

AUDIO

THE EQUIPMENT AUTHORITY

DECEMBER 1996

THE MAGIC OF
DSP
SOUND SHAPING
BY THE NUMBERS

TESTED

**DVD-READY
THX RECEIVER
FROM TECHNICS**

**LEXICON
POWERS UP FOR
HOME THEATER**

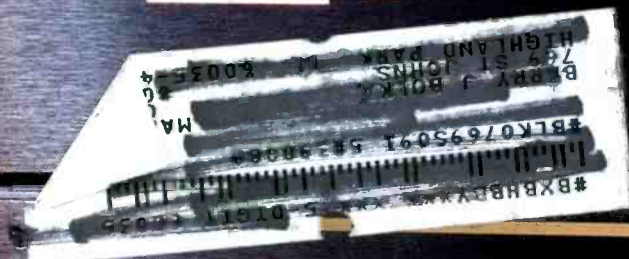
ALSO TESTED

**ATLANTIC TECHNOLOGY
and AR SPEAKERS,
MESA AMP, and MORE**

US \$3.95
UK £2.20
CAN \$4.95



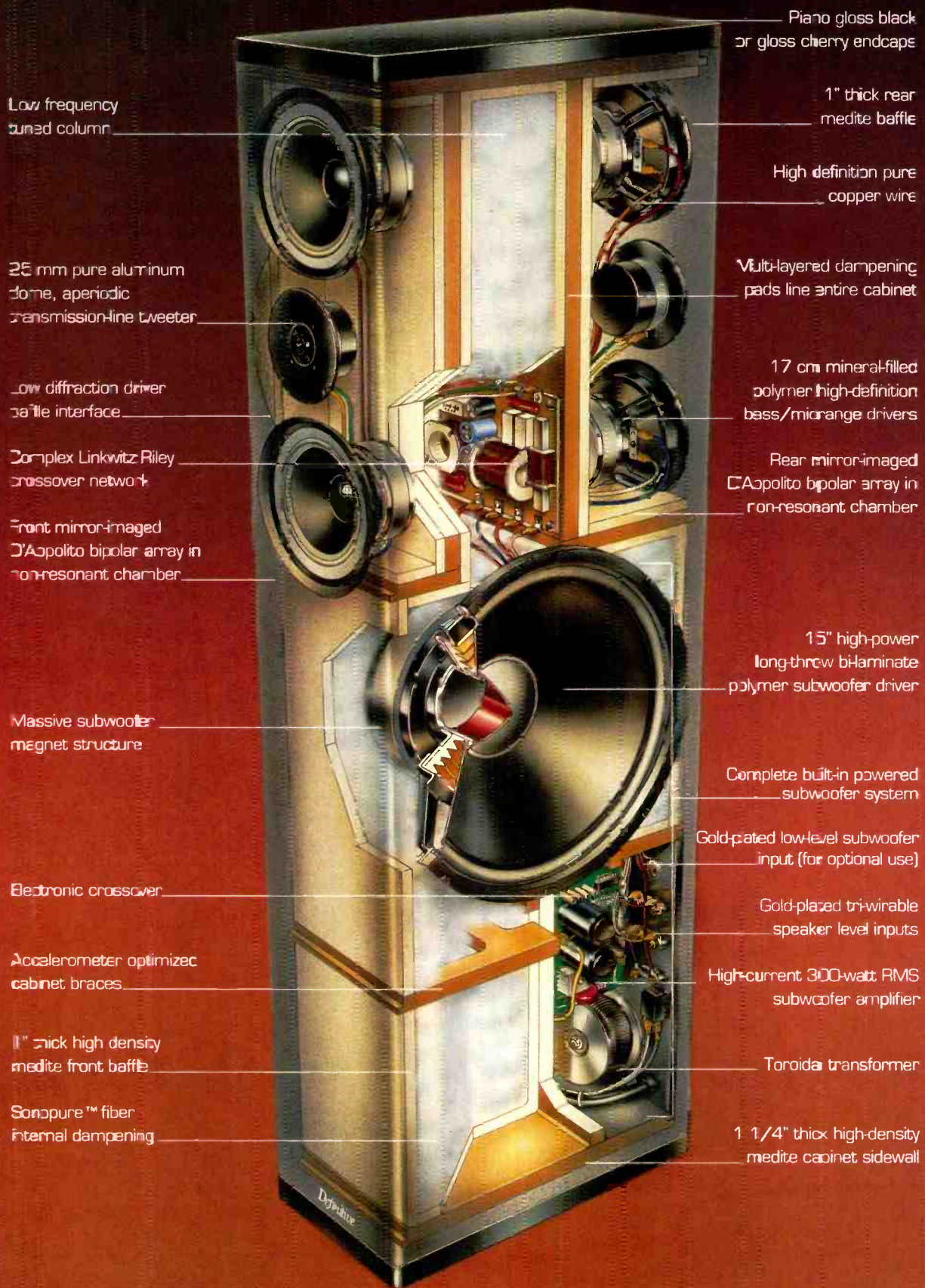
lexicon 412



ON-OFF



Inside Definitive's Revolutionary BP2000



Low frequency tuned column

25 mm pure aluminum dome, aperiodic transmission-line tweeter

Low diffraction driver baffle interface

Complex Linkwitz Riley crossover network

Front mirror-imaged D'Apollito bipolar array in non-resonant chamber

Massive subwoofer magnet structure

Electronic crossover

Accelerometer optimized cabinet braces

1 1/2" thick high density medite front baffle

Sonopure™ fiber internal dampening

Piano gloss black or gloss cherry endcaps

1" thick rear medite baffle

High definition pure copper wire

Multi-layered dampening pads line entire cabinet

17 cm mineral-filled polymer high-definition bass/midrange drivers

Rear mirror-imaged D'Apollito bipolar array in non-resonant chamber

15" high-power long-throw bi-laminar polymer subwoofer driver

Complete built-in powered subwoofer system

Gold-plated low-level subwoofer input (for optional use)

Gold-plated tri-wirable speaker level inputs

High-current 300-watt RMS subwoofer amplifier

Toroidal transformer

1 1/4" thick high-density medite cabinet sidewall

"Definitive's new BP2000 absolutely kills most more-expensive speakers!"

—Brent Bltterworth, *Home Theater Technology*

Definitive's New BP2000 Brings You the Ultimate Listening Experience!

"The first speaker I have been able to audition in my own familiar surroundings that has given me that special thrill that usually costs ten or more times its price to obtain."

—Julian Hirsch, *Stereo Review*

"Frankly, if circumstances allowed, I would choose these speakers for myself."
—Julian Hirsch, *Stereo Review*

Speaker of the Decade

Now, with the BP2000, Definitive literally reinvents the loudspeaker. We have combined a six-driver dual D'Appolito bipolar array with a built-in (side-firing) 300-watt powered 15" subwoofer. (Yes, a complete powered subwoofer built into each speaker!) The result is extraordinary sonic performance beyond anything you've ever heard.

Both music and movies are reproduced with unequalled purity, transparency and lifelike realism. And the astounding high resolution imaging and awesome bass impact totally envelop you in sonic ecstasy. They are an amazing achievement!



Definitive's complete AC-3 ready BP2000 Home Theater System is the perfect choice for ultimate music and movie performance.

The Ultimate Home Theater

In addition to being an audiophile's dream, the BP2000s are also the main speakers in Definitive's AC-3 ready Ultimate Home Theater System. This astonishing system is absolutely the finest sounding available. It recreates a "you are there" spatial reality that actually puts you into the soundspace of the original cinematic action.

The complete system combines the BP2000s (\$1499 ea.) with a C/L/R 2000 center (\$650 ea.) and BPX bipolar surrounds (from \$399 ea.). Of course, dual 15" powered subwoofers are already built into the sleek BP2000 towers. Truly the ultimate listening experience! Visit your Definitive dealer today.

Definitive Technology®
The Leader in High-Performance Loudspeakers™

11105 Valley Hts. Dr. • Baltimore, MD 21117 • (410) 363-7148

Visit us at <http://www.soundsite.com/definitive>.

See our dealer list on page 126

You Need More Than Just Cable.

Any cable can transmit electrical signals from one component to another, or from an amplifier to the speakers. But, transmitting music takes more than just cable. The shapes of musical waveforms are incredibly complex and critical signal timings are measured in microseconds. Ordinary interconnecting cables or speaker cables cannot faithfully preserve these complex musical relationships across the full musical spectrum.

That's why MIT's founder literally invented high-performance interconnects and speaker cables. MIT® holds seven basic patents in high-performance cable and interface design. These fundamental technology patents mean that only MIT can bring you interconnects and speaker cables scientifically designed to eliminate the non-linearities and distortions caused by other cables, no matter whether the others cost tens of dollars or thousands.

If you choose your system components with care, listening for the subtleties of music that distinguish great components, then you need MITerminator™ interconnects and speaker cables. The hard science behind MITerminators reveals the full musical potential of your high fidelity stereo system. Until you use MITerminators, you'll never know how good your system can sound.

Patented MIT Terminator Network

MIT's patented Terminator Networks are the heart of MIT's sonic superiority. These unique networks enable MITerminator interconnects and speaker cables to deliver better bass, clearer midrange and smoother treble sound, and to enhance the image, focus and soundstaging of every recording you listen to.

MIT's fundamental technology patents are your assurance that only MIT interconnects and speaker cables can transmit all of the sound quality that your program sources and stereo system components are able to deliver.



iconn™ interchangeable connector system

MIT's exclusive iconn system for speaker cable connections is so innovative, it has a patent pending, and every MITerminator speaker cable has it. Thanks to iconn's five interchangeable connector types, you'll always have the right connector to fit the terminals of your amplifier and speakers. iconn's gold-plated connectors assure ultra-low contact resistance and contamination-free connections for best sound quality.

New RCA connector

MITerminator™ interconnects now have new high-performance RCA type connectors. These machined gold-plated connectors feature bifurcated center-contact pins and multi-contact shield connectors for unimpeachable signal integrity. They properly match the cable for highly efficient energy transfer and outstanding sound quality.

With MITerminator interfaces starting at just \$39.95 interconnect and \$79.95 speaker (MITerminator 5, not shown), MIT performance is truly affordable for any system.

More Than Just Cable!™

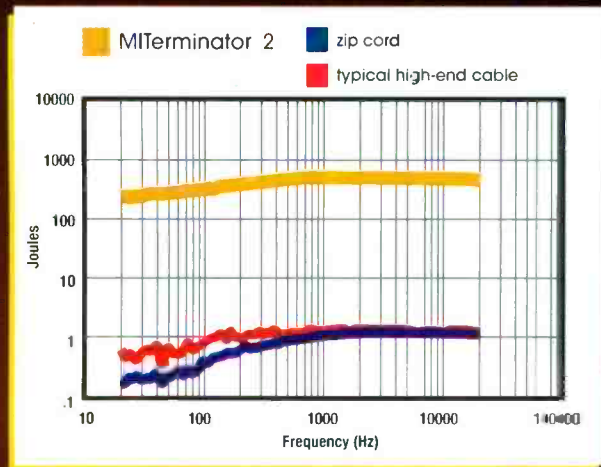


Why MITerminators sound better

Superior Final Energy Component

In transmitting electrical energy, cables store and release energy. MIT calls the amount of energy that is stored and released the Final Energy Component. Unfortunately, as shown in the plot, the Final Energy Component in ordinary 12-gauge "zip cord" and a typical high-end cable is non-linear — It changes value with signal frequency. This non-linearity inevitably causes distortion and the loss of both tonality and image integrity.

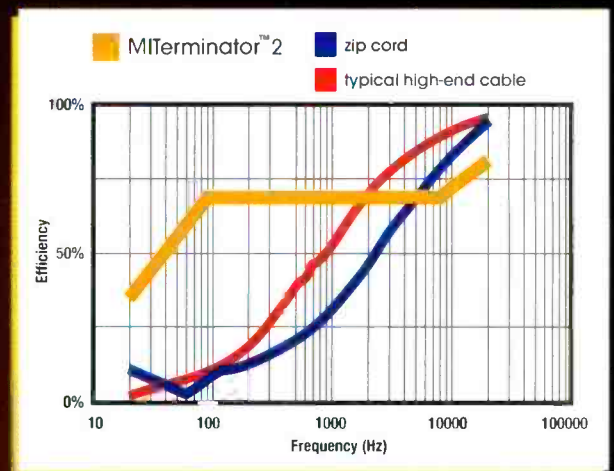
MIT discovered that increasing the Final Energy Component of cables already having outstanding electrical characteristics dramatically improves the overall sound quality. By employing the patented MIT Terminator Networks to store and release energy at the correct levels and times, nonlinearities are greatly reduced or eliminated. This superior Final Energy Component is a major factor in the superb sound quality of MITerminators.



Superior Efficiency

MIT quantifies how well cables maintain correct phase relationships between audio signals' voltages and currents as Efficiency. When cables maintain correct phase relationships, all of the signals' energy transfers to the next component or to the speaker with 100% efficiency. Ordinary cables non-linearities make them much less efficient at low frequencies than at high frequencies, as the plot shows for "zip cord" and for an ordinary high-end speaker cable. The sonic results are noise, distortion, loss of image quality, and excessively "bright" treble sound.

As you can see from the plot, MIT's patented Terminator Networks give MITerminator cables a huge advantage over ordinary cables, raising low-frequency efficiency and "flattening" the overall curve. This means that MITerminator cables deliver far more accurate clarity and imaging, with lower noise than ordinary cables can. Although the plot shows speaker cables, the results also apply to interconnects.



Superior Imaging

Three-dimensional graphics of a typical listening room represent the sonic image quality produced by three different speaker cables. The blue, red and yellow areas indicate the image size, while the musical notes represents the quality of image focus.

The blue area produced by ordinary 12-gauge cable is tiny, indicating a small overall image, and the blurry note indicates that the image is unfocused and poorly defined. The result is a constricted, unconvincing image lacking breadth, depth and life.

The red area produced by a typical "high-end" cable is larger, but is still too small to create a convincing, lifelike soundstage. The blurry note indicates poor image focus within the larger image area. The result is a larger image that only makes the lack of focus and definition more obvious and disappointing.

The yellow area produced by the MITerminator 2 is convincingly large, with the breadth and depth to create a lifelike soundstage. The sharp, clear note indicates solid image definition and focus throughout the audio spectrum. The superior Final Energy Component and Efficiency provided by MIT's Terminator technology deliver a natural, tightly focused and solid image that preserves the integrity of the musical performance. Only MIT's patented Terminator technology can achieve this level of performance in your system.



Experience the sonic improvements of MITerminators in your system!

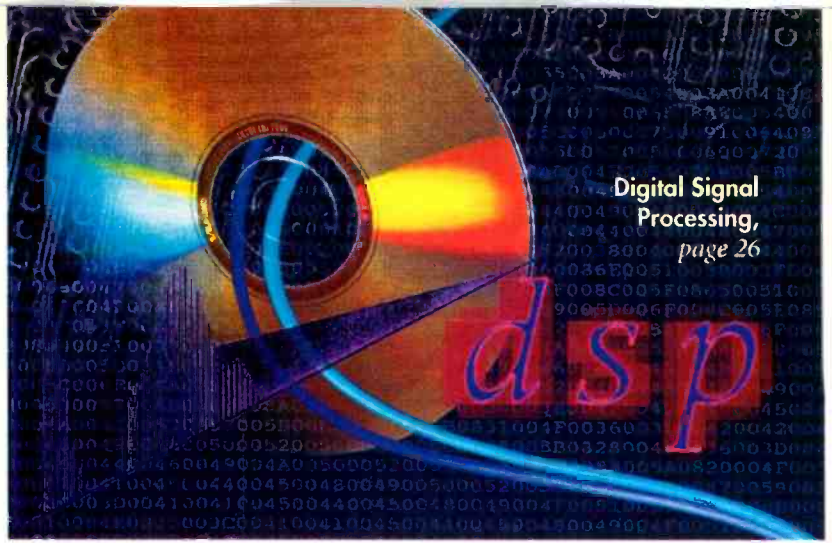
Most MIT dealers offer a no-risk home trial program. Call 916-883-0394 or Fax 916-888-0783 for the location of your nearest authorized MITerminator dealer.

Our components make your components sound their best.™

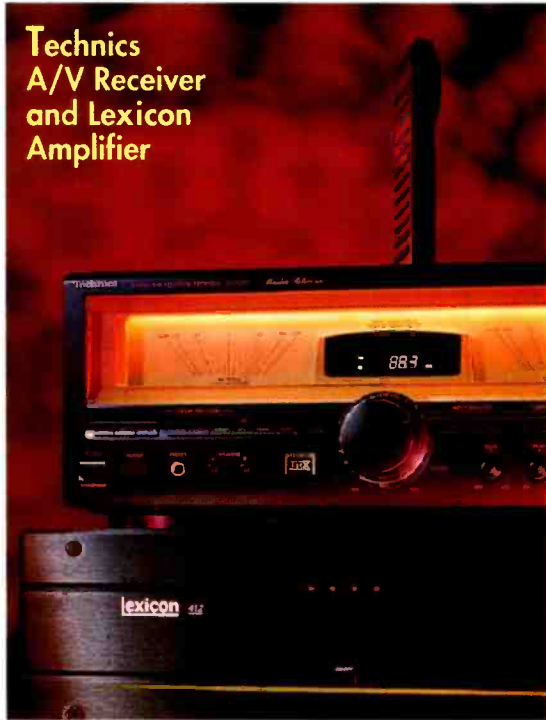
Music Interface Technologies™ MIT products are manufactured and sold by CVTL, Inc., Auburn, CA, USA Distributed in Canada by Aralex Acoustics (604) 528-8965 CIRCLE NO. 28 ON READER SERVICE CARD

AUDIO

THE EQUIPMENT AUTHORITY



Digital Signal Processing, page 26



Technics A/V Receiver and Lexicon Amplifier

FEATURES

DSP IN AUDIO: THE PROMISE, REALITY, AND FUTURE OF DIGITAL SIGNAL PROCESSING Ken Kantor 26

THE AUDIO INTERVIEW:

KAVI ALEXANDER Bruce Bartlett with Jenny Bartlett. 34

1996 ANNUAL INDEX 124

EQUIPMENT PROFILES

TECHNICS SA-TX50 HOME THX RECEIVER Edward J. Foster 40

MESA ENGINEERING BARON AMPLIFIER Bascom H. King 50

ACOUSTIC RESEARCH 312 HO SPEAKER D. B. Keele, Jr. 60

LEXICON 412 FOUR-CHANNEL AMPLIFIER Daniel Kumin 70

AURICLES

ATLANTIC TECHNOLOGY SYSTEM 250.1 HOME THEATER SPEAKERS Corey Greenberg 78

HALES DESIGN GROUP CONCEPT FIVE SPEAKER Anthony H. Cordesman 86

DEPARTMENTS

FAST FORE-WORD Michael Riggs 6

LETTERS 8

WHAT'S NEW 10

AUDIOCLINIC Joseph Giovanelli 16

SPECTRUM Ivan Berger 18

MONDO AUDIO Ken Kessler 22

RECORDINGS

CLASSICAL 92

ROCK/POP 102

JAZZ & BLUES 108

Cover Photographer: Bill Kouirinis Studio
Cover Equipment: Technics SA-TX50 Home THX A/V receiver and Lexicon 412 four-channel power amp

Audio Publishing, Editorial, and Advertising Offices,
1633 Broadway, New York, N.Y. 10019
Editorial E-Mail: audiomag@aol.com

Subscription Inquiries:
Phone, 303/604-1464; fax, 303/604-7455



PLAYBACK

AUDIO ALCHEMY HPA v1.0 HEADPHONE AMPLIFIER, SHURE V15VxMR PHONO CARTRIDGE, AND CASE LOGIC CDV-12 CD VISOR 128



Mesa Amp, page 50

Hales Design Group Speaker, page 86





Go slow.
It's easy to blow
right past this.

Take it easy.



SOUTHERN COMFORT

As you will see in "Letters" this issue, we've received a few responses to Corey Greenberg's, ahem, colorful "Shut the Hell Up, Geeks!" column ("Front Row," September). Ordinarily, there wouldn't be much more to say about the matter, but the recent weirdness between elements of the computer industry and the Federal Communications Commission with respect to HDTV brings me scurrying to Corey's defense.

The specific impetus is John Dvorak's column in the October 22nd issue of *PC Magazine*, in which he trashes the proposed advanced television standard (that is, HDTV) now before the FCC. You probably didn't realize that the Grand Alliance HDTV system is a technological camel cobbled together in Japan and now foisted on an unsuspecting American public. Why didn't you know that? Because it's complete bunk!


Almost everything Dvorak says about the standard is either flat-out wrong or painfully misleading, starting with the made-in-Japan notion. The big players are Thomson (RCA, ProScan, GE), Zenith, and Philips (Magnavox)—which are the top three TV manufacturers in U.S. market share—and NBC, General Instruments, AT&T, and MIT. Japan effectively dropped out of the race several years ago, when the FCC mandated a digital system. Even the companies in the alliance with overseas parents—Thomson (France), Philips (Holland), and Zenith (recently acquired by LG Electronics of Korea)—have deep American roots and do their development work for this market here. The primary R&D centers for the Grand Alliance advanced television system are the big Philips lab in upstate New York, the David Sarnoff Research Center in New Jersey, and Thomson's research laboratory at its headquarters in Indianapolis.

There isn't space here to get into all of Dvorak's technical misconceptions, but I want to mention briefly two prominent issues he brings up: interlaced versus noninterlaced scanning and aspect ratio. Like some computer companies, Dvorak seems incensed that the standard includes any provision for interlaced scanning and particularly that the highest resolution available is interlace only. But of course, for any given transmission bandwidth, interlacing will always enable higher resolution than progressive scan. That's the whole point of interlacing and the reason it was originally developed for the TV systems in use today—economical use of limited broadcast spectrum. Moreover, it is

desirable to have some interlaced formats in the system for compatibility with existing video archives and to facilitate development of practical HDTV cameras with adequate sensitivity. Dvorak has such intense computer-display tunnel vision that he seems to forget that the primary application of the new television system will be broadcast of live-action entertainment programs picked up by cameras, not display of computer-generated text and graphics. And for such applications, the standard does incorporate progressive-scan formats; most of the supported formats are noninterlaced, in fact.

Dvorak also attacks the standard for going with 4:3 and 16:9 aspect ratios, on the grounds that they don't match anything that Hollywood is doing. But 4:3 is the current television aspect ratio and was the ratio used for movies until the advent of widescreen cinematography in the 1950s. The 16:9 size is a very convenient way of moving from 4:3 to a wider aspect ratio, because it is an even-multiple expansion. Also, 16:9 works out to about 1.78:1, which is actually very close to the 1.85:1 aspect ratio most commonly used for modern films. He notes that the American Society of Cinematographers objects to 16:9, but what it has proposed, very late in the game, is 2:1, which at present nobody uses for anything! (The other main film aspect ratio is 2.35:1.) And I would urge you to imagine what a screen twice as wide as it is high would look like in your home, assuming you could get it through the door.

PC is generally a well-edited magazine, and I usually enjoy Dvorak. The problem is that their expertise is in computers, not audio or video. So they wind up getting suckered by a handful of computer hacks with axes to grind. The advanced television system proposed by the Grand Alliance is a very good one, well thought out and flexible enough to accept extension and modification as technology moves forward. If the FCC succumbs to the clamor of the special interests fighting the proposal, the best we can expect is a long delay. More likely, the effort will founder altogether, surrendering the market to the inferior European and Japanese systems already available. That would be a great disservice not only to the American public, but to the world and, even, the computer industry.



AUDIO

EDITOR-IN-CHIEF
Michael Riggs

ART DIRECTOR
Cathy Cacchione
ASSOCIATE ART DIRECTOR
Linda Zerella

TECHNICAL EDITOR
Ivan Berger
SENIOR EDITOR
Alan Lofft
MANAGING EDITOR
Kay Blumenthal

ASSOCIATE MANAGING EDITORS
Douglas Hyde, Scott Van Camp

ASSISTANT EDITOR/MUSIC
Michael Bieber
ASSISTANT EDITOR/DIRECTORY
Gerald F. McCarthy

EDITOR-AT-LARGE
Corey Greenberg

SENIOR CONTRIBUTING EDITORS
Edward J. Foster, D. B. Keele, Jr., Edward M. Long

CONTRIBUTING EDITORS/ARTISTS
Edward Tatnall Canby, David L. Clark, Anthony H. Cordesman, Ted Costa, John Diliberto, Frank Driggs, John Eargle, D. W. Fostle, John Gatski, Joseph Giovanelli, Dawn Joniec, Ken Kessler, Bascom H. King, Daniel Kumin, Robert Long, Paul Moor, Jon W. Poses, Jon R. Sank, John Sunier, Michael Tearson, Jon & Sally Tiven, Michael Wright

V.P./GROUP PUBLISHER
Tony Catalano 212/767-6061

V.P./ASSOCIATE PUBLISHER
Scott Constantine 212/767-6346

GENERAL MANAGER Greg Roperti
BUSINESS MANAGER Jonathan J. Bigham
PRODUCTION DIRECTOR Patti Burns
PRODUCTION MANAGER Dana L. Rubin
PROMOTION COORDINATOR Adele Ferraioli-Kalter
RESEARCH MANAGER Dru Ann Love
OFFICE MANAGER Aline J. Pulley
OPERATIONS MANAGER Sylvia Correa
AD COORDINATOR Linda Neuweiler

ADVERTISING
REGIONAL V.P./AD DIRECTOR, EAST COAST
Charles L. P. Watson 212/767-6038
REGIONAL ACCOUNT MANAGER
Christine B. Forhez 212/767-6025
ACCOUNT EXECUTIVE Penny Price 212/767-6077
MIDWEST ADVERTISING MANAGER
Jerry Stoeckigt 312/923-4804
REGIONAL V.P./AD DIRECTOR, WEST COAST
Bob Meth 213/954-4831
WESTERN MANAGER Paula Mayeri 213/954-4830
NATIONAL RECORD LABEL SALES
MAG Inc. Mitch Herskowitz 212/490-1715
Cara B. Bernstein 212/490-2079
CLASSIFIED ADVERTISING 800/445-6066



CHAIRMAN Daniel Filipacchi
PRESIDENT AND CEO David J. Pecker
EXEC. V.P. AND EDITORIAL DIRECTOR
Jean-Louis Ginibre
SENIOR VICE PRESIDENT, COO John Fennell
PRES., NEW MEDIA Jim Docherty
SR. V.P./DIR., CORP. SALES Nicholas J. Matarazzo
SR. V.P./GLOBAL ADV. Paul DuCharme
SR. V.P./CFO & TREASURER John T. O'Connor
SR. V.P./MFG. & DISTRIBUTION
Anthony R. Romano
V.P., GENERAL COUNSEL Catherine Flickinger
V.P., CIRCULATION David W. Leckey
V.P., RESEARCH & MKTG. SERVICES Susan Smollens
V.P., COMMUNICATIONS & SPECIAL PROJECTS
Keith Estabrook
V.P., MAGAZINE DEVELOPMENT Marcia Rubin
V.P., DIR., CREATIVE SERVICES, CORP. SALES
Lynn Chaiken
V.P., FINANCIAL OPERATIONS Margaret Carroll
CREATIVE PRODUCTION DIR., GLOBAL MKTG.
Jean Pierre Labatut
SR. V.P./CORP. SALES, DETROIT H. E. (Bud) Allen

Every little bit counts.



In our never ending quest for reproducing the fine quality of a live performance, we took our award winning and critically acclaimed GCD-600 and made it a bit, actually four bits, better.

We added the latest Burr Brown 20-bit ladder-type D/A converter – the same one used in our GDA-700 separate Digital-to-Analog converter. The result is a level of sonic performance usually reserved for stand alone D/A converters and C/D transports.

But that's not all we did. To achieve the lowest levels of noise and distortion, our GCD-700's analog section features the same Class A amplifiers we use in our top-of-the-line GFP-565 preamplifier.

The GCD-700 also boasts a superior power supply

Introducing Adcom's GCD-700 CD player.

with two transformers. One for the analog section and one for the digital section, each housed on separate circuit board assemblies to eliminate EMI and RF interference.

By now you're probably asking yourself, "How good does it really sound?"

Let your ears be the judge. Visit your Adcom dealer for a demonstration of this remarkable new player. You'll discover that the new GCD-700 sounds exceptional and is sensibly priced. What else would you expect from a component that is every bit pure Adcom?



ADCOM®

details you can hear

11 Elkins Road, East Brunswick, NJ 08816 U.S.A. (908) 390-1130 • Distributed in Canada by Pro Acoustics, Inc. Montréal, Quebec (514) 344-1226 © 1995 ADCOM

CIRCLE NO. 2 ON READER SERVICE CARD

Proud To Be a Geek

Dear Editor:

I am writing in response to Corey Greenberg's "Front Row" in your September issue, "Shut the Hell Up, Geeks!" I am a computer engineer and work as a programmer. I love computers *and* high-end audio. I subscribe to three computer magazines and three stereo magazines. I agree that a PC has no business being hooked up to a home theater system, but that's where the agreement ends.

First of all, Greenberg lashes out against the PC market as having "CD-ROMs that won't run, operating systems that won't load properly and then take down important files when they crash, and peripherals that just flat don't work, right out of the box." You mean to tell me that every piece of audio equipment Greenberg has ever encountered worked every time, right out of the box? Well, I recently auditioned two CD changers, the Adcom GCD-700 and the California Audio Labs CL-10. The Adcom worked fine, but the CAL didn't work, right out of the box. Not to mention that CAL originally offered the CL-10 at a list price of \$1,495 and a few months later raised the price to \$1,795. When I called to ask why the price was raised, CAL said, "We couldn't keep them on the shelves. It was in response to demand." To me, that is like saying, "Gosh, this is such a great product, why don't we raise the price while adding no functionality whatsoever. Those hi-fi geeks won't know the difference anyway—hell, they pay this much for interconnects!"

Second, Greenberg states that the computer industry is decades behind the consumer electronics industry. At least the computer industry challenges itself to make technological advances. The last technological leap the hi-fi industry made was the CD; when was that, around 1985? If the computer industry had 10+ years between technological advances it too might find the time to live up to Greenberg's "much higher level of relative quality across the board." Today's home PC would be the Commodore 64, but damnit, it would have high

quality. Instead, as a service to both science and the average consumer, the computer industry acknowledges that technology must advance. Amazingly, the hi-fi industry will not advance technologically. The best music playback sources the hi-fi industry has to offer are CDs and vinyl records. And instead of attempting to overcome the shortcomings of both, you argue about which is better. This would be analogous to dividing the computer industry into two factions: those that prefer "high-quality" Commodore 64s and those that prefer "high-quality" Radio Shack TRS-80s. It is absolutely ludicrous to imagine. While my hi-fi system begs for a decent playback mechanism, you guys have just sat on your asses for years, bickering about jitter and noise floors. Both sides should admit that vinyl and CDs suck and get to building something that doesn't.

Next time, Greenberg should try writing an article with some content, rather than writing a combination of totally unfounded statements and stereotypical slander. I'm disappointed that *Audio* published such a piece of prejudicial waste. Get off your damn high horse, buddy, cause I'm your worst nightmare: a total and complete overlap of computer geek and hi-fi geek—and I'm not alone.

Kevin Tatterson
Novi, Mich.

Words of Wisdom?

Dear Editor:

I think Corey Greenberg should take his own advice from the heading of his September "Front Row."

Donald Bisbee
Columbus, Ohio

A Bridge Too Far?

Dear Editor:

I thought that bridging an amplifier into an 8-ohm load doubled its power. So I'd like an explanation as to why 133 of the amps in your 1996 Annual Equipment Directory (October issue) have bridged mode power output specs that far exceed any pos-

sible output wattage. An example is the Accuphase P700, at 350 watts per channel in stereo but a bridged power listing of 1,000 watts! Did you publish what they told you without checking the figures?

Edward George French
Dallas, Tex.

Editor's Reply: To take your second question first, no, we don't check the Directory listings we receive from manufacturers except to screen for obvious discrepancies (of which there are quite a few). Our last Directory covered more than 6,800 products, listing more than 10 specifications for each model. If we stopped to test every component, the products would all be long-gone antiques by the time we got the issue out.

But the power specs you cite are neither discrepancies nor impossibilities. When an 8-ohm load is bridged across two channels, each channel sees, effectively, a 4-ohm load. So the bridged power into 8 ohms is most likely to be twice the 4-ohm stereo power—which, for the Accuphase P700, is 500 watts. Also, because the bridged channels are handling the same signal but in opposite polarity, there's often less stress on the power supply; this can increase the bridged power figure slightly, too.—I.B.

