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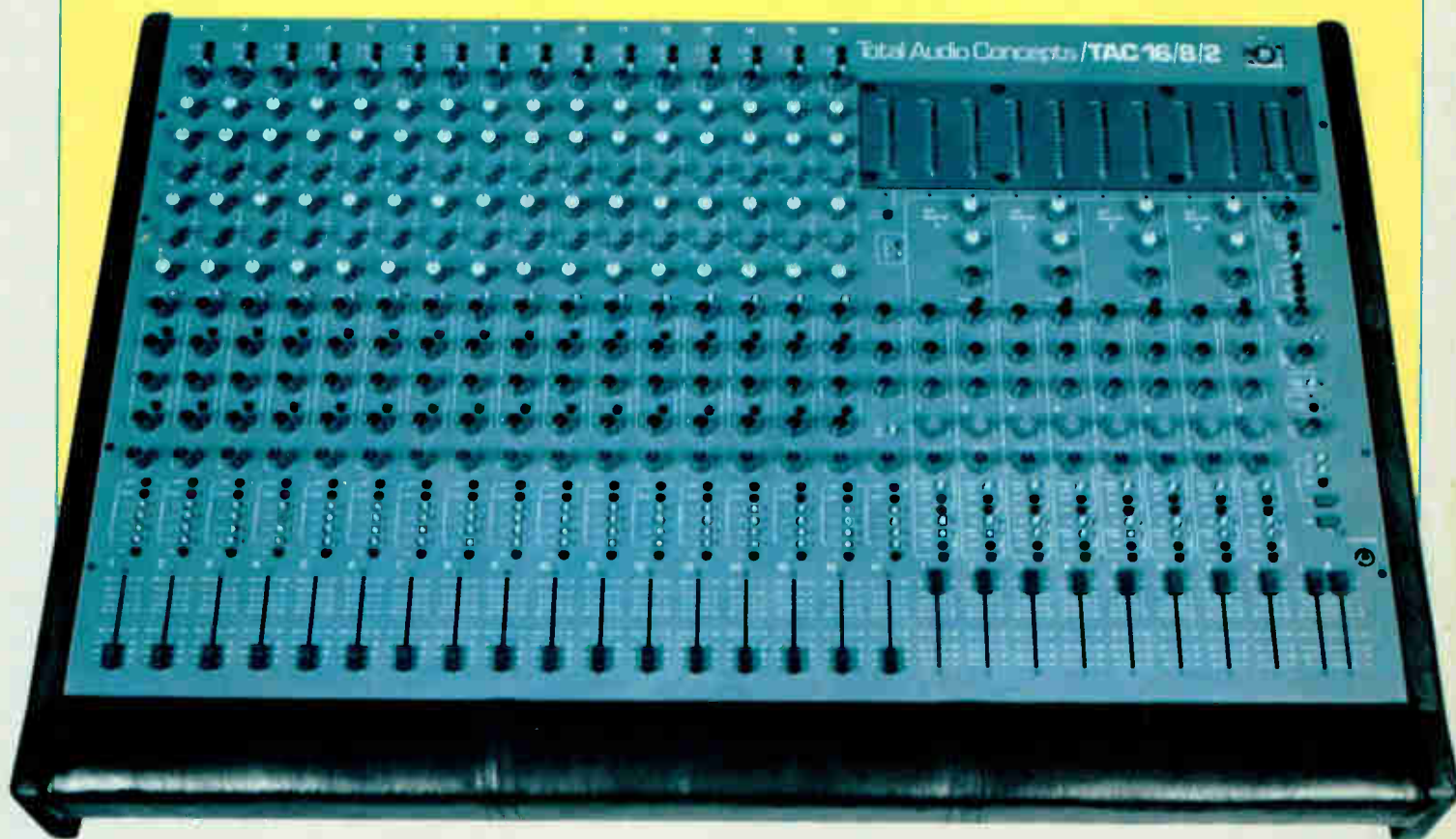
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It's easy to become unstuck in time while publishing a magazine. Although the calendar says that today is October, this is the November issue. The stack of editing on the corner of the desk says December and for the last two weeks we've been putting together our schedule for 1981. And a fine new year it promises to be.

We've run out of good reasons why not to list recording studios outside of this country's major music markets. So, during 1981 we will fill in the spaces and present listings of studios throughout the United States. In addition we'll list other essential components of the U.S. recording industry such as mastering studios, pressing plants, remote recording facilities, studio design firms, tape duplication, maintenance services, recording schools and independent engineers and producers.

What we now need is your help. If you are involved in one of these above areas, or know others who are, and are not on our regular mailing list; write to us at P.O. Box 6395, Albany, CA 94706 and we will introduce you to the all-knowing floppy disc at Mix headquarters.

• •

November is New York AES time and in this issue we keep the spirit by listing new recording equipment for 1981, much of it being unveiled at the AES Show. Our 18 pages of new product information have been supplied by the manufacturers and do not represent product evaluation by the Mix staff.

Also of special note in this issue is a Sound Advice Special Report on Mixing Console Automation. We have surveyed the latest work being done in this area by many of the leading manufacturers and are pleased to pass the information along.

• • •

Next month will be our annual Tape-to-Disc issue, listing mastering studios and pressing plants throughout the U.S. Save a handy spot in your files for this special issue. ■

TRACKS

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CURRENT

Automated Processes Regroups

A group of Los Angeles businessmen and audio engineers have purchased the rights to manufacture API products. They have moved to the West Coast and announce that all previous products are available. For further information write: Automated Processes, 54 E. Colorado Blvd., Pasadena, CA 91105 or telephone (213) 796-5630

GRT Begets NTC

Three Nashville businessmen and an Atlanta broadcast executive have purchased the GRT tape duplicating plant in Nashville and have formed National Tape Corporation, specializing in the duplication of audio cassette and 8-track tapes. Jerry Hutchinson, formerly the Nashville plant manager for GRT, is President of the new company, and the Vice President is George Buck, an owner of several radio stations in the Atlanta area. National Tape Secretary is Charles Duncan, formerly Vice President of Manufacturing for GRT. Treasurer is Bill Denny. President of Cedarwood Publishing Co.

Frankford/Wayne Appointment

Frankford/Wayne Mastering Labs, offices in Philadelphia and New York, has announced the addition of Ms. Norvell A. Miller as the general manager of their New York office. Ms. Miller, a native of Richmond, VA, was formerly studio manager for seven years at Alpha Audio, a 24-track recording studio in Richmond.

Studiomaster Forms In U.S.

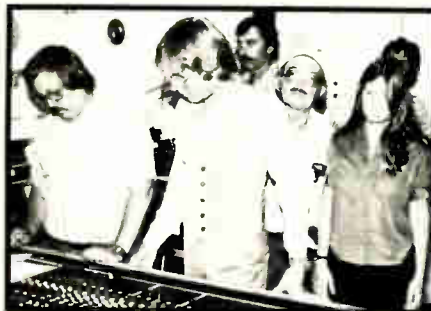
Studiomaster England announces the formation of a new U.S. company called Studiomaster, Inc., 1465-C Dynamics St., North Anaheim, CA 92816. Dennis Handa, former Fender Marketing Director (Lead I, Lead II, Fender 75) is President/Owner in conjunction with Studiomaster of England. The new U.S. company will directly sell Studiomaster and Recording Studio Design products consisting of mixing boards for road use and studio use plus power amplifiers. A new line of accessory products will be added in the near future to complement the line.

V.P. Named By Shure

Shure Brothers Inc., Evanston, ILL., has announced that William P. Finnegan has joined the company as Vice President of Marketing. In this new position, Finnegan will have responsibility for the marketing of all Shure products sold domestically and in foreign markets. In addition, he will be responsible for the company's OEM sales.

Aspen Recording Institute

James B. Lansing Sound, Inc. this year continued to support the Aspen Music Festival's Audio Institute, a "hands-on" approach to teaching live recording techniques which completed its third operating season August 24. JBL Vice President for Market Planning John Eargle, past President of the Audio Engineering Society and author of "Sound Recording," visited the school to lecture each of its three consecutively-run sessions held throughout July and August. In 1978 and 1979, JBL made substantial donations of studio monitor, power amplification and sound reinforcement equipment to the Audio Institute. Other companies which have supported the program include TEAC and Ampex.



Singer John Denver listens to playback of his concert in the Audio Institute studio. Left to right, foreground: Institute Associate Director Alan Kefauver; Denver; Institute Director Harold Boxer; Nina Stern, JBL Public Relations Manager. In the rear are several ABC technicians.

Friedman Joins Martin

Mark Friedman has joined the staff of Martin Audio and Video Corp., New York, where he will be in charge of field sales, reports Courtney Spencer, Vice President and General Manager for Martin Audio. Before joining Martin Audio, Friedman was Studio Manager and Chief Engineer at Producers Recording, New York and Staff Engineer at RPM Sound Studios, New York. In addition, he has several years of experience as a professional musician.

DeltaLab Dealer Award

James L. Camacho, Vice President of Sales and Marketing at DeltaLab Research, Inc. Chelmsford, MA has announced the recipient of the first regional dealer award given to any U.S. dealer. The presentation was made by Jim Camacho and Phil Markham, National Sales Manager at DeltaLab to Arnoldt Williams Music, Canton, Michigan at the latest NAMM show in Chicago.

Sound Workshop's Trans-Amp-LZ

Sound Workshop Professional Audio Products, Inc., the Hauppauge, New York-based manufacturer of professional recording/mixing consoles, has been issued a license by Valley People, Inc. Nashville, TN, to be the first and only company allowed to build the Trans-Amp-LZ Low-Noise Amplifying Device. The license, negotiated at meetings held at the Los Angeles AES Convention last Spring, restricts Sound Workshop to the manufacture of the Trans-Amp LZ only for use in its own proprietary products; Sound Workshop will not market the Trans-Amp LZ as a stand-alone product.

North Miami Music Competition

As part of its four day Winternational Thanksgiving Festival (November 27, 28, 29, 30), North Miami is conducting a Music Concert Showdown Competition for qualified bands. It is estimated that more than 50,000 people will see and hear the outdoor semi-finals of this competition on November 28 and 29. The grand final will be held on Sunday, November 30 with the winning band receiving a recording contract for twenty five (25) hours of recording time at DGP Studios/Graveline Enterprises in North Miami. Interested bands may receive complete information and application forms by writing to: Bonnie Graham, 757 N.E. 126th St., North Miami, FL 33161 or by phoning (305) 891-8667.

Abramowitz Appointed at TDK

TDK Electronics Corp., manufacturer and marketer of quality professional/consumer audio and video recording tape products, announced the appointment of Louis Abramowitz to the position of National Advertising and Public Relations Manager. The announcement was made by TDK Vice President Ken Kohda and is effective immediately.

Syn-Aud-Con Schedule

Synergetic audio concepts has announced the Fall-Winter 1980 and Winter-Spring 1981 schedule for its sound system engineering seminars, now in its 8th year of training audio professionals. November 11-13, 1980; December 9-11; January 27-29, 1981; February 17-19; March 17-19; April 7-9; May 7-9; May 19-21; June 23-25. These industry-sponsored 3-day seminars with over 3,500 graduates are held on the Pacific coast at the Dana Point Marina Inn, CA (half way between Laguna Beach and San Clemente). For detailed information, contact Don Davis, Synergetic Audio Concepts, P.O. Box 1115, San Juan Capistrano, CA 92693. Ph. (714) 496-9599.

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300 feet away. Full 20-20,000Hz frequency response. Six hour stereo operation on rechargeable NiCad batteries.

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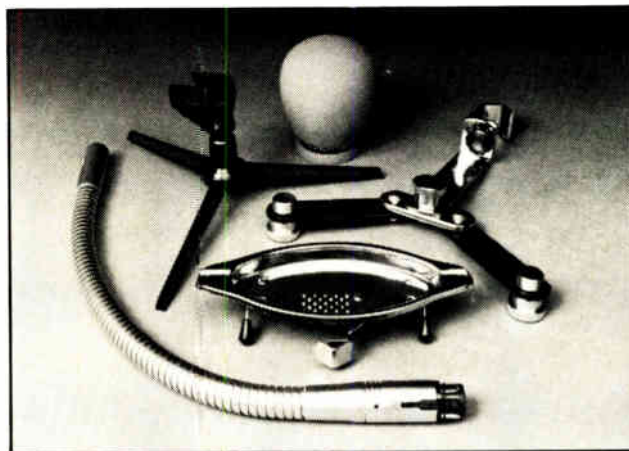
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eight See your dealer or write for information on our product line. You'll have many more reasons to be a Beyer buyer.

COMMITTEE REPORT

Society of Professional Audio Recording Studios

215 S. Broad Street, 7th Floor, Philadelphia, PA 19107

Topics on the agenda for **SPARS** general membership meeting on October 29 at New York's Regent Sound include a proposal for model business forms designed for recording studio operations, a money saving custom tailored insurance program for member studios and a discussion of the tape storage problem and proposed solutions. Other business will include a recommendation to open associate or affiliate membership status, at a much lower fee, to recording companies and manufacturers in the industry. **SPARS** President Joe Tarsia strongly endorses the idea and feels that **SPARS** can be of greatest service to the industry if it broadens its base and takes advantage of the maximum amount of experience and energy available within the industry.

Recently **SPARS** has circulated in-depth questionnaires to its membership in order to put together a recommended practices program for the care and handling of master tapes. More information on this will be discussed at the **SPARS** seminar, Oct. 30 at the New York AES.

Creative Audio and Music Electronics Organization

10 Delmar Ave., Framingham, MA 01701

The election of officers and the board of directors of **CAMEO** for 1980-81 was recently announced. The results of these elections are as follows: President, Larry Blakely of **MICMIX**; Vice President, Ron Means of **JBL**; Secretary, Barbara Fairhurst of **Sequential Circuits**; and Treasurer, Dave Merrey of **E-V/Tapco**. Companies elected to the Board of Directors are **Kustom**, **AKG**, **Tangent**, **TEAC**, **dbx**, **ARP**, **Roland**, **Biamp**, **Yamaha**, **Peavey**, **QSC** and **Altec**.

National Association of Music Merchants

500 North Michigan Ave., Chicago, IL 60611

The **NAMM** Winter Music & Sound Market will be held February 6-8 at the Anaheim Convention Center in Anaheim, CA. As of mid-September, more than 100 companies have applied for some 42,000 square feet of exhibit space at the Market.

The 1980 Winter Market, held at the Disneyland Hotel and Convention Complex, accommodated 293 companies in 58,000 square feet of exhibits. By comparison, the Anaheim Center will hold 92,000 square feet of exhibits in two connecting halls and adjacent, individual display rooms. All exhibits, registration and educational sessions will be located on the main floor of the Center.

Of the companies that have applied for space, more than 50 per cent are small exhibitors (100 and 200 square feet), many of whom have opted for the Anaheim Market exposure rather than attending the Frankfurt Fair.

"It's unfortunate that people have to make this choice between the U.S. and Frankfurt shows, but we are flattered that so many smaller firms have opted for Anaheim," said **NAMM** Assistant Executive Vice President Larry R. Linkin. "The U.S. Winter Market may not be as large as Frankfurt, but it serves a timely, cost-effective marketing need in the world music industry."

National Association of Record Merchandisers

1060 Kings Hwy. North, Cherry Hill, NJ 08034

In the first unified promotional effort ever launched by the music industry, members of the National Association of Recording Merchandisers (**NARM**) are joining forces to stimulate year-round purchase of records and tapes as gift items, a business segment that now represents 12 per cent of industry sales. **NARM** members are primarily retailers and manufacturers of pre-recorded music, a nearly \$3.7 billion industry.

"Give the Gift of Music," the theme of **NARM's** aggressive new marketing campaign, was introduced last March at the industry's annual convention. Since then the distinctive logo—a gift bow with musical notes in the center of each bow's loop—and slogan, "Give the Gift of Music," have been incorporated into the full range of industry promotional vehicles, including record album covers, television, radio and print ads, billboards, delivery trucks, decals, buttons, even bumper stickers, key chains and T-shirts.

With 50,000 outlets in the country selling records and tapes, **NARM's** "Gift of Music" campaign has already resulted in tens of millions of consumer impressions reinforcing the idea that there's no better gift to give than the gift of music. Some retailers even opted to list their outlets in the Yellow Pages under "Gifts."

National Academy of Recording Arts and Sciences

4444 Riverside Drive, Burbank, CA 91505

The San Francisco **NARAS** Chapter has approved plans for presentation of a seminar for session musicians and musicians looking for recording studio work. The day long event titled "Session Work For Musicians And Singers: How To Get It/How To Use It" will be held on Saturday, January 31, at San Francisco's Great American Music Hall. Tickets for the event are \$10 in advance and \$12.50 at the door. For reservations, call Beverly at (415) 777-4633.

National Association of Broadcasters

1771 N. Street, N.W., Washington, D.C. 20036

A proposal to allow up to 140 new VHF stations will harm the growth of UHF television stations according to the National Association of Broadcasters' Executive Vice President and General Manager.

The **NAB** executive, John B. Summers, commented on a Federal Communications Commission proposal to drop in additional VHF stations: "At a time when UHF is finally beginning to solidify itself in the television marketplace, it is unfortunate that the Commission is proposing to shoehorn in some 140 possible new VHF television stations. Such a move is sure to undercut the growth and health of the UHF service.

"Additionally these proposals present technical questions requiring substantial study. The Commission has limited the ability of the industry to provide such technical input by choosing to proceed by Notice of Proposed Rulemaking which involved ex parte restrictions that tend to inhibit full industry and public involvement. A Notice of Inquiry would have permitted a much greater opportunity for examination of the technical issues involved."

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World Radio History

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PROGRESSIONS

Yesterday's Glory Train Derails —It's Time to Lay New Track

by Larry Blakely

The grim economic realities of the past year have brought an unprepared recording industry to its knees. We are now in a position where we can no longer avoid dealing with the problems. Let's retrace our steps a bit and see what events led to the situation in which we now find ourselves. Perhaps our hindsight can give us some advice for the future.

As record sales boomed in the sixties, an industry quickly emerged. Record labels, recording studios and manufacturers of recording equipment joined in the momentum to create a grand scale for the music of our times.

Record labels, in seeing the potential of a hit song or artist, allowed recording and promotion budgets to swell; very often the money being unwisely spent. The attitudes were lavish and such things as recording and promotion budgets in the mid-six figure area were not uncommon, as the gamble was that the records would return in the seven figure area. Little was done to see how efficiently the budgets were utilized. The blank check type of attitude seemed realistic in the quest for gold and platinum albums.

As the tail more and more began to wag the dog, some of the popular recording artists required that the record companies ship their releases gold (\$1,000,000 in sales) or platinum (1,000,000 albums). This meant that the labels would often pay for manufacturing and distribution of millions of dollars worth of records without even knowing if the record was going to be a hit. Although this risky investment occasionally paid off in quick sales and precious metal status, it all too often backfired; such as the rumor of the Sgt. Pepper film soundtrack shipping to the stores at triple platinum and returning unsold to the record label at double platinum.

The recording studios were caught in the middle of all of this. Artists and producers began requesting more tracks, more special effects, more this and that. The studios were in no position to say no, since they were often block booked by the artist and the record labels seemed to be paying their bills without question. More and more studios also sprang up, in answer to this demand for studio time and the glamor of the music industry. Each studio was forced to spend continually more money on their facilities and equipment in order to remain attractive to the artists. With the booming competition, however, what could be charged for studio time had serious limits and the profit margins began to close.

turers of recording equipment who pursued the best that technology had to offer and found an eager market in the recording industry. Each new improvement or gadget seemed instantly marketable and opened the door for many new companies with creative tools and toys for the industry.

But while this recording industry glory train was happily chugging off into the sunset, some serious problems caused the tracks to begin eroding and the fuel supply to diminish. The economy had dealt everyone a severe blow. Priorities rearranged and the general public, the customers whose money created the recording industry, began buying fewer records so that they could afford life's luxuries like food and gas. In a very short time we have seen the sobering effect this has had on record company budgets

and operations.

We find ourselves today in a changing situation. The boom days of record sales are over, at least for the time being, and now we must adapt to survive the new economic realities. What will be the future of the recording industry? Will the record business (and record sales) ever settle back to normal? What will happen to the large number of recording studios? What signs or indications are there that will help us predict or deal with the future? What changes can we make now so that we can keep moving positively in the industry while all of these question marks continue hanging?

I've been spending a considerable amount of time traveling the country and speaking to industry experts trying to find answers to some of the perplexities just mentioned. Many of the insights they have expressed are enlightening and their opinions are valuable for us to consider. In next month's installment of Progressions we will discuss their observations and offer some answers to a few of these burning questions. ■

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(Allison)
White
Yamaha

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World Radio History

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Ron Nevison, Record Producer



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SOUND ADVICE

SPECIAL REPORT

Console Automation

by Dr. Richie Moore and
David Schwartz

Once upon a time, in the old days of recording (some 12 years ago) mixing was a fairly simple procedure. Then came a time when the amount of tracks that had to be mixed outnumbered the amount of digits on our hands, creating the now familiar mix-by-committee.

Audio consoles have never had room to accommodate much more than two pair of hands at one time. We were hard pressed to change any other parameters besides level adjustment while performing the mix. We had to live with mixes that were not always the optimum. The more tracks, the tougher the going was.

Approximately 10 years ago, we were given a device called a VCA, or Voltage Controlled Attenuator. Until that time, any sub-grouping was done by using the mix faders bussed through the console's ACN's (active combining networks) and then returned through an open input in the line position. This worked pretty well from an operation standpoint, but it forced the signal to undergo degradation as it went through additional gain staging. With the invention of the VCA, any and all faders could be assigned to a group master which would control their levels by means of a DC control voltage. No audio signal passed through the groups, just the control voltage. This was the first great step to console automation.

In this computer age, especially with high-speed and high-resolution mini-computers, it was only a very short time before voltage control led to voltage sensing, to automatic scanning. The voltage of each fader setting was encoded onto a track on the tape machine to be read by a micro-processor unit. However, and there is always a however in audio, the development was not without it's own special set of problems. Systems had to be designed to read a multitude of console manipulations at a very rapid rate without error, or at least very minimal, over a period of many passes. Just level control was not enough, and the

availability to set the individual muting functions was incorporated. Of course you had to have update to improve. All this had to be done very accurately to keep away from cumulative error.

Many different companies are currently involved in console automation. Some systems store data on an open track on the tape machine, others now use SMPTE lock with a single or dual drive floppy disc. It is subjective as to what system is the best. It is based on what you, the mixer, believe to be best for you. Only by using the automation systems about to be discussed, can you really judge. Specifications give you an idea, trial by fire is the reality.

In an effort to present information on console automation on an educated and understandable basis, we asked the manufacturers of console automation systems to describe the attributes of their particular devices. This is for you to read and compare. The soundest advice we can give, is to try out any system you might wish to purchase. Handling and reliability for the job are the most important factors where use is concerned. For the most part, console automation systems contain no user serviceable parts.

Until next time, have a great automated mix!

From: Paul Buff/Valley People
Re: Allison 65K Automation

Allison Research and Valley Audio recently merged as Valley People Inc. The company is currently involved in two specifically separate fields of endeavor in automation: OEM sales of 65K programmers, and customer sales of complete Fadex Automation systems.

The 65K programmer is not a complete "automation system," rather, it is a piece of hardware which may be integrated into equipment designed to provide the automation function. The 65K might be considered the "engine" while the overall system becomes the "car."

Acting as the "heart" of a programmable console, the 65K is responsible for accepting mix-

down data from the console, arranging it into a suitable digital format for storage, then retrieving the data from storage for presentation back to the console.

The Allison 65K programmer differs from other available programming equipment in that it is the only equipment widely used by a number of different console manufacturers as a standard format of automation. Some of these users are: Harrison, Trident, Auditronics, Sphere, Neotek, Raindirk, Tangent, API, Helios and of course, the Allison/Valley People Fadex retrofit automation system.

In principle, the 65K programmer offers a straightforward and reliable method of providing console automation with essentially unlimited functional capacity, and with very rapid response time and error immunity. Systems structured with the 65K normally utilize two tracks of the audio master tape for data storage (usually the "edge tracks"). This storage method, as opposed to more complex schemes such as disc media, offers unlimited storage times, lower costs, and simplified operation.

In order to allow for the programming of an unlimited number of console parameters (the equivalent of over 8000 console controls), while maintaining extremely fast response time (1/250th of a second), the 65K performs a rather intelligent series of computations known as Allison Priority Encoding. The benefits of such a scheme become immediately apparent when the performance limitations of conventional "sequential scanning" programmers are studied. In a sequential system, as typified by other available systems utilizing tape data storage, severe limitations of capacity/speed are such that a maximum of 64 console controls may be automated with an inherent access delay of around 1/10th of a second. The capacity/speed limitations of sequential programmers rules out their employment in anything other than rudimentary Level Only consoles exhibiting rather sluggish response to operator movements. Additionally, such systems often become inoperable after 3 or 4 programming

passes, due to the relatively poor immunity to the accumulated errors of data track tape defects.

In contrast, the 65K structure allows for the programming of as many as 8000 controls while limiting the access time to around 1/200th of a second for each change in a console control. That is to say, if one control is moved, the access delay is 1/200th of a second. If a number of controls are moved simultaneously, a delay of 1/200th second per control will result. If 10 controls are moved at the exact same time, a delay of 1/20th second will be required to service all 10 changes. In most mixing situations, it is rare to find more than 3 or 4 controls being adjusted at the same precise moment in time.

Thus, in spite of its unlimited capacity... allowing for the automation of the entire console rather than only faders, the response time of the 65K is typically 1/3 to 1/2 that of sequential programmers serving only faders. As far as error immunity, the word addressing of the 65K (as opposed to conventional frame addressing) results in around a 25 to 1 improvement, with no accumulation effect or "drop-out memory", as evidenced in other equipment.

Re: The Fadex™ Automation System

The Fadex system was conceived to provide a viable method of retrofitting fader automation into existing, non-automated console manufacturers who have included Fadex automation in their new consoles.

The system has been engineered extensively to insure simple installation into all types of consoles, while assuring no audible degradation of the console's performance. Installation is accomplished by removing the console's conventional faders, and placing a pre-wired, modular, motherboard assembly in the fader opening. The connectors which previously connected to the passive faders, are now connected to the Fadex motherboards to complete the audio wiring. Approximately seven connections are made to the patch field and 65K programmer, and two (or 3) pre-made flat wire cables are used to connect the motherboards to the programmer. The power supply is mounted, and wired (about 8 connections), and the motherboards are secured to the console fader well, thus completing the installation. This process has been found to normally take around 12 hours—20 at the outside.

In order to assure a successful working system, considerable communication goes on between the customer and the manufacturer as to type of console, panel sizes, level structure, physical placement of modules, programmer location, etc. Using the results of these communications, the Valley People staff pre-assembles the system and tests it in the exact configuration as it will appear in the console. We have found these methods very workable, and have had excellent customer rapport with the users.

In performing this sort of retrofit, we are faced with a requirement not obvious to a manufacturer of wholly new automated consoles: the owner of an existing console is fully familiar with the sound of his equipment, and will scream bloody murder if that sound is degraded in the slightest by the addition of VCAs. Furthermore, we are dealing with all console types, not one specific type.

Understandably, this situation places stringent demands upon the VCAs we use, and the degree of engineering skill employed in making the audio interface. Out of this unique situation, we have been pleased to have created the Allison/Valley People EGC 101 series VCA, as the only device capable of meeting these criteria. Offering typical distortion levels of .001%, dynamic range of over 130 dB and excellent transient response, the EGC VCA has proven fully transparent in the signal path of any console we have yet encountered, and our customers have verified this.

Once installed, Fadex offers the user the following basic facilities: automation of channel faders, 9 VCA group masters, grand VCA master & quad/stereo output master, automated channel mutes and group mutes, automated channel and group solo in place systems.

Mixdown data is processed by the 65K programmer, and is generally stored on the two outer tracks of the master multi-track audio tape.

Operation of the system is very straightforward, and is devoid of computer entry type controls, flashing lights and tricky functions. Full operational familiarity can be gained in a 20 minute practice session by competent mixers. Despite its operational simplicity, Fadex offers the complete gamut of operating modes and allows the mixer to generate as "finely tuned" a mix as he cares to achieve.

From: Michael Tapes/Sound Workshop Re: ARMS— The Auto-Recall Mixdown System

ARMS automation is a computer controlled "automation system" designed to interface with the Sound Workshop Series 1600, Series 30, and Series 40 multitrack recording consoles. (Its use, however, is not limited to these specific consoles.)

While the specific purpose of ARMS is to aid the recording engineer during complex mixdown situations, in reality ARMS functions throughout the recording process providing computer control (and/or aid) to numerous mechanical operations that previously were done manually, with the assistance of other engineers, or perhaps not at all.

ARMS automation includes the following functions: automated control of channel levels (level write), independent automated control of channel on/off status (mute write), full in-place solo system, total integration of all automated functions into all group structures, super-group.

It is the philosophy of Sound Workshop that the purpose of ARMS (or any automation system) is not to replace the human artistry of the mixdown process. Instead, it is to return "mixdown" to an artform by minimizing the number of mechanical operations that need be rehearsed, memorized, and executed during the process.

ARMS stores its mix data on the multi-track master tape. While only 1 track is needed for automation data, the use of 2 tracks permits the mix to be modified over and over until the desired product is achieved. The use of the multi-track tape as the storage medium provides the most cost effective system, with the most straightforward human interface. The loss of the tracks is

offset by the system allowing tracks to be "shared," thereby creating no effective loss of music tracks in many cases.

Perhaps the most important aspect of ARMS automation is its ability to control the on/off status of each input channel totally independently from its control of channel level information. Even if one were to use ARMS just to turn channels on and off, and not even concern oneself with writing level information (having the system control the actual "mix," which is the normally stated purpose of automation), the following mechanical operations (common to almost all mixdown sessions) would be eliminated: noise gating, erasing unwanted sections on the multitrack master (extremely dangerous, but commonly done), selecting proper tracks when duplicate performances exist, switching between tracks that are "time shared," changing EQ, echo, panning, etc. during specific "sections."

All of the above operations can be achieved through the use of the ARMS function Mute Write. Without "touching" the artistic aspect of the mix, ARMS can indeed return the art of mixing to the mixers, engineers, producers, and musicians. This is not to say that automating "level control" (the actual "mix") is not useful or cannot be artistically employed.

Another major aspect of ARMS automation is its computer-controlled sub-group system called Super-Group. Super-Group allows all grouping functions to be controlled by the computer, thereby eliminating the previously awkward systems of group selection, modification, and visual confirmation.

Instead of the usual thumbwheel switch, Super-Group employs a single momentary push-button and LED on each input module. The button is used for establishing, modifying or viewing a group. The LED gives instant visual indication of the groups that have been set up. On a conventional system (even the newer computer-controlled systems) one must scan each input module's thumbwheel switch to see which inputs belong to a given group. With consoles growing larger each day, this becomes cumbersome. With Super-Group, one merely pushes the button on the master channel and all members of that group light up... instant visual group confirmation.

Other features of Super-Group include: Solo Dim: allows all channels except the one (or ones) solo'd to be attenuated by any pre-set amount; Negative Grouping: allows instant selection of a group consisting of all channels except those selected; Grand Master: any fader may be established as the console grand master; Local Control: any group master can be changed over to local channel control without affecting group level.

When writing mix information, ARMS is not subject to the massive accumulated delays common to other systems which store data on the multi-track tape. The only accumulated delay is a 1.2 millisecond bounce on each pass, regardless of the number of functions changed or initiated. Also, no nulling is required during update passes. The computer recognizes any fader position as the update null point. This greatly increases speed of operation, and eliminates tedious nulling and unwanted level jumps. Tapes made on the Sound Workshop console can be played back and updated on MCI consoles and visa versa. ▶

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film sync applications. Vari-speed control (± 7 musical semitones) is standard, as is a monitor panel with built-in speaker/amplifier which lets you cue the tape right at the machine without tying up your monitor system.

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Others could make their heads and motors as well, no doubt; they just don't. Servo-controlled reel torque and capstan drive (independent of line frequency or voltage) aren't exactly new concepts. Nor is PROM-logic transport control. But try them all out and see whether you can settle for anything less than the Studer A80/RC Mk II.

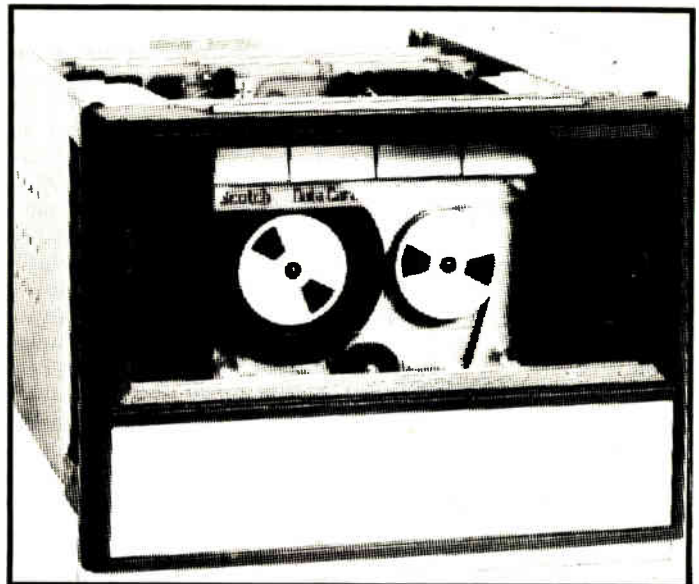
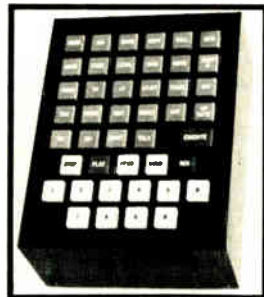
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STUDER REVOX



AUTO-PAK



Auto-Pak storage unit (far right) and control box (right).

From: Barry Roche
Re: The Neve Computer Assisted Mixing System (NECAM)

Neve found that engineers and producers wanted a sophisticated but simple-to-operate automation system which would also relieve them of many routine functions. NECAM essentially provides the mixing engineer and producer with more hands and a better memory.

A console fitted with a NECAM system looks much the same as a regular console except for the simple, but very powerful, control box. The console box has buttons with familiar names like Play, Wind, Keep, Group, etc, and an alphanumeric display which communicates and instructs the operator via a series of plain English messages. Mixing on a console fitted with NECAM would be much the same as mixing on an ordinary console, with the exception that all fader movements and muting can be memorized. On Replay the faders actually move and the mutes switch on and off exactly as they did during the mix attempt. This is a little eerie at first—but when the engineers see their own mix attempt being reproduced exactly, they realize that they are working with a very sophisticated and powerful mixing tool.

The NECAM system actually uses a mini-computer with a powerful software package (the set of instructions the computer responds to) and two dual floppy disc storage units. SMPTE time code is recorded on one track of the multitrack tape and is used to synchronize the multitrack tape and the console functions. No slippage of information can occur with this system. Although a computer and sophisticated technology is used, you don't have to be a computer programmer or keyboard operator to run the system.

