

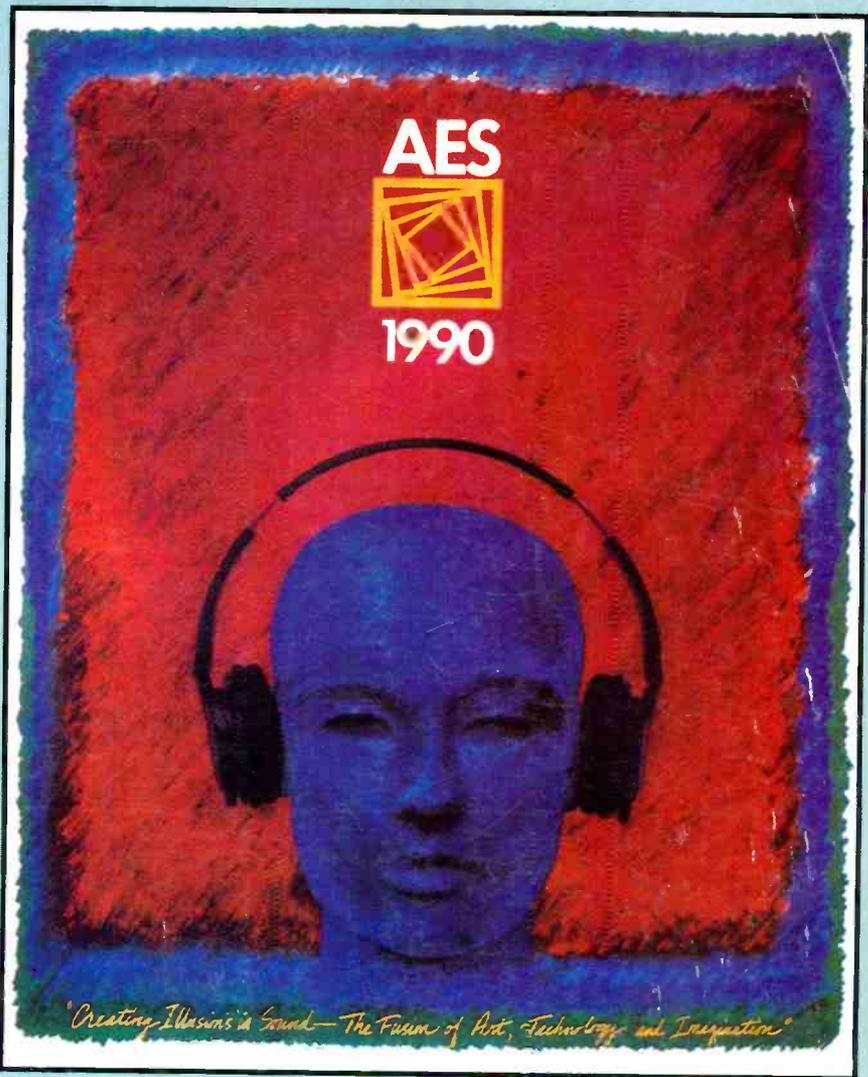
REP

The Pro Audio Applications Magazine

AES Show Preview

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- AES SHOW SCHEDULE**
- EXHIBITOR LISTINGS**
- PRODUCT PREVIEW**
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- INTERVIEW: RUPERT HINE**
- THE LEASING GAME**

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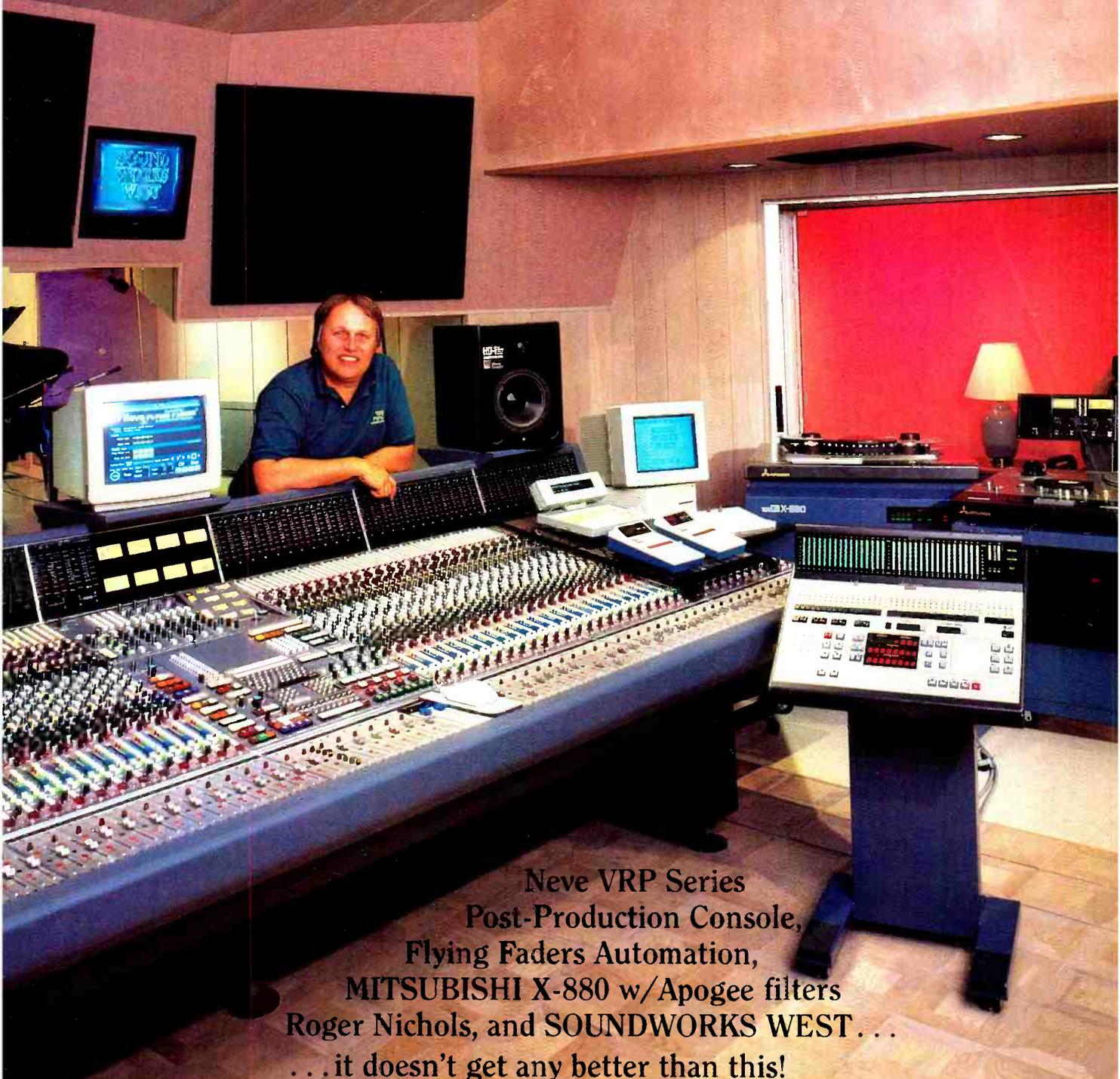


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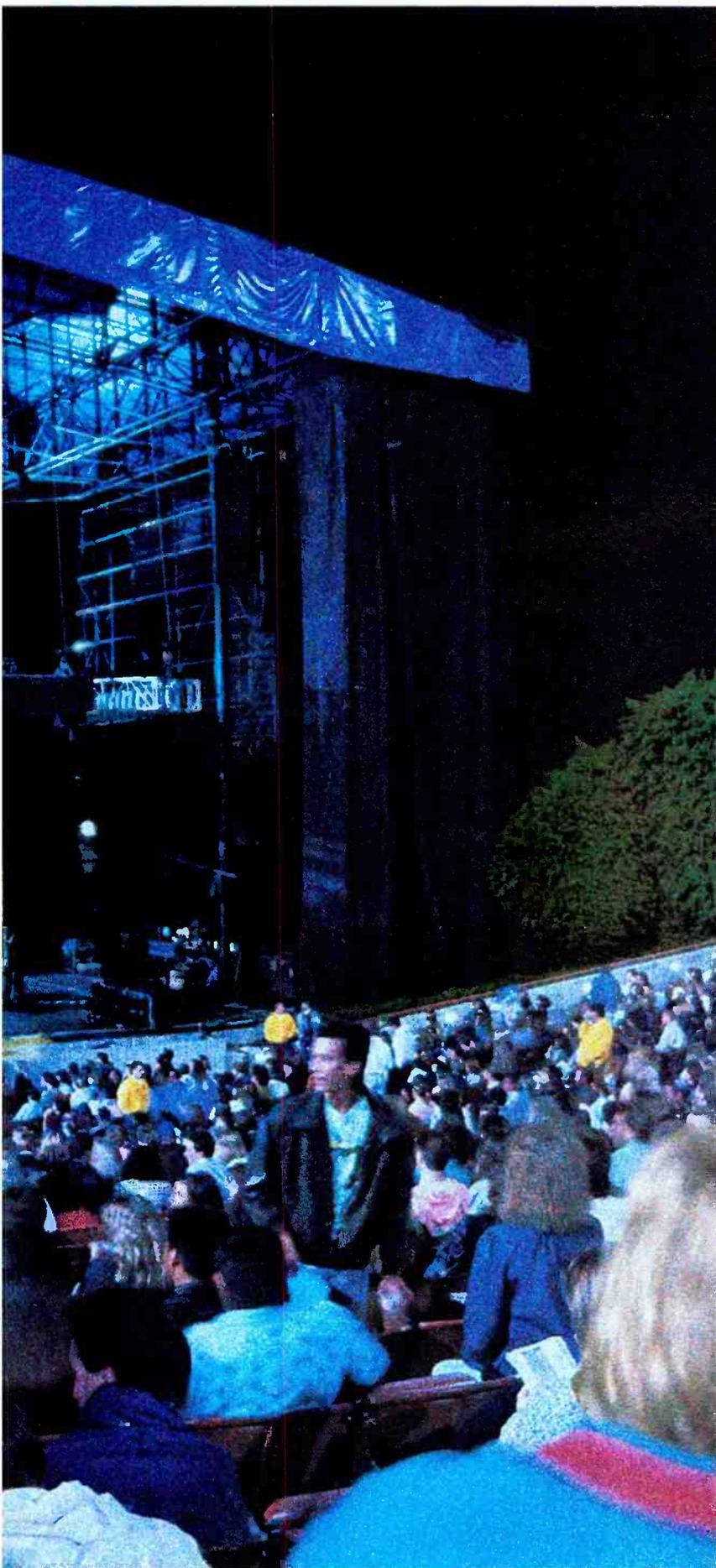
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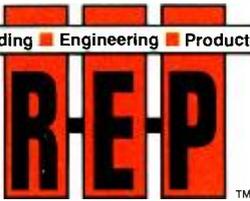
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From the Top

Save the Audio Industry

Wanted: An industry organization, in a small universe of non-joiners, to explain complex technology and diffuse controversial issues to a volatile public that is apprehensive about the future.

As we gather for this month's Audio Engineering Society convention in Los Angeles, this industry's main technical convention, it's more apparent than ever that the audio industry is really a collection of individual user groups. Only technology, and the fact that each group deals with audio, keeps these groups in some semblance of unity.

We love our technology, to the exclusion of almost everything else. No anti-tech diatribe here; technology has made our jobs much easier; careers have been saved (and ruined!) by it. But technology won't mean a damn thing if you get called into court by a family that wants to know why its son or daughter committed suicide.

Collectively, we've forgotten that there's a public that listens to the audio we create. We've ignored the ramifications that our work has on the public at large. Why? Do we think that technology is our refuge? Do we think that before legal or moral responsibility (or a lawyer's subpoena) reaches us, there is plenty of other targets, such as a record companies, film studios or ad agencies, that will take the bullet before we do?

Wanted: An industry organization that pays attention to the newspapers. In the past couple of weeks, two experiences have convinced me that we can no longer afford to keep our heads in the sand.

Item: I go to my local national chain record store to buy a copy of 2 Live Crew's "As Nasty As They Wanna Be." The store clerk, a guy in his late teens or early 20s, sheepishly asks to see my driver's license to verify that I'm over 18. I'm at least 10 years older than the guy. In what I thought was the freest country in the world, I have to show ID to buy an album?

Item: I get into a discussion with a man who owns a chain of religious radio stations. Why, he asks, is the music industry circling the wagons around 2 Live Crew? Wouldn't it be better off if it distanced itself (in biblical terms, cutting off the offending part) for the greater good of the industry? Can I really defend the materi-

al on this album? Are there no limits? Defending a principle in the abstract isn't the same as doing it with a real-life example. First Amendment advocate that I am, I nonetheless had difficulty defending a work that offends me much of the time.

In case you haven't noticed, the mood in the country ain't so great. These events are just the most recent in a trend that's several years old. Consider:

- An engineer, following his client's request, samples an old Jimmy Castor record. Along with the record company and the artist, the engineer is named in the resulting lawsuit.

- More than a third of the country's state legislatures introduce record labeling bills. One actually passes in Louisiana, later vetoed, that includes criminal penalties for the producers.

- The Supreme Court rules in favor of a New York City noise control law, which allows the city to install a city-approved sound system in an outdoor venue, to be run by a city-installed operator. Volume reductions can be made without the performers' consent if the volume rises above permissible levels.

- Laws requiring disclosure when concert acts lip-sync or use any prerecorded material are introduced in three states.

- In the Judas Priest trial, the plaintiff's expert witness, while identifying alleged subliminal messages, all but absolves the band during pre-trial testimony; he thinks the engineers probably did it, without the band's knowledge.

Wanted: An industry organization that will stand up for us. Who will tell the public that we aren't pornographers and satanists, explain how our technology works to legislative committees, tell the truth about subliminals, and remind the public that as an industry we contribute much to our culture, despite what the opportunists and demagogues would have us believe?

In what group can we meet to discuss such difficult issues as freedom of expression, the nature of technology, self-censorship, freedom vs. responsibility, and our moral or legal responsibility to the public? I don't have any answers; but I do know we need to start talking about these subjects. Soon.

A possible answer lies this month in Los Angeles. We're gathering for the AES Convention. Let's use this opportunity to discuss what can be done.

Sadly, the AES, the organization best-suited to take on a political/lobbying role, is unwilling or uninterested in doing so.

From the Top

In this issue, executive director Don Plunkett explains that AES was set up as an educational organization and should remain that way.

The task then falls to the two other organizations that have a presence at this show. To their credit, both are responding to the challenges before us.

The Society of Professional Audio Recording Services, which is holding a variety of events at AES, recently recommended two members to anti-labeling forces in Pennsylvania. These members testified in legislative hearings against the bill, which was defeated. Additionally, the SPARS board is scheduled to consider the organization's position on censorship and how it relates to SPARS members.

The National Academy of Recording Arts and Sciences, which is sponsoring an AES workshop on mixing for records, has responded to the issue by scheduling an anti-censorship rally in Washington, DC, in late summer or early fall.

As important as these steps are, the goals of both societies do not directly address the issues of the technical community. After all, SPARS' mission is to serve the owners and managers of facilities, so its focus is more business-oriented. As for NARAS, its focus is extremely broad, including artists, A&R, arrangers, producers and engineers.

With both organizations, there is some crossover to the technical/production community. When goals are common, we should welcome the opportunity to collaborate. But we have to fight our own battles. By continuing to ignore the larger societal issues surrounding our industry, we are courting disaster. It's only a matter of time before a law or court decision seriously impairs our freedom. If that happens, we have only ourselves to blame.

Wanted: An industry organization that truly looks out for our interests. We have a lot of work to do. The industry we save may be our own.

NEW BUSINESS

In this issue, we're pleased to introduce Mark Herman in our pages. President of High Tech Audio, a Half Moon Bay, CA, sound reinforcement equipment rental company, Mark wrote this month's sound reinforcement article while David Scheirman. R•E•P's sound reinforcement consulting editor, is doing house sound for Linda Ronstandt's tour.

Mark is only one of several new writers who made his debut this summer, including Rick Schwartz, director of post-production at L.A.'s Music Animals, and Dan Levitin, a Northern California engineer/producer. It's a pleasure to have them appearing beside such R•E•P stalwarts as Scheirman, Paul Lehrman and Laurel Cash-Jones.

R•E•P's strength has always been in its writers. Whether for the first time or the 20th, we thank them for their efforts.

Dan Torchia
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Did you know
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Howard Schwartz the man; Howard Schwartz the studio. They've both always done things with a different style.

He's built one of the world's largest recording studios without ever cutting a hit record. Then again, he's always said that audio-for-video was going to be the biggest hit of all.

His competitors laughed, but he laughed last. With eight control rooms in his mid-Manhattan location (including the latest edition — a fully digital editing/mixing suite), Schwartz (the studio) has grown bigger than Schwartz (the man).

But the studio still maintains the creative, warm and friendly character of its founder, who continues to welcome his clients with the finest audio tools, the most innovative engineers, and the best bagels in town.

"People are the only thing you can count on in this business," Howard explains. "I find the talent, I supply them with the best tools, then I let them do what they do best."

One of these tools is AGFA PEM 469 bias compatible mastering tape — the international standard in audio-for-video recording.

"Year after year we have 'shoot-outs,' and AGFA always comes out ahead," he says. "But 'tape...schmape,' people really make the difference. And whatever you need, there's always someone you can talk to at Agfa."

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Random Access

This has not been a good summer to be connected in the recording business. Across the country, engineers, producers, artists and record companies are being forced to account for their actions in the studio.

To wit: 2 Live Crew's "As Nasty As They Wanna Be" was found to be obscene in three Florida counties. In Louisiana, the governor contemplated the country's first mandatory labeling bill, passed by both state House and state Senate. Ultimately vetoed, the bill that would have provided jail time and fines for retailers, distributors, manufacturers and producers for labeled product sold to minors, and for unlabeled product deemed unacceptable under the law.

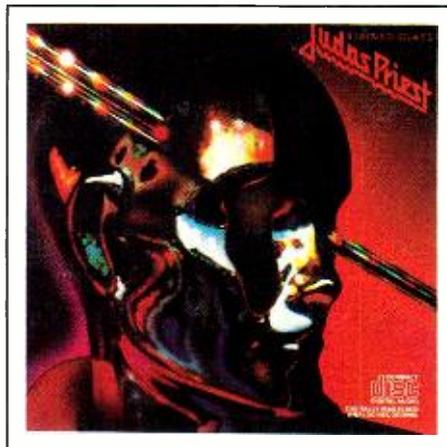
But foremost is the Reno, NV, trial of the metal band Judas Priest, which is being sued by the parents of two men who attempted suicide after listening to the band's "Stained Class" album. One died immediately; the other died three years later of complications.

At issue is whether subliminal messages are contained in the music. Lawyers for the families contend that subliminal messages such as "Try Suicide" and "Let's Be Dead" drove the men to suicide. The band says that there are no such messages contained in the music.

This lawsuit is being argued as a product liability case. In other words, messages were intentionally inserted in music, which was then purchased by an unsuspecting public. This gets around the First Amendment protection, which has caused similar cases to be dismissed.

The judge, who is hearing the case without a jury, ruled in pre-trial motions that subliminal messages are not speech and therefore are not protected by the First Amendment. The purpose of the trial is to determine if subliminal messages exist in "Stained Class."

Home of



the Free?

At press time, the trial had reached its eighth day, and was expected to last about a month. The families' case is mainly based on the testimony of William Nickloff Jr., a self-taught engineer and former producer of subliminal audiotapes for weight loss and to stop smoking. He claims that through extensive listening to a safety copy of the 24-track master, he was able to decipher the phrases in question.

According to press reports, the judge hearing the case questioned what motive the band would have to insert any messages. This is important because it indicates that although the judge is willing to hear evidence regarding any subliminal messages, he was skeptical as to whether they really existed. ■

TrendWatch

Advertising: A "selective recession" has hit parts of the ad industry, according to Advertising Age. This could spell some difficulty if your revenue is derived from advertising clients. Local TV stations are among the hardest hit, and the trade newspaper says that ad agencies and network TV are concerned what the fourth quarter may bring.

Sampling: Flo and Eddie's sampling lawsuit against De La Soul has been settled. The former members of the Turtles claimed that a portion of "You Showed Me" was sampled without authorization on De La Soul's album "Three Feet High and Rising." Unlike other sampling lawsuits, which dealt with copyright infringement, this lawsuit was filed under a California state anti-piracy statute.

Live Concerts: California is the latest state to consider a public disclosure law when a concert uses taped vocals or instrumentals. That bill appears to be less far-reaching than bills introduced in New York and New Jersey. In California, fans who felt cheated by a concert with canned material could get the ticket price refunded. See David Scheirman's Live & Direct column in the August issue for more information on this issue. ■

SPARS



at AES

The Society of Professional Audio Recording Services is holding a number of events in conjunction with this month's Audio Engineering Society convention. Add these to your convention planner:

Friday, Sept. 21, 3 p.m.: A special meeting to discuss SPARS programs, and to review and update the National Studio Exam.

Saturday, Sept. 22, 8:30 a.m.: General membership meeting to elect the 1990-1991 officers. To be held at SoundWorks West, transportation from the convention will be provided.

Saturday, Sept. 22, 2 p.m.: SPARS/AES seminar, "Business Aspects of the Recording Industry: Market Segmentation," led by David Porter.

Sunday, Sept. 23, 8 a.m.: Manufacturers interface at the Los Angeles Hilton and Towers.

For more information about these events, contact SPARS as 4300 10th Ave. N., Suite 2, Lake Worth, FL 33461; 800-771-7727; fax 407-642-8263. ■

L.A.'s Skywalker: *Last of a Breed?*

Eight months ago, LucasArts Entertainment moved into the Los Angeles studio market with the purchase of the former Lionsgate studios. Referred to as Skywalker Sound South Bundy, this facility boasts a film re-recording stage, a combination ADR/Foley stage, two sound transfer rooms and a 25-seat screening room, all outfitted with the Lucasfilm THX sound system.

However, the big excitement is the new ground-up facility being built five blocks away. Dubbed Skywalker Sound South Olympic, this overwhelming 30,000-square-foot facility may very well be the last of its kind to be constructed from the ground up in the Los Angeles area, due to such factors as changes in the marketplace, the price of real estate and construction costs.

This new facility was designed by John P. Edwards of Edwards & Edwards Architects. Construction is being done by Tishman, with acoustical design by Jose Ortega of Paul S. Veneclausen and Associates. The construction is being orchestrated by Lawrence Goga, one of the two chief engineers of Skywalker Sound South. The equipment installation is being done by David Carroll Electronics and Larson Technology.

Equipment installation is being overseen by John Brunnick, chief engineer of Skywalker Sound South. The facility will include two identical re-recording stages with Otari Premiere 88 input consoles, both with Diskmix III Moving Fader automation. Each will be equipped to record Otari DTR-900B 32-track digital or 35mm 6-track film. The playback is 35mm with either digital or analog audio. The ADR and Foley stages will be outfitted with Otari LARTEC Computer Controlled Consoles.

Two videotape-based rooms are identical in size. Both rooms are equipped with a 72-input Otari Premiere console with Diskmix III automation. One room will be outfitted with four Otari MTR-90 24-track machines. The other will be billed as the "New Technology Room" and will be centered around the new SoundDroid, a co-venture between LucasArts Entertainment and New England Digital. [See this month's First Look column for more information — Ed.] Both will offer high-definition video playback projection.

There is a 70mm 6-track THX Dolby surround screening room that seats 49, and a layover/layback room that has one of the hippest designs yet devised. This room is truly a wonder. The first portion of the room is a somewhat typical layover/layback control room but has glass so that the engineer can see to the monitor in the far room.

The far room has been designed as a comfortable living room experience with a sofa, coffee table and chairs and (of course) a home THX environment. It is set up to allow a producer to actually make adjustments to the layback while sitting in a living room atmosphere. There are also multiple transfer rooms as well as a centralized machine room for the Mag-natech film recorders and dubbers used on the re-recording stages.

Other equipment being utilized includes all JBL power amplifiers, JBL/THX speaker systems in every room augmented with Boston Acoustic Surrounds (which are also being used as the recordists monitors). The equalizers are by Rane.

Bruce Markoe, general manager, projects an early October opening for the ADR and Foley stages, and the transfer and screening rooms. "We plan to open the first re-recording stage Nov. 12, and the second on Dec. 10," he says.

The combination of the two Skywalker Sound South facilities in conjunction with their existing Skywalker Sound North facility promises to make LucasArts Entertainment a "force" to be reckoned with.

— *Laurel Cash-Jones* ■

PEOPLE

William C. Mohrhoff has joined E-mu Systems as vice president of worldwide sales and service ... **David W. Roudebush** has been promoted to U.S. marketing and sales manager for AKG Acoustics, Orban Professional Products Division and dbx Professional Products Division. **Jesse Maxenchs** has joined AKG in the newly created position of regional manager, Western Hemisphere ... At AMS Industries, **Stuart Hirotsu** has joined AMS as sales executive, and **Julie Straton** as office manager. **Ridge Nye** of Interface Audio has been appointed the AMS representative in the Southeast ... **John Carey** has been promoted to vice president of sales and marketing at Otari ... **Tony Marra** has been named customer service manager of Klark-Teknik ... **Paul Schmidman** has joined Meridian Data as vice president of marketing ... **Elizabeth Gillespie** has joined Clarity as marketing manager ... Ediflex Systems has appointed **John Patrick Warrington** as a digital audio engineer in the Audiflex division ... Digidesign has appointed **M3 Sweatt** as director of international sales and marketing ... **Peggy Dold** has joined the New Music Seminar as an executive director ... at Gentner Electronics, **Kelly K. Hannig** has been appointed director of research and development ... **Scott Robbins** has been named western regional sales manager at Crown International. ■

"I don't know if the musical group was actually involved in [inserting subliminal messages]. I am more inclined to believe that possibly a producer or engineer or one of the technicians involved in the production was involved in it."

— *William Nickloff Jr., plaintiff's witness, in pre-trial testimony in the Judas Priest case, analyzing what he claimed were subliminal messages in the album "Stained Class."*

Roland breaks th

Roland S-770 DIGITAL SAMPLER

VOLUME



REC LEVEL



```

[Edit Partial TUF] [0] [Dec / Inc]
Filter Mode LPF Envelope
Cutoff Freq 24 -TUF Depth 63
-Key Follow 0 -Vel Sens 63
Resonance 21 -Pitch Depth 0
Vel-Curve 2 Time
Play / Split / TUF / Sampling/UnLoad
    
```

JUMP

F1

F2

F3

F4

F5

EXT CTRL

CONTRAST

PHONES

FOOT SWITCH

L(MONO)

R

INPUT

If we were to tell you that our new S-770 is the best digital sampler in the world, you'd probably mutter something about truth in advertising and go on about your business. When, as you'll discover momentarily, it's absolutely true. And, as you'll also discover momentarily, the reason for it has less to do with any one feature in particular than it does with several features working in conjunction.

Such as the fact that the Roland S-770 is equipped

with AES/EBU Digital I/O, so it's actually possible to set up a fully integrated digital production facility.

We've also equipped our S-770 with both 20 bit D/A conversion and Differential Interpolation, thereby giving it higher resolution than any other stereo sampler.

And while we're making comparisons, allow us to offer another one. With 24-voice polyphony, the Roland S-770 has more voices than any other comparably-priced sampler. So you're not only assured of getting

e sound barrier.



extraordinary sound but the flexibility to go along with it.

Before we forget, the S-770 is also blessed with an elephant-like internal memory. It can be expanded to 16 megabytes which, for those of you without calculators nearby, translates to 83.5 seconds of continuous stereo sampling time at 48 kHz—twice as much as any sampler in its price range.

While we're on the subject of price, there's one more thing we should mention. On many samplers

you have to add a slew of peripherals. On our sampler, you don't. Things like a 40 megabyte hard disk drive, SCSI port, Digital I/O and RGB video monitor output all come standard.

Of course, these are just the highlights. For the rocket-scientist information, write us at the address below or call (213) 685-5141.

And as far as the sonic boom is concerned, that comes later. When you hear the S-770 being played live.

Roland[®]

Roland Corp US, 7200 Dominion Circle, Los Angeles, CA 90040-3647

Circle (9) on Rapid Facts Card

Circle (10) on Rapid Facts Card

www.americanradiohistory.com

Random Access

STUDIO UPDATE

Facility/Location

Details

HAWAII

Sea-West Recording Studios,
Sea-West Productions/Pahoa

Moved to The Big Island, Box 2063, Pahoa, HI 96778; 808-965-8841; fax 808-965-8853.

CANADA

Soundwerks/Vancouver

New facility for rehearsal and music production. Equipment: Soundcraft 6000; Otari MTR-90 II 24-track 2-inch; UREI 6260 and 6290 power amplifiers; UREI 8130 monitors; Tascam MSR-24 1-inch tape machine. 1969 Pandora St., Vancouver, B.C. V5L 5B2 CANADA; 604-255-3536; fax 604-255-8711.

EUROPE

Abbey Road/London

Additions: Sonic Solutions digital mastering room; another Cedar system; another Mitsubishi 32-track digital machine; a third mobile with DDA desk; another Direct Metal Mastering lathe; a multiple R-DAT copying room; an increase to 55 cassette machines in the real time cassette copying facility; a Sony DAE 3000 editor; a third Studer A820; an increase to 15 PCM 1610/1630 systems; residential accommodations.

Sonoland/Madrid

Opened Studio B, a Recording Architecture-designed facility.

MANUFACTURERS

AMEK Systems and Controls

Deliveries of 40-input Mozart consoles: Today Video (New York) and Loomis Productions (Texas).

Neve

Pacifique Recording (North Hollywood) has upgraded to a VR72 with Flying Faders Automation. 525 Studios (Los Angeles) and Studio 306 (Toronto) have added VPR48s with Flying Faders. Soundcastle Recording Studios (Los Angeles) has purchased a VRP72 with Flying Faders.

Otari

The first Sound Workshop Series 54 console was installed at RO Studios (Concord, CA). LucasArts Entertainment has purchased four Premiere consoles for the Skywalker Sound South audio post-production facility in Santa Monica, CA.

Solid State Logic

Vancouver Studios (Vancouver, Canada) has purchased two ScreenSound digital audio-for-video editors. Right Track Recording (New York) has installed an 80-input G Series console.

DEALERS

AudioTechniques/New York

John Guth Productions (New York) has purchased a Peavey/AMR 2400 Production Series console; Jeff Layton Music Production has purchased a Trident 24 console.

SG Audio/Chicago

River North Studios (Chicago) has taken delivery of a 56-input DDA DCM232 console with full automation. Optimus (Chicago) has purchased a Neotek Elite Film console.

ciates (Ocala, FL) to represent its line of pro audio consoles and power amplifiers in Florida.

Audio-Pro, Springfield, MO, has purchased QSC MX Series amplifiers for its new house and monitor systems.

Sales of **Digital Dynamics'** ProDisk digital workstations set a record in the second quarter of the year. In the New York area, **Martin Audio Video** has been named the exclusive dealer for the workstation.

ADDRESS CHANGES

Klark-Teknik has relocated its American headquarters to larger facilities at 200 Sea Lane, Farmingdale, NY 11735; 516-249-3660.

AudioTechniques has moved to a 10,000-square-foot facility at 1619 Broadway, New York, NY 10019; 212-586-5989.

AKG Acoustics has moved to a 77,000-square-foot facility at 1525 Alvarado St., San Leandro, CA 94577.

DISTRIBUTION NEWS

Mark IV Audio has selected **Altec Lansing** for the distribution of Dynacord products in North America.

Swire Magnetics now has exclusive distribution rights for all products presently being manufactured by Olammon Industries.

AudioTechniques has been named the exclusive dealer in the northeast U.S. for RPG Diffusor Systems.

Apple Computer's corporate video facility, **Apple TV**, has taken delivery of a Digital Dynamics 8-track ProDisk-464.

Southern Thunder Sound has opened a repair center for sound reinforcement electronics and speakers.

TGI plc has acquired the entire issued capital of **Martin Audio Ltd.** Martin America, the U.S. distributor for Martin Audio, remains in Chatsworth, CA, under the direction of TGI North America.

The APR-24.

In a couple of years,
it will become even clearer
why you bought it today.



The Sony APR-24 Analog Multitrack Audio Recorder not only meets your production needs today, but those of the future as well.

It's a remarkable combination of reliability and advanced engineering that won't become obsolete as your requirements expand.

To provide dependability and alignment stability, we've constructed a die-cast aluminum webbed deck and tubular welded frame. And the state-of-the-art amorphous-metal heads give the APR-24 significantly longer head life and a smoother, more extended frequency response.

The APR-24's microprocessor fully integrates control of the

transport, alignment, signal routing and timecode functions. So you can take advantage of the built-in synchronizer and precise automated punch-in/punch-out operation.

Since these operations are software-based, the APR-24 can incorporate new features and performance improvements. Such as our unique serial interface that enables the APR-24 to control a Sony VTR for a video sweetening project. Or a second APR-24 in a dual 24-track music recording session.

To learn more, call us at 1-800-635-SONY. With the APR-24, it's clear today why you can look forward to the future.

SONY

PROFESSIONAL AUDIO





MORE ARTISTS GO GOLD ON AMPEX THAN ON ALL OTHER TAPES PUT TOGETHER

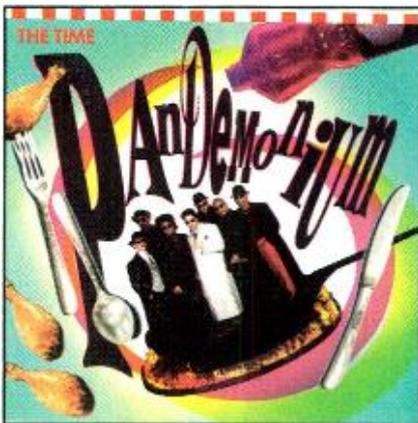


EVERY ARTIST PICTURED HERE HAS EARNED THE PRESTIGIOUS
Ampex Golden Reel Award for creating a gold album exclusively on Ampex audio tape. In fact, of all the gold albums released last year—and the year before—most of them were laid down exclusively on Ampex tape. And it's a good bet that most of the others used Ampex for the majority of their cuts, too. • At Ampex, we respect the art of music and the rare ability it takes to create it. Being an artist means committing your body, mind and soul to your profession. It means fighting to preserve the integrity of your talent. It means never compromising your sound. • We've made our own commitment to provide you with the highest quality, most consistent, most dependable audio tape in the world. Tape created with the same uncompromising attention to detail that you bring to your music. • For all the details on what makes Ampex tape right for your sound, just call or write for a copy of our new 456 Technical Brochure, and see why Grand Master® 456 is engineered like no other tape in the world.

AMPEX
A MASTER OF ENGINEERING

Fresh Tracks

The Time: "Pandemonium"



Produced by: The Time
Production supervision and coordination: Jimmy Jam & Terry Lewis and Jesse Johnson

Recorded at: Paisley Park, Flyte Tyme, Jungle Love, Sunset Sound, The Skillet and The Time Studios

Engineered by: Steve Hodge, Femi Jiya, Tom Garneau

Second engineers: Matthew Larson, Dave Friedlander, Chuck Zwicky, Brad Yost

Mixed at: Flyte Tyme Studio D by Steve Hodge

Mastered at: Bernie Grundman Studios by Brian Gardner

SPARS Code: N/A

Comments: The popular hype associated with the much-celebrated reunion of the 1980s premier R&B group may or may not raise the eyebrows of the '90s music culture; however, from a technical achievement, this album brings much more to the party than a history lesson in funk.

Of special interest: While the stylistic presentation evident on previous productions from Messrs. Day, Johnson, Lewis and Jam (and dare we say Prince) have fancied their way into these recording sessions, we must once again note the talents of Steve Hodge. His work previously noted on Janet Jackson's album, he has managed again to creatively deliver a clear and imaginative mix. ■

Vladimir Spivakov/Moscow Virtuosi: Vivaldi "The Four Seasons" and Violin Concertos RV 278 & RV 357

Label: RCA Victor

Produced by: Yolanta Skura

Engineered by: Yolanta Skura

Mixed by: Yolanta Skura

Recorded At: Eglise du Liban, Paris

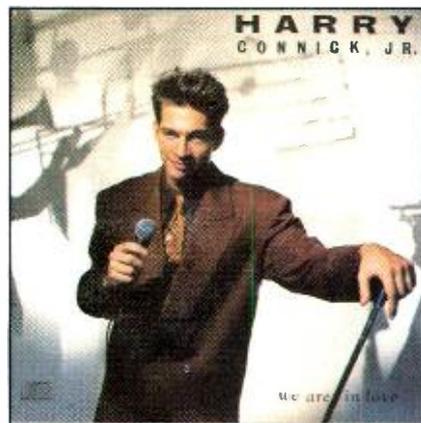
SPARS Code: DDD

Comments: This is one of the best-sounding classical recordings we have heard. The fact that it is all digital is even more impressive. So many all-digital classical recordings have such a grating and unnatural high end that it is easy to see why digital has gotten a bad rap in the popular audio press. This recording is a superb model of how good digital can sound in the right hands.



Of special interest: The dynamic range of a symphony perfectly captured on tape is really something to hear. The full orchestra surrounds the listener; the quiet parts are unobstructed by background noise or hiss. The genius of the engineering is that the featured instruments seem to be in stereo when they are playing alone, yet they never lose their specific place in the orchestra when the ensemble as a whole joins in. We would like to know how Skura did this. Perhaps through close-miking, but the acoustics are so rich and natural sounding that they suggest otherwise. ■

Harry Connick Jr.: "We Are In Love"



Label: CBS Records

Produced by: Harry Connick Jr. and Marc Shaiman

Assistant producer: Ann Marie Wilkins

Executive producers: Dr. Goerge T. Butler and Bobby Colomby

Recorded and mixed by: Joel Moss

Assisted by: Gregg Rubin

Second engineers: David Marquet, Elaine Anderson and Sandy Palmer

Recorded at: Evergreen Radford Studio, North Hollywood, and RCA Studio B, New York

Mixed and edited at: Smoke Tree Ranch Studios, Chatsworth, CA

Mastered by: Bernie Grundman

SPARS Code: DDD

Comments: There's an adage among those of us who surf the higher tides: "When you ride the really big one, keep busy and make sure you're noticed." If Connick's brisk rise to stardom hasn't caught your eye, perhaps one of his two recently released recordings will convince you of his work ethic. "We Are In Love" was recorded in just 10 days — no mean feat considering the number of musicians and today's project studio standards.

Of special interest: The multiballyhooed, multitrack, a cappella escapade in the track "Heavenly" is actually executed very smoothly. The imaging of string ensembles, particularly the smaller sized ones found in the poignant "Drifting," are impeccable. ■

Because compromise is out of the question

Whoever said, "compromise is the oil that lubricates the business process" apparently wasn't in the studio business. To the contrary, in this unique world where art and business meet, and clients expect the best, compromise may be the fastest way *not* to stay in business.

That's why Otari tape recorders come with something behind the meters.



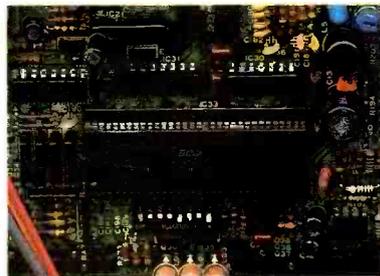
Otari isn't in the toy business. The MX-80 and MTR-90 sport 2" thick cast alloy deck plates, heavy duty swing arms, and motor shafts designed to handle the exceptional acceleration characteristics of these machines.

Our MX-80 and MTR-90 multi-tracks are used all over the world to produce hit CDs and major motion picture sound tracks, and for good reasons.

For example, if you're involved in audio post, you'll appreciate a

capstan motor that is *designed* to be speed-slewed, plus external control connectors for easy interface to any SMPTE/EBU time-code based synchronizer, editor or machine controller.

For *whatever* you do in audio, both machines share constant tension transport technology for high performance, yet gentle tape handling. You'll also get digitally timed, gapless, seamless, punch-in, punch-out. On the "80," an autolocator with search zero and three cue memories comes built-in. And if you're a purist looking for the highest quality sound



Otari's proprietary integrated circuitry provides superior reliability and reduces service time.

possible, you'll appreciate the transformerless balanced inputs and outputs.

Circle (12) on Rapid Facts Card

The MX-80 and MTR-90 were designed from the beginning to lock to external controllers, and therefore provide exceptional performance under these conditions. Pictured is the MTR-90's advanced EC-101 chase synchronizer.



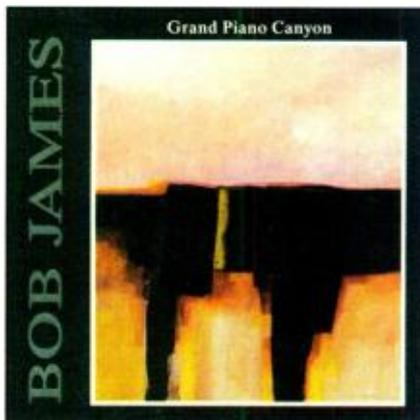
And to keep everything where it belongs as you move from one studio to another, something else you have to look beneath the surface to see—a 2" thick, cast alloy deck plate.

It's not that we don't have our imitators. We do. But to coin an old phrase, beauty is more than skin deep. And someday when you're under pressure to get that track out, and you lock a "90" to your video machine and things happen exactly the way they should... Or some early morning after the talent has gone, you sit back and listen to what you've put together, you'll be glad you decided that "compromise is out of the question."

Call Otari. (415) 341-5900.

OTARI®

Bob James:
"Grand Piano Canyon"



Label: Warner Bros.
Produced by: Bob James
Associate Producer: Max Risenhoover
Engineered by: Al Schmitt, Gene Curtis,
Max Risenhoover, Hank Cicalo, Steve Holroyd
Mixed by: Bill Schnee, Max Risenhoover
Recorded At: Ocean Way, Los Angeles; Clinton Recording, New York; Remidi, Ardsley-On-Hudson, NY; Bill Schnee Studio, Los Angeles
Mastered By: Ted Jensen at Sterling Sound;
CD prep by John Kubick
SPARS Code: DDD

Comments: "Grand Piano Canyon" marks James' return to the concert grand piano. The album is warm and interesting, the compositions being wonderfully diverse instrumentals. The rhythm section arrangements are tight and the recording is superb; the drums and percussion are clear and natural-sounding throughout.