Interminably Bad Ads

Dear Editor:

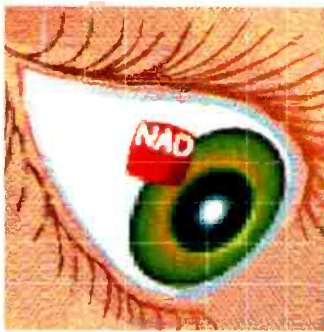
Advertising has never been known for its honesty, ads for audio products included. But ads for passive components, such as cables and crossovers, have reached a new low of insulting ludicrousness!

I'm referring to *Audio*'s September issue on page 59. This ad shows an "efficiency" graph, with zip cord (blue curve) exhibiting an efficiency of about 2% at 60 Hz—really, now! Since zip cord is used mainly to conduct 60-Hz AC power, this so-called graph means all of my house wiring wastes 98% of my electricity! So, it logically follows that by rewiring my house with MIT speaker cable ("60% efficient at 60 Hz"), I can reduce my electric bill by a factor of 30 to 1!

For the nonmathematical, the above argument is called *reductio ad absurdum*, with emphasis on the absurd.

In the interest of truth, how about scientific double-blind tests of cables, etc.?

Dennis P. Colin
Gilmanton, N.H.



218 THX stereo power amplifier

worth looking into

The NAD 218 THX stereo power amplifier is one of the most sophisticated hi fi components we have ever produced. Yet for all its brilliant features and astonishing levels of performance, it remains true to the NAD "no nonsense" design philosophy.



The very first feature you'll notice is the weight of the 218 THX, due partly to the heavy construction of the chassis and front panel, designed for rack mounting, (its advanced specification makes the 218 THX ideal for professional studio use). But the increase in weight is largely due to the massive Holmgren toroidal mains transformer.



WHY SO LARGE AND WHY HOLMGREN?

Apart from being the ideal design for the huge amounts of power it is likely to handle, the Holmgren offers other advantages:

A conventional transformer can be affected by AC mains to produce hum or even buzzing, whereas a Holmgren transformer isn't. Plus, a Holmgren transformer because of its unique design, will not affect other adjacent components.

A feature which doesn't add much to the weight of the 218 THX but certainly adds to the weight of its performance is the bank of eight capacitors, rather than a single pair. This is a comparatively low cost benefit which makes a better power



supply because several smaller capacitors have a faster recovery time and have less equivalent series inductance and resistance than a single pair.

The 218 THX incorporates fully balanced XLF inputs, allowing the use of long runs of cable between pre and power stages, without the risk of

interference. This thoughtful yet simple feature offers the opportunity to set your system up more flexibly and of course it's a benefit if you are bridging two 218 THX's for mono and locating them nearer your speakers.

The circuitry includes left and right channel PCB's, offering lots of benefits. They include less complicated PCB's meaning extra

reliability, more separation of circuits, so like the Holmgren transformer, less interference going out or coming in. All this, plus lower build cost too,

means more savings again towards the specification of better components

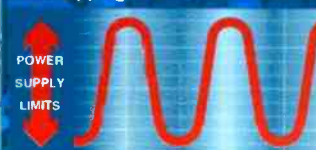
Any amp which is overdriven, (unlikely on the 218 THX because it is so powerful) can produce distortion or 'clipping'. The NAD Soft Clipping circuit gently transforms the waveform, rounding

off the peaks, preventing "dynamic overload" and heading off damage to your ears and your speakers, without losing the sense of musical drama.

Hard Clipping



Soft Clipping



There are other more hidden features too which provide specific benefits. Typically, the 218 THX incorporates extensive non-intrusive protection circuitry. This prevents damage from accidental overload or misuse which can lead to overheating or circuit failure.

Finally to those for whom the letters THX are somewhat of a mystery, let us briefly explain.

George Lucas, creator of the 'Star Wars' epics, went to extraordinary lengths to ensure that the sound quality of his films exceeded anything Hollywood had

previously produced and he laid down exacting specifications covering distortion, noise, power etc. to encourage manufacturers to develop products which will reproduce his sound tracks to the standard they deserve.

NAD was first with a power amplifier which met these challenging standards and won the right to carry the THX badge. The 218 THX continues this principle of quality first.



So what do you get for your not substantial investment at the end of the day?

A thoughtfully designed, utterly reliable, acoustically stunning 2 X 325 watts, bridgeable to a more than you'll ever need 780 watts mono, with enough headroom to frighten your window frames, which could even change the way you perceive music.

But with all this capability none of it is a fashion statement. The 218 THX is designed, not designer. Every feature of the 218 THX enhances performance and reliability.

That's why our slogan "pure and simple" is as relevant today for equipment as advanced as the 218 THX as it was when NAD was created more than 20 years ago.



WHAT'S NEW



Bryston Integrated Amp

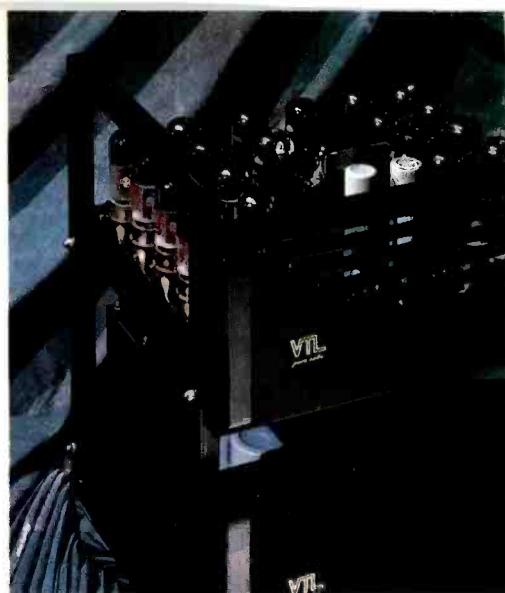
The B-60's amp and preamp sections can be used separately, thanks to pre-out and main-in jacks. The preamp section has four high-level inputs, one tape loop, and a headphone jack; a motor-driven volume pot and remote volume/muting control are optional. The amp is rated at 60 watts per channel into 8 ohms (100 watts per channel into 4 ohms) with less than 0.02% THD from 20 Hz to 20 kHz; power bandwidth is 0.5 Hz to 100 kHz, and the damping factor into 8-ohm loads is more than 500 at 20 Hz. All signal circuitry is

discrete, and incoming signals are buffered. Each channel has its own power supply with toroidal transformer. Price: with motorized volume control and remote, \$1,795; without, \$1,495. For literature, circle No. 100

VTL MONO AMP

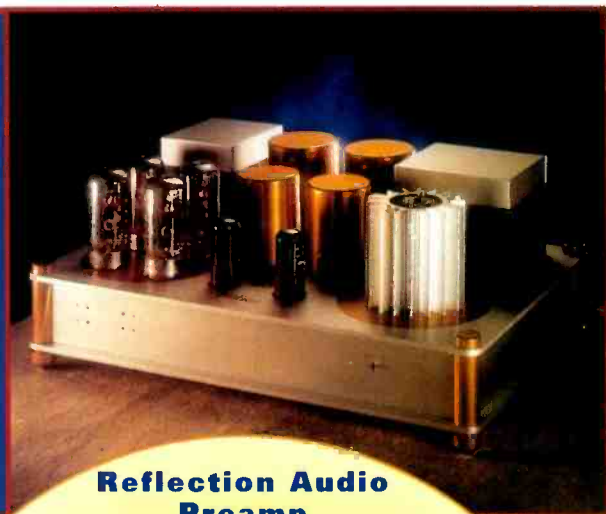
In tetrode mode, the Wotan MB-1250 Signature is rated to deliver 1,250 watts; in triode mode, its rated power is 600 watts. Either way, that takes two dozen 6550 tubes. The power supply is on a separate chassis, designed for stacking with the amp; the two chassis, with stacking frame, weigh 150 pounds. The output transformer is VTL's new Signature design,

with multiple tight layers and coupling for extended frequency response. Rated small-signal frequency response is 7 Hz to 100 kHz, ± 0.5 dB; full-power response is rated at 20 Hz to 25 kHz, with less than 1.5% THD. Price: \$25,000 per pair. For literature, circle No. 103



• Matisse Mono Amp •

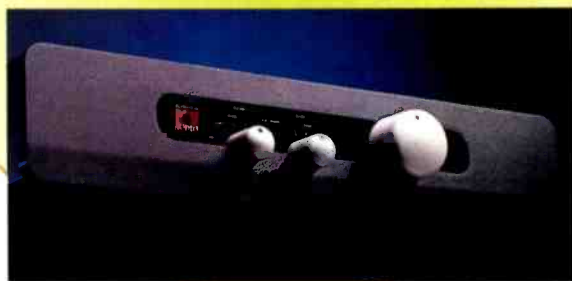
Using four 6550 output tubes, the Matisse Monoblock is rated to deliver 120 watts into 4 or 8 ohms in Ultra-Linear mode, half that power in triode mode. Rated bandwidth is 4 Hz to 40 kHz, and rated noise is -86 dBA. Balanced and unbalanced inputs are switch-selectable, and the amp has adjustments for tube bias (with a bicolor LED indicator) and feedback (0 to 15 dB) for optimum speaker damping. Available finishes are silver with rose gold legends or black chrome with natural gold details. Price: \$12,500 per pair. For literature, circle No. 101



tube performance, even after changing tubes. Both unbalanced and pseudo-balanced noninverting inputs are provided. Rated power output is 80 watts into 8, 4, or 2 ohms at 2% THD;

Reflection Audio Preamp

Class-A biasing, a minimal signal path, direct-coupled circuitry, and four power supplies underlie the OM-1's performance. The manufacturer's specifications include a 2,500-volt/microsecond slew rate, phase accuracy of $\pm 0.5^\circ$, frequency response of ± 0.02 dB from 10 Hz to 500 kHz, and a 114-dB S/N ratio. The external power supply provided can also be used as a charger for the optional battery supply. Prices: with MM/MC phono stage, \$4,495; without phono, \$3,995; battery power supply, \$1,495. For literature, circle No. 104



LAMM INDUSTRIES MONO AMP

Because its output stage uses two high-current, low-impedance 6C33C triode tubes, the mono ML1 can also use an output transformer with a very low turns ratio that reduces leakage inductance. Meters on the chassis make it easier to set and balance

response is down 3 dB at 4 Hz and 82 kHz. The power supply can be set to operate on 100, 120, 220, or 240 volts, and the toroidal power transformer is suspended to absorb vibration. Price: \$18,690 per pair. For literature, circle No. 102

NEW BACARDI SPICE



AS GOOD AS IT GETS.

RON BACARDI® Spice. Made in Puerto Rico. Bacardi and the bat device are registered trademarks of Bacardi & Company Limited.
©1996 Bacardi Martini U.S.A., Inc., Miami, FL. Rum Specialty 35% Alc. by volume.

WHAT'S NEW

Nova USA Speaker

The Applause is a two-way speaker with a ported enclosure for the two 7-inch, composite-cone woofers; dual rear chambers lower the resonant frequency of the 1-inch, soft-dome tweeter. The drivers are in a D'Appolito array, to control imaging and room effects, and are fed from a fourth-order Linkwitz-Riley crossover. Rated frequency response is 30 Hz to 25 kHz, ± 3 dB, and rated sensitivity is 89 dB; nominal impedance is 4 ohms, and minimum impedance is 3.2 ohms. A black oak veneer is standard, with exotic finishes optional. Each speaker weighs 80 pounds and measures 48 x 9 x 14 $\frac{1}{2}$ inches. Price: \$5,990 per pair. For literature, circle No. 105



Platinum Audio Speaker

The Studio-2 is a vented 2 $\frac{1}{2}$ -way speaker using a 1-inch, alloy-dome tweeter and two 5-inch woofers with polypropylene cones. Rated frequency range is 35 Hz to 20 kHz, rated sensitivity is 89 dB, and power handling is up to 250 watts. The cabinets are finished in textured black and measure 39 $\frac{1}{2}$ x 9 $\frac{1}{2}$ x 13 inches. Price: \$1,695 per pair. For literature, circle No. 106

Total Media Systems Speaker

Phase integrity was a major goal in the design of the Adiatat 8.5, which uses a "phase-locked" crossover and a carefully sloped front baffle to keep the drivers in correct phase alignment. Its enclosure is said to operate without loss or gain of heat (i.e., adiabatically), eliminating the efficiency penalty of conventional cabinet damping. Rated sensitivity is 91 dB SPL at 1 meter. Price: \$3,950 per pair. For literature, circle No. 107



Probe Audio Labs Speaker

The two-way Monad mini-monitor has three drivers: a 6 $\frac{1}{2}$ -inch shielded woofer and a 1-inch silk-dome tweeter in front, plus a $\frac{3}{4}$ -inch dome tweeter in back, to enhance the soundstage. Rated anechoic frequency response is 65 Hz to 20 kHz, ± 3 dB; typical room response is 50 Hz to 20 kHz. The 8-ohm speaker's rated sensitivity is 88 dB. Price: \$1,945 per pair. For literature, circle No. 108



Yamaha Powered Subwoofer

The two 8-inch drivers in Yamaha's YST-SW150 subwoofer are servo-controlled by circuits in the system's built-in amplifier. The drivers, which have spruce-fiber cones, operate in a vented enclosure. The 120-watt amp turns on automatically when a signal is present and turns off after five minutes of inactivity. Response is claimed down to 20 Hz; the upper limit is 40 to 160 Hz, depending on the setting of a built-in high-cut filter. Price: \$399 each. For literature, circle No. 109

From The Wall To Your Ears, We Connect It All.



"...the TDC-3 was an excellent digital link... The TDC-3 is a great buy."

"If you are looking for interconnects in this price range and appearance is important, these cables (TDC-3) require an audition..."

"Great subtle shading and very good dynamic range with... excellent imaging and timing..."
Dayna E.
The Hi-Fi Hussy
The Audio Adventure
February 1996



Wadia



"...the Nucleus has... some of the most solid, well-spaced terminals (BP-4's) I've seen on any speaker..."
Fred Kaplan
FI
April 1996



You
Paid
Good
Money
For
Your
System.
Why
Screw
It Up
With
Lousy
Cables?

Get
The
Best.

ESOTERIC AUDIO USA.
Group Of Companies

44 Pearl Pentecost Road
Winder, Georgia 30680
(770) 867-6300
(770) 867-2713 fax



"...the Hyper-Balanced... Swept highs articulate in strength, and tight, well defined bass response were right on the money."

Recommended Components
Wes Phillips
Stereophile, Vol. 19, No. 4, April 1996



"These guys know cable..."

"The quality of the connectors and wire (ARTUS and Primus Hyper-Balanced) is first rate as Esoteric makes their own..."
Components of Merit
Martin G. DeWulf
Sound For Sound
No. 2/56



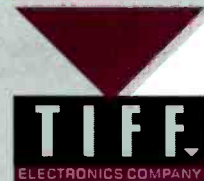
"Of all the interconnects I know well, my top choice is Esoteric's Tech 200 series..."
Lawrence B. Johnson
Stereophile Guide to Home Theater
Vol. 9, No. 1, 1995



"I'm enthusiastic about the strength heard through this cable (UltraPath) and can recommend it here with..."
Components of Merit
Martin G. DeWulf
Sound For Sound
No. 2/56

Audio

CIRCLE NO. 19 ON READER SERVICE CARD



Esoteric Audio USA and T.I.F.F. are registered trademarks of Esoteric Audio USA, inc.

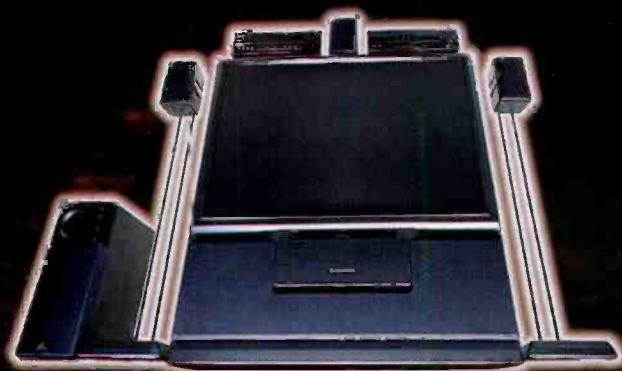


PIONEER
The Art of Entertainment

POLICE INCIDENT REPORT: Officers responded to call from concerned citizen regarding shocking sounds and deep bass vibrations emanating from house next door. Further investigation revealed source of sound to be occupant's state-of-the-art Pioneer Advanced HomeTheater System. After questioning, officers learned that Dolby Digital (AC-3™) technology provides stunning sound reproduction with 6 independent digital channels. Supercharged audio and video performance

©1996 Pioneer Electronics (USA) Inc., Long Beach, CA. Dolby, AC-3 and Dolby Digital are trademarks of Dolby Laboratories Licensing Corporation.

DEAR POLICE,
DO NOT BE ALARMED.
THE SOUNDS YOU ARE
HEARING ARE FROM
MY PIONEER ADVANCED
HOME THEATER SYSTEM.
P.S. PLEASE SHUT
OFF THE LIGHT.



was traced to Pioneer LaserDisc player. Cinema Wide System projection monitor identified as source of razor-sharp visuals. Officers concluded Pioneer Advanced HomeTheater System equal to or better than movie theater experience. Officers decided to confiscate the system as evidence and place it in precinct break room until further notice. END OF REPORT. Call 1-800-PIONEER for a dealer near you. Pioneer Advanced HomeTheater. You're surrounded.

Mystery Skip in CD Changer

Q *Sometimes, my CD changer works beautifully—but sometimes it does not play at all, or plays only discs 5 and 6, or plays every disc but with lots of static and skipping. This has happened since day one and still happens with a replacement (of the same model) I was given. I have had both units in for service numerous times and been told that nothing was wrong. My only clue is that the changer seems to work fine if I unplug it from my receiver (which is of the same brand), but if I plug the changer back in, the discs start to skip and act up again. I've read that radio signals can sometimes interfere with the operation of a sound system, and I am close to a strong station. Is this my problem? And is my problem in the CD changer, my receiver, or both?—Tony Giammatteo, Poughkeepsie, N.Y.*

A The fact that the player works fine when not plugged into the receiver tells me that there is some interaction between the two components. Such interaction usually involves ground loops and hum. If hum gets into the changer's microprocessor, it could confuse its operation and cause erratic performance.

The first thing I'd suggest you try is removing any extra ground connections there may be between the chassis of the player and receiver. Next, if either of these units uses a three-prong (U-ground) line cord, lift its ground connection by plugging it into a three-hole, two-prong adaptor, which should *not* be grounded to your wall outlet. If both devices have three-wire power cords, try this first with just the player. If that fixes the problem, great! If it does not, then lift both grounds. If the player does not have that kind of wall plug but the receiver does, lift the receiver's ground.

If, on the other hand, there are no extra ground paths, either direct or via the power line's ground circuit, try the following: Connect the chassis of the player directly to the chassis of the receiver, using the shortest possible lead. Braid, such as the shielding from a scrap piece of coaxial cable, works best. See if the system works properly. Next,

wire the receiver to the best ground you can find. An earth ground is best, but if all you have is a water pipe or radiator, try it and see if this helps matters.

Interference from that local broadcast station could be the problem, too. The interference could enter the player via the cable between the player and the receiver, so try cable with better shielding and use the shortest practical cable run. The interference could also enter the player via its power cord. Try coiling up this cord and tuck the cable close to the chassis of the player. If need be, try power-line filters. Let me know what, if anything, works.

Postscript: Mr. Giammatteo wrote back to tell me that nothing helped. He gave the player to his parents, and it works fine in their home. He bought a different make and model player, and it works fine in his home. Hmmm!

Harshness in Classic System

Q *In 1962 I bought a sound system that, even today, sounds very good except for a slight harshness in the treble. (The only thing I've changed is the preamp, in order to accommodate CDs; I replaced it with a solid-state preamp.) It's been suggested that the harshness comes from my horn tweeters and that I might cure it by applying a damping material, such as modeling clay, to the interior of each horn, near its driver. Will this kill any resonances that are causing the harshness?—Name withheld*

A I wonder whether the harshness really is taking place within the tweeter. But you could try the clay; it's easy to remove if it harms the tweeter's response, output level, or coverage. You might also find the treble less objectionable if you reduced each tweeter's output by putting an L-pad in series with the tweeter.

Unfortunately, there was probably no need to replace your preamp. Just because it had no input labeled "CD" doesn't mean you couldn't have gotten very satisfactory performance by plugging a CD player into some other high-level input. Although CD players have fairly high output voltages,

many tube preamps had their volume controls right at the input, where they'd prevent overload of the early stages. (Those preamps whose volume controls were placed after the input circuits would sometimes overload on really high signal voltages, just as solid-state preamps do if they're built that way. But if you did have that problem, you could have gotten a CD player with an output level control.)

Even if your original preamp simply lacked enough inputs, you could have kept using it. All you'd have needed was a switcher that would let your CD player share an input with another high-level source.

Tonearm Grounding Problem

Q *When listening to records a few weeks ago, I noticed a hum that I hadn't heard before. After a few tests, I thought the cartridge was at fault, so I replaced it; this reduced the hum but did not eliminate it. Someone suggested that I ground the tonearm to my preamp. I ran a wire from the tonearm's vertical height-adjustment screw to the preamp's ground, and the hum disappeared. My tonearm has worked fine for years. What could have happened to it to cause this need for grounding?—Carl S. Lau, via e-mail*

A It is not unreasonable for your tonearm to have developed the hum problem, given its age. The tonearm is grounded to its base (which is grounded to the preamp through the turntable base and phono cable shield) via the electrical contact within the bearings. Over time, non-conductive oxides build up in the bearings, effectively lifting the ground between the tonearm proper and the preamp.

You could try squirting some WD40 into the bearings, but I'm not certain this will correct the problem. I once solved it by running a fine, flexible wire between the tonearm and its mounting base. I made certain there was sufficient slack to permit the arm to move freely over its arc of travel. I didn't

If you have a problem or question about audio, write to Mr. Joseph Giovanelli at AUDIO Magazine, 1633 Broadway, New York, N.Y. 10019, or via e-mail at JOEGIO@delphi.com. All letters are answered. In the event that your letter is chosen by Mr. Giovanelli to appear in Audioclinic, please indicate if your name or address should be withheld. Please enclose a stamped, self-addressed envelope.

have to run the ground directly to the pre-amp because the turntable base was already grounded there.

Power Amplifiers and Cable Runs

Q *My loudspeakers are connected to power amplifiers by 30-foot runs of 16-gauge cable. Should I be using heavier cable? If I locate the power amplifiers closer to the loudspeakers, what benefits will I get? And what problems will occur if I therefore lengthen the line-level interconnects feeding my pre-amp?*—Robert Mallory, Sedalia, Mo.

A If the impedance of the loudspeakers is 8 ohms or more, you probably can use your present cable without sonic degradation. Nevertheless, I'd suggest trying heavier cable, at least AWG #14; you might get a slight audible improvement in response. For 4-ohm speakers, I'd try 12-gauge wire.

Long cable runs tend to be less trouble-prone at speaker level than at line level. If you do move the amps closer to the speakers and farther from your preamp, beware of treble losses caused by interconnect-cable capacitance and of noise and hum pick-up. I've used line-level cables more than 40 feet long successfully but only because my preamp's output impedance is a very low 100 ohms. If your preamp's output impedance isn't reasonably low or you do lose highs or pick up noise, try using interconnect cables whose capacitance per foot is lower than that of your present cables.

Dead Backup Battery

Q *My surround processor uses a lithium backup battery to preserve its programmable memory settings when it is not in use. Recently, the processor's display started flashing a signal that this battery is dying. I rarely use the memory function and can reprogram in seconds if I need to change factory settings. Will it do any harm to ignore these warnings?*—David R. Brown, New Cumberland, Pa.

A I'd replace the battery as soon as possible. Sometimes these batteries actually preserve more than just the programmed memories, in which case your processor might stop working properly if the battery goes dead. Also, dead batteries can leak if they are left in place too long, and the chemicals that leak out of them might damage your processor. **A**

Dunhill

LONDON · PARIS · NEW YORK



SURGEON GENERAL'S WARNING: Smoking By Pregnant Women May Result in Fetal Injury, Premature Birth, and Low Birth Weight.

13 mg. "tar," 1.2 mg. nicotine av. per cigarette by FTC method.

CHANGING CHASSIS

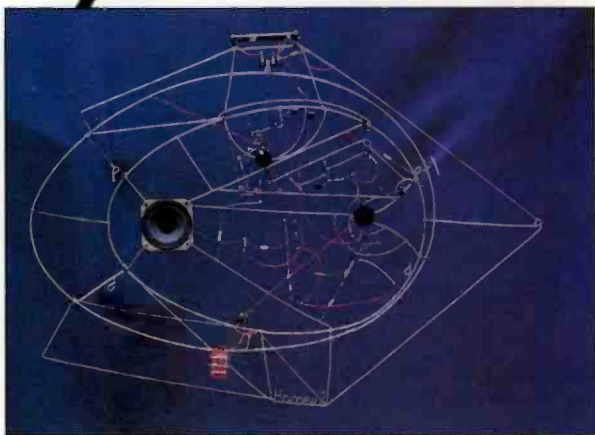
**Rotel's
RMB 100
power amp**

Photographs: Michael Groen



**Kepler's
3rd Law, an
AM radio by
Jason Homer**

Photograph: Jason Homer



One of our editors says circuitry is "in" a chassis. I say "on" a chassis. It's a generation gap, of sorts. "On" the chassis is a tube-era term. Early gear had tube sockets mounted on the chassis' top surface. But most other components were wired directly to solder lugs on the sockets' bottoms, so some components were in the chassis, even then. The first audio gear I ever bought (some of it already antiquated) was

built that way. But the first equipment I bought *new* had its components and tube sockets mounted to printed circuit boards. Those boards were originally set into the chassis surface but soon were mounted underneath, with the tubes poking through chassis holes.

As solid-state took hold, engineers started rethinking chassis design. Some have even eliminated the chassis. In Rotel's RMB 100 amp, for example, the circuitry is mostly sandwiched between two metal plates that sit an inch or two from the heat sink at one end and the rear panel at the other. Instead of a chassis, this amp has a frame—four corner rails—to hold the pieces in position.

In the Air Kluge radios built a few years back by Philadelphia artist Jason Homer, the chassis disappeared entirely. The components of his deconstructed radios seemed to float in space, joined only by their wiring. With no circuit boards, Homer's radios harked back, in a way, to the earliest electronic gear I played with—except that weight, heat, and higher voltages would seem to rule out building tube gear this way.

BULLETINS

- Tandberg and Thorens, two famed European audio companies, have returned to the U.S. market after an absence of several years. Tandberg, originally known mostly for its tape decks, is also sending electronics and CD players here; the importer is Jason Scott Distributing, at 800/359-9154. Thorens, which progressed from making music boxes in the 19th century to being a power in 20th-century turntables, is bringing in turntables and electronics; you can reach the company at 718/847-4289.

- The 100th laserdisc with Dolby Digital (AC-3) sound has been released: *Twister*, from Warner Home Video.

Discover the incredible sound of patent #4,076,098.



CC6

Announcing the new B&W 600 Series.

B&W was the first company to pioneer the use of Kevlar® cones in loudspeakers.

And we've applied our patented technology to some of the world's most respected monitors—the legendary B&W Matrix 801, the celebrated Silver Signature, and our highly acclaimed THX Home Cinema System.

Now B&W brings Kevlar cone technology to a family of affordable, high performance loudspeakers. Introducing the new B&W 600 Series.

Why does Kevlar make such a big difference in sound reproduction? Because of its unique properties, this space-age, woven material virtually eliminates the effects of

resonance and standing waves. Especially in critical mid-range frequencies. So all you hear is pure, uncolored music.

Add B&W's incomparable metal dome tweeters, minimum-diffraction cabinets, and gold-plated, biwired speaker terminals, and you have the incredible sound of patent #4,076,098.

We invite you to audition the new B&W 600 Series ranging from bookshelf to floor standing, center channel to surround sound, even an active subwoofer. For the name of a B&W dealer near you, call 1-800-370-3740. The difference is easy to see. And even easier to hear.



global jazz grooves (CD)
for info: 312.880.5379 fax
<staves@interaccess.com>



Listen and You'll See

B&W Loudspeakers of America,
54 Concord Street, North Reading, MA 01864
tel 1-800-370-3740 fax 508-664-4109

Kevlar is a registered trademark of Dupont
CIRCLE NO. 6 ON READER SERVICE CARD

Houston

Handmade Tube Amplifiers



GSI-01 40W Stereo Integrated Amplifier
12AU7x4 12AX7x1 EL34x4

\$760



GSP-02 60W Stereo Power Amplifier
12AU7x2 12AX7x2 KT100x4

\$860



GSM-260 Monobloc Power Amplifier
65W Ultralinear 35W Triode
12AU7x2 6550x2

\$1,860 pair

14-day no obligation home trial
Setup service available in the Bay Area

888-968-9683

CII Centasound International Inc.

PO Box 210337
San Francisco, CA 94121
Tel (415) 668-9003 • Fax (415) 668-9638
8:00 am-8:00 pm PST Mon-Sat

CIRCLE NO. 12 ON READER SERVICE CARD

FILE AND FORGET?

My record-filing system goes back to the days when all I had were LPs. Because the majority of my stuff is classical, I file by composer most of the time. If there's more than one composer on a disc, I file by instrument, country of origin, or genre (e.g., "Chamber"). Jazz and pop, I file by group or lead artist.

That still leaves room for ambiguity. Should a disc featuring Prokofiev and Shostakovich string quartets go under "Chamber" or "Russian"? (And if I vastly prefer one work to the other, I may file the album under that work's composer.) At worst, it narrows down my search for a given work to three or four places. If I'm searching for a particular artist, however, it's harder: I have several discs by Ivan Moravec, for example, under "Piano" but others under "Beethoven," "Chopin," and "French."

I'd love to have an inventory on my computer, so I could find short works instantly, avoid buying duplicates of stuff I've forgotten I have, and find what works I have by any given artist. The daunting task is entering all that stuff—a problem I ran into when I got my first computer, back when all I had were LPs and cassettes.

For LPs (of which I still have many), only manual entry will do. But I think some of my cassettes have bar codes, and I know some of my CDs do. What's more, a signature code is recorded as data on every CD, so there ought to be a way to automate that part of a filing system. I can envision a gadget with an optical bar-code reader plus a slot that accepts a CD, reads its code, and spits it out again. That's the easy part.

The hard part would be making sense of the numbers that the system retrieved. I'd also need software to compare these codes to a database and convert them to disc titles and listings of artists, works, and composers. It would have to be a hefty database, too: I have CDs that have been out of print for more than a decade.

Such a database would be huge and would probably have to be updated daily, as new CDs come out. So it would make more sense to have it accessible via the Internet than to have it all on my machine. I could just scan a batch of CDs, transmit their numbers, download the information, and

then stuff it into my own, smaller, database. Someone once announced the intent to start such a service, but I've heard nothing about it since.

It would be great if a tiny fraction of a DVD's huge capacity carried complete information on the disc's title and contents. (That would include cast and major credits on movie discs, while music discs would have composers, works, and artists.) Most DVD buyers will, I suspect, already have computers, so a connector and software to transfer that data should be easy to make—or not needed, if those computers had DVD-ROM players built in. I don't know if the folks developing DVD have thought of this—and it's probably too late, if they have not. But wouldn't it be nice? (See pop/rock/jazz shelf, under "Beach Boys".)

YES, WE HAVE NO BANANAS

The IEC65 directive on safety requirements for electronic gear sold in Europe and some Asian countries ("Mondo Audio," January) is already affecting American audio equipment, even though the directive is not binding here. I've just seen an example: the touch-proof binding posts now being used by Amplifier Technologies, Inc. (ATI) on its amplifiers. These terminals



look like the familiar five-way binding posts, but they're actually just three-way. No metal shaft is exposed when you unscrew the terminal lugs, so you cannot use spade lugs or wrap the wire around the post. Instead, unscrewing each lug opens a hole in a plastic shroud into which you insert the wire and then clamp it in place by screwing the lug down again. The hole will accept wire up to about AWG #10 or pin plugs up to 4 millimeters in diameter.

There are still holes in the top of each post for banana plugs, but the banana-jack contacts are recessed about 3/8 inch below the top of the plastic lug—and that's just

Photo: © 1996 Minoru Kawana/Photonica

the U.S. version. For export, manufacturers must plug these holes, eliminating banana plugs as an option. And for 1997, the tops will have to be molded shut.

S-CITING NEWS FROM DOLBY

How does the sound of a cassette tape with Dolby S noise reduction compare with that of a CD? Last summer, 1,100 people found out for themselves at a demonstration held by Dolby Labs.

In the first part of the demonstration, comparing the output of a home CD player and a home cassette deck, slightly more people (27.9%) preferred the S-encoded tape than preferred the sound of the CD (24%). By far the largest group, however, was the 48.1% who said they could hear little or no difference between the two.

When a car stereo cassette player was substituted for the home tape deck, the picture changed drastically. Only 32.3% of the listeners heard little or no difference, and the tide turned heavily—42% to 20.7%—in the CD's favor.