The basic philosophy of NECAM is to make all functions instinctive, or be performed just as they would on a non-NECAM console. To update a fader position, you simply move the touch sensitive fader to the new desired position. The mere touching of the fader puts the system into the "update" mode. This movement is memorized by the computer and stored for later replay.

A sophisticated tape locator is part of the NECAM system using NECAM Labels for time code references. Up to 999 label points can be established and memorized. A totally "Free Grouping" system, permitting any combination of faders to be grouped is also provided. As it is possible to memorize up to 999 mix attempts, NECAM uses the sophisticated Merge function to provide a final mix from any combination of mix attempts by "Butt Splicing" or by the selection of any number of tracks from any number of mixes. At no time will any mix data be lost during the merging function which is carried out with the tape machine stationary.

As an extension of the NECAM system we now have NECAM II, which is designed for audio post-production in music, television and film studios. NECAM II provides more sophisticated tape machine control required for synchronization between video and audio tape machines. Up to 64 external functions can be programmed "on the fly" or by entering time code through the control panel. Both NECAM I and NECAM II permit timing accuracy within one frame or 1/30 of a second with no slippage. Both NECAM I and NECAM II are software-based, enabling the programs to be updated at a later date as additions are made available.

From: Brian Cornfield/AMEK
Re: Auto-Pak by Applied Micro Systems

Auto-Pak is AMEK's computer editing and mass storage system. It is the only console computer that can vocalize all commands when entered and all information as it appears on-screen. The master keyboard selectively lights the correct keys for each function group. The computer also performs as a tape locate and motion control unit, employing the SMPTE time code.

Auto-Pak's storage has ten times the capacity with none of the problems inherent in floppy disks. Memory consists of 4K pages of high-speed Random Access Memory (RAM) and is used only when required by fader action. Mixes can be edited and stored on tape or in RAM.

Auto-Pak continuously monitors all faders and has the data received available for display. During Mix mode, when the tape is playing, any change in fader input is recorded, along with the time that the change occurred. During Update mode, fader data is replayed with the tape, and faders that are write enabled can modify the stored information. All data is placed in storage, and storage is allocated dynamically to minimize waste of resources.

The use of RAM allows "instantaneous" editing to take place: Operations not requiring the motion of the tape (e.g. Mix or Update) will take only fractions of a second. Auto-Pak comes with sixteen pages, but since the system has the capability of accessing 65,535 pages, there is no practical limit to on line workspace. The system is instantly aware of added memory, so no software or other hardware change is involved.

To maintain complete control of operations, several groups of control are available to the recording engineer: Record/Playback, Utility, Fader, Level and Mix File. Functions are included under each of these groups to facilitate rapid and precise control of the recording environment. There are five main groups of controls: 1) Record/Playback; 2) Utility; 3) Fader; 4) Level; and 5) Mix File. Record/Playback functions are those that take data from the mixing board and use that data to update/create a mix file in storage, and are already familiar. Utility functions are bookkeeping and optional functions that allow setting/correcting the time-of-day/day-date clock, establishing tags for later reference, and enabling/disabling various features and options. Fader functions can be used to synthesize fader action at the board, or to amend previously entered data. Level functions allow synthesis of mutes and level changes to faders. Mix File functions are used to manage the mix file library, in storage and on cartridge.

From: Mark Terry
Re: Melkust Console Automation System

The Melkust Console Automation System is employed in all Trident TSM and Series 80



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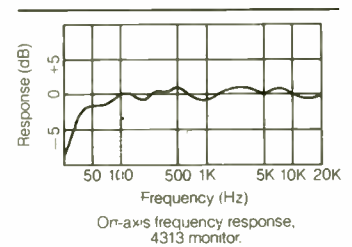
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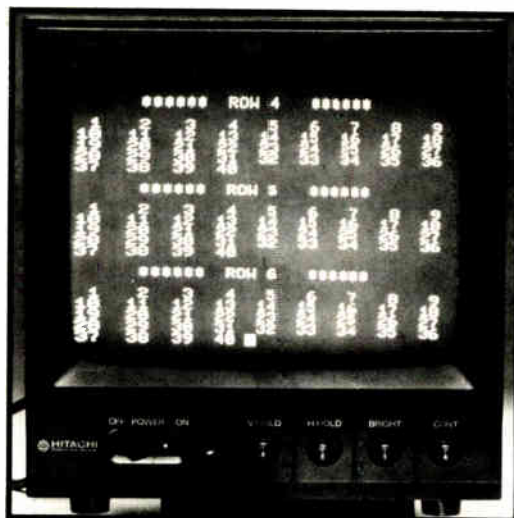


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BMT-1



*BMT-1
programming keyboard
and readout screen*

Recording/Remix Desks. The Floppy Disc based storage system is interlocked with the multitrack machine(s) using Melkuist originated SMPTE code, to retain a permanent "lock" between the automation data and the music itself. This eliminates any cumulative update error when successive mix passes are created. The interactive multi-processor system inquires of the mixer what he wishes to do at any particular point, and the user oriented VDU-CRT is the communication port of computer and operator. The Melkuist system is unique to all other automation systems in that the VCA may be bypassed on each individual fade module so that audio only passes through a resistive fader element. The Melkuist is available as a full fader-with-computer package or as an automation only package. The automation only package can be connected to any existing Valley People/Allison Fadex system, or other consoles capable of operating on the Allison 65K Programmer.

The control of the system as far as the operator is concerned, is handled by a small terminal style control box. Messages to the operator are generated in this box as composite video. A jack on the back of the box is connected to the small monitor which can be placed within the operator's view.

The control box offers the operator a "menu" of functions the system can perform: to display the mix contained in each of the 8 storage areas; to protect any of these stores; to instruct the processor to use data from a selected mix; to copy mixes onto fresh discs; to renumber the mixes, and to select options. The operator has a

The Series 30: A major recording console of minor proportions.



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0-9 keyboard at the control box, buttons to clear an entry before it is acted on, and an "enter" button to cause execution of the command. Two other controls are provided for the selections that might destroy work if operated without care. For example, discs containing data no longer required can be prepared for re-use by selecting "new mix."

As this function clears the directory of both discs, the operator is asked to press a further, quite different switch to confirm his selection. Any other operation repeats the question, except the "no" button, which aborts the command. The only other control on the box isolates the entire system so that manual mixing can proceed uninterrupted.

The actual commands to the system to start and finish a mixing pass are sent to the central processor via opto-isolators strapped across the tape machine remotes. The monitor indicates the function last received from the tape machine even when the system is switched out, so that any fault in this interface can be located quickly.

From: Steve Waldman
Re: BMT-1

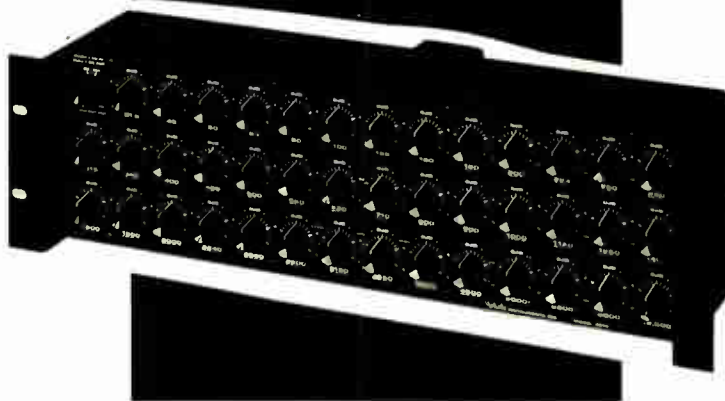
The BMT-1 (Better Mouse Trap) was designed and is solely dedicated to the muting aspects of automation, thus filling a needed gap in present automation systems. Such functions as real time programmable noise gating, real time programmable event control and selection of large groups of inputs in complex time situations are optimized in this system. For example, the BMT-1 allows a composite performance to be assembled from several different performances (such as vocals or instrumental solos) automatically, and in real time without the conventional generation loss in this process.

The flexibility of the BMT-1 allows such creative applications as simplification of arrangements, Mellotron simulations and real time selection of outboard effects, such as inserting and removing an echo, EQ, and/or panning effects on a group of inputs with real time programmability. Additionally, the BMT-1 has applications in video switching and transport control of tape, cartridge and dubbing machines. Using a unique data stream (that does not interfere with adjacent tracks) the BMT-1 allows programming and updating on a single audio track.

The design philosophy of the BMT-1 was that it must be easy to use and, further, that it be interfaced with any console/tape machine configuration without requiring a trained technician for its installation, in most cases. It was designed with high reliability, speed of operation, accommodation of high level functions and to be as unobtrusive as possible, both in its packaging and in its operation. A final design criteria was that it be significantly less expensive than currently available automation systems.

Since its recent introduction, the system has been used by such notables as Peter Asher, Val Garay, Greg Ladanyi and Dennis Kirk on such projects as Jackson Browne's "Hold Out," Warren Zevon's "Bad Luck Streak in Dancing School," Linda Ronstadt's "Mad Love" and her TV special, James Taylor's TV special, Randy Meisner's "One More Song," the MUSE album and "No Nukes" movie and Bette Midler's new film, "Divine Madness." ▶

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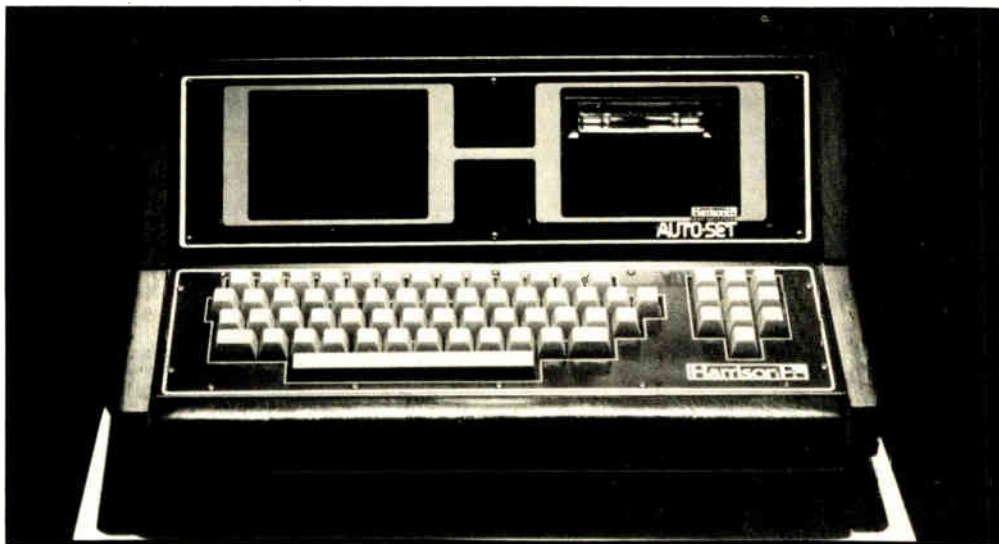
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Auto-Set Keyboard*

The BMT-1 is available with the following options: relay interface package; VCA interface package; TTL interface package; programmable voltage interface; video display; remote keyboard programmer; self contained power supply; video graphics; and expansion beyond standard 24 input, 10 memory selection.

From: David Holmes
Re: Sphere's Datalog

Datalog is the name of the automation game at Sphere. It's simple to use, versatile, quite comprehensive and, following one of Sphere's favorite credos, it's as cost effective as possible.

Dynamic Datalog is SMPTE time code automation of faders, mutes, groups and tape machine operations. There are storage capabilities for (almost) unlimited numbers of mixes on hard and floppy disc drives. Mix editing is part of the package and is accomplished in an easy, straight ahead way. Let's say you have laid down 6 mixes of your next hit. Perhaps mix 4 has the best overall feeling, but the drums were better on mix 2 and a keyboard riff on mix 5 is the one you want. No problem. Datalog consoles are provided with a full sized alphanumeric keyboard and the engineer addresses the computer using the King's English (within reason). You would edit the mix to your liking by typing something like "faders 2, 3, 4, 5, 6, 7, 8, from mix 4; frame 00000-50000 (the drums); faders 16, 17 from mix 5; frame 23530-28740 (keyboard); all other faders mix 4; frame 00000-50000." The resulting mix can be changed again and again if you wish. TV mixes require nothing more than "delete fader 20, 21."

Tape machine interface buttons are adjacent to the keyboard. Overdub sequences may be assigned to keyboard numbers such that "event 1" would play frame 32000-32620 as many times as wished. Computer-controlled overdub punch in and out is requested in similar fashion with "fail-safe" lockout switches.

All of the above information can be stored and later displayed or printed out. Six months

later if you need to know how in the world you got to that mix that sold six million, you can now do it, and more.

Once the hardware is in place Sphere offers Session Datalog, a simple little program that neatly stores stuff like musician's names, phones, Social Security numbers, and W-2 info, session start times, outboard equipment patches and settings, equipment problems, down time, what mikes were used, number of cassette copies made and given to whom, all sorts of info that may be of historical or fiscal value.

Status Datalog is console status information of a static nature. All track assignments; parametric EQ settings including frequency, level and Q shape; high and low pass filter settings; EQ and filter in/out switches; phase reverse; send section levels and pan (Sphere consoles have three stereo and four mono sends on each input); pre/post fader info; monitor levels and pan; mute section status; all master levels for the send section and all echo and effect returns level and pan—all can be dumped into memory and stored in seconds. If Dynamic Datalog is fitted to the console—you can have one without the other—storage can be the disc drive unit; otherwise, any tape will do.

To retrieve stored data, play the tape back into the memory and the console then will either automatically display and index or the engineer can display and index at his or her discretion via the keyboard.

From: Larry Lamoray
Re: MCI's JH-50 Automation

MCI's theory of automation is based on the premise that the engineer is best served by being allowed to concentrate on the audio portion of the mix, not the mechanics of automated controls. It is for this reason that MCI supplies no computer terminal, CRT, etc., but instead has simplified the controls as much as possible.

Basically the MCI JH-50 Automation has three controls for each channel: VCA Write, VCA Update, and Mute Write. The two VCA

controls are for level automation, the Mute control for mute automation. It is important to note that unlike several other systems, MCI writes the level and mute data independently, thereby allowing late automated level recall of a previously muted channel. This can allow the engineer to concentrate on a group or sub-mix well into the automation process, and also serves to make the system "goof-proof."

Automatic level nulling is included, allowing Update initiation and transitions without the engineer having to physically null the faders. This also allows the engineer to use the expanded range portion of the fader's linear travel for very fine level adjustments.

Data storage utilizes any open audio track. This can be an edge track on the multitrack recorder or a track on any other synchronized recorder, thereby allowing a virtually unlimited number of data tracks. Utilizing the audio tape for data storage also simplifies tape filing and transportation. Data for all channels is written repetitively at all times. This reduces the chance of error due to dropouts, etc., and also allows for punch-ins and punch-outs on the data tracks, simplifying the Update or Rewrite processes.

MCI has over 300 JH-50 Automation Systems in the field. All systems are compatible with each other, allowing movement of tapes among MCI equipped studios.

From: Dave Purple
Re: The Harrison 864 Auto-Set

The Harrison 864 Auto-Set is a fully self-contained console automation programmer. Specifically designed to interface with all existing Harrison recording consoles, the Auto-Set may also be easily interfaced with any device which utilizes DC voltage control. Auto-Set is a twin microprocessor-based system, under firmware control, which resembles a small typewriter. (Firmware is a software operating system which usually resides in ROM memory.) The keyboard permits rapid access to the internal Auto-Set programs, and with minimal effort, this access may

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easily be accomplished. The inexperienced operator need not know the complete set of access instructions, as he can gain experience one step at a time. And as the operator gains this experience, he eventually learns to write more complex programs.

The Auto-Set is, in reality, two separate automation programmers housed in one package: dynamic and static automation formats. Standard dynamic automation is most simply described as memorization of fader movement (or non-movement), and channel on/off, or mute status. Dynamic automation involves data storage in real-time on tracks available on the multi-track master tape.

Unique to the Auto-Set is its ability to capture and store static or "preset" automation data. In the preset mode, the Auto-Set takes a "snapshot" of the fader positions and mute status for up to 63 faders. The necessary data for the snapshot is internally generated and stored on a 3M DCD-100 data cartridge by the data cartridge tape drive built into the Auto-Set. The data cartridge is capable of storing 630 separate presets, or snapshots, of up to 63 faders. Data is recalled on command, as needed by the operator. Because data storage is outboard and independent of anything happening in real-time, the Auto-Set preset automation mode lends itself perfectly to such tasks as automation of a live performance, direct-to-disc recording, or a multi-track mix-down, when no data storage tracks are available for storage of standard real-time dynamic automation data (that is, when the producer has completely filled up your 24-track master).

Auto-Set fader levels and mute on/off status are generated via a DC voltage at each individual fader on the console. Each channel's DC voltage is converted to a binary number, which the digital computer can understand. Conversion takes place in an analog-to-digital converter. The 8-bit binary number or "word" yields 256 separate 0.5 dB analog steps. These 8-bit words for 63 faders are collected in a parallel (all at once) manner, re-converted to a serial format, and then transmitted in a priority-encoding format for storage in real-time on the multi-track tape.

Other systems of this type store individual mix data on individual tape tracks. The Auto-set is capable of *four* individual, totally different sets of mix data per tape track.

A console-mounted XY crossfader is provided for moving back and forth between any two data sets, and the CRT displays a cursor which follows movements of the crossfader. Transition between data sets may be accomplished in one of three ways: Manual Advance—whereby the operator manually moves the crossfader from the X-to-Y or Y-to-X register causing a smooth segue of VCA DC voltage; A Jump may be performed which causes a rapid and sudden change of VCA levels; or a Timed Advance may be executed. The computer has an internal clock which may be programmed for a timed advance in 100 ms intervals for any duration between 0.1 second and 9.9 seconds.

It is possible to tell the Auto-Set to put the A read pass at the X end of the crossfader, and the B read pass at the Y end of the crossfader. A mix comparison of the A and B mixes can be accomplished simply by moving the crossfader back

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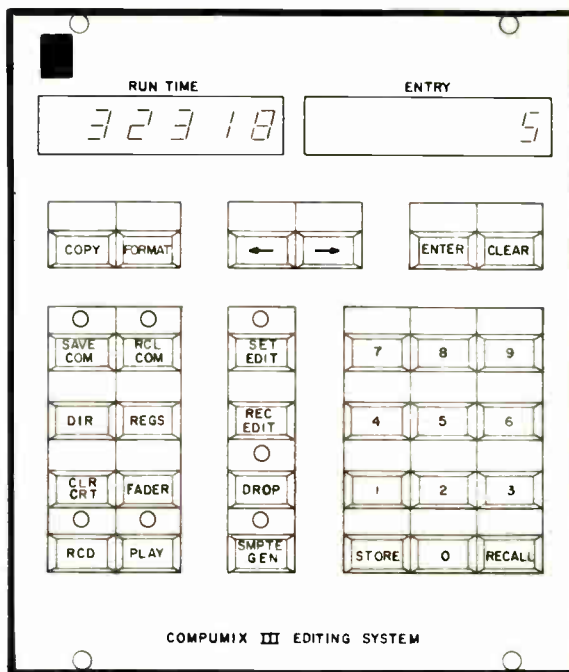
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QUAD/EIGHT



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and forth between the X and Y ends.

From: Dave Hadler/Quad/Eight Electronics
Re: Compumix III Automation

The Quad/Eight Coronado Console includes a Computer Assisted Mixing System designed for simplicity and flexibility of operation. The system utilizes the 6800 Series microprocessor components as the basis for the proprietary Compumix III Automation Processor.

Individual automation controls are provided for each channel fader, channel mute, group fader and group mute. Mute status and fader positional data are independently stored by the computer, enabling instant return of the channel level after unmuting.

Mutes are also assignable to the "Auto Mute" buss for multiple channel muting, unmuting or any combination of both functions. Individual group "Solo" is provided, and its data is stored by the computer by pressing the "Group Solo Write" button on the console's master control panel.

A unique feature of the Compumix III System is the inclusion of a push button labeled "Auto X." This new mode allows the operator to automatically change from one automation mode selection to another without regard to the new or previous fader position. When "Auto X" is enabled, the computer matches the fader positional data to the previously written data, producing an automatic nulling feature. "Auto X" is also used to assign the mutes to the "Auto Mute" buss.

The processor sends and receives its data and control information from the console's input modules via a multiplexed buss system. This buss oriented system provides the simplest method of console input module expansion; just remove the blank filler panels and plug in the additional input modules.

The console's automated functions are scanned at a rate of 18.4 times per second. The processed data is outputted by Compumix in a bi-phase format, which includes parity and synchronization characters, at a rate of 9600 baud.

The processed data can be stored on only one track of a multi-track tape recorder, if the data is added or corrected using a technique similar to audio punch-ins. Two tracks are required if an update correction mode is used.

Optionally available is a double-density, dual-drive Floppy Disk Memory System which features complete electronic editing facilities while requiring only one track of the multi-track tape machine for SMPTE time code synchronization. The Disk Memory System may be added easily at any time.

From: Doug Dickey
Re: SSL Automation System

The Solid State Logic Studio Computer™ differs fundamentally from other console automation systems in that it is not intended only as a programmable *mixing* device. Rather, it is designed to bring a much-needed degree of computer assistance to the first two-thirds of the multi-tracking process as well. The system begins to "learn" about each Title or segment starting with the initial tracking date, and it immediately applies this knowledge, or "data-base," to help out during that session. The data-base continues to accumulate during overdubbing sessions, becoming increasingly comprehensive and useful in each subsequent session. In the final mix, the computer assists with the usual creative procedures, and opens additional possibilities that are simply not available without a fully programmable system.

The Solid State Logic Studio Computer's functions can be divided into three broad classifications, though it should be kept in mind that all three areas interact for maximum benefit. The first area, is Tape Machine Management, referred to as Ultralocator™ functions. Ultralocator functions embrace all of the standard tape locator abilities, such as searching and cycling between cues, returning the tape to the top of a title, etc. The system differs from standard devices in that its memory is more extensive (unlimited Titles, 60 cues per Title) and all cues are stored permanently on floppy disc. Further, cues can be requested

by a cue number assigned by the device, or by a time reference, or cues can be given actual descriptive names such as "Guitar Break" or "Chorus." This eliminates the need to look up cue references scribbled in the margins of track sheets etc. In fact, the system will display complete Title and Cue lists on its video display at any time, or print out these lists on paper for reference away from the studio. Finally, these cue points may also be used as references for rehearsing and performing drop-ins under computer control, and as edit points for assembling mixing data in the final stage of the production.

The Total Recall™ functions of the SSL Studio Computer are also useful during tracking and overdubbing, as well as mixing. Basically, every single pot and switch on each I/O module is connected to the computer. This enables complete details of input assignment, output routing, compression/limiting, monitor mix levels and panning to be stored on floppy disc. After each session, the engineer presses the "Store" button, and the computer scans the console and stores each control setting. The next time that tune is worked on, the "Recall" button is pushed, and the engineer summons up the previously stored-memory. A colour video display then guides the resetting of any relevant sections to their previous position, within 1/4 dB accuracy. This means that the monitor and headphone mixes that were developed and refined in one session can be quickly re-established in each subsequent session. As the console itself is laid out to permit experimentation with EQ and dynamics in the monitor section while not affecting the feed to the multi-track, it is also possible to begin working toward the final mix during overdubs. All useful experimentation can be permanently stored with the Total Recall System. This elimination of duplicated effort increases continuity between sessions on the same tune, which might necessarily be scheduled days or even weeks apart. Total Recall offers numerous advantages in motion picture pre-dubbing and twin 24 track work as well as regular sessions. Control room time that was once locked-out to provide clients with security over

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the console settings can now be used; Total Recall functions are accomplished without adding any audio pass elements to the console. Therefore, the system adds absolutely no noise or distortion. Twenty-three keys labeled in basic studio terminology are used to form common-sense English command phrases or sentences which the computer understands.

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Limitations of space do not allow us to cover this subject as completely as the reader might desire. Therefore, we include the following list of manufacturers to whom questions should be directed:

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Solid State Logic/Mr. Doug Dickey
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World Radio History

PLAYBACK

Something

by Jay Richards

During the past few years consumer audio and professional audio production have come closer together. Now, more than ever before, there must be a good insight into the end use of the recorded product in order for the producers and engineers to do their jobs most effectively.

Just as professional recording has become more sophisticated, so has consumer audio. Over the last decade the quality of hi-fi has improved dramatically. Conventional forms of distortion (IM and THD) have been greatly reduced, if not eliminated. The consumer audio industry is now exploring other factors affecting the natural reproduction of music.

Ten years ago the industry consisted of a few American manufacturers catering to the hobbyist. Consumer audio was still in its infancy, but the stage had been set for a marketing explosion over the next decade.

In the early Seventies new names slowly penetrated the American market, forcing American manufacturers to play by a new set of rules. What started as a trickle, quickly became a flood of Japanese product. The Japanese not only provided competitive product, but also a whole new marketing philosophy. Instead of just appealing to the hobbyist, they appealed to a much larger market segment... and created the "stereo consumer."

Many American manufacturers of electronic audio products could not effectively compete with this flood of product. Many tried having their products manufactured in Japan, but generally with poor results. Most eventually sold out to the competition. Other areas of consumer audio have not been significantly affected by outside competition. The majority of loudspeakers are still made in the U.S., as well as much in the way of hi-end electronics, phono cartridges, and signal processors.

Over the past ten years, as we said earlier, consumer audio has gone through an evolutionary process. During one phase manufacturers were emphasizing power, not unlike the automobiles of the mid to late Sixties. It was an all out power race, culminating with the introduction of a 300 watt per channel receiver.

At the peak of this power race something

strange happened. A company introduced a \$330 receiver rated at 16 watts per channel, emphasizing overall performance rather than just power. While the rest of the industry was snickering at this non-competitive product, it sold exceptionally well. This was a major breakthrough and proved that the American market was finally realizing the importance of a balanced, musically accurate product. Finding that the consumer was interested in more than just output power, manufacturers began optimizing other factors and the specsmanship battle began. New forms of

distortion quickly became problems leading to unique solutions. At one point it seemed like everyone was searching for the perfect square wave.

Today most manufacturers are sensitive to the desire for clean, accurate reproduction of music, not just symmetrical waveforms. This has spawned a new generation of quality recordings and pressings, directing a dramatic new attention to the program source.

Those responsible for today's recordings can no longer afford to overlook the sophistication of even the average playback system. Each year playback systems are becoming more refined and the consumers are becoming more demanding of the quality of source material.

"Playback" will be a monthly column in *Mix*, covering areas of consumer audio that we feel will be of interest and importance to music recorders. December will feature premium quality record labels. We welcome your suggestions as to subjects and areas you would like us to discuss. ■

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A Grand Opening for Dr. Willi Studer

by Sam Borgerson Photos by Beth Jackson



Dr. Willi Studer is heard from rarely in this country. He is seen even less. When he did appear to face the American audio press in Nashville a few weeks ago, the occasion seemed less like a press conference and more like a consultation of the Oracle at Delphi.

Dr. Studer's visit to this country was prompted by the official opening of the new Studer/Revox headquarters facility, a gleaming steel and glass structure located about 7 miles from downtown Nashville. In addition to administering all U.S. operations for the Swiss-based firm, the new facility also serves as home base for sales, warehousing, shipping, parts, and service. Although all manufacturing is done in Switzerland and Germany, the Nashville shop is equipped to rebuild any machine—from a vintage G-36 to a new A-800—practically from the frame on out.

Before meeting the quasi-mythical Dr. Studer, visiting dignitaries were treated to a tour of the spacious one-story building. First stop was the demo room, dominated by two A-800's mated with a Tape Lock System. The price tag of this pair, incidentally, would finance at least two good-sized homes. Against another wall, a polished hardwood display housed a complete

Revox system—except for one empty cubbyhole labelled "B710 Cassette Deck." ("My, it certainly *is* compact!" one writer remarked.) That was to come later.

Bruno Hochstrasser, the amiable President of the U.S. operations, led the group through the administrative and accounting offices (all furnished, of course, with clean and functional elegance), in and out of the room housing two Philips computers for accounting and inventory, past the well-stocked warehouse, and into the service area.

Revox Technical Director Reneaud Delapraz outlined the Revox service functions as we filed past white-coated techs intently rehabilitating A77's. Then Studer Technical Director Doug Beard took over, escorting us around the Studer service area and showing off the special tools (mostly Swiss-made) used to keep the pro machines up to snuff. One gadget of particular interest was a nifty suitcase-sized device for modifying or updating the PROM's (Programmable Read-Only Memory) used in the A800 logic controls.

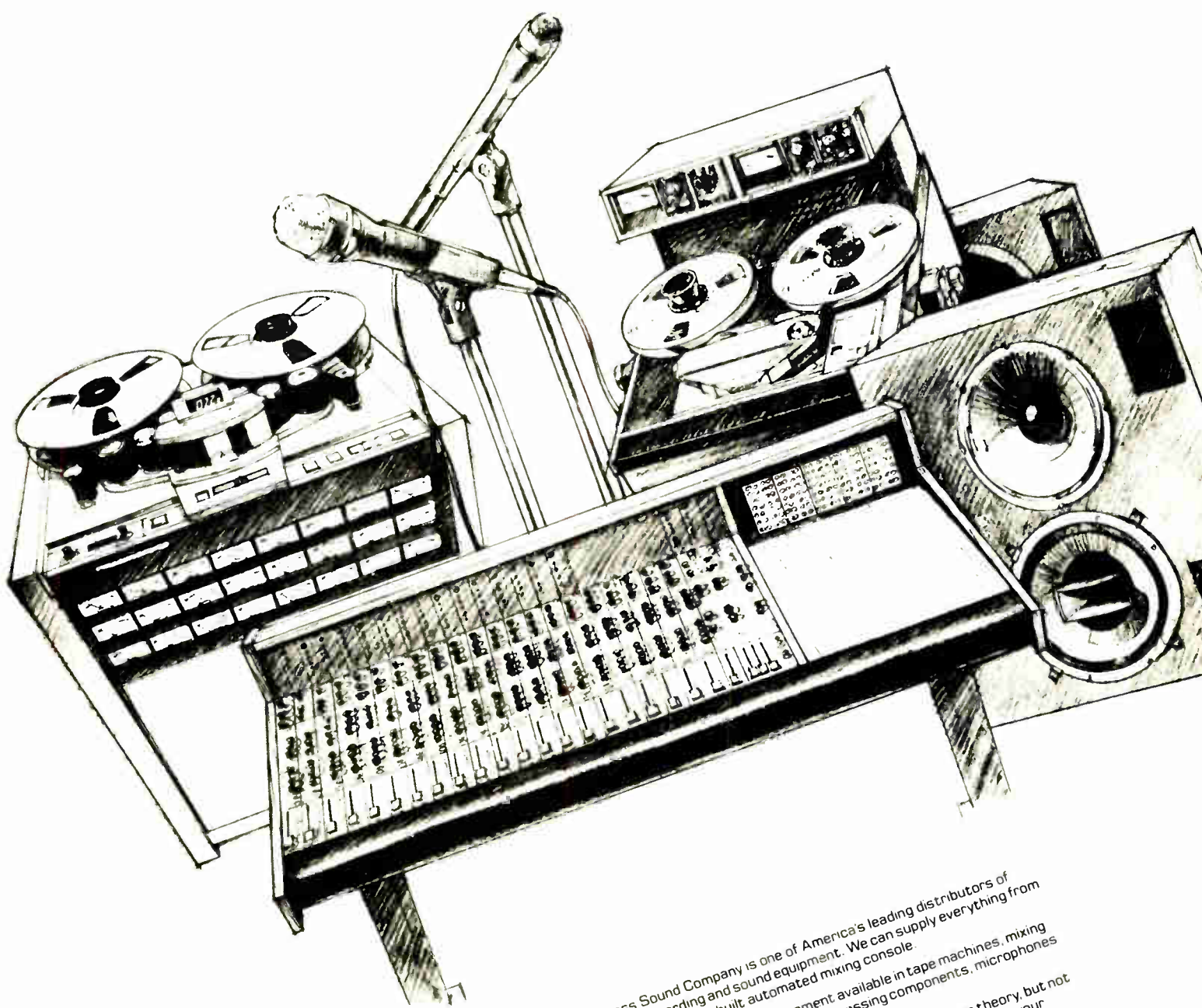
After a slide presentation on the 30-year history of the firm, Hochstrasser previewed a new pro version of the Revox B77. Dubbed the PR99,

this is basically a B77 transport with a flat faceplate for easy head access, calibrate/uncalibrate switches on in and out sections, sel-sync with automatic mode switching, balanced line in and out (balanced mic in optional), and other features long demanded by the pro and semi-pro customers. The PR-99 will debut at the New York AES.

Removing a Swiss flag with a flourish, Reneaud Delapraz unveiled—for the first time in the Western Hemisphere—the new Revox B710 Cassette Deck. This dual capstan, quartz servo, microprocessor-controlled deck will carry a suggested list price of about \$1800. It's obviously designed for those who don't mind paying for the best.

Dr. Studer arrived, personally greeted the guests, and sat down to a round of questioning. At age 68, Dr. Studer is still actively involved in all phases of company operations, including research and development. His answers, spoken in soft and carefully measured "Schweizdeutsch" and translated by Hochstrasser, proved that he intends to push ahead—though with characteristic Swiss caution—along the frontiers of recording technology.

Studer said that his firm is moving ahead



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with development of digital/PCM equipment for both the consumer and professional markets. He said that he intends to "keep his company on the map," and that will entail production of PCM disc players, recorders and amplifiers in the coming decade. Studer now supports the Philips disc format, although no licensing agreement has been signed.

"We won't be the first," said Studer. "We will wait until the others come out, and we will wait until a standard has been established." He expects Revox home PCM equipment to appear in 4 to 6 years.

Studer professional PCM recorders will be appearing sooner. Working jointly with Sony, Studer expects to introduce the first studio machines—using the 16 bit format with 48 tracks on 1" tape—about 1982 or 1983. The main problem now is the high cost of high quality analog-digital converters for the 16 bit format.

Studer also expressed confidence that this format would be adopted as the industry standard. "We are the only two supporting it officially," he stated, "but we already know there will be others."