Of special interest: Nathan East's bass tone on "Bare Bones" is incredibly full in its range, from sub-bass to high mids, while maintaining slapping clarity and low boom at the same time. "Xraxse" is completely a machine track that has interesting depth. "...stop that!" is a more experimental piece featuring a 6-piece horn section and a jackhammer sample (or somebody left a window open during basics). Bill Schnee's mixing is brilliant and sensitive. A very warm sounding digital recording.

FOCUS: AL SCHMITT

Basics engineer, "Grand Piano Canyon"

R•E•P: The bass on "Bare Bones" is one of the most full-range sounding basses I've ever heard.

AS: We used a tube direct, the James Demeter.

R•E•P: That's it? That's a pretty short secret.

AS: That and a good player. I usually use a tube limiter, like an LA-2A, and I pull very little, maybe a decibel and a half or 2dB, just really to get the sound of the tube. No EQ. I use very, very little EQ.

R•E•P: You mean generally?

AS: Yes. I usually use placement of microphones to get what I want.

R•E•P: How did you mic the piano?

AS: I think I used a couple of Schoeps or C12s. It's hard to remember; it's been a while now. I used Schoeps on the Joe Sample record I just did. If I use C12s, I put them inside the piano as high as I can get them, up over the sounding board.

R•E•P: Do you keep the lid on?

AS: Yes. If I use the Schoeps, I use them sometimes in a X-Y pattern across the top. I recorded the basics, including piano, and then I know some of the piano was redone in New York, but I don't know which of it was redone.

R•E•P: How did you mic the drums? They're really clear, and, for an all-digital recording, the drums don't always sound so natural.

AS: Well, the whole thing is really placement and choice of mics. I used a Neumann 47 FET on the kick (with some padding inside), a Sennheiser 452 on the snare, miking just the top, a 452 on the high hat, two 452s for overheads, AKG 414s on the toms and two Beyer M50s for the room.

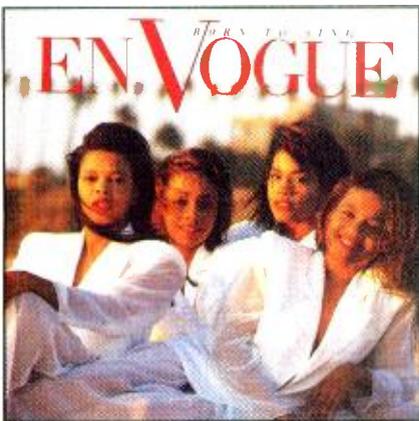
R•E•P: You made this album on the Mitsubishi X-880. Do you like that better than the Sony?

AS: Maybe I do, a little bit. It just sounds better to me. Although I do like Sony's 3348 — that's really nice. But I don't do a lot of digital recording. Most of the stuff I do is analog and then we transfer to digital. I was talking to Bruce Swedien this past weekend, and a lot of the stuff he does is recorded 16-track analog for basics and then transferred to digital. I do that a lot, only with 24-track, not 16-track.

R•E•P: You said you don't use a lot of EQ, and yet your records are plenty bright...

AS: It's microphones. If they're in the right place, things should sound naturally bright. That's how I learned. When I learned engineering, and when I was just starting out, there wasn't a lot of EQ on the boards and we didn't have a lot of inputs. A lot of engineering was microphone techniques and where to put the mics to get the best sounds. We didn't have isolation booths and a lot of that stuff, so you had to learn to use the room and the leakage and the microphones for the sounds you wanted. ■

**En Vogue:
"Born To Sing"**



Label: Atlantic
Produced by: Thomas McElroy and Denzil Foster
Engineered by: Ken Kessie, Steve Counter, Dale Everingham, Jeff Poe
Mixed by: Ken Kessie
Recorded At: Starlight Sound, Richmond, CA; Live Oak, Berkeley, CA; Can-Am, Tarzana, CA
Mastered By: Brian Gardner at Bernie Grundman Mastering, Hollywood
SPARS Code: ADD

Comments: This is a fun record. The album has the party atmosphere and energy of old Motown or Stax/Volt but the songs are fresh. The recording is good without calling attention to itself.

Of special interest: The background vocals in "Strange" begin with a mock British accent which give way to a strong, soulful lead. During the bridge the backgrounds sing a vaguely African sounding harmony, capped by cheesy horn samples. "Hold On," starts out with a great a capella intro with strange, nearly dissonant, harmonies and then launches into a powerful groove.

Focus: KEN KESSIE

Principal engineer, "Born to Sing"

KK: I think the engineering on this record is interesting, because it's kind of "anti-engineering." Its purpose was to not detract from the songs, or from the soul or the vocals, but to just support the songs and be invisible. I found that's kind of hard to do, because one's natural tendency as an engineer is to try and impress people with sound, with shimmer and so on.

Everyone definitely decided we wanted to tone down the drums for this record. It's kind of been a direction lately because of rap — with a lot of the snare drums coming from old James Brown records and stuff — so the drums are not as powerful and whacking you in the face like they were two years ago.

The drums, of course, were drum machine, and it was played off a sequencer in a 4- or 8-bar pattern. Believe it or not, all of the other instruments, the keyboards and bass, were played by hand, which is kind of contrary to modern R&B. Most R&B is done completely with sequences. That's part of how 2 Tuff [Foster & McElroy's production company, 2 Tuff E-Nuff] gets their feel; the drums are right on and everything else is off a little bit.

R•E•P: What kind of mics did you use on the girls?

KK: That was a Neumann 250 on the lead. On backgrounds we used an AKG 414 because we needed more brightness and more pattern variation — sometimes I'd use figure eight, sometimes omni, depending on which song we were doing.

R•E•P: Did you compress the vocals to tape?

KK: Yeah, an 1176. With what the studio had available, it was either that or dbx 160s, and I find those can crush the vocals too much. They can grab them and make them too thunky in the front. I wanted to do these vocals as "soul" vocals in the old-fashioned sense.

To me, most modern vocals are overprocessed; there's so much Harmonizer, AMS Delay, compression and short room put on them that you can't even tell who the singer is anymore; it's equal effects and singer. I tried to keep the vocals bright and clear so that the personalities of the girls would come through. The vocals are bright and maybe at times slightly distorted so they're exciting — like old-time Motown vocals, where they weren't super clean but they were there and they were dramatic.

R•E•P: Do you have any mix notes?

KK: I used the SSL console limiter on the lead vocals. From tape, they went into a GML EQ and then into a dbx 902 de-esser. On the GML I went +9dB at 16k (you can see why I need a de-esser), +3 at 10k, +2 at 1.2k, +2 at 200 and +2 at 80. I tend to use really narrow EQs, both on the GML and on the SSL, very narrow "Q."

R•E•P: Is that so you're not musing up all of the other frequencies in the area where you want to be?

KK: Exactly, it means I'm able to fit more into the mix. With most R&B, you're trying to fit 10 pounds into a 5-pound bag and you do a lot with compression, but you also do a lot with pinpoint EQ.

In a way, it makes everything smaller rather than bigger, because that's what you have to do to make it fit. Like Hugh Padgham, who mentioned it in the June R•E•P [R•E•P Interview — Ed.], I very much prefer the E series EQ in the SSL. ■

THE POSSIBILITIES

The Flex System from Rane: A Powerful New Approach to Modular Signal Processing



F

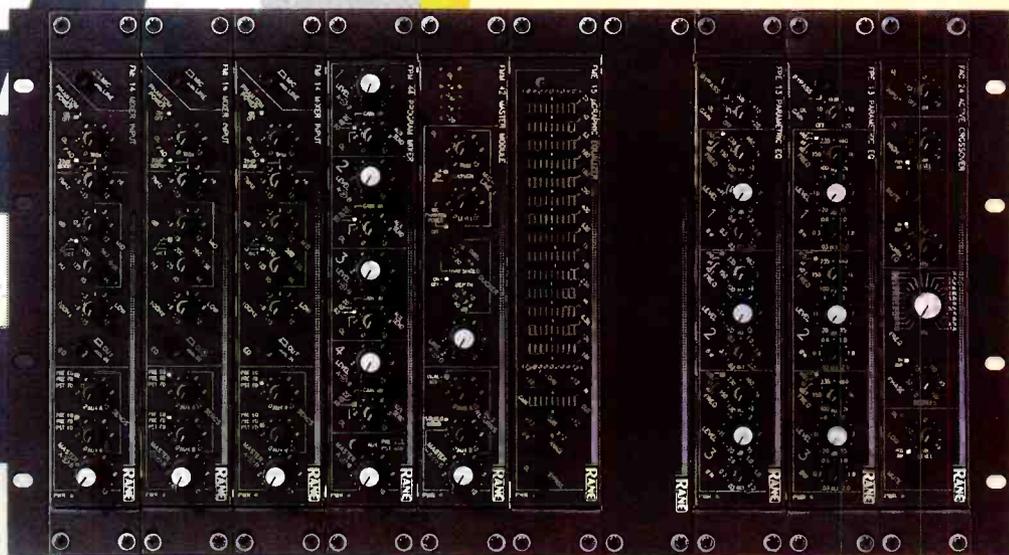
Flexibility, no matter how you spell it, means power. It's the power to meet varied needs. To meet budgets with optimum performance. To efficiently accommodate system growth. Long into the future.

Flexibility is the essence of Rane's new FLEX System. The first universally compatible, cost effective, modular approach to signal processing and routing. With no special requirements. And no dead ends.

Each Flex module is an HR (Half Rack) compatible, UL/CSA/VDE approved, self-contained processing unit. Each capable of being EIA rack-mounted either horizontally or vertically, with inexpensive, readily available hardware. Or simply set on a shelf, stand-alone fashion.

HIGH-POWERED COMPATIBILITY. Using standard 3-pin, 1/4" or barrier strip connectors, FLEX modules are directly compatible with professional audio gear. And since they are remote powered—via Rane's proposed power supply standard—troublesome ground loops, hum and agency approval problems are solved up front by design.

ENDLESS POSSIBLE COMBINATIONS FOR CUSTOM DESIGNS. The FLEX non-exclusive modular concept makes it inherently expandable



ARE STAGGERING!

and upgradeable. It boasts a large and growing number of functions and components to choose from. Mixers. Preamps. Splitters. Crossovers. Dynamic controllers. Equalizers. Amplifiers. Line drivers. And much more under development.

And thanks to Rane's efficient bus design, system wiring is greatly simplified in even complex mixing and splitting layouts.

COST EFFECTIVE CAPABILITIES. Modular flexibility. Uncompromising performance. All without a premium price. That's the FLEX System manifesto. There is no expensive main-frame to buy; you only pay for the functions you want, when you want them.

Say, for example, you only need a 3 channel mixer with one channel of crossover. The FLEX System delivers. And when your needs expand, just add more modules. No need to obsolete old equipment for a loss.

Whether you use two modules or twenty modules, the FLEX System remains cost effective. And supremely flexible. Year after year.

SUPERLATIVE PERFORMANCE, RANE RELIABILITY. The design and performance of each and every Flex module is, in a word, superlative. Every model carries top-grade studio specifications, utilizing the best components available. The result is unsurpassed performance and reliability.

Our HR compatible modules may be compact, but they're stuffed with more top-notch features than you would have thought possible. For example, the **FMI 14 Mixer Input module** measures only 1.75" x 10.5", yet it boasts a -128dB EIN mic stage, switchable phantom power, true 20dB pad, powerful 3-way EQ section, insert loop, two source-selectable Aux sends and balanced master channel outputs. A single DIN cable, supplied with each module, routes the Master and Aux buses from unit to unit for quick and clean hook-up.

+15/-20dB boost/cut, 2-octave down to 1/30th-octave bandwidth range for notch capability, and a full 10Hz-20kHz frequency sweep range for unprecedented flexibility.

The **FME 15 MicroGraphic Equalizer** brings Interpolating Constant-Q filter performance to the Flex line, pioneered by our full-sized GE 30

current balanced outputs, and you've got a powerful, flexible new crossover standard.

This is but a sampling of the innovative Flex Modules to be released this year. We encourage you to obtain separate, detailed data sheets on the many FLEX System modules. Then compare these with the best standard equipment available. You'll discover that FLEX offers the best of all worlds: compact, cost effective, flexible, uncompromising performance.



The **FMM 42 Master Module** not only provides Aux returns and mixing, but features extra mic and stereo line inputs with ducking capability for paging and other applications.

For even more mixing flexibility, the **FPM 44 Program Mixer** allows 4 separate mic or line inputs to be mixed to 4 output programs, with pre or post fade switch selection for the Aux sends. Both the direct balanced/unbalanced terminal strip and the DIN Flex bus inputs and outputs can be used simultaneously for easy expansion and integration into larger systems.

Carrying on a fine tradition of innovative equalizer technology, Rane sets yet more new standards with the Flex Series. The **FPE 13 Parametric Equalizer** provides 3 separate bands, each capable of

model which has set new industry standards. Minimized filter interaction, smooth combined response and fully balanced three-pin and terminal strip input/output are but a few of the features. Both the FME 15 and the FPE 13 also provide an exclusive Patch I/O jack which allows direct connection to an insert loop jack with a single 1/4" TRS patch cable.

The **FAC 24 Active Crossover** is the next generation to follow in the respected footsteps of our AC 22 and AC 23 designs. In addition to the proven 24dB/octave Linkwitz-Riley performance, the FAC 24 features a true 24-position frequency selector switch to provide plug-in card accuracy and repeatability with the convenience of a knob. Add to this a built-in CD Horn EQ section, electronic phase alignment, summing LF input and three-pin high-

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www.americanradiohistory.com

Reality: What a Business Concept!

By David Porter

As I write this column, my company is ending its fiscal year and I am completing my term as president of SPARS. Both events bring time for reflection on what was planned and what actually happened.

My company grew larger and more complicated, and in about 45 days my CPA will hit me with the bottom line. Did we have another "pride of ownership" year, or did we actually generate enough profit to worry about those overlooked quarterly tax prepayments? Or, is this the year we really put it in the toilet?

The facilities business is the only one I know of where people are so entranced with owning the new technology that they leave their business brain at home and plow right ahead even when it is painfully obvious that new acquisitions make no economic sense whatsoever.

We have to get it. We can find the money somewhere and in five years it will be paid for and all of the debt service will turn into profit! Right? I seriously doubt it. I'm convinced there is no magical point in time where changes in technology will slow down enough for any of us to stop building and buying, and allow us to stand back, collect cash and clip coupons. It's not going to happen.

Most of my philosophical speculations in the industry magazines have been aimed at convincing studio owners and managers to charge a fair rate for the services they provide. In other words, stop giving it away. As I look at my year-end account books, I have to ask myself a tough question: Am I a hypocrite?

If I'm having another "pride of ownership" year, then I am guilty of giving it away as well. This leads me to believe that we studio owners are all pretty much alike,

whether we have a one-room operation in the suburbs or 17 rooms in midtown Manhattan. We all want to have the best technology available, even if our clients can't — or won't — pay a reasonable rate.

How do we deal with this perpetual dilemma? First, we need to become realistic about our particular marketplaces. There may not be a market for a \$1 million automated digital room in Mooselips, ID. St. Louis may not need 10 of them. Also, we need to plan for technological obsolescence and charge enough to make a profit while paying off the debts.

Axiom No. 1: Gross in 12 months what your facility cost to build or buy. If you buy something new, it should increase revenue in the next year by that same amount, less depreciation. If you are financing equipment with 5-year money, this formula should keep you out of trouble.

There may not be a market for a \$1 million automated digital room in Mooselips, ID.

Axiom No. 2: My informal poll of studios indicates that engineers make approximately 20% of what they bill. A little more in the sub-\$100/hour market and a little less in the plus-\$200/hour market. Total labor costs of engineering and support usually run between 30% to 38% of gross.

Axiom No. 3: If you finance with 5-year loans or leases, be careful when total debt service of principal and interest is greater than 10% of gross sales.

I can imagine all of you running for the file cabinet now to find last year's financial statement for analysis with Porter's Axioms. There are certainly many exceptions to the rules and it would be very presumptuous of me to suggest that anyone running a facilities business along different guidelines is wrong.

There are no hard and fast rules, but I have seen these percentages come up time after time. The figures appear to be typical throughout the country, in both large and small markets.

The bottom line is to be realistic about being in business. Many of us were not trained in high finance and come from a musician/engineering background. We may have stumbled into this business

through the back door. As the market becomes more populated and competitive, we need to step back and take a well-considered businesslike approach.

If your marketplace can't support a \$400,000 console, don't fool yourself into thinking it can. There are not enough low-rate hours in the day to pay for it. Your profits will dwindle and you'll end up working for free. You must provide facilities and services that fit the market. Do some serious research before purchasing, and then face the facts. Your desire to own something does not necessarily mean that the market can support it.

You might ask how I came up with all of this worldly wisdom. I make a point of grilling my SPARS associates with the hardest of questions. I talk to the big corporate guys and the independent entrepreneurs. It is amazing how people share their hard-earned experience when given a non-threatening forum in which to speak.

SPARS provides the network for studio owners, managers, engineers, producers and manufacturers to talk openly about financial and technical issues. Our interface program gives the manufacturers the opportunity to evaluate our feedback on new and existing products. Our business conferences offer practical information for operations, personnel, finance and marketing.

The SPARS National Studio Exam is a valuable tool in evaluating the skills required in the professional audio environment. Our digital workstation conferences have provided the in-depth, comparative and comprehensive information crucial to making the right purchasing decisions.

I hesitate to use the word communication because it has become so expansive in its ramifications that it no longer serves us well. Some years ago, the term networking became popular and has now lost much of its true meaning. Call it what you will, but the personal and professional relationships, conferences and industry connections which flourish through SPARS are among the best professional resources available today.

The annual AES Convention is an excellent time to join with your colleagues from around the country and learn how others are making a go of it. The only way to profit from SPARS is to participate. ■

The Society of Professional Audio Recording Services is the audio industry's best source of business information. For information on membership and activities, contact SPARS at 4300 10th Ave. N., Lake Worth, FL 33461; 407-641-6648; fax 407-642-8263.

David Porter is the president of SPARS and of Music Annex, San Francisco.

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To Live & Die in LA

By Rick Schwartz

Trade shows are like ... summer films. (You know you're going to be disappointed, but you go anyway, because you don't want to miss out on anything.) Manufacturers can live or die based on how well their new products are received at a major trade show, such as this month's AES Convention in Los Angeles. This is because buying decisions for high-ticket items, such as consoles and tape machines, are often made during or shortly after a show. Manufacturers compete aggressively for your dollars.

Trade shows force manufacturers to "show their hand" several times a year. I've heard that some companies wait until several months before a major trade show and then try to cram six months worth of work into six weeks. Sometimes they don't make it. More than a few of the new devices shown this fall will be one-of-a-kind prototypes.

Real production units won't be ready to ship until months after the show is over. It is not uncommon to announce a product at one trade show and not ship it until the next one. Some products never ship.

Software companies have it a little easier because of the special tools that help programmers design their user interfaces. These utilities make it easy to create software that looks like a real application, but is really just a collection of working screens.

Last fall, a well-known audio manufacturer announced a revolutionary new audio workstation. I stood mesmerized at the booth for more than 10 minutes before I realized that there were no loudspeakers. Imagine that: an audio product that can't make a sound. I walked away, shaking my head, only to find out later that it was the "talk of the show." (Almost a year later, the product still hasn't shipped.)

Rick Schwartz is a sound designer/engineer and director of post-production for Music Animals, Los Angeles.

Some people come to trade shows in search of the next "big thing." Little in recent memory has done more to change the recording industry than the compact disc. Although first accepted by audio enthusiasts, CDs quickly became a mainstream product that has surpassed the sales of LP records. Until recently, pressing a CD was a costly task because of the cost of maintaining a clean room, which is 10 times cleaner than a typical operating room, to manufacture the glass master. No studios I have worked in meet this criteria.

DESKTOP CDs

Desktop CD mastering was first shown last fall at the New York AES show. Marketed by Gotham Audio, the system consists of a Yamaha write-once CD burner and an IBM PC. Since then, there have been CD-R systems from Sonic Solutions and others. The cost for a *complete* desktop CD mastering system has been hovering in the \$50,000 to \$100,000 range, hardly within the reach of the average facility. This may soon change because of a joint venture between Optical Media International (OMI) and Digidesign.

OMI, based in Los Gatos, CA, is no stranger to optical technology. In 1986, it introduced the first CD-ROM system for use in recording studios. It contained a large collection of sounds for the E-mu Emulator II sampling keyboard. Recently, the company has added a new service called CD Express. Not only can CDs be pressed at a reasonable cost, but the need for a Sony PCM-1630 master is no longer mandatory. This helps to keep costs down, because a PCM-1630 rents for about \$500 a day.

CD Express offers limited special pricing to Sound Tools owners who send in a DAT created using Master List software. For \$199, OMI will prepare a DAT master for transfer to CD. There are two types of disc replication available: desktop and factory. Desktop CDs are ideal when small quantities are needed. A single disc can be pressed for as little as \$299 plus artwork and shipping. Also, the turnaround is normally less than 48 hours.

Factory CDs are the best way to go when you need more than 100 discs. Of course, the price goes down as the quantity goes up. For quantities greater than 1,000, discs cost as little as \$2. There is one catch: Factory CDs take a little longer to make, with the average turnaround time being three weeks.

All of this makes me wonder why we

are still paying an average list price of \$14.98 for something that costs major labels less than two bucks to press. Although these prices do not include fancy artwork and studio time, I find it hard to believe the record company's argument that the cost of signing new artists is the reason for such high retail pricing.

DIY CDs

This month, OMI is scheduled to ship its new macTOPiX CD Publishing system. All that's needed, in addition to a Mac CPU and an editing DAT master, is a special Sound Tools package from Digidesign and a CD maker. The macTOPiX system uses the Sony CD-R writer to produce Red Book-compatible discs, as well as CD-ROM and CD-I discs. According to Allen Atkins, OMI president, total system cost will be less than half the price of similar systems. If this pricing trend continues, maybe someday we'll have Photomat-style CD service bureaus. Drop off your DAT by noon and pick up your finished CDs the next day.

MIXERS WITH MIDI

Moving fader packages are more popular than ever, for obvious reasons. What could be cleaner than a system without any of the signal degradation that VCAs can cause? Also, there is never any question where your fader is, or if it's playing back your moves correctly.

I was pleased to see a moving fader system that also controls outboard gear via MIDI. The package is made by Uptown Systems of Boulder, CO. MIDI allows the mixer to easily automate signal processing devices from Eventide, Lexicon, TC Electronic, Yamaha and others. Effects can be switched in and out with frame accuracy, programs can be stored and recalled during playback of a mix, and moving faders can be assigned to vary effects parameters in real time. Expect other manufacturers to follow suit.

SHOW SCOOPS

I don't have a crystal ball, but ... Don't be surprised if you see a new, low-cost digital console at the show. Of course, the "War of the Workstations" will rage on, so expect several companies with DAWs to add exciting DSP capabilities. Expect more 1-bit A/Ds and 18- to 20-bit D/As. A nifty AES digital fiber interface will be shown by AID, and every product will be heralded as "perfect for post." ■

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THE R•E•P INTERVIEW

Rupert Hine

By Richard Buskin

Having immersed himself in a welter of production projects since the early '70s with such names as Tina Turner, Stevie Nicks, Bob Geldof, Chris De Burgh, Howard Jones and the Thompson Twins, producer Rupert Hine has also done his fair share of fader fiddling. However, it is a safe assumption that nothing has been like "One World, One Voice."

When trying to come up with a novel way of involving music biz celebs in last May's international "One World" ecological campaign, Kevin Godley — the ex-10cc drummer, now a successful video director — settled on the idea of putting together a "chain tape." This would take the form of a tape traveling around the world, and various artists recording their own unique contributions, tagged one after the other. All of this would be filmed and thus the result would, if

Richard Buskin is a London-based free-lance writer.

Imagine this project: 65 artists, 25 different recording environments, 13 cities, four continents. Producer Ruper Hine details the monumental “One World, One Voice” session.

Rupert Hine and “One World” engineer Stephen Tayler at London’s Nomis Studio, where the project was compiled, mixed and edited.



all went as intended, differ considerably from the Live Aid-type production.

What started out as an idea for a 20-minute multitrack ended up using the services of 65 different artists/bands/orchestras, taped in 25 different recording environments, located in 13 cities on four continents. All was accomplished within the generously extended schedule of 8½ weeks, from the original 6-week estimate.

Hine, in the middle of producing a new band's debut album, was asked to drop everything immediately and take on the simple task of pulling the whole operation together with engineer and frequent colleague Stephen Tayler.

Nothing could be more straightforward: Six weeks in which to travel around the world and record as wide a variety of musicians as possible ... book the plane tickets!

LOGISTICAL CONSIDERATIONS

"We were literally our own roadies, because everyone had to carry their own gear — including flight cases galore — in and out of major airports," said Hines. "So the physical side alone was pretty exhausting. An awful lot of plane flights and an awful lot of locations to set up in, each one totally different. Only when we'd arrive there would we have any idea of what equipment would be appropriate, so we'd really have to carry most of it with us, humping it all around even if most of it wasn't used at each place.

"Toward the end of the project, upon arriving somewhere, it would only take a 2-minute conversation between Stephen and myself to figure out how to record something. To start with, however, it had been like an hour of head-scratching, and even halfway setting up one system before deciding that it wasn't going to work!

"Kevin Godley had Sting lined up in New York as the first participant, and the idea was for him to lay down some kind of basic groove — a bass and drum track — and that we could then go on building it. The 24 hours that I had to think about it before the first production meeting was enough for me to say to Kevin that this wouldn't be a great idea, because if we wanted to pick up world music artists, from continents like Africa and South America, these people can only really express themselves by using rhythm in a very individual way. Rhythmical increases and decreases are all part of their performance, and so being tied in to some metronomic groove would be very restrictive.

"Therefore, I suggested that we start with a 5- or 6-minute stretch that would at least get something going, and then the next person who received it could either add something to that in a lateral way — meaning overdubs — or in a linear way, extending the piece and changing or de-

veloping the tempo and so forth. The next musician would then have two sections to choose from if he wanted to overdub laterally, or he could add to the end of either piece."

ONE CHANCE

"It was explained right from the start that once the chain tape has passed through your hands, it has gone for good, and you have to accept whatever takes place thereafter. The only really doubtful feedback was from Lou Reed when he first heard the overdubbing to his own segment. But once he heard the whole thing in context later on, he realized it was OK. His piece was just two guitars and bass, and, in a way, because it was so good and so complete, it didn't invite that many contributions.

"But a French accordionist in Paris named Richard Guilliano liked it and added these kind-of squeeze-box references. He's an astounding player, very liked in the jazz circles, and he has an incredible ear for listening to almost any kind of music and finding a really nice niche for himself. So I liked it a lot, and once Lou heard it within a broader framework, he was fine about it.

"On one occasion, I wasn't too pleased with what I heard: The Azuquita Salsa Band, of Cuban origin but based in Paris, played in a very uplifting style, but the lyrical content was not in strict adherence to the desired environmental theme, be it on a global level or a local one.

"The song was basically about himself. Azuquita means 'little sugar,' and one got the impression that it was really giving the message that a little bit of azuquita helps the medicine go down! It wasn't really in quite the right spirit."

ONE TAPE

From the outset, Hine and Tayler decided that the idea of using one master tape was going to be impractical; far too many complications would arise out of trying to retain the same recording medium. Consequently, almost every known medium — bar 4-track — was used: 2-, 8-, 16-, 24-, 32- and 48-track, both analog and digital, on cassette and reel-to-reel, DAT, ¼-inch and ½-inch, at various speeds, using Dolby A, Dolby SR or non-Dolby.

"We needed a compiler and so we looked at the DAR SoundStation II, but we weren't able to hire a 16-track version. In the end, we opted to do something that initially looked like a pretty jokey way of doing things. That was just to have a little Tascam 238 8-track cassette recorder, and because both Steve and I are very used to spooling things in and doing everything live — as your ear tells you — it worked out very well.

"On the few occasions when we honest-

ly had enough time to sit back and review what we'd done — and that was probably only on about three or four occasions throughout the entire couple of months — it served the purpose very well. During our pre-production we somehow thought that we'd get back to hotels late at night, and have an hour or two where we could sit and put things into the SoundStation II and juggle them around, but it was not to be.

"We'd get back to the hotel at two in the morning, absolutely wasted, having to get up at six that morning to catch a plane. So no one was in a very creative mood at that point!"

DAT IN THE FIELD

"In Brazil, we were recording a samba orchestra out in the street, and we used four mics into two DATs: two mics very close to them, and the other two further away. Then, when we got back to the hotel, we laced the tapes onto the 8-track, just manually spooling them in. Having got them perfectly synced, we jostled with the levels and found we had lots of good control, so we started opening up that system more and more. In the end we used all four DATs in exactly the same way.

"Richard Kershaw at HHB Hire told us that the clock rate now on the new generation of DATs is so perfect, you can pretty much guarantee that if you find a sync point, they'll stay in synchronization. This turned out to be the case, to a point where it was almost unbelievable.

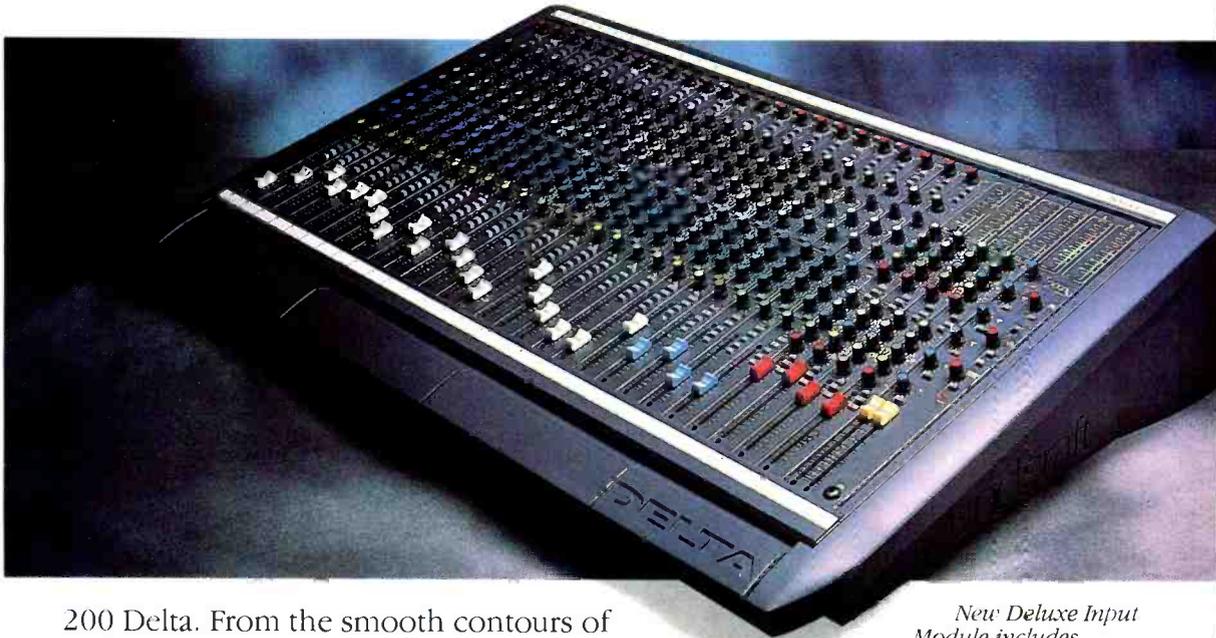
We were running these four DAT machines, recording things like the Kodo drummers in Los Angeles (at the Royce Hall, UCLA) with two mics on stage, two just in front of the stage, two halfway down the hall and two at the back of the hall. Steve did a dummy of it, shortly afterward on the 8-track cassette, just roughly syncing them up over the performance, and they stayed perfectly in sync.

"Later, when we got back to Nomis Studios in London and put them into the NED direct-to-disk 8-track, once we found the start-point, they again stayed in perfect sync, and it was just as if we had a DAT 8-track.

"Originally, the only reason we had that number of DATs was that Steve and I were going to have a DAT player and one spare each, but it ended up being an 8-track in four bits, and it worked perfectly. There wasn't one instance where we had any problem at all. We'd use them in a number of combinations; sometimes — in the case of overdubs — we'd use 6-track and have the fourth DAT for playback, so people could hear what they were overdubbing to off the one machine while they were recording to the six other tracks."

"When we recorded Johnny Clegg, the only way we could grab him was at a

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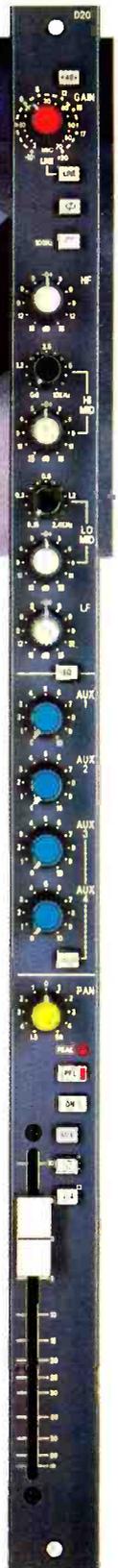
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sound check for a gig, in this huge concert hall called the Salle Espace Foire (in Lilles, France). At the last moment, he announced that he'd also like to overdub vocals and things, so all his stuff was going through the live sound mixer and we took a stereo feed from that.

"We used the same multi-DAT system, but all going through the 8-track, and so this became our multitrack recorder. When he'd done the first pass, we then gave him playback off the 8-track through the stage monitors, and then they'd record the vocals onto two more tracks, backing vocals and squeeze box after that, and so we actually used up our six spare tracks on the 8-track and had a complete 8-track tape.

"It was then a question of duplicating those same overdubs on the NED back in London, this time straight off the DAT ... crazy, really!"

FINAL SESSION

Having recorded the thunderous Japanese beat of the Kodo drummers, Hine began to think in terms of combining this with an orchestral segment in order to give the record a strong ending. Hine had already prepared a synth string outline when, still flitting back and forth between

Europe and Africa, he called upon the services of Simon Jeffes, whose orchestrations have ranged from film and TV productions to Sid Vicious' rendition of My Way.

At 10 p.m. on Saturday, April 28, all 94 members of the Leningrad Symphony Orchestra turned up en masse in the Leningrad Philharmonic Hall, ready to do their bit for charity.

"I'd overdubbed a click to the Kodo track and we fed this to the conductor through headphones, so it was a bit clearer where the first beat of the bar was. He had a go at keeping time with it and it was bloody difficult, and we had to offset timings when we got back to London to try to make it a bit more 'in the pocket.' Considering that we had two hours to set up all our equipment, however, for them to rehearse this piece and another one for Howard Jones' section, record both and be out by midnight, we didn't do too bad! It was the last piece that we recorded and it was the last piece on the program, and so it really felt final. You know, 'We've done it!' We all shook hands and fell flat on our backs at the end of a last crashing chorus from this orchestra. A great finale in every sense of the word!" ■

Portable Equipment List

- 4 Sony TCD-D10 Pro DAT recorders
- 1 Tascam 238 8-track cassette recorder
- 1 Yamaha MV1602 16-channel mixer
- 6 Sony MDR V6 headphones
- 2 Sony MDR V7 headphones
- 1 Sony ECM MS5 stereo microphone + power supply
- 1 Sony ECM 979 stereo microphone
- 1 Crown Sass-P stereo PZM microphone
- 2 Shure SM58 microphones
- 1 Yamaha FX500 multi-effects processor
- 1 set of Acoustic Research speakers with built-in amps
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it's destined to be the best-sounding 24-track around.

So before you invest in any console, you owe it to yourself to hear the M700. We think you'll agree that the only thing more unbelievable than the sound of the M700 & DA800 combination is its price tag.

*Manufacturer's suggested retail price. Actual price may vary from dealer to dealer.

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Quandary, quagmire
or
financial bonanza?

The Great Equipment Leasing Game

By Gregory A. DeTogne

Chances are that if you own or operate a facility, the subject of outfitting your studio with leased equipment has arisen. Chances are also considerably better than winning your state's lottery that you've been left befuddled and confused at the many leasing options available.

The questions surrounding the whole process are many. What's better, an operating lease or a capital lease? Should you insist upon a dollar purchase option, or a 10% buy-out? Better still, what about taxes? When is a lease not a lease, but just a re-packaged form of financing?

This article will try to sort through these questions and more. And for those that feel there's never a need for a leasing program, if you simply have to have that new SSL console for your B room, and have walked away from your local pro audio dealer without the slightest hope of ever being able to buy one outright or through your friendly banker, maybe it is time you read on and take a serious look at what the various programs offer.

WHERE TO TURN

Logically, it makes sense to look at where you might turn to get into a leasing

program first. For starters, you can try your standard pro audio leasing company, and if you don't like what you hear there, you can skip the middlemen and go right to the manufacturer. In principle, the latter may sound the most advantageous, but in reality it may not be. In many cases, a manufacturer will refer you to a leasing company that the manufacturer uses regularly to help move its products.

Let's examine the world of pro audio leasing agencies, their ways, habits and programs. Essentially, there are three major leasing companies dealing exclusively with pro audio in the United States. The "Big Three": Sigmet Corporation, Valley Forge, PA; Century Financial Services Group Ltd., Chesterfield, MO; and Terminal Marketing, New City, NY.

At Sigmet Corporation, Al Fisher has been officially given the job of handling leasing operations. While Fisher himself is a seasoned veteran of the leasing wars, Sigmet's leasing division has been in existence for only 18 months. Despite its tender years, however, the firm today is processing approximately \$500,000 worth of applications per month, and has outfitted a wide variety of studios with everything from monitors to consoles.

In addition to acting on its own behalf, Sigmet manages leasing programs for manufacturers such as Community Light

& Sound. According to Fisher, the present proliferation in his business is due in no small part to the escalating price tags on major pieces of equipment, which have been reaching for the sky in ever greater leaps and bounds.

"Studio owners are learning how to better conserve their capital, and leasing is one of the methods of saving they are turning to more frequently," he says. "The Fortune 500 companies have traditionally made almost 50% of their product purchases through leasing arrangements, yet smaller companies tend to stay away from it, mainly, I think, because of fear and lack of knowledge.

"The market climate today, however, especially in the recording industry, has pushed them into looking at leasing as an option. After all, you can't buy a console for \$3,000 anymore, and to stay in business once you progress, you have to have modern equipment, yet can't always lay out \$20,000 or more at a time. When you reach this point, that's when leasing comes in as a viable alternative."

In most of the leases Sigmet holds, studios have chosen one of two options: the dollar purchase option (which means at the end of the lease you own the equipment for a dollar), and the fair market value option (which means you can either buy the leased equipment at the end of

Gregory A. DeTogne is a free-lance writer based in Libertyville, IL.

Don Was Is



Producer of the Grammy Award-winning "Album of the Year" *Nick of Time* by Bonnie Raitt, the comeback album *Cosmic Thing* by the B-52's, as well as Iggy Pop's new album *Brick by Brick*, Don also collaborated on the critically acclaimed Was (Not Was) album *What Up, Dog?* and the hit single "Walk the Dinosaur."

Don chose the Peavey Audio Media Research Production Series™ 2400 Console and the PRM™ 308S Phase Reference Monitors for his studio after searching for and testing many different brands on the market. Like many other professionals of his caliber, Don appreciates the performance, features, quality, and creative freedom AMR equipment offers. The Production Series 2400 Console features 4-band full sweepable EQ on each Input, 8 Aux-Efx Send/Returns, 92 Inputs with EQ available for mix-down, an on-board MIDI command center for control of outboard devices, low-noise design, and many additional production facilities. The PRM 308S Monitors have uniform frequency response, a minimum of coloration, and feature a selectable switch for reference and EQ playback for the option of hearing how your music sounds in an alternate environment.

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Leasing is generally used for such big-ticket items as consoles and tape machines. (Studio: Musicworks Studio One; photo by Louisjoy Thurstun.)

your term for whatever fair market value is, or you can crate it back up and return it — you are under no obligation to buy).

In the case of the latter, the fair market value usually could be anywhere from 10-15%. Against this backdrop, Fisher believes that one of the most important factors studios should consider when contemplating a lease is the size of the monthly payment.

"No matter what they're thinking of buying, if the dollar per month figure doesn't fit their pocket, leasing is a bad idea," he says. "A studio should also look at the tax advantages of leasing vs. buying and leasing vs. going to the bank. Sometimes leasing will offer an advantage, and sometimes it will not.

"In some cases, it can be written off as a regular expense. You don't own the equipment, so it's not an asset or a liability. The best person to explain the difference between all of the leasing options available is your accountant. Be advised though, that every accountant will look at leasing differently."

Tom Roche at Century Financial has made a name in the business by providing turn-key lease/purchase financing for studios small and upscale alike. An authorized rep for Yamaha, JBL and others, he feels leasing is on the upswing for a variety of reasons.

"First off, manufacturers today are finding that they can't sell their equipment unless it comes with its own finance package," he says. "You have to also factor in depreciation, which is extremely important since the tax laws changed in 1986. Depreciation is critical in leases that cannot be written off totally because now, pro audio gear has been made 7-year proper-

ty. You can see right away that if you enter a lease/purchase agreement for \$10,000, and you're on straight line depreciation, you have to write that lease off over seven years.

"However, if you enter into a similar arrangement that runs only two years, you can write the whole thing off in two years, thereby accelerating the depreciation process by five years."

Century Financial will happily write fair market, dollar purchase, 10% outright, or operating leases. Similar in concept to the fair market lease described by Al Fisher, Roche says his version of this lease is used infrequently — only when the customer wants the absolute lowest payments.

Only 1% to 2% of his customers go with the dollar purchase option. According to Roche, this is because the IRS does not view this as a lease, which prohibits the customer from writing off the entire amount of his monthly payments as an operating expense. Roche's 10% outright lease is admittedly his most frequently written.

"Typically, studios want a straightforward, no questions asked, write-off-their-payments-100% lease with a 10% purchase option," he says. "As far as operating leases are concerned, I've found that they are really only suited for larger companies. On most operating leases, your purchase option is 20% or greater, but you get significantly lower payments."

EXPANSION THROUGH LEASING

The ultimate advantage represented by leasing in Roche's opinion is the fact that

studios can use his programs to grow faster than through conventional bank financing.

"We may start out a small studio with a 24-track Studer, and a couple of months down the road they call back, say it's working great, they're now a little ahead financially, and are ready to do a B room. Next we'll get them a B room going, then a MIDI room, and so forth. In many cases, none of it would have ever been possible if you had to rely upon purchasing the gear outright."