The cassettes used for these demonstrations were taken from the same masters as the CDs but were made on Type I tape (the least expensive formulation) and mass-duplicated at 80 times normal speed. The car stereo deck was modified by replacing its Dolby C noise-reduction circuitry with Dolby S noise reduction but was otherwise unchanged. Listeners were informed by lighted signs as to which source, tape or CD, they were hearing. "In a blind test," said Larry Poor, Dolby's director of technology marketing, "I suspect there would have been more 'little or no difference' answers."

A modified car stereo deck was used because there currently are no production models with Dolby S decoding; with the advent of a 7-volt Dolby S chip (due soon), such players should become available. More than 20% of the listeners surveyed said they would buy a car stereo with Dolby S when it became available; more than 80% said they'd be willing to pay a premium of \$25 or more for one, and nearly 43% said they'd be willing to pay an extra \$50 or more. More than a million home decks with Dolby S noise reduction have now been sold, as have more than 80 million prerecorded Dolby S cassettes, made from about 3,200 album titles.

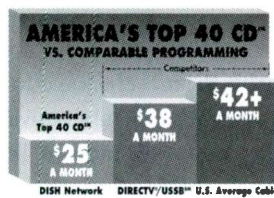
THE DISH NETWORK. WHERE MORE ALWAYS COSTS LESS.

\$25 PER MONTH



At the DISH Network we're selling our complete state-of-the-art 18" digital satellite system for only \$199 when you subscribe for a year to America's Top 40 CD™.

With one phone call you can get America's Top 40 channels, including The Disney Channel, plus 30 channels of digital music for \$300 a year! That's just \$25 a month! And we offer all the multichannel



premium services like HBO and Showtime at cable-busting rates, too.

Cable just can't compete. Average cable costs over \$42 a month. THE DISH NETWORK WILL SAVE YOU \$17 A MONTH OR OVER \$200 A YEAR. EVERY MONTH! EVERY YEAR!

So make the comparison and then make the call. To the company where more will always cost you less. The DISH Network.



Call Now. Limited Time Offer.

30-day money back guarantee. <http://www.dishnetwork.com>

TO ORDER YOUR COMPLETE SYSTEM AND A YEAR OF PROGRAMMING CALL: **1-800-333-DISH**



Nothing Else Compares™



\$199

WHEN YOU PURCHASE 1 YEAR OF AMERICA'S TOP 40 CD™ FOR \$300

All prices and packages are subject to change without notice. Local and state taxes may apply. Programming is available for single family dwellings located in the United States and its territories and possessions. All DISH Network programming, unless otherwise indicated, is subject to change without notice. All other services that we provide to you are subject to the terms and conditions of our standard customer agreement, which is available to you upon request. Broadcast networks are only available to customers in those limited areas not served by local network affiliates. Pay attention to actual conditions. One source per household. The DIRECTV/USSE programming package includes one regional sports channel and feature, but not the superstations FOX, ESPN, the Food Network or QVC. DIRECTV is a registered trademark of DIRECTV, Inc., a unit of Hughes Electronics Corp. 1300 is a registered trademark of 1300 Satellite Broadcasting Company, Inc. Most active programming by December 31, 1996. ©1996

“The sound quality, it's incredible, better than the sound produced by our living room stereo system.”

— Michael Esposito, Bose® Wave® radio owner



The customer letters keep coming. Their messages are similar: amazement over the Bose Wave radio. Our patented acoustic waveguide speaker technology enables the Wave radio to produce rich, full, room-filling stereo sound. It even comes with an array of convenient features, including a handy remote control. And it's available directly from Bose, the most respected name in sound, for just \$349.

Call toll free or return the coupon for a free information kit, or to find out how to hear the Wave radio in your home, satisfaction guaranteed.



Ask about our interest-free six-month payment plan.

MR./MRS./MS. _____ DAYTIME TELEPHONE _____ EVENING TELEPHONE _____
 NAME (PLEASE PRINT) _____
 ADDRESS _____
 CITY _____ STATE _____ ZIP _____

Call 1-800-845-BOSE, ext. R3223.

Installment payment plan option is not to be used in combination with any other offers. Price and/or payment plan are subject to change without notice.

Or mail to: Bose Corporation, Dept. CDD-R3223, The Mountain, Frammingham, MA 01701-9168, or fax to 1-508-485-4577. Ask about FedEx® delivery.

© 1996 Bose Corporation. Covered by patent rights issued and/or pending.

NEW OLDIES, HOT ON THE CHARTS

Probably the most heartwarming artifact of the tube revival is the booming interest in vintage hi-fi equipment. And not just elderly tube gear—any audio equipment older than Chelsea Clinton qualifies: horn loudspeakers, funky idler-drive turntables, and cartridges that once were deemed too massive for anything other than ploughing fields. Hey, I even know a guy who collects the kind of pre-Walkman-era heavy clamping headphones that could pin back the ears of an alert German shepherd. And to think so much of this stuff was dumped in garage sales...

Although manufacturers of new equipment would rather we bought new stuff instead of pestering them for spares for the old stuff, the more industrious brands over a certain age have embraced the hobby—dubbed “anachrophilia” by John Atkinson more than a decade ago, when he was editor of *Hi-Fi News* in England. What started out 30 years ago as a casual audio pursuit in Japan has gone global, and the major brands know it.

I’m sure I’ll be corrected by a reader more astute or perhaps older than I, but the first proper reissue (or replica, or near facsimile, or whatever you want to call “revived” hi-fi) to appear outside of Japan was a limited run of Radford STA-25 tube amps in England in 1984-85.



THE MARKET VALUE
FOR A MINT REISSUED
McINTOSH MC275 AMP
IS NEAR \$7,000.

Prior to that, you could buy replicas of Marantz Model 7s in kit form in Japan, but that was about it. With the tube revival becoming newsworthy by the early '80s, all it took was a lot of nagging to get the then-semi-re-

tired Arthur Radford to permit his former employee, John Widgery of Woodside Electronics, to oversee a run of 100 Radford STA-25s. These amps were designated Mk IVs and painted gloss black with gold trim, to distinguish them from the battleship gray originals; each came with a certificate signed by Radford himself. After his death a couple of years back, 100 lucky owners saw their treasures appreciate in collector circles.

Since then, there’s been a constant flow of such limited-edition reincarnations, and I’m all for it, especially when originals are disappearing at an alarming rate. As was pointed out to me by a McIntosh spokesperson, the \$4,000 paid for the reissued MC275 is less than mint samples command in certain markets, and the buyer knows that the MC275 commemorative edition is brand-new. Unforeseen but unsurprising is the inflation that attaches to a limited edition after its allotted production run has been met; I was told that the market value for a mint, boxed MC275 reissue is now upward of \$7,000.

Those with an investor streak might be kicking themselves for passing on the last decade’s replicas, but I’d hate to think that people bought them to hide away in some closet until they’d appreciated like Shaded Dogs instead of using them to make music. Apologies to those I may be omitting, but the run of now-collectible reissues includes mid-1980s Ortofon SPU-Gold moving-coil cartridges, the (still available, but only just) Sennheiser 50th anniversary reissue of the HD414 headphone, the revived Dynaco products that qualify as near-replicas of the David Hafler-era gems, Quad’s recently announced run of 600 pairs of Diamond Jubilee Quad II tube amps, and Marantz’s revived Models 7, 8,

Rotel Report

4



The RTC-970 is a videophile's delight with an audiophile's soul. It combines a Dolby Pro-Logic surround sound decoder with a high-quality AM/FM tuner for performance and convenience.

HOME THEATER

Home Theater: New Horizons, Old Concerns

Transitions are often difficult. Making any move — say, for instance, to a home theater system — is something of a balancing act. After all, what's the point of three or four more channels if they don't sound as good as the two you already enjoy? That's why music lovers think of Rotel's award-winning sonic heritage when facing the here-and-now reality of home theater.

Consider Rotel's new RTC-970 Surround Sound Tuner/Preamplifier, an impressive centerpiece for a home entertainment system. The RTC-970 decodes Dolby® Pro Logic® sources with precise all-analog circuitry to avoid the harshness common to most digital designs. A special Cinema Mode compensates for excessive high frequency energy in many movie soundtracks. And the RTC-970's Music Modes add progressive spaciousness to music while providing accurate and convincing reproduction.

An informative on-screen display makes initial set-up and calibration easy and also helps you get the most out of your system every day. You can choose any of up to four audio-only and four audio/video sources for your main system while selecting a different one for enjoyment elsewhere in your home!

Regardless of the source you choose, your ears will applaud Rotel's remarkable audio circuitry. Careful power supply design, meticulous parts selection, and painstaking board layout lie at the heart of the RTC-970's outstanding performance.

The RTC-970 also puts discrete multi-channel digital audio squarely in your future. There's a connector specifically designed for outboard Dolby Digital/AC-3 processors like our soon-to-appear RDA-980. That makes your upgrade path simple and totally free of pre-planned obsolescence.

RSP-985 THX Surround-Sound Processor

Do you already own a high quality music system? Do you loathe the thought of relegating it to a dark closet? Then consider the new Rotel RSP-980 Surround-Sound Processor for adding all the performance and flexibility you'll ever need to your existing music system.

Full THX® circuitry augmented by precision A/D and D/A conversion means you'll hear a movie's soundtrack exactly as the director intended you to. Wide-bandwidth video switching for both composite and S-video sources and special "Zone 2" outputs increase your current system's flexibility. Audio circuitry featuring high

precision metal film resistors, low ESR capacitors, and high current operational amplifiers means you won't lose anything either. Of course, a DB25 connector

means you'll be able to add Dolby Digital/AC-3 (or DTS . . . or whatever) at any time, now or in the future.

RB-985 5-channel amplifier

Whether building your home theater from scratch or adding to an existing system, this amplifier is the answer. With 5 channels each delivering 100 high current watts, the RB-985 puts plenty of power in a highly efficient and convenient package.

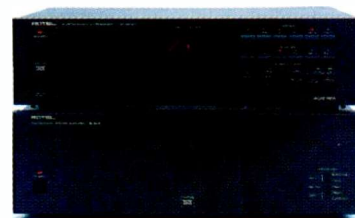
The RB-985 exemplifies Rotel's commitment to quality: A massive 1500VA toroid transformer combines with oversized, high capacity filter capacitors and precision regulators to provide extraordinary smooth operating voltages.

Each of the RB-985's 20 output devices is rated for 130 watts and 15 amperes of current. This high reserve design assures uncompressed and dynamic reproduction of today's music and video sources.

Placing the RB-985 in your system is easy. A multi-pin connector, allowing single-cable hook-up, complements an array of

gold-plated RCA jacks. Rugged, heavy duty binding posts accept a variety of audiophile-grade speaker cables.

The Rotel RSP-980 THX Surround Sound Processor expands your cherished music system.



The THX approved RB-985 delivers the powerful sonic boom of a movie explosion with 5 x 100-watts of power.

Our point is simple: Rotel gives you several approaches to home theater. Each product is different because your needs are different. But each one shares a common family heritage of extraordinary sound quality, backed by a five year warranty on amps, preamps, and processors. That's the Rotel tradition. And, even in the midst of change, we'll never forget it.



Rotel of America

54 Concord St. North Reading, MA 01864-2699
tel 800-370-3741 fax 508-664-4109

and 9 amps (shipping to stores as you read this). But undoubtedly, it was the reappearance of McIntosh's MC275 power amp and C22 preamp that gave the whole sub-genre its credibility.

Admittedly, replicas of high-end tube amps are just as costly to make and buy as brand-spanking-new amps. In some cases you can still buy secondhand mint originals for insignificant sums relative to the price of a reissue. But the reissues tap another vein: a further subset of collectors who don't just want to own the old stuff but also

like to acquire limited editions, whether they're reissues like the 100-only numbered Radfords or products intended from the outset never to exceed a certain quantity. The latter includes the first Goldmund Reference turntable (limited to a production run of 300), KEF's Raymond Cooke Commemorative LS3/5A loudspeaker system and a recent piano-black version, one of Gryphon's preamplifiers, the gilded Nakamichi ZX1000 Signature cassette deck, Technics' piano-black SL1200 turntable, and the like.



**THE INTERNET'S A'BUZZ
WITH REQUESTS FOR
SOURCES OF TANNOY
RED AND GOLD DRIVERS.**

Anachrophilia has created its own supporting industries, quite independent of the companies that emerged to service the tube community. Of course, there is overlap, and companies supplying replacement tubes to the public don't know if the 6550s they're selling you are going into a refurbished MC275 or into an amp that was introduced in 1995. But a new breed of restorer has emerged (a lineal descendant of what the British lovingly referred to as "vintage-radio restorers") who can source a transformer to replace the lump of steel leaking all over the back of your Dyna Stereo 70 or locate some decent "magic eye" tubes for your elderly FM tuner.

How deep is this fascination with vintage equipment? Let's put it this way: The internet's a'buzz with requests for sources of Tannoy Red and Gold drivers, you can't find RCA tube manuals for love or money, and the old (British) *Hi-Fi Yearbooks* that used to sell for 25¢ in thrift shops now command \$20 to \$30 a copy. McIntosh sold out its MC275s in months, as did Quad with its IIs, and Marantz (which, I hasten to add, plans to keep the 7, 8, and 9 in production as long as there's demand) couldn't believe the response even before the first models came off the assembly line.

Just how seriously this should be taken as a proper subdivision of audio fetishism rather than a flavor-of-the-month craze is also indicated by the success that vintage hi-fi displays have enjoyed over the past decade at European hi-fi shows. Credit goes to the French for their vast display of old tube amps at the "Permanence du Tube" exhibition eight years ago, while the Italians followed suit three years back with their own display. At this year's Hi-Fi Show at

"remarkable" ...
"flawless" ... "astonishing" ...
"a landmark" ... "the best"

CS.5

"...one of the best speakers available at any price—Thiel's full size CS.5. ♪"
—Tim Smart, *Business Week*, December 11, '95

CS1.5

"The CS1.5 is a landmark speaker of the 1990s...an astonishing speaker. ♪"
—Sam Tellig, *Stereophile*, Vol. 17, No. 8, August '94

CS2 2

"I think they are one of the best, if not the best, performers I have come across. ♪"
—Andy Benham, *Hi-Fi Choice/U.K.*, Winter '92/93

CS3.6

"...the CS3.6s outperform every other speaker I've heard in their price class... a remarkable loudspeaker. ♪"
—Robert Harley, *Stereophile*, Vol. 17, No. 5, May '94

CS7

"Thiel's CS7 loudspeaker is one of the finest sounding loudspeakers that I have heard. ♪"
—Anthony Cordesman, *Audio*, August '95

CS5i

"A completely flawless design. ♪"
—Nagashima, *Stereo Sound/Japan*, Winter '93



From left to right: CS.5, CS2 2, CS6, CS5i, CS7, CS3.6, CS.5, CS2
Priced from \$1,450 to \$12,300 per pair. All are carefully hand crafted in a variety of finishes from the world's finest woods.

THIEL

Ultimate Performance Loudspeakers
For home music and video sound systems

Call or write for our 36-page brochure, review reprints, and the name of your nearest THIEL dealer.
THIEL • 1026 Nandino Blvd., Lexington, KY, 40511 • Telephone: 606-254-9427 •
e-mail: mail@thielaudio.com

London's Heathrow Airport, visitors crowded around a "Hi-Fi Heritage" display, which *Hi-Fi News* organized to celebrate its 40th anniversary. It featured 25 yards of counter space and such treasures as the world's only known surviving Decca MK V cartridge, the prototype of the SME 12-inch tonearm, a mint original Mac MC275, one of the ultra-rare Audio Research D150 power amps, Rogers tube electronics, Grace's wooden tonearm, Garrard 301 and 401 turntables, and a Revox G36 open-reel deck. More than one visitor walked away tearfully after learning that the stuff wasn't for sale. And the Italian and Asian visitors—trade and public—took as many photos of vintage gear as they did of the new products on display (just in case you were wondering which territories could boast the most fanatical anachrophiles).

One of my wealth-reducing fetishes is bibliophilia, and nothing addresses that passion better than obscure titles about my hobbies. (Even better are books that combine two or more: Anyone know of any publications about tube amps owned by Grand Prix drivers or a history of wrist-watches seen in films noir?) Publishers from the industry's fringes have been quick off the mark with books so perfectly suited to encourage the worst excesses of anachrophilia that they might be deemed by some as audio porn.

In the United States, Vintage Hi-Fi Productions (1095 East Duane Ave., Suite 106, Sunnyvale, Cal. 94086; 408/733-6146) has released a "bookshelf" that forms the foundation of a superb reference library for those unfortunate enough not to own a complete run of *Audio* going back to the Eisenhower years. My faves are the volumes of photos, specifications, and ad reprints in *Vintage Hi-Fi Spotter's Guide 1* and *Guide 2*. A must have for owners of those two titles is the companion *Vintage Hi-Fi Price Guide*, while the more scholarly will adore the *Vintage Hi-Fi Schematic and Literature List*.

Undoubtedly the best book yet for pure information (as opposed to ad reproductions) is the stupendous *Audio! Audio!* by Jonathan Hill, author of *Radio! Radio!* (both published by Sunrise Press, 2-4 Brook St., Bampton, Devon EX16 9LY, England; 011 44 1398 331532). The latter consisted of nothing but photos and specs of classic tube radios. This time Hill has moved on to

audio electronics from the golden age. Although far from complete (it concentrates on British brands and the few imports that were available in the U.K. during the '50s and '60s), it's the only source of information on 850 models from 150 companies available to those lacking a full set of *Hi-fi Yearbooks*. Indeed, it looks like a "Best of" the *Yearbook*, the near-bible that was published from 1956 to 1980 and featured every product on the U.K. market. This 96-page surrogate is jam-packed with data on Quad, Rogers, Leak, Radford, HMV, Armstrong,

and the other greats. If you are an anachrophile of any seriousness, it's unput-downable. And Hill knows the collector mentality: The first edition was numbered.

What's needed now is a guide written from the American side of the pond. So is there anybody out there with the drive to assemble reams of information on products from Harman Kardon, McIntosh, Scott, Fisher, Marantz, Heathkit, Dyna, and the rest? And if so, put me down for two copies: one to use 'til it falls apart and one to save for later. A

WOW! What a Concept!

AWARD-WINNING INTEGRATED STEREO TUBE AMPLIFIERS STARTING AT

\$695



SJ 202A

CONCEPT:
Integrated Amplifiers:
 Nothing could be easier! Hook up a pair of speakers, plug in the CD player and you have a music system ready to go.

CONCEPT:
Tube Amplifiers:
 Music Lovers acknowledge tube amplifiers deliver Power, Reliability and First Rate audio accuracy.



SJ 801A

CONCEPT:
Award Winning Amplifiers:
 The SJ 202A and the SJ 302A won the prestigious Innovations 96 Design and Engineering Honors in Audio which was awarded to Jolida at the 1996 Consumer Electronics Show by the Electronics Industry Association.



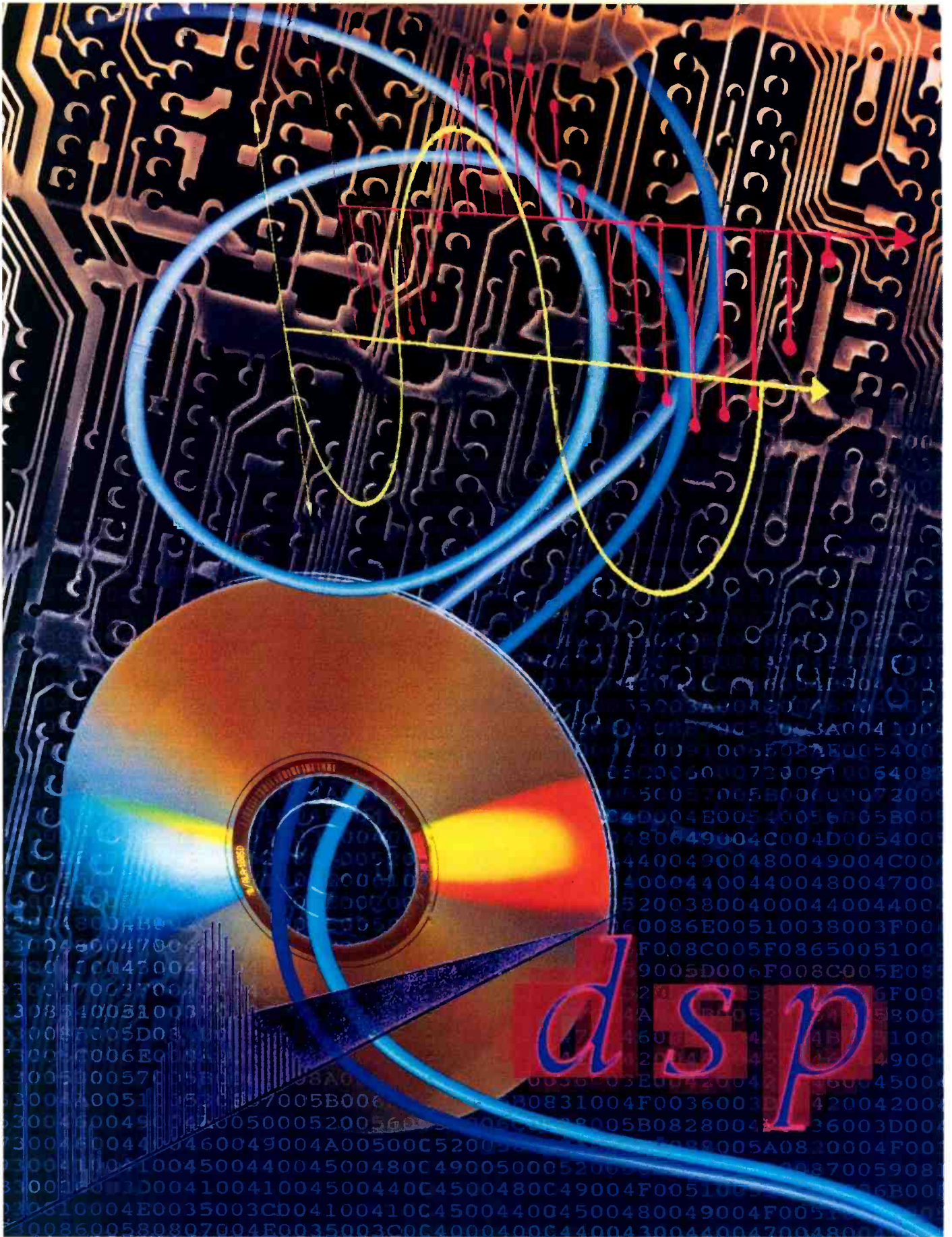
SJ 302A

CONCEPT:
Hi Performance Amplifiers
 starting at \$695:
 Jolida breaks the budget barrier of Hi End amplifiers with a product line that has been described by our customers as silky smooth, great sound presence, crystal clear, musical and even awesome. **Bottom line, in the March 1996 issue of *Audio Magazine*, Bascom King writes that the SJ 302A "Sounded remarkably good, despite its relatively modest cost."**

Bring the Concept home...
 Hi Performance Audio at affordable prices.

JoLida, Inc.

10820 Guilford Road, Annapolis Junction, MD 20701
 Phone: (301) 953-2014 / Fax: (301) 498-0554



PHOTOGRAPH: © 1996, BILL WESTHEIMER

The Promise, Reality, and Future DSP *in* AUDIO of Digital Signal Processing

b y K E N K A N T O R

Twenty years ago a few lone visionaries spoke of the promise that a futuristic technology called digital signal processing might someday bring to audio, but all they could really do was guess and hope. Back then, DSP was largely confined to the engineering classroom and a few esoteric aerospace and military applications. The computer-like hardware needed to realize real-world applications was cumbersome and very expensive, and the mathematics underlying DSP were *very* challenging. Nevertheless, it seemed clear that one day DSP might significantly improve the way we hear recorded music in our homes.

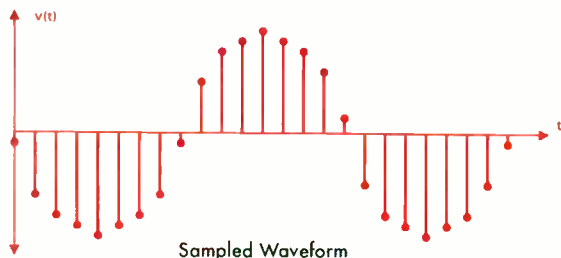
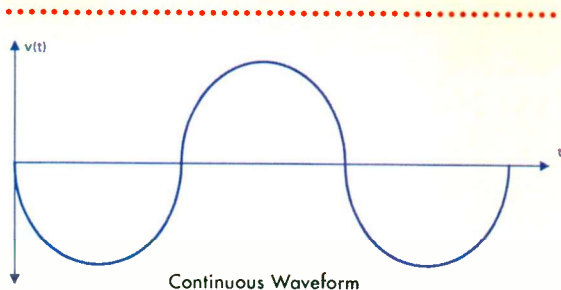
We all know how profoundly computer technology began to evolve and how rapidly digital storage technology infiltrated audio, principally through the Compact Disc. Soon, hobbyists and the hi-fi press were all buzzing about what DSP was about to do for sound reproduction. It was going to finally conquer the demon of room acoustics. It was going to turn our homes into concert halls—any hall we wanted—at the touch of a button. It was going to eliminate stubborn imperfections in loudspeakers that had eluded capture for decades. It would enable a degree of signal-tailoring a hundred times more precise than was possible with the conventional tone controls or equalizers of the day. It would restore precious antique recordings to modern levels of fidelity. And it might even let us block out unwanted noise from our homes and cars.

About a decade ago, we saw the first DSP products reach the consumer market in force. Hopes were high, but, oddly enough,

nothing really caught fire. In the best cases, the products were moderately successful. In the worst, DSP seemed to be just another feature, another button on the box. In all cases, the implementation seemed to be falling short of the revolutionary advantages that were once prophesied. Still, there was hope: The cost of computer hardware continued to plummet, and processing speed, DSP's biggest requirement, was accelerating rapidly.

Today, 10 years later, has DSP finally arrived? Was there any substance to the hype, any reality behind the promises? Certainly, the answer is yes. It has found its way into almost every corner of audio, but not (as we might have been prudent to expect) in exactly the same ways we anticipated. In some areas, DSP has fallen noticeably short of expectations. In others, it has provided advantages not even imagined a decade ago. Its influence is growing, and its very boundaries are hard to define. So let's start by reviewing the underlying principles.

.....
Ken Kantor is Vice President, Technology, for NHT loudspeakers in Benicia, California. In the late '70s and early '80s, he helped develop the Teledyne Acoustic Research (AR) Adaptive Digital Signal Processor, the first DSP room correction system. In addition to his loudspeaker design work, Kantor has managed a number of DSP projects in the related fields of loudspeakers and psychoacoustics and was recently named in a patent as a co-inventor of a DSP solution to the problem of car cabin noise.



BASIC DIGITAL SAMPLING TRACKS A CONTINUOUS AUDIO WAVEFORM BY SAMPLED VOLTAGE LEVELS AT REGULAR INTERVALS AND REPRESENTS THESE SAMPLES AS DIGITAL WORDS. HIGHER SOUND PRESSURE LEVELS ARE TRANSLATED INTO LARGER NUMBERS.

And time has proven analog signal processing to be pretty darn good at many kinds of tasks, such as gentle filtering and equalization, attenuation, amplification, and the handling of high-power audio signals.

Because you can also think of every processing task as a mathematical operation applied to the signal, however, it becomes evident that a computational approach might also be applied. And if the signal is being stored in numerical (digital) form already, this kind of approach opens the door to all kinds of signal manipulation that are virtually impossible to understand in terms of analog circuitry. A resistor can make a signal smaller. A transistor can make it bigger. A capacitor can emphasize the highs or the lows. But a computer—now we are talking *serious* potential! Perhaps we could precompensate the signal for existing acoustical problems in the listening room. Maybe we could add in some of the musical dimension and life not captured by the microphone or filter the noise from an old recording without affecting the desired information. Indeed, a computational approach offers intriguing possibilities.

WHAT, EXACTLY, IS DSP?

On its trip from the studio to the loudspeaker, the information that will ultimately shape the music you hear in your home undergoes many transformations and is subjected to many processes. Think about it: The moment it leaves the microphone or an electronic instrument, the audio signal must be amplified and equalized, attenuated and routed. It must be converted into different forms for storage on different devices, such as a studio DAT, an open-reel master, a lacquer master, or a CD. The audio information may also be subject to filtering, multichannel surround processing, noise reduction, and a dozen different types of enhancement. Even in purist or minimalist recording setups, the signal changes form many times.

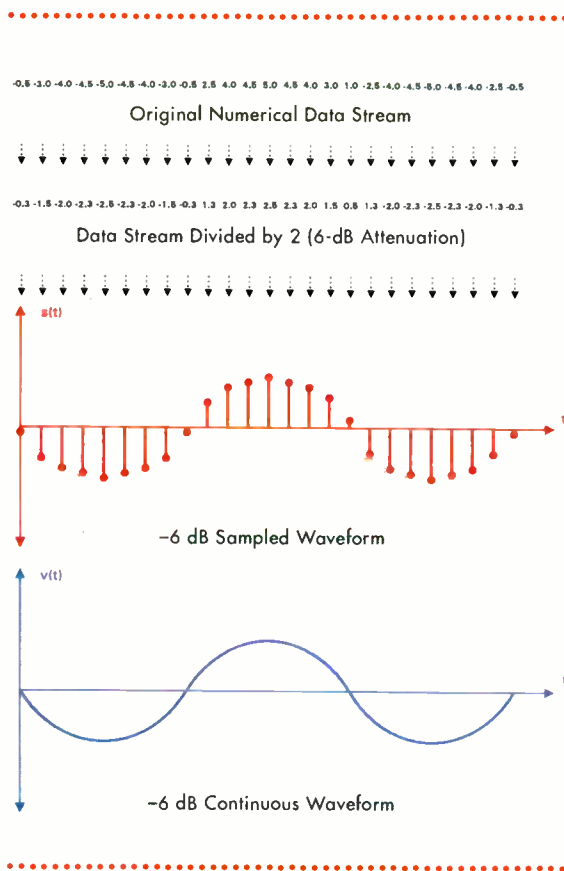
Each change or transformation that occurs means we are processing the signal in some way, so an engineer refers to these as “signal processing” tasks. For each step, there is a mathematical equation (or set of equations) that defines what has been done to the data representing the music.

Traditionally, the only option available for signal processing was analog circuitry—resistors, capacitors, transistors, and that kind of stuff. Tone controls, your RIAA preamplifier, and the crossovers in your speakers were, and probably still are, analog signal processors.

TO REDUCE THE SIGNAL BY 6 DECIBELS, THE DIGITAL SIGNAL PROCESSOR DIVIDES THE ORIGINAL NUMERICAL DATA STREAM BY A FACTOR OF 2. THE RESULTING SAMPLE SERIES APPEARS AS IF A SOUND OF HALF THE ORIGINAL LEVEL WERE RECORDED, YIELDING THE -6 DECIBEL CONTINUOUS WAVEFORM.

THE EARLY YEARS

Today, most audio signals are stored and handled in digital form, so it's easy to take that for granted. But if you can remember back to 1976, you know this wasn't always the case. In the studio and in the



home, audio was predominantly analog. Although it was relatively easy to comprehend the potential value of digital storage and distribution, it took a bit of vision to recognize what digital processing and manipulation might offer.

Early on, audio scientists and engineers realized that creating advanced filters was one of the really powerful advantages of DSP. Because a digital filter works by momentarily storing and combining portions of the signal in digital memory, it can control the temporal (impulse-response) characteristics of a signal as well as manipulate frequency characteristics. This double-edged capability enables the creation of extremely complicated and powerful filter transfer functions, like those required to properly address room acoustics problems (or even to simulate entirely new rooms). Among other applications for advanced digital filtering is creating the kind of surgically exact responses that can dissect the noise from the signal on an old recording.

Consequently, different types of digital filters were among the first commercial applications of DSP technology. Noise-removal systems found their biggest market in professional environments, helping to restore vintage or damaged recordings, assisting with forensic investigations, and improving the quality of location recording for film and television.

In the recording studio, digital signal processors were being explored as an alternative to the special rooms and electro-mechanical “plates” used to generate artificial reverberation. Sometimes accidentally, and sometimes purposefully, digital boxes were providing creative recording engineers and musicians with new effects and even new instruments.

Consumers did not have the ongoing need, the operational training, or the budgets to make digital noise removal a household word. In the consumer arena, ambience simulation and enhancement systems were being developed for the home and car using techniques already employed in recording studios. And, of course, it's hard to forget those cheesy digital keyboards that started appearing everywhere—the \$69 specials where the “piano,” “violin,” and “trumpet” settings all sounded like “kazoo.” You can thank the DSP revolution for those, too.