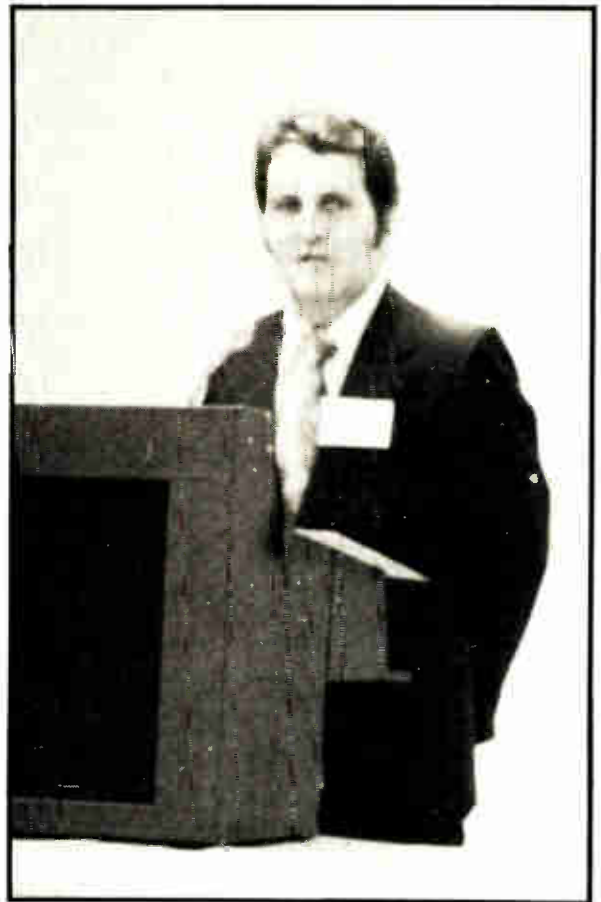
It was obvious from his answers to some questions that Dr. Studer maintains a healthy human perspective despite his enormous stature in the industry. It was also obvious from statements by everyone involved with Studer that the company was embarking on a major campaign to develop its U.S. marketing.

Studer's experience in the North American market has influenced their machine design significantly, according to Hochstrasser. The A80 VU Mark III 24 track master recorder is the latest update of the ten year old series. Now included in the design is a close proximity headblock enabling tight punch in and punch out and a new logic control for the electronics. Studer also announced a price decrease for the series: the 24 track package including a 20 position microprocessor autolocator with channel remote control and stand now sells for \$46,000.

Such improvements as the close proximity headblock and revised software have now also been incorporated into the critically acclaimed A800 series recorders. Update kits for the 130 A800's now in use will soon be available from Studer of America. ■



RIGHT: Bruno Hochstrasser, President of Studer's U.S. operations, translated Dr. Studer's remarks to the English speaking audience.



BELOW LEFT: Revox tech inside an A77.

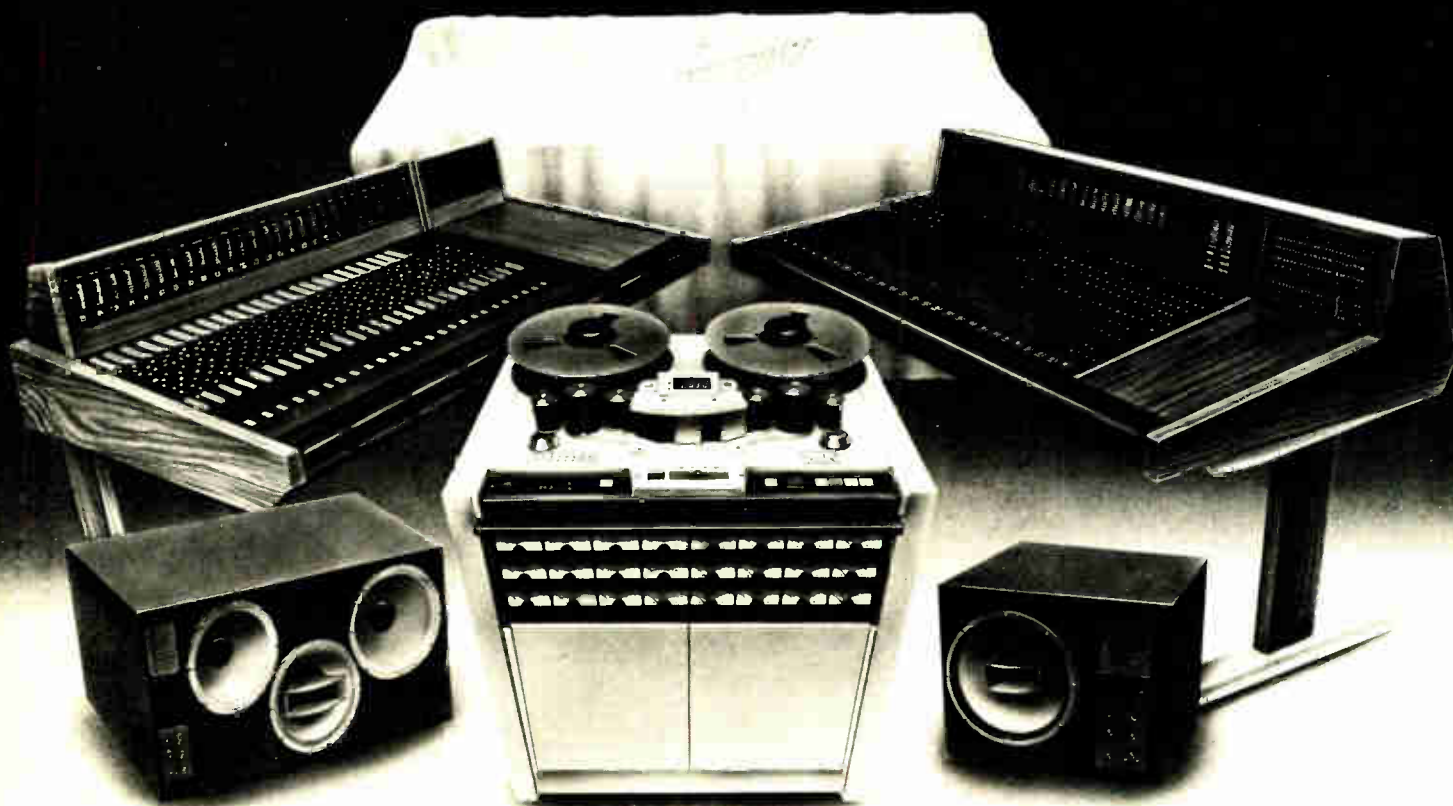
BELOW RIGHT: Twin A800 24 track recorders grace the entrance to Studer's new plant.



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by Tom Lubin

Editor's note

Tuesday, September 16, 1980, was proclaimed Wally Heider Day by the Mayor of Los Angeles. Nearly one thousand revelers showed up at the Ivar Street studios for the grandest industry celebration in recent memory. All of this hoorah centered around the fact that Wally Heider is returning as president of Wally Heider Recording after an absence of many years. His innovative recording ideas and respected leadership qualities have created a new optimism in Hollywood's recording industry.

Shortly before Wally began his new post, Tom Lubin spoke with him at length about his career, studios, remotes, philosophies and predictions. Due to the length of the transcript and the relevance of the material, it will be presented in two installments.

What's your new position here?

The invitation said "President of Wally Heider Recording." I hope the invitation is right because, if it isn't, I'm going to be a little disappointed.

I can understand that... I'd like to take some time and go back to when you first got started. When did you get into recording?

In 1953, I bought a Concertone deck. I knew the manager of the Jansen Beach Ballroom in Oregon, Sammy Amato, very well. They were still playing bands every week there, and I remember going out to hear Woody Herman's band. I met a trumpet player sitting there at the bar having a drink, Roy Caton. In fact, Roy still works and still is in the union here in town. I asked him what he would think of my chances if I asked Woody about recording his band. He introduced me to Woody, and Woody said, "As long as you cool it and keep the tape recorder sort of out of sight, I don't care. So, the next day I brought my recorder into the ballroom and, not knowing what I was doing, I took a couple of alligator clips and clipped them onto the speaker outputs of this Mickey Mouse PA amplifier and paralleled them and ran them directly into the tape recorder. I monitored it with a pair of headphones.

The electronic mis-match was terrible, and there was overload, no matter where you put the input volume control. All there was for level indication was this green eye blinking at you, which didn't really mean that much as far as understanding what was going on, and I wasn't smart enough to realize that when Woody didn't use the PA mic, he'd turn it to

face the audience, because it had no on/off switch. Thus, my pick-up for the band and everyone else was from the back side of the mic, but I still figured I was doing swell. After recording the band for three or four nights like that, I followed the band for about three more dates up through Washington and what-not.

I've since thrown those tapes away because they are terrible, terrible, terrible. This was a bad recording of a good band. They played stuff that had never been released before and all that kind of thing. I've since dumped those tapes out of fear that someone would hear them. Eventually, I got the hang of it and had a friend build for me an 8-position Loss Network mixer, 4 pots right and 4 pots left.

These were all loss pots, and we had one phantom center pot which was a fader with one in and two pigtails out, so we could cope with stereo. It was about the size of a small wooden trombone case, as I remember. I started recording that way and eventually around '54 or '55 I got proficient enough at it that on the mornings after I would take the tapes to the hotel and play them back to the guys in the band. I'd bring along an extra tape recorder, so, if the guys wanted copies of numbers, I could grind them out. It got so that, no matter what band came in, there'd always be three or four guys in the band that I'd seen before with another band. They'd introduce me to the leader so, during that time at Jansen Beach, I probably recorded Kenton about ten times, Basie as many times, Ellington about 20 times, Sam Donahue, Herman, Hal McIntyre, Les Brown. Harry James was about the only band I can recall that would have nothing to do with my recording. I caught about every band that came through Jansen Beach, meanwhile I was getting through law school. I got out in '54 and practiced law in a little town called Sheridan, about 50 miles southwest of Portland, Oregon.

Were you from there?

From Sheridan, Oregon, right.

You played saxophone, too, didn't you?

I played bad saxophone and was a fairly good arranger and had a Mickey Mouse band in San Francisco in the late '40s and in Oregon in the '50s when I was going to law school and while working for my father in Sheridan, who was also an attorney. From '55 through '59 vacations consisted of following a handful of band itineraries. We'd stop by and see Les Brown in Omaha one night and the next day drive to Des Moines in our old Cadillac pulling a trailer and set up the stuff there. The following night it would be Hal McIntyre up in Sandusky, Ohio. That was our vacation for

about five years, with my wife and two kids, which didn't materially help our marriage, I'll tell you.

And you were practicing law?

And I was practicing law and getting vacations longer than I was entitled to and getting paid more money than I was entitled to. Of course, in a small town of 1200 people, what you have is mortgage foreclosures, bankruptcies, divorces, drunk driving, and all kinds of "important" things.

When did you move down from Oregon?

In 1959. I'd been talking to Bill Putnam at United Recording; this was before they bought Western of course. Bill Putnam said he would have no part of hiring anyone from out of state. He said, "If you ever move into town, then come and talk to me." I didn't understand it then, but I have since learned what he meant. If he hired somebody from out of state, and the guy arrived with his family and everything and the job didn't work out, the employer has to let him go, and he'd caused the guy all kinds of unnecessary expense. No employer wants to be put in that kind of position. So, after I moved down, I talked to Bill Putnam and got a job for \$35 a week as a part-time apprentice, not a full-time apprentice, but part-time.

Working the desk, doing set-ups and that sort of thing?

No, not even doing that. I would be off the clock. I would sit by the traffic desk; and, as soon as an order would come in for an emergency tape copy and there was nobody to make the tape copy, they'd say, "Heider, go down and make this tape copy down in Studio A." I'd walk into Studio A at United Recording, and there would be this patch bay with 5,000,000 patch points in it. I hadn't the faintest idea how to patch up for a tape copy in Studio A so I'd hang out in the hall and find a friendly engineer in the hall and ask him to patch up for making tape copies in Studio A. I'd take a loose-leaf notebook in there and write down the patch points for making tape copies in Studio A. Next time, if I had to make copies in Studio A, at that point, I could do it. Then, back to punching the clock in, back to waiting at the traffic desk; and, if I was lucky, another tape copy would come up that day. With my luck, the next time I had to do a tape copy, it would be in Studio B. Same story all over again because the patch bay was different in Studio B than in Studio A, so I'd hang around the hall and get someone friendly to show me how to do it. Now, I got to make a tape copy in Studio B, and I wrote it in my book.

Were you doing any law down here at the time?

No. I was just scraping by with that. I've never been in law before or since and hope never to be that hungry to have to go back to law.

Were you doing remotes at that time with your own gear?

Just for fun. Remotes were like a joke then; nobody cared much about them, which was fine. I was doing some jazz groups on the side, just for kicks.

Finally, I got on as a full-time apprentice after about six weeks of part-time. That meant the dub room because United Recording had three dub rooms, or mastering rooms. They did a big business in publishers' dubs. You don't see that any more; but, when a publisher wanted to plug a tune, he would have about 30 or 40 dubs cut, and dubs would be sent to the artists they figured would use the tune. That meant a lot of mastering rooms were kept busy just cutting publishers' acetate refs.

I was there about three months, when Les Brown came in to do an album for Steve Allen's record company, Signature Records. Butch Stone, the manager of the band, asked if they could have Wally Heider as engineer. The reason he asked that was because I'd recorded him up in Oregon a lot of times, and the guys liked the tapes. Of course, the traffic office couldn't possibly have the guts to tell a prospective client that "Yes, Wally Heider works here, but he isn't qualified to record your band here." If somebody asked for you, right or wrong, good or bad, they had to stick you on the board. I can remember the first Les Brown session, the then chief engineer, Bunny Robyn, marvelous person, great chief engineer, literally stood behind me on this first and second of three sessions, periodically reaching over my shoulder to move a fader in or out or what-not and correct an obvious error. The third session I managed to do by myself. That was live 2-track. The mastering engineer, Bob Golden, said it took him a day and a half to master that album because the tape levels were

so erratic. He didn't want to go an extra generation and smooth it out so he mastered it from the original tape, but he had to plan himself a road map because I was all over the place, level-wise. After Les Brown, it was back to the dub-room.

About two months later, Teddy Reigh came in, Count Basie's manager, and booked an album for Roulette Records, and Teddy told the traffic office he'd like to have me on the session. After Basie, back to the dub-room. About three months after that, Kenton came in to record a bunch of Navy promotional spots, and Stan's manager asked for me as engineer and with the Kenton sessions I got along all right on my own. After the Kenton thing, I got enough nerve to ask Bill Putnam if I could be a full mixer, and I became one without ever having done a full narration session, which was a big short-cut, of course.

I worked for United up through 1964, and in 1964 Bill Putnam started his studio in Las Vegas where I was chief engineer. Toward the end of '64, we got a call from Liberty Records to do Kay Stevens at the Copacabana in New York. I can remember, that after doing an Eddie Fisher record at United Recording in Las Vegas, we flew all my stuff back to New York. I had all my own remote gear, and United would pay me for the use of it and would cover my insurance.

What kind of gear did you have at that time?

I still had my old Mickey Mouse mixer. I didn't have a board, per se. I monitored it off the VU meters of the tape machine, still 2-track then.

What kind of mics did you have?

The best and most expensive mics then were Sony C37A's. I used those and RCA 77's. The Sony was one of the newest condenser mics then; it sounded good on most everything and still does. So, I did the remote for Putnam in New York. I went by myself and hired a kid in New York to help me load and unload and, while I was loading up the truck in New York at the Copacabana, apparently somebody made off with one of the C37S's. So, when I got back to Las Vegas, I put in a claim with Putnam's insurance company. But Putnam wasn't going to bother the insurance company. "That's your loss, Wally," he said. We got into it, so I gave him notice and quit.

What year was that?

In early '65. After that, I found a room about 12' x 15' on the ground floor of an office building on the corner of Lexington and Highland in Hollywood. By this time, I had acquired an Ampex 3-track. And United had just finished building for me, for which I paid, a 12-input 3-output Universal Audio board.

I think I paid \$50 a month for my space, and the owner agreed to let me have a shower and sleep in a vacant office across the hall for \$25 a month. For about four months, I slept there. At least, I was close to my equipment.

During that first three months, my first big remote came in. It was a week in Chicago at the Villa Venice with Dean Martin, Sammy Davis, and Sinatra. This was when Reprise first started. Rick Fouchet, who now has his own cartage company, and I flew this stuff to Chicago. Mind you this was without a maintenance man. When we got the stuff to Chicago the only place we could set up was in the back of the check room or coat closet. We had no visual connection with the stage at all, and Henry Brandon had about a 35-piece orchestra there during the week. We recorded the whole week, and it was panic at times and terror at other times, having only our machine and trying to make reel changes between numbers.

On one particular routine during that week, Sinatra dipped the mic (one of the early Shure's, #677, I think) in water and proceeded to cross himself as if in church, and then started to sing into it. Of course, at that point, the mic didn't work. There's no way you can protect yourself from that. Dean Martin and guys like that used to take the mics and make whips out of them, and bounce them off the floor, causing the heads to come off. It was quite an adventure.

I recall, at the Monterey Pop Festival in 1967, that you were caught on camera grabbing microphones off the stage while the Who was destroying their equipment.

I didn't stop to think about it. If any of the equipment was damaged, I could submit a bill to Monterey Pop Festival or Lou Adler, who was running it, and he would pay me for it. As a matter of fact, I did, and I did get paid for three or four mics that were destroyed, but my first reaction when I saw

it (we had a TV camera on the stage) was to get up on the stage. We were set up underneath the stage, and there was a winding metal staircase going up to the stage, barely big enough for one guy, and there were three of us trying to get up there at once. They burned the amplifiers, shoved their guitars in the amplifiers, they were going crazy on the stage, and I wasn't used to that so I panicked; that's what happened.

Once the truck was on the road did you worry about it?

Yeah, We used to have a rule, I'd like to think it is still a rule, that when a person did a remote, particularly the guy driving the truck, and when he was heading back into town, be it from Tahoe, Arizona or wherever, he would call in once or twice a day collect because there's always a possibility that a call for a remote has come in, possibly from the area he's in; whereby, if he calls in, he can just turn around and head in another direction, and two or three guys could be flown there to meet him, and we could pick up a remote. Matter of fact, we had two instances I can recall where a guy hadn't called in but had driven straight in. One came in from Tahoe or somewhere, and we had a panic call for a remote from San Francisco; and, if we'd been able to flag the guy down and send him up there, we could have picked it up. But the guy drove straight in and didn't call in and, of course, no remote. We have never refused a collect call from a guy who was out on a remote and called in. Just to keep in touch so you know how he is, when to expect him. I'm convinced you can run a tight operation without leaning on people. I don't like to lean on anybody.

When you moved out of Highland, you moved to Selma, Cienega. Is that right?

Yes. I got the studio from Herman Josephson, who owned the building. He rented me space there for, I think, about \$75 a month. It was just off the alley; however, it had a jail type door which made it pretty secure. I started a mix-down room in there. I hired Lena DiFiore to run the office for me. When I wasn't busy, I used to hang around the door when it was open and hope I could snag somebody in off the street. At that point, when you're looking for work, good credit or bad credit is not the point; just get them in and the job done.

The studio was a mix-down room and a dub-down room using the original console. I had a wooden shell built so, if you had time, you'd put the console there and fold the shell around it, so that it looked like a permanent installation. More often than not, however, we'd be coming from a remote the night before, so the client would be watching while we'd be carrying this remote console in and putting it in this shell as though it were a permanent situation. It didn't instill too much confidence in the client because here we were trying to connect it up in the back, and trying to get it the way it should be.

Was it just a mix down room or did you also have a studio?

I had a small studio but it was primarily for overdubs, but some people had the guts to do some tracks in there. We did a lot of Rick Nelson, Anita Kerr, Johnny Mann in that room. It was not uncommon to have two 44's hung in there with twelve singers, six on each mic, doing Johnny Mann chorus parts.

That room was only about 15' x 15', wasn't it?

15' x 8' by about 7' tall. But the echo chamber was very good upstairs, and I was able to get a very good vocal sound out of there, both for Johnny Mann and the Anita Kerr Singers.

Who built your echo chamber for you?

I think Bill Hull. It was one of those echo chambers that just happened. We used to do a lot of Ricky Nelson overdubs. I can remember one time he got fascinated with the idea of going up there and standing in the chamber and singing. We recorded a bunch of things that way. When you stood in the chamber you sounded ten miles high, awfully big and awfully strong.

Did you find your ability and good name brought business to you, or were you actively going out and hustling like hell?

With only one room, fortunately I didn't have to hustle that much because it wasn't that tough then and presumably wouldn't be that tough

now with only one reasonably equipped room. You can keep that one room pretty busy. Of course, the more rooms you have, the more you have to hustle and the more you have to stuff them. If you have one room reasonably equipped and you're reasonably efficient, you can do pretty well. But mostly remotes carried the thing right from the start; and, even when I got a permanent console for that room, it was on wheels so we could roll it out the door and put it in a truck and do a remote with it.

What was the attitude of the industry about remotes back in the early 60's? What got people into doing remotes, the fact that you were out there doing it?

Some hit singles came off of remotes. I remember three or four hit singles I did with Johnny Rivers at the Whiskey-a-Go-Go came from one album which was recorded there. That was pretty remarkable and did a lot to spur the remote business, the fact that people could get hit records out of them.

I think it bears some saying, to describe exactly what a remote truck was like then, and what remotes were. Today a remote truck is a rolling control room, and that isn't what it was then.

A remote truck in those days was just an empty truck with a bunch of gear put in it and tied down so that it would travel. If you were lucky and were doing more than three or four days and had a room you could move into, you got out of that truck at all cost because, generally, you'd have more room to work in and the equipment would be more secure. If you were just one night somewhere, it wasn't worth the trouble of moving out of the truck.

You did a number of sessions at Shelley's Manne Hole, which is now part of the Heider studio complex.

Fortunately, it was very easy to work at Shelley's Manne Hole because we'd just run the mic lines right down the alley about 50' and run them into Studio 1. I can remember one time setting up the equipment at Shelley's Manne Hole, but by and large we'd just run it down the alley.

How long after that did you start Studio 3?

I would say Studio 3 was started about 1968. As a matter of fact, when I sold out to Filmways in 1969, Studio 3 hadn't been completed yet. I remember there was a bunch of haggling about the purchase price because I said Studio 3 was going to do a great business, and the purchaser said it had no history of operation.

But, that studio did have a history.

Yes, I had it designed after United/Western's Studio 3 which was already a very successful room.

Let's move up to multi-track, particularly multi-track in remotes.

Obviously, the first multi-track in remotes was 2-track, and I can remember doing a lot of 2-track. In fact, all of the Johnny Rivers stuff was live 2-track, and you took it the way you got it. Often, I would take a 2-track tape and transfer it to 3-track, which meant they had an extra track to overdub applause or a singer or a string section or whatever they wanted to do. I can remember the first 4-track I had, which was an Ampex with two 354 stereo machines and 4-track heads. Along in the late 60's, 8-track came in. I remember I was at the AES show here in L.A., and a friend of mine from Florida, Mack Emerman was here. 3M had an 8-track here. They were pushing it, and no one had bought one yet. I remember Mack and I going over to the Roosevelt Hotel about 11 at night, talking about the future of 8-track, if any, and about 1 or 1:30, I went over to the house phone in the lobby where we were sitting and asked Scotty Lyall, then sales manager of 3M, to come down. He drew up the papers, and I committed myself to three 8-tracks.

Were they the first 8-tracks off the line?

I think so. At least, they were the first 8-tracks in town, and 3M production, of course, was notoriously slow because they were just starting, but we got the first three. After getting the first ones, we went into the rental business, which was very good because it must have taken 3M a year to really get into 8-track production. Meanwhile, we got the first, second and

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third so we had the knuckle in the multi-track, 8-track business, and I think we rented them for \$100.00 a day. I don't think it was more than \$100 a day, and that included delivery and check-out. Anyway, that first year, when anyone wanted an 8-track, they rented them from us. Sunset Sound got involved in a couple of projects that were 8-track, and for several months, we left an 8-track set over there, rather than haul it back and forth all the time. Of course we drove Tutti Camaratta crazy because he couldn't buy an 8-track. I remember one time, after it had been sitting over there, he said, "Why don't you figure how much rental that is, deduct it from the purchase price, and let me buy it?" Of course, I wasn't much of a business man then, but I was a better business man than that, which made Tutti mad, and I can understand that because he was tired of paying that kind of rental money, although he was able to pass it on to his clients.

When Studio 3 went on the air, was it an 8-track?

Yes, sure was.

What kind of artists were you doing there, at that point? You had the Beach Boys.

The Beach Boys...

Wasn't Bones Howe one of the first ones to use that room?

He was, and still is, God love him. Of the engineer-producers I know of, no one has better rapport than Bones Howe with the people he works with, both studio personnel and artists. He has his act together and never loses his cool and always plans his stuff out ahead of time. He always knows where he is when he comes in with a session, never asks for an under-the-table cut or to pad the record company's bill so he can get more of a taste. A gentleman of the first class, who knows the limitation of the people and equipment he works with. If something doesn't sound good, he never says, "Well, this is the best I could do with what I had to work with." He never puts a bad apple in your lap. That's Bones Howe. With a client like that, you stand on your head, day or night, Sunday or otherwise. As I recall, Bones had a key to the place. In later years, I came to know another fellow very much out of the same mold, and that was Larry Cox. Anything those people wanted was never out of line. When they started to ask you a question, you could always say "Yes" before they asked it, you knew they would never ask for anything that was uncalled for. One thing that comes to mind is, just when I was getting ready to open the studio, I was really short of money. I even had sold my stamp collection that I had built up in Las

Vegas, but even that wasn't enough money, so a friend of mine, Gene Norman, who ran the Crescendo Night Club, helped me. I had met him while I was doing recording work in the Crescendo; and subsequently did work for him. Gene told me he would loan me \$50,000 if I would give him \$100,000 credit. In other words, he could book time for half the rate card; and, if the rate card went up, he was still in for half. It took me several years to work out that \$100,000 for Gene Norman. I can remember the feeling of relief after I worked it out, and I can remember Gene called me up one day and said, "Would you like some more money?" I knew exactly what he had in mind, but fortunately I was over the hump, and I didn't need to get into that kind of deal again. I will concede it was Gene's \$50,000 that enabled me to open the doors, even though this was a Mickey Mouse room in a small studio at the time. I mean \$50,000 was a lot of money, and I had to have that to work with; and, if it wasn't for Gene, it would have been a lot harder trip than it was.

You were equally innovative when 16-track became available...

We repeated the same thing to a lesser degree. The 8-track situation had made a Christian out of a lot of the studios, so when 16-track came in, more of them ran for them than when the 8-tracks came in. I'm sure no studio wished me the same good will with 16's as I had with 8's.

Were you the first with 16?

Yes, the first with 3M 16, and about then Ampex was starting to come in along with 3M. I've learned a lesson since then—that is, never be first with any company's products. To this day, I cannot understand why major equipment manufacturers of major equipment like a tape recorder don't put two or three prototypes in a studio for a few months and get some feedback as to what's wrong with them or what they can do to improve them, but they still don't. They come out with a new model, and you buy it and put it in a studio; and then, for the first time, someone sees how it operates under actual studio conditions. Maybe there have been exceptions when a major manufacturer has tested a machine under studio operating conditions, but I can remember, time after time, a manufacturer representative visiting the studio would say, "How come you're doing it that way? What are you using it that way for? We didn't think you were going to punch in. What do you mean, punch in?" The machines were going through all kinds of things that didn't occur to them in the lab. Back in those days, when you bought an 8 or 16-track, who in the lab would have thought of ping-ponging or stuff like that?

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World Radio History

When you sold out to Filmways, you continued to be involved with the studios?

When I sold out to them, I had a 5-year management contract, and I stayed on with them for 5 years. I believe, somewhere along the line, another 2 years were added so it made a total of 7 years.

It was during that period that a number of other studios were built, and the San Francisco operation was begun?

After Filmways bought it, right. Filmways also bought the building where Shelly's Manne Hole was, and Studio 4 was started, and all that was done with Filmway's money and what-not.

When you left Filmways, you got involved in archival work.

Big band music of the 30's and 40's has always interested me so I started a label, which was originally intended to be a mail-order label, called Hindsight Records. Back in the 30's, 40's and 50's there were about 8 library services: Thesaurus, Capitol, Langworth, Standard, McGregor, Associated, World, Sesac, Cole, and Keystone. Originally, when radio stations went on the air, they didn't play phonograph records because record companies didn't want their 78 records played on the air because they figured radio stations were getting their product free. Most records in those early days were stamped "For home use only." If you started a radio station and wanted to go on the air, you leased a library service. Some stations had two or three library services. The lease price would depend on how big the market was. If you leased a library service from L.A., for instance, it was much more than if you leased one from Bakersfield. These library services would consist of two or three hundred transcriptions, 16" records which had about 4 or 5 tracks to a side, vinyl records. This sort of service was started in the early 30's by McGregor and Standard. I think they were some of the early pioneers.

These were pressings?

Yes, pressings. And they had different classes of music. They had Hawaiian, marching bands, vocal soloists, dance bands, jazz, religious music, pipe organ; they had about a dozen or two classifications of various music. So, if a radio station wanted to go on the air, it could pull from these various libraries and play them on the air. This was material that was different from commercially available recordings of bands such as Les Brown, Kenton, and what-not. In the early 50's, the record companies finally became aware of the fact that, if their records were played on the air and people heard them on the air, people would be inclined to go into a record store and buy them. At that point, record companies started sending radio stations piles of free records. When all these free records started coming in, the radio stations figured why should they pay two or three hundred dollars a month for this library service when they were getting more records in the mail than they could play. So, the transcription companies, in a matter of a couple of years, went under. Many went bankrupt, and the master pieces went here, there and yonder. The discs ended up in the hands of collectors and some of the older radio stations.

Were they all 16" discs?

They sure were, and all 33 rpm. The first transcriptions were 10" 78's in the early 30's. Then there were 12" 78's; then they went to 12" 33's; then they ended up with 16" 33's.

Mono?

All mono, and vinyl, not shellac. If the record hadn't been abused too much, the quality was pretty good.

I had always been aware of these services, so since leaving the studios I've been traveling across the country and locating these transcriptions in the hands of private collectors. Because they were leased, most collectors had gotten them from radio stations from somebody who took them out the back door or threw them out because they were too noisy to play on the air.

I am in the final stages of finishing 15 LPs for Hindsight Records, which will bring the total up to 63 records. I sold the company about a year ago because initially it was all mail order, and I could push mail order just so hard. I knew to expand the line I had to get in the stores. To get in the

stores, you've got to be prepared to wait six months for your money, and it's likely you'll get returns which have all kinds of pricing on them which you'll have to clean up to make them marketable again. I wasn't prepared to bite that kind of a bullet so I sold the company and agreed to stay on to produce records for them but with no obligation, just on a first refusal basis. What records I do produce, they would have first refusal rights, and that is all. The 15 records we're putting out this fall will end my participation in that.

Were they all recorded primarily in studios?

All these were recorded in studios. A lot of this stuff has been bootlegged, but we have records out by Jimmy Dorsey. It took me six months to find Jimmy Dorsey's daughter. I got legal permission from all the leaders or their widows or their heirs for this project. Anson Weeks had five children. I contacted each of these five children to get an ok just for that one record. The Ozzie Nelson we have—Harriet Hilliard authorized that, of course for a royalty. She's one of the nicest ladies I've ever dealt with. For Glen Gray, I went through his estate in Boston, Massachusetts, in a bank up there. I dealt with Stan Kenton himself and with Woody Herman himself. In every case, with all 63 records, we have authorization so it's nothing off the wall. Even though there are thousands of records out there that are off the wall, I wanted mine to be legitimate plus we're very careful about the quality. I have an RCA 7D transfer system. That's an arm and playback system with a vertical lateral equalizer made in 1939. When you play back these transcriptions on the kind of system they were made to be played back on, they sound much better than if you played them on a modern hifi system. I can't explain it, but the imperfections of that system matched the discs, and they sounded good and full and fat. If you play them on a stereo system, you pick up all kinds of noise, scratches, pops, ticks, and everything like that plus you get a thin sound. We transferred everything to 30 ips and, if you're very careful, at 30" per second, you can go in there and literally cut ticks and pops out and not hurt the music, particularly on slower tunes. Of course, the faster the tune is, the more careful you have to be. Otherwise, you can mess up the tempo pretty easily.

How did you go about finding this material?

I called primarily collectors. A lot of collectors have things that they won't let out of the house. So, I had this 16" portable transcription system and a 30 ips Ampex. Three times now I've been across the country, and I can go into a guy's living room and set up and in about 30 minutes be ready and checked out to make a transfer so the records won't leave his house, and he can see how they're being handled and everything and I'd pay him for the privilege of doing so and be on my way. My last trip, this summer, drove 6,000 miles. Regardless of what my future is with Filmways and Wally Heider Recording, I'm not going to do that again. That was it. I'm too old and too tired.

So the archive series will live on, but without your immediate involvement?

Whenever I'd run across material that was suitable but which I didn't have releases for, I would tape it anyway and put it in the library because sometime with the material I have in my library I can probably put out 15 or 20 more LPs without doing any more traveling, just by digging through the library and picking out tunes. Hindsight is not a re-issue label. I've prided myself on trying to avoid putting out things that have been issued before so that when a person buys a Hindsight record, he won't get it home and say "Hell, I've already got this and this and this." It would, in effect, be new and different material that the purchaser hadn't heard before. That was the basis on which the line was formed. I was very involved with it, looking people up and looking up publishers and trying to find the personnel of 1942 or 1943 and things like that, it's been a real rough job, and I'm glad it's over for the time being because a person can only stand one rough job at a time.

I gather you're looking forward to getting back into studio operations.

Yes, I am. I'm going to give it my best shot. If my best shot isn't enough, I have no aversion to someone saying good-bye to me, and I'll move to Oregon and watch old movies.

To be concluded in next issue....

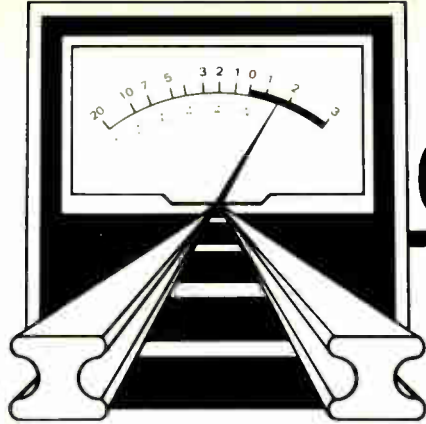
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7133 Santa Monica Boulevard, Hollywood, California, 90046
Tel. (213) 851-7172



Other Side of the Tracks

The situations and characterizations in this column are purely fictional and do not reflect anything relating even vaguely to reality, living or dead.

THE FINAL KEY

by Mr. Bonzai

Continued from last issue

Quad Fader made a few adjustments to the parabolic dish mounted on his acoustic rifle, The Sonic Dance Blaster. The crowd of bikers froze and the employees on Earwig Industries stood back as Quad took aim at Smilin' Deaf Eddie, the legendary engineer silently shouting inside his soundshield bubble. Quad fired as the crowd braced themselves for the explosive unknown. There was absolutely no sound, but suddenly Quad and Eddie started to dance. Ripples of energy ripped through their helpless limbs as Quad started to boogie like his life depended on it. Oddly, Eddie slipped into a soft shoe shuffle, clapping his hands in halftime rhythm. Quad began to babble in tongues:

"I'm a... I'm... I'm a goin' down... yeah... I'm inside the eye of the ear... *I am sound!*"

Quad's evaluation seemed questionable, but from his physical reactions I started to figure out what was going on. His acoustic rifle was designed to act on the victim's brain, causing involuntary dancing. He had been unaware of Eddie's soundshield and the pinpoint frequencies of The Blaster must have hit the shield and ricocheted back on Quad himself. He continued to dance and rave.

"Oh, godamighty... the BASS...

incredible... better than digital... I can feel it in my bones... YAAHHHHHHHHH!!!"