With regards to the latter point, Mike Busby is one studio owner who readily admits that he couldn't have grown as fast or gone as far without leasing. Busby, who along with partner Miles Christensen owns Post Logic, a Hollywood audio-for-video post facility currently encompassing eight rooms, started with what eventually became a 2-room studio in another location.

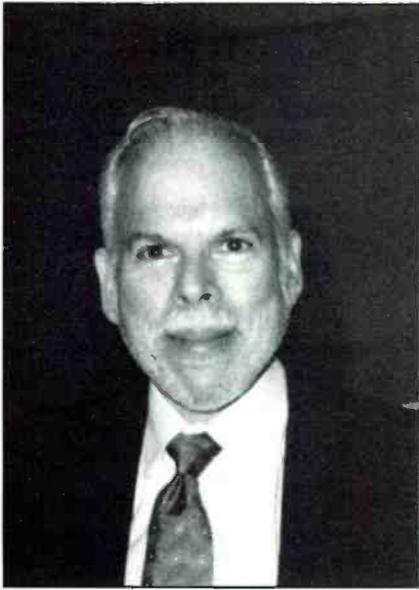
"When we were ready to expand, we took the equipment from the first two studios with us into our new location, then leased an SSL 6000 as the first major piece of equipment for the expansion," Busby says. "From there, we went through three other leasing companies for most of the equipment in the rest of the rooms. We took this step primarily because we had to front the money for the construction of the new facility ourselves, so there was not enough in bank loans left for us to buy equipment with.

"For us, the bottom line with leasing is that a leasing company makes it easier for people in the recording industry to get the money for improvements. Clearly, we pay a premium in higher interest rates for this easier access, but the leverage is there when you need it. Leasing has helped us when the banks wouldn't, but banks in general are leery of businesses like ours anyway because they don't understand us."

John Fry has been at the helm at Ardent Recording in Memphis, TN, for almost a quarter of a century. Legendary in status with recorded product to its credit from the likes of ZZ Top and REM, Ardent has financed its equipment acquisitions over the years with a combination of bank loans, leasing and installment sales contracts from manufacturers. For Fry, whether he leases or chooses another form of financing doesn't depend so much on taxes and the general economic scene, but on the recording studio's own business cycle.

If you ask Murray Allen, obsolescence is the critical factor to consider when leasing. President of Chicago's Universal Recording Studios, Allen has been leasing for

“LEASING HAS HELPED US WHEN BANKS WON’T”



Murray Allen of Chicago's Universal Recording recommends leasing anything that is computer-based.

years, but not when it comes to outfitting entire rooms.

"My advice on this subject is really quite simple," he says. "Lease anything that's computer-based. The hardware changes so fast that it's usually always cheaper to

lease, and many times you have no down payment."

MANUFACTURER PROGRAMS

Manufacturers involved in lease/purchase programs are finding that their sales have increased as the result of using either their own leasing programs or going through an agency. Conversely, leasing agencies representing manufacturers find that working directly with manufacturers provides them with a valuable ally when it comes to re-marketing equipment or finding new clients when a lease goes bad.

"Leasing is a very good idea for manufacturers, because it helps them arrange financing for their studio products without losing control of the deal," Sigmet's Al Fisher points out. "And really, that's why you have leasing programs. For example, if a person went out to look at consoles, and saw one he liked but couldn't come up with the \$20,000 it would take to purchase it on the spot, he'd say, 'Well, I'll check with my bank and get back to you.'

"As any good salesman knows, once the person walks out the door, he usually won't be back. With an available leasing program, a dealer or manufacturer can tell that same person that he can place a credit application in his own system right there and then. In the ideal version of this sce-

nario, the person makes a commitment, gets his console, and is taken out of the marketplace. From my perspective, if I can make two sales each month for a manufacturer that he wouldn't have made otherwise, I've done a good job for him." ■

Leasing Companies

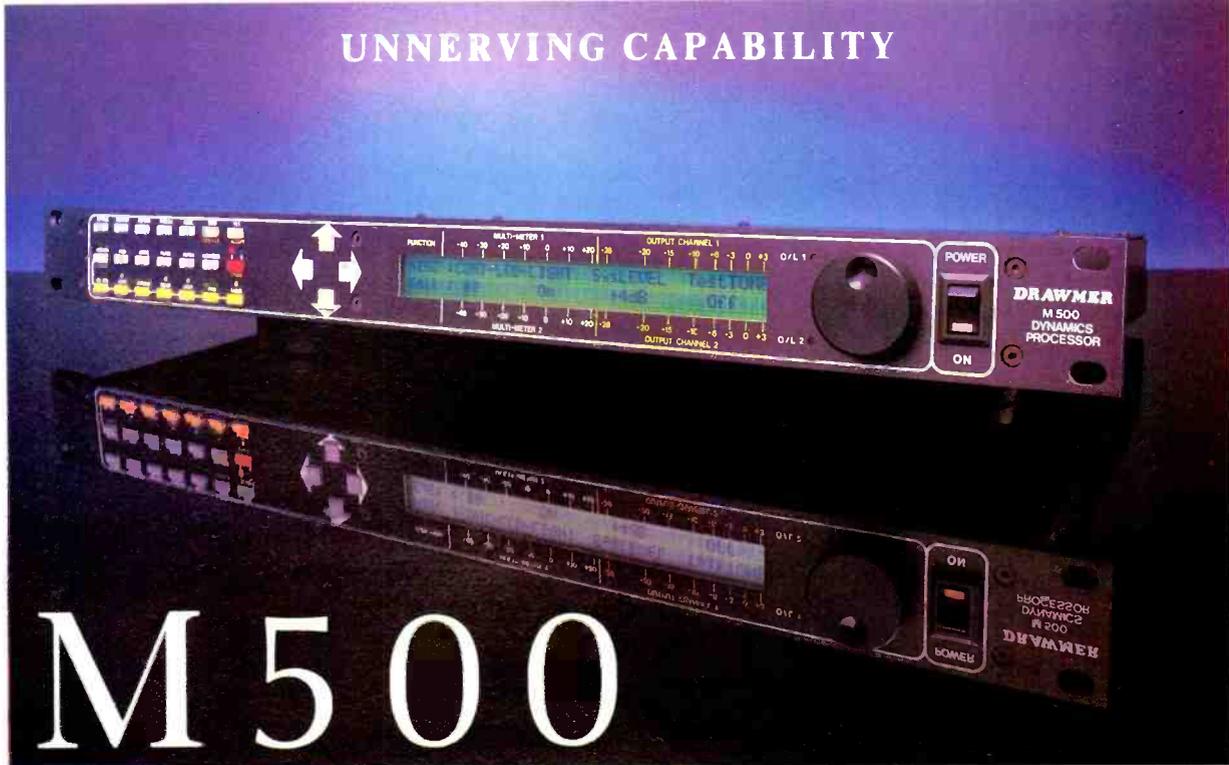
These are the three main leasing companies that write letters for pro audio equipment. Before you enter into any leasing program, have your accountant examine it.

- Century Financial Services Group, 15455 Conway Road, Chesterfield, MO 63017; 314-537-0330. Contact: Tom Roche.

- Terminal Marketing Co., 5 Waverly Court, New City, NY 10956; 914-634-7601. Contact: Sandy Schneiderman.

- Sigmet Corporation, 2-130 Valley Forge Office Colony, Box 995, Valley Forge, PA 19481; 215-783-6666. Contact: Al Fisher.

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Playing With the Big Boys

By Mike Joseph

Have you ever found yourself wondering why the vast majority of really big tours feature speaker systems built by the specific rental companies supporting that tour? Or why there aren't more full-blown, off-the-shelf manufactured touring systems? Why, in light of the very limited number of component speaker and driver suppliers, do most touring companies insist on "rolling their own"?

The answer lies in tradition, and understanding the precedent requires a brief dip into history.

Back in the germinal days of low power woofers and phenolic diaphragm drivers (short excursion Altecs, E-V paging horns and JBL 100W guitar speakers), sound companies learned quickly that boxes bought off-the-shelf not only sounded bad, but vibrated apart under power and tore themselves to pieces merely in the process of being moved about. The components fried when you ran them with the really big amplifiers of the day (Crown DC-300s and the now-reknown Flame Linear 700s).

Serious early companies, like Hanley Sound on the East Coast and Tychoabrae on the West, learned you had to use lots of wood, with lots of bracing, to get the things to hold up at all on the road. Stacks were block-and-tackle affairs, platformed from the stage up.

These early tourers learned that cabinets had to stand up to local union crews and lift trucks first, and sound good second. Sounding good meant sounding just decent under the full onslaught of clipped square wave signal, typically the best that got delivered with too few amplifiers and generally low-tech power distro.

When fiberglass horns hit the scene, these same companies had contests over how many broken yokes and cracked necks would be piled up after a tour. Back

then you either bought JBL metal horns or you weren't a player.

Touring companies learned early that the key to survival was building your own, controlling the ruggedness of the cabinets, the balance and weight tradeoffs, the number of parts you could stuff inside, ever-striving for max SPL and killer density.

And over the years, everything was tried and tested, usually in this way: "We've got a show locked in if we can pull together 24 cabinets, but the old ones don't sound so good (anymore), so we'll put in another order to JBL with the money I'll borrow (again) from Dad, and we'll build up a whole bunch of new boxes to the design of the one box we built last week (which sounded *great* in my living room), and it'll be bitchin'!" Somehow, quite a few companies survived through this. At least until the owners got too old for the road.

Why do the majority of big tours feature speaker systems built by the rental companies supporting that tour?

Along this road, after the skids and sleds got abandoned, cabinets were built every way imaginable: with four front-load woofers on a baffle, with one woofer on a huge horn, with horn mids, with cone mids, with multiple drivers facing into single chambers, some slanted, with passive crossovers, or active, with two or four drivers coupled on a single horn (an idea almost as old as the compression devices themselves), with multiple horns in the same bandpass range, with slots/bullets/interference tubes for tweets ... you name it.

All did something right. Few were well-balanced in all areas — fidelity, loading, excursion, projection, pattern control, array-ability, weight, durability, ease of installation, etc. But they generally did the right thing. They didn't break in the long haul, which (back then) you couldn't buy off-the-shelf.

Today, the big guys, the companies with their own colored shirts labeled Sound or Crew beside the company logo, still live the hard-learned lesson: If they build it themselves, they have total control over what it will do, how it will survive, and

how it matches everything else they have. A company invested in 650 2445s is not going to switch over to brand No. 2 because it's a little sweeter at 16k. Especially not if there are 40 aluminum frisbees in the warehouse already in FedEx bags.

Of course, we also know that more than a dozen audio manufacturing companies around the world have finally learned how to design and build complete speaker systems every bit as capable, in every necessary way, as the proprietary concert touring boxes. But in all likelihood, these systems will not show up at the big boy's party in any quantity. It's not because these systems aren't good. Nothing could be further from the truth. Many are much better, in fact.

And for the regional or local company not competing with the financial do-or-die intensity of the big boys, or without the resources to go through the long development process and cash outlay inherent in tweaking out a really good box, off-the-shelf is great. Competitive performance at minimal costs. But the big boys can afford the dedicated development leading to a unique design. They have to.

The bottom line the big companies need is uniqueness. What sets one company apart from another is not the boards or the amplifiers, but the speaker system. Aside from service and the stable of in-house mixing engineers that a rental shop can offer, the speaker system is the single most important personality stamp a touring company can have. If it really does what it's supposed to do, be it combine coherently when hung 40 wide, or hit the back wall at 105dB, so much the better. Either way, they are the company's signature, more than anything.

To paraphrase Albert Lecesse of Audio Analysts in Montreal, touring companies are like ex-factory racing teams. They tweak on little things, which may or may not provide a big competitive edge somewhere down the road, but you have to believe it will.

That's where all new ideas get tested, whether it's delaying the entire front stack back to the phantom equipment amplifier line-up plane (to present a coherent front wave off the stage), or reconing all of the woofs with the wrong paper to get linear phase and the damping to match the cabinet tuning; they have to try it.

That edge is what they sell. That edge is how they service their clients. ■

Mike Joseph is technical editor of R•E•P.

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The MTR-100's auto-alignment saves you hours of time by eliminating constant tweaking and re-tweaking between sessions.

that this new way will save you hours spent in non-productive time, the analog choice begins to make even more sense. You see, the MTR-100 features full Auto-Alignment that allows total recalibration of the record and reproduce electronics. This means you can compensate for different tapes in a *fraction* of the time that it previously took, and your studio is not bogged down with constant tweaking and re-tweaking between sessions.

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transport is pinchrollerless to give you the legendary tape handling ballistics of our MTR-90.

What's more, with its optional EC-103 chase synchronizer, the MTR-100 maintains frame-lock in forward and reverse from 0.2X to 2.5X play speed,

and will typically park with zero frame error.

Then, there's the sound. New cylindrical-contour heads built by Otari especially for the MTR-100 result in remarkably low crosstalk and outstanding low-frequency performance. Pre-amps are located directly beneath the heads to further improve frequency response, and HX-Pro* is built-in for enhanced high frequency headroom. (An optional internal noise reduction package houses Dolby* SR/A.) Add all these features to gapless, seamless, punch-in, punch-out, which is also built-in, and your

MTR-100's sonic performance will rival, or beat any digital machine in the world.

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By Mark Herman

A profile of the
joint technical venture
between Clair
and TC Electronic.

Step up and take a quantum leap into the future of live equalization engineering. Imagine using a portable remote device that controls numerous outboard equalizer preset memory settings, as well as reads, computes and displays EQ curves and spectrum analyzer data. Picture soloing a monitor mix, which moves high-speed motorized faders on the remote device into a true graphic representation of the equalization response curve applied to that mix. No over-the-shoulder EQ rack scanning is necessary.

With the slightest of ease you can adjust and choose between 99 individual preset EQ curves on any of the outboard rack-mounted equalizers. A backlit LCD on the compact remote head provides further visual information, including spectrum analysis and various softkey functions.

Somewhat far-fetched? It's all available right now with Clair Bros. Audio's new TC6032 remote controller system, based on the TC Electronic TC1128 equalizer and a custom-designed controller. This summer marked the concert touring industry's debut of the system, which has the possi-



A total of 16 1128s and one 6032 controller were used on the Don Henley tour.

System Operation

To adjust or view an output channel:

1. Press the corresponding device select button for the desired output mix; the faders will automatically jump to their positions, which will be whatever the last EQ memory location selected.

2. If needed, adjust the output mix by moving the faders on the TC6032 remote just as you would on a regular graphic EQ. This new mix can be stored as a separate preset or left in a comparison mode by selecting the A/B preset. This allows you to toggle between the move you just made and the selected preset you had before.

3. If you decide to assign the new mix its own preset number, press the 0-9 keypad buttons and then the Store button. This output mix can now be accessed by simply touching the preset number.

4. To access, view and control the LCD, press either the Menu button or soft keys as necessary.

Mark Herman is the president of Hi-Tech Audio Systems, a sound reinforcement equipment rental company based in Half Moon Bay, CA.

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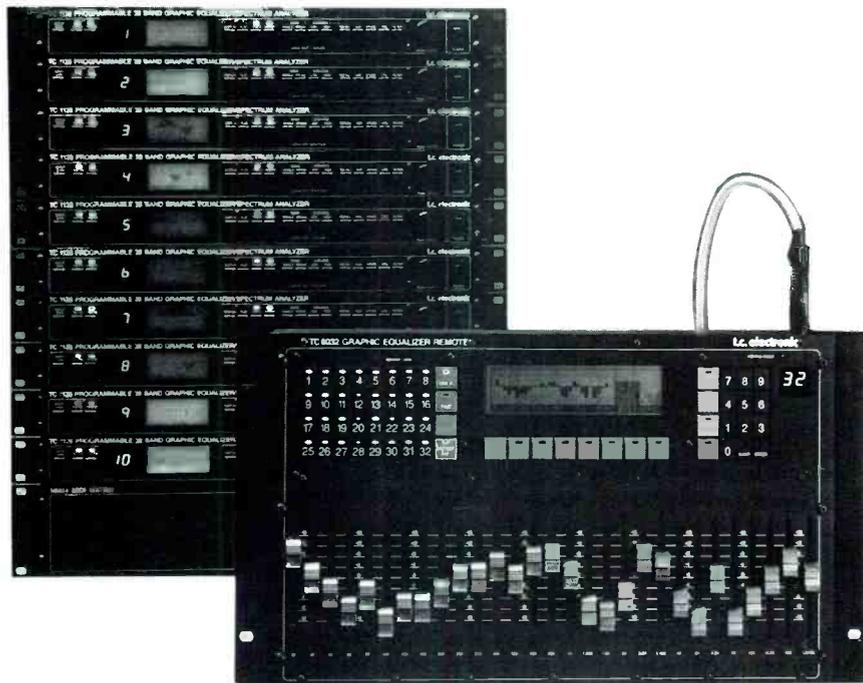


Figure 1. The TC1128 graphic equalizer/spectrum analyzer (background) with the TC6032 remote.

bility of revolutionizing modern onstage monitor engineering and even front-of house as well.

THE NEED FOR CONTROL

After analyzing input from its experienced, road-savvy engineers and technicians, Clair Bros. came up with the 6032 concept. Clair requested European audio manufacturer TC Electronic of Denmark to do the actual product development and manufacturing of the product to Clair's specifications, with Clair Bros. holding proprietary rights. A total of 30 remote control units and a considerable quantity of the microprocessor controlled TC1128 equalizers have been ordered to support Clair's numerous concert monitor and main systems.

The monitor system comprises a single TC6032 remote controller device, 16 customized TC1128 programmable 28-band $\frac{1}{3}$ -octave graphic equalizers, and a TCMM24 matrix unit that interfaces the TC1128 equalizers with the TC6032 remote head via MIDI cabling. A house system requires fewer TC1128s, pending the number of controlled speaker zones.

TC6032 REMOTE CONTROLLER

Physically, the TC6032 remote head is 17" x 10" x 4" (but can be 19 inches for rack mounting, if necessary) and weighs 20 pounds. The 50-foot cable (expandable up to 160 feet) connected to the rack-mounted MM24 MIDI matrix box allows an engineer to locate the remote where desired, or the option of roaming the

stage, if necessary. Currently the remote controller is placed on top of the EQ rack at the monitor position during performances, and travels separately in its own case between shows.

At first glance, the TC6032 remote controller looks like an oversized graphic equalizer. (See Figure 1.) Further inspection reveals a high-contrast, bit-mapped Epson LCD window, many individual function and select buttons (a red LED remains lighted on any active button), a keypad and motorized faders. Each fader represents one of the 28 $\frac{1}{3}$ -octave bands on the host TC1128s.

The completely TC-designed MIDI-controlled faders use an advanced proprietary DSP error correction system for positioning, with no audio signal passing through the optically encoded faders. On the far right is an additional programmable fader for adjusting the currently selected EQs output gain up to 16dB.

SYSTEM OPERATION

Each TC1128 equalizer is assigned a device number from 1 to 32; they are selected by one of the 32 buttons located on the upper left of the remote unit. Clair Bros. is using 16 rack-mounted TC1128s in each touring system, although an additional 16 EQs could be assigned if needed.

When a device select button is pressed for any of the assigned TC1128s, the TC6032 remote polls that specific equalizer for frequency response and says in effect: "Yo, babe! What's happening?" The 1128 then transmits the corresponding

System Road Test

Clair engineer Dave Skaff, who used the TC6032 as the monitor mixer on the Don Henley tour, talked to R•E•P about using the system.

R•E•P: What advantages does the TC6032 system have over traditional setups?

DS: It's so easy to use. Now I only have to look at the remote controller device to see what I'm doing. There's no more getting down on my hands and knees to scan the EQs, especially the ones at the bottom of the rack. Keeping your head out of the EQ racks prevents becoming distracted during the performance. Now it is possible to remain over the console and constantly be in position to read and mix every performer at all times while adjusting the output EQs.

Another important characteristic about the TC6032 is that it just sounds good. I've done A/B tests between TC1128 programmable equalizers and several name-brand EQs, and the TC1128 comes out better sonically every time. They also test out very well on our shop bench tests. With the entire system using TC1128s, I notice it sounds remarkably cleaner than any system I've used before.

R•E•P: It seems as though the TC6032 would also make soundchecks faster and easier.

DS: It definitely saves an immense amount of time at soundchecks. I'd say that several of the functions save me between 40% to 50% of the time spent equalizing. Being able to recall different presets has obvious advantages; having it all centrally located reduces extraneous movements, and the function that allows you to "pile" several output mixes onto one EQ setting is particularly useful for backup vocalists.

For example, if we are running short on time, it is possible to instantly equalize all of their microphones and mixes off one setting.

R•E•P: How long did it take for you to grasp the design and get comfortable with the remote?

DS: I was comfortable on my first day after just several hours of hands-on operation. After I was

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fader positions back to the remote control, which instantaneously moves the faders — in less than 500ms — to their positions, giving the engineer a visual, graphic EQ-style representation of the output equalization curve.

To the right of the device select buttons are the Mix 0, Pile, All and Preset A/B editing buttons. Mix 0 controls the listen mix for the engineer's own headphone or monitor cabinet. The inventive Pile function works as a way to control several TC1128s at once. This could be useful if variations in local weather (humidity) or venue characteristics dictated that a certain frequency (for instance 2.5kHz) is running a little too hot and needs to be pulled down on several mixes.

Pressing the Pile button activates and selects those devices that need to be controlled. The motorized faders on the remote head will "drive" to the flat position, without changing any of the TC1128's actual parameters. Any subsequent changes made to that flat curve by the engineer's hand will universally be added to all of the selected 1128s. So if the 2.5kHz is pulled down 3dB on the flat curve, it is reflected on all of the selected 1128s. Any changes made will affect all the selected devices equally; hence they get 'Piled' together.

Similar to Pile is the All function, whereby all of the EQ devices in the system are automatically selected. The Pile and All functions exhibit enormous potential for quick and accurate multiple output changes.

The last and most widely used of these functions is Preset A/B. When a preset is loaded into the actual audio chain of a selected EQ, it is referred to as Preset A. As soon as a change is made on any EQ setting, the A/B button's light comes on, indicating that the newly adjusted B equalization curve is presently active. When the A/B button is pressed, the output will switch back to the A curve, enabling the engineer to switch back and forth between the original preset and the current modified setting. This A/B comparison function is handy for quickly determining which of the two settings is most desirable.

To the right is the TC6032 remote's LCD window. It is approximately four times the size of the Sanyo window on the TC1128 and has a contrast knob to adjust for prevailing lighting conditions. The LCD allows viewing of the 28-band, real-time spectrum analyzer data, real response equalization curves, and a menu for the eight "soft" switches that appear below the window. These soft controls — depending on what parameter is selected — activate and control the various software legends that appear on the LCD.

On the opposite side of the remote head, a push-button keypad assigns and accesses any of 99 available preset equalization

curves. The number of the selected preset is shown by the LED indicator window in the extreme upper right hand corner. Also in the keypad area are Clear, Enter, Preset Store, Preset Recall, Card and Menu buttons for controlling the presets and certain LCD functions.

The default mode to start — and normally remain — in is the Preset Recall mode; it is designed to prevent accidentally writing over a preset. To store any preset changes made, the engineer presses the Preset Store button and selects the desired preset number using the keypad. When Enter is pressed, it stores the current settings of the equalizer into the current preset number being displayed.

The Card function activates the Memory Card Slot, which appears above the previously mentioned device selection area. It is primarily used for adjusting certain mechanics of the TC6032 system. This includes the speed and the sensitivity of the motorized faders, which can only be moved by the human body — they are sensitive to 60 cycle hum statically riding on the skin, and activated by touch!

The faders use this to unlock or release and otherwise will not move. If you were to use an inanimate object to move the fader, it would not respond. (It is interesting to note that certain people seem able to conduct the omnipresent 60 cycle hum better than others. The engineer can adjust the fader's touch sensitivity to match his body conductivity. This gives new meaning to the expression, "The engineer's mix requires a good touch.")

It is expected that the memory card slot will eventually be able to upload and download a special floppy disk-style card capable of containing all 99 presets for each of 32 TC1128s. This would be ideal for storing various venues' acoustic characteristics and/or artist specific parameters.

Anyone remotely familiar with computers or today's signal processing devices will instantly grasp the Menu function button. It allows access to various software-driven functions available via the eight 'soft keys' located directly beneath the LCD window.

The appropriate menu monikers appear in the LCD screen above and are subject to change according to assignment. The most often used screen menu will typically show EQ ON, FLAT, HOLD, EQ, SA (spectrum analyzer), CAR (computer aided response), PREV (preview for entering a preset into the LCD window without actually being loaded into the audio chain) and UNDO (similar to the Macintosh computer command).

Generally the selected device's EQ curve will be present on the screen in the form of a bargraph. The LCD screen can be cnaed — depending on the Menu button or which of the soft keys is activated

shown the basic functions I quickly figured out what it would take to do a show. It is actually very easy to learn. On the Henley tour, I already have the opening act's engineers to the point where they confidently handle the TC6032 and make their own necessary adjustments without my having to be there.

R•E•P: What do the performers think of the remote controller system?

DS: They are pretty much fascinated by it. The moving faders seem to impress just about everybody right off the bat. And the fact that things sound the same every day really impresses them.

R•E•P: How well can you see the LCD screen in the daylight?

DS: It actually works quite well. There is an angle adjustment and contrast control for better viewing. I primarily watch the display to make sure that the faders are tracking right and the input gain is correct.

R•E•P: Is there a manual override in case the remote fails?

DS: Yes. The TC1128s can always be used by themselves at any time.

R•E•P: How are you using the presets?

DS: I store the standard EQ curves that ideally match our monitors and several others that I find seem to work best. I will make changes on certain things on a day-to-day basis — usually for the hall — and if it is a minor change I probably won't store it. Rarely will I radically change the EQ curves, but sometimes there is that one occasion where everything sounds way off. In that case I change the curve and temporarily use and store it for that particular day.

Usually, I like to start each soundcheck with the same EQ settings in order to have a given reference point. I make very little EQ changes unless the venue starts to hamper the quality. After a while you'll get several presets that seem to work best. You label them and anytime during the day when you want to change something you can go to your presets and keep bouncing back between the different types of EQ settings until you find one that sounds better on that day.

DIGITAL DOMAIN DIGEST

Volume 1, Number 1

Fall 1990

A Digital Audio Newsletter From Lexicon Inc.

NHK goes digital with the 480L

NHK, the Japan Broadcasting Corporation, has replaced all of its analog reverberators with the 480L Digital Effects System, making NHK one of the world's largest users of the 480L.

The 480Ls are being employed throughout NHK's extensive television, radio, and recording studios. Virtually every program broadcast by NHK is being produced with the assistance of the 480L. There are also 480Ls at the NHK Concert Hall, where they are used for recording concerts for television and radio broadcast.

"The 480L just sounds great," says Masaki Sawaguchi, NHK's chief engineer. As well as being sold on the "Lexicon sound," Sawaguchi was impressed with the system's flexibility.

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Brings the clients back

Interface books OPUS non-stop

Lexicon's OPUS digital audio production system is proving to be more than a versatile performer at Interface Video (Washington, DC). It's become a powerful sales tool as well.

Michael David of Interface says the versatility and efficiency of the system, which has been in operation since April, gives his clients a real incentive to come back.

"We did a very effect-laden spot that the client projected would take a day and a half to complete," says David. "That's what it would have taken before. We did it in 4 hours, which allowed the client to use the extra time for other work."

Clients also feel more comfortable with OPUS, says David. "With other systems, the client can't really see what's happening. They feel left out. OPUS looks familiar. You can see the audio passing by on the screen."

The word is spreading. "We're now booking OPUS non-stop," says David. "And we're not the only OPUS in our market."



Lucasfilm's Home THX Audio System

Lexicon is early THX licensee

Lexicon has become an initial licensee of the Home THX Audio System created by Lucasfilm. Lexicon was selected by Lucasfilm based on its reputation for excellence in surround processors and the patented digital technology found in the CP-1 and CP-2 processors.

Lexicon made the announcement during a THX technology demonstration for press and select dealers at the Consumer Electronics Show in Chicago. The surround sound processor used in the demonstration was designed and built by Lexicon.

The Home THX System incorporates a series of proprietary electronic and loudspeaker developments designed to reproduce movie sound in the home as it was originally created by film makers. Lexicon will soon formally announce its first product incorporating THX technology.

lexicon

What's New at Lexicon

Trainor becomes VP of operations

Dick Trainor has joined Lexicon as vice president of operations.

Dick spent 11 years at Prime Computer as plant manager and director of manufacturing where he instituted several successful programs for production control, materials planning, and shop floor scheduling. He also started and managed an off-shore manufacturing facility for two and a half years.

Dick now has responsibility for the manufacturing, customer service, and field service operations at Lexicon.

Ap notes are yours – free

The sales and marketing staff has put together some very interesting application notes to let you get the most from Lexicon products. Here's the list:

PCM 70/MRC: CHORUS 300DLY. A stereo chorus and stereo delay with remote control using Dynamic MIDI®.

LXP-5/MRC: Interactive improvisation and alternative performance techniques.

MRC: MIDI, mixing, and the MRC.

MRC: Mono mode on Yamaha synthesizers.

LXP-5: Too many nouns? Try these 'verbs' (getting more reverb from the LXP-5).

MRC: Two MRC set-ups for the Kurzweil 1000 Series.

They're yours for the asking. Just ask your local Lexicon dealer.

'We wanted the edge'

Family Channel hosts OPUS

A year from now, the Family Channel plans to be completely digital in both video and audio, with arguably one of the most sophisticated studios anywhere. Not surprisingly, an OPUS room will be a permanent fixture.

"We're designing and constructing new audio and video facilities that will keep us more than competitive with the networks and other cable stations on the air," says Bob Whyley, Family Channel's director of audio. "In our audio production room, we figured this would be the time to go all digital. We looked at various digital rigs, and when we saw OPUS, we realized it was just head and shoulders over everything else."

OPUS will initially be used for editing in-house promotional spots, according to Whyley, with posting to come later this fall. The channel's Big Brother Jake sitcom that is currently posted in Hollywood, will ultimately be done by OPUS as well.

The Family Channel's move to all-digital capability is broad-based. All the station's videotaping is done in D2, and all the ancillary equipment in the OPUS room will be digital. In addition, all of the analog tape machines are being eliminated, with RDAT taking its place. They have also installed the Geffen sound effects library in the OPUS room. There are two Sony 60-disc changers that are computer operated and will feed OPUS directly, according to Whyley.

"There are a lot of digital workstations that are great stand-alone editors," says Whyley, "but they are very cumbersome to mix on. The OPUS clears all that, and will let us do more work in a given amount of time."

Notoriety for OPUS/e

Turning heads in Jacksonville

"People come in and are truly impressed."

So says Wayne Fanning, owner of August Recording in Jacksonville, FL, commenting on the studio's new OPUS/e digital audio editing system. The OPUS/e has been on line at August Recording since February performing editing of commercials and jingles.

"We bought OPUS/e to make a statement," says Fanning, "and to bring in a higher level of client. We've been able to bring in new business, some of whom might not have considered us otherwise."

Fanning integrated OPUS/e into his existing room, which includes an SSL 4000G console, OTARI MTR-90 24-track deck, Westlake monitors, and "lots of outboard equipment," including a Lexicon 480L, 224, and Super Prime Time.

An immediate benefit of OPUS/e was its aptitude for dialog replacement. "We found that we could get into the subframe level and manipulate the audio," says Fanning. "It's given us a real advantage."

Digital Domain Digest is published by Lexicon Inc., 100 Beaver St., Waltham, MA 02154; (617) 891-6790. All editorial comments and suggestions are welcome, and should be addressed to Leah Holsten at Lexicon. For information about any of Lexicon's products or where to buy them, contact Lexicon directly. Dynamic MIDI® is a registered trademark of Lexicon Inc.

— to show the spectrum analyzer and a list of different parameters for the various features available. Examples of system utility display functions an engineer can vary include peaking, shelving, response speed and freeze/hold.

TC1128 EQUALIZER

TC Electronic's standard microprocessor-based, 1-rack space TC1128 programmable equalizer/spectrum analyzer was first introduced in late 1988 and has since gone through numerous software and operating upgrade revisions. It has gained considerable industry respect for high audio quality and advanced technology.

One of the highlights of the 1128 (and the TC6032 remote) is the ability to calculate and show real response curves. In all equalizers, each band influences and overlaps adjacent bands. When one filter is raised or lowered several decibels, it can substantially effect the adjacent filter response and wreak havoc on the actual EQ curve. On the TC1128, a real response curve command does an interpolative band computation using its own look-up table called Make Real Response. This displays the true EQ curve response on the LCD screen.

True to form, Clair Bros. has taken a big step to offer its clients the latest advancements in audio electronics.

The TC1128s that work with Clair's TC6032 remote system have been slightly customized and employ special drive software. They have variable gain of 16dB, representing an increase of 4dB over the standard TC1128s.

MM24 MIDI MATRIX

The 2-space rack-mount MM24 unit is a 24x24 MIDI crosspoint matrix switcher. It patches any selected 1128 equalizer directly to the remote control to avoid any MIDI delay problems that might slow down the answer-back of the motorized faders. This design also prevents any equalizer or analyzer response slowdown in the remote. A fairly thin, pliable 50-foot multipin cable connects the MM24 to the remote and carries power and MIDI Sysex data. Two MIDI cables are needed for each equalizer. In the Clair stage system, the 2-rack-space MM24 is placed in the

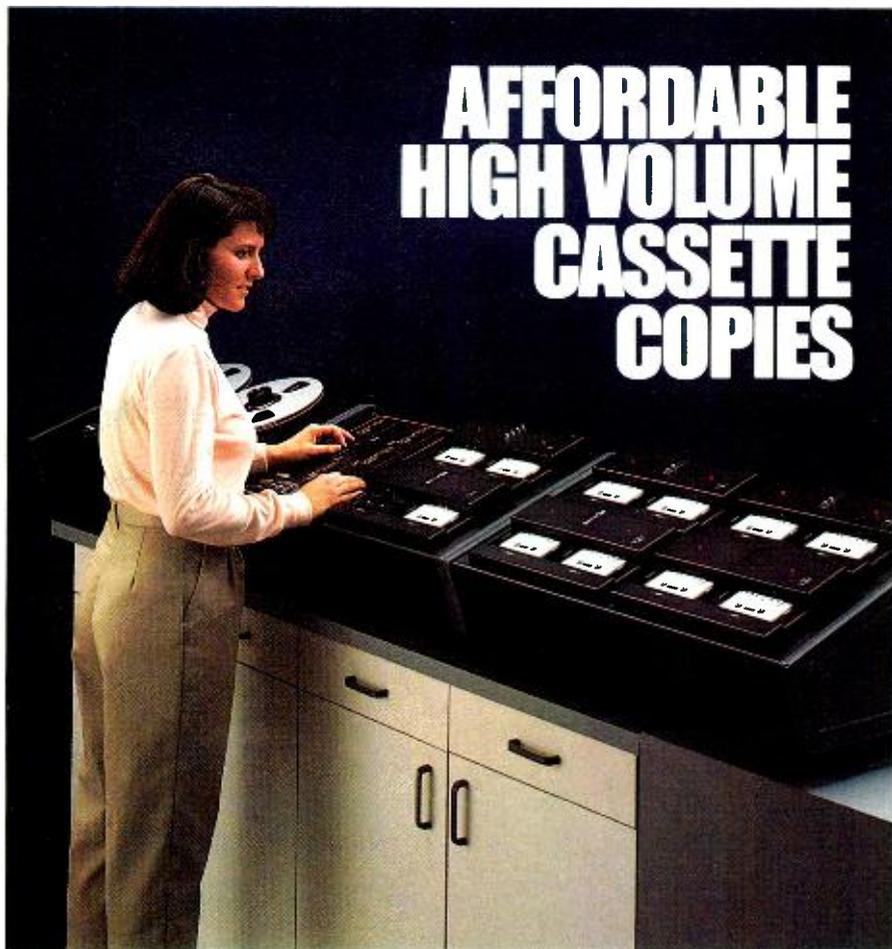
bottom of the rack below the 16 1128 equalizers.

TECHNICAL BRIDGE

The TC6032 remote controller system is a bridge between familiar standard graphic equalizers and the promise of an automated microprocessor black box. Its innovative design allows engineers the ability to provide excellent electronic and human interfacing in today's increasingly sophisticated and complex sound rein-

forcement industry.

True to form as one of the leading sound reinforcement companies, Clair Bros. Audio has taken a big step by investing in new technology to offer its clients the latest advancements in audio electronics. ■



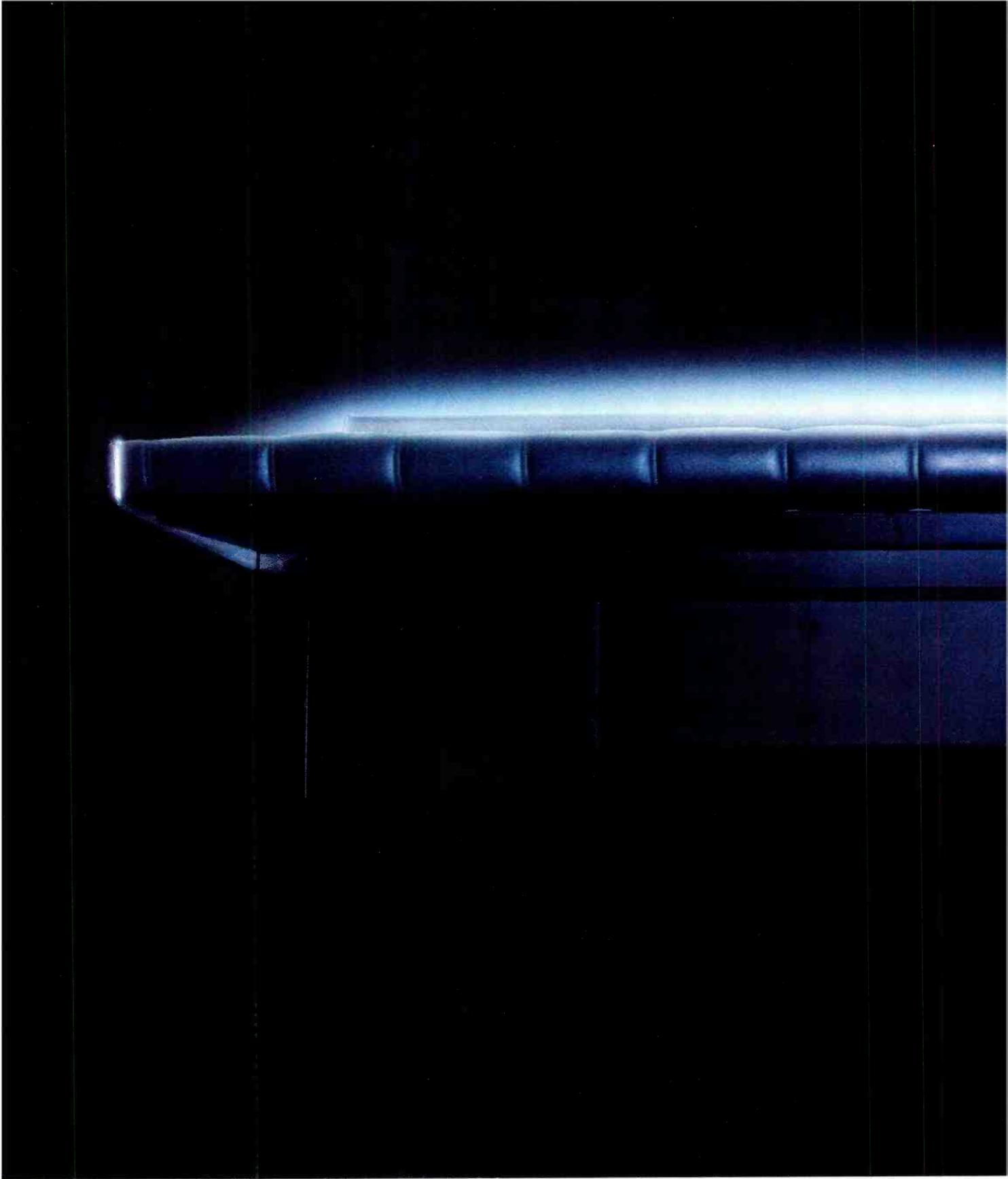
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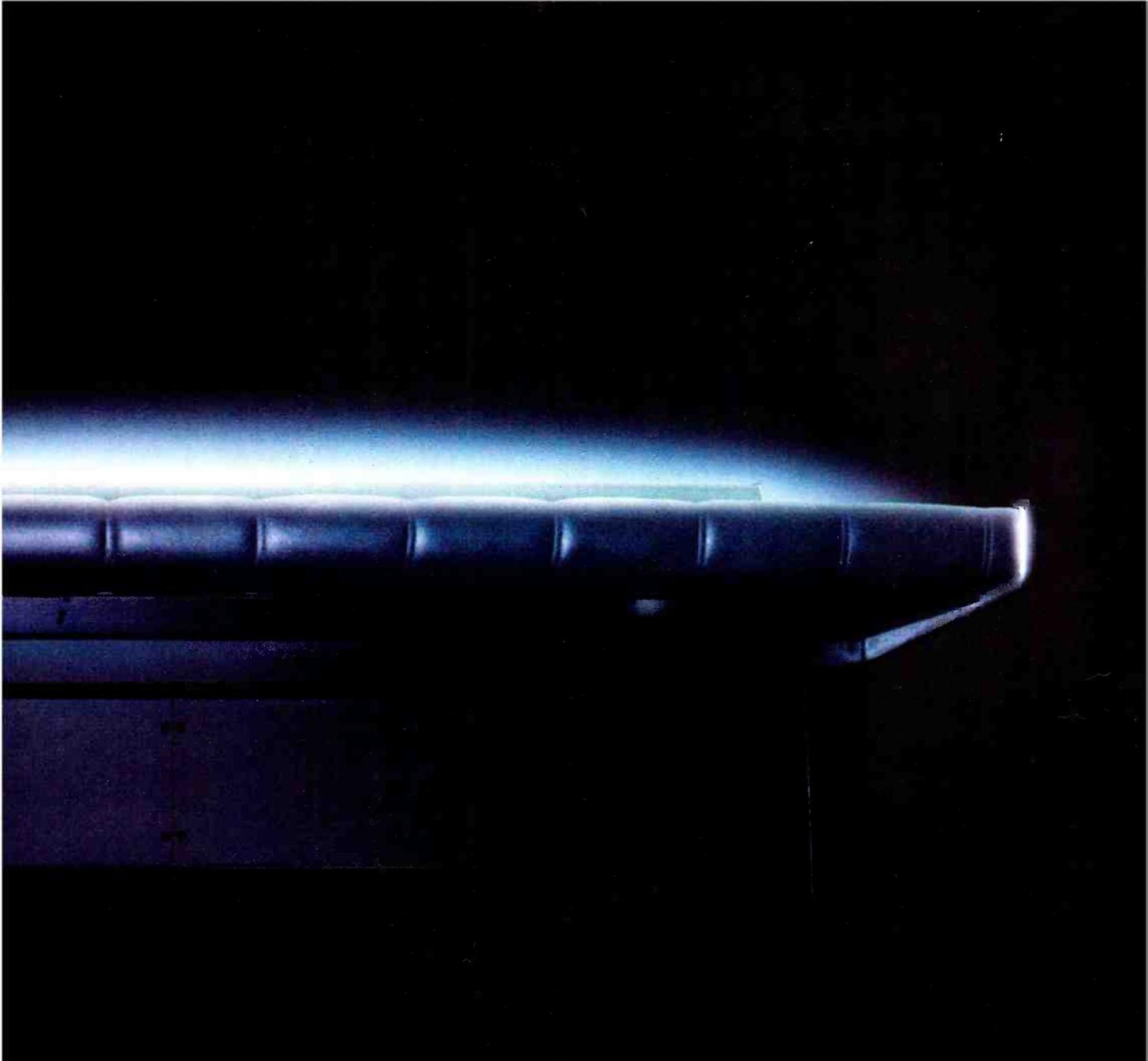
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89th AES CONVENTION PREVIEW

Art, technology and imagination — each of these traits is part of the audio equation. Take away one third of the pie — or rely too much on it — and the equation fails. Truly unforgettable audio occurs when each trait is given equal accord.