It was, however, a novel kind of digital filtering that really caught the attention of hi-fi enthusiasts: room/speaker correction systems, probably the most conceptually interesting and controversial of the early commercial DSP efforts.

Serious audio hobbyists had come to understand the limitations of conventional graphic equalizers in correcting room acoustics problems. First of all, they were restricted in their precision and flexibility. Worse, they had no way to cope with reflected and delayed energy, the very basis of room sound. If a graphic equalizer fixed the reflected sound's tonal balance, it was almost sure to mess up the direct radiation of the speaker, and vice versa.

But a DSP filter, with its ability to work in the time domain, ought to be able to apply individual corrections to each instant of the continuously developing sound field. At the same time, powerful filters might be applied to fix known errors in the loudspeaker. The result, it was hoped, would be an unprecedented degree of transparency between the recorded signal and the listener's ears. The characteristics of speaker and room—in effect, the timbral colorations contributed by each—would be digitally erased, and the recording in its pure essence would be heard. To this pure sound could be added new architectural acoustical signatures and new stereo image perspectives, appropriate or not. And since the computer that accomplished all this DSP work would have to “hear” the listening room via a microphone in order to process it, why not have it make all the necessary corrections automatically, adaptively?

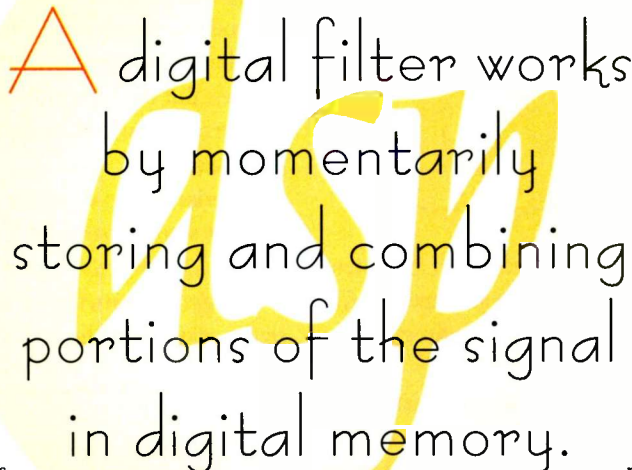
It all seemed to be coming together perfectly—Compact Discs, powerful computer hardware, and great ideas. And several big semiconductor makers had active development programs to offer chips customized for advanced audio signal processing. No wonder we got so excited!

TECHNICAL BARRIERS

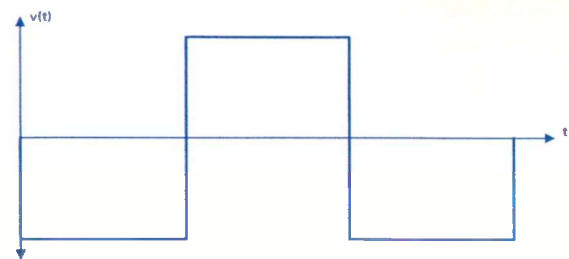
Inevitably, the bubble had to burst. A little bit of technical and economic reality had to encroach upon the dream. Nowhere did it intrude harder than in the area of room and speaker correction. While other fields of DSP gradually began to flourish, several seemingly promising room and speaker correction products were announced, only to evaporate just before or just after being introduced to the market. No single reason was to blame. After all, the success of a new technology depends on many interwoven theoretical and practical factors. Yet in hindsight, there were some formidable technical hurdles that room and speaker correction schemes faced—hurdles that somehow escaped our attention a couple of decades ago when we pondered the future of DSP.

A room corrector is supposed to work by seeking out deleterious room reflections and sending a cancellation signal of each to the loudspeaker. For example, if the room corrector's microphone detects a reflection at 8 milliseconds (i.e., a reflection of the original sound that issued from the speaker 8 milliseconds earlier), the speaker will be sent an opposite signal at exactly the right instant to arrive at the listener and null out the reflection. Or, if energy is missing at that moment, the corrector will try and fill it in. You can think of this as equalization in the time domain, with an effectively anechoic room—a room with *no* reflections—as the ultimate goal.

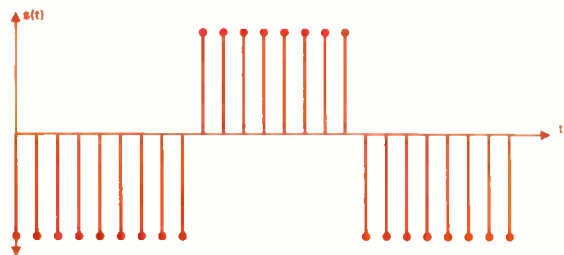
One of the major snags is that the listening room is a much more complex physical and mathematical system than was considered in the planning of early correction schemes. In fact, there are acoustical artifacts of the loudspeaker and room combination that simply cannot be corrected by any conceivable signal applied to the loud-



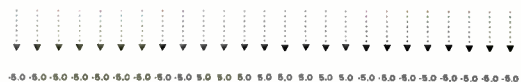
A digital filter works
by momentarily
storing and combining
portions of the signal
in digital memory.



Waveform with High-Frequency Content



Sampled Waveform



Numerical Data Stream

HIGH FREQUENCIES ARE REPRESENTED BY RAPID CHANGES IN THE VALUES IN THE DATA STREAM. SHOWN ARE A WAVEFORM WITH SUBSTANTIAL HIGH-FREQUENCY CONTENT AND THE RESULTING NUMERICAL DATA STREAM AFTER SAMPLING.

But singularities are hell on a digital filter. It's hard to distinguish between a bad but correctable problem and an impossible one. So it's easy for the DSP system to get stuck in the mud when it happens onto one of these acoustical black holes. Before you know it, more and more of the processing power is sucked up, and to no avail. On the contrary, by attempting to fix a singularity that happens to fall right at the sensing microphone, the computer is likely to add excessive and inappropriate boost or cut to the sound a few inches or a few feet away.

This problem really complicates the job of room correction. If the designer writes a cautious program, significant errors will be missed that could have been fixed. If his approach is too aggressive, things will get stuck in a rut. It is true that adding additional active channels to an adaptive correction scheme reduces the singularity problem, since any point in space can be addressed by more sources. But the issue still doesn't go away, and multichannel adaptive correctors stretch today's economic and technical limitations to the maximum.

Surprise, surprise, we are back to relying on human judgment as to what sounds best and how we balance different problems and benefits. So what else is new?

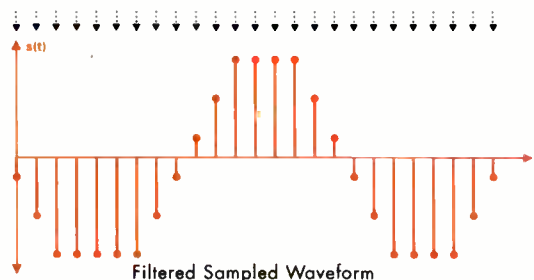
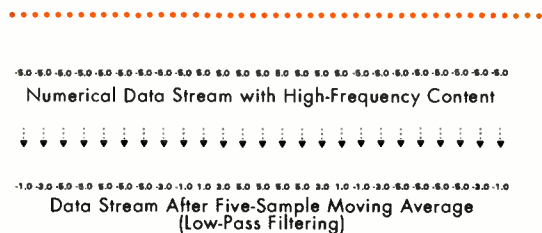
To a great extent, the problem of singularities goes away if the designer takes both the room and "adaptation" out of the equation

speakers. Another way to think of this is to realize that at any listening position within a given room there will be a few specific frequencies that simply do not reach the listener's ears directly from the speaker.

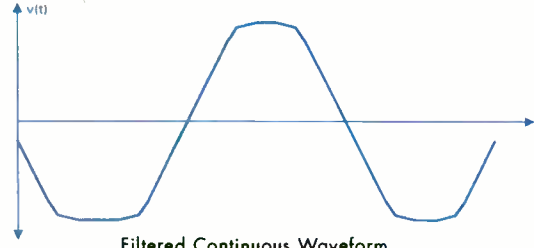
An engineer would call each of these troublesome intersections of location and frequency a "singularity" and tell you there is "zero energy transfer" at that point. (A really smart engineer might try to impress you by telling you the playback system is "non-minimum phase." But who needs another really smart engineer?) Response singularities are normally caused by special kinds of reflections that can occur both in the room and within the drivers of the speaker system.

The net result of a singularity is that *no matter what you put into the speaker, that frequency ain't going to get to your ear*. You can boost it till the speaker cooks, you can delay it till the cows come home, but it is going somewhere else in the room before it reaches your ear, period. Hey, this is a fact of life, and it isn't so bad. These singularities are few and are so impossibly narrow in bandwidth—almost infinitesimally narrow—that they don't affect the sound nearly as much as many other acoustical errors and distortions.

A DIGITAL LOW-PASS FILTER IS CREATED BY PERFORMING A MOVING AVERAGE ON THE ENTIRE DATA STREAM, THUS AVERAGING OUT THE RAPID FLUCTUATIONS WITHOUT AFFECTING THE REPRESENTATION OF LOWER FREQUENCIES. THE NUMBER OF SAMPLES AVERAGED, AND THE WEIGHT THAT EACH ADJACENT SAMPLE IS GIVEN WITHIN THE AVERAGE, DETERMINES THE FILTER'S SLOPE, CUTOFF, AND RESPONSE SHAPE.



Filtered Sampled Waveform



Filtered Continuous Waveform

and focuses his efforts on correcting and controlling the speaker alone. Since human hearing automatically acclimates itself to its acoustical environment to some degree, there is value in this approach. We all know that better speakers generally sound better, almost regardless of the room.

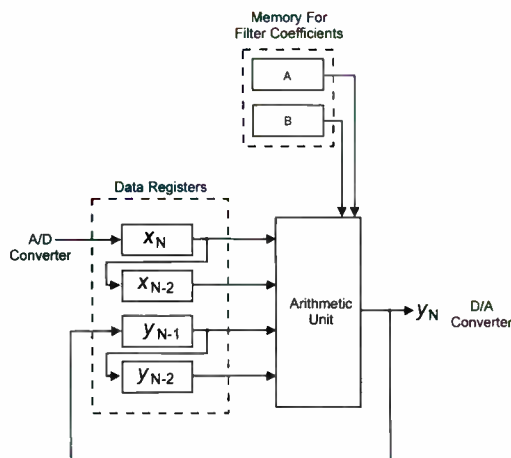
To date there have been a few superb loudspeakers designed with built-in complementary digital correction. It is certainly a more feasible approach technically than generic, adaptable correction applied to the room. When designing a DSP-assisted loudspeaker system, the engineer does have to be very careful to manage the signal delay inherent in most digital filters, which can range from less than 1 millisecond up to 10 or 20 milliseconds. This delay is not usually noticeable in a home audio-only system. But a signal delay of 10 or 20 milliseconds can create plenty of havoc in a recording studio or home theater, where synchronization and timing of the sound is critical.

A difficulty common to all DSP loudspeaker and room compensation is that detailed response corrections implemented in the time domain often trade off spatial flexibility. In other words, the better the correction at one spot, the bigger the problems become everywhere else. This goes beyond the traditional "sweet spot" that many serious listeners have learned to live with. The spatial focus of a digitally corrected system can be so great as to be intolerant of the slightest head movement or even the difference in location between your ears—a tough problem to overcome. Again, the designer can make trade-offs between detailed correction and location flexibility. Some systems even let you make the choice yourself. But here we are once again, deciding how to set our controls for the best subjective effect. Nothing wrong with that; at least we have more power and control. But it isn't the magic bullet of audio transparency anymore.

Finally, it's important to point out a very practical problem about digital room and speaker correction, one that I hope will diminish with time: What is it worth?

As a loudspeaker designer, I know that every dollar counts in the final sound of the speaker. Implementing digital correction in a speaker is costly, and that money could improve the sound in many other ways—better drivers, a more advanced crossover, effective room treatment, and so on. It's always important to determine which sonic problems take priority before running off to solve them. In my opinion, the consumer audio business at times has a tendency to invent solutions and then go looking for the problem. "Digital," in all its forms, is no exception. It can do some things undeniably well. It will do more things better and cheaper as time goes

It took a bit of vision
to recognize
what digital processing
and manipulation
might offer.



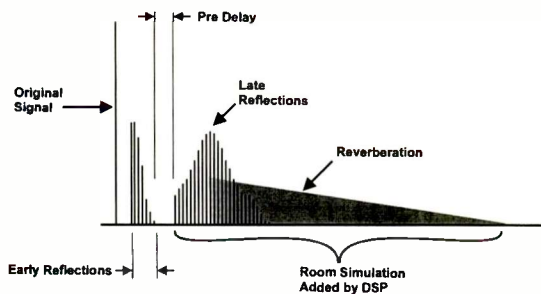
on. But that does not mean it is the most effective solution to every problem that arises now.

Arguably, the cost-versus-benefit factor is the single most important reason why more products that combine DSP with speakers have not reached the market. Customers hear them and compare them to traditional speakers at comparably high prices. Nevertheless, there have been a few great-sounding models, and that does whet the appetite for more affordable solutions.

ACOUSTICAL SIMULATION

No matter how good a microphone you use, one thing you can count on losing when you make a recording is spatial information. Unlike your ears, a single microphone has no way to understand the location and direction of the sound source. The electrical signal from the mike is an average of the sound waves impinging on it. Even a very directional microphone cannot fully differentiate, say, a loud sound behind it from a soft sound in front of it. Once a natural sound field is recorded as a two-dimensional electrical wave, its spatial characteristics are compromised. Good stereo microphone techniques help a lot. Multichannel systems help even more. But nothing available in the audio world today can fully capture the direction, space, and ambience of a live event.

Part of the job of a fine hi-fi system is to restore the proper dimensionality to the sound. In addition to getting the tonal balance right, a good speaker can take a fine recording and create the illusion of a real, tangible event—to a degree. Since we know information is lost at the microphone, the speaker must necessarily "guess" at what constitutes correct spatial information. How well this transpires depends on a complex interaction of recording, loudspeaker, and listening room—and a bit of blind faith on the part of the listener, who, after all, probably doesn't know precisely what acoustical space he should be hearing.



TO CREATE A SENSE OF SPACE OR REPLICATE AN IMAGINARY ROOM, A DSP DIGITIZES AND STORES SOUNDS IN MEMORY. IT THEN STRINGS TOGETHER AND RECIRCULATES THE DELAYED SOUNDS AS LATE REFLECTIONS, THEREBY SIMULATING REVERBERATION.

Restoring a believable and controllable sense of space to recordings by digital means is not a new idea. Some of the early delay-line processors from the 1970s were a sort of primitive digital signal processor, and the premise is the same today with several DSP-based models intended to improve the home listening experience. Now, however, the process is often assisted by surround decoding.

From the inexpensive DSP head units designed to give car audio listening an expanded sense of space to astonishing studio reverberators that can model the minute acoustical details of all sorts of real and totally imaginary “rooms,” the idea is to convey a convincing impression of space and location by adding simulated reflections and reverberation from directions other than the main speakers’ sound.

DSP is a natural for this. A real-world reflection is nothing more, at its heart, than a delay of the original sound. String enough of these delays together, and you have reverberation—and delaying sound is about the easiest task to accomplish with DSP. The recipe is simple: good A/D and D/A converters, a bunch of memory, and some basic filters to alter the levels and spectra of the reflections. Then add a few mixers to recirculate signals within the box and to send outputs to various speakers around the room—okay, so it adds up to serious processing power in the end, but at least the *idea* is simple. The designer must understand the reflection pattern of the room he is trying to simulate and match that reflection pattern using delays and filters within the DSP. With a multichannel processor and several speakers, the results can be startlingly good. A lot depends on the acoustics of the original space, since it is bound to imprint itself on the sound, one way or another. If the playback room is especially live, it may dominate the overall acoustics to the extent of rendering the DSP efforts futile. If the playback room is deader than usual, the listener can be transported to a place of virtual acoustic reality.

Given DSP’s success with simulation, it’s too bad that DSP room *correctors* don’t work better than they do. Otherwise you could use one to remove the acoustics of the playback room and use a room simulator to insert the acoustics of a new room. Pretty neat, huh? Stay tuned. It *will* happen.

TECHNICAL TRIUMPHS

When we think of DSP, often what comes to mind are sound-field processors or other specialized applications. But some of DSP’s greatest triumphs in the audio domain are in areas not directly apparent to the consumer. One of these is the recording studio, where almost every imaginable kind of signal handling and manipulation is now done in the digital domain. In fact, micro-

phone preamps are starting to appear with built-in A/D converters. Virtually from the time it leaves the atmosphere until it leaves your CD player, the music signal is preserved and processed by digital means. This includes mixing, editing, equalization, compression, reverb, special effects—the whole palette of time-honored (and sometimes abused) studio techniques.

Digital filters and ambience generators aside, DSP has other capabilities when it comes to fancy manipulation of audio signals. Not everyone may realize that all the present and proposed digital storage and transmission standards have DSP at their core. From the existing CD standard to Dolby Digital (AC-3), from DVD to the squeaky beeps or swirling 3-D sounds you hear from computer games, DSP is there

In these areas, DSP techniques enable efficient encoding of digital data. That is, they enable more data to be stored in less space, thereby improving the economy of the medium. Sometimes this is accomplished in a pure, “lossless” manner, such as the 16-bit linear scheme of the CD format. Sometimes more aggressive, “lossy” compression is used, as with Dolby Digital, MiniDisc, DCC, and various types of telephone, cable, and satellite audio distribution. Even highly compressed audio can range from barely adequate to essentially transparent, depending on the settings dialed into the DSP algorithms.

Hand in hand with digital data transmission is error correction. Within a CD player or other digital recording or playback machine, there is a DSP section dedicated to detecting and repairing data errors in real time. These recovery methods have become so successful that we rightfully can consider the digital data stream available to us in our home an exact duplicate of what originally left the recording studio (even if the cat did scratch your copy of Phish).

GREAT EXPECTATIONS

Though it seems commonplace, there is every reason to believe that DSP audio is still in its infancy. Digital is here to stay, and once an audio signal is digitized, it makes sense to keep it that way as long as possible. Recording studios have learned this; consumers likely will, too. That means more and more desirable applications for DSP. So does the trend toward discrete multichannel playback, already heavily dependent on advanced signal processing.

Noise reduction and virtual reality products beckon. Who knows how many companies have R&D projects in these areas? Quite a number, I would guess. Will we see further attempts at room correction and “digital” speaker design? Of course, especially as part of an integrated digital approach to all the components in a home audio system. Audio nuts have never left well enough alone, nor are we discouraged by challenges. We will always want more fidelity, more control, more flexibility, and more convenience. And I can’t think of a better way to get these things than by moving ahead into the digital future.

For well over 60 years, the name Tandberg has been associated with flawless, faithful sound reproduction. Whether the components were professional grade reel-to-reel tape recorders, audiophile-quality cassette decks or high-end electronics, Tandberg invariably established new standards of excellence.

The new 4000 Series continues this unbroken tradition. The unique, stackable, top-loading transport of the CD Player, the Zero Negative Feedback and Discrete Class A circuitry of the Control and Power Amplifiers, the Dual Gate MOSFET and Class A circuitry of the FM Tuner are packaged in a museum-grade, fully remote-controllable system as pleasing to use as it is to view.

Tandberg achieves the best of both worlds by integrating old world craftsmanship, world class industrial design and the latest audio technologies. In the process, Tandberg has once again created audio components that transcend traditional hi-fi to become one of your most prized possessions.

What keeps us in the foreground is our background.



Jason Scott Distributing, Inc.
tel (215) 836 9944 fax (215) 836 2273
See the exciting Tandberg line at Winter CES* -
Alexis Park Hotel Suite 2403

TANDBERG®

Much more than hi-fi.

CIRCLE NO. 40 ON READER SERVICE CARD

Kavi Alexander

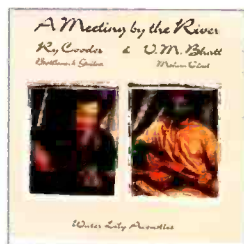
EASTERN MUSIC MEETS MODERN RECORDING TECHNOLOGY

Gently inching his stereo mike array closer to the musicians—an American slide guitarist, an Indian musician playing a modified slide guitar, and a tabla player, all seated on a rug in a spacious church—Kavi Alexander monitors the signal through headphones. He checks the musicians' balances with each other and with the room acoustics. When all is ready, he presses "Record" on a huge, all-tube two-track tape machine and captures an astonishing performance.

Founder of the audiophile label Water Lily Acoustics, Alexander uses minimalist technique to record Asian master musicians playing Indian, Iranian, Arabic, and Chinese music, as well as American blues performers. His work brings the old and the new together, uniting the traditional music of Eastern cultures with modern recording technology. Thanks to Alexander's devotion to sound quality, we can finally hear the remarkable beauty and sophistication of this music.

Of course, world folk music has been available for years from obscure sources, such as field recordings. But Alexander's work is not musty archival stuff. In fact, *A Meeting by the River*, with Ry Cooder and V. M. Bhatt (Water Lily Acoustics WLA-CS-29-CD), won a Grammy for Best World Music album in 1993.

Alexander shuns the usual multimike, multitrack recording techniques commonly used by big-label pop and rock album producers. Instead, he simply places a stereo mike near the performers, in a church that has gorgeous acoustics, and then records using no processing. As a result, his recordings present the music in its purest form.



Alexander knows how to capture the beauty of the instruments. The sound is remarkable for its gentle, non-edgy highs. There's clarity without harshness—a very natural, non-fatiguing quality. On stringed instruments, you can frequently hear individual plucks within a strummed chord. This detail comes from the purity of the signal chain, not from a treble boost on a recording console. Cymbals have a sweet, shimmering edge. Strings and saxophone sound warm and full, not thin or tinny. Tabla goes very deep and has a visceral impact. Thanks to the purist miking techniques, the imaging is very precise and the reverb sounds airy and spacious. Powerful dynamics add to the musical excitement. It's a compelling, realistic effect.

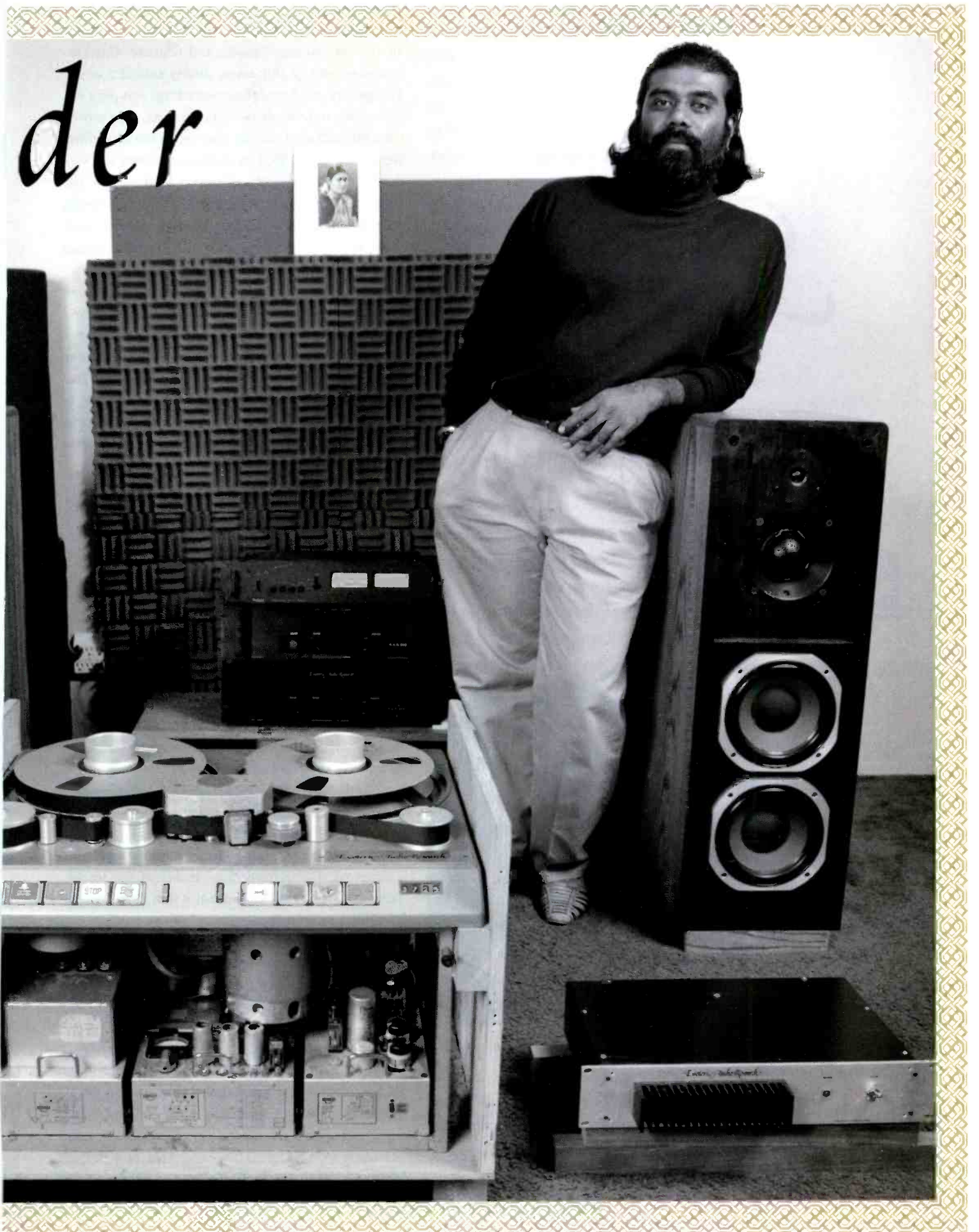
The microphone itself is a custom tube design using Pearl bidirectional mike capsules set in a classic Blumlein array: two coincident figure-eights crossed at a 90° angle. The mike design is by Tim de Paravicini, of Esoteric Audio Research

by Bruce Bartlett with Jenny Bartlett



TIONAL ASIAN AND AMERICAN ACOUSTIC MUSIC IS IMPORTANT TO ME.

der



TO MY EARS, THE BLUMLEIN STEREO MIKING ARRANGEMENT



(U.K.), whom I interviewed for the January 1995 issue. He also designed Alexander's tube mike preamps.

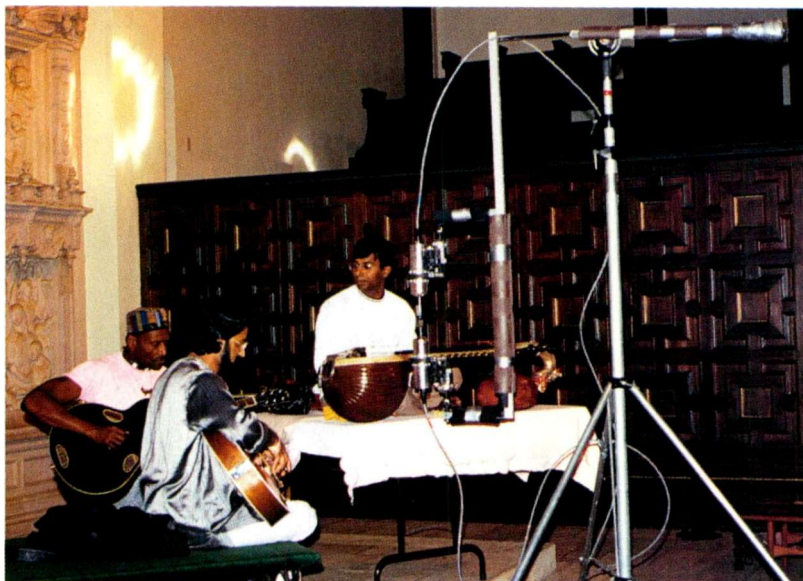
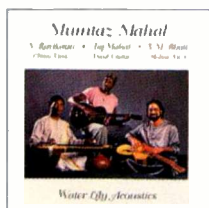
The tape recorder is a Studer transport converted to a 1-inch, two-track format. It has a custom magnetic head assembly and tube electronics designed by de Paravicini. Even though the deck is analog, recordings made with it have no audible tape hiss at normal listening levels.

Alexander monitors with VMPS Super Tower speakers and Stax Lambda Signature Pro electrostatic headphones. He uses 100-watt, monoblock EAR 508 MK II power amplifiers and Discovery Cable Teflon twin-axial cables.

Although in the past he has used several different churches in Santa Barbara, California, for his recordings, Alexander now uses the chapel of Saint Anthony's Seminary exclusively because of its "fantastic acoustics" and its geographical isolation from traffic noise.

The music itself is faultless. Performers range from America's Ry Cooder and Taj Mahal to India's Ali Akbar Khan and V. M. Bhatt. There's a strong East Indian influence, much like Ravi Shankar's sitar music.

Supplied with each recording are extensive liner notes, carefully written and researched by Alexander



TAJ MAHAL,
V. M. BHATT, AND
N. RAVIKIRAN

himself. So scholarly are the notes that reading them is like taking a short course in musical history.

Kavi Alexander was born in Tamillelam, India, and worked in Paris and Sweden before moving to the United States. I began our conversation by asking him how he started his own recording company. *B. B.*

What prompted you to start your own label?

I've always loved traditional music from Asia—Indian classical, Arabic, Persian, and Chinese. Unfortunately, records of this music always sounded awful. The quality of a lot of these recordings was poor because they were made by musicologists, who mostly were not technical people. Even when the recordings were made in the West in studios, they were not well done, partly because the engineers used rock 'n' roll recording techniques. An exception to this, however, are the recordings of the Connoisseur Society, which made fantastic LPs of Ali Akbar Khan [now reissued on CD].

Many tape recordings made in India were superb because they used simple miking techniques and tube electronics. But the vinyl used to make the records was horrendous. To listen to these scratchy records, I used to buy complex amplifiers that had noise and rumble filters to fight the pops and clicks and hiss. This robbed the music of all life. That's how I became an audiophile. Out of frustration, I decided I could do better.

Were you aiming to start an audiophile label?

Not at first. My goal was to become a movie director. I realized that record-producing and movie-directing are basically the same thing. Different media, but the same result. So I went with music production.

As a child, I was inclined toward the arts. I painted. My mother instilled in me a great love for poetry and music. She was a well-trained classical Indian musician who thought that art was more for mystical purposes than entertainment, that art is a legitimate means toward God.

My name, Kavichandran, my mother made up. It means "Poet of the Moon." Her name was Lily, and I named my company after her.

I'm self-taught in musical history. A lot of my early reading came from the wonderful recordings made in the '60s by UNESCO [United Nations Educational, Scientific, and Cultural Organization], which did a series of all the traditional music of the world. They had wonderful album notes that were written by ethnomusicologists.

I decided that recording was my calling in life. I worked as an independent producer/engineer for a Swedish company doing American jazz. Eventually I wanted to start my own company in order to have complete control of the artwork and so forth.

An audiophile friend of mine in Sweden was importing Tim de Paravicini's hi-fi equipment, built by Esoteric Audio Research. When I listened to it, I was quite blown away. A friendship with Tim developed from that.

I came to the United States in 1981 and started Water Lily Acoustics in 1984. A lot of people in the



OF CROSSED FIGURE-EIGHTS GIVES THE BEST RESULTS OVERALL.

music business helped me get started and to get where I am now. They were very supportive and generous with their knowledge, time, and resources. For example, Tim built the entire recording chain and gave it to me free of charge.

How did you arrive at your recording technique?

I tried all the stereo miking techniques, and to my ears, the Blumlein arrangement of crossed figure-eights gave the best results overall.

For my jazz recordings in Sweden, I was using a Revox B77 tape recorder and Pearl stereo microphones made in Sweden. Tim liked Pearl's rectangular mike capsules. So once I was in the United States, I got him the capsules and he made a prototype tube mike for me.

I prefer to record using analog tape equipment rather than digital. I've heard the best digital recorder, the Nagra 20-bit machine. But I think that Tim's 1-inch all-tube analog recorder is still the most musical.

You're using equipment and simple methods that were employed in the past. Some of those older recordings still sound great today.

Yes! There's a newly remastered Muddy Waters LP recording from 1963, *Muddy Waters, Folk Singer* [Chess CH-9261], that's absolutely formidable in its sound quality. Staggering.

A problem I find with a lot of high-end recordings is that the music has been forgotten. People are getting so much into technology, special cable, this and that. I say to my friends, "Listen to this Muddy Waters record made in 1963. What kind of wire do you think these guys used? What kind of capacitors did these guys have in their signal path? What kind of cruddy connectors?" You listen to this record with your brand-new equipment, and you go, "My god, how did they do it?" We've definitely lost a great amount artistically and technically.

Nowadays you listen to some so-called audiophile records, and you want to shut off the system. I wouldn't buy any of them, but this Muddy Waters disc I would gladly own. So if the music isn't there, who cares what copper or gold is used in the cables? It's meaningless.