As Quad continued to boogie his brains out, I looked over and watched Eddie casually sauntering around the parking lot. He was serene, he was shuffling, he was cooler than Isaac Hayes. Of course. The waves from The Blaster must have been diluted by the shield. Eddie slowed down to a liesurely skating pace and then stood motionless in ga-ga land.

"Boyo-boy, whew..." he whinnied. "That was the best dance since that night in the rumble seat back in '34."

"Eddie!" I shouted. "Are you alright?"

"Yowzah, yowzah, yowzah... What happened?"

"Quad shot you with sound," I explained. "He hit your shield and the feedback fried his beans. The effect looks like it could be permanent."

As evidence, Quad continued to palpitate around us. He went into another Irwin Cory lecture:

"Pluck my soul, I can hear the Lord! The third eye is the middle ear..."

As Quad continued to wax mystical, Eddie looked down at the ground and I could almost hear his cerebral wheels slipping into gear. What a mind. Seconds later he looked at me thoughtfully, his bushy eyebrows knitted in profound tension.

"This could be the discovery of relativity in acoustics. The key factor is the effect that The Blaster had on my soundshield. Take a dash of the Doppler Effect, mix in a little basic electromagnetics, compensate for the changes in mass on the nuclear level and you get *pure sound*. This is the sound that a proton hears when an electron zips off to make another molecule. It can't be heard with ears, only experienced by the nerves on an elemental level... it's the music of the spheres."

I guess you have to be there to hear it.

Quad let out a Woodstock whoop and stopped dead in his tracks. The spasms finally ceased. "I'm tellin' ya, that is *MUSIC*," he testified. "Thought I was a goner there for a second, but I feel reborn. What a fool I've been. To hell with quad, I just wanna rock 'n' roll. I'm selling this rotten company. Music is the church I'm gonna pray in. Eddie, what the hell did you do to my gun... that's the secret ingredient. Uh-oh... here I go again..."

Quad went into another routine, more like The Twist this time, shouting out cryptic slogans. I asked Cart to go call the paramedics before Quad split his infinitive. His cosmic pronouncements reminded me of the story of Oliver Wendell Holmes and Nitrous Oxide. As Oliver came out of the laughing gas he told the doctor

he had discovered the key to life and begged to be put back under. Grabbing a pencil as he returned from beyond the veil, he jotted down, "The Universe is pervaded by the aroma of Turpentine." Provocative, but meaningless to mere mortals. Quad abruptly stopped again and tugged on my shirtsleeve like he was reading my skeptical mind.

"Trust me, Mr. Bonzai, you can have your Dinky Doodle tapes back," he pleaded doggy-like. "I have a sincere mission in life, to bring this new music to folks like you and me. Eddie, I need your help. We can make wonderful records together... like I always wanted to."

I could see there was more here than met the ears. Eddie had once been one of the top men in the industry and he was spiritually crushed when his hearing went bad. He couldn't continue like Beethoven had, and he sorely missed never having recorded that "White Christmas" or an "I Am the Walrus." Like every true engineer, he wanted to be a part of some monster record that found its way into the hearts and ears of the human race.

Quad stopped dancing and picked up his plea where he had dropped it. "Eddie, we can make a record for all time, a new form of sound. We can make the Wright Brothers' flight of molecular music."

"Well," Eddie mumbled. "Sounds kinda interestin'. I'm curious how that Blaster of yours works. What ya got in mind?"

"All we need is an artist," he said. "This new molecular sound will do the rest. I'll pay for everything."

"I'm your man," squeaked Dinky Doodle, the up and coming C&W star.

"I like your style," added Longhorn McKintyre, Dinky's road manager.

"Maybe you can cure this dance fever, Eddie?" asked Quad.

"Just a second," I interrupted. A studio manager always has to keep his eye on the monetary VU. "If you're really getting out of the espionage business, Quad, I think we might be able to work together. Of course, we'll have to complete the project at Ryan Recording." Quad nodded his approval. "... And I think Eddie should be the executive producer." More nods, in fact, Eddie was nodding out. It had been a big day for the ol' duffer.

"That's fine by me," said Quad. "Eddie, this record will *really* get under people's skin... they'll be helpless. We'll be billionaires! How does that soundshield of yours actually work?... Uh-oh..."

Quad broke into a speedy version of The Watusi.

"Eddie," I spoke as I put my arm around his shoulder. "Keep your secret to yourself... and keep this guy dancing 'til they pay their bill." ■

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NEW FOR 1981

AMPLIFIERS

AUDI-ENCE, INC.

HMX-6060
3325 Vista Oaks, Garland, TX 75043
(214) 228-2169
Contact: Brian or Gail Hawkes.

Date Product Introduced: November 1980.
Product Description and Applications: Low power utility power amp for studio monitor, headphone cue systems, and broadcast applications. Features include individual level controls, short circuit protection, wide bandwidth, and distortion less than .15% at power levels up to 60 watts per channel.
Suggested List Price: \$475.00.

AUDIOTRONIX CORP.

AUDIOTRONIX
7287 Industrial Parkway, Mentor, Ohio 44080
(216) 255-9330

Contact: L. Ross, President.
Date Product Introduced: June, 1980.
Product Description and Applications: Stereo and quad power amplifiers. Four new models, two stereo (300 and 500 watt) and two quad (600 and 1000 watt). Outstanding features include plug-in power modules each with its own power supply filters, delay turn-on, dissipation limiting, short circuit protection, fusing, thermal regulation. All models are forced air cooling, brushed aluminum front panels and handles with front panel input switching and power LED display.
Basic Specifications: Power output: ratings are into 4 ohms.
Frequency response: flat 2 to 20 KHz with distortion less than .01%.
Suggested List Price: \$599 to \$1,449.

ADVANCED TECHNOLOGY DESIGN CORP.

SINGLE OUTPUT AMPLIFIER SERIES;

MODELS 221, 421, AND 821.
18123 Valerio St., Van Nuys, CA 91804
(213) 989-7577

Contact: Stephen Woolley, Mark Engebretson.
Date Product Introduced: May, 1980.
Product Description and Applications: Single output full-range or subwoofer power systems featuring two input mixing, built-in high-pass filters, low-pass filters, VLF equalization and switch-type controls.
Basic Specifications: Model 221: 150 watts into 8 ohms.
Model 421: 400 watts into 8 ohms.
Model 821: 800 watts into 8 ohms.
Total distortion: less than 0.1%, 20 Hz to 20 KHz.
Noise level: 221 - 104 dB, 421/821 - 101 dB.
Suggested List Price: Model 221: \$420; Model 421: \$720; Model 821: \$1,090.

ADVANCED TECHNOLOGY DESIGN CORP.

TRIAMPLIFIER POWER SYSTEM SERIES;

MODELS 513 AND 713
18123 Valerio St., Van Nuys, CA 91804
(213) 989-7577

Contact: Stephen Woolley, Mark Engebretson.
Date Product Introduced: May, 1980.
Product Description and Applications: Triamplifiers with built-in frequency dividing networks, high pass filters, low frequency equalization and high frequency driver compensation. Both models feature switch-type level and filter/qualizer controls.
Basic Specifications: Model 513 is 350 watts into 8 ohms LF, 100 watts into 8 ohms MF, 50 watts into 8 ohms HF.
Model 713 LF 450 watts @ 4 ohms, 300 watts @ 8 ohms, MF 150 watts @ 4 ohms, 100 watts @ 8 ohms, HF 150 watts @ 4 ohms, 100 watts @ 8 ohms.
Total distortion less than 0.1% 20 Hz-20 KHz.
Suggested List Price: Model 513: \$1,180.00; Model 713: \$1,290.00.

ADVANCED TECHNOLOGY DESIGN CORP.

THREE-OUTPUT BIAMPLIFIER POWER SYSTEM
MODEL 713Z

18123 Valerio St., Van Nuys, CA 91804

(213) 989-7577
Contact: Stephen Woolley, Mark Engebretson.
Date Product Introduced: May, 1980.
Product Description and Applications: Biampifier power system featuring built-in crossover network, high pass filters, low frequency equalization and two sets of (separate) high frequency output and driver equalization controls. All controls are of the switch type for precise settings and repeatability. Three-output format allows separate levels and equalization for long-throw and short-throw HF horns.
Basic Specifications: 450 watts @ 4 ohms, 300 watts @ 8 ohms, LF 150 watts @ 4 ohms, 100 watts @ 8 ohms, HF 150 watts @ 4 ohms, 100 watts @ 8 ohms each of two HF output channels.
Selection of crossover types and frequencies available.
Suggested List Price: Model 713Z: \$1,290.00.

ADVANCED TECHNOLOGY DESIGN CORP.

BIAMPLIFIER POWER SYSTEM SERIES;

MODELS 512, 712 AND 524
18123 Valerio St., Van Nuys, CA 91804
(213) 989-7577

Contact: Stephen Woolley, Mark Engebretson.
Date Product Introduced: May, 1980.
Product Description and Applications: Biampifiers with built-in dividing networks, high pass filters, low frequency equalization and high frequency driver compensation. Models 512 and 712 are single channel amplifiers, Model 524 is a two-channel device. All models feature switch-type level and filter/qualizer controls.
Basic Specifications: Model 512 is 350 watts LF into 8 ohms, 100 watts into 8 ohms HF.
Model 712 LF is 450 watts @ 4 ohms, 300 watts @ 8 ohms, HF is 150 watts @ 4 ohms, 100 watts @ 8 ohms.
Model 524 is 150 watts @ 4 ohms, 100 watts @ 8 ohms, each of two channels, HF is 75 watts at 4 ohms, 50 watts at 8 ohms, each of two channels.
Total distortion, all models, less than 0.1% 20 Hz-20 KHz.
Noise: - 101 dB.
Suggested List Price: Model 512: \$940.00; Model 712: \$1,090.00; Model 524: \$1,180.00.

BGW SYSTEMS, INC.

100C
13130 Yukon Avenue, Hawthorne, CA 90250
(213) 973-8090

Contact: Irwin Laskey, Sales Manager.
Date Product Introduced: November 1980.
Product Description and Applications: The BGW 100C is completely modular 50W per channel amplifier with precision stepped attenuators & LED power indicators. For use in broadcast monitoring or where space & sound are both essential, all wrapped up in a unique 1/4 x 19" package.
Basic Specifications: Output power 8 ohms 20-20 KHz 50W.
Frequency response 10 Hz to 100 KHz.
Input sensitivity 1 volt.
Dimensions 1 3/4" x 19" x 1 1/2".
The maximum THD at any power level from 250 milliwatts to 50 watts shall be no more than 0.1%.
Suggested List Price: \$489.00

BGW SYSTEMS, INC.

1250
13130 Yukon Avenue, Hawthorne, CA 90250
(213) 973-8090

Contact: Irwin Laskey, Sales Manager.
Date Product Introduced: November 1980.
Product Description and Applications: The all new BGW 1250 is a super class full complementary amplifier capable of delivering 1.2K watts into 8 ohms (mono) & 600W per channel into 4 ohms. The BGW 1250 utilizes 48, 200 watt power transistors & is about to set new standards in audio amplification. The BGW 1250 is for

critical, loud, and clean monitoring. Used in recording studios and on the road where power and reliability are essential.
Basic Specifications: Output power 8 ohms 20-20 KHz 400W. 600W at 4 ohms per channel.
Input sensitivity 1.23 V.
The maximum THD at any power level from 250 milliwatts to 400 watts shall be no more than 0.03%.
Suggested List Price: \$1,999.00

EUMIG (USA), INC.

EUMIG M-1000 POWER AMPLIFIER
Lake Success Business Park, 225 Community Drive,
Great Neck, NY 11020
(516) 468-8533

Contact: Jeff Thellen, National Mktg. Manager.
Date Product Introduced: November 1980.
Product Description and Applications: 100 W/channel monitoring amplifier featuring complete DC design, peak-power fluorescent displays, rack mtg.
Basic Specifications: 100 w/channel, min. rms into 8 ohms from 20-20KHz with no more than 0.025% THD.
Frequency response DC-300 KHz (-3 dB, 1W).
95 DB S/N.
35V/microsecond slew rate.
Damping factor of 50 (1 KHz, 8 ohms).
Suggested List Price: \$795.00

FAX AUDIO, INC.

MODEL FA-110 LINE AMPLIFIER
29 Anita Place, Amityville, New York 11701
(516) 281-6085

Contact: M. Kahn, Director of Marketing.
Date Product Introduced: March 1980.
Product Description and Applications: The FAX FA-110 line, combining or differential amplifier is one of a series of plug-in PC card amplifiers which employ the FA-100 op-amp as the active element. The output transformer provides three identical isolated outputs each capable of +24 dBm, or +30 dBm with two outputs wired in series. Each plug-in card can be mounted in a standard 19" card frame and is supplied with a dual 15-pin mating connector.
Basic Specifications: Gain: Externally adjustable from 9 dB to 49 dB.
Frequency response: ± 0.5 dB 30 Hz to 20 KHz.
Distortion: < 0.3% @ +30 dBm 30 Hz to 20 KHz.
Noise: Equivalent to an input of -131 dBv ref. 0.775v (shorted input).
Power supply: ± 16V to ± 24V DC 20 ma @ +4 dBm output; 70 ma @ +30 dBm output.
Suggested List Price: \$110.00.

FAX AUDIO, INC.

MODEL FA-100 OPERATIONAL AMPLIFIER
29 Anita Place, Amityville, New York 11701
(516) 281-6085

Contact: M. Kahn, Director of Marketing.
Date Product Introduced: March 1980.
Product Description and Applications: The FAX FA-100 is a high-speed, low noise, differential audio operational amplifier employing discrete components in a circuit optimized to deliver excellent slew rate, bandwidth, noise and distortion specifications. These outstanding dynamic features provide unsurpassed performance criteria in meeting the most demanding applications. Other features of the FA-100 include: low quiescent current, wide full power bandwidth, low offset voltage, high gain bandwidth product, internal compensation, short circuit protection and excellent unit to unit uniformity.
Basic Specifications: Gain: > 120 dB.
Equivalent input noise: -131 dBv (shorted input).
Slew rate: 16 volts/us.
Distortion: < 0.05% into 75 ohms (40 dB gain) 20 to 20 KHz @ +25 dBv.
Quiescent current: 9 ma.
Supply voltage: ± 16V to ± 32V DC.
Gain bandwidth product: > 20 MHz.
Size: 1" sq. x 0.5" H.
Suggested List Price: \$44.00.

MCINTOSH LABORATORY, INC.
MC-2500 STEREO POWER AMPLIFIER
 2 Chambers St., Binghamton, NY 13903
 (807) 723-3512

Contact: Sales Department.

Date Product Introduced: September 1980.

Product Description and Applications: The MC-2500 is McIntosh's highest power amplifier delivering 500 watts per channel stereo or 1000 watts mono. The MC-2500 is ideal for very high power multiple speaker systems as full power is available at 1 to 8 ohms stereo or 1/2 to 16 ohms mono. May be rack mounted requiring 10 1/2 inch panel space. Thermally regulated cooling fans. A super performing robust amplifier.

Basic Specifications: Stereo power output 500 watts minimum, sine wave average power per channel, both operating into 1, 2, 4 or 8 ohms with less than .02% THD or IMD.

Mono power output 1000 watts minimum sine wave average power into 0.5, 1, 2, 4, 8 or 16 ohms with less than .02% THD or IMD.

Peak responding output meters calibrated in watts and dB.

Power guard circuit prevents output clipping due to overdriving.

PANASONIC PROFESSIONAL AUDIO DIVISION
STEREO DC POWER AMP, SE-A3

50 Meadowland Parkway, Secaucus, NJ 07094
 (201) 348-7470

Contact: Jim Parks, Ass't General Manager, Paul Ackel, Sales Manager.

Date Product Introduced: 1980.

Product Description and Applications: SE-A3: New Class A circuitry eliminates switching and crossover distortion, low distortion DC circuitry, dual linear power transistor output stage, concentrated power block cuts electromagnetic induction, independent left and right channel power transformers, large peak power meters.

Basic Specifications: Rated minimum sine wave RMS power output: 20 Hz to 20 KHz both channels driven. 0.002% total harmonic distortion, 200 W per channel (8 ohms). 20 Hz to 20 KHz both channels driven. 0.003% THD, 320 W per channel (4 ohms).

1 KHz continuous power output both channels driven: 0.001% THD, 220 W per channel (8 ohms). 0.003% THD, 350 W per channel (4 ohms).

Input sensitivity: 70 mV (1 V IHF '66).

Signal to noise ratio (IHF, A): 100 dB (123 dB, IHF '66).

Input Impedance: 47K ohms.

General: Power consumption: 1,400 VA, 1.150 W.

Power supply: AC 120V, 60 Hz.

Dimensions: 16 1/4" x 8 1/2" x 19 1/2" (WxHxD).

Weight: 78.3 lb (35.2 kg).

PANASONIC PROFESSIONAL AUDIO DIVISION
AMPLIFIER WP-9210

50 Meadowland Parkway, Secaucus, NJ 07094
 (201) 348-7470

Contact: Jim Parks, Ass't General Manager, Paul Ackel, Sales Manager.

Date Product Introduced: 1980.

Product Description and Applications: Stereo power amp. 200 W + 200 W rated power out at 8 ohms with less than .05% THD from 20 to 20,000 Hz. S/N ratio 105 dB. Balanced XLR or phone jack inputs.

Basic Specifications: Power output per channel: 200 W + 200 W continuous average sine wave power into 8 ohms with less than 0.05% THD, 20 Hz to 20,000 Hz, both channels driven.

Frequency response: 20 to 20,000 Hz ± 0.5 dB.

THD: 20 to 20,000 Hz less than 0.05%. 250mW to 200W, 1 KHz less than 0.01%.

Intermodulation Distortion: 80 Hz and 7 KHz, mixed 4:1, single channel power output into 8 ohms.

Input sensitivity: +8 dBx (1,95V) for maximum power output. Voltage gain 26 dB.

Indicators: Power On LED, Stand By LED, Run LED, Peak LED.

Dimensions: 16 1/4" W x 5 3/4" H x 14 1/2" D.

Weight: Approx. 43 lbs. (19.5 kg).

Finish: Cover: Silver metallic, Panel: Black, Chassis: Black, Escutcheon: Silver cast aluminum.

RTS SYSTEMS, INC.

MODEL 465 MICROPHONE PREAMPLIFIER

1100 W. Chestnut St., Burbank, CA 91506
 (213) 843-7022

Contact: Doug Leighton, President.

Date Product Introduced: April 1980.

Product Description and Applications: The Model 465 is a single channel microphone preamplifier with transformer balanced input and output, phantom power, adjustable gain, limiter circuit (switchable), and XLR type connections. It is completely self contained, AC powered, in a low profile package that may be used free standing, single rack mount or tandem rack mount.

Basic Specifications: Frequency response: +0, -1 dB 20 Hz-20 KHz.

THD: 0.03%.

Equivalent input noise: -127 dBv.

Max output: +22 dBu.

Suggested List Price: \$392.40.

NEW FOR 1981

AMPLIFIERS

THRESHOLD CORPORATION

STASIS 1

1632 Tribute Road #E, Sacramento, CA 95815
 (916) 927-5081

Contact: Mark Glazier.

Date Product Introduced: June 1980.

Product Description and Applications: Single channel, non phase-inverting audio power amplifier employing patented circuitry to suppress voltage and current variation and enable performance to be dominated by a system maintained in a stasis condition of constant voltage/constant current, linear state operation. No overall negative feedback is employed around the amplifier system. No output stage "protection" circuits are utilized. Power output is monitored by a peak reading meter covering the range of +3 dB through -40 dB. The meter is switchable to indicate power source voltage. A LED status display indicates logic on,

amplifier on, waveform error, and overtemperature. This unit is ideally suited for critical monitoring applications where faultless performance is imperative.

Basic Specifications: Rated power of 200 watts, 20 Hz through 20 KHz, into 8 ohms, at 120 volt line source. Harmonic and IHF intermodulation distortion no greater than .1% at rated power.

Maximum instantaneous output current: 30 amperes. Maximum continuous output current (fuse governed): 10 amperes.

Input impedance of 75K ohms.

Hum & noise no greater than 200 microvolts at the output (-106 dB unweighted below full power).

4 ohm minimum recommended wideband load impedance.

Capable of operating into fully reactive loads.

Dimensions and weight: 19 inches wide by 8 1/4 inches high by 17 1/4 inches deep; shipping weight: 107 pounds.

Suggested List Price: \$3,500.00

THRESHOLD CORPORATION

STASIS 2

1632 Tribute Road #E, Sacramento, CA 95815
 (916) 927-5081

Contact: Mark Glazier.

HOLD IT.



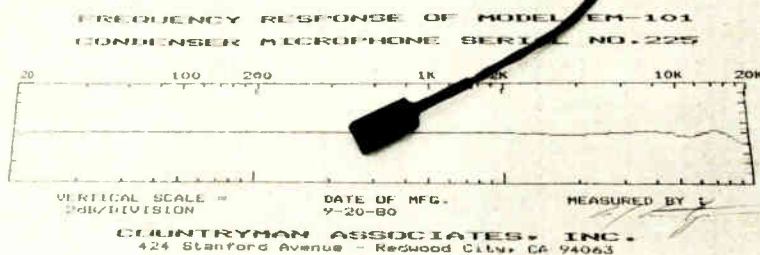
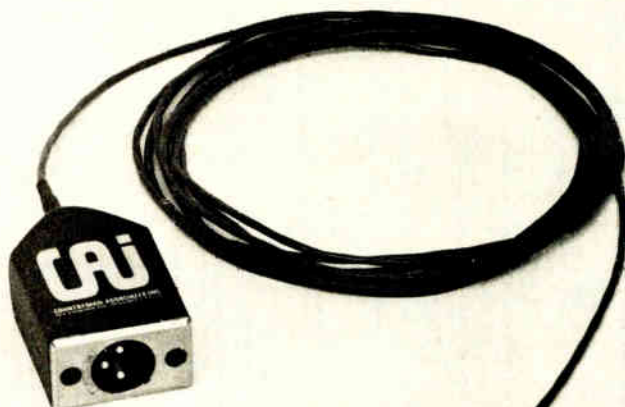
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829 FOLSOM STREET, SAN FRANCISCO, CALIFORNIA 94107

TELEX: 340665 D. ROBINSON SF0

NEW FOR 1981

AMPLIFIERS

Date Product Introduced: June 1980.

Product Description and Applications: Dual channel, non phase-inverting audio power amplifier employing patented circuitry to suppress voltage and current variation and enable performance to be dominated by a system maintained in a stasis condition of constant voltage/constant current, linear state operation. No overall negative feedback is employed around the amplifier system. No output stage "protection" circuits are utilized. Power output is monitored by a peak reading, independent LED ladders, covering the range of +3 dB through -40 dB. This unit is ideally suited for critical monitoring applications where faultless performance is imperative.

Basic Specifications: Rated power of 200 watts, 20 Hz through 20 KHz, both channels driven into 8 ohms, at 120 volt line source.

Harmonic and IHF intermodulation distortion no greater than .1% at rated power.

Maximum instantaneous output current: 25 amperes. Maximum continuous output current (fuse governed): 8 amperes.

Input impedance of 75K ohms.

Hum & noise no greater than 200 microvolts at the output (-106 dB unweighted below 200 watts).

4 ohm minimum recommended wideband load impedance; capable of operating into fully reactive load. Dimensions and weight: 19 inches wide by 6³/₈ inches high by 17¹/₂ inches deep; shipping weight: 83 pounds.

Suggested List Price: \$2,450.00

THRESHOLD CORPORATION

STASIS 3

1832 Tribute Road #E, Sacramento, CA 95815

(916) 927-5081

Contact: Mark Glazier.

Date Product Introduced: June 1980.

Product Description and Applications: Dual channel, non phase-inverting audio power amplifier employing patented circuitry to suppress voltage and current variation and enable performance to be dominated by a system maintained in a stasis condition of constant voltage/constant current, linear state operation. No overall negative feedback is employed around the amplifier system. No output stage "protection" circuits are utilized. Power output is monitored by a peak reading, independent LED ladders, covering the range of +3 dB through -40 dB. This unit is ideally suited for critical monitoring applications where faultless performance is imperative.

Basic Specifications: Rated power of 100 watts, 20 Hz through 20 KHz, both channels driven into 8 ohms, at 120 volt line source.

Harmonic and IHF intermodulation distortion no greater than .1% at rated power.

Maximum instantaneous output current: 20 amperes. Maximum continuous output current (fuse governed): 5 amperes.

Input impedance of 75K ohms.

Hum & noise no greater than 200 microvolts at the output (-103 dB unweighted below 100 watts).

4 ohm minimum recommended wideband load impedance; capable of operating into fully reactive load. Dimensions and weight: 19 inches wide by 6³/₈ inches high by 12 inches deep; shipping weight: 53 pounds.

Suggested List Price: \$1,875.00

UREI

MODEL 6500 POWER AMPLIFIER

8480 San Fernando Rd., Sun Valley, CA 91352

(213) 787-1000

Date Product Introduced: May 1980.

Product Description and Applications: The UREI Model 6500 amplifier offers totally modular construction which allows the use to remove either channel for inspection or exchange while the amplifier is mounted in the rack. Each channel is totally independent with its own power supply and even its own continuously variable cooling fan.

Basic Specifications: With the 6500, UREI is introducing a totally new system of regulating feedback in the amplifier. Through a new system called Conductor Compensation (patent pending), the feedback loop is extended to the speaker's terminals, rather than the speaker outputs on the amplifier. The result is extremely high damping factor and near-perfect transient response.

The Model 6500 provides 275 watts RMS per channel at 8 ohms with .1% THD and up to 1,200 watts RMS in mono mode at 4 ohms.

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Date Product Introduced: October 1980.
Product Description and Applications: A top quality unidirectional microphone with elastically suspended cartridge construction for reduction of handling noise. Excellent directional characteristics for musical instrument recordings. Three position (M, V1, V2) low frequency roll-off switch. Built in wind and pop screen. Recommended applications: Music Instrument pickup, vocal, hi-fi, recording studio, broadcast.
Basic Specifications: Polar pattern: Cardioid.
Frequency response: 50-15 KHz.
Impedance: 600 ohms.
Open circuit voltage output: -72 dB (2.5mV/μa) (0 dB = 1ubar).
Output level (dBm): -56 dBm (0 dBm = 1mw/μa @ 600 ohms).
Output level EIA-GM (dB): -150 dB.
Connector: XLR-3-12C. Cable: 5m.
Switch: Roll-off; M: Flat, V1: -6 dB @ 100 Hz, V2: -12 dB @ 100 Hz.
Finish: Matte metallic.
Dimensions: 40 dia 187 long (mm). Weight: 230g.
Suggested List Price: \$259.95.

IAI INTERLAKE AUDIO INC.
FOSTEX M390 (M390PAIR)
860F Dobbie Street, Winnipeg, Manitoba, R2K 1G4
(204) 868-0248

Contact: Ted Telesky, Applications Engineer.
Date Product Introduced: October 1980.
Product Description and Applications: A top quality unidirectional microphone with extremely wide and flat frequency response for recording applications. Low frequency roll-off switch for suppressing unwanted noise and pop. M390Pair is two specially selected close tolerance M390 microphones supplied with a stereo recording arm (P220) and packing in a handy carrying case. Recommended applications: Music Instrument pickup, vocal, hi-fi, recording studio, broadcast.
Basic Specifications: Polar pattern: Cardioid.
Frequency response: 40-15 KHz.
Impedance: 600 ohms.
Open circuit voltage output: -73 dB (2.2mV/μa) (0 dB = 1ubar).
Output level (dBm): -57 dBm (0 dBm = 1mw @ 600 ohms).
Output level EIA-GM (dB): -151 dB.
Connector: XLR-3-12C. Cable: 5m.
Switch: Roll-off; M: Flat, V: -10 dB @ 50 Hz.
Finish: Matte metallic.
Dimensions: 38 dia 175 long (mm). Weight: 240g.
Suggested List Price: M360: \$139.95; M390Pair: \$294.95.

PANASONIC PROFESSIONAL AUDIO DIVISION
MICROPHONE WM-8050
50 Meadowland Parkway, Secaucus, NJ 07094
(201) 348-7470

Contact: Jim Parks, Assistant General Manager; Paul Ackel, Sales Manager.
Date Product Introduced: 1980.
Product Description and Applications: Hand-calibrated unidirectional dynamic mic. Equipped with floating mic capsule to eliminate shock noise and a triple wind-screen to eliminate pop noise.
Basic Specifications: Type: dynamic.
Frequency response: 50 - 80,000 Hz.
Polar pattern: unidirectional.
Impedance (1 KHz): 250 ohms balanced.
Sensitivity: -77 dBm \pm 3 dB.
Open circuit output level (0 dB = 1 V/10ubar): -58 dB.
Connector: professional 3-pin male audio connector.
Dimensions: 1-11/16" x 7", 43 x 179mm.
Weight: 0.73 lbs., 330 g.
Finish: satin nickel.
Suggested List Price: \$195.00.

PANASONIC PROFESSIONAL AUDIO DIVISION
MICROPHONE WM-8150
50 Meadowland Parkway, Secaucus, NJ 07094
(201) 348-7470

Contact: Jim Parks, Assistant General Manager; Paul Ackel, Sales Manager.
Date Product Introduced: 1980.
Product Description and Applications: Slim-styled hand-calibrated unidirectional back electret condenser mic. Operates on batteries or connects to a phantom power source.
Basic Specifications: Type: back electret condenser.
Frequency response: 30 - 18,000 Hz.
Polar pattern: unidirectional.
Nominal impedance: 250 ohms balanced.
Sensitivity: -74 dBm \pm 3 dB.
Open circuit output level (0 dB = 1V/ubar): -54 dB.
Maximum SPL: 140 dB SPL (4SR44 x 2 or Phantom).
STN ratio: more than 46 dB.
Power supply: a single AA drycell (1.5V); a single silver

NEW FOR 1981

MICROPHONES

oxide battery (6V); a pair of silver oxide batteries (12V); Phantom power source (48V).
Connector: professional 3 pin male audio connector.
Dimensions: 29/32" x 7-11/16", 23 x 195mm.
Weight: 0.46 lbs., 200g.
Finish: satin nickel.
Suggested List Price: \$235.00.

SHURE BROTHERS INC.
SM-63 OMNIDIRECTIONAL MICROPHONE
222 Hartrey Avenue, Evanston, IL 60204
(312) 868-2200

Contact: P. Bugielski, Manager, Professional Products.
Date Product Introduced: April, 1980.
Product Description and Applications: An elegantly small, rugged, dynamic omnidirectional microphone with high output, the SM-63 can be handled or stand-mounted in broadcast and recording studios, in location interviews and sports broadcasts, on stage and in TV handheld use. Controlled low-frequency rolloff for natural sound pickup and smooth high-frequency response for crisp, clear sound. Humbucking coil makes it insensitive to strong hum fields; weighs only 2.8 ounces.
Basic Specifications: Frequency response: 50 to 20,000 Hz.
Rating impedance: 150 ohms.
Open circuit voltage (1,000 Hz): -76 dB (0 dB = 1 V/ubar).
Case: champagne finish aluminum with Veraflex® grille.
Suggested List Price: \$111.00.

SHURE BROTHERS INC.
SM-77 SERIES
222 Hartrey Avenue, Evanston, IL 60204
(312) 868-2200

Contact: P. Bugielski, Manager, Professional Products.
Date Product Introduced: June, 1980.
Product Description and Applications: Starmaker™ Series microphones are small, lightweight, extremely rugged dynamic units with cardioid (unidirectional) pickup and smooth, wide frequency response. Tailored low-frequency rolloff and gentle mid-frequency presence peak for enhanced vocal intelligibility. Available in ebony or tan matte finish. Designed for recording studio, broadcast, and sound reinforcement use. Available with cable and matching connector or less cable.
Basic Specifications: Frequency response: 50 to 15,000 Hz.
Rating impedance: 150 ohms.
Open circuit voltage (1,000 Hz): -79 dB (0 dB = 1 V/ubar).
Case: aluminum and Armo-Dur® with steel mesh screen, ebony or tan Suedecoat™ finish.
Weight: 6 ounces.
Suggested List Price: Less cable: \$117.00; with cable: \$138.00.

SHURE BROTHERS INC.
SM-78 SERIES
222 Hartrey Avenue, Evanston, IL 60204
(312) 868-2200

Contact: P. Bugielski, Manager, Professional Products.
Date Product Introduced: June, 1980.
Product Description and Applications: Starmaker™ Series microphones are small, lightweight, unidirectional dynamic units. They are extremely rugged, and have highly effective built-in wind and "pop" filters for use outdoors or close to the mouth. The microphones are designed for voice or instrument pickup in sound reinforcement and a variety of broadcast uses. They are available in ebony or tan matte finish.
Basic Specifications: Frequency response: 50 to 15,000 Hz.
Rating impedance: 150 ohms.
Open circuit voltage (1,000 Hz): -79 dB (0 dB = 1 V/ubar).
Case: aluminum with steel mesh grille, ebony or tan Suedecoat™ finish.
Weight: 7.2 ounces.
Suggested List Price: Less cable: \$150.00; with cable: \$171.00.

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NEW FOR 1981

MIXERS

ALLEN & HEATH BRENNEL LTD

18:4:2

Pembroke House, Campbourne Road, London N8
01-340 3291

Contact: Iain P. Everington, Sales Manager.

Date Product Introduced: November, 1980.

Product Description and Applications: A logically designed, ruggedly constructed unit, lightweight and portable with a purpose built integral flight case. The 18:4:2 is ideal for PA companies, theatres and touring musicians. The sophisticated output and monitoring facilities are designed in such a way that the 18:4:2 can easily be used for stereo and multi-track recording. Hence enabling musicians to produce their own master tapes. The 18:4:2 is the best double act in the music industry.

Basic Specifications: 18:4:2 features transformerless balanced mix XLR inputs, 1/4 jack line inputs, comprehensive pushbutton routing, auto PFL, 4 subgroups + 2 main outputs, 2 routable echo returns + solo, talkback, stereo monitor tape return, 6 illuminate VU meters, heavy duty PFP flight case, long travel 90mm input/output faders.

ALLEN & HEATH BRENNEL LTD

AHB SYNCON SERIES B

Pembroke House, Campbourne Road, London N8
01-340 3291

Contact: Iain P. Everington, Sales Manager.

Date Product Introduced: November, 1980.

Product Description and Applications: Compact in size Series B is of the "in line" concept and totally modular in construction. The standard main frame has a maximum capacity of 20 input/output modules and is complete with all the necessary master and monitor functions required by the latest multi-track recording techniques. It is ideal for 8, 16 or 24 track operation and with absolutely no factory modification can be expanded to a 44/24 fully automated console, with comprehensive integral patchbay facilities.

Basic Specifications: Standard Series B features 24 track and 2 mix busses, 20 input/output mainframe, 12 input/output expander frame, modular patchbay frame, innovative auxiliary mix system, sweep frequency equalization, free routing and subgrouping, light column metering, auto PFL audio & metering, in-place solo, fully automatable (Allison compatible), solid hardwood trim, 3 channel fader options, LED channel functions, new mic. input design, monitor channel effects mixing, high slew rate, full function monitoring.