The theme of the 89th AES Convention — “Creating Illusions in Sound — The Fusion of Art, Technology and Imagination” — turns this objective into reality. Four days of exhibits, workshops, papers and special events provide ample opportunity to explore the frontiers of audio.

R•E•P’s show coverage, the most comprehensive it has presented, is designed to give attendees and non-attendees alike an overview of what will happen. If you’re planning to attend, this section will give you a good idea of what to expect. And if you’re not attending, you can still get a good idea of what will happen and how it may affect you in the future.

One disclaimer: This information is current as of early August. Refer to on-site convention information for any changes that have occurred.

More Information:
**Contact AES at
212-661-8528;
fax 212-682-0477.**

At A Glance

Event:

89th AES Convention

Theme:

**“Creating Illusions in
Sound — The Fusion
of Art, Technology and
Imagination”**

Dates:

Sept. 21-25, 1990

Venue:

**Los Angeles
Convention Center**

Number of Exhibitors:

245+

Estimated Attendance:

12,000

Convention Chairman:

Ron Streicher

Papers Co-Chair:

**Eric Benjamin and
Laurel Cash-Jones**

Workshops Co-Chair:

**Donald McCrosky and
Jeff Haberman**

R•E•P’s Coverage

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Bose® ProFiles

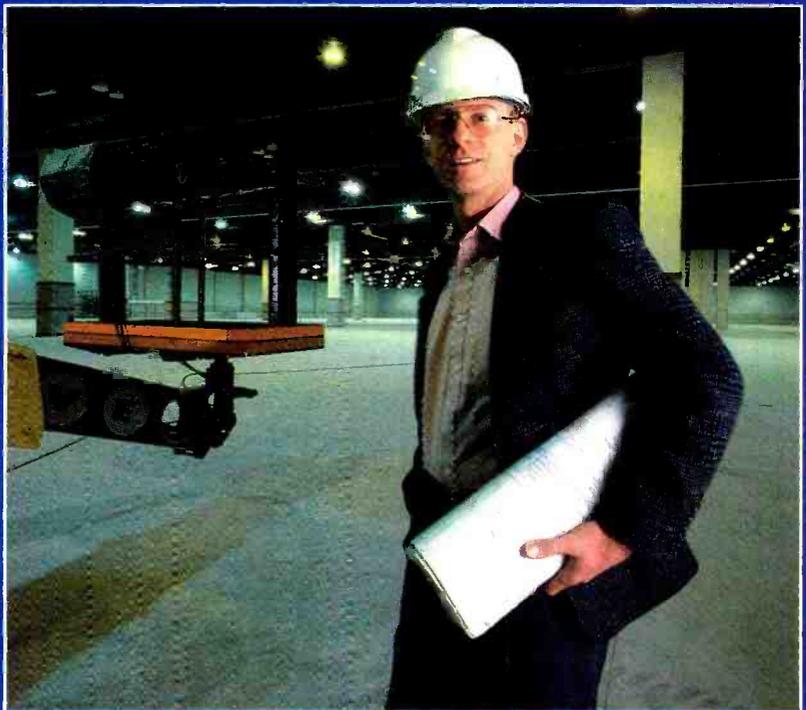
"This was a big installation.

***We didn't have much time,
so it had to be easy.***

***I needed a
high performance system
that could be clearly heard
on a huge convention floor,
and easily concealed too.***

***The sound solution
was Bose."***

*— Randy Lucatuorto
Scenario Systems, Incorporated*



The Site: Colorado Convention Center, Denver, Colorado

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The Tools: Bose Sound System® Software

The Products: 280 Bose 102® II loudspeakers
140 Bose 402 loudspeakers
24 Bose 802® II loudspeakers

The Result: "We had to do it all. We needed even sound dispersion for meeting rooms and function areas, a presentation system for the exhibit hall and event systems for the grand ballrooms. The Bose Sound System Software helped us try different design scenarios, maintain a very tight schedule, and quickly and accurately provide the data and illustrations needed for immediate approval and construction. It was cost effective and exceeded our client's performance expectations. But that's what I've come to expect from Bose."

For more information on Bose products, call 1-508-879-7330, or write Bose Corp., Dept REP, The Mountain, Framingham, MA 01701-9168

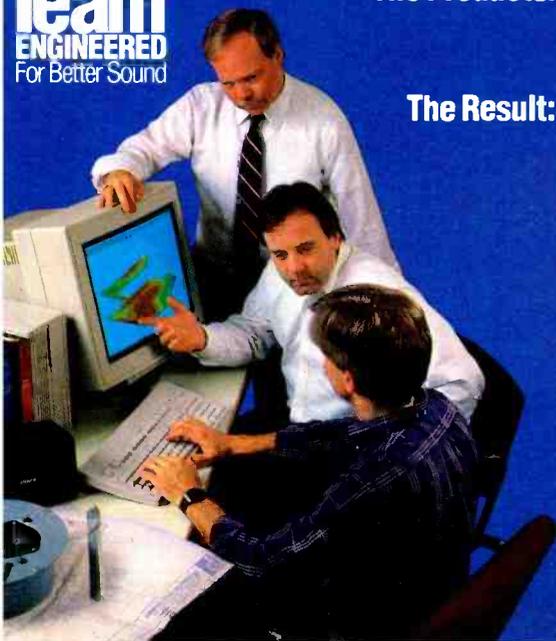
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Team
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The executive director of the Audio Engineering Society talks about the society's origins, its role in developing standards and the future of AES/SMPTE collaborations.

Don Plunkett

INTERVIEW

By Dan Torchia



As the industry's focus shifts to Los Angeles for this month's 89th Audio Engineering Society convention, it's an ideal time to take a look at the man who's been the executive director for 16 years: Don Plunkett, an AES founding member.

It's been a year of changes and challenges for the AES. Policies concerning trade shows have been questioned, culminating in many British manufacturers boycotting the spring Montreux convention. Occasionally accused of embracing the technically obscure at the expense of real world considerations, the AES's papers and workshop schedule this year is as well-balanced as any in recent memory. And talks between AES and the Society of Motion Picture and Television Engineers concerning future collaborations are proceeding, albeit cautiously.

Criticized in some quarters for his direction of the AES, Plunkett is unflappable. To his credit, he is secure in leading the society in its traditional areas of strength — technical education and standards.

In the interview, Plunkett talked about the beginnings of the AES, its role in developing standards, AES/SMPTE collaborations and how AES should remain an educational/information society.

Dan Torchia is the editor of R•E•P.



A professional CD player that does the work of two.

Introducing Numark's Dual-Transport CD Player

Finally, there is one CD player that satisfies the mixing needs of DJs, club owners and professional sound installers... Numark's CD6020. This revolutionary player features two CD transports in a single unit. So now, with a single player system, CDs can be mixed with the same ease as LPs.

The CD6020 consists of two 19" rack-mountable components—a control unit that can be mounted neatly in the mixer console, and a transport module that mounts in an equipment rack. This design ap-

proach enables sound contractors to upgrade existing club installations to CD without touching the turntables.

For hands-free mixing, the CD6020 features Numark's patented Integrate™ feature. Push a button and it ping pongs from one disc to the other, playing programmed selections from each disc automatically, and without interruption. There's also Numark's patented Beat Sync™ feature that automatically mixes from one disc selection to another while matching the beat structure of both discs for perfectly-

matched, beat-synchronized mixes.

The CD6020's control panel features two sliding pitch controls for varying the pitch of each disc $\pm 8\%$. A matching set of LED displays, large start/stop buttons, and a full complement of search, repeat, and memory functions provide total mixing and playback control!

So, if you are looking to upgrade your installations to CD, check out Numark's new CD6020 Dual-Transport CD Player. It's the only CD player you need to do the work of two... for a lot less.

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FIVE QUESTIONS:

By Mike Joseph

Convention Imbibition

Q: Consuming alcohol is (unfortunately) often a byproduct of doing “business” at a show like the AES. What actually happens when I have several drinks?

A: Biophysically, the alcohol is absorbed through the lining of your stomach. Once in the blood stream, alcohol becomes a central nervous system depressant. In the brain, synaptic activity (or the electrical “firing rate”) between brain cells is inhibited. We believe that the active process is tied to the negative chemical regulation of enzymes and hormones.

An added factor involves the brain’s blood vessels becoming dilated, unbalancing the normal nutritive relationship between blood oxygen, blood sugar and cell demand. All this creates the sensation of an alcoholic high, while euphorically reeking havoc and destruction.

Additionally, booze impairs the electrochemical mechanism in your brain which allows you to differentiate between and among discrete sounds, explaining in part why at a cocktail party, people speak louder. It becomes increasingly more difficult to focus on one particular sound.

Q: What effect does alcohol have on my liver and kidneys?

A: Downstream, the liver is the only

organ that breaks down and removes the alcohol into its component parts, glucose (sugar) and water, among other impurities, for elimination. If you drink a lot of alcohol, you are overworking your liver, which can only filter at a limited rate.

Unlike a muscle that gets stronger with exercise, the liver is worn down when it is repeatedly overstressed. Alcohol affects the kidneys by inhibiting the reabsorption of water via the Anti Diuretic Hormone, or ADH. The kidneys are fooled into thinking they have to drop water from your blood system (via elimination), when in reality you are being dehydrated.

In other words, drinking alcohol damages your brain cells, stresses your liver’s ability to filter the blood and inhibits the kidney’s normal function to maintain water levels in your system, causing major dehydration.

Q: Since beer is mostly water, doesn’t drinking it put more of the lost fluid back into my system? Would that mean that beer is better than hard liquor? Please?

A: Alcohol is a dehydrant, no matter which form it takes or what its delivery vehicle. Bacardi 151, at 75% pure alcohol and only 25% binder fluid, acts much more quickly on less total consumption than a 6% brew. But they all dehydrate you, starve the electrolytes in your system and affect your hormones, enzymes, blood sugar and oxygen levels. It is only a mat-

ter of how much alcohol in any given form you consume, as all motor vehicle department blood alcohol level charts (which correlate beer to cocktail amounts) clearly indicate.

Q: Is there anything I can do before or after drinking that will help me survive the ill effects?

A: Despite the plethora of free canapes, dead shrimp and soggy, stuffed, fried mushrooms at convention hospitality suites, food doesn’t help. While there is some truth to introducing nutritive substances into your system, whether vitamin B or Gatorade (which replenishes electrolytes), there is absolutely no truth to the countereffective measures of eating food or drinking milk, unless you are plagued by a sensitive stomach and need the calcium and alkaloids of the latter.

All food does is delay the onset of the alcoholic progression. Alcohol still must go through your entire system, including the absorption, circulation and elimination stages. Don’t be fooled by myths and old wives tales!

Q: Knowing all this, how does one avoid a hangover?

A: Don’t drink, or drink in moderation. If you don’t get drunk, you don’t drink. ■

Mike Joseph is technical editor of R•E•P.

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By Laurel Cash-Jones

IT'S SHOW TIME!

If the rumbling I'm hearing about the new products that are going to be shown at the 89th Audio Engineering Society Convention is true, it promises to be a very exciting one.

This is partly because of the fact that the digital audio workstation is maturing as a product category, and, as such, is showing real signs that this may be the year that we may see some compatibility in the form of data transfer between the systems. In the last few months, some of the major manufacturers have addressed some of the biggest problems with these systems.

The results have been fascinating. Optical disk has become a reality in some of the systems, backing up data as a background function, and a more intuitive user interface has contributed to advancing this product category from "Gee, that's nice, but..." to "Wow, I need one of these!"

In fact, it is interesting to note the various manufacturers that have thrown their hat into the ring since the last AES Convention in New York. Even the Japanese manufacturers are entering the arena.

DAR DSP, ETC.

Digital Audio Research is introducing a DSP version of its SoundStation II workstation, along with an advance in audio production technology that it calls "Segment-Based Processing." These advances allow users to assign settings for digital 4-band parametric EQ, gain and panning to each individual audio segment. These new settings are then attached to the edited segment and stay with them wherever they are moved, copied, slipped or backed up. What is even more remarkable is that this is done in real time.

DAR is also introducing 16-channel operation to the SoundStation II, along with a sophisticated drop-in recording function with autolocator. A re-writable optical disk can be used for back-up, or random access playback and editing of sound files. These back-up functions are done in the background so you don't lose time.

If that wasn't enough, there's Wordfit, a software enhancement that can automatically edit one dialogue

track to synchronize exactly with another (i.e., guide) track. This feature alone will allow sound editors on long-term film projects to spend more time with their families.

RETURN OF THE SOUNDROID

No, this is not the latest movie from George Lucas. However, it is quite possibly a landmark in audio history, involving LucasArts & Entertainment and New England Digital. Originally shown in 1986, the SoundDroid was exhibited at various conventions and showed great promise. With the additional expertise of New England Digital, the SoundDroid is a greater product than either could have produced alone.

The SoundDroid has been designed to manage all of the information requirements of post-production, from a single editor's needs to a complete multiroom facility. This is no small task. To accomplish all of this, the design team started with the concept of creating a "Multitrack Digital Moviola with Memory."

In order to integrate the various computer technologies necessary to create such a comprehensive multitasking system that could accommodate the full range of audio for film and video post-production,

the design engineers had to come up with some far-reaching design goals. Among these were the power to access, audition, play back and modify large numbers of sounds simultaneously from production tracks or an on-line sound library, plus the ability for groups of editors to work simultaneously while accessing these tracks, and a central database of production records (i.e.: cue sheets) and sounds.

But above all, the SoundDroid had to have an intuitive interface that used established film and TV editing terms and practices. And all reports and recordkeeping had to be automatic in order to streamline the post process and control costs.

Sounds like fun doesn't it? Aside from all of the software considerations, the hardware side of a project this size can also be a nightmare. Knowing this, the NED PostPro family of products was used because of its acceptance in the post-production world.

However, instead of just adapting the SoundDroid to the PostPro, New England Digital has instead introduced the PostPro DSP, which will provide a platform for the evolution of this multitasking, multiuser environment.

Within the PostPro DSP, a full range of signal processing and mixing capabilities are available, including 3- and 4-band parametric EQ, sample rate conversion, time compression/expansion and automated level control. The hardware architecture has been designed to mirror the physical layout of the post facility of the future. It allows for the digitization of multiple editing rooms, each room performing a specific task, and all rooms sharing a central audio processor.

Managers of facilities who find they want to start small can because stand-alone versions of SoundDroid for the Macintosh IIx will be available for project management. Software options include off-line Cuesheet creation, updating and printing, picture changes, ADR, effects, dialogue spotting and library management.

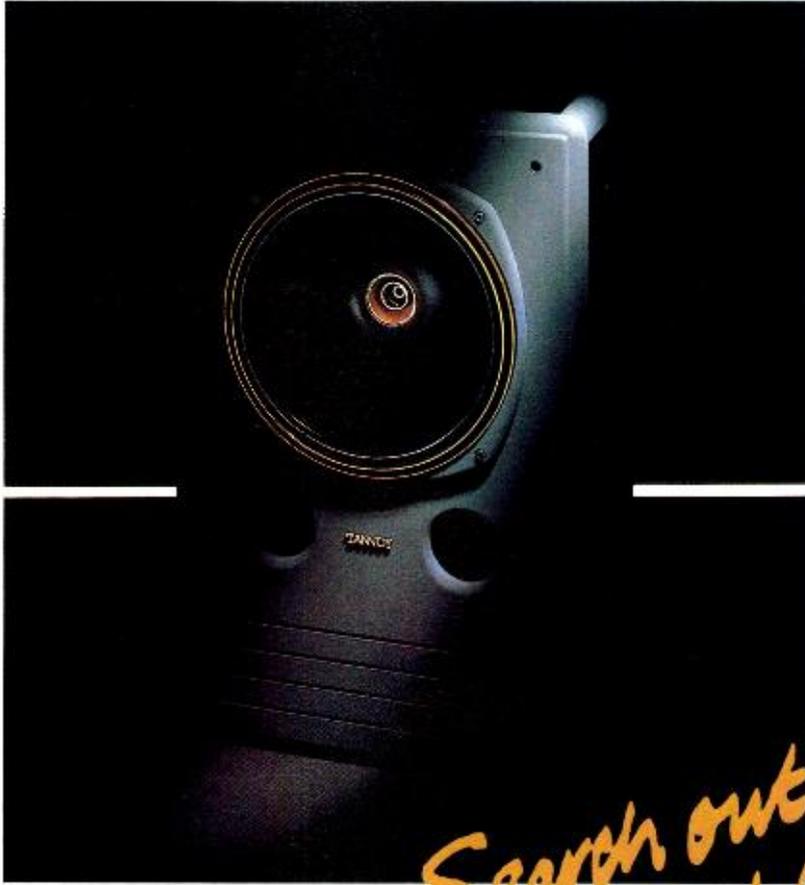
The DSP option is plug compatible with current Synclavier, PostPro, and Direct-to-Disk systems, and will allow you such new features as pooled "trackless" storage, multitasking, and digital EQ and mixing. Delivery is anticipated in November 1990. All in all, this could be the most major advancement in post-production since the invention of the Moviola. Honest.

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Laurel Cash-Jones is R+E's editorial consultant and a Los Angeles-based free-lance writer.

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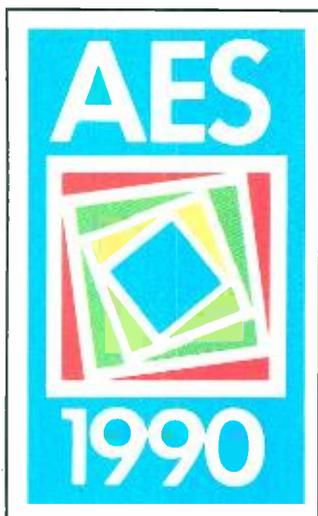


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PAPERS & WORKSHOPS

Through the hard work of many people, this year's papers and workshops offer an exceptional mix of the cutting edge of technology with real world considerations. The following schedule combines technical workshops and papers by date and time. Information was current as of early August; there may be changes at the convention.

Friday, Sept. 21

9 a.m. to 12 p.m.

Architectural Acoustics, session chair: Russ Berger, Russ Berger Design Group, Dallas.

- 9 a.m.: "Overview on Architectural Acoustics," Ewart Wetherill, Wilson, Ihrig & Associates, Oakland, CA.
- 10 a.m.: "The Architectural, Acoustical and Construction Analysis and Techniques of Two Underground World Class Recording Studios," John Storyk, Walters-Storyk Design Group, New Paltz, NY.
- 10:30 a.m.: "The QRD Diffractal: A New 1- or 2-Dimensional Fractal Sound Diffusor," Peter D'Antonio, RPG Diffusor Systems, Largo, MD.
- 11 a.m.: "A Multichannel Reverberation and Sound Enhancement System for the Theatre," Neil A. Muncy, Neil Muncy Associates Ltd., Scarborough, Ontario.
- 11:30 a.m.: "The Hollywood Bowl: Year III," Elizabeth Cohen, Eric L. Macria and Thomas A. Schindler, Charles M. Salter Associates, San Francisco.

2 p.m. to 5 p.m.

Sound Reinforcement, session chair: Michael MacDonald, Yamaha Corporation of America,

Buena Park, CA.

- 2 p.m.: "Toward a Better Concert Loudspeaker," Bob Thurmond, G.R. Thurmond Associates, Austin, TX.
- 2:30 p.m.: "An Evaluation of the Accuracy of MTF-STI Measurements by Comparison to Japanese Three-Syllable Listening Tests," Akira Mochimaru, Altec Lansing, Oklahoma City.
- 3 p.m.: "Microcomputer-Based Implementation of the Speech Transmission Index (STI)," Kenneth D. Jacob, Thomas K. Birkle and Chris B. Ickler, Bose Corporation, Framingham, MA.

Reproduction of Spatial Sound I, session chair: Elizabeth A. Cohen, Charles M. Salter Associates, San Francisco.

- 2 p.m.: "An Analog LSI Dolby Pro-Logic Decoder IC," Peter S. Henry, Precision Monolithics, Santa Clara, CA.
- 2:30 p.m.: "New Factors in Sound for Cinema and Television," Tomlinson Holman, University of Southern California, Los Angeles, and Lucasfilm Ltd., San Rafael, CA.
- 3:30 p.m.: "A New Method for Spatial Enhancement in Stereo and Surround Recording," Dr. Wieslaw R. Woszczyk, McGill University, Montreal.
- 4 p.m.: "Multichannel Sound in the Home: Further Development of Stereophony," Gunther Theile, Intitut fur Rundfunktechnik, Flornamuhlster, West Germany.

7 p.m. to 10 p.m.

Reproduction of Spatial Sound II, session chair: Elizabeth A. Cohen, Charles M. Salter Associates, San Francisco.

- 7 p.m.: "Challenges to the Successful Implementation of 3-D Sound," Durand R. Begault, NASA-Ames Research Center, Moffett Field, CA.
- 7:30 p.m.: "Directional Perception on the

Cone of Confusion," William Martens, Auris Corporation, Evanston, IL.

- 8 p.m.: "Digital Binaural/Stereo Conversion and Crosstalk Cancelling," Kevin Kotorynski, University of Waterloo, Ontario.
- 8:30 p.m.: "Development and Use of Binaural Recording Technology," W. Bray, K. Genuit and H.W. Giertich, Jaffe Acoustics, Norwalk, CO.
- 9 p.m.: "A Spatial Sound Processor for Simulating Natural Acoustic Environments," Gary Kendell and Martin Wilde, Auris Corporation, Evanston, IL.

MIDI and Electronic Music, session chair: Robert T. Davis, Yamaha Corporation of America, Buena Park, CA.

- 7 p.m.: "New Results in LPC Synthesis of Drums," M.B. Sandler, Kings College, University of London, England.
- 7:30 p.m.: "Aesthetic Issues of Music Production Utilizing MIDI," Douglas M. Carroll, San Francisco State University, San Francisco.
- 8 p.m.: "Combinatorial Music Theory," Andrew Duncan, Quaternion Consulting, Agoura, CA.
- 8:30 p.m.: "Ensemble: An Extensible Poly-functional Music Performance Environment," Michael McNabb, NeXT, Redwood City, CA.

Saturday, Sept. 22

9 a.m. to 12 p.m.

Signal Processing, session chair: Andrew Duncan, Quaternion Consulting, Agoura, CA.

- 9 a.m.: "Time and Pitch Scaling of Audio Signals," Chris J. Roehrig, University of Waterloo, Ontario.
- 9:30 a.m.: "A Computer Aided Environment for the Design of Digital Audio Products," Paul

F. Titchener, Comdisco Systems, Foster City, CA.

• 10 a.m.: "An Investigation into How Amplifier Clipping is Said to Burn Out Loudspeakers," Montgomery F. Ross, Rane, Everett, WA.

• 10:30 a.m.: "Using General Purpose Workstations for Digital Signal Processing," Jeffrey Borish, EuPhonics, San Rafael, CA.

• 11 a.m.: "A Class D Amplifier Using MOS-FETs with Reduced Minority Carrier Lifetime," Jon Mark Hancock, Siemens Components, Santa Clara, CA.

• 11:30 a.m.: "New Results in PWM for Digital Power Amplification and Realizing an All Digital Power Amplifier," J. Goldberg, R. Hlorns and M.B. Sandler, King's College, University of London, England.

2 p.m. to 5 p.m.

Digital Audio Technology I, session chair: Louis Fielder, Dolby Laboratories, San Francisco, CA.

• 2 p.m.: "Criteria for Synthesizing Narrow-Band Digital Dither at Nyquist," Jerrold R. Goodwin, Apogee Electronics, Santa Monica, CA.

• 2:30 p.m.: "An AES/EBU Interface Transmitter and Receiver Chip Set," David J. Knapp, Crystal Semiconductor, Austin, TX.

• 3 p.m.: "20-Bit Colinear DAC, a Solution to Low Level Problems," Fred J. Highton and Toshio Murota, Burr Brown, Tucson, AZ.

• 3:30 p.m.: "Performance Limitations of Digital Filter Topologies," Richard C. Cabot, Audio Precision, Beaverton, OR.

• 4 p.m.: "Psycho-Acoustically Optimal Noise-Shaping," Robert A. Wannamaker, Audio Research Group, University of Waterloo, Ontario.

• 4:30 p.m.: "Low-Complexity Transform Coder for Satellite Link Applications," Grant Davidson, Louis Fielder and Mike Antill, Dolby Laboratories, San Francisco.

7 p.m. to 10 p.m.

Sigma-Delta Converter Technology, session chair: Bob Adams, Analog Devices Semiconductor, Wilmington, MA.

• 7 p.m.: "Overview of Oversampling A/D Conversion," Max Hauser, School of Electrical Engineering, Cornell University, Ithaca, NY.

• 8 p.m.: "Design of Single-Bit Noise-Shaping Loops with High-Order Loop Filters," R.W. Adams, P.F. Ferguson Jr. and A. Gansesan," Analog Devices Semiconductor, Wilmington, MA.

• 8:30 p.m.: "A Monolithic 100kHz, 16-Bit D/A Converter Using Sigma-Delta Modulation," Charles D. Thompson, Motorola, Austin, TX.

• 9 p.m.: "18-Bit Stereo D/A Converter with Integrated Digital and Analog Filter," Nav S. Sooch and Jeffrey W. Scott, Crystal Semiconductor, Austin, TX; T. Tanaka, T. Sugimoto and C. Kubomura, Asahi Kasei Microsystems, Tokyo.

• 9:30 p.m.: "VLSI Implementation of a One-Stage 64:1 FIR Decimator," David Andreas, Ensoniq, Malvern, PA.

Sunday, Sept. 23

9 a.m. to 12 p.m.

Digital Audio Technology II, session chair: Larry Bodan, Nimbus Information Systems, Charlottesville, VA.

• 9 a.m.: "CD Mastering Using a Recordable 'Red Book Standard' CD and Graphical PQ Subcode Editing," David P. Cumming and James A. Moorer, Sonic Solutions, San Francisco; Hiroshi Ogawa, Takashi Ishiguro and Hietaro Nakajima, Tokyo Start Lab.

• 9:30 a.m.: "Multirate Digital Reverberation System," U. Zolzer, N. Filege, M. Schonie, M. Schadziara, Telecommunication Group, Technical University of Hamburg, West Germany.

• 10 a.m.: "Comparison of Phase Equalizer Designs for Digital Filters," Jerry E. Purcell, Momentum Data Systems, Costa Mesa, CA.

• 10:30 a.m.: "Bit-Rate Reduction of High Quality Audio Signals by Modelling the Ear's Masking Thresholds," Detlef Wiese and Gehard Stoll, Institute fur Rundfunktechnik, Flornamuhlstr, West Germany.

• 11 a.m.: "A Linear-Phase Digital Equalizer with Cubic-Spline Frequency Response," Paul

H. Kraght, Beckman Instruments, Brea, CA.

• 11:30 a.m.: "Optimizing Parallel Architectures for Real-Time Digital Audio," Ken Linton, Lee Gould, Steve Tarapin and Alan Purvis, Audio Engineering Group, University of Durham, England.

Transducers I: Loudspeakers — Theory & Practice, session chair: George Augspurger, Perception Inc., Los Angeles.

• 9 a.m.: "On the Acoustic Impedance of Strip Radiators," Stanley P. Lipshitz, Tony C. Scott and Bruno Salvy, University of Waterloo, Ontario.

• 9:30 a.m.: "The Design of a High Efficient

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cy Servomotor Driven Subwoofer," Thomas J. Danley and Dan Mapes-Riorden, Intersonics, Northbrook, IL.

- 10 a.m.: "Magnetic Modulation Effects in Loudspeakers: Problems & Solutions," Douglas J. Button, JBL/Harmon Manufacturing, Northridge, CA.

- 10:30 a.m.: "Super Compliance Updated," Ralph E. Marrs, Marrs Development, San Jose, CA.

- 11 a.m.: "Heat Dissipation & Power Compression in Loudspeakers," Douglas J. Button, JBL/Harmon Manufacturing, Northridge, CA.

- 11:30 a.m.: "Resonant Modes of Some Common Thin Metal Diaphragms," David Bie, JBL, Northridge, CA.

2 p.m. to 5 p.m.

Transducers II: Microphones & Acoustical Measurements, session chair: George Augspurger, Perception Inc., Los Angeles.

- 2 p.m.: "Nonlinearities in Condenser Microphone Electronics," David L. Josephson, Josephson Engineering, San Jose, CA.

- 2:30 p.m.: "An Intuitive View of Coincident Stereo Microphones," Stephen Julstrom, Shure Brothers, Evanston, IL.

- 3 p.m.: "Low-Frequency Acoustic Noise and Its Effect on Loudspeaker Measurements," John Vanderkooy, Department of Physics, University of Waterloo, Ontario.

- 3:30 p.m.: "Amplitude Modulation Method for Measuring Linear Excursion of Transducers," David Clark, DLC Design, Farmington Hills, MI.

- 4 p.m.: "Loudspeaker Directional Response Measurement," David W. Guinness, Mark IV Audio, Buchanan, MI.

- 4:30 p.m.: "A DSP-Based Time Delay Spectrometry Analyzer," Ronald Bennett, Keith Jebelian, Brian Flinn, Dales Burnett, Don B. Keele Jr., Techron, Division of Crown International, Elkhart, IN.

7 p.m. to 10 p.m.

"A Tutorial on Phase," Stanley P. Lipshitz, University of Waterloo, Department in Applied Math, Ontario.

Monday, Sept. 24

9 a.m. to 12 p.m.

Modelling of Acoustic Spaces I, session chair: Manfred R. Schroeder, Drittes Physikalisches Institut, Universitat Gottingen, West Germany.

- 9 a.m.: "Modelling of Acoustic Spaces: An Overview," Dr. Manfred R. Schroeder, Drittes Physikalisches Institut, Universitat Gottingen, West Germany.

- 10 a.m.: "Electroacoustic Simulation of Listening Room Acoustics for Investigation of the Interactive Sound Source, Room and Listener," Soren Bech, The Acoustics Laboratory, Technical University of Denmark, Lyngby, Denmark.

- 10:30 a.m.: "Experiments in Acoustical CAD," Mendel Kleiner, Chalmers University of Technology, Department of Applied Acoustics, Gothenburg, Sweden.

- 11 a.m.: "Application of Computer Simulation and Scale Model Testings in Room Acoustical Design," Keiji Oguchi, Satoru Ikeda, Minoru Nagata, M. Nagata Acoustic Engineers & Associates, Tokyo.

- 11:30 a.m.: "Computer Simulation for Acoustic Visualization," Adam Stettner, Stett-

ner Consultants, Medusa, NY.

2 p.m. to 5 p.m.

Modelling of Acoustic Spaces II, session chair: Manfred R. Schroeder, Drittes Physikalisches Institut, Universitat Gottingen, West Germany.

- 2 p.m.: "A Computationally Efficient Algorithm for Simulating Room Impulse Responses," Wolfgang Ahnert, Ahnert Acoustical Consultants, Berlin, Germany.

- 2:30 p.m.: "Measurements of Panel Reflection Using Scale Modeling Techniques," Jose C. Ortega, Paul S. Vaneklasen and Associates, Santa Monica, CA.

- 3 p.m.: "Experience with Models of Acoustic Spaces," V.M.A. Peutz, R. Metkemeijer, Adviesbureau Peutz & Associates, Nymegen, Netherlands.

- 3:30 p.m.: "Computer Simulation Algorithms for Prediction of MTF-STI and Accurate Calculation of Sound Pressure Levels," Akira Mochimaru, Altec Lansing, Oklahoma City.

- 4 p.m.: AES Technical Council Committee on Acoustics and Sound Reinforcement Meeting; Ken Jacob, Bose Corporation, Framingham, MA, chairman.

Audio for Video, Broadcast and Film, session chair: Phillip Mendelson, Post Group, Woodland Hills, CA.

- 2 p.m.: "Why a Digital Movieola Alone Won't Cut It," Brian Kelley, Skywalker Sound, San Rafael, CA.

- 2:30 p.m.: "Application of a New Near-Coincident Stereo Microphone Array for Soundtrack, Special Effects and Ambience Recording on Location," Mike Billingsley, Backtracks Location Recording, Montpelier, VT.

- 3 p.m.: "Audio Considerations for Multiple Media," David Gray, Dolby Laboratories, Los Angeles.

- 3:30 p.m.: "Sound Fusion and the Acoustic Presence Effect," Art M. Noxon, Acoustic Sciences, Eugene, OR.

- 4 p.m.: "Toward a Truly Integrated Digital Audio Environment," Phillip A. Mendelson, The Post Group, Los Angeles.

- 4:30 p.m.: "Intellectual Property and the Emerging Technology: Who Wins; Who Loses?" Peter L. Rothbart, Ithaca College, Ithaca, NY.

Tuesday, Sept. 25

9 a.m. to 12 p.m.

Recording

- 9 a.m.: "Flying Faders: A Case Study in Product Development," Morgan Martin, Lambda Unlimited, Los Angeles.

- 9:30 a.m.: "New Frontiers in Digital Audio," Roger Lagadec, Sony Corporation, Japan.

- 10 a.m.: "A Professional DAT for Audio and Video Application," Neil Neubert, Tomohiro Mori, Shoji Ueno, Yasuhiko Fuji, Taku Umazono, Tomoyuki Udagawa and Yoshihisa Fujinami, Victor Company of Japan, Kanagawa, Japan.

- 10:30 a.m.: "A New Recording Process for Consumer Recording Formats," Stan Cossette, Dolby Laboratories, San Francisco.

- 11 a.m.: "A Simple High Frequency Audio Magnetic Tape Recording and Playback Model," Michael Poimboeuf, Personics Corporation, Redwood City, CA.

- 11:30 a.m.: "Hard Disk Recording and Editing of Digital Audio," James A. Moorer, Sonic Solutions, San Francisco, CA.

Workshops

Friday, Sept. 21

- 9 a.m. to 12 p.m.: "Visual Audio Monitoring," David Bascomb, Audio Engineering Services; Dick Burden, Burden Associates.

- 9 a.m. to 12 p.m.: "Theatre Sound for the Small House," Al Siniscal, A-1 Audio, and Shelley Herman, Acoustronics.

- 2 p.m. to 5 p.m.: "Digital Workstations: Diverse Applications," Fred Jones, Fred Jones Recording Services; and Laurel Cash-Jones, Laurel Ink.

- 7 p.m. to 10 p.m.: "Digital Audio: Testing and Listening," Bill Hogan, Sprocket Video, and Bill Elswick, Ediflex.

Saturday, Sept. 22

- 9 a.m. to 12 p.m.: "Recording Studio Mixing," George Massenburg, National Academy of Recording Arts and Sciences.

- 9 a.m. to 12 p.m.: "Loudspeaker Assessment," Marshall Buck, Psychotechnology.

- 2 p.m. to 5 p.m.: "Business Aspects of Recording: Market Segmentation," David Porter, Society of Professional Audio Recording Services.

- 2 p.m. to 5 p.m.: "Educational Fair: Opportunities in Audio," Roy Pritts, University of Colorado at Denver.

- 7 p.m. to 10 p.m.: "Computer Music Composition," Howard Sandroff, University of Chicago.

- 7 p.m. to 10 p.m.: "R-DAT in Production and Post-Production — The Good, the Bad and the Not-Yet," Larry Blake.

Sunday Sept. 23

- 9 a.m. to 12 p.m.: "Dialogue Processing and Clean-up," Terry Porter, Walt Disney Studios.

- 9 a.m. to 12 p.m.: "Basic Audio for Musicians," chair to be announced.

- 2 p.m. to 5 p.m.: "Sampling: Editing Voice, Music and Sound Effects," Chris Harvengt, BLC Post.

- 2 p.m. to 5 p.m.: "The Dolby Motion Picture Stereo Dilemma: Theatrical vs. Home Release," Tomlinson Holman, USC Cinema Dept.

- 7 p.m. to 10 p.m.: "Fixed Speaker Systems Using Touring Speaker Enclosures," Fred Ampel, Editor, *Sound & Video Contractor*.

- 7 p.m. to 10 p.m.: "Improving the Listening Environment," Peter D'Antonio, RPG Diffuser Systems.

Monday, Sept. 24

- 9 a.m. to 12 p.m.: "Restoration of Audio Recordings," Tom Owen.

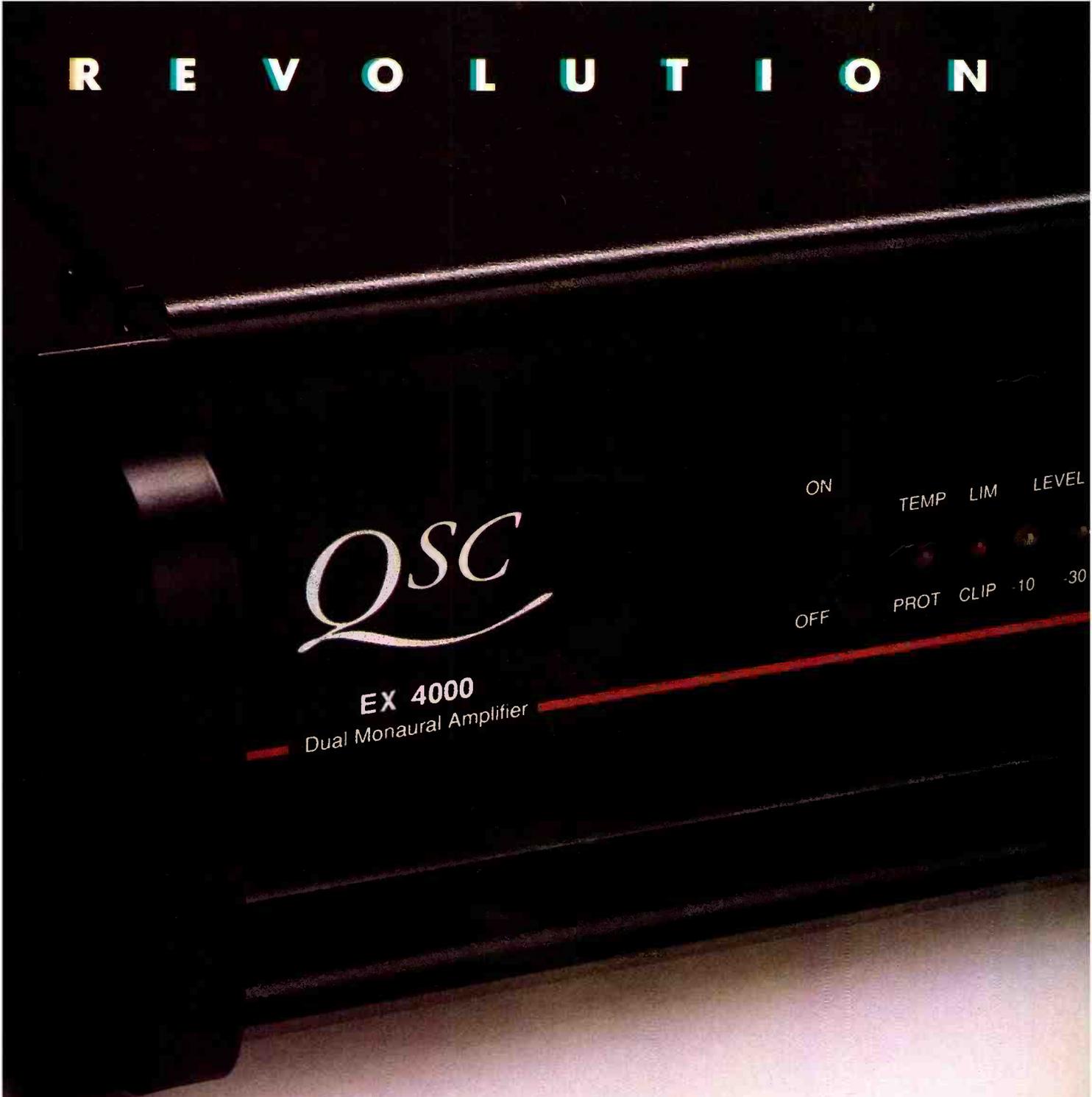
- 2 p.m. to 5 p.m.: "Esoteric Sound Tests: Surround Sound Decoders," David Clark, DLC Design.

Tuesday, Sept. 25

- 9 a.m. to 12 p.m.: "Critical Listening: Perception and the Audio Environment," Ron Streicher, Pacific Audio-Visual Enterprises.

- 9 a.m. to 12 p.m.: "Interactive Knowledge Systems for Technical Training," Leonid Strashun, Sony Broadcast and Communications. ■

R E V O L U T I O N



A close-up photograph of the QSC EX 4000 Dual Monaural Amplifier. The device is black with a silver handle on the left. The QSC logo is prominently displayed in the center. To the right, there are several control knobs and switches, including a power switch labeled 'ON' and 'OFF', and three indicator lights labeled 'TEMP', 'LIM', and 'LEVEL'. Below the lights are two more knobs labeled 'PROT' and 'CLIP', with numerical markings '-10' and '-30'.