One recording engineer from the past whom I respect is Emory Cooke. He was an overlooked genius. Not only was he technically very innovative, but he was recording the Tarahumara Indians way back in the 1950s. He was an ethnomusicologist and a pioneer in recording techniques. He built his own equipment. I have an LP of an organ recording he made in the '50s that goes down to 15 Hz!

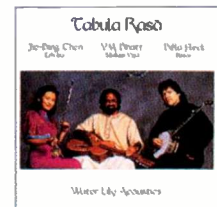
People like that, the real pros, wrote the book and set the stage for guys like me, the rank amateurs. They wanted to preserve great music and present it well, with great documentation. Their recordings are a time capsule to another world, frozen forever.

The music in your recordings is superb. Most of it is played by master musicians who have perfected their craft. It must be a thrill for you to work with them.

ALEXANDER,
K. GOPALNATH,
P. SRINIVASAN,
AND J. NEWTON



It's the greatest gift. I've been blessed because I've had the opportunity to record some of the great virtuosos. A lot of these musicians have tapped into something really profound, very spiritual, because that kind of music leads you to it. Just to sit next to them, to drink a cup of tea with them, is an inspiring experience. They have so much love.



When these men die, a whole era is going with them—the era of the royal courts. When these musicians were court musicians, they only had to worry about the music; everything else was taken care of. Now musicians have to be agents and managers, negotiating their price for the next gig. It changes something.

One of the masters is Ali Akbar Khan. My first record on Water Lily is of him. I consider him as my dad; he's been very loving. He tells me stories about his father, Baba Allhudid Khan, and what it was like in the old days to play in the royal courts.

Baba, a legend in India and revered as a musical genius, had a band composed of orphans. It was a chamber group trained in both Western and Eastern instruments. This, I believe, was one of the first fusion bands. He even made new types of instruments, such as a combination sitar/banjo. He was a great innovator, a guiding light.

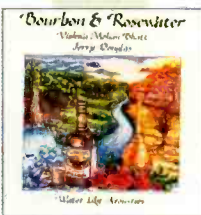


M

y business relationship with these musicians is based on friendship. Many musicians whom I record do not speak any English. They can't even read my recording contract, but they trust me because I'm their friend. It's a big responsibility.

A lot of these virtuoso musicians are in their golden years; they feel they don't have much time left,

WU MAN AND
MARTIN SIMPSON



and they want to leave behind a record of their work. The great Indian singer Salamat Ali Khan told me that there are these modes he's always wanted to sing, and he said, "Hurry up, record me."

What are your plans for the future?

I want to become mobile. Many musicians from the old traditions don't want to travel to the church in California where I record. They don't want to leave their villages. So I want to record on location. The recorder I have now weighs 250 pounds! Tim de Paravicini is going to design and build an FM recorder

for me, using NuVistors in a Nagra instrumentation-recorder transport.

I just did a recording with James Newton, David Hidalgo from Los Lobos, Cadri Goopalnath (a South Indian sax player), and Martin Simpson (a fantastic English guitarist).

You seem to have a mission.

Yes. I want to archive the traditional music of Asia, American Delta blues, and whatever acoustic music that has a tradition worth preserving. Many of my recordings bring together wonderful musicians from the West with those of the East. So we have East meets West. I'm also recording Indian and Chinese musicians together and Indian and Iranian musicians collectively. East meets East! This has never been done before.

I've always believed in this type of fusion, because all music is ultimately a fusion of various cultural streams. This mix of cultures paves the way of the future. I try to preserve the old music in the purest way on the one hand while trying to create encounters that can be a stepping stone for the new music on the other.

I'm very much a believer in the oral tradition of poetry and music. I think we are losing that. In this age, most people have no regard for poetry; most don't even sing lullabies to their babies anymore. A doctor found that babies who had lullabies sung to them were able to grasp more complex things perceptually than babies who had no lullabies sung to them.

The highest compliment to me would be, "I read your liner notes and started singing lullabies to my baby." Then I would feel that I have contributed something, in a humble way, toward the betterment of humanity. A

PARTIAL DISCOGRAPHY

Ry Cooder and V. M. Bhatt, *A Meeting by the River* (Water Lily WLA-CS-29-CD). A best-seller featuring bottleneck guitar, mohan vina (a sitar-like instrument), and tabla.

The Court Musicians, *At the Court of the Chera King* (Water Lily WLA-CS-34-CD). Vocal, dobro, violin, cello, dulcimer, sarod, tar, and dumbek.

Taj Mahal, V. M. Bhatt, and N. Ravikiran, *Mumtaz Mahal* (Water Lily WLA-CS-46-CD). Vocals, guitar, chitra vina, and mohan vina.

The Mevlevi Ensemble of Turkey, *Wherever You Turn Is the Face of God* (Water Lily WLA-ES-50-CD). Variety of instruments.

Dom Um Romao, *Saudades* (Water Lily WLA-CS-16-CD). Jazz-like music with drums, piano, percussion, berimbau, vocals, bass, and sax.

Ustad Imrat Khan, *Ajmer* (Water Lily WLA-ES-17-CD). Surbahar, sitar, and tabla.

For a complete discography, call 805/968-8188.

Kavi Alexander told me that Water Lily Acoustics "will release a CD of classical Indian musicians and classical Chinese playing together. It's a remarkably historic recording because this Indian/Chinese mix has never been done before. The recording features Visha Mogen Bhatt and an exceptional erhu player from China, Jie-Bing Chen. Another recording will feature Iranian master musician Jossian Alisade playing with a South Indian musician, Ravikiran, who played with Taj Mahal. We'll also present Simon Shahim, probably the finest erhu player in the United States." B.B



'Audio Hall of Fame' speaker designer Arnie Nudell is famous for making speakers with ultra high-end performance—and prices to match. Now he has developed Eosone—a new speaker line featuring high-end technologies and performance but at affordable prices.

finally, High-End Home Theater without the high-end price

The top-of-the-line Eosone Millennium home theater speaker system features Radiant Surround Field™ dipole technology so that everyone in the room, regardless of listening position, hears the same full fidelity sound and lifelike imaging.

On-board, twin 10" powered subwoofers provide the body slams while titanium dome tweeters deliver clean, clear sound and enveloping surround sound imaging. The center and surround speakers perfectly match the front speakers and take full advantage of the latest surround technologies such as Dolby® Digital (AC-3®).

We could go on and on about this remarkable system, *but we're out of ad space*. Call today for a free 32 page brochure on the entire line of Eosone speakers and for the location of your nearest Eosone retailer:

(800) 347-1876.

 **EOSONE™**
INTERNATIONAL



The Eosone Millennium system consists of two RSF 1000 towers with twin, on-board powered subwoofers, two RSR 350 surround speakers and one RSC 300 center speaker. Suggested retail price: under \$3,000.

Dolby, AC-3 and Dolby Digital are registered trademarks of Dolby Laboratories Licensing Corp.

CIRCLE NO. 18 ON READER SERVICE CARD

EDWARD J. FOSTER

TECHNICS SA-TX50 HOME THX RECEIVER



Although the new Technics Master Reference SA-TX50 looks like an upscale stereo amp, it's really a five-channel, Home THX-certified, Dolby Digital surround-ready receiver. With its twin analog power meters, central volume control, and modicum of other buttons and knobs, the SA-TX50 looks

like less than it is. (Or should that be "more"?)

Those burnished-gold meters surely give it the high-end look of yore.)

In addition to its AM/FM-stereo tuner, the sine qua non of a receiver, the SA-TX50 handles two audio-only sources and five audio/video sources. The audio inputs are designated "CD" and "Tape." There's no

phono preamp, but that's not likely to concern the buyers Technics has in mind for this product.

The video complement is nominally designated for three VCRs, a TV, and a videodisc player ("VDP"). Of the VCRs, only "VCR 1" can record, but it's equipped with S-video and composite-video connections and can make a direct S-video dub from the videodisc player—the only other input that has an S-video connector. The SA-TX50's "TV" and "VCR 2" and "VCR 3" inputs handle composite-video signals exclusively. Since composite-video and S-video signals are routed separately through the SA-TX50 (as is usual), both output types are provided for the TV, and both must be connected if both are to be used.

All connectors are on the back except for the trio of RCA jacks for "VCR 3" and the

front-panel headphone jack; all are base metal. To meet requirements for Home THX certification, there's a line-level subwoofer output to feed a powered sub and decoder output jacks for the five other channels (front left and right, center, and surround left and right). These are jumpered to their respective power amp input jacks by removable links, so you can reconfigure the system if desired. (Although the receiver's owner's manual mentions connecting a graphic equalizer at this interface, I don't recommend using such a hookup for home theater unless a five-channel equalizer is used and all channels are adjusted simultaneously.)

In addition to stereo inputs for each source, the "VDP" input has four more jacks to accommodate the stereo surround, center, and low-frequency effects (LFE) signals of an external Dolby Digital (AC-3) decoder (or a DVD player with analog outputs from all channels of its internal Dolby Digital decoder). These are activated when the input selector is set to "VDP6CH," and they route the 5.1 discrete audio channels directly through the system. Thus, when "VDP6CH" is selected, all other playback modes are unavailable, so you can't use THX timbre-matching or re-equalization with Dolby Digital audio. When conventional "VDP" is selected, the stereo signal fed to the front left/right inputs is decoded by the Dolby Pro Logic circuit and Home THX modifications can be applied.

Connections are provided for a 75-ohm FM antenna, a long-wire AM antenna, and the supplied AM loop antenna. The loop plugs into a socket on back and must be attached even when you use an external wire

Rated Power Output into 6 Ohms:

Stereo mode, 125 watts/channel at 0.05% THD, 20 Hz to 20 kHz; Dolby Pro Logic mode, 120 watts/channel for main and center and 100 watts/channel for surround at 1 kHz and 0.8% THD (clipping threshold).

Dimensions: 16 $\frac{7}{8}$ in. W x 6 $\frac{3}{4}$ in. H x 14 $\frac{1}{4}$ in. D (43 x 17 x 37.5 cm).

Weight: 26 $\frac{1}{2}$ lbs. (12 kg).

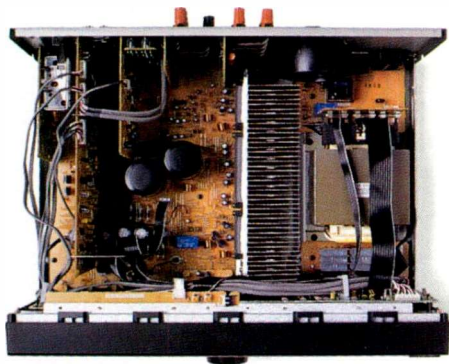
Price: \$999.95.

Company Address: One Panasonic Way, Secaucus, N.J. 07094; 201/348-9090.

For literature, circle No. 90

antenna. The wire antenna connects to a thumbscrew terminal. Two more terminals are provided for the FM antenna hot and ground wires; I find these somewhat less convenient than an F connector.

The SA-TX50 has output terminals for two sets of main front speakers, a center speaker, and a pair of surround speakers. Although these look to be multiway binding posts that will accept banana plugs, the



**IF YOU DO SOMETHING
WRONG, JUST TAP
THE "HELP" KEY
FOR INSTANT GUIDANCE.**

connectors lack internal metal sleeves and can be used only with bare wires. The receiver is powered via a detachable two-wire line cord, and it has two switched convenience outlets rated for 300 watts total. A cooling fan activates as needed but is usually off.

For the most part, the SA-TX50 is digitally controlled; even the volume control adjusts level in discrete steps, although it feels continuous and sounds almost so. The main exceptions to this are the bass and treble controls, which seem conventional. Although they can't be defeated manually, these controls are bypassed automatically in Pro Logic and mono modes. Digital control enables Technics to use the same button for more than one purpose. For example, the two pairs of main speakers are switched on and off independently with the "Speakers A" and "Speakers B" buttons, but pressing either button for 4 seconds causes the power amps to toggle between high- and low-impedance operation. Low-impedance operation (indicated by "Low IMP" in the

display) is recommended when the net load on the amplifier is less than 6 ohms.

The three buttons above the on/off switch set "Center Mode," toggle the "Subwoofer Off/On," and set "Delay Time." The usual center modes—"Wide," "Normal," and "Phantom" are provided for Pro Logic and THX. The buttons must be pressed for 4 seconds to advance to the next or alternative choice; if you tap them briefly, the current setting will appear in the display panel and on your TV if you've connected it.

The next group of buttons determines operating mode. The first three choose "THX Cinema," "Surround" (Dolby Pro Logic), and "3 Stereo" (i.e., Pro Logic with the surround channel folded into the front). The fourth button, "SFC," steps through the SA-TX50's 10 "Sound Field Control" modes: "Hall," "Club," "Live," "Theater," "Church," "Stadium," "Simulated," and three soundstage imaging modes ("SSI 1," "SSI 2," and "SSI 3"). The range of surround-channel delay depends on the processing mode. It is adjustable from 15 to 30 milliseconds, in 5-millisecond steps, for Pro Logic and THX; a wider range is available in the music modes.

With the final two pads in this control cluster, you select stereo or mono reproduction.

If you make a mistake while operating the SA-TX50 or if the sound cuts out because of some operation that was performed, pressing the "Help/Reset" key (to the left of "Volume") displays suggestions for correcting the problem. For example, if you mute the receiver and tap "Help," "Muting On Now" will scroll across the display and you're given instructions as to what to do: "Press The Muting Button On Remote Controller." Pressing "Help/Reset" until "Reset" appears in the display will re-initialize the receiver to its factory settings.

The two pads to the right of the volume control are labeled "Input Selector." You can advance forward or backward through the options: "Tuner," "CD," "Tape," "VCR 1," "VCR 2," "VCR 3," "VDP," "VDP6CH,"

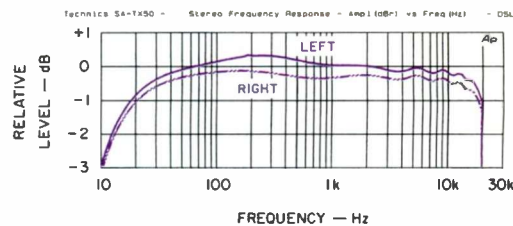


Fig. 1—Frequency response, amp section.

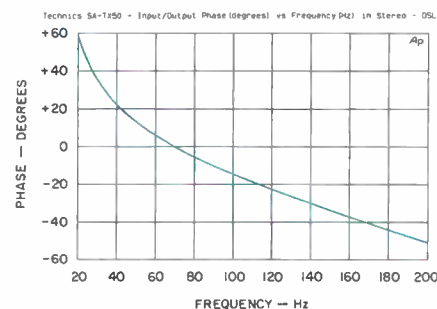
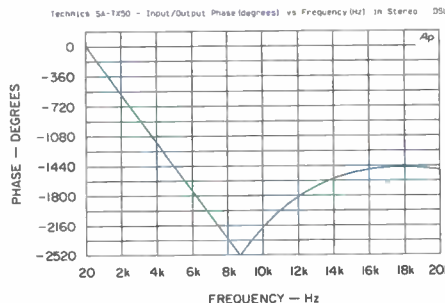


Fig. 2—Phase response, overall (A) and in bass region (B).

"TV," and back to "Tuner." Next are the tuner controls: two pads to advance up and down the FM or AM band in standard channel increments, two pads to advance up or down through the 30 possible station presets, a pad to select the band, another to choose between "FM Auto" (i.e., stereo) and mono reception, and a pad for loading the station presets ("Memory"). Pressing "Memory" briefly will load the currently tuned station into whatever preset slot you designate. Pressing it a little longer makes the TX50 automatically find and memorize stations. All 30 presets can be used for FM reception, but only presets 21 to 30 can be used for AM.

The SA-TX50's 53-button remote is pre-programmed with the codes of Technics and Panasonic products manufactured since 1985. You also can change its com-

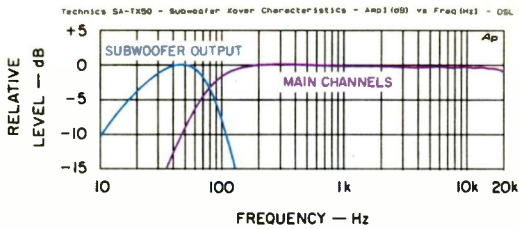


Fig. 3—Subwoofer crossover characteristics.

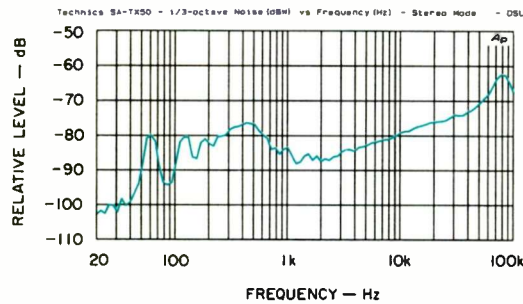


Fig. 4—Noise spectrum.

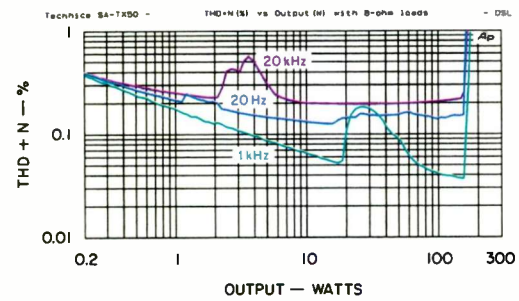


Fig. 5—Stereo THD + N vs. output for 8-ohm loads (A) and at 1 kHz into 4-ohm loads for high- and low-impedance settings (B).

mand codes to control components from other companies; the owner's manual suggests which codes to use. The remote operates TVs, VCRs, laserdisc players, CD players (including megadisc changers), and cassette decks. It provides direct access to program sources via nine pads, one for each source. ("VDP" and "VDP6CH" are on the same pad; pressing consecutively toggles

between them.) You can select any TV channel or AM/FM station preset by entering the channel or preset number; you can tune radio broadcasts directly by entering the station frequency on the numeric keypad.

The remote has the only facilities for balancing sound levels, with "Test," "CH Select," and "CH Level" pads for this purpose. Because the receiver lacks an ordinary balance control, readjusting the left/right front-speaker calibration is the only way to correct for a wayward stereo program.

Measurements

Although I didn't have a schematic or signal-flow diagram for the SA-TX50, it became pretty clear from the test results that stereo signals are digitized whether they receive further digital processing or not. As you can see in Fig. 1, the amp section's frequency response in stereo dies abruptly above 20 kHz (it's down 3 dB at 21 kHz) and there's some high-frequency ripple caused by the digital filters. That doesn't bother me particularly (although I think it's a needless complication). But given the fact that the signal is digitized, I see no reason for the response to be down 1 dB at 20 Hz.

Potentially more bothersome is the amp section's nonlinear phase response, which occurs at both ends of the audio spectrum. The effect is seen in Figs. 2A and 2B. I seldom present curves of phase response because they usually reveal nothing significant. Not so in this case. Below 70 Hz and above 8.73 kHz, the curves exhibit substantial nonlinearity, which implies non-constant group delay, a potentially audible form of "phase distortion." (Note that I've used a linear rather than logarithmic frequency scale, to facilitate your seeing the nonlinearity.)

Another cause for concern is the SA-TX50's precariously low input-overload point of 2.02 volts. Although the quasi-standard 0-dBFS output level of digital-to-

analog (D/A) converters is 2.0 volts, and it doesn't pay to waste dynamic range by providing excessive headroom, this is cutting it too close. Some CD and laserdisc players put out more than 2.02 volts at 0 dBFS, and when they do, the SA-TX50 will clip sharply. This characteristic is particularly surprising given that Lucasfilm's Home THX specs call for an overload point of at least 3 volts.

Fortunately, the tone controls seem to come after the A/D and D/A processors and

**BURNISHED-GOLD METERS
GIVE THE FIVE-CHANNEL
SA-TX50 RECEIVER
THE LOOK
OF A HIGH-END AMP.**

do not affect input overload. Both controls shelved, the bass below 100 Hz and the treble above about 10 kHz. The control ranges were perfectly adequate and reasonably symmetrical (see "Measured Data").

Figure 3 shows the crossover between the main and subwoofer channels. These curves are rather perplexing too. The high-pass section cuts off as mandated by Home THX standards (-3 dB at 80 Hz, 12 dB per octave), but the low-pass section is off the mark. The slope is okay (24 dB per octave), but the -6 dB point occurs at 91 Hz rather than at 80 Hz. Furthermore, the low-end response in the subwoofer channel rolls off—it's down 1 dB at 31 Hz and 3 dB at 22 Hz—so there's actually less bass output from the receiver when a subwoofer is used than when it's not!

The amp section's A-weighted noise, measured in stereo with the volume set according to IHF standards (about 11.2 dB below the THX reference mark), was a rather poor -69.7 dBW. The third-octave noise spectrum of Fig. 4 suggests why. Note the hump in noise power in a two-octave region (between approximately 150 and 700 Hz) in the upper bass and midrange. There's also a fairly substantial power-supply hum component at 120 Hz and some line-induced hum at 60 and 180 Hz. These hum components are not that unusual, but the broad hump in noise is—and it is not suppressed by A-weighting.

**“Phenomenal...
Highly
Recommended!”**

— D.B. Keele, Jr., on the Studio/100
Audio Magazine/July '96

**“Extraordinary...
Bravo
Paradigm!”**

— Andrew Marshall, on the Studio/80, CC-450, ADP-450
Audio Ideas Guide, Summer 96 Issue

**High praise for PARADIGM®
REFERENCE SPEAKER SYSTEMS...
dedicated to providing the highest
standard of technological design
excellence, and deliver breathtaking
high-end sonic performance!**



With years of design expertise and a state-of-the-art in-house R&D facility, Paradigm engineers and acousticians set out to build the world's finest speakers, regardless of cost! The result is Paradigm Reference...electrifying and eminently satisfying high-end speaker systems that bring you closer than ever to the live event!

And, while this stunning performance heightens the sheer enjoyment of music, it is equally important for the best in home theater sound, especially now with the arrival of digital AC-3.

We invite you to visit your nearest Authorized Paradigm Reference Dealer and experience this astonishing new reference standard in music and home theater sound for yourself!



Studio/20

Studio/60

Studio/80

Studio/100

Esprit/BP
Bipolar

Eclipse/BP
Bipolar

LCR-450
Left/Center/Right

CC-450
Center Channel

ADP-450
Surround

AC-3 is a trademark of Dolby Labs

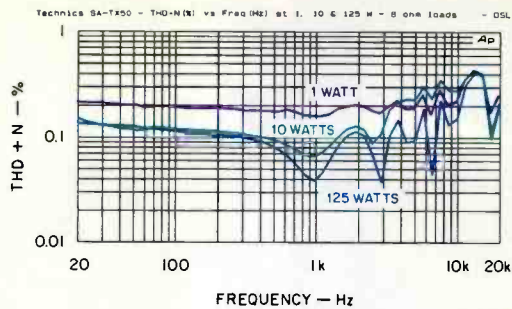


PARADIGM® REFERENCE

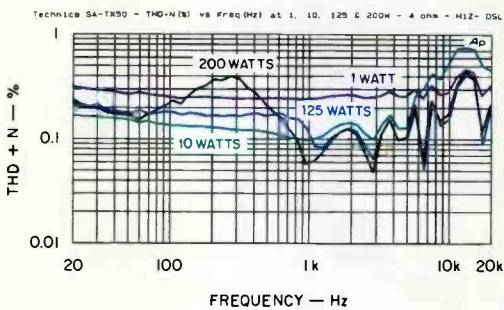
THE ULTIMATE IN HIGH-END PERFORMANCE FOR MUSIC AND HOME THEATER™

For more information visit your nearest Authorized Paradigm Reference Dealer or write:
AudioStream, MPO Box 2410, Niagara Falls, NY 14302 (905) 632-0180
In Canada: Paradigm, 101 Hanlan Rd., Woodbridge, ON L4L 3P5 (905) 850-2889

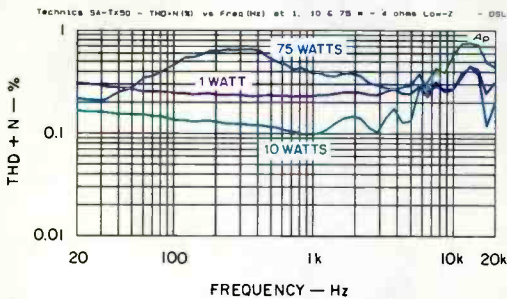
CIRCLE NO. 31 ON READER SERVICE CARD



A



B



C

Fig. 6—Stereo THD + N vs. frequency for 8-ohm loads (A), 4-ohm loads with high-impedance setting (B), and 4-ohm loads with low-impedance setting (C).

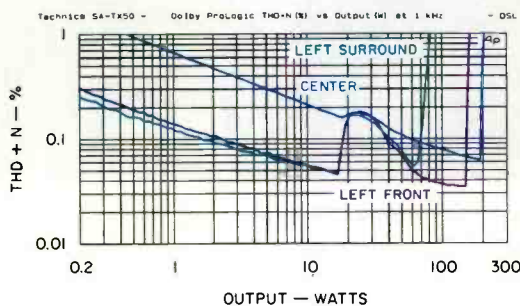


Fig. 7—THD + N vs. output, Dolby Pro Logic mode.

Technics specifies output power only with 6-ohm loads and gives an FTC rating only in stereo (125 watts per channel at 0.05% THD, 20 Hz to 20 kHz). For home theater, power ratings are given at clipping and only at 1 kHz (120 watts per channel

across the front, 100 watts apiece for the surrounds). I tested the receiver in stereo with standard 8- and 4-ohm loads and, with 4-ohm loads, tried the high- and low-impedance choices. Not having either 8- or 4-ohm manufacturer's specifications, I couldn't calculate dynamic headroom, but I did check dynamic power (see "Measured Data").

The SA-TX50 uses Technics' "Class H+" power modules, which are transistor/IC hybrids. I take them to be similar to the modules used in the SE-A1000 stereo power amplifier that I reviewed for the May issue. Although purists sniff at such hybrid amps, I found that those in the SE-A1000 tested very well. I was rather surprised, therefore, that the test results for the SA-TX50 were substantially worse.

The curves of Fig. 5 plot total harmonic distortion plus noise (THD + N) versus output level, for 8-ohm loads at three test frequencies (Fig. 5A) and at 1 kHz for 4-ohm loads with both impedance settings (Fig. 5B). The "bumps" in the curves correspond to the output levels at which the SA-TX50 shifts between power-supply rails—low-voltage rails when delivering modest output power and high-voltage rails when approaching full power. As you can see from Fig. 5A, the switchover region varies with frequency and occurs at lower power levels with high-frequency signals than with low-frequency signals. Although the general shape of these curves is fairly typical of Class-H operation (it's one of the prices paid for Class-H efficiency), these distortion levels are relatively high. At 20 kHz with 4-ohm loads, THD + N was especially high; in the transition region, around 7 watts, it hit nearly 1%!

Figure 6 shows the left channel's THD + N versus frequency. I made these tests in stereo, with both channels driven, at 1 watt per channel, 10 watts per channel, and "rated" output under the three load/impedance conditions. Since there are no manufacturer

ratings for either 8- or 4-ohm loads (the TX50 is rated for 6 ohms), I imposed my own ratings, based on the results in Fig. 5. Under steady-state, 1-kHz conditions with 8-ohm loads, the SA-TX50 clipped at 175 watts per channel, so I assigned it a power rating of 125 watts per channel (the same as Technics uses for 6-ohm loads). With 4-ohm loads and the low-impedance setting, the receiver clipped at 82 watts per channel; I therefore rated output as 75 watts. With the high-impedance setting, it delivered 215 watts per channel into 4 ohms at clipping. I thought this might be pushing it, so I ran one curve at 125 watts per channel and another at 200 watts per channel. At the very end of the 200-watt/channel test, the overload protector triggered, so I guess I was up against the stops. (The power meters, incidentally, are calibrated for 8-ohm loads and are reasonably accurate.

**SURPRISINGLY,
THE SUBWOOFER OUTPUT
ROLLS OFF SLIGHTLY
AT THE BOTTOM END.**

However, they operate even when the speakers are turned off.)

What's interesting about the curves in Fig. 6—especially those taken with the high-impedance setting (Figs. 6A and 6B)—is that over much of the frequency and power range, most of the distortion does not seem to come from the hybrid power modules but from elsewhere in the circuit. The irregularities in these curves and their relative parallelism suggest that the distortion mechanism lies in the analog-to-digital or digital-to-analog converters. There's no justification for that; Technics certainly has better A/D and D/A converters at its disposal.

On the IHF tone-burst test for dynamic headroom, the SA-TX50 delivered about 0.5 to 1 dB more power than on a steady-state basis. Damping factor was nearly 100, and output impedance was relatively constant with frequency, rising from 85 milliohms at 1 kHz to 115 milliohms at 20 kHz. Channel separation in stereo mode was 53 dB or better across the meaningful

"THIS SYSTEM EMBARRASSES MANY HOME THEATER SPEAKER COMBOS COSTING SEVERAL TIMES ITS PRICE"

- *Congress Quarterly Home Theater Technology, Volume 2, No. 7*



\$1,576*

gets you this stunning

home theater system consisting of:

Mini-Mk3, CC-300, ADP-150, and PS-1000†.

Spectacular performance from Paradigm...

the number one choice for critical listeners!

6

Consecutive years Rated #1 for price/value in *Inside Track*®

7

Product of the Year Awards in the past year

16

Critic's Choice Awards in the past year

80

Awards since 1990



Atom, CC-73, Micro, PCR-10† \$796*



Titan, CC-150, ADP-100, PDR-10† \$1,085*



9series, CC-300, ADP-150, PS-1000† \$1,996*

Paradigm's state-of-the-art R&D and superior component technology produces speakers that offer the *ultimate* in high performance sound for both music and home theater. And, when it comes to value, Paradigm is second to none! Visit your nearest **AUTHORIZED PARADIGM DEALER** and listen to any of these sensational systems today!

Paradigm

THE ULTIMATE IN HIGH-PERFORMANCE SOUND™

For more information on other fine Paradigm speakers visit your nearest AUTHORIZED PARADIGM DEALER or write: AUDIO'S TREAS, M/PO Box 2810 Niagara Falls, NY 14302 (905) 632-0180 In Canada: PARADIGM, 107 Houlton Rd. Woodbridge, ON L4L 3P5 (905) 850-2889

® Inside Track Annual Dealer Survey * Manufacturer's FMV retail price. † All systems shown include a powered subwoofer. Website: www.paradigm.ca

CIRCLE NO. 32 ON READER SERVICE CARD

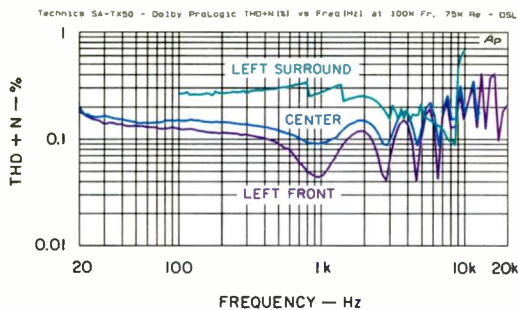


Fig. 8—THD + N vs. frequency, Dolby Pro Logic mode.

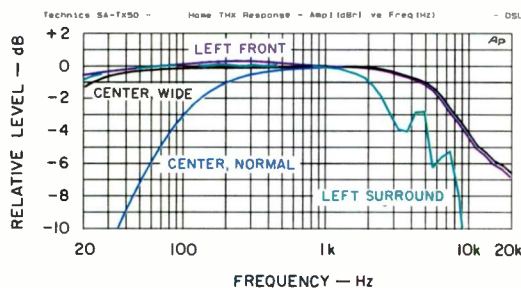
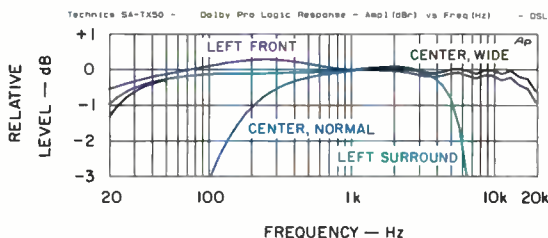


Fig. 9—Frequency response in Dolby Pro Logic mode (A) and in Home THX mode (B).

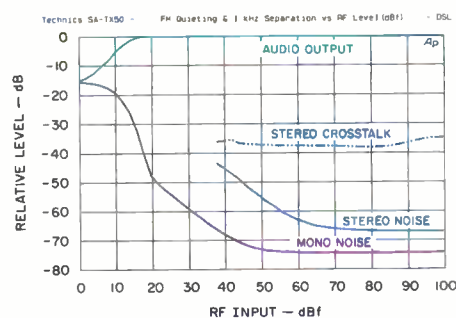
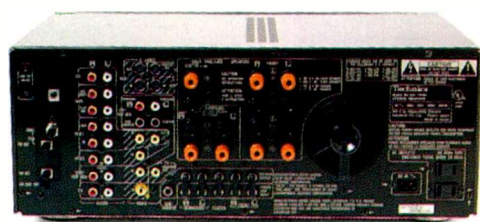


Fig. 10—FM tuner section's quieting characteristics and crosstalk.



portion of the spectrum. Channel imbalance in stereo amounted to 0.4 dB. Input impedance was fine; output impedance at the tape recording terminals was rather high, so keep the interconnects short. Recording output levels, however, were fine.