ALTEC LANSING

MODEL 1674 AND 1678 MICROPHONE MIXERS

1615 S. Manchester Avenue, Anaheim, CA 92803
(714) 774-2900

Contact: Linda Hill.

Date Product Introduced: November, 1980.

Product Description and Applications: The 1674 (4-Input) and 1678 (8-Input) incorporate Altec's patented gain sharing principle which allows the system to deliver maximum acoustic gain while helping to prevent feedback in multi-microphone operations. In addition to their automatic mixing capabilities, the Models 1674 and 1678 provide a number of other versatile application features including: balanced mic or line level inputs with phantom power for condenser microphones, TTL compatible logic outputs for custom applications such as automatic switching of speaker zones, channel line outputs for logging tape recorders, remote muting and priority override control, switchable 200 Hz hi-pass filters and auto/direct by passing in each channel and complete international selection of power standards.

AUDITRONICS, INC.

MODEL 740

3750 Old Getwell Rd., Memphis, TN 38116

(901) 362-1350

Contact: James F. Woodworth, Sales Manager.

Date Product Introduced: October, 1980.

Product Description and Applications: Audio control

console for professional recording applications. 4 effects are standard, with a maximum of 9. All input positions have transformerless mic preamps.

DALLAS MUSIC INDUSTRIES, INC.

KELSEY PRO-CLUB + 3 SERIES MIXERS

150 Florence Avenue, Hawthorne, NJ 07506

(201) 423-1300

Contact: Diane Anness, Customer Service.

Date Product Introduced: June, 1980.

Product Description and Applications: This economically priced series is available in 8, 8, 12 and 24 channel versions. Each mixer is built into a rugged fiberglass SMF Roadcase along with a regulated bipolar power supply featuring a toroidal power transformer and AC voltage selector plug. A built-in multiple long spring reverb system provides smooth, natural sounding reverberation. This series offers a stereo output with a summed mono output which allows for two submaster operation. Peak reading LED arrays monitor six output levels.

Basic Specifications: Gain: 90 dB.

Frequency response: +0, -3 dB 30 Hz to 30 KHz.

THD: less than .08%.

Leakage: under 70 dB.

Equivalent input noise: better than -127 dBv RMS.

Dynamic range: better than 90 dB.

Balanced outs: +24 dBv RMS.

Suggested List Price: \$925.00 to \$2,700.00.

DALLAS MUSIC INDUSTRIES, INC.

KELSEY PRO 4/3 SERIES MIXERS

150 Florence Avenue, Hawthorne, NJ 07506

(201) 423-1300

Contact: Diane Anness, Customer Service.

Date Product Introduced: June, 1980.

Product Description and Applications: This feature packed high performance series is available in 12, 16 and 24 channel versions. A separate regulated power supply also fits into the rugged foam-lined SMF mixer Road Case. The 4/3 may be used as a mono output board with four submasters or as a four track board with a mono summed output, or by changing the mode switch to a stereo output board with two true stereo submasters and a summed mono output. Featuring: four sends, four band EQ, LED gain status indication, long throw faders, LED level arrays, stereo solo, extensive patching, balanced outputs.

Basic Specifications: Gain: 110 dB.

Frequency response: +0, -3 dB 15 Hz to 20 KHz.

THD: typically .03%.

Equivalent input noise: less than -127 dBv RMS.

Dynamic range typically 100 dB.

Max. output into 600 ohms: +24 dBv RMS.

Leakage: better than 70 dB.

Output noise: -100 dBv RMS.

Suggested List Price: \$2,800 to \$4,800.

DALLAS MUSIC INDUSTRIES, INC.

KELSEY PRO-TOUR 8/3 SERIES MIXERS

150 Florence Avenue, Hawthorne, NJ 07506

(201) 423-1300

Contact: Diane Anness, Customer Service.

Date Product Introduced: June, 1980.

Product Description and Applications: This conservatively priced state-of-the-art touring board series is available in twelve mainframe configurations from eight to thirty-two channels. Features include: heavy duty foam-lined SMF road case, external regulated power supply, four true stereo submasters, simultaneous four track mixdown, stereo and summed mono main outputs, phantom power, four sends, extensive LED level monitoring.

Basic Specifications: Gain: 93 dB.

Frequency response: +0, -3 dB 12 Hz to 35 KHz.

THD: typically .03%.

Equivalent input noise: under -127 dBv RMS.

Dynamic range: typically 100 dB.

Max. output level into 600 ohms: +24 dBv RMS.

Leakage: better than 70 dB.

Output noise: -100 dBv RMS.

Suggested List Price: \$3,100 to \$7,800.

DALLAS MUSIC INDUSTRIES, INC.

KELSEY SOUNDPRISM SERIES

150 Florence Avenue, Hawthorne, NJ 07508

(201) 423-1300

Contact: Diane Anness, Customer Service.

Date Product Introduced: June, 1980.

Product Description and Applications: This series is the culmination of the Kelsey Mixer line, and represents an origin in advanced technology. A modular expandable series, the Soundprism is equally powerful on the road or in the studio. Total functional flexibility is the keynote both in signal access and control. Featuring zoom automation and 8, 4, 2, and mono mixdown. Seven frame sizes are available with eight through forty-eight input channels. A stereo talkback system, gain status indicators, LED level arrays, external power supply and foam-lined SMF road cases are provided.

Basic Specifications: Gain: 97 dB.

THD: below .04%.

Frequency response: +0, -3 dB 12 Hz to 35 KHz.

Equivalent input noise: under -127 dBv RMS.

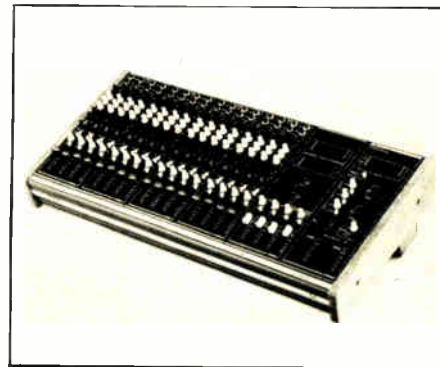
Leakage: better than 70 dB.

Dynamic range: typically 100 dB.

Ma. mic in: +23 dBv RMS.

Max. out into 600 ohms: +24 dBv RMS.

Suggested List Price: \$5,900 to \$16,900.



E-VTAPCO
SERIES 74 MIXING CONSOLES

E-VTAPCO

SERIES 74 MIXING CONSOLES

(7408/7416/7424/7432)

3810-148th Avenue N.E., Redmond, WA 98052

(206) 883-3510

Contact: Jim Loppnow, Market Development Manager.

Date Product Introduced: January - July, 1980.

Product Description and Applications: Four mixers with 4 x 2 x 1 output formats ranging from 8, 18, 24 and 32 inputs, for sound reinforcement, recording and broadcast. Same features as Series 72 Mixing Consoles with the following additions: 4 channel sub-group capability with stereo and mono outputs; fluorescent bargraph level indicators for sub-groups and stereo or mono/solo metering; aux stereo tape input with level and pan controls; talkback system with independent mains, monitor, and aux switching with level control. Also features innovative factory-installed optional reverb system called ADR with Adjustable Decay Time.

Basic Specifications: Slew rate: 10v/microsec.

Equivalent input noise: -130 dBv.

Frequency response: ±0.5 dB (20-20KHz).

T.H.D.: .02% at +4 dBv.

3-band equalization: ±18 dB at 100 Hz; ±12 dB selectable at 600 Hz or 3.5 KHz; ±18 dB at 10 KHz.

Suggested List Price: 7408 (\$2,295); 7416 (\$3,195); 7424 (\$4,595); 7432 (\$5,995); A.D.R. reverb option: \$220.

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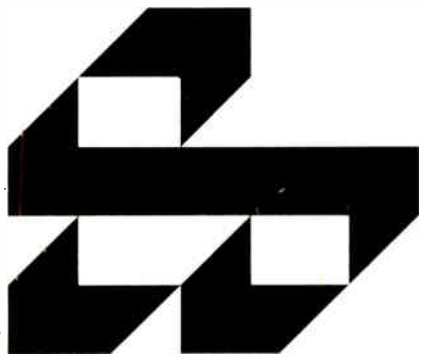


(516) 582-8210

Contact: Emil Handke, Sales Manager.

Date Product Introduced: November 1980.

Product Description and Applications: The Series 40 represents the top of the line in Sound Workshop's Series of Professional Recording Consoles. The Series 40 represents a major number of updates to Sound



sound workshop

SOUND WORKSHOP
PROFESSIONAL AUDIO PRODUCTS, INC.

Workshop's well respected Series 1600 Console. All of the features and performance of the 1600 have been maintained with the following additions and/or changes: 8 auxiliary send busses. Trans-Amp (TM Valley People) microphone preamplifiers are now standard. Phantom power is now standard. Solid oak cabinetry. New buss circuit structure yielding, less crosstalk, less buss noise, greater dynamic range. Standard output modules now feature high resolution LED level indicators and balanced transformerless outputs. Two line level inputs are now available on each input module. All previous 1600 options will still be available for the Series 40 including: VCA input sub-grouping package, multi-mode high resolution metering, choice of equalizers, ARMS automation with Super-Group.
Suggested List Price: \$12,000 to \$65,000 depending on size, module complement and options.



SPECK ELECTRONICS
SPECKMIX 16

SPECK ELECTRONICS

SPECKMIX 16

7400 Greenbush Ave., North Hollywood, CA 91605

(213) 764-1200

Contact: Arlene Savre, Sales.

Date Product Introduced: July 1980.

Product Description and Applications: The Speckmix 16 is a 16 input, 8 output recording console... researched, designed, and intended specifically for professional and semi-professional 8 track studios. Features include: 16 complete input channels, 8 mixing buss outputs, 8 large VU meters, 8 track panable assign, 6 frequency, 3 band equalizers, low noise transformerless mike inputs, control room and studio playback, talkback and cue prompts, independent stereo mixdown buss, all operating levels are +4 dBm, stylish European color coded knobs, and solid oak sides.

Basic Specifications: Output level: +4 dBm.

Maximum output level: +22 dBv.

E.I.N.: -124 dBv.

Suggested List Price: \$2,975.00.

STUDER 160/269 MIXER/CONSOLES

STUDER 160/269 MIXER/CONSOLES

1425 Elm Hill Pike, Nashville, TN 37210

(615) 254-5851

Contact: Bruno Hochstrasser, President.

Date Product Introduced: November 1980.

Product Description and Applications: 10-In/2-out rack-mountable (169) and 16/2 (269) mixing consoles configurable for 4-out, with individual input bass/treble/presence EQ, independently-metered variable-recovery-rate limiting, reverb send, foldback, pan pots, solo, muting, and slating facilities. Built-in electret talkback mike, pre-fade monitor amp, 6-step sensitivity selector. Floating XLR connectors with phantom mike powering; long-throw faders, ASA-VU or PPM metering, built-in low/external filter switching.

Basic Specifications: (0 dBu = 0.775V): -61 to -22

dBu sens. (mike, -2 dBu overload).

-23 to +16 dBu sens. (line, +23 dBu overload).

Nom. output +6 to +15 dBu (+21 dBu max. into 200

ohms).

40-15,000 Hz +0.5/-1.0 dB response, unity-gain distortion less than 0.03% (1 KHz).

Bass/treble EQ \pm 16 dB.

presence EQ \pm 11 dB (150-7000 Hz, tunable).

Low-cut filter (switchable) 12 dB/octave, -3 dB @ 70

Hz.

48V/60ma phantom powering.

Suggested List Price: \$9,210.00

WALKER AUDIO VISUAL ENGINEERING

WALKER 1608 & 2408

P.O. Box 5723, 1823 Commercenter West.,

San Bernardino, CA 92412

(714) 884-1294

Contact: Larry Brandsen.

Date Product Introduced: July 1980.

Product Description and Applications: Monitor board: 16 or 24 inputs. Completely modular—any module can be removed and replaced in seconds; 8 sends plus 4 sub-groups on each input; continuously variable input gain control; 3 level, 3 color VU meter on each input; 5 band equalization on each input module; each output module receives all 4 sub-group sends; 2 separate assignable talkback sends; complete cueing of inputs, outputs and sub-groups.

Basic Specifications: Frequency response: 20 Hz to 20 KHz \pm 5 dB.

Equivalent input noise: Less than -129 dBv.

Distortion: Less than .04%.

Suggested List Price: 1608: \$6,179.00, 2408: \$8,160.00.

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25 WEST 45TH STREET, NEW YORK, N.Y. 10036 (212) 921-5920

NEW FOR 1981

SIGNAL PROCESSING



APHEX SYSTEMS LTD.
APHEX BROADCAST 602B AURAL EXCITER

APHEX SYSTEMS LTD.
APHEX BROADCAST 602B AURAL EXCITER
7801 Melrose Ave., Los Angeles, CA 90048
(213) 855-1411
Contact: Paula Lintz, Marketing.
Date Product Introduced: March 1980.
Product Description and Applications: The Broadcast 602B brings genuine Aural Excitement to the radio market. Users report greater range and penetration, an increase in apparent loudness and greatly improved stereo imaging as well as the enhanced brilliance, clarity and presence that has made the studio Aural Exciter famous on over 5000 albums and commercials. From AM mono to FM stereo the Aphe psycho acoustic effect penetrates even 3 and 4 inch speakers in autos and transistor radios using sophisticated, patented circuitry no other manufacturer can offer.
Basic Specifications: 3½" x 19" rack package, XLR inputs and outputs, balanced 600 ohms.
Suggested List Price: \$2700.00.

ADVANCED AUDIO DESIGNS, INC.
THIRD HAND™
3890 Stewart Road, Eugene, OR 97402
(503) 485-4251
Contact: John L. Caporale, Chief Executive Officer.
Date Product Introduced: October 1980.
Product Description and Applications: The Third Hand™ is a voltage control source used to provide continuously variable preset voltages. The unit will interface with any voltage controllable unit. There are six presets selectable by self cancelling push buttons. Voltage presets are front panel selectable. One rack space, excellent for live performance or studio applications, especially for setting digital delay time in voltage control mode. An excellent accessory to Advanced Audio Designs Digital Delay Model D-250.

AUDIO & DESIGN RECORDING, INC.
GEMINI EASY-RIDER
P.O. Box 786, Bremerton, WA 98310
(206) 275-5009
Contact: Nigel Branwell V.P.; or Kathy Mallory.
Date Product Introduced: October/November 1980.
Product Description and Applications: A compressor/limiter featuring infinitely variable compression slope, ranging from very soft (1.5:1) to limit (20:1). The attack control acts as the basis from which the unit calculates the optimum attack time, according to program characteristics ("Intelligent Attack®"). Slower settings can be used safely since the unit will adjust its attack automatically to handle any unforeseen peaks. Release (recovery) time can also be programmed or set between 15 milliseconds and four seconds for specific

signal shaping. The unit offers 33 dB make-up gain, with a 25 dB control range from onset of limiting to maximum clip level of +18 dBm, with preset output control user-calibrated between -10 dBm and +12 dBm Ref to limit threshold.

Basic Specifications: The Easy Rider can be used as two separate mono channels with crosstalk better than -77 dB Ref. to +12 dBm on the opposite channel; or stereo coupled features ±1 dB channel to channel matching over 20 dB gain reduction, to ensure image stability.

S/N ratio is better than -82 dB with low distortion better than 0.15% at 1 KHz Ref. to +12 dBm.

A 20-segment bar graph meter, which reads gain reduction over the 20 dB scale, is set into the unit's laminated plastic front panel which is anti-static treated.

Side chain is accessed via ¼" jack.

Suggested List Price: \$875.00. The Easy Rider is ideal for musicians and recording studios alike.

COURT ACOUSTICS LTD.
GE 80
STEREO 30 BAND ½-OCTAVE GRAPHIC EQUALIZER
c/o Quintek Inc.

4721 Laurel Canyon Blvd., Suite 209,
North Hollywood, CA 91607
Contact: Ian Dunn, President, (213) 980-5717.
Date Product Introduced: August 1980.
Product Description and Applications: The ultimate in tone control is afforded by the GE 80 Graphic Equalizer, comprising stereo equalization in two rows of 30 ½-octave bands on standard iso center frequencies from 25 Hz to 20,000 Hz. Innovative filters consisting of precision inductors and capacitors minimize noise and distortion. The unique "Unloop" feedback design provides a very linear filter shape, phase shift is minimal and results in a substantially flat response in "all boost" or "cut" positions. The unit is extremely compact and ruggedly constructed.

Basic Specifications: Frequency range 18.5 Hz ▶ 24 KHz.

Gain range: Filters ±10 dB.

Level: Up to 20 dB overall gain.

Max output level: +23 dBm.

Distortion: Better than 0.01% THD.

Noise: Better than -85 dBm.

Input Impedance: 10K ohms; Output Impedance: 100 ohms.

Terminations: Unbalanced 2 pole ¼" jack, balanced XLR.

Size: 19" rack mount or free standing, 5¼" (3u) high, 10" deep.

Optional Perspex "tamperproof" cover.

Suggested List Price: \$1960.00.

dbx, INCORPORATED
905 PARAMETRIC EQUALIZER
71 Chapel St., Newton, MA 02195
(617) 984-3210

Contact: David Roudebush, Product Manager.

Date Product Introduced: October 1980.

Product Description and Applications: The 905 is a three band, fully parametric equalizer module for use in the dbx 900 Series signal processing system. Each band features the convenience of truly reciprocal operation with the capability of constant Q operation in the full cut position to produce infinitely deep notches and either peaking or shelving operation of the high and the low band. Its high density (8 905's will fit in an F900 frame occupying only 5½" of rack space) and extreme versatility make it ideal for recording and broadcast applications.

Basic Specifications: Equalization range; boost: 15 dB.; Cut: 15 dB (reciprocal mode); Cut: infinite (constant Q mode).

"Q" range: .7 to 10, low band range: 20 Hz to 500 Hz, mid band range: 200 Hz to 5 KHz, high band range: 800 Hz to 20 KHz.

Maximum input and output level: +24 dBm.

dbx, INCORPORATED
906 FLANGER +
71 Chapel Street, Newton, MA 02195
(617) 984-3210

Contact: David Roudebush, Product Manager.

Date Product Introduced: October 1980.

Product Description and Applications: The 906 is capable of proving the full frequency range flanging effects previously obtained only by using matched tape machines. Also included is a switch selectable double mode providing high quality doubling effects. Modulation sources include 2 internal sweep functions and a random low frequency noise function with switch selection of external control voltage (typically from another 900 Series module or electronic music synthesizer). Other features include stereo outputs and an LED bar graph indicating delay times.

Basic Specifications: Delay range (continuously variable).

Flange mode: 100µs to 20ms.

Double mode: 4ms to 40ms.

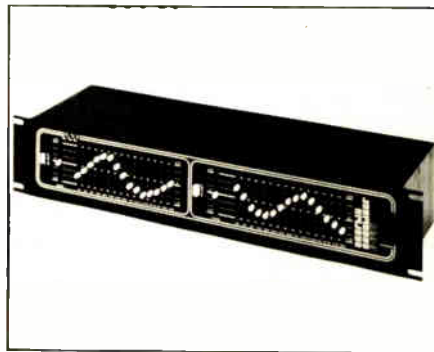
Maximum input and output level: +24 dBm.

DELTALAB RESEARCH, INC.
MEMORY MODULE
27 Industrial Ave., Chelmsford, MA 01824
(617) 258-9034

Contact: James L. Camacho.

Date Product Introduced: June 1980.

Product Description and Applications: DeltaLab Research, Inc., Chelmsford, MA is proud to formally introduce the Memory Module. This product is a companion product to the highly successful DL-2 Acoustic-computer® and its newest product DL-4 Time Line™. The Memory Module when interfaced with the DL-2 Acoustic-computer® and the DL-4 Time Line™ allows the user an additional two full seconds of delay, with absolutely no degradation in performance. The Memory Modules can be cascaded to obtain additional seconds of delay still without any degradation in performance of the master unit or the Memory Module.



DOD ELECTRONICS CORP.
R-830 DUAL 15 BAND GRAPHIC EQUALIZER

DOD ELECTRONICS CORP.
R-830 DUAL 15 BAND GRAPHIC EQUALIZER
242 West 2950 South, Salt Lake City, Utah 84115
(801) 485-8534

Contact: John Johnson, National Sales Manager.

Date Product Introduced: January 1980.

Product Description and Applications: The DOD R-830 is a solid state dual 15 band graphic equalizer which is designed for mounting in a standard 19" rack, and is intended for acoustic and room equalization. Two sets of 15 bands on ½ ISO centers with 12 dB of boost or cut, in-

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111B Dual Spring Reverb

A professional reverb with an excellent price/performance ratio

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Creates a seductive, mono-compatible pseudo-stereo effect from mono sources

418A Stereo Compressor/Limiter

For smooth, undetectable level and high frequency control in recording

526A Dynamic Sibilance Controller

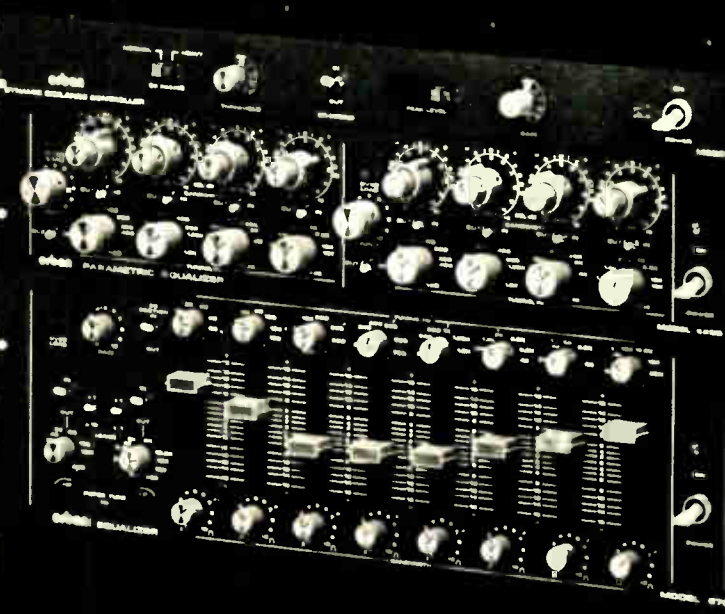
Clean, inaudible de-essing of vocals with consistent action regardless of levels

622B Dual Channel Parametric EQ

Constant-Q design makes it an exceptionally versatile EQ

672A Equalizer

A Parametric EQ with graphic controls, including variable high and low-pass filters usable as an electronic crossover



AES BOOTH 28

All products are sold through authorized Orban professional audio dealers worldwide.
Call or write for the name of the dealer nearest you.

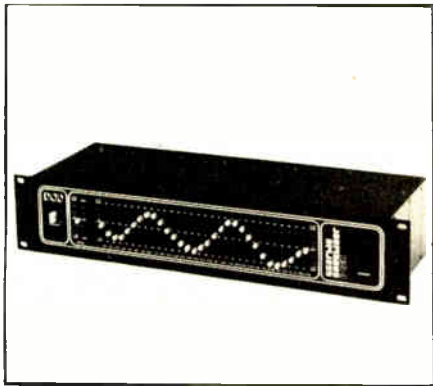
orban

Orban Associates Inc., 645 Bryant Street, San Francisco, CA 94107 (415) 957-1067

World Radio History

and-out switch which does not disturb the balance condition, level control with 12 dB of boost or padding, 1/4" balanced and unbalanced input and output jacks, illuminated power rocker switch.

Basic Specifications: Frequency response: 10-40 KHz. THD: Less than 0.01%. IMD: Less than 0.01%. S/N ratio: 95 dB. MOL, balanced: 20 dBm (ref: 1mW/600 ohms) 10 Vrms into 10K ohms; Unbalanced: 17 dBm (ref: 1mW/600 ohms) 5 Vrms into 10K ohms. Output impedance, balanced: 940 ohms; Unbalanced: 470 ohms. Power requirements: 105-125 VAC, 50-60 Hz 2 watts. I/O Connectors, Input: one 1/4" phone jack, balanced and unbalanced; Output: One 1/4" phone jack. Dimensions: 18" x 6 1/2" x 3 1/2". **Suggested List Price: \$299.95.**



**DOD ELECTRONICS CORP.
R-831 31 BAND GRAPHIC EQUALIZER**

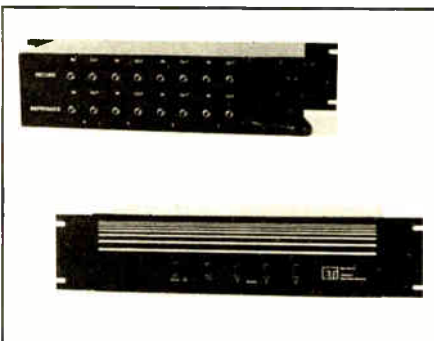
**DOD ELECTRONICS CORP.
R-831 31 BAND GRAPHIC EQUALIZER**
242 West 2950 South, Salt Lake City, Utah 84115
(801) 485-8534
Contact: John Johnson, National Sales Manager.
Date Product Introduced: January 1980.
Product Description and Applications: The DOD R-831 is a solid state 31 band graphic equalizer which is designed for mounting in a standard 19" rack, and is intended for acoustic and room equalization. 31 separate bands on 1/2 ISO centers with 12 dB of boost or cut, in-and-out switch which does not disturb the balance condition, level control with 12 dB of boost or padding, 1/4" balanced and unbalanced input and output jacks, illuminated power rocker switch.
Basic Specifications: Frequency response: 18-22 KHz. THD: Less than 0.01%. IMD: Less than 0.01%. S/N ratio: 90 dB. MOL, balanced: 20 dBm (ref: 1mW/600 ohms) 10 Vrms into 10K ohms; Unbalanced: 17 dBm (ref: 1mW/600 ohms) 5 Vrms into 10K ohms. Output impedance, balanced: 940 ohms; Unbalanced: 470 ohms. Power requirements: 105-125 VAC, 50-60 Hz 2 watts. I/O Connectors, Input: one 1/4" phone jack, balanced and unbalanced; Output: One 1/4" phone jack. Dimensions: 19" x 6 1/2" x 3 1/2". **Suggested List Price: \$299.95.**

**DUKANE CORPORATION
99A556 ACTIVE CROSSOVER**
2900 Dukane Drive, St. Charles, Illinois 60174
(312) 584-2300
Contact: Doug Randle, Administrative Assistant.
Date Product Introduced: March 1980.
Product Description and Applications: Active, low-level crossover designed for professional quality sound systems. Allows each amplifier to drive speakers within a single band of frequencies. Capable of bi-amplification and tri-amplification using two circuit cards. Built in power supply.
Basic Specifications: 2 bands for bi-amplification (standard) with selectable crossover frequencies of 500 Hz or 800 Hz. Two additional bands for tri-amplification (optional). Bandwidth: (110-1867) 500 Hz/800 Hz lo pass; (110-1668) 500 Hz/800 Hz hi pass; (110-1869) 3150 Hz/5 KHz low pass; (110-1670) 3150 Hz/5 KHz hi pass all @ 36 dB/octave. Input Z: > 10K ohms. Output Z: < 100 ohms. Distortion: Less than .25%.

NEW FOR 1981

SIGNAL PROCESSING

**DUKANE CORPORATION
3A241 1/3 OCTAVE EQUALIZER**
2900 Dukane Drive, St. Charles, Illinois 60174
(312) 584-2300
Contact: Doug Randle, Administrative Assistant.
Date Product Introduced: March 1980.
Product Description and Applications: Filter set is designed for use in sound systems to provide up to 12.5 dB of continuously variable boost or attenuation at any of up to 24 1/3-octave frequencies. Front panel contains input level control, "Normal," "overload" and "power on" LED's. Optional 2A266 variable high-low pass filter and 2A276 pink noise source plug-in circuit cards.
Basic Specifications: Input Z: > 10,000 ohms. Output Z: < 100 ohms. Gain ± 1 dB in flat position. Frequency response: 20 to 20,000 Hz ± 5 dB. Filter type: LC; active filter center frequency accuracy: within 1%. Distortion: Less than .05% @ 1V rms output RL = 600 ohms. Noise: better than -93 dB from 1V rms output (20 KHz bw).

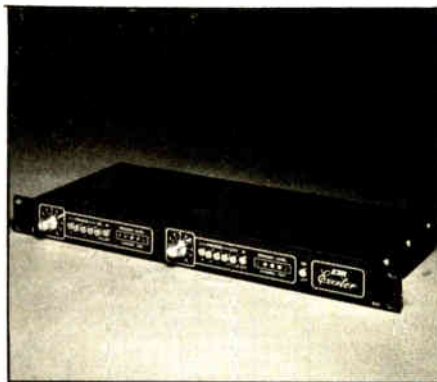


**ELEC-TEC INC.
ULTIMA IV NOISE REDUCER**

**ELEC-TEC INC.
ULTIMA IV NOISE REDUCER**
2324 Walsh Avenue, Santa Clara, CA 95051
(408) 727-3713
Contact: George Davis, President.
Date Product Introduced: October 1980.
Product Description and Applications: This new, hybrid design, 4-channel noise reducer is designed to directly interface to existing home studio systems without modifications or tools needed. The unique integrated circuit design provides adjustment free performance on all 4 channels and simultaneous record/reproduce noise reduction by as much as 90 dB. Dynamic range is also improved by 30 dB without audio coloration or breathing and pumping. Stand-alone and EIA rack mounted versions are available. Delivery is approximately 2 weeks after receipt of order.
Basic Specifications: The Ultima IV can be used with any direct record/reproduce tape system, and offers a frequency response of 50 Hz to 125 KHz with less than 2 degree phase shift over the entire frequency band. Distortion is less than .25% THD. Noise reduction is accomplished by compression and expansion of the data during recording and reproducing.
Suggested List Price: The Ultima IV sells for \$499 in single unit quantities.

**EXR CORPORATION
EXIII**
2800 Gladstone, Ann Arbor, MI 48104
(313) 996-4111
Contact: Jim Cassidy, Pres., Marketing/Sales.
Date Product Introduced: September 1980.
Product Description and Applications: The EXIII is the latest in a line of professional psychoacoustic enhancers manufactured by EXR Corporation. This 2 channel, 4 process/select system w/solo capability is in a 1 1/2"

rack mount package with high precision select buttons and the easy to monitor 5 LED bargraph indicator that the EXIII incorporated. The internal changes that have been made include an exclusive electronically balanced input and output and added RF protection.
Basic Specifications: Input: 600 ohms, electronically balanced and RF protected. Output: A unique circuit electronically simulates a 600 ohm balanced transformer output. Maximum levels: +20 dBm. Signal to noise ratio: At least 90 dB. **Suggested List Price: \$1690.00.**



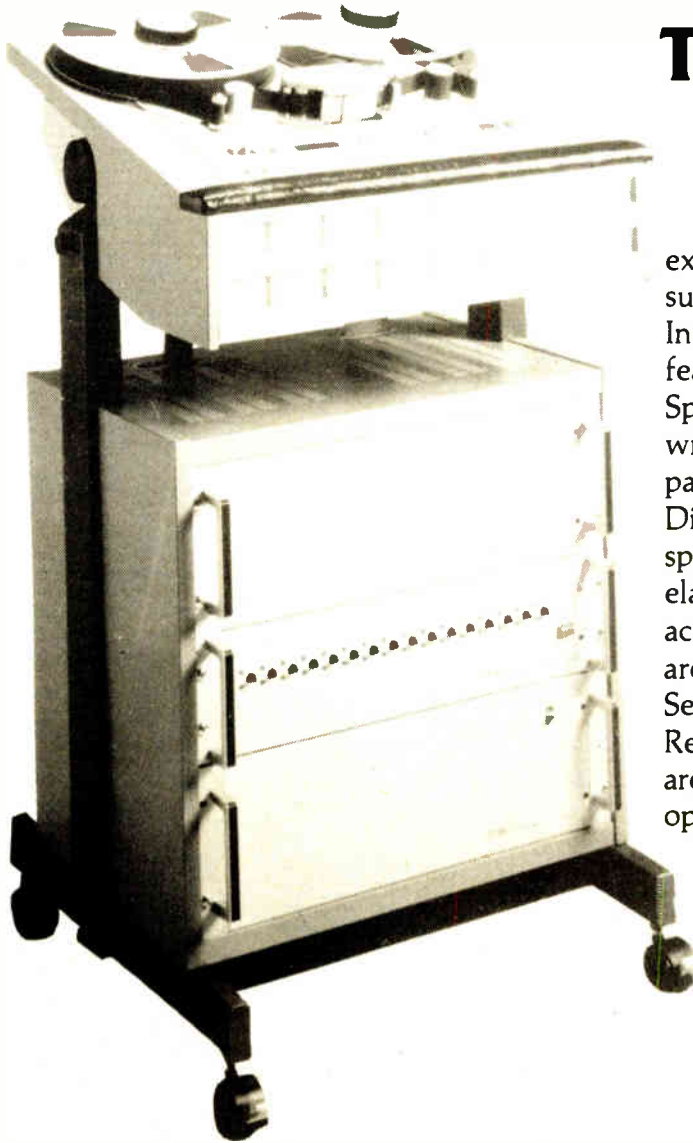
**EXR CORPORATION
EXR EXIII**

**GOTHAM AUDIO CORPORATION
EMT 251**
741 Washington St., New York, NY 10014
(212) 741-7411
Contact: Eil Passen.
Date Product Introduced: November 1980.
Product Description and Applications: The EMT 251 is an advanced digital reverberation system. Programs include echo, chorusing, reverberation, space, delay and Doppler shift. A liquid crystal display indicates control settings and reverberation parameters.

**IBANEZ
UE-400 MULTI-EFFECTS UNIT**
P.O. Box 469, 1716 Winchester Rd., Bensalem, PA 19020
(215) 838-8870
Contact: Jim Heffner, R&D Engineer.
Date Product Introduced: January, 1980.
Product Description and Applications: Compressor, phaser, distortion and chorus/flanger in one device. Remote footboard noiselessly switches individual effects or a preset group. LEDs indicate individual and overall effects status. Insta-Patch Switches select series order of effects. External effects loop allows use of one or more effects in addition to the UE-400. Low noise. 19" rackmount. Applications include musical instrument, sound reinforcement and studio special effects.
Basic Specifications: Input impedance: 510K ohm (1/4" standard phone jack, unbalanced). Output impedance: 10K ohm (1/4" standard phone jack, unbalanced). Hum and noise: less than -80 dBm (Equivalent Input Noise, IHF A-Curve). Power: 120VAC. **Suggested List Price: \$545.00**

**IBANEZ
AD-202 MULTIMODE ANALOG DELAY**
P.O. Box 469, 1716 Winchester Rd., Bensalem, PA 19020
(215) 838-8870
Contact: Jim Heffner, R&D Engineer.
Date Product Introduced: January, 1980.
Product Description and Applications: Multipurpose Analog Delay with switch selectable delay, doubling, stereo chorus and flanging. Two inputs with separate level controls accept two microphones or a microphone and an instrument. LED ladder displays input signal level. Tone control allows delay response contour. Two outputs are provided for stereo effects. Footswitch jack accepts any standard on/off footswitch for remote in/out switching. Low noise. 19" rackmount. Useful for musical instrument, sound reinforcement and studio delay applications.
Basic Specifications: Delay range: 2.8 ms to 400 ms. Input impedance: 5K ohm (mic), 100K ohm (Inst). Input sensitivity: -50 dBm (mic), -30 dBm (Inst). Output impedance: 10K ohm. All jacks standard 1/4" phone, unbalanced. Hum and noise: -65 dBm (equivalent input noise, IHF A). Power: 120 VAC. **Suggested List Price: \$425.00**

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INCLUDING DBX



The TEAC 85-16

Teac has built an excellent machine at a surprisingly low price. Intelligent design features, such as Spooling Mode for fast wrapping and neat packing, 4-segment Digital Display for tape speed (% of 15 ips) or elapsed time, and accurate Search To Cue are standard. 5-point Search To Cue and Remote Function Select are available as options.