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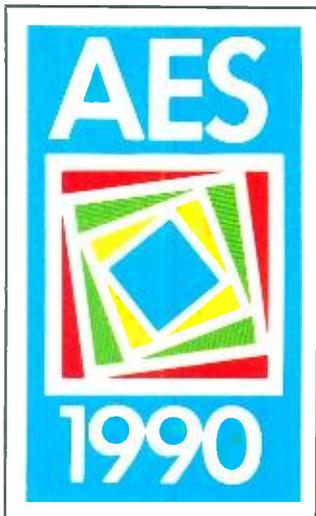
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EXHIBITOR LISTINGS

The exhibiting companies are a good anchor to the papers and workshops portion of the convention. After all, technology is ultimately expressed in terms of products, the tools audio professionals use every day.

These listings were derived from information taken from forms we mailed to exhibiting companies. Companies that were able to submit new product information have a new products entry, containing the model name of number and a short description. Product lines are listed below the new products. Each entry has been assigned a Rapid Facts Number. For more information on any of the companies, circle the appropriate number on the Rapid Facts Card bound into the back of this issue.

If you are looking for a specific piece of equipment and want to find out which companies make it, refer to the Product Directory. For additional information on many of the products listed in this directory, refer to Product Preview.

AB International Electronics (1011)

New products _____
 1200C 2-channel power amp; 200 slim-line 1-rack power amp.

Product line _____
 Amplifiers.
Circle (200)

Accurate Sound Corporation (1004)

New products _____
 AS-200B high-speed reel-to-reel duplicator system; AS-100 micro-processed tape handler for Studio Master recorder cassette pancake evaluator and cassette duplicator slave transport; 315 high-speed audio duplicating electronics and model 925 bias supply.

Product line _____
 Tape duplication, systems and accessories; tape machines, analog; tape machines, cassette and cartridge.
Circle (201)

ACO Pacific (241)

New products _____
 MK224 electret measurement mic; 511D sound pressure calibrator.

Product line _____
 Maintenance, test and measuring equipment; microphones, booms, stands and accessories; microphones, pre-amplifiers; tape machines, digital.
Circle (202)

Acoustical Physics Labs (847)

Not available at press time.
Circle (204)

Acoustics Design Group (448)

Product line _____
 Acoustic design and construction.
Circle (203)

Adamson Acoustic Design Corp. (1422)

New products _____
 MH225/B218F/AX300 and MH121/B118/AX300 concert loudspeaker systems.

Product line _____
 Crossovers and frequency dividers; loudspeakers, component; loudspeakers, sound reinforcement; signal processors, other.
Circle (205)

Adams-Smith (1407*)

New products _____
 2600 A/V audio editing system.

Product line _____
 Editing systems; MIDI hardware; sequencers; synchronizer systems; time compression/expansion.
Circle (206)

AEG Corp. (900*)

New products _____
 High-speed duplicating system and loading equipment for audio cassette manufacturing.

Product line _____
 Tape duplication, systems and accessories.
Circle (207)

A.R.T. INTRODUCES THE FIRST SIGNAL PROCESSORS OF THE 21ST CENTURY

THE SGE MACH II

The stunning new Wonder-processor offering 12 effects simultaneously! The Mach II has over 70 different effects including an exciter, equalizer, compressor, limiter, noise gate, expander, sampler, env. filter, pitch transposer, line EQ, stereo panner, stereo chorus and flange, 12 killer distortions, 21 delay types (2 full seconds) and 24 different reverb algorithms! Real time midi, 200 memories and bandwidth to 20 kHz.

THE DR-X

The all new Studio Digital Reverberator/Dynamics Processor/Pitch Transposer/Sampler offering 160K bytes of audio ram, bandwidth to 20 kHz, sampling, 10 simultaneous audio functions, an exciter, equalizer, compressor, limiter, expander, noise gate, stereo panner, stereo chorus and flange, 21 different delays (2 full seconds), 24 reverb algorithms, 200 memories, amazingly comprehensive real time midi control.

THE MULTIVERB III

A new age of technology and 400% more processing offers digital reverb and spatial enhancement that defies description! The Multiverb III has over 53 effects to choose from (up to four simultaneously) including sampling, stereo chorus and flanging, 21 delay types (2 full seconds), stereo panning, pitch transposing, 24 reverbs, 200 memory locations, full programmability and Performance Midi™.

THE MULTIVERB LT

The Multiverb LT gives you the power of the Multiverb with the simplicity of 1-touch control. The LT has 192 of the finest studio multi-effect combinations ever created! For those who don't have time for the complexity of programming, the LT gives you all the power you can use at a great price! Midi addressable.

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Agfa Corp. (114*)

New products _____
Audio mastering polyester leader tape; audio mastering paper leader tape; audio duplication tape cleaning fabric; video duplication tape cleaning fabric; SR-XS chrome studio reference cassette IEC II; audio mastering splicing tape; audio mastering splicing tape dispenser; audio duplication splicing tape; video duplication splicing tape; Spliceproof printed video splicing tape; R-DAT cassettes.

Product line _____
Recording tape, audio; recording tape, video.
Circle (208) See ad page 9

Akai/IMC (Rm. 211A)

New products _____
DD1000 magneto optical disk recorder; S1100 16-bit stereo sampler.

Product line _____
Drum machines; MIDI hardware; recorders, hard disk; routing switchers, audio; sequencers; sound samplers; tape machines, analog.
Circle (209) See ad page 5

AKG Acoustics (226*)

New products _____
K1000 reference listening system; V6HP headphone amp; C426 stereo mic; K2701HC headset; C406/407 miniature mics; C451E pre-amp.

Product line _____
Delays, analog and digital; digital audio workstations; headphones and headsets; headphone mixing systems; microphones, booms, stands and accessories; microphones, studio and PA; microphones, wireless and RF; reverb devices.
Circle (210)

Alesis Corp. (249*)

New products _____
SR-16 16-bit stereo drum machine.

Product line _____
Consoles, recording and production; consoles, sound reinforcement; delays, analog and digital; drum machines; equalizers; headphone mixing systems; limiters/compressors; MIDI hardware; noise gates/expanders; reverb devices; sequencers; signal processors, other.
Circle (211) See ad page 71

Allen and Heath (101*)

New products _____
SC Plus Series sound reinforcement console.

Product line _____
Consoles, automation systems; consoles, recording and production; consoles, sound reinforcement; microphone mixers.
Circle (212)

Alpha Audio (700*)

New products _____
DR-2 digital hard-disk recorder; DR-2 edit controller.

Product line _____
Acoustic treatment materials; editing systems; recorders, hard disk.
Circle (213)

Amber Electro Design (1012*)

New products _____
Not available at press time.
Circle (214)

Amek/TAC (632*)

New products _____
Mozart RN console designed by Rupert Neve;

Amek Bullet mid-frame console; TAC Bullet console in mid-frame chassis.

Product line _____
Consoles, automation systems; consoles, recording and production; consoles, sound reinforcement; equalizers; equipment cases.
Circle (215)

American Helix (1418*)

Product line _____
Record/CD manufacturing.
Circle (216)

Ampex Recording Media Corp. (212*)

Product line _____
Tape supplies and accessories.
Circle (217) See ad pages 18,19

AMS Industries (336*)

New products _____
AudioFile Plus hard-disk recorder/editor; Logic 1 digital mixing console; SoundField microphone system.

Product line _____
Consoles, automation systems; consoles, digital; consoles, recording and production; delays, analog and digital; digital audio workstations; editing systems; microphones, booms, stands and accessories; microphones, pre-amplifiers; microphones, studio and PA; miscellaneous equipment and services; pitch shifters; recorders, hard disk; reverb devices; signal processors, other; sound samplers; time compression/expansion.
Circle (218)

Analog Devices (1048*)

New products _____
AD1860 18-bit audio D/A converters; AD1864 dual 18-bit D/A converter; AD712 high-speed monolithic BiFET op-amp.

Product line _____
Amplifiers; noise reduction systems; signal processors, other.
Circle (219)

Apex Machine Company (348*)

New products _____
CA-20 1- or 2-color, 2-sided audio cassette printer; Z-90 automatic packaging machine; Rotoscreen Machine DAT, audio and video cassette rotoscreeener; PP-18 and PP-21 pad printers.

Product line _____
Miscellaneous equipment and services.
Circle (220)

Aphex Systems (708*)

New products _____
720 Dominator II tri-band peak limiter; 800DA Macintosh software for setup and editing of maps for the Aphex Studio Clock.

Product line _____
Computer software, MIDI; computer software, studio applications; limiters/compressors; MIDI hardware; noise gates/expanders; signal processors, other.
Circle (221) See ad page 83

Apogee Electronics (600*)

New products _____
D160 proprietary dithering module for the AD1000 A/D converter; C384 low-jitter slaving clock regenerator.

Product line _____
Filters, replacement; maintenance, test and

measuring equipment; metering devices.
Circle (222)

Apogee Sound (351,Rm. 202B)

New products _____
AE-3M stage monitor; a high-frequency vice and heavy duty straps that connect rigging points for 3x3 speakers; AE-4SB subwoofer system; AE-4 single-amped speaker system; literature for Apogee speaker systems and accessories; AE-6B stage monitor; second generation processors for all loudspeaker systems, including a single-channel processor for permanent installations.

Product line _____
Loudspeakers, sound reinforcement.
Circle (223) See ad page 79

Apollo Masters Corp. (140)

New products _____
Not available at press time.
Circle (440)

Applied Research & Technology (ART) (240*)

New products _____
MDC 2001 stereo master dynamics controller; X-11 MIDI master control foot controller; The Power Plant studio guitar pre-amp.

Product line _____
Delays, analog and digital; equalizers; limiters/compressors; noise gates/expanders; pitch shifters; reverb devices; signal processors, other; sound samplers; time compression/expansion.
Circle (224) See ad page 69

APRS (96)

Product line _____
Miscellaneous equipment and services.
Circle (441)

AQ Design (152)

New products _____
Not available at press time.
Circle (442)

Archon (942)

New products _____
Not available at press time.
Circle (225)

Ariel Corporation (549*)

New products _____
DAT-56 DSP development system; Pro-Port line of A/D and D/A boards with 16-bit AD/DA and AES/EBU interface.

Product line _____
Computers, hardware and peripherals; digital audio workstations; signal processors, other.
Circle (226)

ARsonic U.S. (33)

New products _____
Not available at press time.
Circle (227)

Ashly Audio (624)

New products _____
LM-1000 8-input stereo line mixer; LM-2000 8-input stereo line mixer with stereo sends and returns; MM-108 8-input mixer with 90dB of gain; MM-208 8-input stereo mixer with input EQ, stereo sends/returns, built-in limiter.

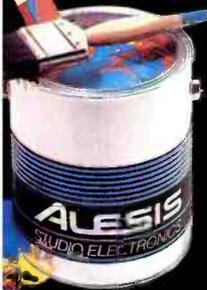
Product line _____
Amplifiers; crossovers and frequency dividers; equalizers; limiters/compressors; microphone mixers; noise gates/expanders; signal processors, other.
Circle (228)

If Michelangelo had a QUADRAVERB, he might have mixed music instead of paint.



It's true. Music and painting are very similar. A stroke of red, a touch of chorus. A splash of blue, a wash of reverb. Either way, it's art. And every artform has its masterpieces. And its tools.

Introducing the Alesis QUADRAVERB. An all-new 16 bit digital, simultaneous multi-effects processor and dead-serious musical tool. With QUADRAVERB, your mixes will be mirror images of the sound in your head. No letdowns. No noise. No nonsense. No boundaries between art and creation.



Inside, QUADRAVERB is alive with colors. Chorus, flange, phase shift, pitch detune and delay... all in stereo, to give your music depth and space. For absolute tonal control there are 5 bands of parametric and 11 bands of graphic e.q. And, of course, there's the unmistakable clarity and drama of the award-winning Alesis digital reverb programs.

With full programmability, 100 memory slots, and 90 factory programs created by the best ears in the business, QUADRAVERB gives you total artistic freedom. Plus, in QuadMode™, four of these flawless 20kHz bandwidth effects occur simultaneously. Like crunching thousands of dollars worth of studio gear into one rack space.

With very little cash, and even less effort, you can use QUADRAVERB on your next mix... plug it into your instrument rig... perfect your sound.

See your Alesis dealer today and hear what state of the art really means.

Michelangelo would agree, QUADRAVERB is a masterpiece.



LOS ANGELES:
Alesis Corporation • 3630 Holdrege
Avenue • Los Angeles, Ca. 90016

LONDON:
Alesis Corporation • 6, Letchworth
Business Center • Avenue One,
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Circle (32) on Rapid Facts Card

New

QUADRAVERB

Plus

Now with:

- Sampling
- Multi-Tap Delays
- Panning
- Ring Modulator
- Resonators

See Your Alesis Dealer

Audio Accessories (247)

Product line _____
 Cable and connectors; patchbay and jack panels.
Circle (229)

Audio Action (32)

New products _____
 Compact disc releases of all music libraries.
Product line _____
 Libraries, music production; libraries, sampled sounds; libraries, sound effects.
Circle (230)

Audio Animation (948*)

New products _____
 Paragon digital audio dynamics processor for broadcast.
Product line _____
 Consoles, digital; signal processors, other.
Circle (231) See ads pages 75, 77

AudioControl Industrial (746)

New products _____
 SRD-10 audio test signal CD; UTM-250 ultrasonic tape measure; AC-10 A and C weighting filter for SA-3050A RTA.
Product line _____
 Maintenance, test and measuring equipment; metering devices; miscellaneous equipment and services.
Circle (232) See ad page 59

Audio Precision (20*)

Product line _____
 Maintenance, test and measuring equipment
Circle (233)

Audio Services (1420)

Product line _____
 Cable and connectors; educational courses and programs; equipment cases; equipment rental and leasing; headphones and headsets; intercom systems; libraries, sound effects; loudspeakers, component; loudspeakers, sound reinforcement; loudspeakers, studio monitoring; microphone mixers; microphones, booms, stands and accessories; microphones, pre-amplifiers; microphones, studio and PA; microphones, wireless and RF; miscellaneous equipment and services; noise reduction systems; racks and stands; recording tape, audio; tape machines, DAT; tape machines, digital; tape supplies and accessories.
Circle (234) See ad page 108

Audio-Technica U.S. (301)

New products _____
 AT825 X/Y single-point stereo microphone; ATM41HE dynamic microphone for vocals; ATM61HE dynamic microphone for vocals and instruments; AT4462 (48) field stereo mixer with built-in 48V phantom power; AT804 handheld omnidirectional dynamic microphone; AT871R remote power UniPlate microphone; ATM25 high SPL mini condenser instrument order.
Product line _____
 Cable and connectors; headphones and headsets; microphones, booms, stands and accessories; microphones, wireless and RF; MIDI hardware; phonograph cartridges and accessories.
Circle (235)

Audiotechniques/Tube Tech (307)

New products _____
 ADT FC-1 digital interface; DCS 900 A/D converter; TubeTech EQs, limiters and mic pre-amps.
Product line _____
 Amplifiers; digital audio workstations; equalizers; limiters/compressors; microphones, pre-amplifiers; record/CD manufacturing.
Circle (236)

Audio Teknology (71*)

Product line _____
 Computer software, studio applications; consoles, sound reinforcement; crossovers and frequency dividers; equalizers; limiters/compressors; noise gates/expanders; transformers, audio.
Circle (237)

Audio Video Consultants (629*)

New products _____
 SAM Tapematic static audio waster-loopless bin; 2002 Tapematic automatic audio loader dual pancake; 3002 Tapematic automatic video loader dual pancake; 3003 Tapematic automatic video loader dual pancake with conveyor system; 5128 Tapematic slave with four speeds and 8 EQ.
Product line _____
 Tape duplication, systems and accessories.
Circle (238)

Audix Corp. (42)

Product line _____
 Loudspeakers, studio monitoring; microphones, booms, stands and accessories; microphones, studio and PA; microphones, wireless and RF.
Circle (239)

Audra International (69)

Product line _____
 Not available at press time.
Circle (443)

Australian Monitor (844)

New products _____
 AM IK2 (600W) and AM K7 (350W) 2-channel, 2-rack space MOSFET power amplifiers.
Product line _____
 Amplifiers; loudspeakers, sound reinforcement.
Circle (240)

BASE (Rm. 101)

New products _____
 BASE processor.
Product line _____
 Signal processes, other.
Circle (241)

BASF Corp. Information Systems (440*)

Product line _____
 Maintenance, test and measuring equipment; recording tape, audio; recording tape, video.
Circle (242)

BEC Technologies (1046)

Product line _____
 Not available at press time.
Circle (243)

Berklee College of Music (346)

Product line _____
 Educational courses and programs.
Circle (244)

Beyerdynamic (601*)

New products _____

MC742 large diaphragm stereo condenser microphone; M59 hypercardioid dynamic microphone; MCE 50 mini condenser lavalier microphone; TG-X series dynamic vocal microphones.

Product line _____
 Cable and connectors; headphones and headsets; microphones, booms, stands and accessories; microphones, pre-amplifiers; microphones, studio and PA; microphones, wireless and RF.
Circle (245)

BGW Systems (216)

New products _____
 200 power amp; 350 Series power amps; 6500T dual 100W power amp with optional input and output transformers, precision stepped attenuators and crossover.
Product line _____
 Amplifiers.
Circle (246)

Bose (Rm. 216B)

Product line _____
 Computer software, business; loudspeakers, sound reinforcement; signal processors, other.
Circle (247) See ad page 53

Brainstorm Electronics (1406)

New products _____
 TB-4 communicator, an infrared talkback remote control; JHM2 autolocator multibox for JH-24; TBS-4 remotable talkback switch for Trident; SR-1 time code refresher; VP-90 VSO for Ampex machines; TDC-24 tach/dir converter for Sony APR-24.
Product line _____
 Miscellaneous equipment and services; synchronizer systems.
Circle (248) See ad page 59

Bruel & Kjaer (7)

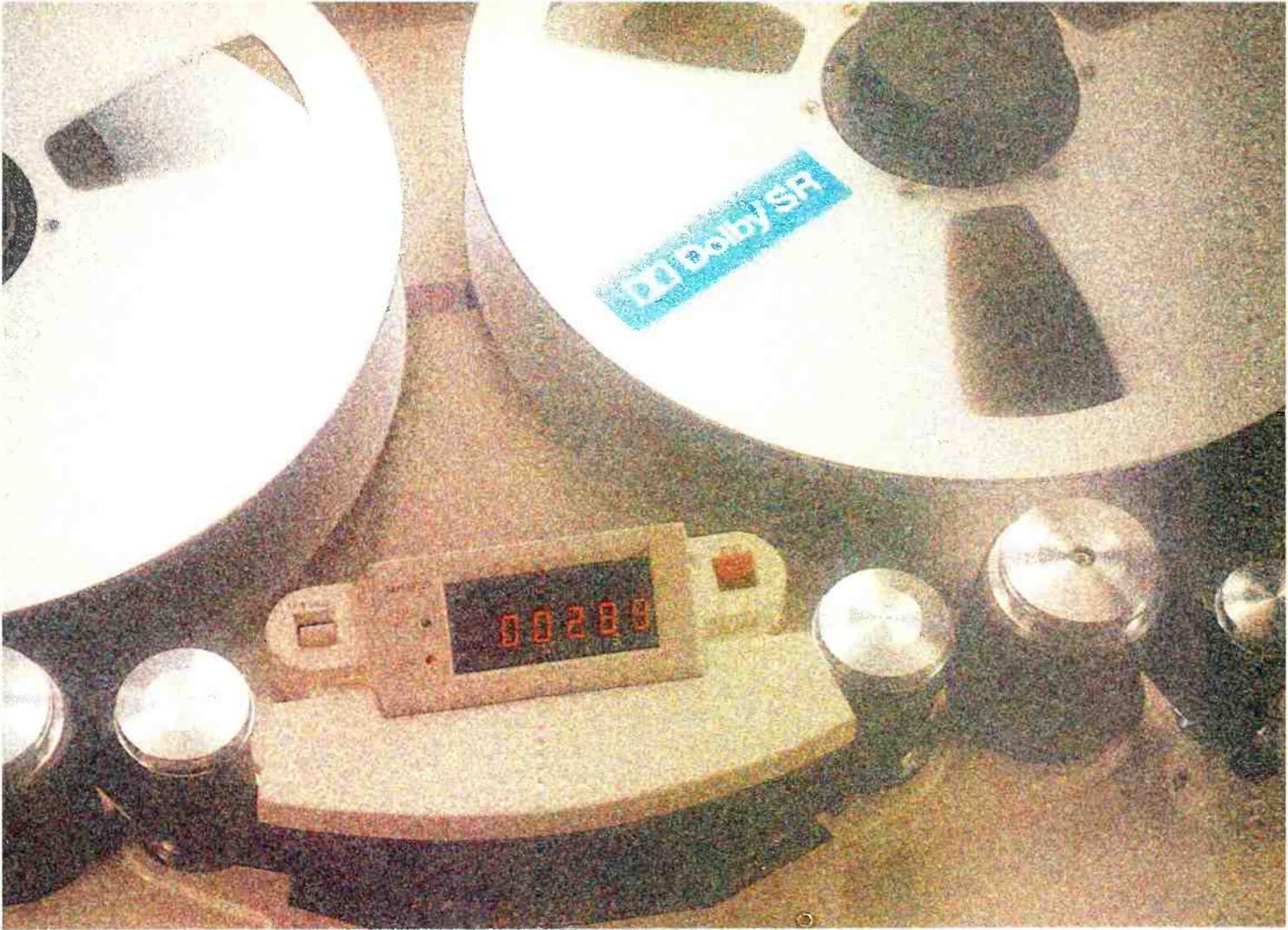
New products _____
 Portable R-DAT recording system with two Series 4000 professional mics and a Panasonic SV-255.
Product line _____
 Acoustic design and construction; educational courses and programs; microphones, studio and PA.
Circle (250)

BrystonVermont (418*)

New products _____
 6B 800W mono amplifier; 8W 8x50W incremental amplifier.
Product line _____
 Amplifiers; crossovers and frequency dividers; microphones, pre-amplifiers.
Circle (251)

BSS Audio (826*)

New products _____
 DPR-901 dynamic EQ; TCS-803 time corrector; TCS-804 dual time corrector; DPR-404 4-channel compressor/de-esser.
Product line _____
 Amplifiers; crossovers and frequency dividers; delays, analog and digital; equalizers; limiters/compressors; maintenance, test and measuring equipment; microphones, pre-amplifiers; noise gates/expanders; transformers, audio.
Circle (464)



Dolby SR. The sound investment for analog multitracks.

When everyone else was making noise about digital, we quietly developed Dolby SR. But it's no secret: Dolby SR makes analog multitrack recording a cost-effective alternative to digital.

Improves the preferred sound of analog

At both 15 and 30 ips, Dolby SR dramatically increases headroom, and virtually eliminates tape hiss and modulation noise. Dynamic range is improved by more than 25 dB over unassisted analog, preserving all the warmth and purity of the original sound.

Increases the return on your investment

Dolby SR upgrades your multitrack at a fraction of digital's cost. Add our Model XP SR (configured for up to 24 channels), or update an existing Dolby mainframe with plug-in SR modules. If you are in the market for a new multitrack, Otari and Studer offer models with Dolby SR built-in.

Simple to use

Set-up is quick and easy with Dolby SR. A unique

Auto Compare feature lets you instantly verify frequency response and playback calibration.

And editing is as convenient as ever, with no need for special equipment.

Worldwide acceptance

Tapes recorded with Dolby SR can go anywhere, anytime. In fact, with more than 25,000 channels in over 30 countries, analog with Dolby SR is a firmly-established format you can't afford to ignore.

Put it to the test

Call your Dolby dealer to arrange for a demo at your facility. Hear for yourself why Dolby SR is

the sound investment for analog multitracks in today's competitive marketplace.



DD Dolby®

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Circle (33) on Rapid Facts Card

California Switch & Signal (1405)

Product line _____
Cable and connectors; maintenance, test and measuring equipment; patchbay and jack panels.
Circle (252)

Capri Digital Studios SRL (56)

Not available at press time.
Circle (253)

Carver Corp. (1417)

New products _____
PT-2400 lightweight high-powered touring amplifier.
Product line _____
Amplifiers.
Circle (254) [See ad page 8](#)

Dwight Cavendish (95)

New products _____
Copymaster 250 video cassette duplicator.
Product line _____
Tape duplication, systems and accessories.
Circle (255)

Cerwin-Vega (88)

Not available at press time.
Circle (444)

Cintas Vac (82*)

Not available at press time.
Circle (445)

Cipher Digital (635*)

New products _____
CDI-328 random access recorder; CDI-1000 VTC reader/translator; CDI-5000P Softouch II audio edit/controller.
Product line _____
Editing systems; recorders, hard disk; synchronizer systems.
Circle (256)

Clear-Com Systems (807)

New products _____
MS-812 Master Station fully programmable communications control center; model 1021 stereo-amplified monitor speaker.
Product line _____
Headphones and headsets; intercom systems; loudspeakers, studio monitoring.
Circle (257)

Community Light & Sound (40)

New products _____
RS220 3-way, electronically controlled loudspeaker system; VBS210 subwoofer system for use with RS220; 220 system controller; RS880 3-way trapezoidal live/playback loudspeaker; VBS415 subwoofer system for use with RS880; 880 system controller.
Product line _____
Loudspeakers, component; loudspeakers, sound reinforcement; loudspeakers, studio monitoring.
Circle (258) [See ad page 104](#)

Concept Design Electronics (740*)

New products _____
CD 9000 automatic cassette loader; DAAD Type R digital audio analog duplication system.
Product line _____
Maintenance, test and measuring equipment; tape duplication, systems and accessories; tape supplies and accessories.

Circle (259)

Conneaut Technologies (128*)

Not available at press time.
Circle (260)

Connectronics (319)

New products _____
PV video patchbays; CR1, CR2 and CR3 cable reels.
Product line _____
Cable and connectors; patchbay and jack panels.
Circle (261)

Countryman Associates (524)

Product line _____
Microphones, studio and PA.
Circle (262) [See ad page 110](#)

Creation Technologies (34)

Not available at press time.
Circle (263)

Crest Audio (801*,Rm. 202A)

Product line _____
Amplifiers; consoles, sound reinforcement.
Circle (264)

Crown International (200*)

New products _____
Macro Reference reference amplifier.
Product line _____
Amplifiers; microphone mixers.
Circle (265) [See ads pages 27, 29](#)

Crystal Semiconductor (447)

New products _____
CS8401 AES/EBU interface line driver; CS4328 18-bit D/A converter; CS5336 16-bit A/D converter.
Product line _____
Miscellaneous equipment and services.
Circle (266)

CST Manufacturing & Sales (819*)

New products _____
PP 2000 cassette imprinter; cassette labeler.
Product line _____
Tape supplies and accessories.
Circle (267)

C-T Audio Marketing (155)

Product line _____
Equipment cases; microphones, pre-amplifiers; microphones, studio and PA; noise gates/expanders; racks and stands.
Circle (249)

DDA (826*)

New products _____
DCM-224V and DCM-12 consoles
Product line _____
Consoles, recording and production; consoles, sound reinforcement.
Circle (465)

D&R Electronics (748*)

New products _____
Marilon Series recording console; Avalon Series recording console; Stylyx Series mixer.
Product line _____
Consoles, automation systems; consoles, recording and production; consoles, sound reinforcement; equalizers; limiters/compressors; microphone mixers.

Circle (268)

[See ad page 34](#)

dbx Professional Products (226*)

New products _____
160RT compressor/limiter; 1531X graphic EQ.
Product line _____
Equalizers; limiters/compressors; noise gates/expanders; noise reduction systems.
Circle (269)

DIC Digital (848*)

Product line _____
Tape supplies and accessories.
Circle (270)

Digidesign (1109*)

New products _____
Deck multitrack software and Pro I/O interface for Sound Tools; Sample Cell 16-voice sample playback card for Macintosh II.
Product line _____
Computers, hardware and peripherals; digital audio workstations; recorders, hard disk; sound samplers.
Circle (271) [See ad page 6](#)

Digital Audio Research Ltd. (1411*)

New products _____
SoundStation/DSP digital signal processing for SoundStation II; DASS 100 digital audio synchronizing system.
Product line _____
Digital audio workstations; editing systems; recorders, hard disk; signal processors, other; time compression/expansion.
Circle (272)

Digital Dynamics (76*)

New products _____
ProDisk-464 hard-disk digital audio recording and editing system and accessories.
Product line _____
Digital audio workstations; recorders, hard disk.
Circle (273)

DLC Design (60)

New products _____
SPEAK IBM/compatible software for designing speakers.
Product line _____
Acoustic design and construction; computer software, business; maintenance, test and measuring equipment.
Circle (274)

DOD Electronics (523*)

New products _____
Ten Audio Logic products; IPS-33B Super Harmony Machine; GSP-21 guitar signal processor with full-function foot controller; Whammy pedal; MEQ 28, MEQ 14 and MEQ 7 MIDI programmable graphic EQs; DOD compact mixer series.
Product line _____
Delays, analog and digital; equalizers; microphone mixers; noise gates/expanders; reverb devices; signal processors, other.
Circle (275)

Dolby Laboratories (326*)

New products _____
MT Series; model 422 reference encoder/decoder; model DP501/DP502 audio coding units.
Product line _____
Noise reduction systems; signal processors,

par•a•gon \ ' par-e-, gän, -gen \ *n*
1 : a model of excellence or perfection, an apparently perfect person or thing

As Defined by Webster's.

Dolby Laboratories, con't.

other.

Circle (276)

See ad page 73

Doremi Labs (1036)

Not available at press time.

Circle (446)

Dorough Electronics (940)

New products _____

40-C telecine transfer level meter; 60-D digital transfer meter.

Product line _____

Limiters/compressors; maintenance, test and measuring equipment; metering devices.

Circle (277)

Drawmer (1113*)

New products _____

DL241 Auto-Compressor dual-gated compressor/limiter; DS301 dual expander/noise gate.

Product line _____

Limiters/compressors; noise gates/expanders; noise reduction systems.

Circle (278)

See ad page 41

Duplication Equipment Brokerage (1045)

New products _____

A-301 manually operated Norelco Box overwrapping machine with pre-cut cellophane and polypropylene films.

Product line _____

Miscellaneous equipment and services.

Circle (279)

Dupltronics (1006)

New products _____

DM 400 Series digital master high-speed cassette duplication system.

Product line _____

Computers, hardware and peripherals; power conditioning/standby power systems; tape duplication, systems and accessories; tape machines, digital.

Circle (280)

Dynacord (53)

Not available at press time.

Circle (447)

E-mu Systems (Rm. 211B)

New products _____

Emulator III digital sound production system; Emax II 16-bit digital sound system; Proteus/1 and Proteus/2 digital sound modules; Performance 16-bit true-stereo piano modules.

Product line _____

Digital audio workstations; libraries, sampled sounds; libraries, sound effects; MIDI hardware.

Circle (281)

East-West Communications (25)

Not available at press time.

Circle (282)

Eastern Acoustic Works (244*)

New products _____

KF-1000 Virtual Array system; a high-definition stage monitor — details at show.

Product line _____

Loudspeakers, component; loudspeakers, sound reinforcement; loudspeakers, studio monitoring.

Circle (283)

Ediflex Systems (1119*)

New products _____

Optiflex digital multitrack recorder.

Product line _____

Digital audio workstations; editing systems; recorders, hard disk.

Circle (284)

Electro Sound (730*)

New products _____

4800 digital control slave; ES 8000 with improved power loop bin; ES 4300 Series quality control system.

Product line _____

Tape duplication, systems and accessories.

Circle (286)

Electro-Voice (Rm. 205)

New products _____

DML-1152MC DeltaMax slant floor monitor; MT-2 concert speaker system.

Product line _____

Amplifiers; consoles, sound reinforcement; crossovers and frequency dividers; equalizers; loudspeakers, component; loudspeakers, sound reinforcement; loudspeakers, studio monitoring; microphone mixers; microphones, studio and PA; microphones, wireless and RF.

Circle (287)

See ad inside front cover

El Mar Plastics (31)

Not available at press time.

Circle (448)

Enterprise Corporation of America(1043)

New products _____

CD CATS SA2 compact disk computer-aided test system.

Product line _____

Computers, hardware and peripherals; computer software, business; record/CD manufacturing.

Circle (288)

Euphonix (90*)

New products _____

Crescendo audio mixing system.

Product line _____

Consoles, automation systems; consoles, digital; consoles, recording and production.

Circle (289)

Eventide (208*)

New products _____

H3000 SE/B/VW/HS322 "Kitchen Sink" Ultra-Harmonizer.

Product line _____

Delays, analog and digital; pitch shifters; reverb devices; signal processors, other; sound samplers; time compression/expansion.

Circle (290)

Fairlight (45*)

Not available at press time.

Circle (291)

Feltway S.A. (14)

Not available at press time.

Circle (292)

Ferrofluidics (84)

New products _____

APG 900 Series audio-grade ferrofluid.

Product line _____

Acoustic treatment materials; loudspeakers,

component; loudspeakers, sound reinforcement.

Circle (293)

FM Acoustics (4)

New products _____

Forcelines 3 transfer cable.

Product line _____

Amplifiers; cable and connectors; crossovers and frequency dividers.

Circle (449)

Focusrite Audio Engineering (1*)

New products _____

Focusrite Studio console; ISA 230 dual-channel dynamics module.

Product line _____

Consoles, automation systems; consoles, recording and production; equalizers; limiters/compressors; microphones, pre-amplifiers; noise gates/expanders; signal processors, other.

Circle (294)

Fostex Corp. of America (820*)

Product line _____

Computer software, MIDI; consoles, recording and production; headphones and headsets; loudspeakers, studio monitoring; microphones, studio and PA; MIDI hardware; patchbay and jack panels; synchronizer systems; tape machines, analog; tape machines, cassette and cartridge; tape machines, DAT.

Circle (295)

See ad page 93

Fujii International (946)

New products _____

Greencorp Magnetics audio cassette pancake tapes; Teccon Enterprises magnetic recording replacement heads.

Product line _____

Recording heads, replacement, sales and service; recording tape, audio.

Circle (296)

Full Sail Recorders (548*)

Product line _____

Educational courses and programs.

Circle (297)

Furman Sound (48)

New products _____

SP-20 half-rack power amplifier; AR-Pro ac line voltage regulator.

Product line _____

Amplifiers; equalizers; headphone mixing systems; limiters/compressors; metering devices; microphone mixers; noise gates/expanders; patchbay and jack panels; power conditioning/standby power systems.

Circle (298)

See ad page 109

Gauss (726*)

New products _____

3588 coaxial loudspeaker.

Product line _____

Loudspeakers, component; tape duplication, systems and accessories.

Circle (299)

See ad page 97

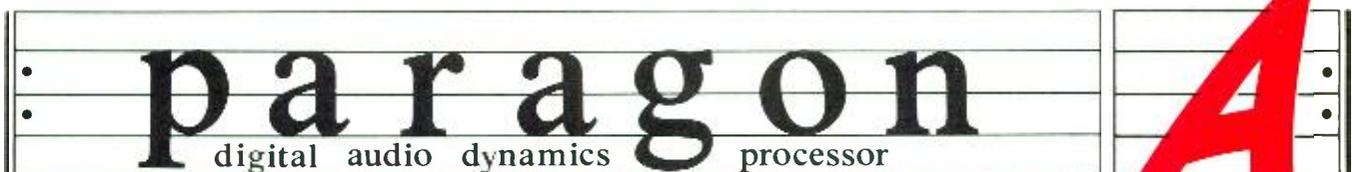
Gefen Systems (445)

New products _____

GS-006 interface unit for the Sony CDK-006; M&E organizer with AMS AudioFile interface;

As Re-defined by Audio Animation:

par•a•gon \ ' par-e-, gän, -gen \ *n*
1: a fully digital audio dynamics processor for all broadcast environments. **2:** *Featuring:* No clipper, meaning no clipping artifacts; 4-band compressor and limiter; 9" VGA touch-screen equipped video monitor; factory-loaded sound library; on-air A/B comparison; remote controllable. *User installable options* will include a 10-band Graphic EQ, Stereo Generator and AES/EBU digital I/O.



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A U D I O
ANIMATION
I N C O R P O R A T E D

Circle (35) on Rapid Facts Card

www.americanradiohistory.com

Gefen Systems, con't.

Soundtouch music system for radio and cable music automation; TrackWriter (Macintosh version) ADR and spotting software; The Classics sound effects library.

Product line _____

Compact disc players; computer software, studio applications; libraries, music production; libraries, sound effects.

Circle (300)

Genelec Oy (1105)

New products _____

530B and 530BNF active monitoring speakers; 1033A control room monitor.

Product line _____

Amplifiers; loudspeakers, studio monitoring.

Circle (450)

Gentner Electronics (1308)

Product line _____

Amplifiers; microphone mixers; routing switchers, audio.

Circle (301)

Gepco International (142)

Product line _____

Cable and connectors; patchbay and jack panels.

Circle (302)

GML (747*)

New products _____

Series 2000 Moving Fader automation; 8900 2-channel compressor/limiter.

Product line _____

Consoles, automation systems; equalizers; faders; limiters/compressors; microphones, pre-amplifiers.

Circle (303)

Gold Line/Loft (521)

New products _____

PN-3 gated pink noise generator/timer; CBM-2 Celebrity Boundary mic; SPL 120 digital portable SPL meter; Loftech TS-2 audio test set.

Product line _____

Crossover and frequency dividers; headphone mixing systems; limiters/compressors; maintenance, test and measuring equipment; metering devices; microphones, studio and PA; miscellaneous equipment and services; noise gates/expanders; signal processors, other.

Circle (304)

Gotham AG (846)

Not available at press time.

Circle (305)

Gotham Audio Corp. (712*)

New products _____

Neumann GFM 132 boundary layer microphone; Harmonia Mundi BW102/50 sampling frequency synchronizer; Gotham SPOT 90 CD recording system with R-DAT source.

Product line _____

Computers, hardware and peripherals; computer software, business; computer software, studio applications; consoles, digital; disc mastering systems; equalizers; limiters/compressors; microphones, booms, stands and accessories; microphones, studio and PA; noise reduction systems; record/CD manufacturing; signal processors, other.

Circle (306)

Goutam Elect. Products Ltd. (38*)

Not available at press time.

Circle (307)

Greencorp Magnetics Pty. Ltd. (946)

New products _____

XD38, XD383 and CR22 high-speed duplicating and blank cassette pancake tapes.

Product line _____

Recording tape, audio.

Circle (466)

The John Hardy Company (13)

New products _____

MPC-1R mic pre-amp.

Product line _____

Amplifiers; microphones, pre-amplifiers.

Circle (308)

See ad page 113

Harrison by GLW (312*)

New products _____

ARS-9 audio routing switcher; Series Ten console.

Product line _____

Computer software, studio applications; consoles, automation systems; consoles, recording and production; consoles, sound reinforcement; metering devices; routing switchers, audio.

Circle (309)

See ad page 61

HEDCO (1044)

New products _____

Pro-Bel 6050 A/D-D/A converters; Pro-Bel 6063 digital DAs; Pro-Bel 5012 digital audio waveform generator.

Product line _____

Amplifiers; routing switchers, audio; video equipment, all.

Circle (310)

Hybrid Arts (15*)

New products _____

ADAP II digital audio recorder/editor.

Product line _____

Digital audio workstations.

Circle (311)

See ad page 106

Heino Ilsemann GmbH (722*)

Product line _____

Tape duplication, systems and accessories.

Circle (312)

Industrial Strength Industries (446)

Product line _____

Amplifiers; consoles, sound reinforcement; crossovers and frequency dividers; delays, analog and digital; drum machines; equalizers; reverb devices.

Circle (313)

Innovative Electronic Designs (519)

New products _____

2000 UDAPS universal digital audio processing system; 596S speaker circuit sensor for use with IED 596 monitor/test system.

Product line _____

Amplifiers; microphone mixers; routing switchers, audio; signal processors, other.

Circle (314)

Institute of Audio Research (1016)

New products _____

650-hour recording, engineering and production (REP) program; 930-hour video technology program (VTP).

Product line _____

Educational courses and programs.

Circle (315)

Intelix (745)

New products _____

MIND Control system.

Product line _____

Consoles, sound reinforcement; headphone mixing systems; routing switchers, audio.

Circle (316)

Jan-AI Cases (89)

Not available at press time.

Circle (451)

Japan America Electronics (1416)

Product line _____

Recording tape, audio; tape machines, DAT; tape supplies and accessories;

Circle (317)

JBL Professional (430*)

New products _____

SR4700 Series loudspeaker systems; Control SB-1 subwoofer; Control SB-5 subwoofer; SR6600 Series amplifiers; ES Series amplifiers.

Product line _____

Amplifiers; loudspeakers, component; loudspeakers, sound reinforcement; loudspeakers, studio monitoring.

Circle (318)

See ad back cover

Jensen Transformers (605)

Not available at press time.

Circle (319)

J.L. Cooper (130*)

New products _____

Magi II console automation system; Magi III internal retrofit automation system; SA-1000 stage automation system; Synapse MIDI patchbay processor; Syncmaster Macintosh synchronizer interface; PPS-100 SMPTE synchronizer.

Product line _____

Computers, hardware and peripherals; computer software, MIDI; computer software, studio applications; consoles, automation systems; consoles, sound reinforcement; digital audio workstations; MIDI hardware; synchronizer systems.

Circle (452)

Josephson Engineering (1041)

New products _____

C603A transformerless low-distortion microphone; KA600 switchable pattern capsule; KA800 figure-eight capsule.

Product line _____

Microphones, pre-amplifiers; microphones, studio and PA; miscellaneous equipment and services.

Circle (320)

JRF Magnetic Sciences (330)

New products _____

Magnetic head replacements for the Ampex MM1100 and 1200 24-track, Tascam 80-8 and 86-16, Otari MTR10 and MTR12 for low-speed mastering; replacements for 16/35mm film recorders; PAW P/N PTC-50TTP Pilot Tone test tape; PAW Seamless/Gapless retrofit kit for Otari MTR10 and 12 machines; TC-50 center track time cod conversion kits with EC-BII option.