I tested the TX50's Dolby Pro Logic performance using 8-ohm loads on each channel and with the high-impedance setting. The test results are remarkably similar to those in stereo, often matching within the limits of measurement error. Main-front output power at clipping, for example, is 0.2 dB less with Pro Logic than in stereo; it's difficult to determine the clipping point more precisely than that.

With only the center channel driven, as Fig. 7 shows, output power at clipping rises to 205 watts, well above Technics' spec. The surround channels squeak through, if you take into account the difference between the 8-ohm loads I used and the 6-ohm loads Technics used for its specs. (The rated 100 watts per channel into 6 ohms is equivalent, on an output-voltage basis, to 75 watts per channel into 8 ohms.)

Figure 8 shows THD + N versus frequency with Dolby Pro Logic decoding. I measured all three front channels at 100 watts into 8 ohms (close to the voltage equivalent of the 6-ohm rating) and the surrounds at 75 watts a side. The front-channel curves are shaped remarkably like those taken in stereo (which again suggests that the distortion is coming from the converters). The maximum distortion levels (less than 0.43% from 20 Hz to 20 kHz) are also practically identical to those in stereo. Over much of the frequency range, front-channel distortion is less than 0.2% while surround distortion is somewhat higher. (Surround-channel distortion seems to be lower in "Measured Data" because the frequency range is more confined.)

Front-channel frequency response of the Technics SA-TX50 with Dolby Pro Logic also is similar to that in stereo. Actually, it's a bit better, since the tone controls are bypassed in Pro Logic mode. As you can see in Fig. 9A, the surround channel rolls off above 6.5 kHz in Pro Logic mode, as it should, and the center rolls off below 100 Hz when in its "Normal" mode. Figure 9B shows the receiver's frequency response in the Home THX mode (note the change in vertical scale). On the whole, these curves adhere to Home THX standards within acceptable tolerance limits.

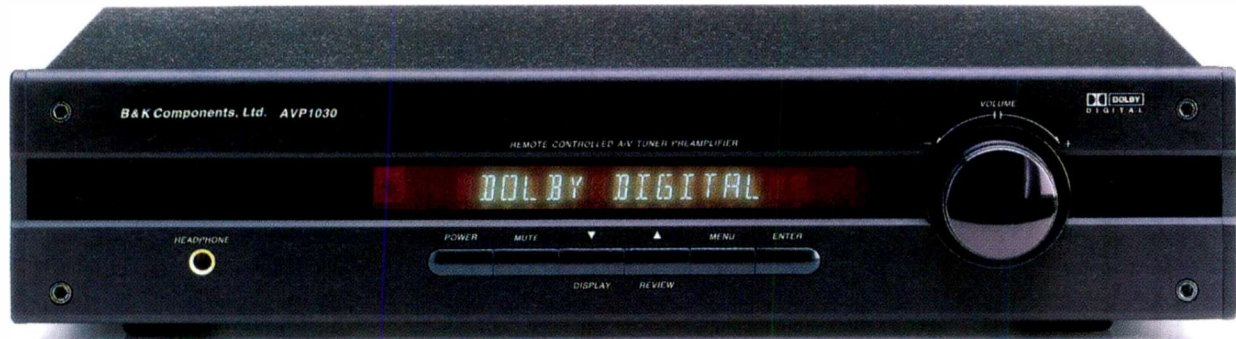
The receiver's A-weighted noise in Pro Logic mode was similar to that in stereo; if anything, it was a tad better. Steady-state channel separation at 1 kHz varied from a

THE FM SECTION BEAT ITS AM-SUPPRESSION SPEC BY 16 dB AND ITS IMAGE-REJECTION SPEC BY A WHOPPING 30+ dB!

low of 52.5 dB between the surround and right-front channels to a maximum of 70.8 dB between left front and surround. On the whole, separation averaged about 63 dB, which is very good.

When I test FM tuners, I often cannot verify a manufacturer's specs for alternate-channel selectivity, image rejection, and AM suppression. For the SA-TX50, however, my selectivity figure exceeded Technics' spec by 12.5 dB, AM suppression was more than 16 dB better than claimed, and image rejection beat the spec by a whopping 30+ dB! Adjacent-channel selectivity (which Technics, like most manufacturers, does not specify) was also remarkably high. There's usually a trade-off between high selectivity on the one hand and good capture ratio and low distortion on the other. That was the case here: Capture ratio was a relatively modest 2 dB, and although the SA-TX50's tuner beat its distortion spec in stereo, it missed the target on mono broadcasts. The tuner's THD + N is listed in "Measured Data" at 100% modulation; distortion at 50% modulation was a bit lower, 0.03% or less to about 4 kHz and less than 1% out to about 7.5 kHz.

The Heart of a High-End Home Theater Mere Mortals Can Afford.



Nearly 15 years ago, B&K Components, Ltd. of Buffalo, NY, started out with an idea.

If we produced wonderful-sounding components, and kept prices low, we knew we'd win a reputation for making High End audio affordable.

Critics took notice, "B&K offers exceptional sound at a remarkable value". We have won numerous "Best Buy" awards from leading hi-fi publications - coveted recognition that is only awarded to the very best models in each product category.

"B&K's components offer good value. They sound great!" - Sensible Sound

Can I hear it?

You bet you can! You don't need a critic's "golden ears". You need only normal ears and a love of music or movies. The superior sound quality of B&K is obvious, not subtle. With any style of music or film soundtrack - the harmonics just sound right. We bring out the beauty of music, and put you in the action.

Why are your prices so low?

We keep our circuits simple. Less is more. Fewer parts and shorter signal paths mean better sound. This allows us to buy the best parts at the best price.

But that is only part of the story.

Because the human ear is the ultimate -the only arbiter of sound quality, we regularly pull gear off the production line and listen to it. B&K's absolute dedication to sound quality is the reason so many have fallen in love with our components.



B&K's new surround sound components are powered by the 24-bit Motorola 56000 DSP.

Our products speak for themselves.

Do you hear the bite of the cymbal? The energy and emotion of the soundtrack? Do the voices sound right? Do you hear the beauty of a solo violin? If you get the harmonics right...if you reproduce vocal and instruments correctly...then everything else typically falls into place, including detail, resolution, clarity, imaging, soundstage, rhythm, pace, timing. And getting the movie effects, voices, and music right makes our

audio/video system the complete package for both music and movies.

"B&K Components, Ltd. has become one of America's leading manufacturers of affordable, high-quality audio electronics...providing musical, reliable preamplifiers and power amplifiers within the budget of virtually any music lover." -Hi-Fi Heretic

Powered by Motorola™.

B&K is developing a family of consumer audio/video products based on the Motorola® 56000 Series 24-bit DSP processors. Chosen as an Alpha development site by Motorola for the 56000 Series, B&K contributes to the Motorola effort to design, develop, and test their newest state-of-the-art digital signal processors. B&K is leading the way with the first Dolby Digital® (AC3) preamp tuner/processor powered by the Motorola 56009 DSP processor, the AVP1030.

Please take the time to listen to B&K's components and judge for yourself. At B&K, high end A/V means high performance, not high price.



Call 800-543-5252, 716-656-0023 or fax 716-656-1291 for a dealer near you. B&K Components, Ltd., 2100 Old Union Road., Buffalo, New York 14227

Dolby Digital® is a registered trademark of Dolby Labs, Inc.. Powered by Motorola® name and logo and Motorola and (M) are registered trademarks of Motorola, Inc. CIRCLE NO. 5 ON READER SERVICE CARD

MEASURED DATA

AMP SECTION, STEREO MODE

Output Power at Clipping (1% THD at 1 kHz): 8-ohm loads, 175 watts (22.4 dBW); 4-ohm loads at low-impedance setting, 82 watts (19.1 dBW); 4-ohm loads at high-impedance setting, 215 watts (23.3 dBW).

Dynamic Output Power: 8-ohm loads, 195 watts (22.9 dBW); 4-ohm loads at low-impedance setting, 90 watts (19.5 dBW); 4-ohm loads at high-impedance setting, 270 watts (24.3 dBW).

THD + N, 20 Hz to 20 kHz: 8-ohm loads, less than 0.406% at 125 watts/channel out and less than 0.416% at 10 watts/channel out; 4-ohm loads at high-impedance setting, less than 0.4% at 125 watts/channel out and less than 0.752% at 10 watts/channel out.

A-Weighted Noise: -69.7 dBW.

Damping Factor re 8 Ohms: 95 at 50 Hz.

Output Impedance: 85 milliohms at 1 kHz, 90 milliohms at 5 kHz, 105 milliohms at 10 kHz, and 115 milliohms at 20 kHz.

Frequency Response, Tone Controls at Detent: 20 Hz to 20 kHz, +0.29, -0.95 dB (-3 dB at 10.4 Hz and 21 kHz).

Tone-Control Range: Bass, +10.2, -8.8 dB at 100 Hz; treble, +8.7, -8.2 dB at 10 kHz.

Subwoofer Crossover: High-pass, -3 dB at 80 Hz and -6 dB at 61 Hz, 12-dB/oct-

tave slope; low-pass, -3 dB at 76 Hz and -6 dB at 91 Hz, 24-dB/octave slope.

Sensitivity: 30.9 mV for 0 dBW out.

Input Impedance: 32.4 kilohms.

Input Overload for 1% THD at 1 kHz: 2.02 V.

Channel Separation: Greater than 53.3 dB, 100 Hz to 10 kHz.

Channel Balance: ±0.2 dB.

Record Output Level: "VDP" input, 470 mV out for 0.5 V in; FM tuner, 520 mV out for 100% modulation at 1 kHz.

Recording Output Impedance: 3.55 kilohms.

AMP SECTION,

DOLBY PRO LOGIC MODE

Output Power at Clipping, 8-Ohm Loads: Main channels, 165 watts/channel (22.2 dBW) with "Phantom" center setting; center channel, 205 watts (23.1 dBW) with "Wide" center setting; surround channels, 82 watts/channel (19.1 dBW) with "Wide" center setting.

THD + N at 125 Watts Output, 8-Ohm Loads: Main, less than 0.41% from 20 Hz to 20 kHz; center, less than 0.43% from 20 Hz to 20 kHz; surround, less than 0.34% from 20 Hz to 8.7 kHz.

Frequency Response: Main, 20 Hz to 20 kHz, +0.29, -0.92 dB (-3 dB below 10 Hz and at 21.08 kHz); center ("Wide" mode), 20 Hz to 20 kHz, +0.06, -1.34

dB (-3 dB at 13.5 Hz and 21.15 kHz); center ("Normal" mode), 104 Hz to 21.15 kHz, +0.06, -3 dB; surround, 11 Hz to 6.55 kHz, +0.11, -3 dB.

A-Weighted Noise: Main, -70.4 dBW; center ("Wide" mode), -68.4 dBW; surround, -70.1 dBW.

Channel Separation at 1 kHz: 52.5 dB or greater.

FM TUNER SECTION

IHF Usable Sensitivity: Mono, 19.4 dBf.

50-dB Quieting Sensitivity: Mono, 21.3 dBf; stereo, 45.8 dBf.

S/N at 65 dBf: Mono, 74.3 dB; stereo, 64.8 dB.

Frequency Response, Stereo: 20 Hz to 15 kHz, +0.13, -1.12 dB.

Channel Balance: ±0.00 dB.

Channel Separation: Greater than 32 dB, 100 Hz to 10 kHz.

THD + N at 65 dBf, 100% Modulation: Mono, 0.49% at 100 Hz, 0.45% at 1 kHz, and 0.16% at 6 kHz; stereo, 0.25% at 100 Hz, 0.2% at 1 kHz, and 0.99% at 6 kHz.

Capture Ratio at 45 dBf: 2 dB.

Selectivity: Adjacent-channel, 9.5 dB; alternate-channel, 77.5 dB.

Image Rejection: Greater than 75 dB.

AM Rejection: Greater than 66 dB.

Stereo-Pilot Rejection: 35.9 dB.

Stereo-Subcarrier Rejection: 83.2 dB.

Although the TX50's tuner is unusually selective, its sensitivity is no better than average. As seen in the quieting curves of Fig. 10, the tuner reaches 50-dB quieting with a 21.3-dBf mono signal and a 45.8-dBf stereo signal. Below 38 dBf (the point at which the stereo curves begin), the tuner receives stereo broadcasts in mono. Signal-to-noise ratio at 65 dBf was good, better than 74 dB in mono and almost 65 dB in stereo. Channel balance was perfect. Frequency response was smooth, extended, and extremely flat. Tape recordists will appreciate the better-than-average pilot rejection and total absence of subcarrier residue in the audio output. Incidentally, because I measured the FM tuner characteristics at the tape output (as usual), I presumably bypassed the SA-TX50's digital conversion process.

Use and Listening Tests

I know from experience that the technology of Matsushita, the parent company of Technics, is world-class and that Technics has delivered many excellent products over the years. But I was disappointed in the SA-TX50's performance on the test bench, and matters weren't much better in my listening room.

I have no gripe with this receiver's Dolby Pro Logic decoder and Home THX enhancements; taken by themselves, they worked fine. And I have little doubt that many people will be pleased with the SA-TX50 in a home theater; after all, video can tend to distract one from pure sound quality. But for music listening, I thought the SA-TX50 fell short. The sound tended to thicken and become confused in complex

passages, such as during the choral parts of the Berlioz *Te Deum* (Eliahu Inbal conducting the Frankfurt Royal Symphony Orchestra, Denon CO-76142). In general, the sound tended to hardness in the upper treble. For example, I found the opening trumpet in "El amor brujo" (*Music of Manuel de Falla*, Dorian DOR-90210) disconcertingly shrill. The same goes for the Royal Concertgebouw Orchestra's violins in Beethoven's Piano Concertos, Nos. 3 and 4 (Philips 446 082). And Mitsuko Uchida's piano in these pieces sounded unusually hard and clangorous to me.

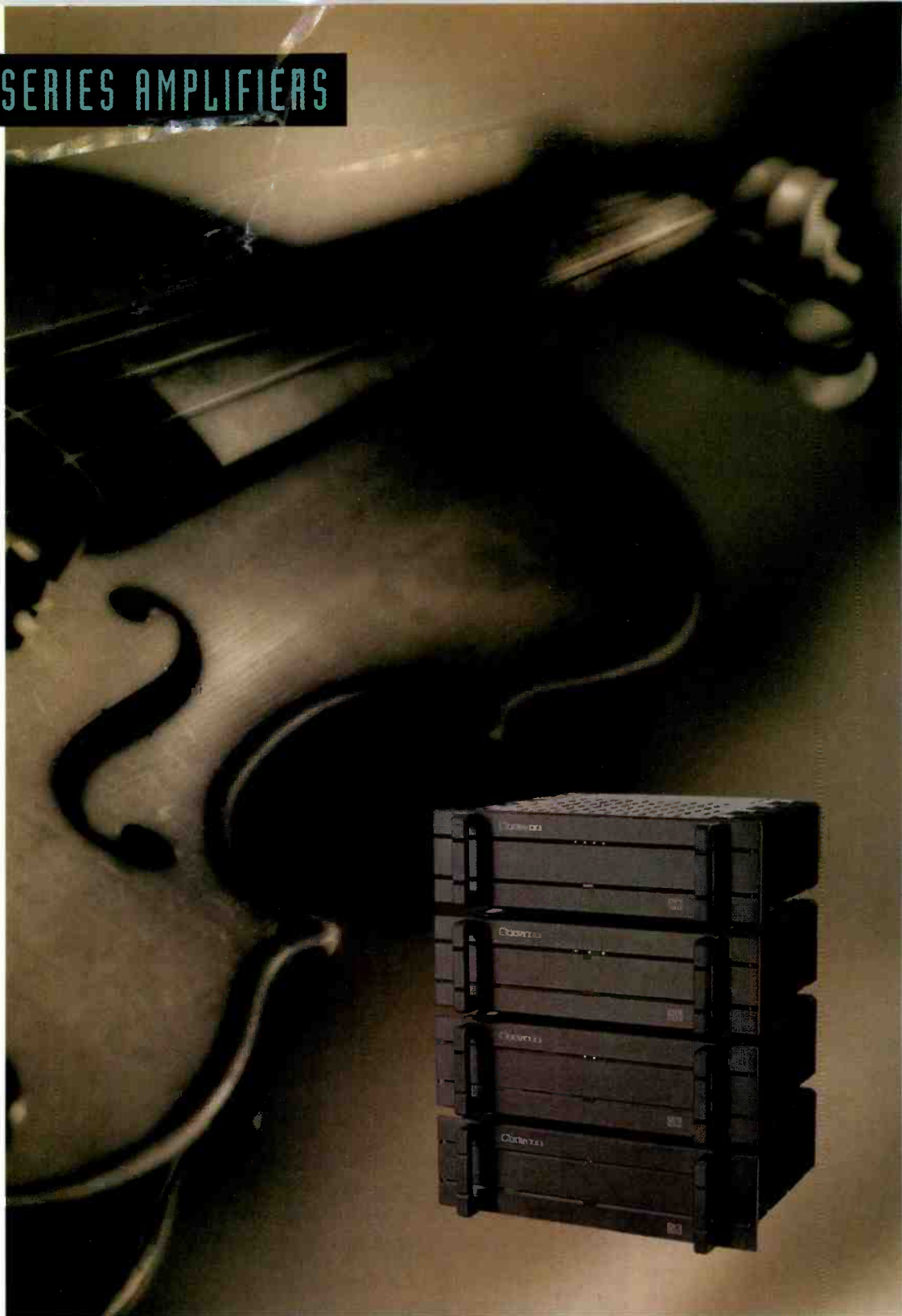
All in all, the SA-TX50 is a rather mixed bag. As an audio/video receiver, it's certainly a lot of bang for the buck. But it's also Technics' top receiver, and I know the company can do better. A

THE BRYSTON ST SERIES AMPLIFIERS

Listen Past the Equipment
and Experience the Music
as Intended

Once in a while an idea
comes along which represents
a significant step forward in
advancing the current state-
of-the-art. We feel our new
ST Series amplifiers exemplify
this unique distinction.

A new approach to low-noise,
low distortion signal-path
has produced a line of
amplifiers which is actually
quieter and more transparent
than any source material
currently available.



Bryston ST amplifiers, from the top: 8B ST 4 channel 120 wpc, 5B ST 3 channel 120 wpc, 4B ST 250 wpc stereo, 7B ST 500 watts mono. Not shown is the 3B ST 120 wpc stereo.

The Bryston ST innovation: our ultra-linear "input buffer-with-gain" substantially lowers the distortion and inherent noise floor — *hearing is believing.*

Completely separate power supplies for each channel eliminate any crosstalk to ensure firm focus and completely accurate imaging of musical instruments.

Switchable gold plated RCA unbalanced and XLR-1/4 inch balanced inputs, with equal gain, allows flexibility for multi-channel system configurations.

20
YEAR WARRANTY
Music
for a
Generation

Bryston Ltd, P.O. Box 2170, 677 Neal Drive, Peterborough, Ontario,
Canada K9J 7Y4 Tel: (705) 742-5325 Fax: (705) 742-0882

CIRCLE NO. 8 ON READER SERVICE CARD

BRYSTON

BASCOM H. KING

MESA ENGINEERING BARON AMPLIFIER



prises two parts, a rear-panel switch to select any of four negative feedback levels ("0," "I," "II," and "III") and an output-tube setup for pentode or triode operation as well as mixtures of the two.

To accomplish the latter, Mesa partitioned each channel's three pairs of output tubes into two unequal groups. Switches on top of the chassis enable each group to be set for triode or pentode operation. Four modes of operation are available: full pentode, two-thirds pentode and one-third triode, one-third pentode and two-thirds triode, and all-triode.

Power output varies according to the operating mode, with each group of output tubes delivering about 60% less power in triode than in pentode mode. But what matters most, according to Mesa, is the range of sonic choice that Tandem-State Imaging gives you. For example, the Baron's instruction manual states that you might prefer triode operation with little or no negative feedback for "bringing lushness to... acoustic instruments in a playback setting," whereas pentode operation might be better "for playing back modern electronic music, where bass fundamentals require considerable—and fast—amplifier power with enough negative feedback to keep speaker motion tight."

The Baron's very attractive front panel has mirror-image symmetry—which is logical, since the Baron is a dual-mono design and has separate AC power cords for each channel. The prominent, illuminated meters normally indicate output level but are

The Baron tube power amp's heritage stems from Mesa Engineering's success as a maker of musical instrument amplifiers. Randall Smith, the company's president and chief designer, saw a need in the early '80s

for a guitar amplifier that could be rack-mounted, so he developed the Mesa M180 and M190 amplifiers. These early models, which found their way into the hi-fi systems of some of Smith's audiophile friends, were so well received that he decided to build a high-end amplifier for use in the home. This led to the introduction of the Baron.

**THE MESA BARON'S
DESIGN CHOICES
WERE BASED ON
LISTENING PREFERENCES,
NOT MEASUREMENTS.**

In designing the Baron, a complex and unusual amp, Smith relied heavily on a listening panel that was fairly evenly divided between musicians and audio enthusiasts. The panelists rejected many design choices that would have given the amplifier better

measurements in favor of those they felt would improve its sound. The Baron's design was finalized when its sound character satisfied both the panel and Smith.

The most unusual aspect of the Baron's design is its Tandem-State Imaging (patent pending), a system for tailoring the amp's sonic performance to suit different tastes and speakers. Tandem-State Imaging com-

Rated Midband Power at Onset of Clipping, All-Pentode Operation into 8 or 4 Ohms: With Type 5881 output tubes, 135 watts per channel; with Type 6L6 output tubes, 150 watts per channel.

Rated Midband Distortion with No Negative Feedback: Less than 1% THD.

Dimensions: 19 in. W x 8¾ in. H x 14½ in. D (48.3 cm x 22.2 cm x 36.8 cm).

Weight: 75 lbs. (34 kg).

Price: \$3,695.

Company Address: 1317 Ross St., Petaluma, Cal. 94954; 707/433-8663;

E-mail, audioguy@mesaboogie.com

For literature, circle No. 91

MovieWorks
\$1,299
\$100 Bonus Dollars†



140 Watt, 12"
 Powered Subwoofer

Dipole Radiator
 Surround Speakers

Shielded, Two-Way
 Main Speakers

Shielded, Low-Profile
 Center Speaker

Introducing MovieWorks.[™] No-Compromise Home Theater Surround Sound Made Simple.

For many, many people, *MovieWorks* is the perfect home theater speaker system. It delivers incredible no-compromise performance that doesn't require disclaimers or apologies. We don't know of any other system in its price range that approaches its performance.

What Is *MovieWorks*?

MovieWorks is a set of carefully matched speakers – including a powered subwoofer – for Dolby Pro Logic® or Dolby Digital® (AC3) surround sound systems. Each speaker is designed to accurately reproduce music and movie soundtracks with outstanding realism.

Main Speakers.

The left and right speakers in *MovieWorks* use a two-way, shielded design. They are acoustically similar to the satellite speakers in our acclaimed *Ensemble*® speaker system, which *Audio* magazine called "the best value in the world."

The Center Speaker.

The center speaker is a wide-dispersion, high-output shielded design with two 3 1/2" midrange drivers and a tweeter identical to that in the main speakers. Its low profile makes it ideal for use above or below a TV monitor.

The Surround Speakers.

For the rear channel, we chose an acoustically matched dipole radiator speaker. Each speaker has two high-frequency drivers – one facing forward, one to the rear. They send out-of-phase signals to the front and rear of the room, where they reflect off walls, "surrounding" the listener. We feel dipole speakers are ideal for home theater – including Dolby Pro Logic and Dolby Digital (AC3) systems.

"The Cambridge SoundWorks dipole surround speaker sounded absolutely great. These will stay on my surround speaker shelves for a long time."

Home Theater magazine-3/96

The Powered Subwoofer.

For bass reproduction, we chose an amazing powered subwoofer. It uses a 12" woofer with a 140-watt amplifier for outstanding bass in music and soundtracks. *Sound & Image* says it's, "a winner, pounding out first-rate 108 SPL...a knockout."

\$100 Bonus Dollars & Satisfaction Guaranteed.

At \$1,299, we think *MovieWorks* is the ideal home theater sound system for people who aren't willing to compromise on performance. As an introductory offer, *MovieWorks* comes with \$100 Bonus Dollars for use towards the purchase of anything in our catalog!

Try *MovieWorks* in your own home, with your favorite music and movies. If within 30 days you decide you don't love it, send it back for a full refund.

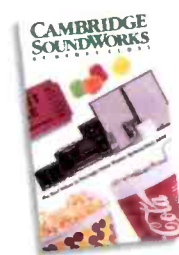
"Cambridge SoundWorks' Powered Subwoofer was clearly the best subwoofer of the pack...it blew them away on dynamics."

Stereo Review-9/96

HOW DOES *MovieWorks* COMPARE TO THE COMPETITION?

	DIPOLE SURROUND SPEAKER?	WOOFER SIZE	SUBWOOFER POWER	PRICE
CAMBRIDGE SOUNOWORKS	YES	12"	140 WATTS	\$1,299†
POLK (M5, M3II, CS250S, PSW300)	NO	10"	125 WATTS	\$1,499
BOSTON ACOUSTICS (Micro90, 90X, 90C)	NO	8"	75 WATTS	\$1,399
KLIPSCH (KSS3, KSS2, KSS1)	NO	6.5"	50 WATTS	\$1,199

†Price includes \$100 Bonus Dollars good towards any product in the Cambridge SoundWorks catalog.



†Offer ends 12/29/96. Bonus Dollars must be used by 12/29/96.

Free Catalog

To Order, For A Free Catalog, Or For
 The Nearest Store Location, Call
1-800-FOR-HIFI
 (1-800-367-4434)

CAMBRIDGE SOUNOWORKS®

Critically Acclaimed. Factory-Direct.

311 Needham Street, Suite 104, Newton, MA 02164
 Tel: 1-800-367-4434 Fax: 617-332-9229
 Canada: 1-800-525-4434 www.hifi.com
 Outside U.S. or Canada: 617-332-5936

© 1996 Cambridge SoundWorks. ®Cambridge SoundWorks, Ensemble and The Surround are registered trademarks of Cambridge SoundWorks, Inc. *MovieWorks* is a trademark of Cambridge SoundWorks, Inc. Dolby Digital and Pro Logic are registered trademarks of Dolby Laboratories Licensing Corp. † In the continental U.S. † Offer ends 12/29/96.



CIRCLE NO. 10 ON READER SERVICE CARD

The Baron's input circuit is a differential amplifier that uses a 12AX7 dual triode as a phase inverter. One grid is fed from the incoming input signal, the other tied to ground through a resistor that forms the shunt element for the negative feedback. Because of the impedance difference between these grids, the Baron is set up, despite the presence of XLR jacks, for unbalanced signals. In the unit I received, pin 2 of the XLR input connector was tied to the hot lead of the RCA input connector and to the signal input grid; pins 1 and 3 were grounded. Grounding one phase of a balanced input this way could conceivably cause distortion in some preamps. (For that reason, according to Mesa Engineering, Baron amps produced since August of this year have pin 3 grounded through 60 kilohms, to match the input impedance of pin 2 and the RCA connector.) The cathodes of the input tubes are tied together and returned to about -60 volts through a resistor whose value sets the stage's current at the desired level. Output is taken from the plates of the first stage and capacitor-coupled to the next stage through an attenuator that uses one resistor for each signal phase.

The second stage, which also uses a 12AX7 dual triode, is a push-pull amplifier whose cathodes are tied together and connected to ground through a self-biasing resistor. This resistor is bypassed with an electrolytic capacitor. An AC-balance control is incorporated in the plate circuit. (This is a service adjustment and should not be confused with the accessible balance adjustment described below.) A small capacitor is connected from one of the plates to ground; this is just one of many touches that tailor the sound in a way Mesa Engineering considers desirable, although it also increases measured high-frequency distortion. Plate outputs of this stage are capacitor-coupled to the grids of the output tubes.

The plates of the output tubes are fed from a 460-volt supply. The screen grids of the output tubes are fed through a filter choke from this supply and are bypassed through a capacitor to ground. Two adjustable bias-voltage dividers are used to feed the tube grids in each half of the push-pull output stage through individual grid-leak resistors. When the meter switches on the front panel are set for bias adjustment, the meter reads the voltage drop across a common-cathode sampling resistor. This represents the sum of the DC currents in the three output tubes near the Baron's front. When the meter switch is set for balance adjustment, the meter is connected between the sampling resistor and a similar resistor in the cathodes of the other three output tubes. When the amp has been properly balanced, the cathode currents in both halves of the push-pull circuit are equal and the meter reads zero. Global negative feedback is taken back through a switchable series resistor (the four-position feedback switch on the back panel) from the 8-ohm output tap to the aforementioned shunt feedback resistor.

In the power supply, the B+ voltage for the output stage passes through a solid-state, full-wave rectifier bridge and six 4,700-microfarad, 100-volt filter capacitors in series (an effective filter capacitance of 783 microfarads and 600 volts). Identical resistors across each of the capacitors equalize the voltage distribution in the series string and function as high-voltage bleed resistors when the Baron is turned off. The soft-start position of the AC power switch temporarily places a resistor in series with the power transformer's primary winding, thereby reducing inrush current. This current can be appreciable because the tube heaters have low resistance when cold and the capacitance of the B+ filter is high. Flipping the power switch up to its operating position shorts out the resistor. Simple and effective. *B.H.K.*

also referred to when you adjust the output tubes' bias and balance. A rotary switch below each meter sets the meter to show output level (with a choice of 15 or 150 watts as the 0-dB point), bias, or balance.

Between the two rotary switches are six toggle switches, three per channel. The outermost toggles are unusual, three-position power switches. To turn the Baron on, you should hold each switch all the way down for 2 seconds (its soft-start position), to start the amp without a current surge; then you flip each switch up to its top position. The middle position turns the amp off. The adjacent standby switches also have three positions, for warm-up, standby, and operation. These switches control the high-voltage level fed to the tubes; the tube heaters remain on in all three positions so that the

amp can start operating without waiting for the tubes to heat up. The warm-up mode reduces the high voltage by half, which cuts off the output stage, greatly reducing heat and overall power consumption. The stand-

**UNIQUELY, THE BARON
OFFERS TRIODE AND
PENTODE OPERATION
PLUS TWO
INTERMEDIATE MODES.**

by position cuts the high voltage off completely, reducing heat and power draw even more. However, the Baron attains its characteristic sound faster when you switch on

from warm-up than from standby mode. The innermost toggles are used to illuminate each meter, a nice touch.

On top of the chassis, near the rear edge, are sets of toggle switches for each amplifier channel. In each set, one switch selects pentode or triode mode for four output tubes, another selects the operating mode for two tubes, and a smaller switch between them selects whether the circuit's common ground is connected to the chassis and power-line ground or isolated from them.

On the Baron's rear panel are, for each channel, three rugged gold-plated binding posts for speaker connections ("Common" flanked by "4 Ohm" and "8 Ohm"), RCA phono and XLR connectors for signal inputs, an AC line fuse, and an IEC power-cord socket. The "Negative Feedback"

Introducing The *Tower*™ Series By Henry Kloss.

Cambridge SoundWorks' new *Tower* series speakers combine musical accuracy, very natural tonal balance, precise stereo imaging and an incredibly dynamic presence – all without reinventing the laws of physics.



No Magic Formula. No Secret Ingredients. No Mumbo Jumbo.

In 1988, we changed the way people bought speakers when we introduced our *Ensemble* speaker system by Henry Kloss (founder of AR, KLH & Advent) – selling it factory-direct. In 1996, we're changing things again.

No Mumbo Jumbo.

We don't claim our designs are based on amazing scientific breakthroughs. No mystery material. No magical formula. No revolutionary technology.

We offer carefully fine-tuned designs, based on years of experience, using the best materials. But we aren't obsessed with materials. We're obsessed with sound.

Our *Tower* series has the wide range, precise stereo imaging and natural tonal balance of our acclaimed *Ensemble* series – and adds improvements in efficiency, dynamic range and "presence."

The result is somewhat unusual: speakers combining the dynamic presence of high-efficiency studio monitors, and the precise musical accuracy and pinpoint imaging of low-efficiency "reference" speakers.

Tower III by Henry Kloss™

Tower III is a two-way design using a wide-dispersion tweeter and a single 8" woofer. Like the more expensive models in the *Tower* series, it combines high sensitivity and outstanding dynamic range with the natural, wide-range sound (including terrific bass) that results from a generously-proportioned cabinet. It has been meticulously "voiced" by Henry Kloss for superb octave-to-octave tonal balance and precise stereo imaging. These benefits come at a much lower cost than superficially similar models through a combination of Henry Kloss' design expertise, plus Cambridge SoundWorks' highly efficient direct-to-the-consumer sales policy. *Tower III* is the most affordable high-performance floor-standing speaker we know of.