Audio/Musical Company

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LEXICON, INC.
VERSION 3 OPERATING SYSTEM
FOR MODIFIED 224 DIGITAL REVERB
60 Turner St., Waltham, MA 02154
(617) 891-8790

Contact: Virginia Casale, Marketing Administrator.
Date Product Introduced: August, 1980.
Product Description and Applications: This 3rd generation software for the Model 224 Digital Reverb incorporates further refinements and improvements in the reverberation audio quality with a more convenient operator interface. Each program now comes on pre-set to Lexicon's recommended parameters and yet can be easily modified. This makes it easier for a first-time operator to create beautiful reverberation. The 224 is used in major studios as well as in live performance where high quality reverb and versatility are required.
Basic Specifications: Mod. 224 specs: 0.5 to 70 seconds reverb time, 2, 4 or 6 reverberation programs, up to 255 ms of pre-delay.
Dynamic range: 86 dB.
THD plus noise: 0.05% typical for all reverb times between 0 and 35 seconds, remote control console is standard.
Suggested List Price: Older systems may be updated to Version 3 for \$250. Complete systems are \$7,500 to \$8,300.

LEXICON, INC.
MODELS 122/122-S DIGITAL DELAY SYSTEMS
60 Turner St., Waltham, MA 02154
(617) 891-8790

Contact: Virginia Casale, Marketing Administrator.
Date Product Introduced: May, 1980.
Product Description and Applications: Top of the line, modular mono and stereo digital audio delay systems designed for sound reinforcement and studio applications. Provide many special effects for studio use as well as live performance with the VCO module. Intended for those who want the very highest audio quality and equipment reliability. Supersedes and replaces Lexicon's 102 Series delay systems.
Basic Specifications: Mod. 122 Delay: 40 to 320 ms in 5 ms steps.
Mod. 122-S Delay: 40 to 180 ms per channel in 2.5 ms steps.
Dynamic range: 95 dB typical, 90 dB min., "A" weighted for 122 and 122-S.
Frequency response: 20 Hz to 15 KHz, +0.5, -1 dB.
THD plus noise: 0.03% typical, 0.05% max at 1 KHz, less than 0.1% through entire bandwidth.
Suggested List Price: Model 122, \$2,395 to \$5,135. Model 122-S, \$3,815 to \$5,735.

LEXICON, INC.
PCM41 DIGITAL DELAY PROCESSOR
60 Turner St., Waltham, MA 02154
(617) 891-8790

Contact: Virginia Casale, Marketing Administrator.
Date Product Introduced: July, 1980.
Product Description and Applications: Cost effective delay processor with excellent audio performance at all delay settings and frequencies. Human factored, easy to operate design. Intended for entertainers and smaller studios. New envelope follower control provides articulated sweep for dramatic musical effects.
Basic Specifications: Delay: up to 400 ms at 16 KHz; up to 800 ms at 6.5 KHz.
TDH and noise: 0.04% typical at 1 KHz; 0.1% typical over bandpass of 20 Hz to 15 KHz.
Dynamic range: better than 90 dB
Frequency response: 20 Hz to 16 KHz +0, -1 dB
Suggested List Price: \$1,095 to \$1,135.

LT SOUND
PEQ-1 SINGLE CHANNEL FOUR BAND
PARAMETRIC EQUALIZER
P.O. Box 338, Stone Mountain, Georgia 30088
(404) 493-8995

Contact: Lacy Thompson, Jr.
Date Product Introduced: January 1981.
Product Description and Applications: The PEQ-1 is a single channel version of the PEQ-2. Only the low frequency rumble filter is omitted. This unit makes an excellent instrument equalizer for performance or monaural PA use. In the studio it can be used on those difficult tracks where your own board equalization is not adequate. The ability to bypass individual bands of EQ during a song with the flick of a switch enables you to do real time editing that would be difficult with a graphic or parametric with individual bypassable bands.
Basic Specifications: Frequency response: $\pm 1/2$ dB 20 to 20 KHz ± 1 dB 2.2 Hz-100 KHz.
Distortion: Less than 0.007% THD; Less than 0.002% IM.
S/N ratio: Better than 90 dB below 1 volt. Better than 110 dB below peak input.
Slew rate: 13V/microsecond.
Input impedance: 47K ohms.
Boost/Cut range: ± 15 dB.
Dimensions: 19"W x 2"H x 7.25"D.
Suggested List Price: \$249.00.

NEW FOR 1981

SIGNAL PROCESSING

LT SOUND
CLX-2 COMPRESSOR/LIMITER/EXPANDER
P.O. Box 338, Stone Mountain, Georgia 30088
(404) 493-8995

Contact: Lacy Thompson, Jr.
Date Product Introduced: January 1981.
Product Description and Applications: Stereo unit uses Allison Research VCA with feed-forward circuit design. D'Essing with switchable knee or normal compression. Functions as compressor, limiter, d'Esser and noise gate. Has key function for keyed expansion or noise gating. Each channel has compression threshold, compression ratio, compression attack and release controls, and expander threshold, three-color LED gain reduction indicators.
Basic Specifications: Frequency response: $\pm 1/2$ dB 20 to 40 KHz ± 1 dB 2.2 Hz-100 KHz.
Distortion: Less than 0.003%.
S/N ratio: Better than 90 dB below 1 volt.
Slew rate: 13V/microsecond.
Maximum Input: +25 dBV.
Input Impedance: 47K ohms.
Output Impedance: 47 ohms (for driving loads 2K ohm or higher).
Power requirements: 115 VAC.
Dimensions: 19"W x 2"H x 7.25"D.
Suggested List Price: \$595.00.

MXR INNOVATIONS, INC.
DUAL LIMITER
740 Driving Park Ave., Rochester, NY 14613
(716) 254-2910

Contact: MXR, Department 140
Date Product Introduced: June, 1980.
Product Description and Applications: The MXR Dual Limiter functions like two completely independent limiters that can be strapped together via front panel switches for stereo-limiting applications. Each channel has in/out switch, slope switch, input, output, attack and release controls, as well as LED meter, displaying the amount of gain reduction. The detector of each channel is also accessible via rear panel $1/4$ " phone jacks, allowing for external tailoring of the detectors' frequency response. This feature enables reduction of vocal sibilants and fulfills a wide variety of frequency-dependent limiting needs.
Basic Specifications: Its balanced inputs, ability to drive 600-ohm loads, +19 dB input and output capability and standard rack dimensions of 19"L x $3/4$ "H x 6"D allow it to be easily employed in any professional system.

NEPTUNE ELECTRONICS, INC.
1021 DUAL CHANNEL GRAPHIC EQUALIZER
934 N.E. 25th Ave., Portland, OR 97232
(503) 232-4445

Contact: H.C (Bud) Garrison, Vice president, Marketing.
Date Product Introduced: June, 1980.
Product Description and Applications: The 1021 Dual Channel Graphic Equalizer has been repackaged in a rugged, $1/2$ " anodized aluminum front panel and chassis with new graphics and appointments.
Basic Specifications: The 1021 has both balanced and unbalanced inputs and outputs for easy interface with a wide range of professional sound reinforcement/recording or broadcast equipment, as well as musical instrument or stage PA systems. Other 1021 features include: ± 12 dB boost or cut on each of 10 bands (on ISO frequency centers), fully rack mountable (EIA) for installation in permanent equipment rack or road/flight case, optional 220 V, 50 Hz line voltage and much more.
Suggested List Price: \$425.00

NEPTUNE ELECTRONICS, INC.
2711 $1/2$ OCTAVE GRAPHIC EQUALIZER
934 N.E. 25th Ave., Portland, OR 97232
(503) 232-4445

Contact: H.C (Bud) Garrison, Vice president, Marketing.
Date Product Introduced: June, 1980.
Product Description and Applications: Center detented, oil-dampened slide controls boost or cut ± 12 dB each 27, $1/2$ octave bands on ISO frequency centers. EQ in/out switching, input gain control, and balanced and unbalanced input/output (D3FM and $1/4$ " phone jack) are a few of the professional features.
Basic Specifications: NEI has enclosed the 2711 in a rugged steel chassis in an EIA rack mount size ($3 1/2$ " x 19") for easy installation in a road/flight case or equipment rack. Optional 220 V, 50 Hz line voltage available.
Suggested List Price: \$475.00



ORANGE COUNTY ELECTRONICS INTL., INC.
NOVASYSTEMS APHEX AURAL EXCITER

ORANGE COUNTY ELECTRONICS INTL., INC.
NOVASYSTEMS APHEX AURAL EXCITER
2100 West 98th Street, Minneapolis, MN 55431
(612) 881-8040

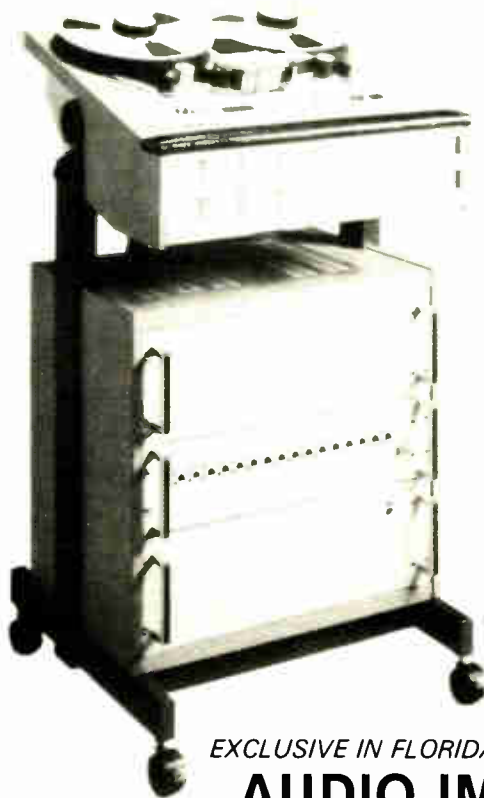
Contact: Gareth Nelson, National Sales Manager.
Date Product Introduced: August, 1980.
Product Description and Applications: The Novasystems Apex Aural Exciter is the first and only licensed "exciter" to be offered to the industry-at-large. Manufactured under license from ITX, the Novasystems unit is a full-stereo, low-cost, unit in which the operating parameters have been optimized so that the user is allowed maximum flexibility in using the unit in any audio system, as well as simplified control of the valuable psychoacoustics effects of "aural excitement." The unit produces increased presence, spatiality, brilliance and clarity.
Basic Specifications: Input: 100K bridging, unbalanced.
Output: +18 dBV max., unbalanced.
T.H.D.: less than 0.03%.
Frequency response: 5 Hz - 100 KHz ± 0.5 dB.
Signal/noise: 90 dB.
System gain: unity, nominal -10 dBm.
Controls: 'ApheX' injection; 'D-factor'; system in/out; tape monitor; 'ApheX-to-tape'.
Suggested List Price: \$449.00

QUAD/EIGHT ELECTRONICS
SYSTEM 5
11929 Voss St., N. Hollywood, CA 91605
(213) 784-1516

Contact: David Hadler, National Sales Manager.
Date Product Introduced: November 1980.
Product Description and Applications: System 5 Digital Reverberation Processor, automated with 4 complete presets, 5 programs, 16 EQ settings, 13440 discrete recallable system settings. Remote control unit connects to mother unit thru audio tie lines. Spill proof dead front switches, super rugged construction for road and remote usage. Utilizes very latest VLSI technology for lowest possible parts count and highest reliability. 15 bit circuit architecture maximizes S/N with minimum overflow error.
Basic Specifications: 20-14 KHz frequency response.
S/N ratio: -87 dBv (ref. 775 VRMS).
Dynamic range 103 dB.
Suggested List Price: \$8,950.00.

REDWOOD RESEARCH, INC.
PARAM
1200 Beechwood Ave., Nashville, TN 37212
(615) 256-6900

Contact: Claude Hill, President.
Date Product Introduced: May 1980.
Product Description and Applications: Automated equalization system featuring central computer control of up to 64 individual equalizer channels from a 6x9 panel. Video graphic display of exact EQ curve in use and system data. Param utilizes direct digital control of the analog equalizers without the use of VCA devices. The systems computer retains 24 settings for each equalizer as well as 32 "standard" curves in memory for instant use.
Basic Specifications: System: Number of channels: 8-128 maximum, modular. 32 max. standard EQ settings. 64 max. internal memory settings.
Equalizer: Number of filters: 6 per each EQ channel. Digital crosstalk: ≤ -88 dBm (only during switching with +4 dB gain in all filters).
Distortion, THD: $\leq 0.1\%$ at +24 dBm into 600 ohms.
 $\leq 0.05\%$ at +20 dBm into 600 ohms.
Accuracy: Boost and cut: ± 0.5 dB; frequencies: 2%; gain: ± 0.5 dB.



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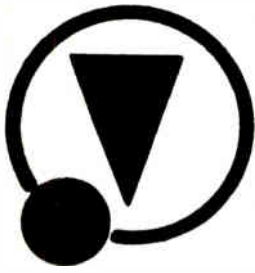
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Technics/Panasonic

NEW FOR 1981

SPEAKERS/ MONITORS

ACOUSTIC RESEARCH (TELEDYNE) AR93 and AR94 HIGH-TECH SPEAKERS 10 American Drive, Norwood, MA 02062 (617) 789-4200

Contact: Gwynne Jamieson, Communications Manager.
Date Product Introduced: April 1980.
Product Description and Applications: High-Tech Speakers for studio monitors. AR93: 3-way floor standing system with 4 drivers. Pair of side-firing 8" woofers. Liquid-cooled tweeter for higher power handling (125 watts per side). With vertical driver array and AR Acoustic Blanket. AR94: 3-way floor standing system with 3 drivers. Pair of front-firing woofers. Liquid-cooled tweeter for higher power handling (125 watts per side). With vertical driver array and AR Acoustic Blanket. All AR speakers feature a full 5-year warranty on both construction and performance.
Basic Specifications: AR93: Overall frequency response: 44-22 KHz \pm 2 dB.
AR94: Overall frequency response: 48-22 KHz \pm 2 dB.
Both speakers are wrapped in acoustically transparent black grille cloth.
The AR93 has received the Design and Engineering Award from the Consumer Electronics Group of the Electronic Industries Association, June 1980.
Suggested List Price: AR93: \$249.00 each. AR94: \$199.00 each.

AMERICAN ACOUSTICS LABS (AAL) IMPRESSION IM-910, IM-912; EQUATION EQ-9 LOUDSPEAKERS 629 W. Cermak Rd., Chicago, IL 60616 (312) 243-1310

Contact: Jim Mungovan, 312/327-5956
Date Product Introduced: June, 1980; January, 1980
Product Description and Applications: IM-910: 10-in., 3-way speaker system; IM-912: 12-in., 3-way system; both with foam surround woofers, isolated midranges and soft dome tweeters; EQ-9: 8-in., 2-way, with foam surround woofer, cone midrange and phenolic ring tweeter; all for use as studio monitor speaker systems; all carry 10-year factory warranty.
Basic Specifications: IM-910: 38-22,000 Hz \pm 3 dB; 5-60 watts RMS program; 8 ohms. Crossovers: 500/2000; 14 1/2 x 23 1/2 x 11 1/2 in.; 36 lbs; \$219 each.
IM-912: 35-22,000 Hz +3 dB; 5-95 watts RMS program; 8 ohms. Crossovers: 500/2000; 16 x 26 x 11 1/2; 41 lbs; \$249 each.
IM-910 and IM-912: rosewood-grained vinyl laminated cabinets, flush mounted baffles.
EQ-9: 35-22,000 Hz \pm 3 dB; 5-25 watts RMS program; 8 ohms. Crossovers: 2500 Hz; 21 x 12 x 8 1/4 in.; 22 lbs; \$89 each.
Hickory-grained vinyl laminated cabinets.

BQW/TANNOY M1000 13130 Yukon Avenue, Hawthorne, CA 90250 (213) 973-9090

Contact: Irwin Laskey, Sales Manager.
Date Product Introduced: May, 1980.
Product Description and Applications: M1000 is a two way system. It uses single point source 15" dual concentric drive unit. Has a calibrated control network for presence, treble energy & roll off. Can be bi-amped using the optional Tannoy X05000, a time compensated electronic dividing network & parametric equalizer. M1000 has accurate sound reproduction, low distortion & high power handling capability. For recording studios & broadcast use.
Basic Specifications: Impedance: 8 ohms.
Maximum output: SPL (peak) at 1 meter anechoic 121 dB.
Sensitivity: 1w at 1 meter anechoic 94 dB.
Frequency response: 50 Hz to 20 KHz.
Dimensions: 40 1/2" H x 28 1/2" W x 17" D.
Suggested List Price: \$1,295.00 each in oiled walnut finish.

BQW/TANNOY SRM12B 13130 Yukon Avenue, Hawthorne, CA 90250 (213) 973-9090

Contact: Irwin Laskey, Sales Manager.
Date Product Introduced: May, 1980.
Product Description and Applications: SRM12 is a two way system. It uses single point sound source 12" dual concentric drive unit. Has calibrated control network for treble energy & roll off. Can be bi-amped with optional Tannoy electronic crossover (X0-5000). SRM12B has accurate sound reproduction & low distortion. High power handling capability. Very versatile for control rooms, mobile studios and broadcast monitoring.
Basic Specifications: Impedance: 8 ohms.
Maximum output: SPL (peak) at 1 meter anechoic 116 dB.
Sensitivity 1w at 1 meter anechoic 92 dB.
Frequency response: 55 Hz to 20 KHz.
Dimensions: 15 1/4 x 23 x 11".
Suggested List Price: \$695.00 each in oiled walnut finish.



CERWIN-VEGA
SW-18 PRO. STUDIO MONITOR SUB-WOOFER

CERWIN-VEGA SW-18 PROFESSIONAL STUDIO MONITOR SUB-WOOFER 12250 Montague Street, Arleta, CA 91331 (213) 896-0777, Ext. 233

Contact: Mark Silverman, Technical Services.
Date Product Introduced: January 1980.
Product Description and Applications: Designed for the highest quality digital and analog medium playback, the SW-18 is a calibrated low-frequency control room monitor which augments and dramatically improves the performance of any available studio standard when the two systems are operated in a bi-amplified configuration. Dividing the working frequency range through low-frequency bi-amplification effectively changes a 2-way monitor into a 3-way; a 3-way into a 4-way; and results in the following significant audible improvements: reduction of all forms of excursion-related distortions, greater overall headroom and increased power handling capacity, and retention of the preferred reference monitor's sound quality.

Basic Specifications: Low-frequency 3 dB to down point: 28 Hz.
Nearfield (per Keele) pressure response (1/2-space load; swept sine): \pm 1 dB.
Long-term power handling capacity (band-limited, spectrum-shaped pink noise for 8 hours): 600w per EI RS-426-A.
Average SPL at 1 m with 1w input across nominal input impedance (swept sine averaged between 30 Hz-100 Hz under 1/2-space load): 100 dB.
Driver type: C-V 189SC, (4 or 8 ohms) features a 3"

voice-coil 18" piston with patented dual-spider stabilizer to adjust voice-coil for minimum distortion. Enclosure and alignment type: Class I, 8th order Butterworth requiring 2-pole high-pass filter and bass equalizer. Enclosure is 12 ft³, 3/4" with 1 1/2" front baffle.

EASTERN ACOUSTIC WORKS, INC. ATCEAW S-85 DEFINITIVE STUDIO REFERENCE MONITOR 59 Fountain Street, Box 111, Framingham, Mass 01701 (617) 620-1476

Contact: Kenneth Berger, National Sales Manager.
Date Product Introduced: January, 1980.
Product Description and Applications: The S-85 was conceived for the engineer who appreciates exacting performance. The key to the ATC monitor's performance is the SM-75-150 soft dome mid-range drive unit which combines unequalled definition, and transparency with high power handling and the lowest distortion in any high output mid band driver.
Basic Specifications: Bandwidth: 40 to 20 KHz.
Sensitivity: 90 dB 1w @ 1m.
Maximum power input: 300 w RMS.
Usable radiation angle: \pm 60° horizontal + 10° vertical.
Harmonic distortion: @ 1w 0.3%, @25w 1.0%.
Bass drivers: (2) 234 mm drivers. Mid driver: 75 mm soft dome. HF driver: 40 mm soft dome.
Enclosure: 85 litre sealed box.
Suggested List Price: \$1,775.00 each in flush mounting kit. \$2,850.00 each in free standing package.

EASTERN ACOUSTIC WORKS, INC. MS-100 STUDIO REFERENCE MONITOR 59 Fountain Street, Box 111, Framingham, Mass 01701 (617) 620-1476

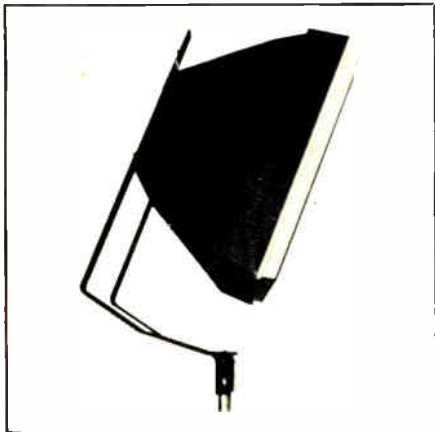
Contact: Kenneth Berger, National Sales Manager.
Date Product Introduced: November, 1980.
Product Description and Applications: The MS-100 reference monitor system is designed to offer high acoustic output combined with accurate reproduction and low distortion. It is ideal for use in audio and video recording and production studios, or any critical listening application. The basic configuration is a three-way with a dome tweeter, cone mid-range, and low frequency driver, which is acoustically coupled to an auxiliary bass radiator below 100 Hz. Additional features include 18 dB/octave third order crossover, magnetic damping fluid, polymeric cone treatment, and acoustic contour controls.

Basic Specifications: Normal frequency response: 32 Hz to 22 KHz \pm 3 dB.
Sensitivity: 91 dB 1w @ 1m.
Power handling: 75 w RMS, 180 w program.
Maximum SPL: 113.5 dB @ 1m.
Nominal Impedance: 8 ohms.
LF driver: 250 mm (10") polymeric cone, LF enclosure. Vented/ABR.
MF driver: 112 mm (4.5") polymeric cone, HF driver: 28 mm (1") dome.
Suggested List Price: \$337.00

GALAXY AUDIO PRO SPOT 625 East Pawnee, Wichita, KS 67211 (316) 263-2852

Contact: Brock M. Jabara, Engineer.
Date Product Introduced: November, 1980.
Product Description and Applications: New Pro Spot is a full range 3-way speaker which can be positioned easily for broad or narrow dispersion. It sits on floor, mounts quickly to tilt stand bracket or can be hung by any of eight 1/4-20 metal inserts for permanent installations. Available in three finishes (light or dark wood, black). The Pro Spot's light weight, small size and rugged structural foam construction will give the marketplace a new standard in quality.

Basic Specifications: 15" woofer in vented enclosure. Two 5" mid-range speakers in separate vented enclosure. Three special piezo drivers. 200 watts power handling. Under 50 lbs. in weight. 19" x 27" x 13½" small. Suggested List Price: \$600 each.



GALAXY AUDIO
PRO SPOT

GOLLEHON INDUSTRIES, INC.
S200

2431 Clyde Park S.W., Grand Rapids, MI 49509
(616) 247-8231
Contact: John T. Gollehon, President; Elena Dillree, Accounts Manager.

Date Product Introduced: December, 1980.
Product Description and Applications: The Gollehon S200 is a studio installation and permanent club installation version of the popular S2 sound reinforcement speaker marketed to the music industry for performing groups. Flat frequency response and wide dispersion, uniform with frequency has created demand from recording studios. The S200 uses a 12" Gollehon 2112 speaker and 4690 high-frequency horn, both extremely accurate to meet studio specifications. Finish is gray textured resin, removable charcoal grille cloth, dimensions are 28" high, 18½" wide, 18" deep.
Basic Specifications: Frequency response: 40-20,000 Hz.
Impedance: 8 ohms.
Sensitivity: 99 dB, 1 watt, 1 meter.
Power handling: 100 watts RMS.
Suggested List Price: \$299.00

JAMES B. LANSING SOUND, INC. (JBL)
BI-RADIAL CONSTANT COVERAGE HORN (3 models)
8500 Balboa Blvd., Northridge, CA 91329
(213) 893-8411

Contact: Ron Means, Prof. Division Manager.
Date Product Introduced: May 1980, AES Show.
Product Description and Applications: JBL Bi-Radial Horns provide uniform on and off axis frequency response from below 500 Hz to beyond 18 KHz. Vertical and horizontal beamwidth control throughout the rated frequency band is ensured due to the horn design and tall vertical mouth dimension. The horn design provides even and constant coverage, simplifying cluster design and minimizing the need for horn overlapping. All three horn models feature 31 5/18" square mouth dimensions and a cast aluminum throat that accepts JBL two-inch diameter compression drivers. Horn bell is of 5/16" thick fiberglass reinforced plastic with mounting holes to facilitate three-point hanging.
Basic Specifications: Nominal coverage angles: Model 2360: short throw 90° x 40°; Model 2365: medium throw, 60° x 40°; Model 2368: long throw, 40° x 20°. Usable Low Frequency Limit: 300 Hz; 300 Hz; 200 Hz. Directivity Factor: 12.3; 19.8; 45.9. Average Range: 500-18KHz; 500-18KHz; 1000-18KHz. Directivity Index: 10.8 dB; 12.9 dB; 18.5 dB.

JAMES B. LANSING SOUND, INC. (JBL)
JBL MODEL 4690
EXTENDED RANGE PLAYBACK SYSTEM
8500 Balboa Blvd., Northridge, CA 91329
(213) 893-8411

Contact: Ron Means, Prof. Division Manager.
Date Product Introduced: September 1980.
Product Description and Applications: The JBL Model 4690 two-way loudspeaker system, engineered for high level, full range, music playback is particularly suited for portable or fixed installations such as clubs, theaters or any application requiring high acoustic output and sound quality. Components include a new high frequen-

NEW FOR 1981 SPEAKERS/ MONITORS

cy exponential horn, high frequency compression driver, specially designed frequency dividing network and 15-inch E Series low frequency transducer, housed in an optimally tuned, handcrafted hardwood enclosure. System features include wide frequency response, low distortion and separate high frequency level adjustment control knob. Model 4690 can be used with Cabaret Series 4695 Bass/Subwoofer system.
Basic Specifications: Frequency range: 40 Hz-20 KHz. Power capacity: 200W/GSW; 400W/CPM. Nominal impedance: 8 ohms. Sensitivity, 1W, 1m: 103 dB SPL. Crossover: 1.5 KHz.

MCINTOSH LABORATORY, INC.
XR-18 ISOPLANAR LOUDSPEAKER SYSTEM
2 Chambers St., Binghamton, NY 13903
(807) 723-3512

Contact: Sales department.
Date Product Introduced: July 1980.
Product Description and Applications: The XR-18 features McIntosh's isoplanar design which produces a widely dispersed energy field that allows listeners to experience a full stereo perspective. The XR-18 is a four way system with all speakers on a vertical line so that the degree of time coordination achieved on the perpendicular is maintained also symmetrically either side of the perpendicular.
Basic Specifications: Crossover frequencies are 250 Hz, 1.4 KHz and 7 KHz. Impedance 8 ohms. Speaker sizes are 12" woofer, 8" lower mid, 1½" dome upper mid, 1" dome tweeter. 150 watts music power. Overload protection system uses warning lights and fuses. 90x44x30 cm cabinet size. Genuine walnut veneer. 75 pounds net weight.

MODULAR SOUND SYSTEMS INC.
QC-5-W
22N49 Pepper Rd., Barrington, IN 60010
(312) 382-4550

Contact: Jim Wachmeyer, Sales Manager.
Date Product Introduced: September 1980.
Product Description and Applications: The QC-5-W is a high frequency sound reinforcement cabinet, holding four vertical columns of four 5" JBL speakers in each. The enclosure is wedge shaped and each vertical row of speakers is on a slight angle to the other. Designed for use where high power hi-fidelity sound is required. This cone type high frequency system offers a pleasant change to the traditional radial horn.
Basic Specifications: The QC-5-W arrays 18 JBL model 2105H drivers. The unit may be strapped for ¼ ohm, 2 ohm, or 8 ohm operation. Power handling capacity is 640 watts. Sensitivity, 1 watt at 1 meter is 107 DBSPL. Recommended frequency range is 1 KHz to 4 KHz. Dispersion is 60° horizontal by 40° vertical. Units may be arrayed together to increase horizontal dispersion. Weight 68 lbs. Dimensions 21½" x 20" x 15".
Suggested List Price: \$1,179.00.

PANASONIC PROFESSIONAL AUDIO DIVISION
HONEYCOMB DISC SPEAKER SB-7
50 Meadowland Parkway, Secaucus, NJ 07064
(201) 348-7470

Contact: Jim Parks, Asst General Manager, Paul Ackel, Sales Manager.
Date Product Introduced: 1980.
Product Description and Applications: SB-7: Honeycomb Disc Speaker System 3-way, 3-speaker woofer: 25 cm honeycomb disc. Midrange: 8 cm honeycomb disc. Leaf tweeter. 8 ohms.
Basic Specifications: Configuration: 3-way, 3-speaker. Speaker units: Woofer: 25 cm honeycomb disc. Midrange: 8 cm honeycomb disc. Tweeter: Leaf tweeter. Impedance: 8 ohms. Input power 130 W. music; 90 W. DIN. Output level: 87 dB/W (1.0 m). Frequency range: 34 Hz to 125 KHz (at 10 dB below average level). Crossover frequencies: 900 Hz, 4,500 Hz. Dimensions (HxWxD): 83.0 cm x 36.0 cm x 31.8 cm (24 3/4" x 14 1/2" x 12 1/2"). Weight: 19 kg (42 lbs) including grille.
Suggested List Price: \$130.00.

PANASONIC PROFESSIONAL AUDIO DIVISION
HONEYCOMB DISC SPEAKER SB-10
50 Meadowland Parkway, Secaucus, NJ 07064
(201) 348-7470

Contact: Jim Parks, Asst General Manager, Paul Ackel, Sales Manager.
Date Product Introduced: 1980.
Product Description and Applications: SB-10: Flat axially symmetric honeycomb sandwich diaphragm without the "cavity effect." A honeycomb disc midrange driver and a leaf tweeter. Linear phase response. Solid, reinforced enclosure construction suppressing rattle and resonances. Honeycomb Disc Woofer Unit nodally driven by an extremely large 16 cm voice coil bobbin assembly.
Basic Specifications: Configuration: 3-way, 3-speaker. Speaker units: Woofer: 32 cm honeycomb disc. Midrange: 8 cm honeycomb disc. Tweeter: Leaf tweeter. Impedance: 8 ohms. Input power 150 W. music; 100 W. DIN. Output level: 87 dB/W (1.0 m). Frequency range: 28 Hz to 125 KHz (at 10 dB below average level). Crossover frequencies: 400 Hz, 4,000 Hz. Dimensions (HxWxD): 71.1 cm x 40.2 cm x 31.8 cm (28" x 15 1/2" x 12 1/2"). Weight: 32 kg (70.5 lbs) including grille.
Suggested List Price: \$680.00.

SPECTRA SONICS
MODEL 3003 STUDIO MONITOR
3750 Airport Road, Ogden, Utah 84403
(801) 392-7531

Contact: Gregory D. Dilley, Engineering Sales.
Date Product Introduced: April 1980.
Product Description and Applications: The new high power, low distortion Model 3003 Studio Monitor Loudspeaker is the result of extensive computer design, and empirical listening tests utilizing the latest available technology and hardware. This monitor loudspeaker has been designed for tri-amplification, and is ideally suited for use with Spectra Sonics power amplifiers. Only the highest quality material and workmanship are employed in this Studio Monitor System.
Basic Specifications: Frequency range: 20 Hz to 20,000 Hz. Crossover frequencies: 800 Hz/4000 Hz (crossover network not included). Physical dimensions: 95.89 cm (37 3/8") high x 43.18 cm (17") deep x 82.55 cm (24 1/2") wide. Weight: 56.7 kg (125 lbs). Termination: Blinding post.
Suggested List Price: \$1271.00.

SPECTRA SONICS
MODEL 3085D QUAD-AMPLIFIED HIGH INTENSITY MONITOR LOUDSPEAKER SYSTEM
3750 Airport Road, Ogden, Utah 84403
(801) 392-7531

Contact: Gregory D. Dilley, Engineering Sales.
Date Product Introduced: October 1980.
Product Description and Applications: The Model 3085D is especially designed to provide sound pressure levels in the upper ranges for complete coverage of large auditoriums or arenas. It contains a power supply, active electronic filters, and power amplifiers for quad-amplification. The Model 3085D is constructed in three separate sections for ease in shipping and handling. The two top sections house the speakers, the lower, or base section, houses the electronic components.
Basic Specifications: All amplification and crossover networks for quad-amplification are included. Frequency ranges: 20 Hz to 20,000 Hz. Power requirements: 115VAC, 60 Hz, 7 amperes, 805 watts. Exterior dimensions: 225.42 cm (88.75") high x 91.44 cm (36") wide x 66.04 cm (26") deep. Weight: 187.83 kg (370 lbs).
Suggested List Price: \$6,800.00.

TECHNICAL AUDIO DEVICES
TM-1201
142 Redneck Ave., Moonachie, NJ 07074
(201) 440-8234

Contact: Applications Engineering Staff.
Date Product Introduced: December 1980.
Product Description and Applications: 12 inch dia. mid-bass loudspeaker optimized for best performance in the 200 Hz-300 Hz frequency range. Heavy duty design and construction. Accepts both horn loading and direct radiating enclosures. Newly developed polymer graphite (PG) cone extends and flattens frequency response and dramatically reduces distortion.
Basic Specifications: Power rating (watts) 150 continuous, 300 maximum. Sensitivity: 99 dB @ 1 watt, 1 meter on axis. Impedance: 8 ohms, nominal. B1 product: 28 T-M. Effective moving mass (not including air load): approx. 50 grams. Resonance frequency (free air): 52 Hz.
Suggested List Price: \$200.00.