Product line _____

Maintenance, test and measuring equipment;

AE-4

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300 WATTS CONTINUOUS,
1200 WATTS PEAK

MAXIMUM SOUND PRESSURE:
121dB CONTINUOUS, 126dB PEAK

DISPERSION:
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DIMENSIONS:
23" HIGH, 14" WIDE, 14" DEEP



Apogee is proud to be recognized by the audio professionals who nominated our AE-4 speaker system in not one, but two categories of the 1990 TEC Awards. We thank the nominating committee for this honor, and we also thank the consultants, contractors and sound companies who specified and installed AE-4 systems throughout the world.

The AE-4 loudspeaker is a two-way, electronically coupled system providing high acoustic output, smooth response and very low distortion. Designed for use with the new generation Advanced Technology P-4 Processor, the AE-4 system is a versatile performer fulfilling a wide range of music and speech reinforcement applications.

Long acknowledged as the leader in sonically transparent systems technology, Apogee's new "P" series processor brings to the AE-4 system an integral subwoofer output and an advanced "User-Preset" mode with electronic 'lock-out'. The subwoofer output allows ready use of the optional SB subwoofer, for an economical means of extending the bass response while increasing overall power output capability.

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Circle (38) on Rapid Facts Card

www.americanradiohistory.com

miscellaneous equipment and services; recording heads, replacement, sales and service; synchronizer systems; tape duplication, systems and accessories.
Circle (321)

JVC Professional Products (121*)

New products _____
 DS-DT9000 professional R-DAT recorder.
Product line _____
 Disc mastering systems; limiters/compressors; tape machines, DAT.
Circle (322) See ad page 45

KABA (936*)

Product line _____
 Tape duplication, systems and accessories.
Circle (323) See ad page 99

Kenwood USA (57*)

New products _____
 DA-7000 CD encoder; DD-7000 CD writer.
Product line _____
 Disc mastering systems; record/CD manufacturing.
Circle (324)

King Instrument Corp. (724*)

Not available at press time.
Circle (325)

Klark-Teknik Electronics (826*)

New products _____
 DN735 digital VTR editing "lay-off" recorder.
Product line _____
 Delays, analog and digital; equalizers; limiters/compressors; maintenance, test and measuring equipment; noise gates/expanders; reverb devices; sound samplers.
Circle (326)

Klipsch & Associates (141)

New products _____
 KP-115-SW 15-inch subwoofer.
Product line _____
 Loudspeakers, component; loudspeakers, sound reinforcement; loudspeakers, studio monitoring; miscellaneous equipment and services.
Circle (327) See ad page 89

Korg USA (Rm. 216C)

New products _____
 S3 rhythm workstation; C-50 concert piano; WS Wavestation synthesizer; DAW digital audio workstation.
Product line _____
 Delays, analog and digital; digital audio workstations; drum machines; reverb devices; signal processors, other; synthesizers and keyboards.
Circle (328)

Lester Audio Laboratories (1033)

New products _____
 DAS-2000 64-channel audio-to-optical multiplexer fiber optic sound transmitter.
Product line _____
 Routing switchers, audio.
Circle (329)

Lexicon (Rm. 208)

New products _____

300 digital effects system.
Product line _____
 Consoles, digital; consoles, recording and production; delays, analog and digital; digital audio workstations; reverb devices; signal processors, other; time compression/expansion.
Circle (330) See ad pages 48 A-F

Lindos Electronics (1414)

Not available at press time.
Circle (331)

Lone Wolf (70)

New products _____
 MidiHuG 8 and MidiHuG16 MIDI patchbay/processors with full merging on all inputs.
Product line _____
 Computers, hardware and peripherals; computer software, MIDI; computer software, studio applications; MIDI hardware.
Circle (332)

Mag-Zon (1034)

Not available at press time.
Circle (333)

Magnefax International (725)

New products _____
 3081 4-track cassette duplicator; HP-110 continuous belt-tape degausser.
Product line _____
 Tape duplications, systems and accessories.
Circle (334)

Mark of the Unicorn (945)

New products _____
 Video Time Piece VITC/MIDI/SMPTE synchronizer with built-in character generator; Video Distribution Amplifier 3x15 video signal routing device.
Product line _____
 Synchronizer systems.
Circle (335)

Marshall Electronic (Rm. 201)

Not available at press time.
Circle (336)

Marshall Electronics (340)

New products _____
 Molded cable assemblies.
Product line _____
 Cable and connectors.
Circle (337)

Martin America/Martin Audio (1027*)

New products _____
 F1 2-box version of the VRS1000 sound reinforcement speaker system; CT Series.
Product line _____
 Loudspeakers, sound reinforcement.
Circle (338)

McCauley Sound (1042)

Not available at press time.
Circle (339)

Meyer Sound Laboratories (626*)

New products _____
 VX-1 stereo program equalizer; DS-2 arrayable mid-bass loudspeaker.
Product line _____
 Amplifiers; equalizers; loudspeakers, sound reinforcement; loudspeakers, studio monitoring.
Circle (340)

MicroAudio (11)

New products _____
 DCM 6200 programmable, tamper-proof 6x2 microphone mixer.
Product line _____
 Computer software, studio applications; equalizers; microphone mixers.
Circle (341) See ad page 87

Midas (826*)

New products _____
 XL3 mixing desk; XL88 outboard matrix mixer.
Product line _____
 Consoles, sound reinforcement.
Circle (468)

Milab (826*)

New products _____
 VM-44 small diaphragm condenser mic; LSR-2000 handheld condenser mic.
Product line _____
 Microphones, studio and PA.
Circle (469)

Minim Electronics Ltd. (332)

Not available at press time.
Circle (342)

Monster Cable Products (625)

Product line _____
 Cable and connectors.
Circle (343)

Morenz Development (1047)

New products _____
 SA-1000 power amplifier.
Product line _____
 Amplifiers.
Circle (344)

Motorola (831*)

New products _____
 New audio applications on 56001 fixed-point digital signal processor.
Product line _____
 Signal processors, other.
Circle (345)

Nady Systems (317)

New products _____
 WA-150 wireless speaker system.
Product line _____
 Headphones and headsets; intercom systems; microphones, wireless and RF; MIDI hardware.
Circle (346)

Nagra USA (5*)

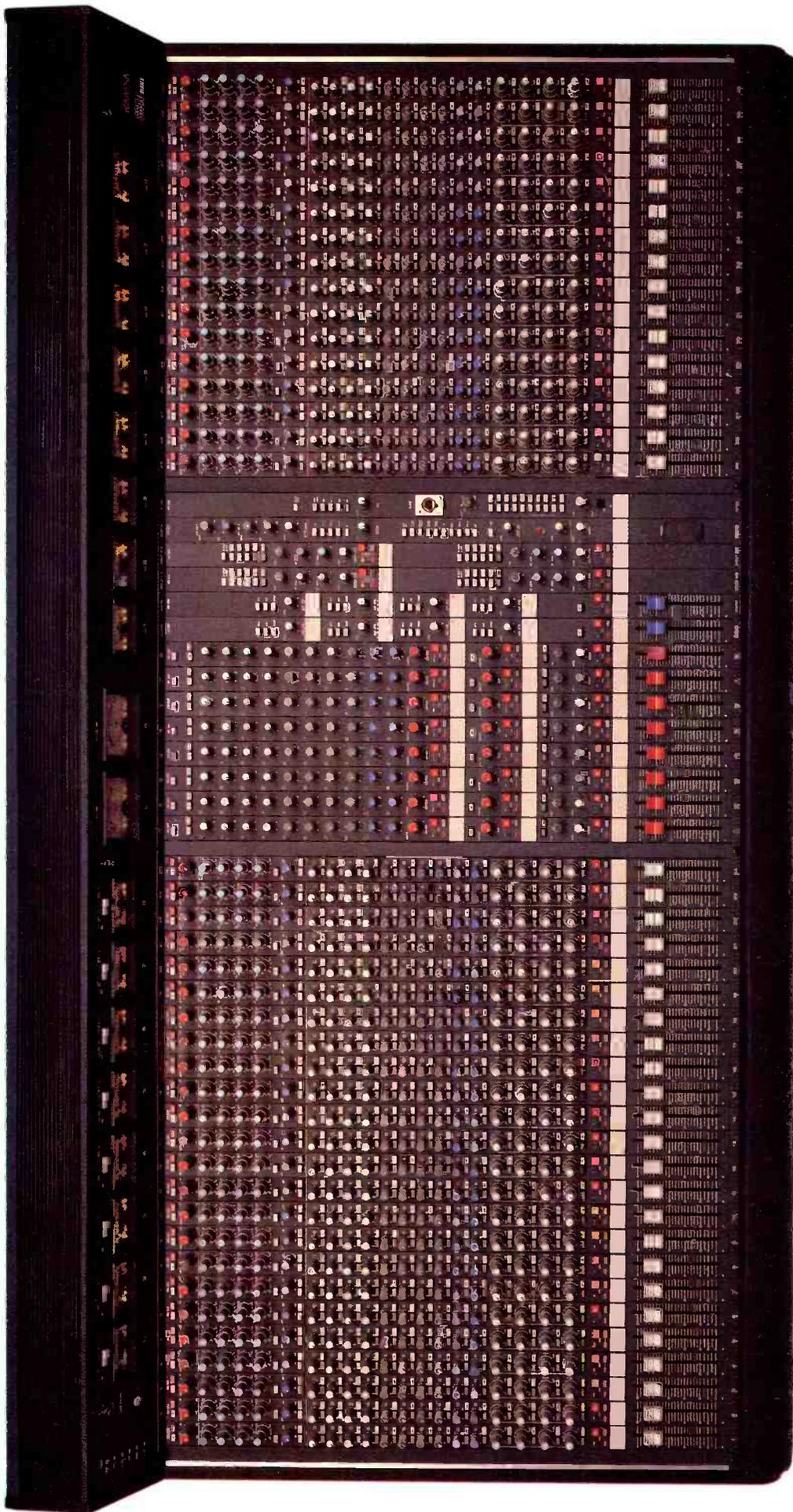
Not available at press time.
Circle (347)

Nakamichi America (718)

New products _____
 1000 digital audio recording system; MR-1 3-head discrete cassette deck; MR-2 2-head cassette deck.
Product line _____
 Tape machines, cassette and cartridge; tape machines, DAT.
Circle (348)

Neotek (615)

New products _____
 Encore console series for film dubbing and film-style TV post-production.
Product line _____
 Consoles, recording and production.
Circle (349)



RAMSA WRS-840 Monitor Console. Just ask these sound companies: AI-Audio (Frank Sinatra, Liza Minelli, The Temptations, Tony Bennett, K.T. Oslin, Gladys Knight), **Burns Audio** (Academy Awards, Grammy Awards, Golden Globe Awards, Academy of Country Music Awards, Kennedy Center Honors, San Diego Civic Auditorium (Summer Season), San Diego Starlight Bowl (Summer Season), Soul Train Music Awards, Las Vegas Spring Mountain Ranch (Summer Concert Series), Warner Brothers Re-dedication Ceremonies), **dB Sound, Chicago** (Aerosmith, Stryper, New Order, P!nk, Sugarcube, Prince), **Eighth Day Sound** (Erasure, Bad English, Alice Cooper, Lisa Stansfield, Jethro Tull, The Escape Club, The Tom-Tom Club/Deborah Harry/Ramones/Jerry Harrison Tour, Tom Jones, Kool & The Gang), **Maryland Sound** (David Bowie, Neil Diamond, Debbie Gibson, Anita Baker, Kenny G, Luther Vandross, Hall & Oates, Miami Sound Machine, Neil Young, David Lee Roth, Belinda Carlisle, Melissa Manchester, Patti LaBelle, Paul Simon, George Benson, Steve Miller, Pink Floyd, Roberta Flack, Dolly Parton, Ann Murray, Joe Jackson, Boy George, Stevie Wonder, Earth, Wind and Fire, The Cure, Whitney Houston), **Naked Zoo** (Wayne Newton, The Commodores, Roger Whitaker), **Pro Media** (Luciano Pavarotti), **See Factor** (Lou Reed, Smokey Robinson, David Byrne), **Sound Image** (Barbara Mandrell, Jackson Browne, John Denver, Jimmy Buffett, The Robert Cray Band), **Sun Sound Audio** (Joe Cocker, Harry Belafonte, The Cult). For information, contact: Ramsa, 6550 Katella Ave., Cypress, CA 90632, 714-373-7278.

RAMSA

Panasonic

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Circle (37) on Rapid Facts Card

Professional Audio Systems, cont'

loudspeakers, component; loudspeakers, sound reinforcement; loudspeakers, studio monitoring.

Circle (369)

Pygmy Computer Systems (932)

New products

AD-2 A/D converter.

Product line

Miscellaneous equipment and services; signal processors, other.

Circle (370)

QSC Audio Products (640*)

New products

EX 4000 power amplifier.

Product line

Amplifiers.

Circle (371)

See ad page 67

Quad Eight Electronics (800*)

New products

Panpot update on all console lines.

Product line

Consoles, automation systems; consoles, recording and production; equalizers; limiters/compressors.

Circle (372)

See ad page 113

Requested Monitoring Systems (24)

Product line

Loudspeakers, studio monitoring.

Circle (373)

Radian Audio Engineering (133*)

New products

MS-12 Monitor Standard system with 12-inch coaxial loudspeaker; MS-809 for direct retrofit of the UREI 809 system; MS-10 Monitor Standard system with 10-inch coaxial loudspeaker; 5200 Series high-output versions of coaxial loudspeakers in 8-, 10- and 12-inch cast frame formats.

Product line

Crossovers and frequency dividers; loudspeakers, component; loudspeakers, sound reinforcement; loudspeakers, studio monitoring.

Circle (374)

See ad page 35

Rane Corp. (1031)

New products

Commercial EQ Series: MQ15, MQ30, GQ15 and GQ30; FPL44 quad program limiter; FNG44 quad noise gate.

Product line

Amplifiers; crossovers and frequency dividers; equalizers; microphone mixers; noise gates/expanders; signal processors, other.

Circle (375)

See ad pages 24, 25

R•E•P (347*)

Stop by to meet R•E•P's sales and editorial staff, including Cameron Bishop, group vice president; Dennis Milan, publisher; Dan Torchia, editor; Mike Joseph, technical editor; Stan Kashine, East Coast sales rep; David Ruttenberg, Midwest sales rep; West Coast sales reps Herb Schiff, Jason Perlman and Kelly Dougherty; and Nick McGeachin, international sales rep.

The sales and editorial staff of Sound & Video Contractor and Broadcast Engineering will also be at booths 347 and 349. All three magazines are Intertec publications.

Renkus-Heinz (701*)

New products

EASE acoustical design and analysis software program; CM121 loudspeaker; C-1 System coaxial point-source speaker system.

Product line

Amplifiers; loudspeakers, component; loudspeakers, sound reinforcement; loudspeakers, studio monitoring.

Circle (376)

Richmond Sound Design (62)

Not available at press time.

Circle (455)

See ad page 118

Roland Corp. U.S. (Rm. 207)

New products

DM-80 digital multitrack hard-disk recorder; S-770 digital sampler; R/V/S NF-25 powered monitors; R/V/S NF-100 powered monitors; Sync Box; RSS 3D sound system; Q-Box synchronization box; M-480 48-channel mixer; SN-550 digital noise eliminator; SV-30 personal MIDI studio system.

Product line

Computer software, MIDI; delays, analog and digital; drum machines; equalizers; libraries, sampled sounds; loudspeakers, studio monitoring; MIDI hardware; recorders, hard disk; reverb devices; sequencers; signal processors, other; sound samplers; synthesizers and keyboards.

Circle (377)

See ad pages 12, 13

Roldex Industries (1007*)

New products

STF-2 automatic cassette imprinter; A-5 automatic platemaker.

Product line

Tape duplication, systems and accessories.

Circle (378)

Rolls Corp. (744)

New products

HR210 dual 10-band EQ; HR250 stereo power amp.

Product line

Amplifiers; equalizers; microphone mixers; pitch shifters; signal processors, other.

Circle (379)

RPG Diffusor Systems (341)

New products

Trade Show Audio Suite; Diffractal full-spectrum 1- and 2-D fractal diffuser within a diffuser; FlutterFree non-absorptive flutter control architectural molding; Chorister QRD choral acoustical shell; Ensemble QRD orchestral and chamber group shell; Biffusor QRD diffuser performance partition; Omnifusor 2-D broad-bandwidth diffuser; QRDX diffuser based on new number theory sequences.

Product line

Acoustic design and construction; acoustic treatment materials; miscellaneous equipment and services.

Circle (380)

Saki Magnetics (627)

New products

Replacement heads for the Studer A-80 and A-800 series recorders.

Product line

Recording heads, replacement, sales and service.

Circle (381)

See ad page 95

Samson Technology/Soundtracs Plc.(540*)

New products

VLP wireless system; Super TD wireless system; UHF Series.

Product line

Microphones, wireless and RF.

Circle (382)

Sanken/Audio Intervisual Design (1026*)

New products

COS-11 ultra-miniature high-performance electret lavalier microphone; COS-11 PT ultra-miniature pigtail version.

Product line

Microphones, booms, stands and accessories; microphones, studio and PA; microphones, wireless and RF.

Circle (383)

Schoeps/Posthorn Recordings (1000)

New products

KCY/VMS021B miniature stereo microphone system.

Product line

Metering devices; microphones, booms, stands and accessories; microphones, studio and PA; microphones, wireless and RF.

Circle (384)

Seck (536*)

Product line

Consoles, recording and production; consoles, sound reinforcement.

Circle (385)

Selco/Sifam (720)

New products

47mm collet control knobs.

Product line

Miscellaneous equipment and services.

Circle (386)

Sellmark Electronic Services (1101*)

New products

OMITRAC plastic faders and motorized faders.

Product line

Consoles, automation systems.

Circle (387)

Sennheiser Electronics Corp. (609*)

New products

MKH 60 short shotgun condenser microphone; HD450 studio headphone.

Product line

Headphones and headsets; microphones, booms, stands and accessories; microphones, studio and PA; microphones, wireless and RF; miscellaneous equipment and services.

Circle (388)

Sescom (206)

Product line

Amplifiers; cable and connectors; crossovers and frequency dividers; equalizers; microphone mixers; microphones, pre-amplifiers; noise gates/expanders; patchbay and jack panels; signal processors, other; transformers, audio.

Circle (389)

Shure Bros. (107*)

New products

To be announced at show.

Product line

Amplifiers; headphones and headsets; microphone mixers; microphones, booms, stands and accessories; microphones, pre-amplifiers; mi-



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* Standard on X-880's sold in U.S. and Canada only

Shure Bros., *cont.*

crophones, studio and PA; microphones, wireless and RF.

Circle (390)

SigTech (formerly Cambridge Signal Technologies) (18)

New products

ASC 1000 adaptive signal correction digital filtering unit for automatic analysis and real-time compensation of loudspeaker and room interaction.

Product line

Signal processors, other.

Circle (391)

Singular Solutions (1002)

Not available at press time.

Circle (392)

Sliger Sierra Designs (132)

Not available at press time.

Circle (456)

Society of Professional Audio Recording Services (SPARS) (431)

Product line

SPARS is a non-profit professional trade organization whose members include prominent studios, manufacturers of professional equipment, recording schools and colleges, small personal home-use studios, individual engineers and producers. The goal of SPARS is to promote worldwide communication among all those who make and use professional audio equipment, to foster high-quality educational programs for future engineers and producers, and to promote the economic well-being of the recording service industry as a whole.

Circle (399)

Solid State Logic (812*)

Product line

Consoles, automation systems; consoles, recording and production; digital audio workstations; equalizers.

Circle (393)

Sonex Acoustical/Ilbruck (43*)

Not available at press time.

Circle (394)

Sonic Perceptions (49)

New products

HRS II Aachenhead recording system.

Product line

Consoles, digital; consoles, recording and production; headphones and headsets; microphones, studio and PA; miscellaneous equipment and services.

Circle (285)

Sony Professional Audio (300*)

New products

7000 Series 4-head DAT recorders with time code; MXP-210 and MXP-290 mixers; BVG-200 portable time code reader/generator; MXP-2900 Series console.

Product line

Consoles, automation systems; consoles, recording and production; disc mastering systems; editing systems; equalizers; headphones and headsets; limiters/compressors; metering devices; microphone mixers; microphones,

booms, stands and accessories; microphones, studio and PA; microphones, wireless and RF; MIDI hardware; noise gates/expanders; record/CD manufacturing; recording tape, audio; reverb devices; tape machines, analog; tape machines, cassette and cartridge; tape machines, DAT; tape machines, digital.

Circle (395)

See ads pages 17, 65

Soundcraft (526*)

New products

Products based on the Delta console.

Product line

Consoles, automation systems; consoles, recording and production; consoles, sound reinforcement.

Circle (396)

See ad page 33

Soundcraftsmen (63)

New products

900X2 MOSFET power amplifier; DJ900 MOSFET power amplifier.

Product line

Amplifiers; equalizers; patchbay and jack panels.

Circle (397)

Sound Ideas (441)

New products

Series 1000, 2000, 3000 and 4000 sound effects libraries; Series LF LucasFilm sound effects library; PML production music library.

Product line

Libraries, music production; libraries, sound effects.

Circle (398)

Soundmaster International (146*)

New products

Soundmaster audio editing system; Syncram random-access digital audio modules.

Product line

Computers, hardware and peripherals; digital audio workstations; editing systems; libraries, music production; libraries, sampled sounds; libraries, sound effects; recorders, hard disk; sound samplers; synchronizer systems.

Circle (458)

See ad page 116

Sound Technology (139)

Not available at press time.

Circle (457)

Soundtracker Pty. Ltd. (98)

Not available at press time.

Circle (459)

Spatial Sound (1042)

New products

SSP-100 Spatial Sound Processor.

Product line

Consoles, automation systems; signal processors, other.

Circle (400)

Spectral Synthesis (12)

New products

Digital Studio board and sampler Pak 1 and 2 with Windows 3.0 software interface for IBM PC/AT; ADDA-2218 18-bit digital audio converter for multitracking; AudioVision 16-track sample editor with Windows 3.0.

Product line

Computers, hardware and peripherals; computer software, studio applications; digital audio workstations; editing systems; recorders, hard

disk; signal processors, other; sound samplers; time compression/expansion.

Circle (401)

See ad page 114

Spectrum Signal Processing (1121)

New products

600-00752 dual DSP56001 processor board; 600-00761 dual-channel analog I/O module.

Product line

Signal processors, other.

Circle (402)

See ad page 102

Star Case (443)

New products

Reusable shipping cases and EIA rackmounts for professional audio sound reinforcement, computer and AV/TV equipment.

Product line

Computers, hardware and peripherals; equipment cases; miscellaneous equipment and services; racks and stands; video equipment, all.

Circle (403)

Stellavox (843)

New products

Prototype of Stelladat portable professional R-DAT.

Product line

Tape machines, analog; tape machines, DAT.

Circle (404)

Stewart Electronics (547)

New products

PA-50U/B single-channel half-rack space stereo power amplifier; PA-100U/B single half-rack space stereo power amplifier; PA-500 2-rack space dual mono amplifier.

Product line

Amplifiers; microphone mixers; miscellaneous equipment and services.

Circle (405)

Strand Magnetics (433)

New products

V-0 video cassette shells.

Product line

Miscellaneous equipment and services.

Circle (406)

Studer Revox America (111*)

New products

D820-48 48-channel DASH recorder; Dyaxis 2+2 4-channel digital audio hard-disk recording and editing suite; A827-24 multitrack recorder; A820-24 multitrack recorder with Dolby SR; A727 and A730 professional CD players; 961 and 962 portable mixing consoles; C274 and C278 multitrack recorders.

Product line

Compact disc players; consoles, recording and production; digital audio workstations; recorders, hard disk; tape machines, analog; tape machines, digital.

Circle (407)

Success Specialty Sales Corp. (607)

New products

1/4-inch acetate and polyester splicing tape for recording studios.

Product line

Tape supplies and accessories.

Circle (408)

Summit Audio (1421)

New products

990 op-amp.

Product line _____

Amplifiers; equalizers; limiters/compressors; microphones, pre-amplifiers; signal processors, other.

Circle (409)

Sunkyong Magnetic/America (920*)

New products _____

UCR pure chrome tape for music duplication; SKX premium grade ferric tape; SH ferric tape for voice duplication.

Product line _____

Recording tape, audio.

Circle (410) See ad page 47

Swire Magnetics (1018*)

New products _____

C-60 and C-90 audio pancakes for loading and duplication; Video V-0s and Audio C-0s; custom video loading services in California and North Carolina, lengths from T-01 to T-150 available.

Product line _____

Recording tape, audio.

Circle (411)

Switchcraft (1117)

Product line _____

Cable and connectors; miscellaneous equipment and services; patchbay and jack panels.

Circle (412) See ad page 15

Symetrix (901*)

New products _____

4-track random-access recorder/editor/mixer/signal processor; SX206 multi-dynamics processor.

Product line _____

Amplifiers; digital audio workstations; equalizers; limiters/compressors; metering devices; noise gates/expanders; noise reduction systems; signal processors, other.

Circle (413)

Tannoy/TGI North America (926*)

New products _____

Monitor Series reference studio monitors.

Product line _____

Loudspeakers, studio monitoring.

Circle (414) See ad page 63

Tape Automation (648*)

New products _____

Interchange Evaluator; Cassette Marker for the Xenon loader; Conveyor Systems infeed/outfeed auto feed system; Tap Lode process control system for product verification.

Product line _____

Maintenance, test and measuring equipment; tape duplication, systems and accessories; tape machines, cassette and cartridge.

Circle (415)

Tascam (103*)

New products _____

Portastudio; M2500 Series 8-bus mixing consoles; CD-301 professional CD; 24-track recorder.

Product line _____

Compact disc players; consoles, digital; consoles, recording and production; consoles, sound reinforcement; MIDI hardware; synchronizer systems; tape machines, cassette and cartridge; tape machines, DAT; tape machines, digital.

Circle (416) See ad pages 36, 37

T.C. Electronic (841)

New products _____

TC6032 graphic EQ remote controller; 2290 dynamic digital delay processor; 1128 programmable graphic EQ/analyzer; 1280 stereo digital/audio delay; 1380 multi-tap digital/audio delay; 2240HS high-speed parametric EQ.

Product line _____

Computer software, MIDI; computer software, studio applications; delays, analog and digital; equalizers; maintenance, test and measuring equipment; signal processors, other; sound samplers.

Circle (417) See ad page 100

TDK Electronics (85*)

New products _____

CA-QL301 audio interconnect cables; Professional Master Series audio and video recording tape; NF-C09B clamp-on ferrite electromagnetic interference filter; CA-QL601 speaker cable; Super Accurate cables with (99.997%) monocrystalline PCOCC wire.

Product line _____

Recording tape, audio; recording tape, video;

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Circle (78) on Rapid Facts Card

TDK Electronics, con't.

tape supplies and accessories.
Circle (418)

Teccon Enterprises Ltd. (946)
Product line _____
Recording heads, replacement, sales and service.
Circle (467)

Techron (204)
New products _____
TEF 20 acoustic analyzer for IBM/compatible or Macintosh.
Product line _____
Maintenance, test and measuring equipment.
Circle (419)

Telex Communications (734*)
New products _____
FMR-100 wireless microphone receiver; WT-60 backpack transmitter; MRT327 intercom user station; Series 2100 wireless intercom; Series 2200 wireless IFB; PS15 intercom power supply.
Product line _____
Headphones and headsets; intercom systems; microphones, studio and PA; microphones, wireless and RF; tape duplication, systems and accessories.
Circle (420) See ad page 49

THAT Corp. (845)
New products _____
202H modular VCA; 202XT and 202XTC modular VCAs; THAT/dbx 2252 integrated-circuit RMS-level detector; THAT/dbx 2150 series integrated-circuit VCAs.
Product line _____
Amplifiers; miscellaneous equipment and services; noise reduction systems; signal processors, other.
Circle (421)

Theatre Crafts (61)
Not available at press time.
Circle (460)

3M/Professional A/V Products (412*)
Product line _____
Tape supplies and accessories.
Circle (422)

360 Systems (1403*)
New products _____
DCR1000 DigiCart; AM-16/R Remote Control Station; Patch-It editor/librarian software.
Product line _____
MIDI hardware; recorders, hard disk; routing switchers, audio.
Circle (423)

TimeLine (1123*)
New products _____
Lynx SSL data interface; Lynx keyboard control unit.
Product line _____
Editing systems; synchronizer systems.
Circle (424)

Toa Electronics (125*)
New products _____
SAORI integrated digital sound reinforcement processor; AX-1000 automatic microphone mixer; SR Series electronically controlled speaker system; SF-60 trapezoidal 3-way loudspeaker system; SR-30 flying loudspeaker system; SW

Series ultra-linear subwoofers; F-500/F-600 2-way sound reinforcement loudspeaker system; CX-124 and CX-164 professional mixing consoles.
Product line _____
Consoles, sound reinforcement; microphone mixers; signal processors, other.
Circle (425)

Trident Audio USA (232*)
New products _____
Series 80C music recording mixing console; Vector 432 music/post-production audio console.
Product line _____
Consoles, digital; consoles, recording and production; consoles, sound reinforcement.
Circle (426) See ad page 91

Trouper Industries Ltd. (81)
Not available at press time.
Circle (461)

Turbosound (826*)
New products _____
TMS-5 3-way enclosure; TFS Series compact loudspeaker enclosures.
Product line _____
Loudspeakers, component; loudspeakers, sound reinforcement.
Circle (470)

Turtle Beach Systems (52)
Not available at press time.
Circle (462)

21st Century Ltd. (67*)
Not available at press time.
Circle (463)

UltraAnalog (944)
New products _____
ADC 20048 20-bit audio A/D converter.
Product line _____
Signal processors, other.
Circle (427)

UREI (426*)
New products _____
SR6600 Series compact sound reinforcement power amplifiers; ES Series compact commercial power amplifiers
Product line _____
Amplifiers.
Circle (428)

U.S. Audio (325)
New products _____
MIX-5S stereo mixer.
Product line _____
Amplifiers; headphone mixing systems; microphone mixers.
Circle (429)

Vacuum Tube Logic (1008)
New products _____
Manley line of recording equipment: tube amplifiers and pre-amplifiers, equalizers, mixers, limiters and compressors; an A/D converter; tube capacitor microphone.
Product line _____
Amplifiers; cable and connectors; equalizers; limiters/compressors; microphones, booms, stands and accessories; microphones, pre-amplifiers; microphones, studio and PA.
Circle (430)

Valentino (35)
Not available at press time.
Circle (431)

Vega (829)
Product line _____
Intercom systems; microphones, wireless and RF.
Circle (432)

Versadyne International (1415)
New products _____
1500 Series high-speed bin-loop duplicator; PT-250 duplicator production totalizer; SR-150 slave reader.
Product line _____
Tape duplication, systems and accessories.
Circle (433)

WaveFrame Corp. (Rm. 216A)
Product line _____
Computer software, studio applications; consoles, automation systems; digital audio workstations; editing systems; MIDI hardware; recorders, hard disk; signal processors, other; sound samplers.
Circle (434)

Westlake Audio (Rm. 203)
Product line _____
Loudspeakers, studio monitoring.
Circle (435)

Whirlwind (321*)
New products _____
Concert 42 and Concert 32 mic splitting systems; Line Balancer/Splitter.
Product line _____
Cable and connectors; patchbay and jack panels; transformers, audio.
Circle (436)

Wireworks (1401*)
Product line _____
Cable and connectors; miscellaneous equipment and services; transformers, audio; video equipment, all.
Circle (437)

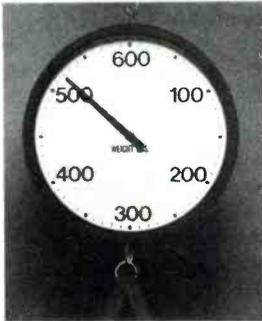
Yamaha Corp. of America (318*)
New products _____
DMC1000 digital recording console; PC4002M dual-channel amplifier.
Product line _____
Amplifiers; consoles, digital; consoles, sound reinforcement; crossovers and frequency dividers; delays, analog and digital; equalizers; limiters/compressors; loudspeakers, sound reinforcement; loudspeakers, studio monitoring; microphones, studio and PA; microphone mixers; reverb devices; signal processors, other; tape machines, cassette and cartridge; tape machines, digital.
Circle (438)

Zoom (644*)
Product line _____
Signal processors, other.
Circle (439)

This directory is current as of Aug. 3, 1990 and is compiled from information supplied by exhibiting companies as of that date. For changes and additions after Aug. 3, consult the official program at the convention.

THE WEIGHT IS OVER

520 lbs. = 235 kg



Introducing the new KP-600 Series flyable speaker system from KLIPSCH. No longer does breathtaking sound translate to backbreaking weight.

A full-range, fully-featured, three-cabinet stack that's ready to fly weighs less than 520 lbs. To really lighten your load,

you can move the system one cabinet at a time. Or you can use the rigid assembly hardware, put the whole stack on its wheel tray, and still move it without much of a strain.

The secret is in the cabinet construction. A super-light composite material molded around a rigid aluminum skeleton. The result is a stronger, lighter, cabinet that remains free of unwanted resonances.

The fact that the KP-600 Series is lightweight is just one of many things that makes this system a heavyweight contender.

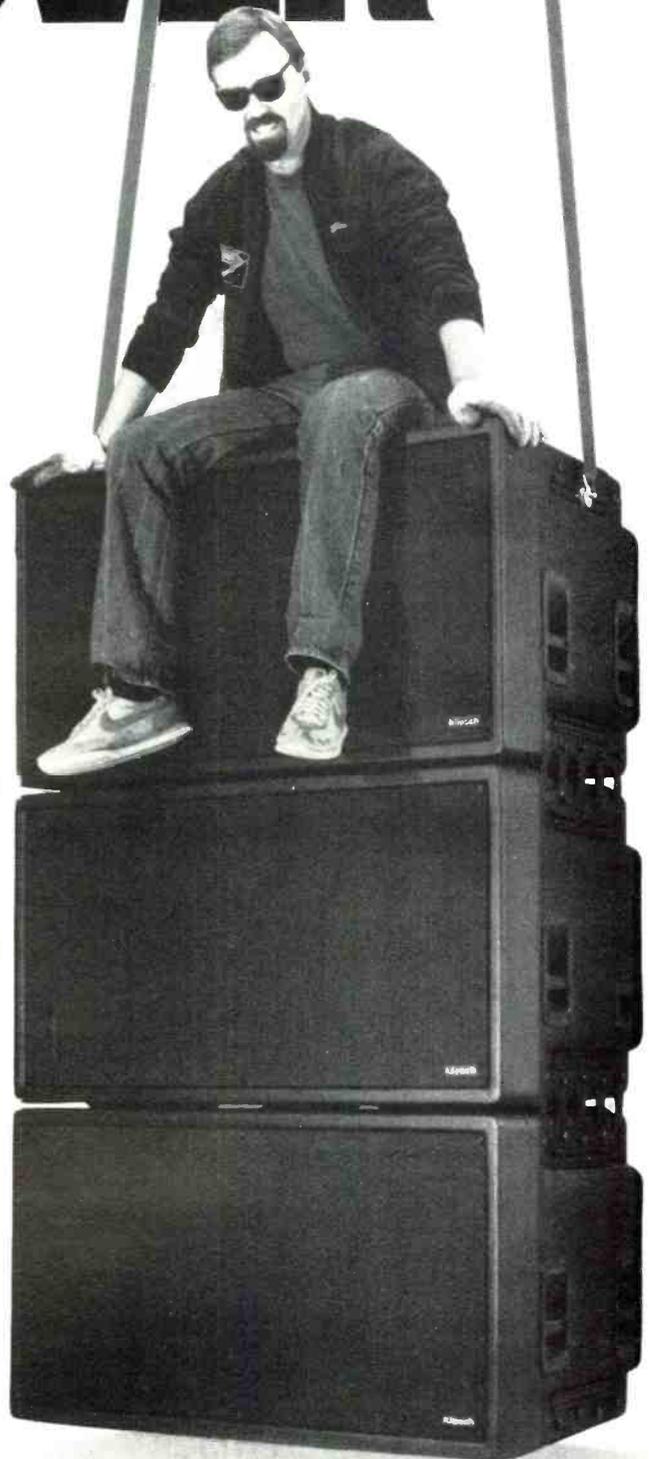
Consider its maximum continuous output of more than 131 dB. Consider its frequency response of 43 Hz - 17 kHz \pm 3 dB. Consider its modular design that lets you easily rotate or interchange the horns for the best polar coverage. Consider all the infinite design details that help you hook it up and hoist it up, quickly and easily. Consider the simple fact that it sounds great, too.

For some informative literature about the new KLIPSCH KP-600 drop us a line at the address below. Or if you don't have time to "weight," give us a call.



A LEGEND IN SOUND™

P.O. BOX 688 • HOPE, ARKANSAS USA 71801
FAX 501-777-6753





PRODUCT DIRECTORY

This directory lists exhibiting companies that manufacture equipment or offer services in 75 categories. The categories are listed in alphabetical order, as are companies within the specific category. Companies advertising in this issue are printed in blue.

Basic information on all exhibiting categories is contained in the Exhibitor Directory. Detailed information on many new products is contained in Product Preview. Because of our press deadlines, changes or additions after early August are not included. Check your convention program for updated information.

Acoustic design and construction

Acoustics Design Group (448)
Bruel & Kjaer (7)
DLC Design (60)
RPG Diffusor Systems (341)

Acoustic treatment materials

Alpha Audio (700*)
Ferrofluidics (84)
RPG Diffusor Systems (341)

Amplifiers

AB International Electronics (1011)
Analog Devices (1048*)
Ashly Audio (624)
Audiotechniques/Tube Tech (307)
Australian Monitor (844)
BGW Systems (216)
BrystonVermont (418*)
BSS Audio (826*)
Carver Corp. (56)
Crest Audio (200*)
Crown International (200*)
Electro-Voice (Rm. 205)
FM Acoustics (4)
Furman Sound (48)
Genelec Oy (1105)
Gentner Electronics (1308)
The John Hardy Company (13)
HEDCO (1044)
Industrial Strength Industries (446)
Innovative Electronic Designs (519)
JBL Professional (430*)
Meyer Sound Laboratories (626*)

Morenz Development (1047)
Oxmoor (343*)
Panasonic Professional Audio/Ramsa (Rm. 206)
Peavey Electronics (806*)
Professional Audio Systems (248*)
QSC Audio Products (640*)
Rane Corp. (1031)
Renkus-Heinz (701*)
Rolls Corp. (744)
Sescom (206)
Shure Bros. (107*)
Soundcraftsmen (63)
Stewart Electronics (547)
Summit Audio (1421)
Symetrix (901*)
THAT Corp. (845)
UREI (426*)
U.S. Audio (325)
Vacuum Tube Logic (1008)
Yamaha Corp. of America (318*)

Cable and connectors

Audio Accessories (247)
Audio Services (1420)
Audio-Technica U.S. (301)
Beyerdynamic (601*)
California Switch & Signal (1405)
Connectronics (319)
FM Acoustics (4)
Gepeco International (142)
Marshall Electronics (340)
Monster Cable Products (625)
Neutrik USA (342*)
Optical Disc Corp. (29*)
Pro Co Sound (450)
Sescom (206)
Switchcraft (1117)
Vacuum Tube Logic (1008)
Whirlwind (321*)
Wireworks (1401*)

Compact disc players

Gefen Systems (445)
Studer Revox America (111*)
Tascam (103*)

Computers, hardware and peripherals

Ariel Corporation (549*)

Digidesign (1109*)
Duplitrionics (1006)
Enterprise Corporation of America (1043)
Gotham Audio Corp. (712*)
J.L. Cooper (130*)
Lone Wolf (70)
Pinc Link (135)
Soundmaster International (146*)
Spectral Synthesis (12)
Star Case (443)

Computer software, business

Bose (Rm. 216B)
DLC Design (60)
Enterprise Corporation of America (1043)
Gotham Audio Corp. (712*)

Computer software, MIDI

Aphex Systems (708*)
Fostex Corp. of America (820*)
J.L. Cooper (130*)
Lone Wolf (70)
Opcode Systems (1107)
Passport Designs (245)
Roland Corp. U.S. (Rm. 207)
T.C. Electronic (841)

Computer software, studio applications

Aphex Systems (708*)
Audio Teknology (71*)
Gefen Systems (445)
Gotham Audio Corp. (712*)
Harrison by GLW (312*)
J.L. Cooper (130*)
Lone Wolf (70)
MicroAudio (11)
Opcode Systems (1107)
Optical Disc Corp. (29*)
Passport Designs (245)
Pinc Link (135)
Spectral Synthesis (12)
T.C. Electronic (841)
WaveFrame Corp. (Rm. 216A)

Consoles, automation systems

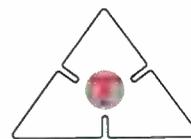
Allen and Heath (101*)
Amek/TAC (632*)

Advancing The Art.

Trident pioneered sophisticated audio mixing systems over two decades ago. You cut and mixed your best tracks on a Trident and have since longed for our legendary sonics in a mixer designed for your application. The wait is over.

A new standard is emerging from the company that continues to define audio integrity. Vector, the latest in Audio for Video mixing technology. It's heritage is firmly rooted in the finest audio tradition: a tradition unique to Trident.

With four stereo busses, dynamics, stereo inputs, integrated machine control and fader automation options, there really is no other choice. Audition a Vector and hear for yourself. After all, you've been listening to us for years.