Like other models in the series, *Tower III* is magnetically shielded and features removable black grilles, fully-finished cabinets (front and rear) and gold-plated binding posts. It is finished in black ash vinyl. **Factory-direct price: \$599 pr.**

Tower II by Henry Kloss™

Tower II is a three-way system that is substantially larger than *Tower III*. It features two 8" polypropylene woofers, a 5 1/4" polypropylene midrange driver, and a 1" soft-dome tweeter. A flared low-frequency vent is located at the lower rear of the enclosure.

The large cone area of *Tower II*'s multiple drivers contributes to an effortless sound quality, giving music a strong feeling of "presence" that is easier to hear than describe. That presence, along with *Tower II*'s smooth, musical octave-to-octave tonal balance and precise stereo imaging, produce what we think is the finest speaker system ever offered for under \$1,000.

Tower II is finished in vinyl that simulates black ash or Vermont walnut. It is bi-wire/bi-amp capable.

Factory-direct price: \$999 pr.

"Selling direct allows Cambridge SoundWorks to price speakers hundreds of dollars below the competition."

Inc. magazine

Tower by Henry Kloss™

The flagship of our new series is a three-way, bipolar model named *Tower* by Henry Kloss. The bipolar dispersion pattern helps eliminate the usual "point source" effect of direct-radiator speakers, and ensures a proper stereo effect in a variety of listening positions.

Tower features two forward-facing 8" woofers; a forward-facing 5 1/4" midrange driver; a 1" soft-dome tweeter; and separate rearward-facing midrange and tweeter units identical to those used in front. A flared low-frequency vent is at the lower rear.

Because it has even more cone area, *Tower*'s feeling of "presence" is, if anything, stronger than that of *Tower II*. That presence, when combined with the three-dimensional sound of *Tower*'s bipolar design, results in sound that is nothing short of incredible – *spectacularly* realistic. Available in lacquered walnut or black ash veneers, we think *Tower* is one of the finest speakers ever offered. It is bi-wire/bi-amp capable. **Factory-direct price: \$1,499 pr.**

CenterStage by Henry Kloss™

CenterStage is a two-way, three-driver center channel speaker that complements our *Tower* speakers. It matches the tonal balance of all three models. Its bass reach is significantly greater than most center speakers, thanks to its dual-vent enclosure. The dynamic range of its long-throw drivers is enough to handle the most demanding of video soundtracks, while their dispersion is broad enough to include all listening positions. It is finished in black vinyl. **Factory-direct price: \$349**

The Surround® by Henry Kloss

You can create a complete home theater sound systems using *CenterStage* and any of our *Tower* speakers combined with our high-output dipole radiator surround speaker, *The Surround*. Available in black or white. **Factory-direct price: \$399 pr.**

Satisfaction Guaranteed

All three *Tower* speakers and *CenterStage* are backed by our Seven Year Parts and Labor Warranty and our 30-Day Total Satisfaction Guarantee.

To Order, For a Free Catalog, Or For
The Nearest Store Location, Call
1-800-FOR-HIFI
(1-800-367-4434)

**CAMBRIDGE
SOUNDWORKS®**

Critically Acclaimed. Factory-Direct.

311 Needham Street, Suite 104, Newton, MA 02164
Voice: 1-800-367-4434 Fax: 617-332-9229
Canada: 1-800-525-4434 www.hifi.com
Outside U.S. or Canada: 617-332-5936

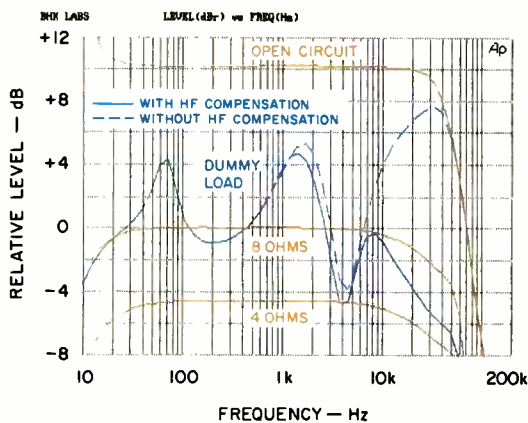
© 1996 Cambridge SoundWorks. Ensemble is a registered trademark of Cambridge SoundWorks, Inc. KLH is a trademark of KLH. Inc. AR and Advent are trademarks of International Jensen Inc. Cambridge SoundWorks is not affiliated with KLH, Advent or AR.



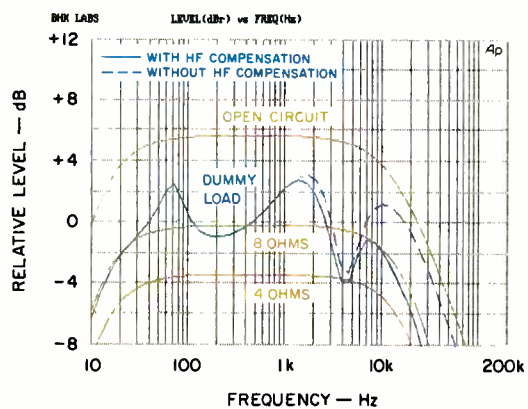
CIRCLE NO. 11 ON READER SERVICE CARD

Table I—IHF sensitivity, 8-ohm load on 8-ohm tap.

	Sensitivity, mV			
	FEEDBACK SETTING			
	0	I	II	III
P/P Mode	34.4	38.0	42.0	48.0
P/T Mode	47.2	50.7	54.8	61.0
T/P Mode	60.7	64.2	68.0	74.2
T/T Mode	73.0	76.4	80.5	87.2



A



B

Fig. 1—Frequency response in all-pentode (P/P) mode with maximum feedback (A) and in all-triode (T/T) mode with zero feedback (B).

switch, in the center, is common to both channels.

The Baron's chassis is fairly conventional and is divided into three zones. First is the front panel, with a cover for the meters extending about 2 inches behind it. Next are the power and output transformers. Behind them are the tubes, the switches for operating mode and ground selection, and access holes for the bias and balance adjustment pots. Ample slots in the sides and top allow plenty of air to flow into the chassis and up past the tubes. Metal bars on each side con-

nect the top of the front panel with the back corners of the chassis; these bars will help you lift the amp and enable you to turn it over without damaging the tubes. All metalwork is aluminum, even the transformer covers. The inside of the chassis is mostly occupied by printed circuit boards for each channel's audio circuitry and power supply. The Baron is very well built, with high-quality parts.

Measurements

To simplify references to the Baron's four operating modes, I'll abbreviate them as P/P (all-pentode), P/T (two-thirds pentode, one-third triode), T/P (two-thirds triode, one-third pentode), and T/T (all-triode). Data presented is for the left channel, which had higher distortion than the right. Input signals were applied to the RCA connectors in all cases.

The Baron's voltage gain varied somewhat, depending on the operating modes of its output tubes and the feedback setting. The amount of negative feedback was small, ranging from about 1 to 8 dB according to the load and, again, the output mode and feedback setting. The Baron's gain was greatest in P/P mode (38.31 dB with zero feedback), decreasing as I switched through the P/T, T/P, and T/T modes (minimum gain was 30.22 dB). As I switched through them, I found it interesting that over most of the audio range each mode's gain and frequency response under load with maximum

feedback was very similar to the next mode's gain and response with zero feedback. Table I presents IHF sensitivity for each combination of output mode and feedback level when an 8-ohm load was connected to the 8-ohm output tap. With 4-ohm loading on the 4-ohm output tap, gain was lower by about 70%, or about 3.1 dB, and sensitivity was correspondingly higher. Channel balance was excellent, within a few tenths of a dB.

The Baron's frequency response is shown in Fig. 1 for various loading conditions. The

dummy speaker load, built for me by NHT under Ken Kantor's direction, was designed to mimic the load presented by a real speaker. It has an RC high-frequency impedance-compensation network, whose effects can also be seen. Figure 1A shows operation in P/P mode with maximum feedback; Fig. 1B is for T/T mode with zero feedback. Note the variations in response when the Baron feeds the simulated speaker load: They are caused by interaction between the amp's

OUTPUT-MODE SELECTION IS PARTLY A TRADE-OFF OF BANDWIDTH VERSUS LOAD TOLERANCE.

high output impedance and the load's impedance variations. Needless to say, this will affect the sound and will vary according to the impedance characteristics of the speakers you use. The variation is greater in pentode than in triode mode; this would be even more evident if I had used a lower feedback setting for Fig. 1A. Similarly, the response with the dummy load in Fig. 1B would have been smoother had I used maximum feedback.

The low-frequency peak with open-circuit loading seen in Fig. 1A occurs only in P/P mode (where the amp's open-loop gain is highest) when maximum feedback is used. This peak might cause output-transformer saturation and consequent intermodulation distortion, but only in the unlikely event that you play material containing a lot of infrasonic energy at high levels into speakers whose impedance at low frequencies is high.

Square-wave response is shown in Fig. 2. The pairs of traces at the top and in the middle are for a 10-kHz signal; the faster (squarer) trace in each pair is for an 8-ohm load on the 8-ohm tap, while the slower (more rounded) trace shows the effect of 8 ohms paralleled with a 2-microfarad capacitance. The mode in the top traces is P/P with maximum feedback; the middle traces are for T/T mode and maximum feedback. The Baron's P/P mode has the greater bandwidth (because of decreased damping of the output transformer's resonance at

THERE'S A SENSE OF INDIVIDUALISM,
OVERFLOWING INTELLIGENCE, TOTAL POWER,
AND YOU HAVEN'T EVEN TURNED IT ON YET.



The Elite VSX-90 is the most innovative receiver ever created. An audio/video receiver designed with one goal: to give you the most realistic theater sound possible. With the touch of a button, your entire system comes alive with Dolby® Surround AC-3™.

AC-3 gives your ear the distinct pleasure of hearing six independent digital signals. And duplicates for your home the thrilling performance of digital surround sound which, until now, was heard exclusively in top theaters. The Accurate Imaging System consistently distributes

100 watts to each channel, all with discrete amplifiers, delivering the full bandwidth (20Hz to 20kHz) provided by AC-3. And the Intelligent System Control brings the operation of all your components, including those of other brands, to your fingertips.

All this at the heart of your audio/video system, giving you the most uncompromising sound quality possible, as you would expect only from Elite. For the Elite dealer nearest you, call 1-800-746-6337.



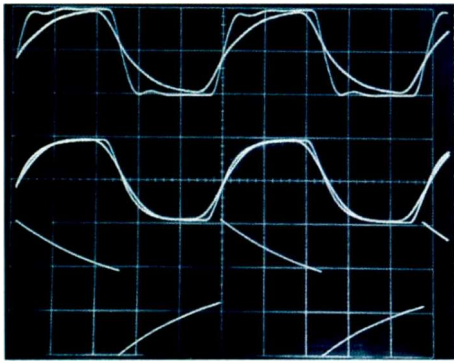


Fig. 2—Square-wave response for 10 kHz in P/P mode (top) and T/T mode (middle) and for 40 Hz in T/T mode (bottom). The overlaid 10-kHz traces show effects of 8-ohm loading and of 8-ohm loads paralleled by 2 μ F (see text); the 40-Hz curve is for 8-ohm loading.

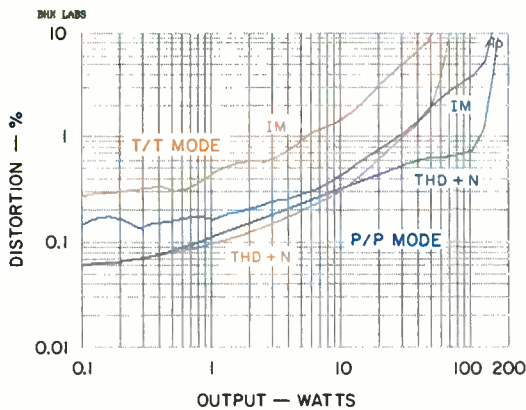


Fig. 3—Distortion vs. power for all-pentode and all-triode modes.

about 50 to 60 kHz) but is more affected by load; T/T mode is slower but has greater load tolerance. In the bottom trace, a 40-Hz waveform with the Baron in T/T mode, the pronounced tilt is caused by the rolled-off low-frequency response seen in Fig. 1.

Figure 3 shows distortion for P/P and T/T modes with maximum feedback. The SMPTE intermodulation (IM) distortion is considerably higher in T/T mode because of power-supply ripple modulation that seemed to occur mostly in this mode.

Figure 4 shows 1-kHz total harmonic distortion plus noise (THD + N) versus power in P/P mode with maximum feedback (Fig. 4A) and in T/T mode with zero feedback (Fig. 4B) for various loads on the 8-ohm tap. Some of the well-known differences between pentode and triode operation are clearly seen here. Specifically, the triode mode is, again, more load-tolerant;

the distortion near full power stays more constant with changing load. In pentode mode, however, the attainable power and the distortion at specific power levels vary more with load. The Baron's load matching is typical for a tube amplifier: There is little change in power when an output tap is loaded with half its rated impedance (e.g., 4 ohms on the 8-ohm tap), but when the load is twice the rated impedance, power output drops appreciably.

Figure 5 shows how the Baron's THD + N varies with frequency at several power levels in P/P mode with maximum feedback. This push-pull amplifier's performance here is entirely in keeping with its small amount of feedback and is as good as (or better than) the distortion of some of the single-ended tube amplifiers that are popular these days.

The Baron's dynamic power in P/P mode was 150 watts at the beginning of the 20-millisecond tone burst and 144 watts at the end of the burst. Mesa Engineering does not provide conventional specifications for the Baron's power output and distortion, but the company does give (in a document titled "Mesa Baron Technical Update")

power output of 55, 85, 120, and 150 watts per channel for the T/T, T/P, P/T, and P/P modes, respectively. If you take 150 watts as a reference, dynamic headroom would be 0 dB. Based on the data for Fig. 5, the power levels attainable at clipping (2% THD + N) for the four output modes were, respectively, 49, 76, 116, and 134 watts at 300 to 400 Hz (where the amp's distortion at most power levels is lowest).

Even though the Baron is dual mono, with separate power supplies and such, the two channels, otherwise completely independent, have sensitive leads in close proximity at the feedback switch. Crosstalk was less than -80 dB below 1 kHz but increased above that frequency; by 20 kHz, it was between -65 and -75 dB—depending on the direction of measurement, whether or not the amp was grounded to my Audio Precision test system's chassis

ground, and how I set the amp's ground-isolation switches.

Like most characteristics I measured, output noise varied with the Baron's operating mode and feedback level. The absolute value of the noise in the band from 22 Hz to 22 kHz was about 1 millivolt with the feedback set to zero—except in T/T mode, where it dropped to 0.5 millivolt. The major contributions to these readings

**THE MESA BARON'S
DISTORTION
IS IN KEEPING
WITH THE LOW AMOUNT
OF FEEDBACK IT USES.**

came from power-supply hum components. The IHF signal-to-noise ratio (A-weighted noise relative to 1 watt into 8 ohms) varied with operating mode and feedback; it was 81 dB in P/P mode with zero feedback and 88 dB in T/T mode with maximum feedback.

Damping factor was only about 1 for most conditions; it dropped to 0.5 or less in P/P mode at all feedback levels. The damping factor was relatively flat with frequency between 100 Hz and 20 kHz but decreased below 100 Hz, varying with mode and feedback level.

The Baron's current draw from the AC line was 1.7 amperes in the standby and warm-up modes and 4 amperes at idle in all operating modes.

Use and Listening Tests

During the review period, I used a Sonic Frontiers SFT-1 or a Counterpoint DA-11A CD transport to drive a Genesis Technologies Digital Lens jitter-reduction device. The output of the Digital Lens drove a Sonic Frontiers SFD-2 MKII, a Classé Audio DAC-1, a Dodson Audio DA-217, or a Manley Reference D/A converter. Phono source was an Oracle turntable fitted with a Well Tempered Arm and an Accuphase AC-2 moving-coil cartridge used with a Vendetta Research SCP-2C phono preamp. I also used a Nakamichi ST-7 FM tuner, a Nakamichi 250 cassette recorder, and a Technics 1500 open-reel recorder. The preamplifiers in my system were an Audio Re-

HEAR EVERYTHING...

Velodyne's radical new patented driver design sets a new industry standard for maximum clarity and detail.



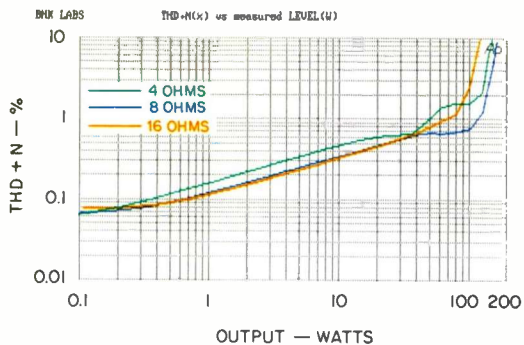
(INCLUDING THE WHIMPERS OF THAT FELLOW HAVING SECOND THOUGHTS IN HIS LITTLE BARREL)



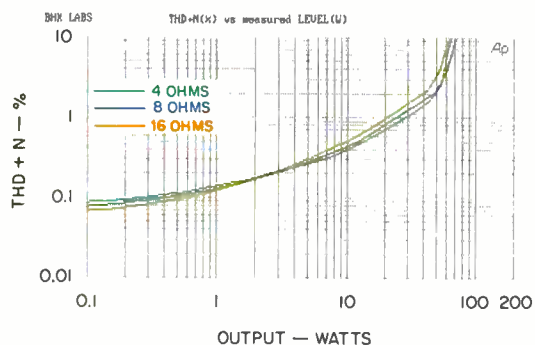
EXPERIENCE THE SUBTLITIES OF THE BEST HOME THEATRE SPEAKER SYSTEMS

Velodyne[®]
1.300.VELOCITY

1070 Commercial Street, Suite 101, San Jose, CA 95112
Tel: 408.436.7270 Fax: 408.436.7276 www.velodyne.com



A



B

Fig. 4—THD + N vs. output for different loads on 8-ohm tap in P/P mode with maximum feedback (A) and in T/T mode with zero feedback (B).

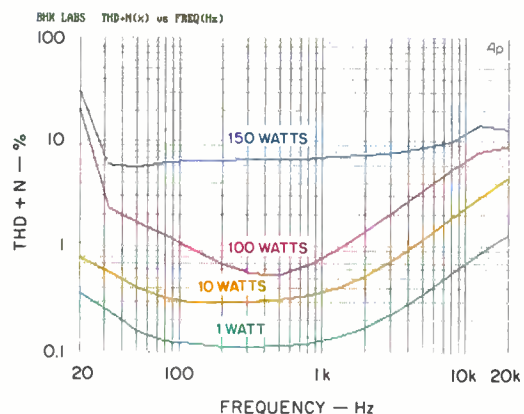


Fig. 5—THD + N vs. frequency, P/P mode with maximum feedback and 8-ohm loading on 8-ohm tap.

search LS22, a Pass Labs Aleph-P, and my custom-made Forssell balanced tube line driver. For comparison with the Baron, I used a pair of Sonic Frontiers Power 3 mono tube amps, a pair of Quicksilver M135 mono tube amps with Svetlana 6550C output tubes, and a Spectron 1KW digital switching amplifier. The loudspeakers were Genesis Technologies Vs and B&W 801 Matrix Series 3s; the B&Ws were aug-

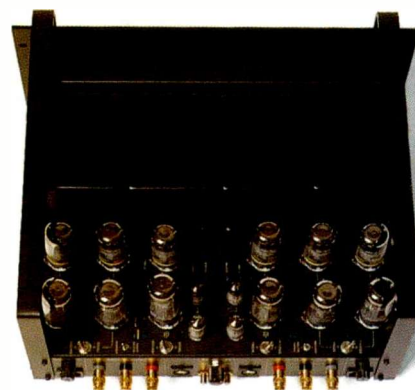
mented from 20 to 50 Hz by subwoofers, placed against the wall behind each 801. Speaker and interconnect cables were from MIT and Transparent Audio. Digital interconnects were Audient Technologies Datrix AES/EBU Reference active cabling, in conjunction with Audient's Tactic and Audit cable driver and receiver, and AES/EBU balanced Illuminati DX-50s.

I first listened to the Baron on the Genesis V speakers. I was surprised to find that the sound was not as affected by the speaker's impedance variations as I had expected. The sound was laid-back, with a softened high end. The speaker's low-frequency impedance rise below about 150 Hz (stemming from the high-pass crossover between its powered woofer and passive mid-bass driver) generally caused the Baron no problems with overall blend and balance in the bass and lower midrange. I did notice some mild boominess from 100 to 200 Hz on some music when the Baron was in all-pentode mode. Some of my favorite pop CDs sounded fun and involving. Yet some other music sounded more irritating and distorted with the Baron than with the other amps in my system. On classical pieces, there was a better sense of "thereness" with the other amps; the Baron sounded more closed in and not as airy and spacious. But I must say it did put out power: Even in all-triode mode, it would play most music louder than I wanted.

I liked the sound of the Baron better with the B&W 801s than with the Genesis Vs, despite the 801s' greater impedance variations in the midrange. (The 801s' maximum and minimum impedances are similar to those of the NHT dummy load.) I played quite a variety of music and generally enjoyed the experience. More than once I found myself thinking that this amp really sounded pretty damn good. The Baron sounded best to me in its all-triode mode with full feedback. As I switched in more and more pentode operation, the sound got harder and the

frequency response aberrations became too noticeable. Surprisingly, considering the results of my measurements, the Baron's bass was anything but flabby and undamped. I thought it was quite tuneful and not too dissimilar from the bass of other amplifiers I've used with the 801s.

Operation of the Mesa Baron, both in the lab and in my listening room, was straightforward. One surprise, however, was a small blap from the speakers when I unplugged an input lead to the amp just after I'd placed the Baron in standby mode. Clearly, the filter capacitors still held enough of a



**EVEN IN TRIODE MODE,
THE BARON PUT OUT
ENOUGH POWER
TO PLAY MOST MUSIC
LOUDER THAN I WANTED.**

charge to amplify for a short while. Solution: wait just a few seconds longer!

I thought that the power transformers got a bit too hot after several hours of operation on a hot day. It would be wise to follow the operating manual's recommendations regarding fan cooling.

The Baron is an interesting design. Its basic design concept is valid, but its sound (for me, at least) was undercut by its high output impedance and the variations in frequency response this caused when it drove real speaker loads. Yet it does represent a good value in terms of power and features per dollar and gives you unique ways to tailor your system's sound. If you like a warm, full sound and enjoy equipment that you can play with in ways that make a sonic difference, you may find that it's your cup of tea, even if it isn't entirely mine. **A**

Introducing the New Polk RT20P with Built-in Powered Subwoofers...



This matched home theater system consists of the new RT20P main speakers with built-in powered subs, LS f/x bipole/dipole surround speakers and the awesome CS350 center speaker.



*Matthew Polk,
co-founder and
chairman*

Polk Audio's new RT20P is truly a speaker for our times. Featuring built-in 100 watt powered subwoofers and Polk's patented Power Port venting technology, the RT20P delivers the bass authority and life-like dynamic range for home theater and digital music sources.

But the remarkable RT20P is more than a mere brute. It is a true serious listener's

speaker which will seduce you with its accuracy, detail and spacious imaging. Dynamic Balance® driver technology, spawned from laser research conducted in cooperation with Johns Hopkins University, is the key to the superior musicality of the RT20P.

For the complete story of Polk technologies and the entire line of Polk loudspeakers, call **(800)377-7655** or visit us on the web, <http://www.polkaudio.com>.

CIRCLE NO. 33 ON READER SERVICE CARD

polkaudio
The Speaker Specialists

5601 Metro Drive, Baltimore, Maryland 21215 USA

Dealer Locator Number

1-800-992-2520
Ad code: 20003

"Polk Audio", "The Speaker Specialists", "Power Port" and "High Velocity Compression Drive" are registered trademarks of Polk Investment Corporation used under license by Polk Audio Incorporated.

D. B. KEELE, JR.

ACOUSTIC RESEARCH 312 HO SPEAKER

Acoustic Research dates back to the early '50s, when company founder Edgar Villchur developed and marketed the world's first acoustic-suspension speaker systems. The very popular AR-1 was the first modestly sized speaker with honest-to-goodness, wall-shaking bass. The AR-3 was the first to incorporate a soft-dome tweeter and mid-range. Acoustic Research kept on developing innovative products through the years, including the AR turntable in 1963 and the AR-9 speaker in 1978, which used an acoustic blanket to minimize diffraction.

Although the original AR speakers were known for their low efficiency (the trade-off that gained them better and deeper bass), the company recently introduced the High Output series, a high-efficiency line aimed at high-performance audio and home theater. It comprises 10 models: five full-range systems (led by the 312 HO), a center-channel speaker, an indoor/outdoor speaker, and three subwoofers.

The AR 312 HO is a three-way, floor-standing system with a 12-inch side-firing woofer in a vented enclosure, two 5¼-inch

The 312 HO's cabinet is nearly twice as deep as it is wide, which gives the speaker a relatively tall, narrow look. Its narrow baffle and rounded front edges are intended to minimize diffraction and reduce blurring of the aural image. The cabinet is made from ¾-inch medium-density fiberboard, braced internally to minimize wall flexing and vibration. Heavy molded-plastic rails on each side of the bottom broaden the cabinet's footprint, for better side-to-side



Rated Frequency Response: 30 Hz to 20 kHz, ± 2 dB.

Rated Sensitivity: 97 dB at 1 meter, 2.83 V rms applied.

Rated Impedance: 8-ohm compatible.

Rated Power Handling: 25 to 250 watts.

Dimensions: 43¾ in. H x 10½ in. W x 19½ in. D (111 cm x 26.8 cm x 48.6 cm).

Weight: 70 lbs. (31.8 kg) each.

Price: \$1,199 per pair; available in black ash, maple, or cherry vinyl.

Company Address: 9424 Eton Ave., Suite J, Chatsworth, Cal. 91311; 818/407-4820.

For literature, circle No. 92

cone midranges, and a 1-inch dome tweeter. The midranges are placed symmetrically above and below the tweeter, in a D'Appolito-style arrangement that AR calls a "focused array configuration." The nominal crossover point between the woofer and the midranges is a low 180 Hz; transition between the midranges and the tweeter is said to occur at 2.5 kHz.

stability. When the speaker is placed on a carpet, it rests on these rails. For hard-surface floors, threaded nylon screws can be extended down to serve as leveling feet and glides; these screws can be replaced with spikes (not supplied). At 70 pounds, the 312 HO is fairly heavy but not so massive that it can't be moved around easily. The speaker's grille is an open-frame design of molded

Photos: Michael Groen

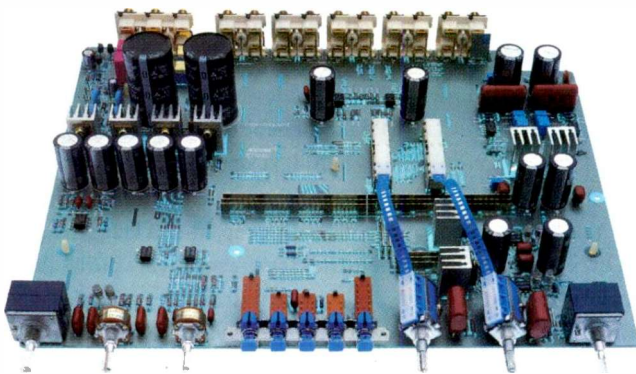
Adcom's GFP-565 Preamp: Pure and Simple.



In Search of Sonic Perfection, Adcom Took the Path of Least Resistance

The fewer circuits a musical signal encounters on its way to your loudspeaker system, the greater its musical purity will be. Now, through obsessive attention to detail and design ingenuity, Adcom has created the GFP-565 — the world's first affordable preamplifier with direct, linear gain path circuitry. By combining the GFP-565 with any of Adcom's power amplifiers, you can experience the exceptionally lifelike sound which has astonished even the most demanding critics.

From Input to Output,
the Signal Path is
as Direct, Pure and
Simple as Possible



By gold plating all input and output jacks, and then directly mounting all jacks, switches, potentiometers and other laboratory grade components on a double copper-plated, glass epoxy printed circuit board, signal losses and noise are dramatically reduced.

Three Sets of Outputs for the Perfect Balance of Performance and Flexibility

You can use one or more sets of outputs: 1) **BYPASS** - direct-coupled before tone controls, filters, etc. for the most direct path to your power amplifier while retaining control of volume and balance. 2) **LAB** - direct-coupled with no output-coupling capacitors yet with tone, filter and loudness controls. 3) **NORMAL** - same as LAB but with highest quality output capacitors for use with amplifiers needing the extra protection of ultra-low-frequency roll-off.

Bi-amped and tri-amped systems are easily accommodated by this flexible arrangement.

Pure Convenience

The minimalist aesthetics of the GFP-565 are deceptive in their simplicity. Without being overly complicated to use, this preamplifier is able to integrate and control all of the components in the most sophisticated of music systems. There are five high-level inputs as well as a phono input. A separate front-panel switch allows the use of an external processor, only when needed, leaving both tape circuits free. And, of course, you may listen to one input while recording from another.

More Sound, Less Money

Adcom stereo components have a reputation for sounding superior to others costing two and three times more. Keeping faith with this tradition, Adcom took the path of least resistance. Why not do the same? Ask your authorized Adcom dealer for a demonstration of this remarkable stereo preamplifier. Please write or call for a fully detailed brochure. You'll discover the best value in high performance preamplifiers.

Pure and simple.

ADCOM[®]
details you can hear

© 1995 ADCOM

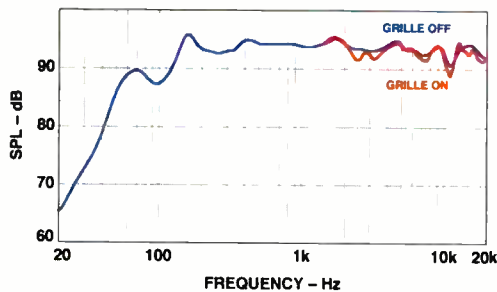


Fig. 1—One-meter, on-axis frequency response.

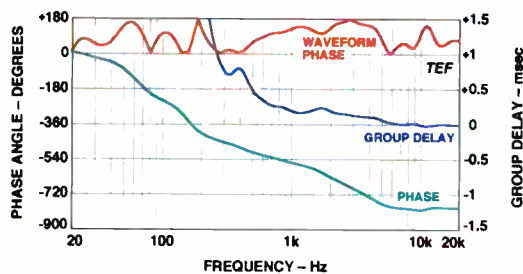


Fig. 2—On-axis phase response, group delay, and waveform phase.

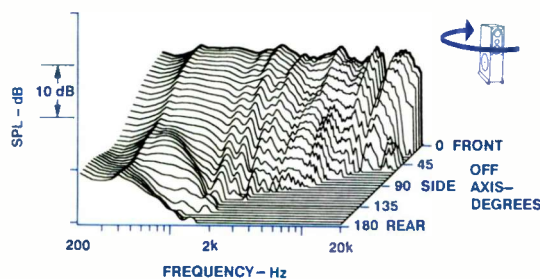


Fig. 3—Horizontal off-axis frequency responses.

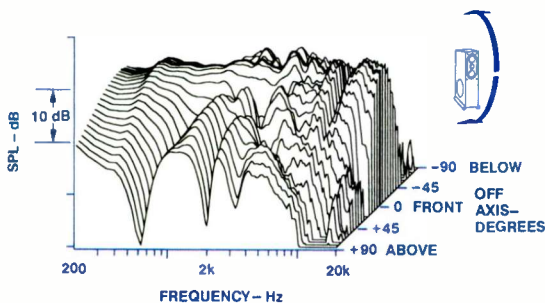


Fig. 4—Vertical off-axis frequency responses.

plastic that attaches to the front panel with six pegs.

The midrange drivers and tweeter are surrounded by an Energy Control Contour baffle that is said to keep unwanted reflec-

tive energy from radiating off the baffle. Made from reticulated foam of varying density and thickness, the baffle is designed to reduce diffraction, minimize lobing between the midrange and tweeter, and enhance dispersion characteristics. The foam baffle also significantly improves the speaker's appearance.

The 312 HO's come in mirror-image pairs, with the woofers on opposite sides of the individual cabinets. Each woofer is vented to the rear of the cabinet through a port tube, 4 inches in diameter and 5½ inches long, just below the center of the back panel. The port, which is flared to reduce air turbulence, is covered by tightly stretched black fabric that hides internal cabinet details, keeps small children from dropping things into the speaker, and presumably adds acoustic resistance to the flow of air in the port.