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OTARI

Otari Corporation
1559 Industrial Road
San Carlos, CA 94070
(415) 592-8311

In Canada:
BSR (Canada, LTD.)
P.O. Box 7003
Station B
Rexdale, Ontario M9V 4B3

MCI, INC.
JH-24 SERIES
 1400 West Commercial Blvd., Ft. Lauderdale, FL 33309
 (305) 491-0625
 Contact: Larry Lamoray, Marketing.
 Date Product Introduced: 1980.
Product Description and Applications: The JH-24 Series is a totally transformerless multitrack recorder available in 8, 16, and 24 track configurations. Features include 2 speed bias and equalizer adjustments, fixed sync and bias traps, and separate preamplifiers and equalizers for both sync and repro. Optionally available is the AutoLocator III with 10 addressable memories, and the JH-45 AutoLock SMPTE/EBU synchronizer.
Basic Specifications: 30 Hz-26 KHz +1.5/-2 dB.
 S/N: 69 dB.
 Max. output: +26 dBV.
 Speeds 15/30 ips.
Suggested List Price: JH-24: \$37,477.00. A/L III \$1,932.00.

NAKAMICHI USA CORP.
NAKAMICHI 1000 ZXL CASSETTE DECK
 1101 Colorado Avenue, Santa Monica, CA 90401
 (213) 451-5901
 Contact: Jane LeFevre, Marketing Manager.
 Date Product Introduced: June 1980.
Product Description and Applications: Microprocessor assisted 3 head cassette deck. The computer (A.B.L.E. system) automatically adjusts recording head Azimuth, Bias, Level and Equalization for the best performance to assure "ruler-flat" response—20 to 20,000 Hz ± 0.5 dB.
Basic Specifications: Tape Speed: 1½ ips; 20-20,000 Hz ± 0.5 dB, 10-25,000 Hz ± 3 dB.
 Signal to noise ratio: 66 dB up.
 THD: less than 0.8% @ 400 Hz, 0 dB.
 Wow & flutter less than 0.08% WTD peak, 0.04% WTD rms.
 21W x 11H x 13D inches.
Suggested List Price: \$3,800.00.

NEAL FERROGRAPH USA, INC.
 330
 652 Glenbrook Rd., Stamford, CT 06906
 (203) 348-1045
 Contact: Richard J. Chilvers, Sales Manager.
 Date Product Introduced: Summer 1980.
Product Description and Applications: A full feature 3-channel cassette recorder for producing stereo sound tracks for audio visual material. 3-motor and full logic control gives ease of uses in production facility.
Suggested List Price: \$2,057.00.

NEAL FERROGRAPH USA, INC.
 312
 652 Glenbrook Rd., Stamford, CT 06906
 (203) 348-1045
 Contact: Richard J. Chilvers, Sales Manager.
 Date Product Introduced: Summer 1980.
Product Description and Applications: 3-motor fully logic control cassette recorder incorporating Dolby noise reduction and Dolby HX. Can be rack mounted and remote operated. Full features. Metal capability.
Suggested List Price: \$1,195.00.

NEAL FERROGRAPH USA, INC.
 SP7
 652 Glenbrook Rd., Stamford, CT 06906
 (203) 348-1045
 Contact: Richard J. Chilvers, Sales Manager.
 Date Product Introduced: Summer 1980.
Product Description and Applications: ½" format reel to reel tape recorder which can be supplied with features chosen from the following list. Mono twin track (½ or ¼), Dolby noise reduction, any three adjacent speeds from 15 ips to 15/16 ips, mic pre amps, Cannon XLR connectors, balanced lines, NAB/CCIR equalization, rack mounting.
Suggested List Price: Full pro spec prices start from \$1460.00.

PANASONIC PROFESSIONAL AUDIO DIVISION
DIGITAL RECORD/PLAYBACK PROCESSOR, SH-P1
 50 Meadowland Parkway, Secaucus, NJ 07094
 (201) 348-7470
 Contact: Jim Parks, Ass't General Manager, Paul Ackel, Sales Manager.
 Date Product Introduced: 1980.
Product Description and Applications: SH-P1: Pulse Code Modulation digital record/playback processor. To be used with professional video tape recorder.
Basic Specifications: Frequency response: 2 Hz to 20 KHz, +0 dB, -2.5 dB.
 Distortion: Less than 0.03%.
 Input terminals:
 Audio line input: Input Impedance 50K ohm unbalanced, Input level 100 mVrms.
 Mic input: Input impedance 600 ohms unbalanced, Input level -70 dBV.
 Auxiliary mic input: Input Impedance 100K ohm unbal-

NEW FOR 1981

TAPE RECORDING

anced, input level more than -70 dBV.
 Video input: Input impedance 75 ohms unbalanced, input level 1V peak to peak.
 Output terminals:
 Audio Output: output Impedance 560 ohms unbalanced, output level 250mVrms.
 Video output: output impedance 75 ohms unbalanced, output level 1V peak to peak.
 headphone output: output Impedance low Impedance type.
Suggested List Price: \$5,800.00.

PANASONIC PROFESSIONAL AUDIO DIVISION
RS-10A02
 50 Meadowland Parkway, Secaucus, NJ 07094
 (201) 348-7470
 Contact: Jim Parks, Ass't General Manager, Paul Ackel, Sales Manager.
 Date Product Introduced: 1980.
Product Description and Applications: Designed for professional half track recording and playback using the "isolated" loop quartz phase locked direct drive tape transport system. Features include balanced or unbalanced connectors, ASA standard VU meters with peak overload LED's, sendust record and play heads with Ferrite erase head to reduce wear and lower distortion; 10 front panel calibration controls for record level, play level, record EQ, playback EQ, bias; IC logic for braking and transport.
Basic Specifications: Speeds: 15, 7½, 3¼ ips.
 Output level: +4 dBm.
 Reel size: 10½, 7, 5 inches.
 Frequency response: 30-30K +3 dB at 15 ips.
 S/N ratio: 68 dB at 15 ips awtd, rec level = 650 nwb/m.
 Equalization: IEC or NAB.
 Wow and flutter: .018% at 15 ips.
Suggested List Price: \$2,300.00.

SAKI MAGNETICS, INC.
NEO-PILOT HEADS
 5770 Uplander Way, Culver City, CA 90230
 (213) 649-5963
 Contact: Trevor J. Boyer.
 Date Product Introduced: July 1980.
Product Description and Applications: Neo-pilot heads constructed of hot pressed TDK ferrite with glass bonded gaps are available for ATR 100 and 440 type Ampex equipment and can be supplied for other machines on special order.
Suggested List Price: \$350.00 each.

STUDER REVEX AMERICA, INC.
B710 CASSETTE DECK
 1425 Elm Hill Pike, Nashville, TN 37210
 (615) 254-5651
 Contact: Barry Evans, National Sales Manager.
 Date Product Introduced: 1981.
Product Description and Applications: Due to be introduced early in 1981, the final details on pricing and specifications for the Revox B710 are not yet available, but the basic design bears eloquent witness to the un-



STUDER REVEX AMERICA, INC.
B710 CASSETTE DECK

compromising professionalism that characterizes all Studer Revox products. Drive belts, pulleys, friction clutches and mechanical braking systems are all sources of potential problems, and all have been eliminated in the B710. The dual-capstan system is direct-driven by two separate Magnetic Disc Drive motors, slaved to a common quartz-crystal reference frequency. The two spooling motors also feature direct-drive, and use optical tachometers in a servo system to maintain constant tension and fast-winding speeds. Fully modular construction, mic/line mixing facilities, automatic or manual bias/equalization switching for ferric, CrO2, ferrichrome, and metal tapes, and optional rack-mounting are additional features. Stylistically, the B710 matches the other components in the Revox line.

TDK ELECTRONICS CORP.
TDK MA-C90, MA-R C90 CASSETTES
 755 Eastgate Blvd., Garden City, NY 11530
 (516) 748-0860
 Contact: Ed Havens, Audio Products Manager.
 Date Product Introduced: June 1980.
Product Description and Applications: State of the art metal alloy particle formulation available for the first time in 90 minute lengths. TDK MA-R features die-cast metal frame with clear plastic covers for lowest wow and flutter. TDK MA has new mechanism with dual spring pressure pad for optimum tape to head contact.
Basic Specifications: Coercivity: 1,050 Oe.
 Remanence: 3,000 gauss, up to 8 dB better MOL than conventional high bias cassettes.
Suggested List Price: MA-R C90: \$17.99; MA-C90: \$12.99.

TDK ELECTRONICS CORP.
TDK LX OPEN REEL TAPE
 755 Eastgate Blvd., Garden City, NY 11530
 (516) 748-0860
 Contact: Ed Havens, Audio Products Manager.
 Date Product Introduced: June 1980.
Product Description and Applications: Super fine gamma ferric oxide particle formulation, extended flat frequency response, high output and low distortion. Exclusive graphite/carbon backcoating treatment, new binder system for smoothest running and maximum durability. Redesigned hub and flange. For professional studio use. Available in either 35 or 50 micron thickness, and 1,200 to 3,600 foot lengths.
Suggested List Price: LX50-120BM; LX50-60B; LX-35-180BM; LX35-90B; LX35-180M; LX35-90. Suggested retail prices not available at this time.

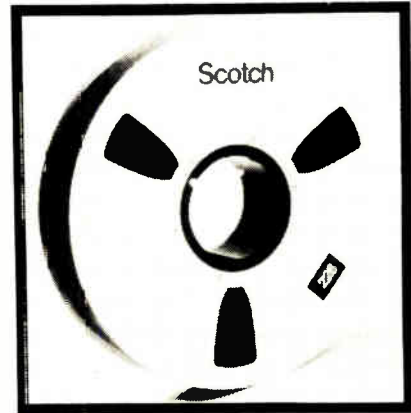
TDK ELECTRONICS CORP.
TDK GX OPEN REEL TAPE
 755 Eastgate Blvd., Garden City, NY 11530
 (516) 748-0860
 Contact: Ed Havens, Audio Products Manager.
 Date Product Introduced: June 1980.
Product Description and Applications: Ultra fine gamma ferric oxide particle formulation, extended flat frequency response, extremely high output and low distortion. Exclusive graphite/carbon backcoating treatment, new binder system for smoothest running and maximum durability. Redesigned hub and flange. For studio mastering use. Available in either 35 or 50 micron thickness, and 1,200 to 3,600 foot lengths.
Suggested List Price: GX50-120BM; GX50-60B; GX-35-180BM; GX35-90B. Suggested retail prices not available this time.

TDK ELECTRONICS CORP.
TDK SA-X CASSETTE
 755 Eastgate Blvd., Garden City, NY 11530
 (516) 748-0860
 Contact: Ed Havens, Audio Products Manager.
 Date Product Introduced: June 1980.
Product Description and Applications: Double coated high bias cassette using two layers of Super Avilyn particles. Each layer has optimum coercivity level to insure highest output and smoothest response. Excellent magnetic match provides superior stability and consistency. A new class of high bias cassette.
Basic Specifications: Coercivity: 580 Oe.
 Remanence: 1,650 gauss, 1.0 dB higher MOL and 1.0-1.5 dB better sensitivity than TDK SA. New mechanism with dual spring pressure pad for precise running.
Suggested List Price: SA-X C80: \$4.99; SA-X C90: \$6.99.

TEAC CORPORATION OF AMERICA
 22-4
 7733 Telegraph Rd., Montebello, CA 90640
 (213) 726-0303
 Contact: Dave Oren, Sales Manager.
 Date Product Introduced: October 1980.
Product Description and Applications: The Tascam Creative Series 22-4 is a four channel recorder/reproducer with onboard metering and monitoring facilities. The 22-4 has interface provisions for optional dbx type 1

Suntronics

"FOR THE NEW GENERATION"
of Recording Studios the TASCAM
85-16, one inch 16 track Recorder
and Scotch 226 Studio Mastering
Tape will lead the way in the 80's



3M Scotch® 226 Studio Mastering Tape

TASCAM SERIES

TEAC Professional Products Group

85-16

- 16 tracks on 1" tape
- 15 inches per second, and $\pm 10\%$ record/play speed control
- 4 digit display for tape speed (% of 15 ips) or elapsed time
- Accurate zero-search function
- Plug-in front accessible PC cards for record/play amps and dbx encode/decode processing
- Three DC servo motors
- Spooling mode for fast winding and neat tape pack
- Integral dbx noise reduction
- Adjustable transport mounting angle
- Superior record/play audio performance from DC-coupled FET amplifiers
- 28 dB system headroom



THE 85-16 IS \$11,500.00 COMPLETE
CALIBRATED TO SCOTCH 226 STUDIO MASTERING TAPE

(714) 985-0701 P. O. Box 734
985-5307 1620 W. Foothill Blvd. UPLAND, CA 91786

NR allowing performance better than any analog deck without NR. The 22-4 operates at 15 ips and 7 1/2 ips, and includes a pitch control for $\pm 6\%$ speed change in play or record, or a total of 12%. The 22-4 also has a cue lever to speed editing.

Basic Specifications: 4 track, 4 channel. 1 FG servo DC Capstan motor, 2 eddy current outer-rotor reel motors. 3 heads (erase, record, playback). W&F: $\pm 0.04\%$ at 15 ips, $\pm 0.05\%$ at 7 1/2 ips NAB A weighted.

S/N ratio: 61 dB at 15 ips, 80 dB at 7 1/2 ips, referred to 585 nWb/m tape flux level.

Frequency response: 40-22 KHz ± 3 dB at OVU (15 ips), 40-20 KHz ± 3 dB at -10 VU (7 1/2 ips).

Pitch control: $\pm 6\%$.

Line input: Input Impedance 50K ohms unbalanced, nominal input level -10 dBv (0.3V).

Line output: Load impedance 10K ohms or more nominal output level -10 dBv (0.3V).

Suggested List Price: \$1,425.00.

TEAC CORPORATION OF AMERICA

35-2B (updated)

7733 Telegraph Rd., Montebello, CA 90640

(213) 726-0303

Contact: Dave Oren, Sales Manager.

Date Product Introduced: June 1980.

Product Description and Applications: The 35-2B is the up-graded version of the two track mastering recorder/reproducer specifically designed for studio applications. The dbx Type 1 noise reduction circuits have been integrated into the electronics for additional improvement in overall signal-to-noise ratio. Original dbx encoded masters recorded on the 35-2B will exceed the capabilities of any analog system without dbx. Independent right/left record selectors have been added to increase flexibility.

Basic Specifications: 1/2 track, 2 channel. 15 ips and 7 1/2 ips, 10 1/2" max. reel size. Pitch control $\pm 6\%$. W&F: $\pm 0.03\%$ at 15 ips, $\pm 0.06\%$ at 7 1/2 ips NAB A weighted.

S/N ratio: 65 dB at 15 ips, 63 dB at 7 1/2 ips, referred to 585 nWb/m tape flux level.

Frequency response: 40 Hz - 22,000 Hz ± 3 dB at OVU (15 ips), 40 Hz - 13,000 Hz ± 3 dB at OVU (7 1/2 ips).

Eddy current induction type reel motors with tension servo, DC servo controlled capstan motor.

Input: 50K ohms unbalanced, nominal operating level -10 dB (0.3V).

Suggested List Price: \$1,990.00.

NEW FOR 1981

TAPE RECORDING

3M

SCOTCH 226/227 MAGNETIC TAPES

600 Third Ave., New York, NY 10018

(212) 883-9348

Contact: Dick Ziff.

Date Product Introduced: June 1980.

Product Description and Applications: The new tapes are bias compatible with "Scotch" 206/207 and offer performance and output characteristics similar to Scotch 250. The music mastering tapes are designed for recording studios, but also have application for recordists working with medium-priced multi-channel units. Print-through characteristics of the new formulation allow recordists additional playing time, since the 1-mil version (Scotch 227) also features excellent signal to print properties. The tapes offer 2 dB better signal to print properties than existing high output/low noise mastering tapes.

Basic Specifications: When used in studio applications (15 ips) Scotch 226/227 is capable of 3 dB greater maximum output in the low frequency spectrum and 2 dB better maximum output in the high frequency spectrum than Scotch 206/207 tapes. The tape is available in 1/4-inch, 1/2-inch and one and two-inch widths in standard reel configurations and packages. Scotch 226 is a 1 1/2 mil tape. A 10 1/2 inch reel will accept 2500 feet. Scotch 227 is a 1-mil tape. A 10 1/2 inch reel will accept 3600 feet.

TRIDENT AUDIO DEVELOPMENTS

T.S.R. 24 TRACK RECORDER

Studio Maintenance Service, Inc. (West Coast Dist.)

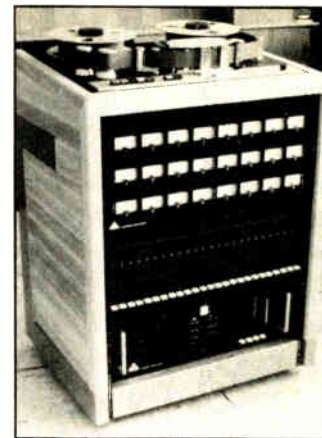
12438 Magnolia Blvd., N. Hollywood, CA 91607

(213) 877-3311

Contact: David Michaels, President SMS, Inc.

Date Product Introduced: July 1980.

Product Description and Applications: The new Trident



**TRIDENT AUDIO DEVELOPMENTS, LTD.
T.S.R. 24 TRACK RECORDER**

TSR 24-track is floor standing with a natural wood finish that matches Trident consoles. Spool capacity is 14" with switched 15/30in/s or 6 to 45in/s vari-speed (with digital display). Electronics are all modular and plug in, and incorporate separate record and repro h/f/lf equalization settings. Although transformers are used on the repro and drive amplifiers for head matching, output is transformerless and input is differential balanced.

Basic Specifications: Input Impedance: \triangleright 15 ohms differentially balanced.

Output impedance: 600 ohm load unbalanced (balanced to order).

Level: OVU = +4 dBm. Amplifier max. level: +24 dBm.

Overall frequency response: 40 Hz-16 KHz ± 2 dB (15 ips), 50 Hz-16 KHz ± 2 dB (30 ips).

Crosstalk: \triangleright 50 dB at 1 KHz.

Distortion: \triangleright 0.5% at 1 KHz at 250nWb/m.

S/N ratio (record/repro): 30 ips \triangleright 62 dB, 15 ips \triangleright 62 dB, ref: 250nWb/m 20 Hz-20 KHz.

Suggested List Price: 18,500.00 pound sterling.

THE ULTIMATE INTERFACE...

headroom horseman

FINALLY--and at last, a line amp which really compatilizes--10 hifi/semi-pro levels with +4 studio and +8 broadcast standards. Available in stereo or stereo multiples with rack mount options.

XLR and Phono Plugs in and out.

ABSOLUTELY no integrated circuits are used in the Headroom Horseman, and it is not hazardous to your sound.

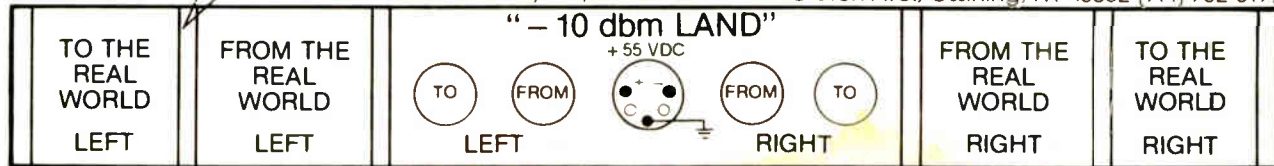
UNCONDITIONAL 1 yr. Warranty, unless we find Coke or other sticky stuff inside

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Hours: 11-6:30 Tuesday-Friday, 11-5 Saturday, closed Sunday & Monday

NEW FOR 1981

OTHER EQUIPMENT

ACCURATE SOUND CORPORATION
STOP-CLOCK
114 5th Ave., Redwood City, CA 94063
(415) 365-2643

Contact: Ronald M. Newdall, President.
Date Product Introduced: November, 1980.
Product Description and Applications: This digital timer incorporates 4-inch high numerals plainly visible "across the room." The timer operates in two modes: one a real-time clock, the other a stop-watch. When switching between modes the stop-watch display is stored and may be recalled as required. Remote start, stop, reset & recall are provided as standard.

ACOUSTILOG, INC.
THE ULTRAMULT
19 Mercer Street, New York, NY 10013
(212) 925-1365

Contact: Greg Guarino.
Date Product Introduced: May 1980.
Product Description and Applications: The Acoustilog UltraMult is a versatile cable tester as well as a multi-purpose adaptor box. Three LED's in conjunction with three momentary pushbuttons allow the user to determine instantly the existence and location of shorts, opens, miswiring and intermittent connections. The UltraMult will test cables with any combination of 3-pin XLR, 1/4" phone, RCA phono, Bantam, 1/8" mini-phone, and banana connectors. Flip one switch and all connectors are wired together for the ultimate adaptor box.
Basic Specifications: Power: 9V battery; lasts for one year of daily use.
Suggested List Price: \$125.00.

ACOUSTILOG, INC.
THE ACOUSTILOG NOISE-1
19 Mercer Street, New York, NY 10013
(212) 925-1365

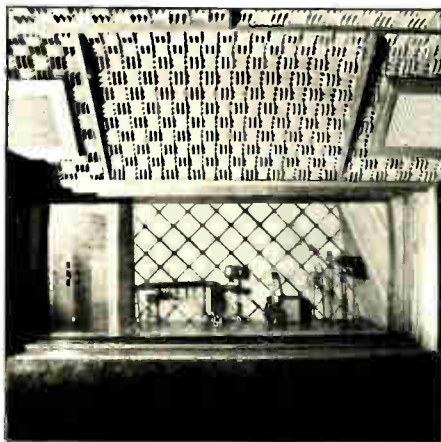
Contact: Greg Guarino.
Date Product Introduced: August 1980.
Product Description and Applications: The Acoustilog Noise-1 is a high quality portable pink noise source suitable for all types of acoustic testing. Its output is flat within $\pm 1/2$ dB from 25 Hz to 20 KHz. It features a variable output level and is no bigger than a pack of cigarettes. The Noise-1 may be powered by a 9V battery or an external AC power supply.
Suggested List Price: \$175.00.

AUDI-ENCE, INC.
PPS-1000
3325 Vista Oaks, Garland, TX 75043
(214) 228-2189

Contact: Brian or Gail Hawkes.
Date Product Introduced: August 1980.
Product Description and Applications: Heavy duty power supply for powering condenser microphones in console applications. Voltage range from 24 to 48 volts adjustable, at up to 1 ampere. Fully regulated and short-circuit protected. Resistor kits available for custom retrofit existing consoles.
Suggested List Price: \$185.00

ALPHA AUDIO ACOUSTICS (Distributor)
SONEX Acoustic Materials
2049 W. Broad St., Richmond, VA 23220
(804) 356-3652

Contact: Eric W. Johnson, General Manager.
Date Product Introduced: 1980.
Product Description and Applications: Sonex is an acoustical open-cell foam, sculptured in an anechoic wedge pattern. The uniform and high absorption characteristics of the Sonex plus the ease of installation give it numerous acoustical applications. Sonex is finding use on studio walls, control rooms, acoustic traps, flats and goboes.
Basic Specifications: Sonex is available in 4' x 4' sheets with 2", 3" and 4" depths, or 15" square Audiotiles.



ALPHA AUDIO ACOUSTICS
SONEX ACOUSTIC MATERIALS

Standard color is charcoal with custom colors of blue, yellow, brown and a silver treated with fire retardant overspray.
Suggested List Price: Range from \$1.64 per square foot to \$4.17 per square foot.

AUDIO & DESIGN RECORDING, INC.
ADR TRANSFORMERLESS DIRECT BOX
P.O. Box 766, Bremerton, WA 98310
(206) 275-5009

Contact: Nigel Branwell, V.P.; or Kathy Mallory.
Date Product Introduced: February, 1980.
Product Description and Applications: For directly connecting (injecting) any electronic instrument to a studio mixing console. Most direct boxes are based on a transformer because it's the easiest method. But transformers have inherent problems. The ADR Transformerless Direct Box has been designed to eliminate the need for a transformer and features these advantages: No phase shift—hence retains proper phase relationship in subsequent mixes. No loading problems—avoids 'ringing' problems inherent in transformers. No transformer distortion—i.e. good and clean down to 10 Hz. Improved transient response—wide bandwidth response. No loss of signal level—due to use of active impedance converter.
Basic Specifications: Frequency response: +0 dB -1 dB, 10 Hz to 30 KHz.
Distortion: 0.08% @ 1 KHz.
Noise: -103 dBm.
Clip level: in excess of +20 dBm.
Input Impedance: Normal; greater than 10K ohms;
High: greater than 10M ohms.
Output Impedance: Suitable for driving loads greater than 1 K.
Power: 9v battery or 48v phantom.
Suggested List Price: \$120.00.

AUDIO-KINETICS, U.K. LTD.
QLOCK Q310 SYNCHRONISER
c/o Quintek Inc.
4721 Laurel Canyon Blvd., Suite 209,
North Hollywood, CA 91607
(213) 980-5717

Contact: Ian Dunn, President.
Date Product Introduced: September 1980.
Product Description and Applications: The QLOCK 310 provides synchronisation, transport control and full auto locate functions for three video/audio tape transports. A multi-standard SMPTE generator (24/25/30/skip frame) is built in. Tape is lifted from heads during all fast winds to protect heads and tape. Unique lock routines will not transfer wow & flutter. 'Cascade' mode

allows system control from desk automation. QLOCK's sensible and powerful control functions provide fast and efficient working.

Basic Specifications: Lock time: 2 to 3 seconds typically.
Lock stability: ± 50 microseconds typically.
Offset: ± 11 hrs 59 mins.
Capture window: ± 11 hrs 59 mins.
Varispeed lock: $\pm 33\%$ from play speed.
Wow & flutter: 0.01% typically added to slave machines.
Code reader range: -30 dB to +10 dB.
Size: Controller: 13.5" x 5.75" x 3" max; Computer: 13.5" x 10.5" x 13".
High speed code reader available for chase operation, code only master.
Suggested List Price: \$16,950.00.

AUDIO TECHNOLOGY
MODEL 511
DIGITAL PEAK HOLD LED AUDIO LEVEL DISPLAY
1189 Tower Rd., Schaumburg, IL 60195
(312) 885-0068

Contact: William Griffiths, Sales Manager.
Date Product Introduced: September 1980.
Product Description and Applications: Audio Technology announces the first programmable digital peak hold LED audio level display—the model 511 which incorporates dual phase peak detectors, line (dBm) and power (dBw) inputs and a packaging system with vertical, horizontal or 19" rack mounting for two, four or up to sixteen channels. In use, the highest LED is digitally held while the lower LEDs continue to function in real time. Hold time for the 511 is continuously programmable from 10 ms to infinity. Accuracy is ± 0.25 dB over a dynamic range of 45 dB with 1 dB resolution.
Basic Specifications: The 511 has a frequency response of 20 to 20,000 Hz.
Input Impedances of 100,000 ohms for the line level inputs and 20,000 ohms for the power level inputs.
The 0-dB level for the line inputs is adjustable from 50 mV to 5V.
The power inputs can display levels from 0.003 to 400 watts.
In any one sensitivity setting the display range is 45 dB & -39 to +6 dB.
The display resolution near the 0-dB point is 1 dB.
The 511 measures 7 1/2 x 1 1/4 x 5 1/2 inches.
Suggested List Price: \$199.95.

AUDIOVISUAL SYSTEMS
PATCH BAY SYSTEM PB 269G
725 Lorraine Blvd., Los Angeles, CA 90005
(213) 934-3006

Contact: Benjamin Weise, Sales Manager.
Date Product Introduced: May 1980
Product Description and Applications: For the first time, the flexibility that a patch bay provides to a large recording studio is available to smaller studios, musicians, and audiophiles. The PB 269G is quite different from any other switching or "patching" devices available in that all circuits may be "normalised," that is, the Patch Bay may be programmed to internally connect all components in their normal operating mode without patch cords! Two Bantam® cords will provide 90% of normal user requirements. No active circuits, noise, distortion, crosstalk, or confusion!
Basic Specifications: Sixteen 2-channel inputs and outputs (stereo or balanced lines) normalised to 64 gold-plated RCA connectors on rear panel.
Programmable Normalising™ provides flexible assignment of "normals." Patch Bay uses gold high-reliability Bantam® connectors on printed circuit boards—no discrete wires.
Crosstalk is -95 dBm @ 50 KHz.
May be used for video.
Front panel designation strips allow clear labeling of all connections.
A 3/4" EIA standard rack mount.
Suggested List Price: \$650.00.

AUDIOVISUAL SYSTEMS
"PYRAMOUNT" SPEAKER HANGER
725 Lorraine Boulevard, Los Angeles, CA 90005
(213) 934-3008

Contact: Benjamin Weise, Sales Manager.
Date Product Introduced: September, 1980.
Product Description and Applications: The "Pyramount" is a unique hanging device for all types of speakers, including studio monitors, bookshelf, electrostatics, planar, and "Bose-type" designs. It allows flexible positioning from any flat or inclined ceiling. Three-point suspension provides stable vertical or angle mounting, yet allows instant repositioning to almost any angle without loosening any fasteners and with no risk of falling. Cable system isolates speakers from all surfaces for cleaner sound, no vibration, and provides for optimum focusing.

Basic Specifications: Single-bolt mounting in any solid wood or metal structural ceiling member. 380° horizontal rotation, 120° approximate tilt range. Will support 150 pounds (heavy-duty versions available). Matte black finish is nearly invisible in use. All hardware provided. Specify speaker type, dimensions, and required hanging distance below ceiling.
Suggested List Price: \$50/pair.

CUSTOM AUDIO ELECTRONICS, INC.
T-CON™

2826 Stommel Rd., Ypsilanti, MI 48197
(313) 482-6568

Contact: John Malek, Marketing Manager.
Date Product Introduced: 1980.

Product Description and Applications: T-Con™ split shell tee connector allows easy wiring and service for "Y" or tee connection to XLR-type microphone or line cable. Strain relief accommodates ¼" diameter tap-off cable. Applications include: Intercom "daisy-chaining" of stations, direct splits from microphone snakes, two mics into one channel, etc.
Suggested List Price: \$9.82 each.

dbx, INC.
140

71 Chapel St., Newton, MA 02195
(617) 964-3210

Contact: David Roudebush, Product Manager.
Date Product Introduced: October, 1980.

Product Description and Applications: The 140 is a two channel, simultaneous encode/decode type II noise reduction system for broadcast applications. It features active balanced inputs, unbalanced outputs (with provision for output transformers) barrier strip input/output terminations, and switch selectable dbx disc decoding capability. It will be used to reduce the noise contributed by cart machines, phone lines and STL's.

Basic Specifications: Input impedance: >= 50 Kohms balanced, >= 25 Kohms unbalanced.
Output impedance: less than 1.0 ohm (active, designed to drive 600 ohm or greater load, or 600 ohm to 600 ohm output transformers which may be installed on printed circuit board).
1 1/4" x 19" rack package.
Suggested List Price: TBA.

dbx, INC.
150

71 Chapel St., Newton, MA 02195
(617) 964-3210

Contact: David Roudebush, Product Manager.
Date Product Introduced: October, 1980.

Product Description and Applications: The 150 is a two channel, simultaneous encode/decode type I tape noise reduction system designed for small studio use. It will provide users with fully simultaneous dbx type I noise reduction system, eliminating the problems of switches or relays at an affordable price. The units will be stackable for multi-track formats from two channels through sixteen channels, and can be easily front panel bypassed to accommodate non-noise reduced tapes.

Basic Specifications: Input impedance: 100 Kohms. Output impedance: 100 ohms (designed to drive 5 Kohms or greater).
Frequency response: ± 0.5 dB 40 Hz to 20 KHz, - 1 dB @ 30 Hz (encode/decode, typical program material).
THD: less than 0.5% 30 Hz to 100 Hz, less than 0.1% 100 Hz - 20 KHz (encode/decode).
IM: less than 0.2% (SMPTTE).
1 1/4" x 19" rack mount package.
Suggested List Price: TBA.

EDCOR
MAINLINETM

16762 Hais Avenue, Irvine, CA 92714
(714) 566-2740

Contact: Wayne Wyche, Marketing Manager
Date Product Introduced: August, 1980.

Product Description and Applications: 8 channel digital snake. Encodes 8 mic lines on to 1 mic cable. Available with XLRs (low & unbalanced), phone jacks (line level & unbalanced), phone jacks (high & unbalanced). In new

NEW FOR 1981

OTHER EQUIPMENT

construction a labor saving device. For road shows a material savings and less weight than conventional snakes.

Basic Specifications: No added distortion.

No signal loss - 80 dB crosstalk.

Up to 2,000 foot run without a repeater.

Suggested List Price: Musical instrument version: \$425 1/2. Microphone version: \$515.

FAX AUDIO, INC.
TRANSFAX™

29 Anita Place, Amityville, NY 11701
(516) 261-6085

Contact: M. Kahn, Director of Marketing.
Date Product Introduced: October 1980.

Product Description and Applications: Transfax, a transformer active balanced output unit designed for transformerless applications, offers un-precedented sonic excellence and flexibility for transformer type device. Transfax features include extremely low distortion, wide power supply range, exceptional frequency response, output phase shift capability, and can be operated with either output grounded without a subsequent 6 dB loss. Available in PC mount or with wire leads. Transfax eliminates undesirable transformer characteristics such as ringing, overshoot, parasitic resonances and low frequency core saturation.

Basic Specifications: Slew rate: 16 volts/us.

Supply voltage: ± 16 V to ± 32 V.

Distortion: < 0.1% @ ± 27 dBm 20 Hz to 20 KHz.

Frequency response: ± 0.1 dB 10 Hz to 100 KHz @ ± 27 dBm.

Noise: Unweighted 20 KHz bandwidth, - 108 dBv. Quiescent current: 28 to 34ma ± 16V to ± 32 V DC.

Output: Differential or single-ended ± 22 dBm @ ± 16V, ± 27 dBm @ ± 32V.

Grounded output current: < 1ua.

FAX AUDIO, INC.

SERIES 1 PROGRAMMABLE FADER

29 Anita Place, Amityville, NY 11701
(516) 261-6085

Contact: M. Kahn, Director of Marketing.
Date Product Introduced: July 1980.

Product Description and Applications: This advanced programmable fader design features solid state touch sensitive membrane switches, comprehensive visual indicators that include simultaneous LED monitoring of precise read and write levels, and the most complete array of functions ever offered in a modular automated fader. Other features include: Read, write, true update, safe, read/write automatic switchover electronic nulling, solo, mute, trim, group select with digital display, group master, grand master, battery back-up, and an 8-function master control module.

Basic Specifications: Fader: Penny and Giles.

VCA: Allison EGC 205M.

LED visual resolution (for read/write levels): Better than 0.25 dB.

Switch life: Rated for over 5 million cycles.

Switch contacts: Gold.

Number of group busses: Nine (1 to 9, 0 is unassigned).

Panel size: 7" H x 1.5" to 2.0" W.

Suggested List Price: \$850.00.

FILMS FOR THE HUMANITIES, INC.

THE BBC THEMUSIC LIBRARY

P.O. Box 2053, Princeton, NJ 08540
(809) 452-1128

Contact: Frank Hopkins, Sales.