TRIDENT

Circle (29) on Rapid Facts Card

TRIDENT AUDIO DEVELOPMENTS LTD • Trident House, Rodd Estate, Govett Avenue, Shepperton, Middlesex TW17 8AQ, England • Phone 0932-224665 • Fax 0932-226721 • Telex 8813982 TRIMIX G
TRIDENT AUDIO USA • 2720 Monterey Street, Suite 403 • Torrance, California 90503, USA • Phone 213-533-8900 • Fax 213-533-7072

AMS Industries (336*)
D&R Electronics (748*)
Euphonix (90*)
Focusrite Audio Engineering (1*)
GML (747*)
Harrison by GLW (312*)
J.L. Cooper (130*)
Neve (604*)
Otari (512*)
Quad Eight Electronics (800*)
Sellmark Electronic Services (1101*)
Solid State Logic (812*)
Sony Professional Audio (300*)
Soundcraft (526*)
Spatial Sound (1042)
WaveFrame Corp. (Rm. 216A)

Consoles, digital

AMS Industries (336*)
Audio Animation (948*)
Euphonix (90*)
Gotham Audio Corp. (712*)
Lexicon (Rm. 208)
Sonic Perceptions (49)
Tascam (103*)
Trident Audio USA (232*)
Yamaha Corp. of America (318*)

Consoles, recording and production

Alesis (249*)
Allen and Heath (101*)
Amek/TAC (632*)
AMS Industries (336*)
DDA (826*)
D&R Electronics (748*)
Euphonix (90*)
Focusrite Audio Engineering (1*)
Fostex Corp. of America (820*)
Harrison by GLW (312*)
Lexicon (Rm. 208)
Neotek (615)
Neve (604*)
Otari (512*)
Panasonic Professional Audio/Ramsa (Rm. 206)
Peavey Electronics (806*)
Quad Eight Electronics (800*)
Seck (536*)
Solid State Logic (812*)
Sonic Perceptions (49)
Sony Professional Audio (300*)
Soundcraft (526*)
Studer Revox America (111*)
Tascam (103*)
Trident Audio USA (232*)

Consoles, sound reinforcement

Alesis (249*)
Allen and Heath (101*)
Amek/TAC (632*)
Audio Teknology (71*)
Crest Audio (200*)
DDA (826*)
D&R Electronics (748*)
Electro-Voice (Rm. 205)
Harrison by GLW (312*)
Industrial Strength Industries (446)
Intelix (745)
J.L. Cooper (130*)
Midas (826*)
Panasonic Professional Audio/Ramsa (Rm. 206)
Peavey Electronics (806*)
Seck (536*)
Soundcraft (526*)
Tascam (103*)

Toa Electronics (125*)
Trident Audio USA (232*)
Yamaha Corp. of America (318*)

Crossovers and frequency dividers

Adamson Acoustic Design Corporation (1422)
Ashly Audio (624)
Audio Teknology (71*)
BrystonVermont (418*)
BSS Audio (826*)
Electro-Voice (Rm. 205)
FM Acoustics (4)
Gold Line/Loft (521)
Industrial Strength Industries (446)
Panasonic Professional Audio/Ramsa (Rm. 206)
Peavey Electronics (806*)
Professional Audio Systems (248*)
Radian Audio Engineering (133*)
Rane Corp. (1031)
Sescom (206)
Yamaha Corp. of America (318*)

Delays, analog and digital

AKG Acoustics (226*)
Alesis (249*)
AMS Industries (336*)
Applied Research and Technology (ART) (240*)
BSS Audio (826*)
DOD Electronics (523*)
Eventide (208*)
Industrial Strength Industries (446)
Klark-Teknik Electronics (724*)
Korg USA (Rm. 216C)
Lexicon (Rm. 208)
Panasonic Professional Audio/Ramsa (Rm. 206)
Peavey Electronics (806*)
Roland Corp. U.S. (Rm. 207)
T.C. Electronic (841)
Yamaha Corp. of America (318*)

Digital audio workstations

AKG Acoustics (226*)
AMS Industries (336*)
Ariel Corporation (549*)
Audiotechniques/Tube Tech (307)
Digidesign (1109*)
Digital Audio Research Ltd. (1411*)
Digital Dynamics (76*)
E-mu Systems (Rm. 211B)
Ediflex Systems (1119*)
Hybrid Arts (15*)
J.L. Cooper (130*)
Korg USA (Rm. 216C)
Lexicon (Rm. 208)
New England Digital (Rm. 214A,B,C)
Otari (512*)
Pinc Link (135)
Solid State Logic (812*)
Soundmaster International (146*)
Spectral Synthesis (12)
Studer Revox America (111*)
Symetrix (901*)
WaveFrame Corp. (Rm. 216A)

Disc mastering systems

Gotham Audio Corp. (712*)
JVC Professional Products (121*)
Kenwood USA (57*)
Pinc Link (135)
Sony Professional Audio (300*)

Drum machines

Akai/IMC (Rm. 112A)
Alesis (249*)
Industrial Strength Industries (446)

Korg USA (Rm. 216C)
Roland Corp. U.S. (Rm. 207)

Editing systems

Adams-Smith (1407*)
Alpha Audio (700*)
AMS Industries (336*)
Cipher Digital (635*)
Digital Audio Research Ltd. (1411*)
Ediflex Systems (1119*)
Sony Professional Audio (300*)
Soundmaster International (146*)
Spectral Synthesis (12)
TimeLine (1123*)
WaveFrame Corp. (Rm. 216A)

Educational courses and programs

Audio Services (1420)
Berklee College of Music (346)
Bruel & Kjaer (7)
Full Sail Recorders (548*)
Institute of Audio Research (1016*)

Equalizers

Alesis (249*)
Amek/TAC (632*)
Applied Research and Technology (ART) (240*)
Ashly Audio (624)
Audiotechniques/Tube Tech (307)
Audio Teknology (71*)
BSS Audio (826*)
D&R Electronics (748*)
dbx Professional Products (226*)
DOD Electronics (523*)
Electro-Voice (Rm. 205)
Focusrite Audio Engineering (1*)
Furman Sound (48)
GML (747*)
Gotham Audio Corp. (712*)
Industrial Strength Industries (446)
Klark-Teknik Electronics (724*)
Meyer Sound Laboratories (626*)
MicroAudio (11)
Orban — a division of AKG (226*)
Oxmoor (343*)
Peavey Electronics (806*)
Quad Eight Electronics (800*)
Rane Corp. (1031)
Roland Corp. U.S. (Rm. 207)
Rolls Corp. (744)
Sescom (206)
Solid State Logic (812*)
Sony Professional Audio (300*)
Soundcraftsmen (63)
Summit Audio (1421)
Symetrix (901*)
T.C. Electronic (841)
Vacuum Tube Logic (1008)
Yamaha Corp. of America (318*)

Equipment cases

Amek/TAC (632*)
Audio Services (1420)
C-T Audio Marketing (155)
Star Case (443)

Equipment rental and leasing

Audio Services (1420)

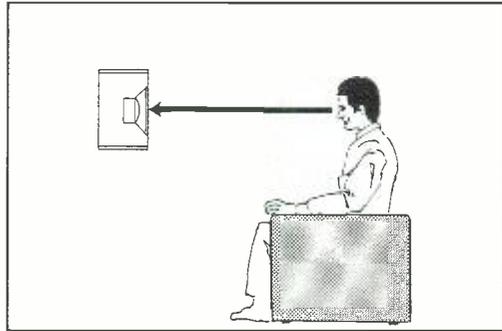
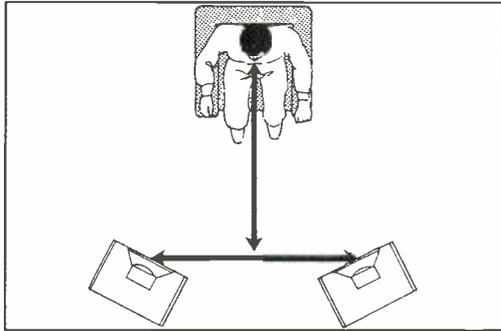
Faders

GML (747*)
Penny & Giles (303*)

Filters, replacement

Apogee Electronics (600*)

Fostex RM Monitors Leave No Room For Error.



Fostex RM monitors are significantly more directional than almost all other near-field designs. RMs eliminate those confusing reflections in the listening room so effectively that you maintain a crystal clear sonic picture at all times.

The RM high directional design is a true coaxial point-source reference. All the sound reaches your ears at the same time, just like in nature. Thus RMs are working tools for those who work with sound. They are especially good for mixing because what you hear is what you get.

Now you can end the frustration of mixing something in the studio and hearing it sound different on home and car systems or in other studios. The mix you create on your RMs will sound proportionally the same on all other playback systems.

Our patented ribbon technology is so precise we had to provide a control for what is called the "boundary effect"--where accurate speakers exhibit different characteristics in a free-standing field [4 pi steradian] vs. a wall/soffit mount [2 pi steradian].

RMs are designed for the classic listening arrangement: placed the same distance apart as from the center point to the listening area or "sweet spot", with our drivers and your ears on the same horizontal plane.

In fact, a good test of correct placement is to sit down after arranging a pair of RMs as shown above. Listen for a few minutes, repeat the program material and after 30 seconds, stand up.

The sound changes radically because your ears are now out of position. Try this simple, effective test with other so-called near-field monitors. Then ask yourself this musical question: "Who's kidding whom?"

So listen to a pair of Fostex RM monitors--one of our three models will best suit your application. A neutral, accurate reference you can rely on, leaving no room for error.



Fostex®

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Circle (42) on Rapid Facts Card

www.americanradiohistory.com

Headphones and headsets

AKG Acoustics (226*)
Audio Services (1420)
Audio-Technica U.S. (301)
Beyerdynamic (601*)
Clear-Com Systems (807)
Fostex Corp. of America (820*)
Nady Systems (317)
Sennheiser Electronics Corp. (609*)
Shure Bros. (107*)
Sonic Perceptions (49)
Sony Professional Audio (300*)
Telex Communications (734*)

Headphone mixing systems

Alesis (249*)
Furman Sound (48)
Gold Line/Loft (521)
Intelix (745)
U.S. Audio (325)

Intercom systems

Audio Services (1420)
Clear-Com Systems (807)
Nady Systems (317)
Telex Communications (734*)
Vega (829)

Libraries, music production

Audio Action (32)
Gefen Systems (445)
Optical Disc Corp. (29*)
Sound Ideas (441)
Soundmaster International (146*)

Libraries, sampled sounds

Audio Action (32)
E-mu Systems (Rm. 211B)
New England Digital (Rm. 214A,B,C)
Optical Disc Corp. (29*)
Roland Corp. U.S. (Rm. 207)
Soundmaster International (146*)

Libraries, sound effects

Audio Action (32)
Audio Services (1420)
E-mu Systems (Rm. 211B)
Gefen Systems (445)
Optical Disc Corp. (29*)
Sound Ideas (441)
Soundmaster International (146*)

Limiters/compressors

Alesis (249*)
Aphex Systems (708*)
Applied Research and Technology (ART) (240*)
Ashly Audio (624)
Audiotechniques/Tube Tech (307)
Audio Teknology (71*)
BSS Audio (826*)
D&R Electronics (748*)
dbx Professional Products (226*)
Dorrough Electronics (940)
Drawmer (1113*)
Focusrite Audio Engineering (1*)
Furman Sound (48)
GML (747*)
Gold Line/Loft (521)
Gotham Audio Corp. (712*)
JVC Professional Products (121*)
Klark-Teknik Electronics (724*)
Orban — a division of AKG (226*)
Peavey Electronics (806*)
Quad Eight Electronics (800*)
Sony Professional Audio (300*)
Summit Audio (1421)
Symetrix (901*)

Vacuum Tube Logic (1008)
Yamaha Corp. of America (318*)

Loudspeakers, component

Adamson Acoustic Design Corporation (1422)
Audio Services (1420)
Community Light & Sound (40)
Eastern Acoustic Works (244*)
Electro-Voice (Rm. 205)
Ferrofluidics (84)
Gauss (726*)
JBL Professional (430*)
Klipsch & Associates (141)
Neutrik USA (342*)
Peavey Electronics (806*)
Professional Audio Systems (248*)
Radian Audio Engineering (133*)
Renkus-Heinz (701*)
Turbosound (826*)

Loudspeakers, sound reinforcement

Adamson Acoustic Design Corporation (1422)
Apogee Sound (351, Rm. 202B)
Audio Services (1420)
Australian Monitor (844)
Bose (Rm. 216B)
Community Light & Sound (40)
Eastern Acoustic Works (244*)
Electro-Voice (Rm. 205)
Ferrofluidics (84)
JBL Professional (430*)
Klipsch & Associates (141)
Martin America/Martin Audio (1027*)
Meyer Sound Laboratories (626*)
Panasonic Professional Audio/Ramsa (Rm. 206)
Peavey Electronics (806*)
Professional Audio Systems (248*)
Radian Audio Engineering (133*)
Renkus-Heinz (701*)
Turbosound (826*)
Yamaha Corp. of America (318*)

Loudspeakers, studio monitoring

Audio Services (1420)
Audix Corp. (42)
Clear-Com Systems (807)
Community Light & Sound (40)
Eastern Acoustic Works (244*)
Electro-Voice (Rm. 205)
Fostex Corp. of America (820*)
Genelec Oy (1105)
JBL Professional (430*)
Klipsch & Associates (141)
Meyer Sound Laboratories (626*)
Panasonic Professional Audio/Ramsa (Rm. 206)
Peavey Electronics (806*)
Professional Audio Systems (248*)
Quested Monitoring Systems (24)
Radian Audio Engineering (133*)
Renkus-Heinz (701*)
Roland Corp. U.S. (Rm. 207)
Tannoy/TGI North America (926*)
Westlake Audio (Rm. 203)
Yamaha Corp. of America (318*)

Maintenance, test and measuring equipment

ACO Pacific (241)
Apogee Electronics (600*)
AudioControl Industrial (746)
Audio Precision (746)
BASF Corp. Information Systems (440*)
BSS Audio (826*)
California Switch & Signal (1405)
Concept Design Electronics (740*)
DLC Design (60)

Dorrough Electronics (940)
Gold Line/Loft (521)
JRF Magnetic Sciences (330)
Klark-Teknik Electronics (724*)
Neutrik USA (342*)
Tape Automation (648*)
T.C. Electronic (841)
Techron (204)

Metering devices

Apogee Electronics (600*)
AudioControl Industrial (746)
Dorrough Electronics (940)
Furman Sound (48)
Gold Line/Loft (521)
Harrison by GLW (312*)
Peavey Electronics (806*)
Schoeps/Posthorn Recordings (1000)
Sony Professional Audio (300*)
Symetrix (901*)

Microphone mixers

Ashly Audio (624)
Audio Services (1420)
Crown International (200*)
D&R Electronics (748*)
DOD Electronics (523*)
Electro-Voice (Rm. 205)
Furman Sound (48)
Genter Electronics (1308)
Innovative Electronic Designs (519)
MicroAudio (11)
Panasonic Professional Audio/Ramsa (Rm. 206)
Peavey Electronics (806*)
Rane Corp. (1031)
Rolls Corp. (744)
Sescom (206)
Shure Bros. (107*)
Sony Professional Audio (300*)
Stewart Electronics (547)
Toa Electronics (125*)
U.S. Audio (325)
Yamaha Corp. of America (318*)

Microphones, booms, stands and accessories

ACO Pacific (241)
AKG Acoustics (226*)
AMS Industries (336*)
Audio Services (1420)
Audio-Technica U.S. (301)
Audix Corp. (42)
Beyerdynamic (601*)
Gotham Audio Corp. (712*)
Panasonic Professional Audio/Ramsa (Rm. 206)
Peavey Electronics (806*)
Sanken/Audio Intervisual Design (1026*)
Schoeps/Posthorn Recordings (1000)
Sennheiser Electronics Corp. (609*)
Shure Bros. (107*)
Sony Professional Audio (300*)
Vacuum Tube Logic (1008)

Microphones, pre-amplifiers

ACO Pacific (241)
AMS Industries (336*)
Audio Services (1420)
Audiotechniques/Tube Tech (307)
Beyerdynamic (601*)
BrystonVermont (418*)
BSS Audio (826*)
C-T Audio Marketing (155)
Focusrite Audio Engineering (1*)
GML (747*)
The John Hardy Company (13)
Josephson Engineering (1041)

Microphones, pre-amplifiers, con't.

Sescom (206)
Shure Bros. (107*)
Summit Audio (1421)
Vacuum Tube Logic (1008)

Microphones, studio and PA

AKG Acoustics (226*)
AMS Industries (336*)
Audio Services (1420)
Audix Corp. (42)
Beyerdynamic (601*)
Bruel & Kjaer (7)
Countryman Associates (524)
C-T Audio Marketing (155)
Electro-Voice (Rm. 205)
Fostex Corp. of America (820*)
Gold Line/Loft (521)
Gotham Audio Corp. (712*)
Josephson Engineering (1041)
Milab (826*)
Panasonic Professional Audio/Ramsa (Rm. 206)
Peavey Electronics (806*)
Sanken/Audio Intervisual Design (1026*)
Schoeps/Posthorn Recordings (1000)
Sennheiser Electronics Corp. (609*)
Shure Bros. (107*)
Sonic Perceptions (49)
Sony Professional Audio (300*)
Telex Communications (734*)
Vacuum Tube Logic (1008)
Yamaha Corp. of America (318*)

Microphones, wireless and RF

AKG Acoustics (226*)
Audio Services (1420)
Audio-Technica U.S. (301)
Audix Corp. (42)
Beyerdynamic (601*)
Electro-Voice (Rm. 205)
Nady Systems (317)
Panasonic Professional Audio/Ramsa (Rm. 206)
Peavey Electronics (806*)
Samson Technology/Soundtracs Plc. (540*)
Sanken/Audio Intervisual Design (1026*)
Schoeps/Posthorn Recordings (1000)
Sennheiser Electronics Corp. (609*)
Shure Bros. (107*)
Sony Professional Audio (300*)
Telex Communications (734*)
Vega (829)

MIDI hardware

Adams-Smith (1407*)
Akai/IMC (Rm. 112A)
Alesis (249*)
Aphex Systems (708*)
Audio-Technica U.S. (301)
E-mu Systems (Rm. 211B)
Fostex Corp. of America (820*)
J.L. Cooper (130*)
Lone Wolf (70)
Nady Systems (317)
New England Digital (Rm. 214A,B,C)
Peavey Electronics (806*)
Roland Corp. U.S. (Rm. 207)
Sony Professional Audio (300*)
Tascam (103*)
360 Systems (1403*)
WaveFrame Corp. (Rm. 216A)

Miscellaneous equipment and services

AMS Industries (336*)
Apex Machine Company (348*)

APRS (96)
AudioControl Industrial (746)
Audio Services (1420)
Brainstorm Electronics (1406)
Crystal Semiconductor (447)
Duplication Equipment Brokerage (1045)
Gold Line/Loft (521)
Josephson Engineering (1041)
JRF Magnetic Sciences (330)
Klipsch & Associates (141)
Oxmoor (343*)
Precision Monolithics (1040)
Pygmy Computer Systems (932)
RPG Diffusor Systems (341)

Selco/Sifam (720)
Sennheiser Electronics Corp. (609*)
Sonic Perceptions (49)
Star Case (443)
Stewart Electronics (547)
Strand Magnetics (433)
Switchcraft (1117)
THAT Corp. (845)
Wireworks (1401*)

Noise gates/expanders

Alesis (249*)
Aphex Systems (708*)
Applied Research and Technology (ART) (240*)

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Noise gates/expanders, *con't.*

Ashly Audio (624)
Audio Teknology (71*)
BSS Audio (826*)
C-T Audio Marketing (155)
dbx Professional Products (226*)
DOD Electronics (523*)
Drawmer (1113*)
Focusrite Audio Engineering (1*)
Furman Sound (48)
Gold Line/Loft (521)
Klark-Teknik Electronics (724*)
Orban — a division of AKG (226*)
Peavey Electronics (806*)
Rane Corp. (1031)
Sescom (206)
Sony Professional Audio (300*)
Symetrix (901*)

Noise reduction systems

Analog Devices (1048*)
Audio Services (1420)
dbx Professional Products (226*)
Dolby Laboratories (326*)
Drawmer (1113*)
Gotham Audio Corp. (712*)
Orban — a division of AKG (226*)
Peavey Electronics (806*)
Pinc Link (135)
Symetrix (901*)
THAT Corp. (845)

Patchbay and jack panels

Audio Accessories (247)
California Switch & Signal (1405)
Connectronics (319)
Fostex Corp. of America (820*)
Furman Sound (48)
Gepco International (142)
Peavey Electronics (806*)
Penny & Giles (303*)
Pro Co Sound (450)
Sescom (206)
Soundcraftsmen (63)
Switchcraft (1117)
Whirlwind (321*)

Phonograph cartridges and accessories

Audio-Technica U.S. (301)

Pitch shifters

AMS Industries (336*)
Applied Research and Technology (ART) (240*)
Eventide (208*)
Rolls Corp. (744)

Power conditioning/standby power systems

Duplitrronics (1006)
Furman Sound (48)

Racks and stands

Audio Services (1420)
C-T Audio Marketing (155)
Peavey Electronics (806*)
Star Case (443)

Record/CD manufacturing

American Helix (1418*)
Audiotechniques/Tube Tech (307)
Enterprise Corporation of America (1043)
Gotham Audio Corp. (712*)
Kenwood USA (57*)
Sony Professional Audio (300*)

Recorders, hard disk

Akai/IMC (Rm. 112A)
Alpha Audio (700*)
AMS Industries (336*)
Cipher Digital (635*)
Digidesign (1109*)
Digital Audio Research Ltd. (1411*)
Digital Dynamics (76*)
Ediflex Systems (1119*)
Opcode Systems (1107)
Roland Corp. U.S. (Rm. 207)
Soundmaster International (146*)
Spectral Synthesis (12)
Studer Revox America (111*)
360 Systems (1403*)
WaveFrame Corp. (Rm. 216A)

Recording heads, replacement, sales and service

Fujii International (946)
JRF Magnetic Sciences (330)
Otari (512*)
Saki Magnetics (627)
Teccon Enterprises Ltd. (946)

Recording tape, audio

Agfa Corporation (114*)
Audio Services (1420)
BASF Corp. Information Systems (440*)
Fujii International (946)
Greencorp Magnetics Pty. Ltd. (946)
Japan America Electronics (1416)
Panasonic Professional Audio/Ramsa (Rm. 206)
Sony Professional Audio (300*)
Sunkyoung Magnetic/America (920*)
Swire Magnetics (1018*)
TDK Electronics (85*)

Recording tape, video

Agfa Corporation (114*)
BASF Corp. Information Systems (440*)
TDK Electronics (85*)

Reverb devices

AKG Acoustics (226*)
Alesis (249*)
AMS Industries (336*)
Applied Research and Technology (ART) (240*)
DOD Electronics (523*)
Eventide (208*)
Industrial Strength Industries (446)
Klark-Teknik Electronics (724*)
Korg USA (Rm 216C)
Lexicon (Rm. 208)
Peavey Electronics (806*)
Roland Corp. U.S. (Rm. 207)
Sony Professional Audio (300*)
Yamaha Corp. of America (318*)

Routing switchers, audio

Akai/IMC (Rm. 112A)
Genter Electronics (1308)
Harrison by GLW (312*)
HEDCO (1044)
Innovative Electronic Designs (519)
Intelix (745)
Lester Audio Laboratories (1033)
NVision (947)
Oxmoor (343*)
360 Systems (1403*)

Sequencers

Adams-Smith (1407*)
Akai/IMC (Rm. 112A)
Alesis (249*)
Opcode Systems (1107)
Roland Corp. U.S. (Rm. 207)

Signal processors, other

Adamson Acoustic Design Corporation (1422)
Alesis (249*)
AMS Industries (336*)
Analog Devices (1048*)
Aphex Systems (708*)
Applied Research and Technology (ART) (240*)
Ariel Corporation (549*)
Ashly Audio (624)
Audio Animation (948*)
BASE (Rm. 101)
Bose (Rm. 216B)
Digital Audio Research Ltd. (1411*)
DOD Electronics (523*)
Dolby Laboratories (326*)
Eventide (208*)
Focusrite Audio Engineering (1*)
Gold Line/Loft (521)
Gotham Audio Corp. (712*)
Innovative Electronic Designs (519)
Korg USA (Rm 216C)
Lexicon (Rm. 208)
Motorola (831*)
NVision (947)
Oxmoor (343*)
Pinc Link (135)
Pygmy Computer Systems (932)
Rane Corp. (1031)
Roland Corp. U.S. (Rm. 207)
Rolls Corp. (744)
Sescom (206)
SigTech (18)
Spatial Sound (1042)
Spectral Synthesis (12)
Spectrum Signal Processing (1121)
Summit Audio (1421)
Symetrix (901*)
T.C. Electronic (841)
THAT Corp. (845)
Toa Electronics (125*)
UltraAnalog (944)
WaveFrame Corp. (Rm. 216A)
Yamaha Corp. of America (318*)
Zoom (644*)

Sound samplers

Akai/IMC (Rm. 112A)
AMS Industries (336*)
Applied Research and Technology (ART) (240*)
Digidesign (1109*)
Eventide (208*)
Klark-Teknik Electronics (724*)
Pinc Link (135)
Roland Corp. U.S. (Rm. 207)
Soundmaster International (146*)
Spectral Synthesis (12)
T.C. Electronic (841)
WaveFrame Corp. (Rm. 216A)

Synchronizer systems

Adams-Smith (1407*)
Brainstorm Electronics (1406)
Cipher Digital (635*)
Fostex Corp. of America (820*)
J.L. Cooper (130*)
JRF Magnetic Sciences (330)
Mark of the Unicorn (945)
Peavey Electronics (806*)
Soundmaster International (146*)
Tascam (103*)
TimeLine (1123*)

Synthesizers and keyboards

Korg USA (Rm 216C)
Peavey Electronics (806*)
Roland Corp. U.S. (Rm. 207)

Tape duplication, systems and accessories

Accurate Sound Corporation (1004)
AEG Corporation (900*)
Audio Video Consultants (629*)
Dwight Cavendish (95)
Concept Design Electronics (740*)
Duplitrronics (1006)
Electro Sound (730*)
Gauss (726*)
Heino Ilsemann (722*)
JRF Magnetic Sciences (330)
KABA (840*)
Magnefax International (725)
Paktec Automation (1413)
Roldex Industries (1007*)
Tape Automation (648*)
Telex Communications (734*)
Versadyne International (1415)

Tape machines, analog

Accurate Sound Corporation (1004)
Akai/IMC (Rm. 112A)
Fostex Corp. of America (820*)
Otari (512*)
Sony Professional Audio (300*)
Stellavox (843)
Studer Revox America (111*)

Tape machines, cassette and cartridge

Accurate Sound Corporation (1004)
Fostex Corp. of America (820*)
Nakamichi America (718)
Otari (512*)
Sony Professional Audio (300*)
Tape Automation (648*)
Tascam (103*)
Yamaha Corp. of America (318*)

Tape machines, DAT

Audio Services (1420)
Fostex Corp. of America (820*)
Japan America Electronics (1416)
JVC Professional Products (121*)
Nakamichi America (718)
Panasonic Professional Audio/Ramsa (Rm. 206)
Sony Professional Audio (300*)
Stellavox (843)
Tascam (103*)

Tape machines, digital

ACO Pacific (241)
Audio Services (1420)
Duplitrronics (1006)
Neve (604*)
Otari (512*)
Sony Professional Audio (300*)
Studer Revox America (111*)
Tascam (103*)
Yamaha Corp. of America (318*)

Tape supplies and accessories

Ampex Recording Media Corp. (212*)
Audio Services (1420)
Concept Design Electronics (740*)
CST Manufacturing & Sales (819*)
DIC Digital (848*)
Japan America Electronics (1416)
Success Specialty Sales Corp. (607)
TDK Electronics (85*)
3M/Professional A/V Products (412*)

Time compression/expansion

Adams-Smith (1407*)

AMS Industries (336*)
Applied Research and Technology (ART) (240*)
Digital Audio Research Ltd. (1411*)
Eventide (208*)
Lexicon (Rm. 208)
Spectral Synthesis (12)

Transformers, audio

Audio Teknology (71*)
BSS Audio (826*)
Neutrik USA (342*)
Plitron Manufacturing (243)
Pro Co Sound (450)
Sescom (206)

Whirlwind (321*)
Wireworks (1401*)

Video equipment, all

HEDCO (1044)
Panasonic Professional Audio/Ramsa (Rm. 206)
Pinc Link (135)
Star Case (443)
Wireworks (1401*)

This directory is current as of Aug. 3, 1990, and is compiled from information supplied by exhibiting companies as of that date. For changes and additions after Aug. 3, consult the official program at the convention. All numbers listed with an asterisk mean multiple booths.

DIGITAL PROOF!

The demands of digital monitoring have driven many "old standby" coaxial speakers to bits. Instead of singing the blues, more and more studios are replacing their blues with Gauss coaxials.

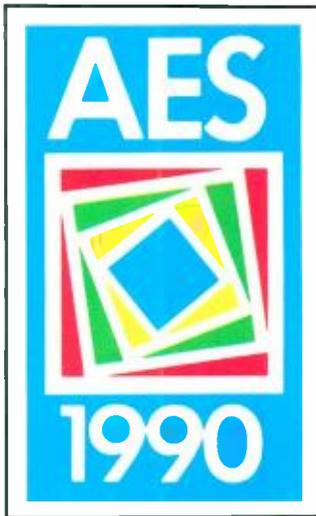
The Gauss coaxials were designed neutral so they wouldn't color the music. The cosh horn and time coherent design eliminate the need for time correction and greatly reduce fatigue. The carefully matched drivers require little or no EQ, provide the widest possible frequency response and 200 watts of power handling (400 peak) without self-destructing.

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Circle (44) on Rapid Facts Card



PRODUCT PREVIEW

Product Preview is designed to supplement the basic information supplied in the Exhibitor Listings.

When we asked exhibiting companies for basic show information, we invited them to submit short product releases concerning new products that were being introduced at this show. This information has been arranged here in alphabetical order. Each has been assigned a Rapid Facts Number. For more information, circle the appropriate number on the Rapid Facts Card.

These are only part of the products that will be introduced. Some companies chose to wait until the show to release any product information. In future issues, Cutting Edge will showcase additional products from the show.

AB International power amplifiers

AB's 1200C is a 2-channel, fully modular power amplifier, featuring 1400W per channel into 4 Ω and 1500W per channel into 2 Ω , with selectable load limiting or soft clip. The model 200 is a 1U rack-mountable power amplifier that delivers 75W per channel into 8 Ω or 100W per channel into 4 Ω . It includes front-panel dual phone jacks for signal monitoring, and signal and clip indicators.

Circle (475) on Rapid Facts Card

Adams-Smith 2600 A/V

The 2600 A/V audio editing system allows the traditional tape-based audio studio the capability to synchronize or edit any mix

or 24-, 25- or 30-frame time codes; correct off-speed audio; expand/compress audio to fit; make audio edit decisions visually; automatically select and log record tracks; cue talent and mixers; record, store, edit and play MIDI events; trigger carts, CDs and other non-time code devices; input, output and manipulate audio edit, video edit, memo and MIDI event lists; and control more than 100 types of transports.

Circle (476) on Rapid Facts Card

Agfa SR-XS cassette

Designed for studio reference applications, the SR-XS is a Type II cassette that uses highly coercive magnetic particles. The tape is designed to provide users with a consumer-compatible medium that can be compared with metal cassettes for quality and sound reproduction. The Agfa-designed and manufactured shell offers precise and reliable tape housing.

Circle (477) on Rapid Facts Card

Agfa accessories

Agfa has introduced a line of accessories for audio/video duplicators, including mastering splicing tape; duplication splicing tape; mastering polyester leading tape; and paper leader tape.

Circle (478) on Rapid Facts Card

Akai/IMC introductions

The DD1000 is a magneto-optical disk recorder that allows stereo recording directly to rewritable optical disks. Features include 4-channel playback, extensive editing, multiple sample rates and expandability. The S1100 is a 16-bit stereo sampler with 2Mbytes of RAM, expandable to

32Mbytes. Other features include AES/EBU digital outputs, SCSI port, SMPTE read and write with cue-list function and built-in DSP functions.

Circle (479) on Rapid Facts Card

AKG K1000

The K1000 reference listening system is a new design of headphone that the company says allows personal listening with a natural acoustic perspective, full-range reproduction and sonic transparency. The transducer elements, magnetic structure and basic design are part of the new technology, which is said to offer a radical improvement over existing headphone designs.

Circle (480) on Rapid Facts Card

AKG V6HP headphone amp

The V6HP is a personalized headphone mixing system and amplifier. The amp section offers high output levels equivalent to 100W per channel at 4 Ω , low distortion and 110dB S/N ratio. Five mixing modes provide individual left single/double, right single/double and stereo signals over three channels (or six outputs), for personal headphone monitoring during tracking.

Circle (481) on Rapid Facts Card

Alesis SR-16 drum machine

With 100 new sounds, including stereo samples, the SR-16 has 200 presets and use patterns with fill variations, 100 "drum sets" that can be assigned to any user pattern and Dynamic Voice Allocation, which allows repeated notes from the same drum pad to overlap rather than cut off, resulting for a more natural sound. The Dynam-

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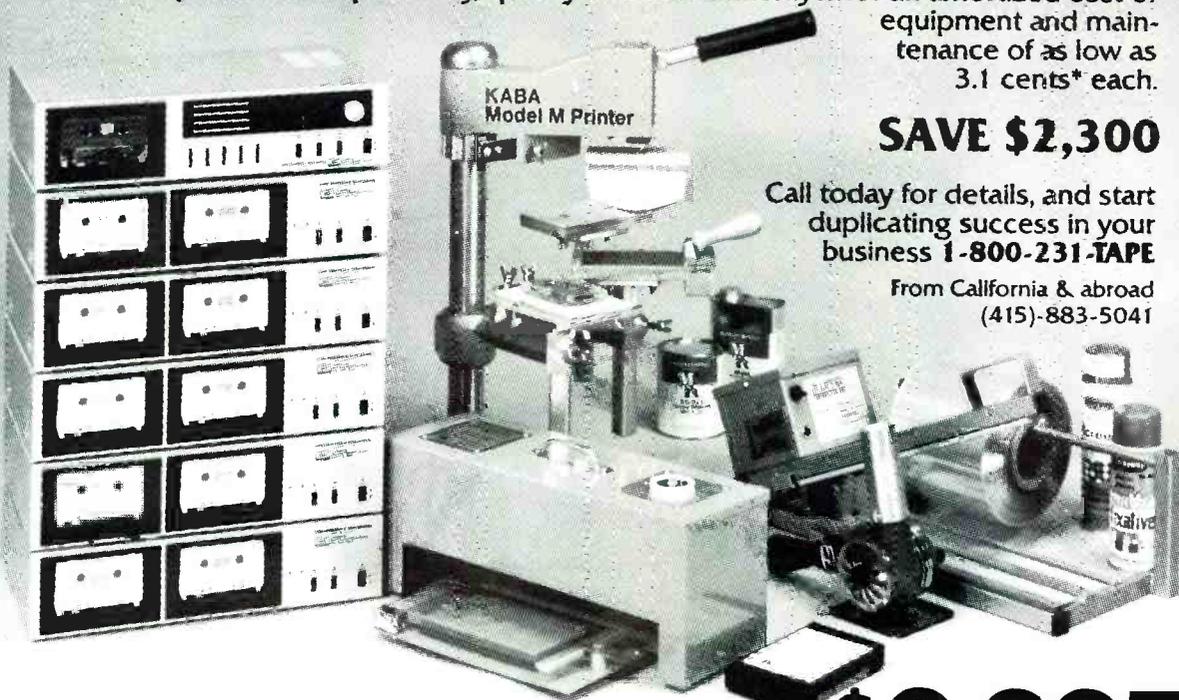
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Circle (45) on Rapid Facts Card

ic Articulation feature incorporates timbral changes into drum sounds as they are played at different volumes. This allows soft hits to sound soft, and harder, louder sound to sound as if they were hit harder.

Circle (482) on Rapid Facts Card

AMS AudioFile Plus

The updated version AudioFile now includes faster operation, eight simultaneous inputs, 16 outputs and read/write optical drives. Future software and hardware updates are planned, and all existing systems can be upgraded.

tems can be upgraded.

Circle (483) on Rapid Facts Card

Analog Devices converters

The AD1860 is an 18-bit D/A converter that requires no external components. Of a proprietary design, the AD1860 is designed for CD players, DAT recorders, synthesizers, digital audio amplifiers and keyboards. Also being introduced is the AD1864, a dual 18-bit D/A for multichannel digital audio applications such as electronic musical instruments, CD players,

digital mixing/editing systems and multimedia workstations. The AD712 is a low-cost, high-speed monolithic BiFET op-amp.

Circle (484) on Rapid Facts Card

Apogee AE-3M

Apogee Sound's AE-3M is a derivative of the AE-3 system, and shares the same A-3 processor. The system is designed to combine high output capability and power handling in a compact cabinet. Other features include steel-recessed nutplates on both sides of the cabinet, 2-position cabinet angles, multiply Finland birth construction and Neutrik NL4MP Speakon connectors.

Circle (486) on Rapid Facts Card

Apogee AE-6B

A new high-output stage monitor, the AE-6B is derived from the AE-6 and incorporates a horizontally mounted high-frequency horn. It uses the A-5 processor, which provides time domain alignment, fixed equalization points and Positive Amplifier Return driver protection.

Circle (487) on Rapid Facts Card

Audio Animation Paragon processor

Designed for broadcast production, the Paragon features the company's instant-attack-time limiting system, which yields no clipping artifacts. It has four bands of compression and four bands of limiting, including adjustable crossover frequencies, attack times, density (release time), coupling and mix level. Five sound libraries, CHR, AOR, AC, Urban, Classical/Jazz, General Use, and Television, are included. Each has five setups, ranging from minimum to heavy processing. Options include a digital 10-band graphic EQ, digital FM stereo generator and an AES/EBU input/output package.

Circle (489) on Rapid Facts Card

BASE processor

Standing for Bedini Audio Spacial Environment, BASE is a non-encoding processing tool that creates dimension, width and depth without a loss of sonic purity. According to the company, results can be more true-to-life than stereo, with minimal cancellation, more highs, better clarity, more accurate point source, better separation of instrumentation and an enlarged "sweet spot." This is accomplished without a change in spectrum, total gain or SPL.

Circle (490) on Rapid Facts Card

Beyer MC 742 microphone

The MC 742 is a stereo condenser microphone designed for stereo, M-S and X-Y recording configurations. It has two double-diaphragm capsules arranged vertically, one on top of the other. The upper con-

TC 1280/1380

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-Dual Channel Analog I/O module	\$1,395
-Adaptive FIR Filter module	\$1,995
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• DS56001 Processor Board	\$1,495
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• TMS320C25 Processor Board	\$995
• TMS320C25 System Board	\$1,995
• DSP32C System Board	\$2,995
• DSP32C Processor Board	\$1,995
• ADSP-2101 System Board	\$1,995

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• 16 Channel Analog Output	\$845
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• Dual-Processor Comm. Module	\$95
• DSP~LINK Prototyping Module	\$95

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Circle (72) on Rapid Facts Card

denser can be rotated 360° in relation to the lower capsule to accommodate a complete range of recording techniques. Five polar patterns can be manually adjusted. A 10dB attenuation switch and built-in bass roll-off filter is included.

Circle (491) on Rapid Facts Card

Brainstorm SR1

The SR-1 is a time code refresher that enables time code to be dubbed without the signal degradation that would result from a direct transfer. It also cleans up unreadable time code by eliminating distortions and level fluctuations. The unit features a balanced or unbalanced input and output, a switchable output rise time and an adjustable output level.

Circle (493) on Rapid Facts Card

Brainstorm TD24

The TD24 is a tach/dir converter for the Sony APR-24's on-board chaise synchronizer. It allows the tape machine to high-speed-chase any master machine with a tach/dir or bi-phase output, even when the master time code track is not in contact with the playback head. Features include: turbo locate mode, video release mode and ADR beep. The electronics are opto-isolated from the master machine to avoid any ground loop.

Circle (494) on Rapid Facts Card

Clear-Com MS-812

The MS-812 Master Station is a fully programmable communications control center. Features include four to 12 party line channels; individual channel volume controls; separate, non-volatile "rehearsal/show" setup memories; internal program interrupt for dressing room and zone paging; multiple call signal functions; local and global programmable relays; LCD programming assist display; and variable intensity button illumination.

Circle (495) on Rapid Facts Card

Clear-Com 1021

Model 1021 is a stereo amplified monitor speaker, providing full-range sound in a small-self-contained speaker. The rack-mount, internally bi-amped speaker is 1³/₄ inches high, but contains one 6-inch LF and two 4-inch mid/HF loudspeakers. Included are two peak-reading bar graph meters to indicate input level.

Circle (496) on Rapid Facts Card

Countryman EMW lavalier mic

The EMW is a body-worn electret condenser mic designed for film, broadcast, theatrical and sound reinforcement applications. The omnidirectional pattern is uniform over a wide range of frequencies and is available with a choice of three different frequency responses. In its most basic form, it is designed for wireless applications and is electrically compatible

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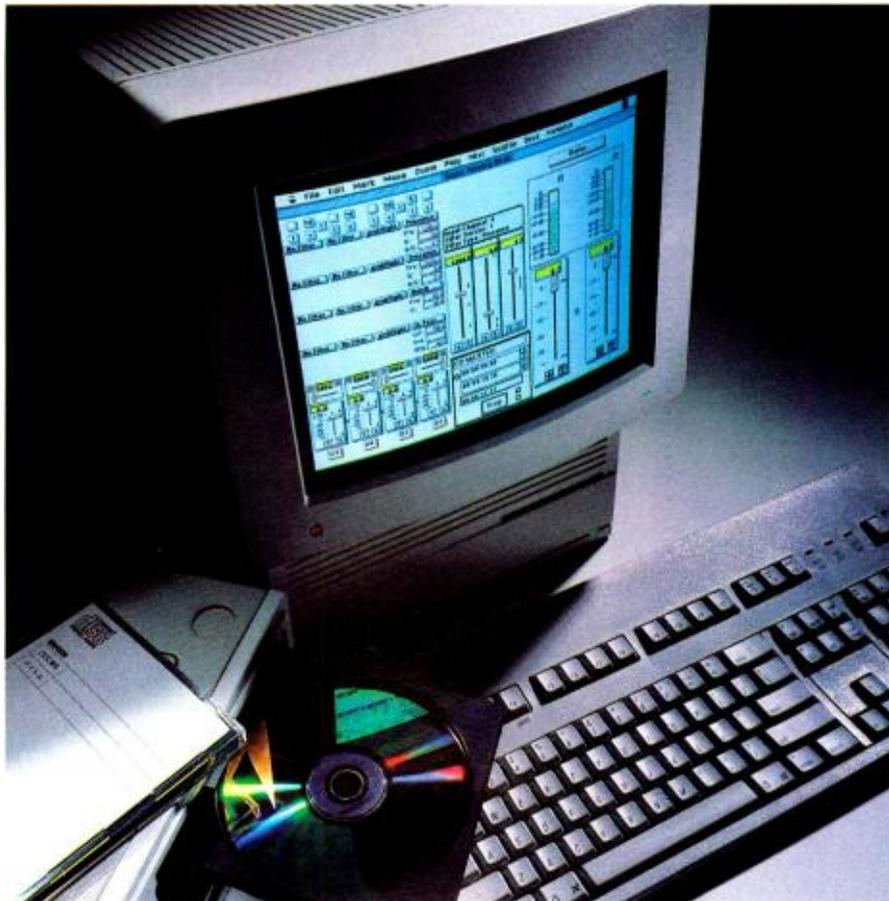
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Circle (497) on Rapid Facts Card

Crystal Semiconductor CS4328 DAC

The CS4328 is a complete stereo D/D output system. In addition to the D/A function, the CS4328 includes an 8× digital interpolation filter, followed by a 64× oversampled Delta-Sigma modulator. The modulator output controls the reference voltage input to an ultralinear analog low-pass filter. It is available in a 26-pin DIP

or SOIC.