Date Product Introduced: 1980.

Product Description and Applications: The TheMusic Library has been prepared with the same high standards that mark the BBC Sound Effects Library. Twenty-five LP records that cover the gamut of music most wanted by film, video and tape producers and engineers. Free brochure available.
Suggested List Price: 25 LP records, two library shelf volumes with how-to-guidebook and complete index \$350.00.

GC ELECTRONICS
AUDIO COMPONENT ISOLATORS

400 S. Wyman St., Rockford, IL 61101
(815) 968-9861

Contact: Joyce Donahue, Advertising and Sales Promo.
Date Product Introduced: August 1980.

Product Description and Applications: Set of 4 molded

rubber cushions for use under turntable or speaker. Prevents mechanical feedback to turntable, when used under turntable or speakers. Stops stylus groove-jumping caused by "footfall" vibrations. Also, when used under speakers, reduces sound carried through walls and floors to adjoining rooms.

Basic Specifications: Set of 4 cushions hold up to 36 pounds. Catalog no. 30-8555.

GC ELECTRONICS

AUDIO MAID EN-STAT

400 S. Wyman St., Rockford, IL 61101
(815) 968-9861

Contact: Joyce Donahue, Advertising and Sales Promo.
Date Product Introduced: March 1980.

Product Description and Applications: Anti-static cleaner for records. One application removes static for the life of the record (assumed to be 100 plays). Black velour applicator cylinder also serves as storage for fluid bottle. Wood handle.

Basic Specifications: Catalog no. 30-8600 has 2 oz. bottle of fluid. 2 oz. refills available as Cat. no. 30-8601..

HSC, INC.

SYSTEM 700 SERIES III TKD

2932 River Rd., P.O. Box 155, River Grove, IL 60171
(312) 452-5551

Contact: Paul F. Bergetz, Sales Manager.

Date Product Introduced: September 1980.

Product Description and Applications: (1) TKD (Totally Knocked Down) version of Series III Enclosure System. Same spec. at a 10-15% price reduction. Units require 1-3 hr. assembly time. Freight costs also are reduced because of TKD concept. (2) "The Edge" simulated leather armrest for all TBM (Triple Bay Mainframe) Series mainframes. (3) Over 300 different types of rack mounts now available.

Basic Specifications: Aluminum and formica covered particle board construction. Black or rosewood finish sample unit.

Suggested List Price: TBM \$675.00. TBM-3 Mounting hardware for Tascam Model 5 mixer with 29 3/4" of 19" rack space to the left and right of center. \$190.00. Adds up to \$865.00.

INFONICS INC.

200 SYSTEM

P.O. Box 1111, 236 Highway 212
Michigan City, IN 46360

(219) 678-3381 TLX 233111 Infonics MCI.

Contact: Paul Lloyd, President.

Date Product Introduced: 1980.

Product Description and Applications: Studio, audiophile duplicator for critical applications requiring low distortion and extended frequency range on chrome and metal tapes.

Basic Specifications: 30 to 20 KHz ± 3 dB, 60 to 16 KHz with 3 dB.

Less than 0.1% flutter unweighted.

Better than 80 dB crosstalk.

Suggested List Price: Basic system price: \$12,000 USD including factory training at Chicago, Hong Kong or Zurich. All expenses except transportation.

LT SOUND

FUNCTION GENERATOR/LEVEL INDICATOR FG-1

P.O. Box 338, Stone Mountain, GA 30086
(404) 493-6995

Contact: Lacy Thompson, Jr.

Date Product Introduced: January 1981.

Product Description and Applications: The FG-1 is a function generator and a level indicator in one package. The function generator is capable of generating sine, triangle, or square waves from 1 Hz to 100 KHz. It is possible to use the unit to make frequency response checks, calibrated level checks, as a test tone oscillator, and to generate signals for voltage controlled effects.

Basic Specifications: Function Generator frequency range: 1 Hz to 100 KHz.

Waveforms: Sine, triangle, square.

Level indicator accuracy: ± 1 dB.

Indicator response: Peak.

Sine wave distortion: Less than 1.0%.

Dimensions: 19.0" W x 2.0" H x 7.25" D.

Suggested List Price: \$249.00.

LT SOUND

PARAMETRIC SPECTRUM ANALYZER SA-1

P.O. Box 338, Stone Mountain, GA 30086
(404) 493-6995

Contact: Lacy Thompson, Jr.

Date Product Introduced: January 1981.

Product Description and Applications: Though modest in price, this spectrum analyzer offers certain performance advantages not found on octave or one-third octave analyzers regardless of price. This unit is particularly suitable for equalizing a room using a parametric equalizer. A separate omnidirectional microphone with

flat response must be used with this analyzer and is not provided. Contains pink noise generator and a level indicator with 17 LEDs. Filter with a switchable width of 1 octave, 1/3 octave, and 1/6 octave.

Basic Specifications: Frequency response: $\pm 1/2$ dB 20 Hz to 20 KHz.
Mic input impedance: Greater than 10K ohms (for low impedance mic 150-600 ohms).
Output impedance: 200 ohms (for loads 2K or above).
Mic preamp noise figure: @ 60 dB gain EIN: 130 dBV.
@ 30 dB gain EIN: 128 dBV.
Pink noise output impedance: 200 ohms (for loads 2K or above).
Dimensions: 19" W x 2.0" H x 7.25" D.
Suggested List Price: \$298.00.

MINNICH'S AUDIO PRODUCTS
ROLL OUT SNAKE MODEL 16-S
P.O. Box 5372, San Bernardino, CA 92412
(714) 887-8245
Contact: Don Minnich, Owner.

Date Product Introduced: October 1980.
Product Description and Applications: A 16 input 3 output low impedance passive microphone snake. The spool of cable, with XLR connectors grouped in the center, unwinds freely from a rugged flight case into which it is permanently mounted. Extremely rugged epoxy filled breakout. Breakout cables are color coded and the connectors are numerically stamped. 100 feet standard length. Consult manufacturer for special orders.

Basic Specifications: Size: 22" x 22" x 9".
Weight: 55 lbs.
Suggested List Price: \$695.00.

MINNICH'S AUDIO PRODUCTS
ROLL OUT SNAKE MODEL 24-S
P.O. Box 5372, San Bernardino, CA 92412
(714) 887-8245

Contact: Dan Minnich, Owner.
Date Product Introduced: December, 1980.
Product Description and Applications: A 24 input 3 output low impedance passive microphone snake. The spool of cable, with XLR connectors grouped in the center, unwinds freely from a rugged flight case into which it is permanently mounted. Extremely rugged epoxy filled breakout. Breakout cables are color coded and the connectors are numerically stamped. 100 feet standard length. Consult manufacturer for special orders.
Suggested List Price: \$960.00.



SYE MITCHELL SOUND CO.
DIRECT BOX AND CUE SYSTEM BOX

SYE MITCHELL SOUND CO.
DIRECT BOX AND CUE SYSTEM BOX
22301 Cass Ave., Woodland Hills, CA 91364
(213) 348-4977

Contact: Sye, Ina, or Lenora.
Date Product Introduced: 1980.
Product Description and Applications: Designed for his own use by leading engineer Sye Mitchell, and refined over years of studio use, these boxes are now available for purchase. They are completely hand-assembled with all American parts and extensively tested before delivery.

Direct box: (passive): Features a hand-selected heavy-core Triad A-11-J transformer to assure faithful signal transmission—even with low range, high level sources.
Cue System Box: Incorporates a protective resistive network to prevent a headphone problem from shorting out entire box and/or cue system amplifier. Selector switch and volume controls do not affect box output—this allows boxes to be coupled together and still be controlled individually.

NEW FOR 1981 OTHER EQUIPMENT

Basic Specifications: Direct Box switches include input padding (0, 10 dB, or 20 dB), ground lift, output matching (50, 250, or 600 ohms), and phase reversal. Heavy duty padding is available on special order. Cue system box has three level controls and six headphone jacks.

Controls are precision, hermetically sealed, 2 watt audio taper pots. Also has switch control for A, B, or A & B (stereo). Connectors are 3 pin XL type (4 pin upon request). Both boxes are made of solid heavy-gauge aluminum and are fully engraved. Purchaser's name or studio name also engraved at no charge.

Finish is scuff-resistant hammertone with baked-on enamel.

Custom colors are available.
Direct box: $4\frac{1}{2}$ " x $3\frac{3}{4}$ " x $3\frac{1}{2}$ ".
Cue system box: $7\frac{1}{2}$ " x $4\frac{1}{4}$ " x $3\frac{1}{2}$ ".
Suggested List Price: Direct Box or Cue System Box: \$150 until November 15, 1980. Full 90 day guarantee.

N.E.I. (NEPTUNE ELECTRONICS, INC.)
2709A REAL TIME ANALYZER
934 N.E. 25th Ave., Portland, Oregon 97232
(503) 232-4445

Contact: H.C. (Bud) Garrison, Vice President, Marketing.
Date Product Introduced: June 1980.
Product Description and Applications: NEI's 2709A Real Time Analyzer is an improved tool for the professional sound engineer, recordist or musician. Designed to be more than an effective tool used in conjunction with 1/3 octave or parametric equalizers for flattening room response and eliminating feedback, the 2709A can be used to check response in every part of a sound reinforcement, recording or stage instrument system. Consisting of 27, 1/3 octave bands with 9 steps of amplitude. Marked by high quality electronics and superior design, the 2709A comes with an internal pink noise generator with self checking response, balanced input and line in/out jacks with gain control (D3F and $1/4$ " phone connectors), sensitivity control with switchable range (3 or 1 dB).
Suggested List Price: \$1199.00.

PANASONIC PROFESSIONAL AUDIO DIVISION
SP-02 D.D. DRIVING UNIT
FOR DISC MASTERING LATHES
50 Meadowland Parkway, Secaucus, NJ 07094
(201) 348-7470

Contact: Jim Parks, Assistant General Manager; Paul Ackel, Sales Manager.
Date Product Introduced: 1980.
Basic Specifications: Servo control system: Quartz synthesizer direct drive.
Motor: Heteropole brushless DC motor.
Rated speeds: 16 $\frac{1}{2}$, 22 $\frac{1}{2}$, 33 $\frac{1}{3}$, 45, 78.26 (rpm).
Starting torque: 28 kg*cm.
Start-up Within one rotation (at 33 $\frac{1}{3}$ rpm).
Speed drift: $\pm 0.001\%$ or less.
Wow & flutter: 16 $\frac{1}{2}$ rpm: 0.011% rms or less; 22 $\frac{1}{2}$ rpm: 0.008% rms or less; 33 $\frac{1}{3}$ rpm: 0.007% rms or less; 45 rpm: 0.005% rms or less; 78.26 rpm: 0.003% rms or less.
Rumble -56 dB or less (IEC 98A unweighted); -78 dB or less (IEC 98A weighted).
Pitch control 0.1% steps up to $\pm 9.9\%$.
All speeds are quartz-locked with the quartz synthesizer.
Power supply AC 110/120/220/240V, 50/60 Hz.
Suggested List Price: \$5000.00

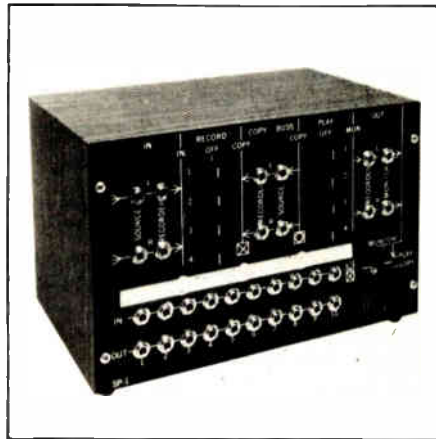
RTS SYSTEMS, INC.
SERIES 4000 IFB SYSTEM
1100 W. Chestnut St., Burbank, CA 91508
(213) 643-7022

Contact: Doug Leighton, President.
Date Product Introduced: April, 1980.
Product Description and Applications: An IFB system performs a switching function to enable a program signal to be interrupted. IFB stands for interrupted feedback. It is used in television broadcasting. An announcer wears an earphone to which a program feed is sent—this feed may be interrupted by the director (typically) to give the announcer a cue or a direction. The system is modular and may be configured to any size by the customer.

Basic Specifications: The system consists of switching control panels, central electronics, user stations, and accessories. Standard mic cable is used for user

station interconnect. The system runs at line level and provides for high quality construction and electrical specs.

Suggested List Price: Model 4001 switch panel/\$427.00; Model 4010 central electronics/\$1,970.00; Model 4020 user station belt pack/\$299.00.



RUSSOUND/FMP, INC.
SP-1R STEREO PATCHING AND CONTROL CENTER

RUSSOUND/FMP, INC.
RUSSOUND SP-1R
STEREO PATCHING AND CONTROL CENTER
P.O. Box 2369, Woburn, MA 01888
(617) 935-3625

Contact: John W. Rabbitt, President.
Date Product Introduced: 1980.
Product Description and Applications: SP-1R Stereo Patching and Control Center: Switching capability for up to four stereo tape recorders and five stereo accessories for any combination of recording, playback, monitoring, dubbing, in conjunction with signal processing components. Compatible with any combination of separate components including recorders, preamps, amps, noise reduction units, equalizers, receivers, etc. Professional type label strip permits easy labeling and identification of functions. Set of 12 patch cords furnished, additional cords available. Also available in free-standing version as SP-1 with walnut finish vinyl over compressed wood cabinet, semi-gloss black face panel.
Basic Specifications: Rack mount version occupies three rack spaces (5 $\frac{1}{2}$ ""). All metal case with semi-gloss black finish. 19" W x 5 $\frac{1}{2}$ " H x 5" D.
Suggested List Price: \$179.95.

RUSSOUND/FMP, INC.
RUSSOUND FP-36R PATCHBAY
P.O. Box 2369, Woburn, MA 01888
(617) 935-3625

Contact: John W. Rabbitt, President.
Date Product Introduced: 1980.
Product Description and Applications: SP-36R Patchbay: Functional equivalent of the full size rack mount patch bays used in professional studios. 18 inputs and 18 outputs on front panel. Stackable to provide as many inputs and outputs as needed. Connect any combination of components in any sequence. May be used independently in tape monitor loop or to augment patching capability of a Russound QT-1R or SP-1R. Professional type label strip permits easy labeling and identification of functions. 12 patch cords provided, additional cords available.

Basic Specifications: Occupies one rack space (1 $\frac{1}{4}$ "") for professional or semi-professional installations. All metal case with semi-gloss black finish. 19" W x 1 $\frac{1}{2}$ " H x 5" D. Also available in free-standing version as FP-36 with walnut finish wood sides, semi-gloss black face panel, rubber feet. 13 $\frac{1}{2}$ " W x 1 $\frac{1}{2}$ " H x 5" D.
Suggested List Price: \$139.95.

SHURE BROTHERS INC.
M97HE PHONOGRAPH CARTRIDGE
222 Hartrey Avenue, Evanston, IL 60204
(312) 866-2200

Contact: S. Mastricola, Product Manager/Hi-Fi.
Date Product Introduced: January 1980.
Product Description and Applications: Exclusive Shure Era IV Dynamic Stabilizer minimizes or completely eliminates record warp-related problems such as fluctuating tracking force, groove skipping, cartridge bottoming, signal wow, and even amplifier and/or speaker overload. Stabilizer also acts like a shock absorber to maintain cartridge-record distance, attenuates arm/cartridge system resonance effect, discharges static electricity,



Why settle for a casual pick-up when you can be seduced.

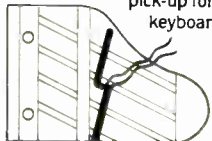
C-ducer...a whole new concept in acoustic pick-ups. It's a magical strip of electronics built into a sensing tape. The easy-to-move tape safely adheres to your instrument in the exact location that creates the best sound. The tape is connected to a control box which connects directly to your amplifier.

C-ducer...its phenomenal flat response means you get more volume with less feedback or artificial tone coloration...and total fidelity at both the high end and the low end. This electronic response, together with the expanded physical contact with the sounding board, lets the natural sound of your instrument come through loud and clear! It works reliably with any acoustic instrument: guitar, mandolin, violin, bass, piano, harpsichord, drums, etc. And there is no need to alter the instrument or add bothersome attachments.

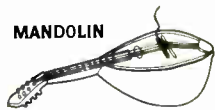
C-ducer...it is now being used by top name groups and recording studios throughout the world. C-ducer makes all other pick-ups obsolete! See it at your authorized dealer today.

For product literature and the name of your nearest dealer write: C-ducer, 1365-C Dynamics Street, North Anaheim, CA 92806.

PIANO-2-way MS model provides stereo pick-up for acoustic keyboard instruments.



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Clear, clean highs, definitive lows with sharpness in between. Larksong cassettes feature professional quality tape that delivers life long reliability, high output and sensitivity, crisp response, tape to tape consistency and low price.

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To catch your ear, we will send you a free sample cassette. Send your request on your business letterhead or call (800) 356-8236. CA, AK, HI call (707) 882-2833 collect.

Larksong CASSETTES

10 Scott Place • Point Arena, CA 95468

and sweeps the record clean. Telescoped stylus shank improves trackability in mid and high frequencies. Hyper-elliptical stylus is low in distortion. Unique Side-Guard lateral deflection assembly minimizes possibility of damage to shank and tip.

Basic Specifications: Frequency response: 20-20 KHz. Channel separation (min): 25 dB at 1 KHz. Channel balance: Within 2 dB. Tip tracking force: ¼ to 1½ grams. Trackability (cm/sec peak recorded velocity): 24 at 400 Hz, 35 at 1,000 Hz, 33 at 5,000 Hz, 25 at 10,000 Hz (measured at 1 gram tracking force). Weight: 6.4 grams, output (at 1,000 Hz): 4.0 mV at 5 cm/sec peak recorded velocity. **Suggested List Price: \$112.00.**

SHURE BROTHERS INC.
M97HE-AH INTEGRATED PHONOGRAPH
CARTRIDGE/HEADSHELL
222 Hartrey Avenue, Evanston, IL 60204
(312) 868-2200

Contact: S. Mastricola, Product Manager/Hi-Fi.
Date Product Introduced: August 1980.
Product Description and Applications: Integrated cartridge and headshell with universal SME-type bayonet headshell connector for instant connection to many of the world's finest tone arms and turntables. Provides total weight reduction of 4 to 6 grams compared to separate cartridge and headshell. Exclusive Shure Era IV Dynamic Stabilizer minimizes or completely eliminates record warp-related problems such as fluctuating tracking force, groove skipping, cartridge bottoming, signal wow, and even amplifier and/or speaker overload. Stabilizer also acts like a shock absorber to maintain cartridge-record distance, attenuates arm/cartridge system resonance effect, discharges static electricity, and sweeps the record clean. Telescoped stylus shank improves trackability in mid and high frequencies. Hyper-elliptical stylus is low in distortion. Unique Side-Guard lateral deflection assembly minimizes possibility of damage to shank and tip.
Basic Specifications: Frequency response: 20-20 KHz. Channel separation (min): 25 dB at 1 KHz. Channel balance: Within 2 dB. Tip tracking force: ¼ to 1½ grams. Trackability (cm/sec peak recorded velocity): 24 at 400 Hz, 35 at 1,000 Hz, 33 at 5,000 Hz, 25 at 10,000 Hz (measured at 1 gram tracking force). Weight: 12.6 grams, output (at 1,000 Hz): 4.0 mV at 5 cm/sec peak recorded velocity. **Suggested List Price: \$120.00.**

SLEEPY HOLLOW
HEADROOM HERSEMAN
141 Croton Ave., Ossining, NY 10562
(914) 782-3197

Contact: Ted Hammond, Chief Engineer.
Date Product Introduced: October 1980.
Product Description and Applications: Discrete line amplifier to interface hi-fi/semi pro -10 dB levels with studio +4 and broadcast +8 standards. XLR's talk to the world, RCA's talk to the hi-fi gear. Standardizes all studio equipment. Will drive +25 into 600 ohms. Increases recording headroom by padding inputs to cassettes or ¼ tracks. **Suggested List Price: \$175.00 each, includes +50 VDC power supply.**

SONIC RAINBOW LABS
ACCUSONIC TUNER
112 Space Park Drive., Nashville, TN 37211
(615) 832-2848

Contact: Allen Rumbaugh, V.P., George Juodenas, Pres.
Date Product Introduced: December 1980.
Product Description and Applications: The simple solution for tape recorder alignment which introduces the first of a new breed of test equipment that is human engineered. Instead of gazing at meters, you tune an audible tone to a reference tone. Like tuning a guitar. It does not require the technical expertise of a maintenance man allowing instead any small or large studio owner to keep his recorders in perfect alignment.
Basic Specifications: User accessible calibration pot. AC voltmeter function for recorder output level alignment. Azimuth alignment function. Built sweep oscillator from 20 to 20 KHz. Oscillator output level alignment function. **Suggested List Price: \$450.00.**

SPECTRA SONICS
MODEL 802 BATTERY POWERED SIGNAL GENERATOR
3750 Airport Road, Ogden, Utah 84403
(801) 392-7531

Contact: Gregory D. Dilley, Engineering Sales.
Date Product Introduced: October 1980.
Product Description and Applications: The Model 802 Battery Powered Signal Generator is a compact, self-contained, solid state, low distortion, precision,

NEW FOR 1981

OTHER EQUIPMENT

oscillator with five selectable frequencies and variable gain. The miniature size and rugged packaging of this economical unit make it ideally suited for both studio and road applications. All controls are mounted on the front panel and a three conductor audio type connector is located on the rear panel for output termination. The Model 802 comes complete with two nine volt batteries. **Basic Specifications:** Output impedance: 0-1000 ohms unbalanced. Output loading: 600 ohms (essential for calibration). Output level: Continuously variable from infinity (-74 dBm) to +4 dBm; +11 dB (unterminated). Output calibration: Panel calibrated, infinity -10 dBm, -2 dBm, -0 dBm, +2 dBm, & +4 dBm. Frequency selection: 50 Hz, 100 Hz, 1 KHz, 10 KHz, & 15 KHz. THD and Noise: Less than .05% 100 Hz to 15 KHz, .1% at 50 Hz. Stabilization time: Not more than 3 seconds at 50 Hz, less than 3 seconds at all other freq. Power requirement: Two 9V rectangular batteries (NEDA #1604). Physical dimensions: 95.25 mm (3.75") W x 127.0 mm (5.00") D x 40.64 mm (1.6") H. Weight: 340.2 grams (12 oz). **Suggested List Price: \$130.00.**

STUDER REVOX AMERICA, INC.
STUDER BALANCING UNIT
1425 Elm Hill Pike, Nashville, TN 37210
(615) 254-5851

Contact: Bruno Hochstrasser, President.
Date Product Introduced: November 1980.
Product Description and Applications: Transforms up to three stereo unbalanced line-level units (equalizers, limiter/compressors, tape decks, etc.) from single-ended to balanced-line in/out for interface with standard professional equipment. Active circuitry, floating in/out, XLR-type and phono-type connectors. **Basic Specifications:** (0 dBu = 0.775V): Balanced in/out +21 dBu (max). 5K ohm or higher input Z, output Z less than 50 ohms. Unbalanced in/out -30 to +15 dBu input, 5K ohm in/out. Output -30 to +15 dBu at less than 100 ohm (1K ohm min. load recommended). 19 x 1.75" rack mounting. **Suggested List Price: \$1,055.00 4 lines, \$1,360.00 6 lines.**

3M
CROSS FADE CAPABILITY
P.O. Box 33600, St. Paul, MN 55133
(612) 733-7358

Contact: Clark Duffey, Mkt. Communications Manager.
Date Product Introduced: May 1980.
Product Description and Applications: As a standard feature on 3M's multi-track digital recording equipment, cross fade permits perfectly smooth transitions during both punch-in and editing functions. The old signal is faded out as the new signal is faded in. Complete error correction data is maintained throughout the 10 millisecond cross fade. It includes a record encode board and a cross fade control/time code record board with a coefficient generator to effect the cross fade change in amplitude through a multiplication process. **Suggested List Price: A standard feature included in the base price of 3M's 32-track digital recorder.**

UREI
MODEL 525 ELECTRONIC CROSSOVER
8480 San Fernando Rd., Sun Valley, CA 91352
(213) 767-1000

Date Product Introduced: May 1980.
Product Description and Applications: The UREI Model 525 Electronic Crossover features 4 panel-selectable operating modes: stereo 2-way or 3-way and mono 4-way or 5-way. Crossover frequencies are continuously adjustable from 50 Hz to 10 KHz, with the actual frequency measured and displayed on a digital frequency counter, with 1 Hz resolution.
Basic Specifications: Mode select and crossover frequency controls are front panel screwdriver slot adjustments for greater security. A subsonic filter is included to roll-off frequencies below 30 Hz providing protection of the low frequency transducers in the PA system. This is switch selectable on the rear panel. Inputs and outputs are XLR/QG connectors or terminal strips. Security covers are also available for the Model 525.

VIF INTERNATIONAL
TAPE REEL HOLD DOWN KNOB, CAT. NO. 1000-H
P.O. Box 1555, Mountain View, CA 94042
(408) 739-9740

Contact: Gordon MacKechnie, President.
Date Product Introduced: April 1980.
Product Description and Applications: The VIF 1000-H, a brand new reel lock-down retainer, has been developed to provide a quick-loading, highly reliable method of securing both NAB and RETMA tape reels in place. This precision designed retainer, works with either ¼" or ½" reels on both rack and console mounted recorders. **Suggested List Price: \$15.00 each.**

WESTLAKE AUDIO, INC.
WESTLAKE AUDIO ACTIVE DIRECT BOX, MODEL D-1
6311 Wilshire Blvd., Los Angeles, CA 90048
(213) 655-0303

Contact: Charles J. Flynn, Vice President.
Date Product Introduced: July 1980.
Product Description and Applications: The D-1 Active Direct Box is the ultimate device for amplification of an instrument's pick-up or pre-amp signal. While active direct boxes have been in practical use for many years, none combine the features, dynamic range, and sonic accuracy exhibited by the D-1. The D-1 comes complete with rechargeable Ni-CAD batteries, charger, and eight foot low capacitance cable.

Basic Specifications: Input impedance: 1 meg ohm. Maximum input level: 10 dBm (8.0 V P/P). Output impedance/maximum level: Recording output 180 ohm +10 dBm instrument amp output 15K ohm + dBm (transformer isolated, measured open circuit). Frequency response (measured at recording output using a low impedance calibrated source. Actual performance will be affected by source impedance cable capacitance): 10 Hz-58 KHz flat 2 Hz-380 KHz -3 dB. Distortion (THD): 10 Hz-10 KHz less than .05% @ +4 dBm 10 KHz-100 KHz less than .2% @ +4 dBm. Dynamic range: 106 dBm 20 Hz -20 KHz. **Suggested List Price: \$478.00.**

WHIRLWIND MUSIC DIST., INC.
CONSTRUCTOR
100 Boxart St., Rochester, NY 14612
(716) 883-8820

Contact: Bob Martin, National Sales Manager.
Date Product Introduced: September 1980.
Product Description and Applications: The Constrictor combines a straight cord with a retractable coil cord, to offer musicians an organized appearance with maximum freedom of movement in performance. **Basic Specifications:** The Constrictor's 10' straight cable and 20" coil body provides 20' - 25' extension. Cable cured Neoprene terminated with a right angle plug to a Whirlwind Tip.

ROLAND CORPORATION
TR-88 RHYTHM COMPOSER
2401 Saybrook Ave., Los Angeles, CA 90040
(213) 885-5141

Contact: Ron Wilkerson, Vice President.
Date Product Introduced: October 1980.
Product Description and Applications: The TR-88 Rhythm Composer provides for complete programming of drum rhythms composed of 12 different percussive sounds. Programs are loaded in a step sequence procedure, each measure containing a maximum of 32 steps. The TR-88 can store up to 32 different programs. These programs can then be arranged to play a complete percussion track of up to 786 measures involving straight beats, breaks and fills.

WALKER AUDIO VISUAL ENGINEERING
WALKER 1680 & 2480
P.O. Box 5723, 1823 Commerceter West.,
San Bernardino, CA 92412
(714) 884-1294

Contact: Larry Brandson.
Date Product Introduced: July 1980.
Product Description and Applications: Studio mixing console: 16 or 24 inputs. Completely modular—any module can be removed and replaced in seconds; 3 level, 3 color VU meter on each input; continuously variable input gain control; 13 sends per channel; extensive back panel patching; 5 band equalization on each input and effect module; 8 independent studio (headphone) mixes plus 8 main outputs; Accutronic type 9 reverb spring; plus much more.
Basic Specifications: Frequency response: 20 Hz to 20 KHz ± .5 dB. Equivalent input noise: Less than -129 dBv. Distortion: Less than .04%. **Suggested List Price: \$5,150.00, 2480: \$6,705.00.**

72 Fine Lines

Quality Cost-efficient Equipment. Experienced, no-bull sales and service people who will help you find the right products for your application and budget. That's what Bananas At Large is all about. We carry an ever increasing diversity of products so if you don't see what you're looking for listed below, please call us. We also operate a complete Musical Instrument Shop shop and we'll be happy to send you an MI line card.

Advanced Music Systems	Frap	Russound
Audio and Design (Recording) - Scamp	Furman Sound	SCAMP by AD&R
AIWA	Gallien-Krueger	Scotch
AKG	Gauss Speaker Systems & Components	Sennheiser
Altec	Harbinger	Sescom
Ampex	Inovonics	Shure
Analog-Digital Associates	Ivie	Sony
Ashly Audio	JBL	Sound Workshop
Atlas Stands	Keith Monks	Souder
Audio-Technica	KORG	Soundolier
Audio Technology	Lexicon	Stanton
Barcus Berry	Marshall Electronics	Switchcraft
Belden	Maxell	Symetrix
Beyer	MXR	Tapco
Cases, Inc.	Nortronics	Tascam Creative, Studio & Production Series
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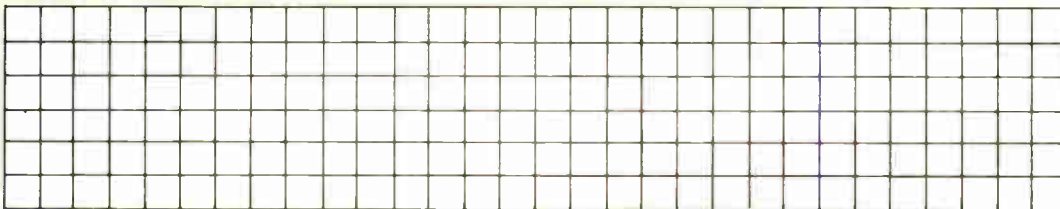
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feedback

Dear Mix,

In your last issue (Vol. 4, No. 8) on page 4 you inadvertently published incorrect information about myself, Dick Swettenham and Baskind, Bissot and Associates. Below is the correct information.

Baskind, Bissot and Associates was founded by David Baskind and E.J. Bissot in 1972. (Baskind, Bissot and Associates has the AKA B&B Audio.)

In May of 1980 Dick Swettenham joined B&B as a limited partner and became their exclusive representative for the United Kingdom and Europe.

Also in May of 1980, B&B's former representative, Aphex Systems was terminated and B&B moved to new quarters in Malibu.

B&B Audio's new address is P.O. Box 362, Malibu, CA 90265 (213) 461-2577.

In England, we may be contacted via R. Swettenham Associates, 106A Sheperdess Walk, London, N.I.

We have been building custom consoles and complete studios since our inception and are continuing in that direction with the added expertise and prestige of Mr. Swettenham.

In addition we will be offering Dick's extensive experience in the design of mobile systems.

The above constitutes sufficient information to correct that which was previously published. There is also some new information which may be of interest to your readers:

B&B is now the Los Angeles representative for Cadac, and has thereby added "stock" high end consoles to its custom console offering.

B&B is engaged in a development program for a new line of products featuring true class "A" signal paths; the first product off the line is to be a class A microphone preamplifier, the MP-500.

David Baskind.

Dear Mix,

Well Sir, I goofed. The egg is dripping off my face and rather red neck. I forgot to cancel the listing in your August Southeast Studio edition (Vol. 4 No. 7).

Let me say unequivocally that the Homestead Studio, Inc. is not a 24 track studio. Due to the bank's inability to understand our business

and indeed express any confidence in the recording business, we did not receive our financing.

However I did purchase enough equipment to establish a professional 8-track private production studio. I did this, of course, without the help of the "★✓#&!*" who call themselves bankers.

So please accept my apologies for letting a bogus write up go through.

I am currently producing and managing a hot new fusion group, TKO, who have recorded all their material here at my studio. I have no plans to go public. I am finding that private production is very rewarding both financially and otherwise. However when I get TKO on the road the next groups that I produce I hope to be able to record on 16 track equipment. Once again the narrow minded Southern Bankers will lose out.

Please print this letter in your next edition.

Thank you for not sending the gentlemen in the black limos to break by legs.

Rick Grant, President
Homestead Studio Inc. & Productions
2341 Hendricks Ave. Jacksonville, FL.

Dear Mix,

Thank you for your fine publication, although we have only been receiving it for a short period, we have enjoyed your articles concerning our industry. I would like to remark on your oversight of publishing any listing of the recording industry in the midwest! Is it that we don't really exist (as some say we don't), or is it that we are just a pimple on the face of our business and therefore are not worth mentioning? Also you seemed to have neglected to add any listings of recording sessions that could possibly be happening here!

I hope that this letter will have enlightened you to the fact that there is a lot more to the Midwest than just corn!

Ronald Schwartz
Rainbow Bridge Studios
Libertyville, IL

Dear Ronald,

Hang in there. We just put our 1981 schedule together and will be listing studios throughout the United States in our issues next year. Tell a friend.

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A mix control is provided, enabling the unit to be used in one input of a mixing console, or with musical instrument amplifiers. A regeneration control provides for the recirculation of processed signals, creating more and more notes, depending upon the selected interval. This results in multitudes of voices or instrumental chords. An entire new range of sound effects and musical textures, unattainable with any other type of signal processor, is suddenly at your fingertips.

With many other pitch transposition devices a splicing noise, or glitch, is present. The MXR Pitch Transposer

renders these often offensive noises into a subtle vibrato which blends with the music, and is, in some cases, virtually inaudible. The result is a processed signal which is musical and usable.

We have been able to maintain a high level of sonic integrity in this most versatile signal processor. The frequency response of the processed signal is beyond 10 kHz, with a dynamic range exceeding 80 dB.

A micro computer based display option allows the user to read the created harmonic interval in terms of a pitch ratio, or as a musical interval (in half steps). This unique feature allows the pitch to be expressed in a language meaningful to both musicians and engineers.

We designed our Pitch Transposer as a practical musical tool for those actively involved in creative audio. It reflects our commitment to provide the highest quality signal processors with the features and performance that will satisfy the creative demands of today's musical artist. See your MXR dealer.

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tional creative time savings. The transport system of the ATR-100 is unsurpassed by any competitive model in terms of accuracy and precision. Feature after feature that makes outstanding performance an everyday occurrence. The Ampex ATR-100. Contact your Ampex sales representative for complete details.

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