Circle (499) on Rapid Facts Card

Crystal Semiconductor CD5336 ADC

The CD5336 A/D converter performs sampling, A/D conversion and anti-aliasing filtering, which results in a 16-bit serial word for each channel. It uses Delta-Sigma modulation with 64× oversampling, followed by digital filtering and decimation. The filter passband is dc to 24kHz. Sampling rates are 32kHz, 44.1kHz and 48kHz.

It is available in a 28-pin plastic DIP or SOIC.

Circle (500) on Rapid Facts Card

Digidesign SampleCell

SampleCell is a 16-voice, 16-bit, RAM-based sample playback card for the Mac II. It offers eight outputs, up to 8Mbytes of RAM using standard Mac II RAM and includes a CD-ROM loaded with approximately 600Mbytes of ready-to-load samples. Multiple SampleCells can be used to create a 64-voice, 32-output, 32Mbyte sampler. When used with the company's Sound Tools, it transforms the Macintosh into a high-fidelity stereo sampling and editing system, which can be configured to match users' needs. Samples can be stored on any Mac-compatible storage device, so no dedicated disks are needed. A special version of SoundDesigner II is included to edit samples.

Circle (501) on Rapid Facts Card

DLC Design SPEAK software

Designed for IBM AT/compatibles, SPEAK is a loudspeaker simulation program designed to provide accurate simulations of loudspeaker designs. Using menus, the user inputs necessary data, after which calculations are made and plots drawn. The manual trains users by stepping through design examples.

Circle (502) on Rapid Facts Card

Dolby MT Series

The MT Series provides up to 24 channels of switchable Dolby SR and A-type noise reduction, software-controlled automatic alignment, flexible assignment of any number of channels to separate groups for multitrack and multi-machine use, electronically balanced/floating input and output stages, and auto compare circuitry. Applications include recording, film, video, post-production and broadcast.

Circle (503) on Rapid Facts Card

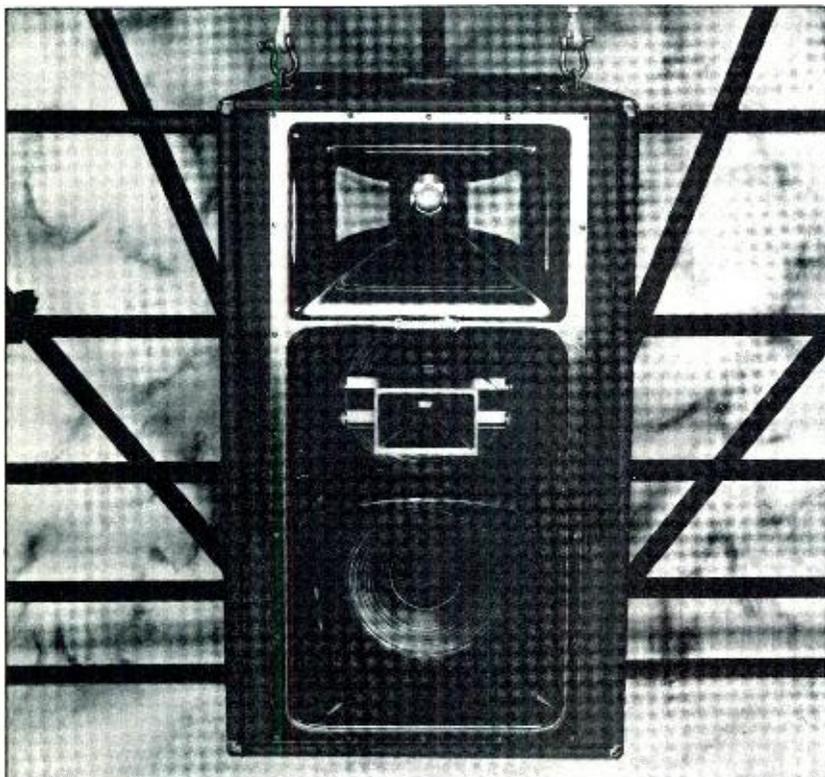
Dolby 422 encoder/decoder

The reference encoder/decoder provides four channels of Dolby B-, C- and S-type NR in a 1U frame. One pair of channels can operate either as encoders or decoders, while the other pair operates as decodes only. A signal generator provides calibration tones corresponding to selected NR type. Applications include encoding running masters for audio and video tape duplication, decoding recordings for quality assessment and C-type decoding of 1/2-inch and 3/4-inch VTR formats.

Circle (504) on Rapid Facts Card

Drawmer DL241

The DL241 auto-compressor is a dual-gated compressor/limiter that incorporates many automatic features for quick operation in situations where strict dynamic range control is required. An auto-



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attack expander/gate with auto-ratio circuitry prevents "chatter," on or around the threshold, and has a switchable release time. The unit also has a full auto-attack/release "soft knee" compressor with simultaneous LED displays for gain reduction and output level. It can be switched for manual control of the attack and release times if required.

Circle (506) on Rapid Facts Card

Drawmer DS301

The dual expander/noise gate offers auto attack, peak attack, retrigger mast, and balanced inputs and outputs. It also has comprehensive MIDI facilities, including programmable individual MIDI channels, programmable notes sent, programmable split bands receive, "data present" LEDs, velocity sensing and velocity output in EXPAND mode.

Circle (507) on Rapid Facts Card

Ediflex Optiflex

The Optiflex is a digital multitrack recorder for use on film sound re-recording and music recording/mixing stages, using removable, rewritable magneto-optical disks. Tracks are instantly accessed by computer, allowing total freedom in sound manipulation, with the creative flexibility

of 35 mag film.

Circle (508) on Rapid Facts Card

HRSII recording system

Available from Electronic Architecture Techniques, the HRSII AachenHEAD recording system is a dummy head microphone system operated by 48V phantom power inputs. It includes individually tuned EQ (frontal free-field or independent of direction, switch-selectable) for loudspeaker compatibility, and Schoeps mic capsules.

Circle (509) on Rapid Facts Card

Electro-Voice MT-2

The MT-2 is a half-size version of the MT-4 speaker system, using Manifold Technology. The system contains an MTH-2/94 mid/HF cabinet and an MTL-2 LF cabinet. It can be used as a stand-alone system or to supplement the MT-4 in down-fill and medium-throw applications. Crossover points are at 160Hz and 1,600Hz.

Circle (510) on Rapid Facts Card

E-V DeltaMax monitor

The DML-1152MC slant monitor offers the same performance as the DML-1152A with new features. The spare front horn can be rotated for a 60°×40° or 40°×60° pattern.

Three-angled sides offer two horizontal cabinet positions and one vertical cabinet position. Using the existing DMC-1152A controller, the -1152MC has a frequency range of 50Hz to 18kHz and is designed to deliver this a high SPL.

Circle (511) on Rapid Facts Card

Euphonix Crescendo

The Crescendo audio mixing system provides SMPTE-based automation of all mixer functions, including faders, mutes, EQ, mic pre's and signal routing. Entire console setups can be recalled in 20ms. Snapshots and automation files are stored in high-speed RAM and archived to hard disk. Dynamic automation of faders, EQ and aux sends is frame-accurate. The system can be configured for 48 to 112 inputs and includes two mic inputs, two EQs, two stereo faders, three effects loops, and two direct outputs per channel.

Circle (512) on Rapid Facts Card

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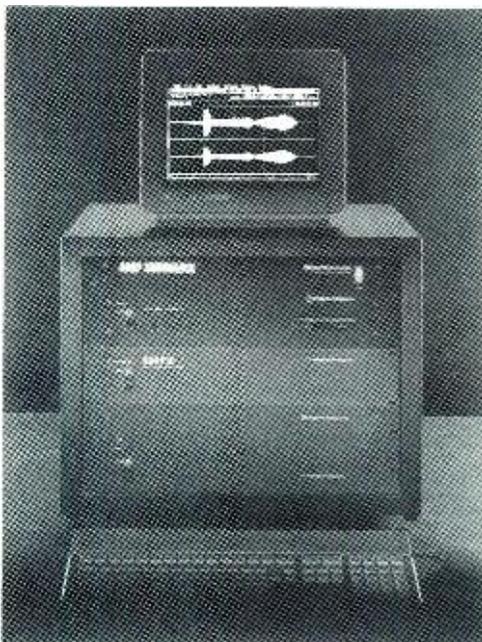
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Circle (513) on Rapid Facts Card

Furman AR-PRO

The AR-PRO is a 30A line voltage regulator that supplies regulated ac power at each of 12 rear-panel and two front-panel outlets. It can supply a nominal 120Vac output from any input from 88V to 264V, allowing it to be used almost anywhere in the world. Taps are switched only at voltage zero-crossings, and the unit is not sensitive to line frequency. Features include 21-LED bar graph meters for input voltage and input current, and three status lights indicating output regulation.

Circle (514) on Rapid Facts Card

Furman SP-20

The unit is a stereo power amp in the half-rack spec, and features 20W per channel. It may be switched for normal stereo, dual-channel mode, or bridge 40W operation as needed. It includes a stereo input level control, signal present and overload LEDs for each channel, a headphone output with its own volume control and speaker mute switch. If needed, the unit can be used as a multistation headphone amp by connecting a chain of HR-2 headphone remote stations.

Circle (515) on Rapid Facts Card

Gauss 3588 coaxial

The 3588 is "conservatively" rated at 200W RMS and can be retrofitted into existing cabinets or new designs for studio and sound reinforcement applications. Because of the company's proprietary design parameters, both drivers are virtually in the same acoustic plane, eliminating the need for time compensation networks. The heavy ferrite magnet structure features Gauss Pole Geometry (GPG), which reduces second-harmonic component, which would degrade the sound. The cash horn was designed using Gauss's Computer Aided Time Spectrometry (CATS) program, which is said to provide a stable image and reduce shadowing.

Circle (516) on Rapid Facts Card

GML 2000

George Massenburg Labs' Series 2000 Moving Fader Automation Environment features pan and zoom graphics recall, machine control and "C" peripheral VCA controller. New options include true stereo fader, software-nested groupers, drop-in points, data add and VCA-style auto-null mode. New software packages include video post and film re-recording configurations, using relevant terminology and multisectional control.

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Gold Line PN-3

The PC-3 gated pink noise generator/timer automatically turns pink noise on and

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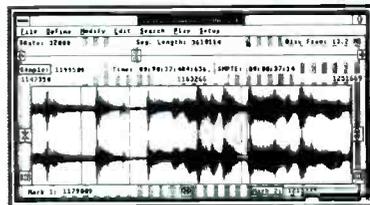
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Circle (52) on Rapid Facts Card

off. It can be set for intervals ranging from "burst" to "continuous." It allows pink noise to be placed in different parts of a hall without having to return to the on/off control. The "burst" mode is useful for audio testing gates or checking RT-60 readings.

Circle (576) on Rapid Facts Card

Other Gold Line products

The company is introducing three other products. The CBM-2 is an omni electret boundary mic with "normal," "cut" or "boost" filters, designed for drums, pianos or stage use. The SPL120 is a digital portable SPL meter with a 7-segment numeric display, with readings from 45dB to 120dB. The Loftech TS-2 is an audio test set designed to read impedance at any audio frequency. A sine wave generator, frequency meter, decibel meter and an impedance meter are built in.

Circle (518) on Rapid Facts Card

Hardy MPC-1R

The John Hardy Co. MPC-1R offers the same features as the M1 mic pre-amp in a 3.5-inch vertical card-cage format. It includes a Jensen JE-16-B input transformer, 990 discrete op-amp and dc-servo circuitry that eliminates coupling capacitors. Four meter options, two output transform-

er options and an optional TS-1R companion card with three additional transformer outputs for sending the signal to several transformer-isolated locations are available.

Circle (519) on Rapid Facts Card

Harrison ARS-9

From Harrison by GLW, the ARS-9 is an audio routing switcher under microprocessor control. Designed for multiroom recording, video post, broadcast and film applications, the unit is designed to work with the Harrison Series Ten console. This allows the instant recreation of all console functions, including multiple source routing to and from the console. It may be fitted with up to 256 inputs and 256 outputs, allowing a maximum of 65,536 switches or crosspoints.

Circle (520) on Rapid Facts Card

Hybrid Arts ADAP II

The system is a computer-based digital audio recorder and editor. ADAP II allows non-destructive editing of digital audio with 16-bit precision and will accept analog or digital audio at sample rates between 22kHz and 48kHz. It includes a SMPTE reader/generator, and all of the necessary hardware/software in a turnkey

system. Recording times of more than 100 minutes of stereo are available.

Circle (521) on Rapid Facts Card

JBL products

JBL Professional is introducing five products. The SR4700 series loudspeaker system is a portable sound reinforcement loudspeaker system featuring Vented Gap Cooling transducers and pure titanium diaphragm compression drivers. The Control SB-1 subwoofer is a triple-chamber bandpass subwoofer system for use with Control 1 monitors. The Control SB-5 is a subwoofer system for the Control 1 and Control 5. The SR6600 Series amplifiers are compact sound reinforcement power amplifiers feature HF power conversion technology. The ES Series amplifiers are compact commercial amplifiers featuring 1dB stepped digital attenuators and HF power conversion technology.

Circle (523) on Rapid Facts Card

JVC DS-DT900U

The unit is a DAT recorder that can be synchronized to TV signals and use standard SMPTE time code to permit its use in TV production and post-production. An internal TV sync generator can output TV sync signals that are in-phase with digital audio played back from the machine. Paral-

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lel and serial remote ports allows connection to most editing systems.

Circle (524) on Rapid Facts Card

K-T DN735 recorder

Klark-Teknik's DN735 solid-state recorder records and plays back short passages of stereo audio in synchronization with other devices via externally applied time code, thus adding two extra tracks of audio to standard VTRs. Plug-in memory cards can increase on-board memory to 175 seconds. When used in mono mode, the maximum storage time is 350 seconds. RS-422 provides serial control, allowing the unit to be controlled directly from the VTR.

Circle (525) on Rapid Facts Card

Klipsch KP-115-SW

The KP-115-SW is a 15-inch subwoofer that can be transported anywhere because of its size and weight. When placed on its side, it is rack-mountable (14U), and can be placed underneath most popular 15-inch 2-way systems. Weighing 65 pounds, it can also be drop-shipped to sites if needed. Handles are recessed and are placed so that the cabinet is balanced when carried. Edges are round, and interlocking caps lock stacked cabinets to-

gether.

Circle (526) on Rapid Facts Card

Korg DAW

The Korg DAW digital audio workstation features 16-bit technology used in such products as the M-1 and T-Series workstations. It consists of four major systems: a hard-disk-based 8-track digital audio recorder; a computer-controlled 8-channel mixer; a 16-track MIDI recorder/sequencer; and a multichannel digital effects generator. All functions are controlled by a built-in SMPTE generator and synchronizer. The recorder features 114 minutes of on-line sound, stored on a built-in hard disk drive. A built-in magnetic optical disk drive system is used for storage and backup.

Circle (527) on Rapid Facts Card

Mark of the Unicorn Video Time Piece

The Video Time Piece is a VITC/MIDI/SMPTE synchronizer and character generator for audio/video production. It reads and writes all SMPTE formats, gen-locks to house sync or video, jam sync SMPTE, and converts SMPTE to MTC, VITC to LTC, and LTC to VITC. A character generator allows the unit to burn

in code, generate streamers and conductor crawl lines and download graphics from a computer onto the video. An audio click-to-MIDI converter is also included. Video Time Piece is controlled by a personal computer with a software desk accessory that allows users access over all synchronizer and character generation functions. Initially available for the Macintosh, it will be available in other platforms in the future.

Circle (528) on Rapid Facts Card

Meyer VX-1

Meyer Sound Laboratories' VX-1 stereo program equalizer is a single-space rack-mount unit designed for composite response shaping of program material. Featuring Virtual Crossover implementation, the unit provides five controls for each channel: two frequency breakpoint settings, and gain controls for low, mid and high bands. Applications include simulation of non-flat playback systems and standardized house curves to compact disc mastering and sound reinforcement house equalization.

Circle (529) on Rapid Facts Card

Meyer DS-2

The DS-2 arrayable mid-bass loudspeak-

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FURMAN
Signal Processing

Circle (55) on Rapid Facts Card

September 1990 R•E•P 109

er is a horn-loaded unit designed to cover the frequency range from 50Hz to 200Hz. Designed to supplement the Meyer MSL-10A and large MSL-3 arrays, it employs two 15-inch cone low-frequency drivers in an enclosure the same dimensions as the MSL-3, and presents a 4Ω load.

Circle (530) on Rapid Facts Card

Neotek Encore console

The Encore console is designed for film dubbing and film-style TV post-production. Available in 4- and 6-track formats, with several automation options and custom patchbay alternatives, the console has comprehensive facilities familiar to film mixing engineers. It is available in versions for one to three operators, with up to 95 inputs.

Circle (531) on Rapid Facts Card

Neve DTC-2

The DTC-2 digital transfer console is an enhanced version of the DTC-1. New equalization consists of two pairs of selections for LF and HF, with a full range of peak/shelf response in both selections. Midrange band coverage is between 1,000Hz and 3,150Hz, with a choice of up to seven different Q values. An A/B store system facilitates comparisons between different EQ settings. New Neve A/D and

D/A converters include special anti-aliasing and anti-imaging filters, which results in S/N figures exceeding 102dB.

Circle (532) on Rapid Facts Card

NVision NV2000

The NV2000 is a high-definition audio system developed to support and simplify multichannel audio interconnection requirements, including HDTV, D-1, D-2 and Type C VTRs. Designed to bridge the gap between high technology and affordability, the unit offers an integrated approach to multichannel distribution. Up to 10 channels of 20-bit audio can be routed throughout a facility with the same switch and cable space required for one analog audio channel. This means that one deck of a video routing switch can be used to carry all program audio, time code and cue information.

Circle (533) on Rapid Facts Card

ODC 617 CX encoder/decoder

Optical Disc Corporation's 617 is a stand-alone rack-mounted unit that performs both CX encoding and decoding of two audio channels in accordance with the CX standard and IEC specifications for video-discs. It can be set up to CX-encode and -decode for stereo or to provide independent channel encoding and decoding for

bilingual (dual-independent) audio. Encoding and decoding are bypassed when power is not applied, and can be bypassed independently by front-panel switches. This allows the unit to be integrated into a mastering or recording system with no cable changes necessary.

Circle (534) on Rapid Facts Card

Oxmoor distribution amps

The RMX-44 is a compact 4x4 buffer/mixer/distribution amplifier, while the RMX-62 is a 6x2 unit. Both are housed in 1U, rack-mount chassis. Both offer front-panel input trimmers with ±15dB gain adjustment. A logic control port allows for remote selection of an input or multiple inputs to any or all outputs. Any of the inputs can be assigned to any or all of the outputs, in any combination. Jumpers are used for setting various output configurations, electronically balanced, XLR-type inputs and outputs. All outputs can deliver +24dBm into a 600Ω load.

Circle (535) on Rapid Facts Card

Paktek Cassingles packaging system

The system consists of the model OCG6000 O'Card score/form/glue machine and the model OC3000 inserter. The

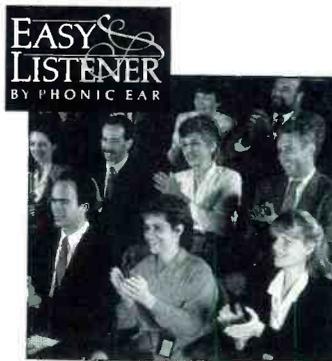
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equipment accepts flat rectangular printed stock, which it then processes into the finished product at 120 pieces per minute. Computer control interfaces with the audio cassette line to start and stop on demand, and to monitor all machine functions simultaneously.

Circle (536) on Rapid Facts Card

Panasonic SV-3700

The company's latest addition to its DAT machine line features a front panel shuttle wheel with 0.5x to 15x speed range. Other features include an infrared remote controller, push-button fade-in/fade-out functions, balanced inputs and outputs video XL-type connectors for diverse interfacing possibilities and up to 400x forward/rewind/search speeds.

Circle (537) on Rapid Facts Card

Panasonic SV-3900

The SV-3900 DAT machine features enhanced 4-stage, 1-bit Delta-Sigma A/D converters, plus quad-18-bit D/A converters. An all new mechanical system provides up to 400x forward/rewind/search speeds, and a 9-pin serial port makes it compatible with most editing controllers and automation systems. Also included is a remote control unit with standard keypad for entering PNO and start IDs.

Circle (538) on Rapid Facts Card

AMR SyncController update

Peavey's Audio Media Research division has introduced a new software update for the SyncController, a SMPTE-based synchronizer and event controller. Full "chase-lock" is now available, along with tempo mapping. Other refinements include improved locate and lock times with several popular tape machines.

Circle (539) on Rapid Facts Card

Quad Eight console systems

Quad Eight now features 3-channel, left, center and right, and 4-channel, left, center, right and surround panpots on all of its console lines, including the Virtuoso recording console, Screenstar video post-production console and Filmstar film recording console. Four-channel monitor systems are supplied with the Virtuoso and Screenstar, while the Filmstar is available with a matrix and dedicated assignment 4-channel or 8-channel monitor system to present all film formats. Customization is available.

Circle (540) on Rapid Facts Card

Rane FPL 44

The latest addition to the Flex Series is the FPL 44 Quad Program Limiter. In addition to using the Servo Lock design of the DC 24, each channel can independently be switched to a special function called audio slave, which links the side chains of selected channels so that they all respond identically to the limiting demands of any

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one channel. This allows the overall dynamic integrity to be preserved in such difficult situations as actively crossed-over speaker systems and multichannel live sound reinforcement.

Circle (541) on Rapid Facts Card

Rane FNG 44

The FNG 44 is a quad noise gate that features separate attack threshold, attenuation depth, release time, release threshold and bypass controls for each channel. The separate release threshold control eliminates noise "chattering" on long decay patterns such as cymbals. The unit is built in the HR spec, which allows two units to be mounted together, providing eight separate channels in a single rack space.

Circle (542) on Rapid Facts Card

Renkus-Heinz products

The company is introducing three products. EASE is an acoustical design and analysis software program for consultants, engineers and contractors. The CMI21 is the latest addition to the Cluster Module loudspeaker line and features a multi-angled cabinet that simplifies installation and is easy to array. The C-1 System is a coaxial point-source high-performance speaker system that provides sonic performance in large concert sound applications.

Circle (543) on Rapid Facts Card

Roland DM-80 hard disk recorder

Roland's DM-80 digital multitrack hard disk recorder combines the editing power of a sequencer, the audio recording capabilities of a multitrack recorder, and the sound quality of digital audio equipment. It is a stand-alone unit that allows any sound source, including acoustic instruments, to be recorded. The basic configuration provides four recording tracks, sampling rates of 32kHz, 44.1kHz and 48kHz, and a built-in 100Mbyte hard disk. It can be expanded to eight tracks. Also included is a SCSI bus, AES/EBU I/O and a dedicated remote control.

Circle (544) on Rapid Facts Card

Roland monitors

The R/U/S Activ NF-25 and -100 are powered close field monitors. The NF-25 is a 2-way bi-amped system with a 5.25-inch woofer and 10mm dome tweeter, and the Activ NF-100 features an 8-inch woofer. Both feature all-electronic crossovers with active frequency and phase compensation, and external high current power supplies. Input level and tweeter level controls are located on the rear panel.

Circle (545) on Rapid Facts Card

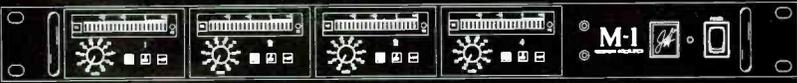
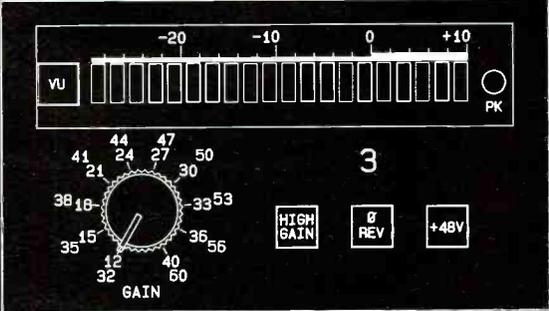
Rolls 10-band EQ

The HR210 is a dual 10-band EQ in a single half-rack unit, with a noise floor of -90dB and S/N of 106dB. The front pan-

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el has level and bypass controls for each channel, as well as power and overload indicators. The unit also uses gold sockets and RCA's, and non-inductive capacitors.

Circle (546) on Rapid Facts Card

Rolls HR amp

The HR250 stereo power amp is a 50W per channel, general-purpose amplifier in a half-rack chassis. It is bridgeable for 100W into 8Ω or can drive a 70V line directly. Front panel controls and LED power meters are included. Frequency response is dc to 70kHz, and the MOSFET design is intended to withstand heavy use in distributed systems or permanent installations.

Circle (547) on Rapid Facts Card

RPG Flutterfree

Flutterfree is a non-absorptive architectural flutter control hardwood molding, which eliminates flutter echo and resonances while maintaining a natural ambiance. When the panels are mounted adjacent to one another and spaced from a wall boundary, they can be used as low frequency slat Helmholtz absorbers to control room modes.

Circle (548) on Rapid Facts Card

RPG Biffusor

Biffusor is designed to provide an acoustic barrier between instrumental sections in an orchestra, where high intensity instruments like percussion and brass can overwhelm softer sounds like woodwinds and strings. Biffusor is designed to provide an acoustical barrier within instrumental sections, providing abfussion on one side and diffusion on the other.

Circle (549) on Rapid Facts Card

Saki replacement heads for Studer

Saki Magnetics is now offering factory-equivalent record and playback heads for Studer A-80 and A-800 series 24-track recorders. They are made of permalloy to meet or exceed Studer electrical and mechanical specifications in all essential characteristics. The replacement heads can replace the original heads with no wiring modification.

Circle (550) on Rapid Facts Card

Samson wireless systems

Samson Technologies is introducing three wireless systems. The VLP is a budget-conscious system available on 14 VHF frequencies, and is designed for entry-level users. Super TD is an upgrade modifica-

tion of the company's Concert TD system. It features greater distance through optional active antennas, improved frequency response and four times the headroom. The UHF series is Samson's first product in the UHF band. In addition to the capability to operate up to six different units in the same location, the series uses cavity tuning and dielectric filtering.

Circle (551) on Rapid Facts Card

Schoeps/Posthorn KCY/VMS02IB

The unit is a miniature stereo microphone system with M-S matrix, which permits the user to configure a stereo mic for X-Y or M-S. Any two of the Colette series capsules can be used to make up the stereo pickup head, with a special cable connecting them to a remote box with simultaneous M-S and X-Y stereo outputs at line level. A separate headphone monitor output with level control audits either signal. The remote box also features switchable gain settings, a variable M-S matrix and LF filtering if required.

Circle (552) on Rapid Facts Card

Selco control knobs

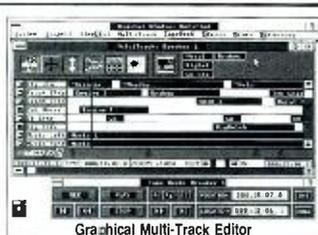
Selco has introduced a 47mm model to its range of collet control knobs. Plain or

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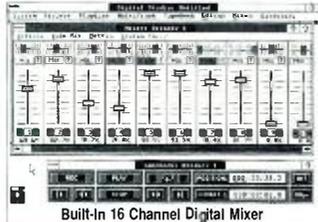
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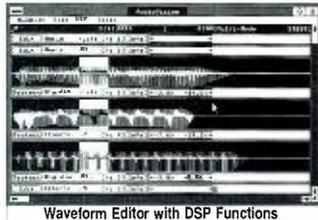
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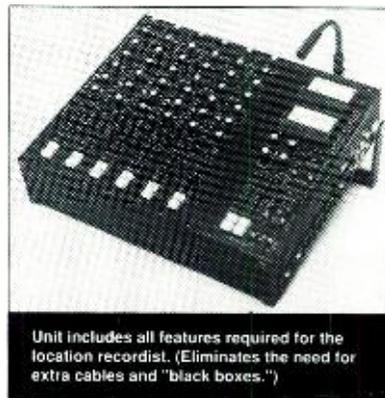


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cranked versions are now available, offering the opportunity to match control knobs when a larger diameter product is specified. Both types of knobs may be fitted with a brass flywheel weight, if required. Standard colors are black or gray, but other colors are available upon request.

Circle (553) on Rapid Facts Card

Sennheiser WM 1 wireless mixer

Designed for field audio mixing, the WM 1 is a 5-channel, portable audio mixer that operates on internal or external dc power. Four of the channels have RF receivers as inputs for wireless microphones, and one additional wired balanced input for mike or line-level audio sources. Each of the channels has bass and treble equalization controls, a switchable 70Hz cutoff filter to reduce LF rumble, pre-fader listen, channel gain adjustment, channel on/off switch and an LED bar graph switchable for audio level or RF field strength. All controls are accessible at the front panel.

Circle (554) on Rapid Facts Card

Sony products

Sony Pro Audio is introducing a variety of

products, including the 7000 series 4-head DAT recorder with time code; MXP-210 and -290 mixers; the BVG-200 portable time code reader/generator; and the MXP-2900 series consoles. The latter is the latest in Sony's audio-for-video consoles, which provide a wide selection of plug-in cards and modules for inputs, monitoring, dynamics, communications, mic pre-amps and line pre-amps, which allows users to configure a console for their individual needs.

Circle (555) on Rapid Facts Card

Spatial Sound SSP-100

The SSP-100 Spatial Sound Processor is a programmable multichannel audio signal panner for the creation of surround sound on speaker arrays with up to eight loudspeakers, with the loudspeaker positions being programmable. Mono sound sources can be placed or moved in real-time with joysticks anywhere inside the loudspeaker array. These movements can then be recorded in the internal position sequencers or externally on a MIDI sequencer, or on an FSK data audio track, or programmed in step-time. Proportional reverberation and Doppler shift can be added.

Circle (556) on Rapid Facts Card

Spectrum Signal DSP56001

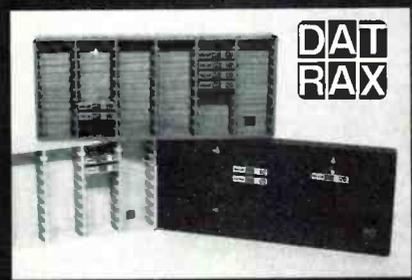
Spectrum Signal Processing's dual DSP56001 processor board is said to be the first PC-based processor that uses multiple Motorola DSP56001 signal processors. The board is designed for audio systems that use DSP to reduce or eliminate acoustic echo, compress digital data and improve overall sound quality. It is designed for use with IBM PC/XT/AT computers and compatibles. A companion module, a dual-channel analog I/O module, performs 16-bit conversion at sample rates of up to 200kHz on one channel, or 100kHz on two channels.

Circle (557) on Rapid Facts Card

Stewart amplifiers

Stewart Electronics is introducing three products. The PA-50U/B is a single-channel, half-rack stereo power amp that delivers 25W per channel into 8Ω, or 50W per channel into 2Ω. The PA-100U/B is a single half-rack stereo power amp that delivers 50W per side into 8 or 100W per side into 2Ω. The PA-500 is a 2U dual mono amplifier that delivers 250W per channel into 8Ω or 600W per channel into 2Ω. Features include a switching power supply, and thermal and short-circuit pro-

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Studer D820-48 DASH recorder

The D820-48 is Studer's entry into the 48-track DASH market. Extremely low-noise passive filters have been developed to match the machines 4x oversampling D/A converters. Features include advanced head technology, built-in time code generator, track bouncing from one track to one or more other tracks, compatibility with all 24- and 48-track DASH machines, an

internal synchronizer, output with negative delay, and a wide selection of external clock sources.

Circle (559) on Rapid Facts Card

Studer EdiTech Dyaxis update

The Dyaxis 2+2 now features 4-channel simultaneous playback, overdubbing, multitrack record and programmable I/O. A new system synchronizer and time code options allows the system to lock to SMPTE, EBU, VITC, video and film tach. An integrated DAT subsystem stores all

soundfiles and allows for precise editing instructions. Up to 100 different sampling rates are available on-line.

Circle (560) on Rapid Facts Card

Symetrix SX206 processor

The SX206 multidynamics processor is a single-channel device that may be used as a compressor/limiter, gate, downward expander, ducker or a slave for stereo operation. Complete operating controls are provided for each operating mode. For situations that require the unit to "wake up" in a particular mode, rear panel DIP switches determine the initial operating state. For stereo, units are linked via rear-panel TRS jacks and operated as a tracking stereo pair in a master/slave configuration.

Circle (561) on Rapid Facts Card

Tannoy Monitor Series

Based on 10 years of Differential Material Technology research, Tannoy's Studio Monitor Series consists of six speaker types: System 2 NFM; System 8 NFM; System 10 DMT; System 12 DMT; System 15 DMT; and System 215 DMT. By using DMT technology, which involves isolating any moving or vibrating component by using a surround or mount made from a different material or a fused bond generating a differential, the company says unwanted sonic characteristics are eliminated. All products in the line use redesigned Dual Concentric Drivers mounted in cabinets constructed from a high-density MDF space-frame. Additional features include bi-wired terminal panels, hard-wired cross-overs, polyimide wire insulation and magnetic gap coolant.

As in past AES shows, Tannoy is giving away three pairs of monitors at the end of each day. Ballots are available at Tannoy's booth, and winners must be present to win.

Circle (562) on Rapid Facts Card

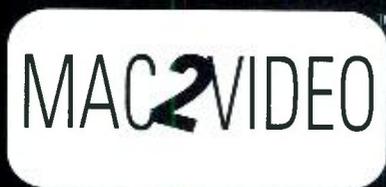
TDK pro tape line

TDK has introduced a line of professional audio and video recording tape called the Professional Master Series. The line features improved tape formulations, high-performance cassette mechanisms and new packaging. Audio cassettes in the line include SM (Sound Master), for studio and demo recording; AM (Acoustic Master), for A/V applications; AL (Acoustic Master/Leaderless), for instant starting and high-quality reproduction; and ZM (Duplicate Master); for duplicator applications.

Circle (563) on Rapid Facts Card

THAT VCAs

THAT Corporation is introducing three voltage controlled amplifiers. The 202XT and 202XTC are modular VCAs that offer improved modulation noise over a dbx 202XL and improved control-voltage feed-



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through over a dbx 202X. The -XTC is fully temperature-compensated. Both are pin-compatible with the dbx 202 series. The 202H features improved noise and distortion compared to a dbx 202X and is pin-compatible. It is designed for automation systems in new consoles, and may be retrofitted into existing automated consoles based on dbx modular VCAs.

Circle (564) on Rapid Facts Card

360 Systems DigiCart

DigiCart is a digital audio cart machines that contains a 16-bit stereo digital recorder/reproducer while retaining the controls of a traditional cart machine. It stores 10 minutes of stereo at 15kHz on a removable magnetic digital audio disk; there is no limit to the number of cuts that can be recorded on the disk. Standard remote control functions, three NAB standard cue tones, a serial computer interface and extensive editing facilities have been provided. An optional internal disk drive increases the storage time to one hour.

Circle (565) on Rapid Facts Card

360 Systems audio routers

The company has added the AM-16/R remote control station and the AM-16/CR circuit card remote to its line of audio routers. The AM-16/R is a 1U control panel that will access up to four levels of switching. Interface with AM-16/B master switchers is through EIA-485 control parts. A "lock-out" feature allows sources and destinations to be dedicated to individual locations with all routing assignments displayed on backlit buttons. The AM-16/CR includes the capabilities of the AM-16/R but without the buttons and chassis, which allows users to create "idiot-proof" control panels.

Circle (566) on Rapid Facts Card

360 Systems Patch-It software

Created by Sprocket Development and marketed by 360 Systems, Patch-It is an editor/library software package for the Macintosh that provides remote control for the AM-16/B audio crosspoint switcher. It provides a clear display of parameters for each of the unit's operating modes, including program select, program edit, program recall and individual crosspoint editing.

Circle (567) on Rapid Facts Card

TimeLine SSL data interface

The Lynx SSL data interface is said to be a more flexible and cost-effective method for the SSL Studio Computer to talk directly to audiotape recorders, VTRs and film equipment. A joined development between SSL and TimeLine, the unit allows facilities to use complete Lynx systems for a simple, unified network between consoles, tape machines and synchronizers. In addition to offering unlimited master/slave selection, it allows all offset, cue

and mix data to be stored on the SSL data cartridge.

Circle (568) on Rapid Facts Card

TimeLine Lynx keyboard unit

The Lynx keyboard control unit, designed for multimachine synchronization and audio editing, features new software with additional operating features. All controls are functionally grouped for ease of operation, and the fluorescent alphanumeric display provides the maximum amount of user information. To expand the number of trans-

ports and other devices controlled by the system, the Lynx System Supervisor may be added.

Circle (569) on Rapid Facts Card

TOA mixing consoles

TOA has introduced the SC-164 (16x4) and SC-124 (12x4) mixing consoles, designed for professional sound reinforcement applications. Both incorporate nine mix buses, including four group sends, stereo left and right buses and three independent aux sends, one pre-fader, one pre-EQ and



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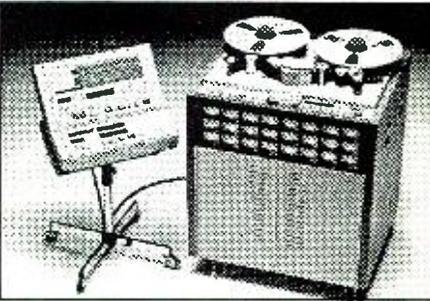
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US Audio MIX-5S

The MIX-5S is a 1U unit that brings mixing capabilities and other features to an audio or A/V installation. Features include four balanced XLR or 1/4-inch TRS inputs, each with level and pan controls as well as a line/mic/instrument level switch that provides 35dB of gain to either signal. An auxiliary input is also provided, which accepts and sums a stereo pair of unbalanced line level signals. Other features include 24Vdc of switchable phantom power, 10-segment LED level meters and independent master level controls.

Circle (571) on Rapid Facts Card

Versadyne PT-250 Production Totalizer

The PT-250 provides tape duplicators with up-to-the-second running totals of production copies, and can be added to most existing tape duplication systems. It racks the ongoing number of copies made on a sys-

tem with up to 12 slaves by evaluating the status of each slave before and after cue-tone insertion. This ensures that only completed copies are counted in the totals. The unit's design allows slaves to be stagger-loaded and various hub lengths to be used with no effect on the accuracy of the count.

Circle (572) on Rapid Facts Card

Versadyne SR-150 slave reader

The SR-150 duplicator slave reader permits precise adjustment of bias and recording levels on most duplicating systems. Technicians can easily monitor proper biasing and record levels for each track while adjustments are being made, which minimizes downtime and boosts productivity. The unit consists of a playback head on an adjustable headblock, a VU meter with associated electronics and a control knob for selecting pre-determined record level calibration points. It is affixed to the slave in the tape path following the record head.

Circle (573) on Rapid Facts Card

Whirlwind splitting systems

The Concert 32 and 42 mic splitting systems are prepackaged sound reinforcement systems that include the most requested options to provide complete

interconnection for house and monitor consoles. The Concert 32 has 24 inputs and eight returns, while the Concert 42 has 32 inputs and 10 returns. Each is available in a heavy-duty steel stage box or an 8U rack panel with back box enclosure. A 150-foot main cable and a 50-foot cable for the split output, both with 4-foot fan-outs, are provided.

Circle (574) on Rapid Facts Card

Whirlwind line balancer/splitter

The Line Balancer/Splitter is a single-channel, low-impedance device for isolating, splitting and balancing line-level signals, and is designed for applications requiring isolation at line level. It uses the Whirlwind TRSP-600 transformer. A choice of two input connectors — a female XLR jack or a 1/4-inch TRS jack — is provided for connection to a line level source, either balanced or unbalanced. Two output modes, isolation and splitting, are provided.

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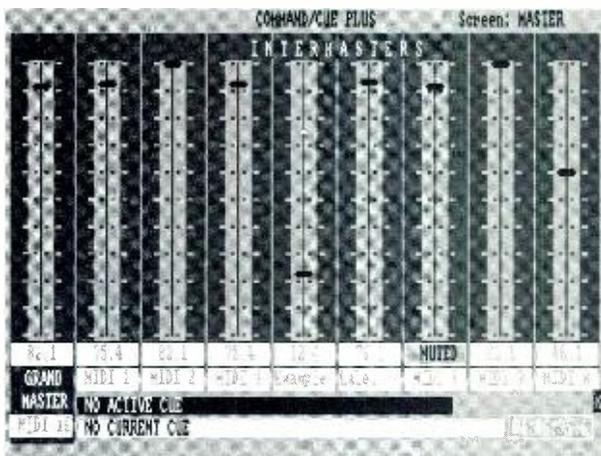
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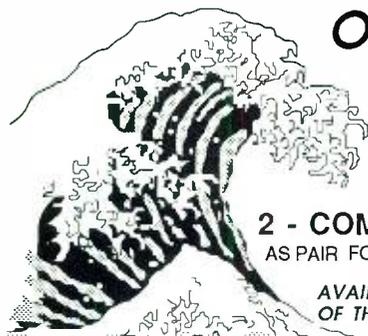
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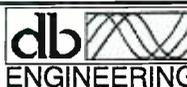
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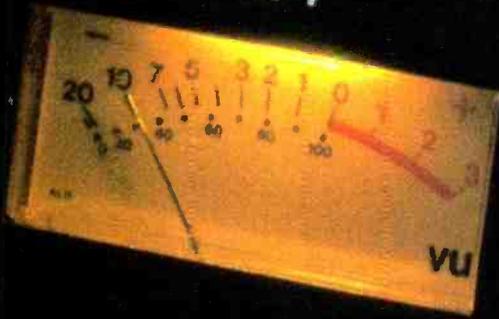
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