All of the 312 HO's drivers are magnetically shielded so as not to interfere with a TV picture in a home theater setup. The long-throw woofer's cone is a laminate of paper and polypropylene. It has a polyurethane foam surround and an inverted dust dome. The voice coil is of oxygen-free pure copper wire wound on an epoxy-laminate coil former. The midrange drivers, similar in design to the woofer, are mounted in sealed sub-enclosures. The tweeter's low-mass diaphragm is made of a gas-filled, closed-cell foam that AR calls Aerofoam. This material is said to be very light and strong, with good internal damping, and is claimed to prevent dome breakup.

The crossover network contains three resistors, five inductors, and six capacitors. Three additional, low-value polypropylene capacitors are utilized to bypass larger capacitors in the crossover's mid- and high-frequency portions. Four of the five inductors have laminated steel-plate cores; the tweeter crossover's coil has a ferrite-rod core. Electrically, the crossover provides a second-order low-pass filter for

the woofer, a fourth-order bandpass filter for the parallel-connected midranges, and a second-order high-pass filter for the tweeter. The crossover board is attached to the back of the input-connection cup. Internal connections are of 18-gauge stranded wire. Gold-plated double-banana binding posts on the bottom rear of the speaker enable bi-wiring, with the woofer connected separately from the rest of the system. Straps are provided for single-wire operation.

Measurements

Figure 1 shows the Acoustic Research 312 HO's on-axis frequency response in a large anechoic chamber. Measurements were taken on the top midrange's axis, as recommended by the manufacturer, and smoothed with a tenth-octave filter.

With the grille removed, the 312 HO's response fits a tight, 5.5-dB, window between 130 Hz and 20 kHz. Above 200 Hz, the response is quite flat and extended, with

**THE AR'S BASS OUTPUT
WAS IMPRESSIVE,
BOTH IN EXTENSION
AND IN CLEANLINES
AT HIGH LEVELS.**

only slight roughness above 7 kHz. (With the speaker's grille on, response roughens significantly above 2 kHz. I measured peak deviation in the range of 1 to 2 dB.) Below 130 Hz, output diminishes: From about 100 Hz down to 50 Hz, the average level is about 5 dB lower than it is above 200 Hz, and then it rolls off. This may be deliberate, to compensate for possible bass augmentation from the side-mounted woofer's proximity to the wall behind the speaker.

When I reversed the polarity of the woofer's connections, I noted a sharp null, about 25-dB deep, at 120 Hz. This indicates that the true crossover point between woofer and midrange is at about 120 Hz, lower than the claimed 180 Hz.

Averaged from 250 Hz to 4 kHz, the 312 HO's sensitivity was 93.7 dB, 3.3 dB less than AR's rating but nonetheless unusually high. Below 9.5 kHz, the right and left speakers matched within a fairly close ±1.5 dB. At higher frequencies, the deviation was

“Any sufficiently advanced technology is indistinguishable from magic...”

Arthur C. Clarke



Lexicon is trusted audio recording professionals as the first digital signal processor in 1971.

For the past 25 years, Lexicon digital processors have been relied upon by recording artists, producers and directors in the world's most demanding audio environments.

The superb new DC-1 Series of Digital Controllers combines Lexicon's legendary digital signal processing capabilities, known to audio professionals the world over, with the latest in home theater technology: highly accurate implementations of Dolby® Pro Logic and Dolby Digital® Surround decoding with all the enhancements of Lucasfilm Home THX® Cinema.

The new DC-1 is available in three versions with remote control including an advanced Dolby® Digital model.



• **More than a Surround Preamp**

The DC-1 is a sophisticated signal processing computer that can be custom-tailored for any audio system. It combines the functions of a *preamp*, *D-to-A converter*, *surround sound processor* and *Audio/Video switcher*.

It puts you in control of the entire home theater environment – from playing digital disks to dubbing a videotape – even controlling the volume of a system in another room.

• **Advanced all-digital technology**

All signal processing, (including filters, equalization & crossovers), is achieved in the digital domain, while true 20-bit Digital-to-Analog converters surpass the performance of exotic stand-alone units. A built-in audio/video switcher incorporates eight analog inputs which can be programmed for any

digital and video source while four digital inputs can be assigned to any input combination.

• **Superlative audio quality**

We didn't compromise audio quality, control flexibility or the future development of home theater sound. With Dolby Digital decoder circuitry on its own

plug-in card, Lexicon's DC-1 is the only *eight channel digital discrete surround sound processor* where the future of surround sound is an option – regardless of format – and not just an add-on.

The DC-1 is firmly and significantly in an entirely new class of its own. No other surround sound controller offers you the DC-1's sophisticated technology, extensive features and flexibility.

And absolutely no other Digital Controller gives you the ultimate experience of *Lexicon Sound* – sound you'll enjoy for life.



The DC 1 features tomorrow's surround sound technology; invest today or easily upgrade later with a plug-in decoder.

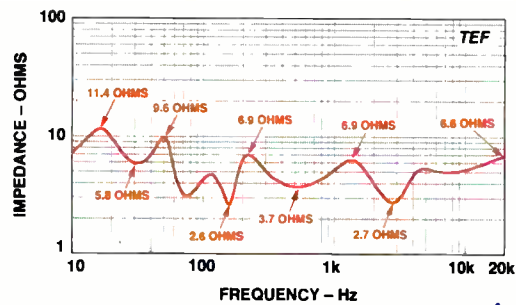
Trademarks and registered trademarks are the property of their respective owners. Studio photo courtesy of Masterfonics, Nashville, TN

100 Beaver Street
Waltham, MA 02154
617/736-0300 Fax: 617/891-0340
E-mail: info@lexicon.com

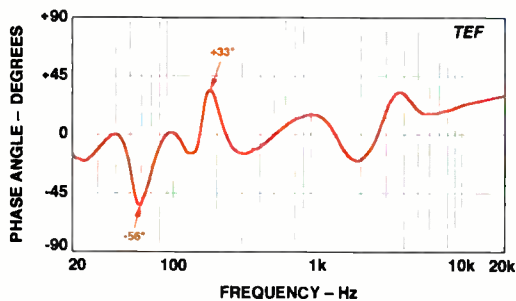


A Harman International Company

CIRCLE NO. 26 ON READER SERVICE CARD



A



B

Fig. 5—Impedance magnitude (A) and phase (B).

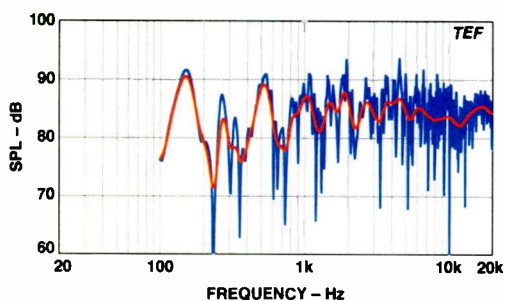


Fig. 6—Three-meter room response.

greater: The left speaker's output fell 5.5 dB below that of the right, in a narrow range centered at 10.6 kHz, and was down 4 dB at 18.1 kHz.

In Fig. 2, the 312 HO's phase and group-delay responses are referenced to the tweeter's arrival time. The phase curve is well behaved and rotates 240° between 1 and 10 kHz. The group-delay curve reveals that the midrange outputs are delayed relative to the tweeter output by a relatively short 0.25 millisecond or so. The curve of waveform phase indicates that waveshapes will not be preserved over any significantly wide frequency range. (Waveshapes are preserved only where the curve stays near 0° or 180°, but very few conventional speaker systems achieve this.)

Figure 3 shows the 312 HO's horizontal on- and off-axis responses (the bold curve at the rear of the graph is on-axis response). The curve-to-curve uniformity indicates very even horizontal coverage, with minimal narrowing evident above 10 kHz.

The 312 HO's response above and below axis is shown in Fig. 4. (The bold curve in the middle of the graph is response on the top midrange driver's axis.) The curves are quite uniform except in the upper crossover range, 1.5 to 5 kHz, where the response narrows significantly. From 10° below axis to 5° above it, the response is fairly uniform and flat. Above and below these angles, there's a dip in the upper crossover range. When measured on the top midrange driver's axis, as recommended by AR, the polar pattern in this range was skewed slightly downward; this would not be the case if response were measured on the tweeter's axis. A listener's ears would normally be about halfway between the axes of the tweeter and the top midrange driver.

The 312 HO's impedance magnitude curve (Fig. 5A) has many peaks and dips. The impedance ranges from a high of 11.4 ohms at 16 Hz down to a low 2.6 ohms at 158 Hz. Above 20 Hz, the maximum impedance is 9.6 ohms at 50 Hz, a moderate 3.7 times the 2.6-ohm minimum; this makes it possible to have up to 40 milliohms of cable series resistance before cable-drop effects cause response peaks and dips greater than 0.1 dB. For a typical run of about 10 feet, 16-gauge (or larger), low-inductance cable would suffice to achieve that.

The speaker's impedance phase (Fig. 5B) reaches its maximum of +33° (inductive) at 180 Hz and its minimum of -56° (capacitive) at 59 Hz. The combination of the 3.7-times impedance variation, the fairly wide phase variations, and the low minimum impedance means that the 312 HO will be a moderately difficult load for most receivers that are rated only for 8 ohms. However, an amplifier or receiver without that limita-

tion, used with cables having low resistance and inductance, should be able to drive the 312 HO quite well—especially as the AR's high efficiency means you'll rarely tax the amp or receiver's output capabilities.

When I swept the 312 HO with a high-level sine wave, I noted only one significant cabinet wall resonance, in the vicinity of 230 Hz. At that frequency, the top sides of the cabinet, next to the midrange drivers, vibrated to my touch. I was impressed with the 312 HO's clean bass output from 30 Hz up. Below 30 Hz, the output was much attenuated. There was also significant noise generated by vibration of the fabric covering the port. But even at 20 Hz, the woofer could handle very high levels, in excess of 20 volts rms (100 watts into 4 ohms), without undue strain.

The 312 HO's woofer had impressive excursion capabilities (¾ inch, peak to peak) and overloaded very gracefully. No port

THE 312 HOs'
CLOSE-UP PERSPECTIVE
IS EXACTLY RIGHT
FOR HOME THEATER USE.

wind noise was evident, and there was only slight dynamic offset. The vented enclosure loaded the woofer only moderately well; by temporarily closing the port, I determined that the vent reduced cone excursion at and near box resonance by only one-third. This excursion reduction covered a broad range, from about 30 to 40 Hz, with no sharp reduction at any single frequency. In this respect, the 312 HO is reminiscent of other lossy-port systems I have tested, such as the Variovent in the Dynaudio Special One (*Audio*, December 1990).

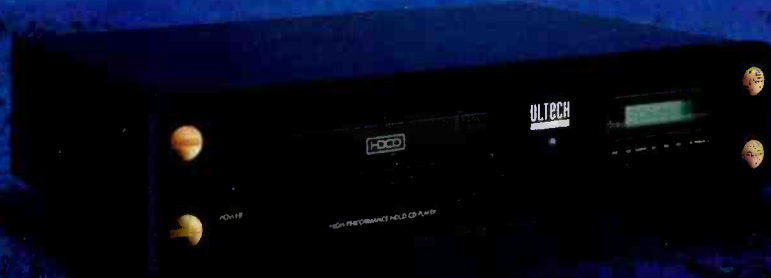
Figure 6 shows the 312 HO's 3-meter room response, with raw and sixth-octave-smoothed data. The speaker was in the right-hand stereo position, aimed at the test microphone. The microphone was at ear height (36 inches), at the main listening position on my sofa. From 800 Hz and up, the smoothed curve fits a very tight, 6-dB window. The deviation increases below that frequency, with significant peaks at 150 and 530 Hz and a dip at 235 Hz. Except for the

Pure

Clean

Natural

Musical



Powerful single-word descriptions of what great audio components should be ... and, accurate descriptions of ULTECH components.

Utilizing the finest electronic components available and housed in elegant and durable packages, ULTECH components are among the best values in the high-end.

Case in point ... the new ULTECH UCD-100. An exceptional all-in-one CD Player with built-in HDCD® decoder. A rival to separate components with the ease of use only a unified player can give. Simplicity in execution. Sophistication in sound. Priced affordably at \$895*.

We invite you to audition the UCD-100 at your nearest ULTECH dealer. We believe you will be pleasantly surprised.

AVAILABLE IN JANUARY 1997.



HDCD® is a registered trademark of Pacific Microsonics, Inc.
* Suggested retail price ... actual prices may vary.

ULTECH
AUDIO

ULTECH AUDIO® components are manufactured and distributed by:
ULTIMATE TECHNOLOGY, INC.

401 Chaddick Drive, Wheeling, IL 60090 Phone: 847/537-9008 Fax: 847/537-6657 Email: ultech@concentric.net

CIRCLE NO. 41 ON READER SERVICE CARD

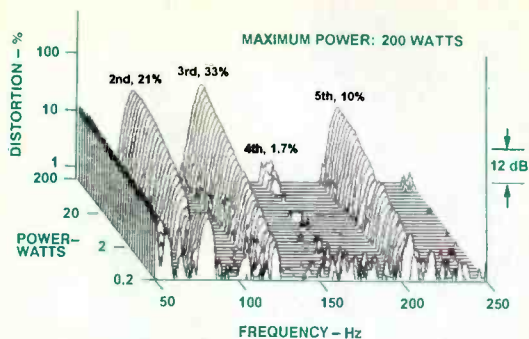


Fig. 7—Harmonic distortion for E_1 (41.2 Hz).

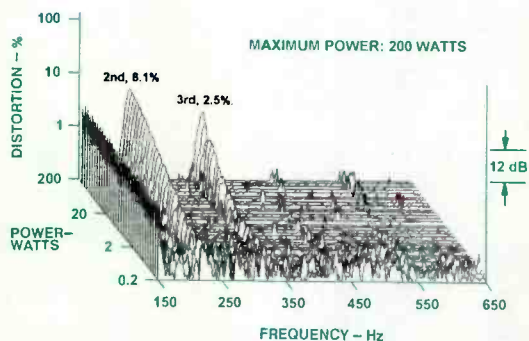


Fig. 8—Harmonic distortion for A_2 (110 Hz).

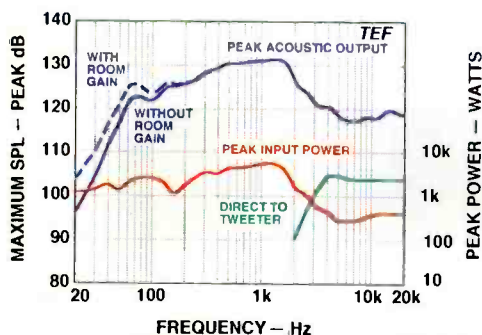


Fig. 9—Maximum peak input power and sound output.

150-Hz peak and 235-Hz dip, the curve fits a reasonable window of 13.5 dB.

Figure 7 shows the 312 HO's E_1 (41.2-Hz) harmonic distortion. Even at full power (200 watts), the speaker sounded fairly effortless at most bass frequencies. Although the distortion at E_1 rises to a significant 21% second harmonic, 33% third, and 10% fifth, the sound was not as objectionable as these high percentages might suggest. At high input levels at E_1 , however, I was aware of an additional distorted sound that I had not heard from other vented speakers. I de-

termined this was the flapping of the fabric stretched across the 312 HO's port; pressing the center of the cloth with my finger cleaned the sound up significantly. At 1 meter in free space and with a 200-watt input, the AR system generated a healthy 103 dB SPL at 41.2 Hz.

As you can see in Fig. 8, the A_2 (110-Hz) distortion rises to a moderate 8.1% second harmonic and a much lower 2.5% third harmonic. Higher harmonics were below the floor of my analyzer. At 1 meter in free space and with a 200-watt input, the 312 HO generated a loud 113 dB SPL at 110 Hz. The A_4 (440-Hz) distortion (not shown) rose only to the very low level of 0.4% second harmonic and 0.6% third. All higher harmonics were less than 0.4%. The IM distortion created by tones of 440 Hz (A_4) and 41.2 Hz (E_1) of equal power was also very low, reaching only 1.2% at 200 watts.

Figure 9 shows the 312 HO's short-term peak-power input and output capabilities as a function of frequency, measured using a 6.5-cycle, third-octave-bandwidth tone burst. The peak input power was calculated by assuming that the measured peak voltage was applied across a 4-ohm impedance.

In the bands handled by the woofer and midrange drivers, below 2 kHz, the 312 HO's power handling is uniformly high. Starting at an unusually high 1,100 watts at 20 Hz, peak input power rises to 2,500 watts at 100 Hz, drops somewhat to 1,000 watts at 160 Hz (where the midrange drivers have started operating), and then increases to a maximum of 5,600 watts at 1.6 kHz. But in the tweeter's range, above 2 kHz, peak input power drops significantly, to a low of 250 watts at 5 kHz, and then rises somewhat, to 400 watts above 10 kHz. At slightly higher power levels, with output approaching 120 dB SPL, the sound suddenly turned very harsh and restricted when the tone bursts got up into the tweeter's range. Suspecting the problem was a saturating inductor core in the tweeter's branch of the

crossover, I bypassed the crossover and drove the tweeter directly. The tweeter's sound immediately improved. It became quite clean and effortless, and input power capability rose to the 2,500-watt range.

With room gain, the 312 HO's maximum peak SPL starts at a healthy 104 dB at 20 Hz. It then rises rapidly, passing 110 dB at 30 Hz and 120 dB at 50 Hz, until it reaches a local maximum of 125 dB at 70 Hz before falling slightly, to 123.5 dB at 100 Hz. This high maximum peak bass output places the AR 312 HO in the top 5% of all speakers and

USING THE ARs INSTEAD OF LESS SENSITIVE SPEAKERS IS LIKE GETTING A MORE POWERFUL AMP, FREE.

subwoofers I have tested. From about 200 Hz up, the AR's output rises smoothly, to a very loud 131 dB at 1.6 kHz, the top of the midrange drivers' frequency band. Above 2 kHz, maximum peak output falls, but only into the quite usable range of 117 to 119 dB.

Use and Listening Tests

The AR 312 HOs are packed individually in sturdy cartons that can be moved easily by one person. Although quite large and tall, the cabinets are not as heavy as their bulk might suggest. From the front, they present a rather stately narrow and tall appearance. My review samples were finished in a fine black ash; I was impressed with the cabinets' appearance, construction quality, and finish.

The ARs looked particularly good even when their front grilles were removed, which they were for most of my listening. The grille is quite easy to remove and replace. The molded foam bezel around the upper-frequency drivers is quite handsome, enhancing the speaker's appearance when the grille is off. The side-mounted 12-inch woofer is covered with its own grille, a molded plastic ring covered with black cloth.

When set up on my carpeted floor and without spikes, the AR speakers were very stable laterally, thanks to their molded plastic bases. The connection cup was quite ac-

Life's philosophical sound check

ultimately boils down to this:

You can let other folks dictate

what's cool. Or, you can trust

your own gut. And your own

ears. And in the process, actually

evolve your own standards.

Sometimes, the most
important voice to listen to
(Remarkable what a little self-
confidence can do.) is the one inside your head.
By then, you

might even appreciate something

like the CL-10 Multi-Disc 20-Bit

Server...Its unique union of sophis-

ticated technologies is engineered

to deliver only one thing—quality

you can hear. Play on...

California Audio Labs
Quality You Can Hear



714 833-3040 E-mail: info@calaudio.com Website: <http://www.calaudio.com>



Photograph of Ernie Watts by William Claxton
CIRCLE NO. 9 ON READER SERVICE CARD



The AR's input connections are quite accessible; the port is covered with cloth.

cessible. I listened to the ARs in the standard, single-wire, mode.

The owner's manual covers AR's complete line of HO (High Output) loudspeakers. It discusses connections, speaker location, amplification for both stereo music and home theater listening, and how to care for the speakers. Most topics are covered only briefly, but the manual does go into some detail about properly positioning the speakers with respect to side walls and adjacent surfaces, concerns made more significant by the side-firing woofer. The woofer side of the 312 HO's enclosure should be no closer than 4 inches to such obstructions as walls or the cabinet of a projection TV. If the speaker must be placed in close proximity to such a surface, AR recommends facing the woofer side of the cabinet away from the barrier.

I listened to the 312 HOs primarily with the woofers facing the side walls and the cabinets somewhat closer to the wall behind them than I usually place speakers. This yielded somewhat more upper bass than when I toed the speakers in and put them further away from the wall behind them. When I tried my usual positioning, the bass—between about 80 and 125 Hz—was softer than that of the B&W 801 Matrix Series 3 speakers I use for comparison. The

AR's low-bass output, however, was very impressive with either placement, both in extension and in the high levels that could be achieved without audible distortion.

I evaluated the 312 HOs as music playback systems, not as main speakers for a home theater setup. Auxiliary review equipment included a Krell KRC preamp, a Crown Macro Reference power amplifier, and Straight Wire Maestro cabling. The first disc I selected was the entertaining *Music From and Inspired By the Motion Picture Mission: Impossible* (Mother Records 314-531 682-2). The ARs boogied on the rock tracks, playing loud and clean. And the precision with which the 312 HOs' powerful low-bass output and extended, smooth frequency response rendered the intricate percussion and sound effects of track 4 was an absolute delight.

The 312 HOs' home theater orientation was clearly evident on everything I listened to. The ARs produced a close-up, in-your-face sound that was quite flattering to some recordings but not so inviting on others. Switching to the AR systems was like bringing the speakers closer to my listening position and reduced the room's effect on the sound, exactly what a good front speaker in a home theater should do! The B&W speakers often sounded somewhat dull and distant by comparison. The ARs' imaging and soundstaging, both horizontal and vertical, were excellent. They had an uncanny ability to act as a sonic magnifying glass on much of the music I listened to. Their reduction of room sound imparted a dry and analytical character to some program material.

The ARs' sensitivity was very high; I had to attenuate the input signal to my amplifiers by a significant 7 to 8 dB to match the 312 HOs' output level to that of the B&Ws. As a result, the Crown power amp was working significantly harder when driving the B&Ws than when driving the ARs at the same acoustic level. Using the ARs instead of less sensitive speakers is like giving your amp a free power boost, enabling a modest 50-watt/channel receiver to pound like a 250- to 300-watter!

I enjoyed listening to the ARs with music that profited from their high output capabilities, such as film sound effects and concert-level rock and country music. These speakers sure could play loud and clean when required!

When I stood up while listening to pink noise, the 312 HOs' sound changed significantly. There were moderate tonal changes through the upper midrange, but I was even more aware of a reduction in volume. When I stood, the image receded into the distance, similar to the presentation of the more diffuse-sounding B&Ws. Proper tonal balance was achieved only when I was sitting.

On third-octave pink noise band-limited to 32 Hz and above, the 312 HOs' bass output was very impressive, significantly louder and cleaner than the B&Ws'. The ARs' output in the 20- and 25-Hz bands was just usable, however, with significant flexing of the port's cover adding extra distortion. The B&Ws could generate room-shaking bass in these two lower bands, but this was accompanied by high levels of port wind noise that the 312 HOs did not produce.

The 312 HOs' performance in other areas was equally impressive. This included smooth and extended high-frequency re-

THE AR 312 HOs
COULD DELIVER A BROAD
ORCHESTRAL SOUNDSTAGE
AND SUBTLE DETAILS
IN CHAMBER MUSIC.

sponse, with broad coverage, as well as a smooth, accurate midrange response that worked well on male and female vocals. The ARs handled large-scale classical orchestral music with equal ease, exhibiting a broad and accurate soundstage with extended response. But they could also bring forth subtle details in less complex recordings, such as chamber music. On some recordings, the ARs did slightly emphasize analog tape hiss that was not evident through the B&Ws.

At only \$1,199 per pair, the Acoustic Research 312 HOs offer extremely good value and compete well even with systems costing up to \$2,500 per pair. Their combination of extended low end, high efficiency, smoothness, solid construction, and good looks is hard to beat at the price. They are an excellent choice for any music system and would be particularly good in a dual-use setup for music and home theater. A



The Theater

The DSP-A3090 lets you choose from 30 sound field modes. From L.A.'s Roxy and New York's Cellar Club, to churches and concert halls around the world. Seven-channel amplification sends 80 watts to each of the main, center and rear speakers, plus 25 watts to both front effects speakers. Analog, video and S-video, plus RF, coaxial and optical digital inputs link you to today's and tomorrow's Dolby Surround AC-3 components.



Now available in convenient take-home size.



Raise the curtain on a conventional home theater and listen closely. What's missing? • The theater. Until very recently, the expansive acoustic environment that helps give a real movie palace its sense of grandeur just didn't seem possible from a sound system sandwiched between a sofa, a coffee table and a couple of ficus trees. • Decades of Yamaha experience in sound field measuring and processing, custom integrated circuit design and audio microchip fabrication changed all that. And now with the new DSP-A3090 Digital Sound Field Processor, we've introduced unique technology that creates the unmistakable sensation of a first-run theater's acoustic spaciousness, combined with the unparalleled accuracy and dynamic range of Dolby® Surround AC-3™. Proprietary Yamaha processing techniques maintain the depth, openness



The Technology

The sophisticated microcircuitry that makes our new Cinema DSP possible is designed and produced exclusively by Yamaha. Our microprocessors apply the vast library of sound field data we've amassed creating products for audio professionals, both on the stage and in the studio. And they're manufactured with the advanced processes we've perfected through years of experience fabricating our own custom chips.

and realism the director envisioned when mixing the original soundtrack for the big screen. While also preserving the directional relationships of every sound. So you hear each note – and every squeak, creak, rattle and roar – positioned exactly where the director intended. • We call it Tri-Field Processing.

And it's made possible using the latest generation of the Yamaha Cinema DSP technology that's kept us at the forefront of home theater for more than a decade. • For the dealer

nearest you, call 1-800-4YAMAHA. Or visit us on the web at <http://www.yamaha.com> • Then listen to the DSP-A3090 and hear the results for yourself. • You may take home a 1200-seat movie theater. But you'll still only have to vacuum under the couch.

YAMAHA®

WHERE HOME THEATER LIVES.

DANIEL KUMIN

LEXICON 412 FOUR-CHANNEL AMPLIFIER



Lexicon may not be the first name that springs to mind when you think of power amplifiers. But the company is a leader in surround processors and pre-amp/processors, so it's entirely logical that it should offer multichannel amps to go with them.

The five amps in Lexicon's NT series each bear the company's characteristic green stripe. Three of them—the Models 212, 312, and 412—are functionally identical except for channel count. The \$2,995 Model 412 is, naturally, the four-channel version.

The 412 is a relatively compact component whose sheet metal, heat sinks, and rear panel have a distinctly Bryston look about them. Moreover, the test sheet packed with the amp is in English and French, and Bryston is a Canadian outfit. Hmmm. Then I

noticed the small back-panel graphic: "Made in Canada by Bryston Ltd." Some detective I am.

The 44-pound, Home THX-certified Model 412 is rated to supply four channels of 120 watts each into 8 ohms or 200 watts per channel into 4 ohms and to permit two bridged channel pairs to produce 400 watts each into 8 ohms (all from 20 Hz to 20 kHz at less than 0.01% THD).

From the outside the 412 looks very professional, with unusually heavy, no-nonsense metalwork and square-key, security-screw fasteners. (Providentially, I had just bought a cool \$19.95 set of every screwdriver bit known to man.) The black-anodized finish is of obviously high quality, and the sheet-metal quality of the rugged-looking frame-and-pan construction is way above average. (I can tell—my first paying job was

in a sheet-metal shop.) A 19-inch rack-mount front panel is optional.

The front panel presents just a pushbutton power switch and four centrally located LEDs, one per channel. These glow green to indicate normal operation and are said by the manual to flicker yellow at the threshold of clipping and to turn red to indicate overload, distortion, excessive DC or ultrasonic signals, shorts, etc.

The Lexicon's deep heat sinks dominate both sides of the amplifier; they are nicely corner-cut and smoothed, to prevent wrist-gashing. Each channel has two heat sinks, each consisting of two groups of fins with a clip-on, spring-steel cover between them. Snapping each cover off reveals a complementary pair of Motorola bipolar output transistors and an adjacent thermal sensor. Since the transistors are mounted on the outside of the heat sink, I understand the cosmetic need for these covers, but their snap-on design lets each cover go "tick!" and then spring back if you gently press it in. It is highly unlikely that this could have any audible effect (the spring action is stiff enough to prevent any resonance, I should think), but somehow the whole setup just doesn't feel right for a \$3,000 amplifier. Covers held down with screws might be a better solution.

For a power amp, the 412 fairly bristles with rear-mounted connectors and controls. The back panel is enameled black instead of anodized like the rest of the amp, and the screened-on graphics are bright white and are relatively large and legible—very nice touches. The panel's center is dominated by four pairs of five-way binding posts; these are the heavy-duty variety, with big screwdriver slots starring their ends. Directly below is an IEC power block

Rated Power: 8 ohms, 120 watts/channel; 4 ohms, 200 watts/channel.

Distortion: Less than 0.01% IM or THD.

Dimensions: 17 in. W x 5¼ in. H x 15½ in. D (43.2 cm x 13.3 cm x 39.4 cm).

Weight: 44 lbs. (20 kg).

Price: \$2,995.

Company Address: 3 Oak Park Dr., Bedford, Mass. 01530; E-mail, 71154.1331@compuserve.com
For literature, circle No. 93

Photos: Michael Green

S-125

"The home-theater
speaker system to
beat for under
\$4,000" *Home Theater*



"It utterly blows away most of what passes for "high-end" loudspeakers on the market at any price." —Corey Greenberg, *Home Theater* magazine

Designed for Dolby Digital and DTS multichannel formats, the S-125, 5.1 multichannel Digital Monitor speaker system is one of the best buys in high-end home theater—bringing dynamic impact and excitement to film soundtracks and a warm natural quality to music sources.

Along with complete systems, M&K lets you choose from the industry's

largest selection of powered subwoofers, plus several center-channel and surround speakers—including M&K's exclusive SS-150THX "Tripole."

The final word from *Home Theater*: "We guarantee you, there is no movie theater on the face of this earth that sounds as good as the M&K S-125 system driven by a good front end..."

Docking Module stands shown in the photo are optional.



MILLER & KREISEL
SOUND CORPORATION

10391 Jefferson Boulevard
Culver City, California 90232
(310) 204-2854, Fax: (310) 202-8782
<http://www.mksound.com>

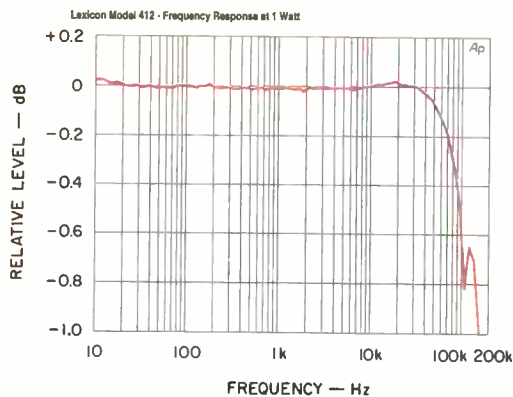


Fig. 1—Frequency response.

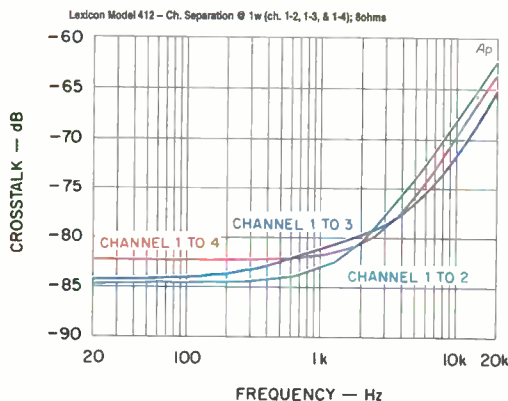


Fig. 2—Channel separation.

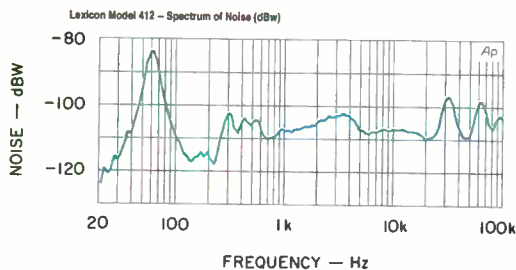


Fig. 3—Noise spectrum.

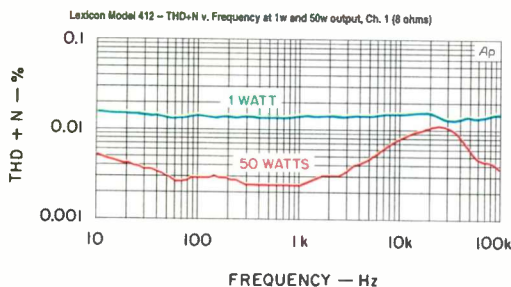


Fig. 4—THD + N vs. frequency.

comprising a removable power cord and a convenient, snap-out fuse carrier holding a pair of 8-amp fuses.

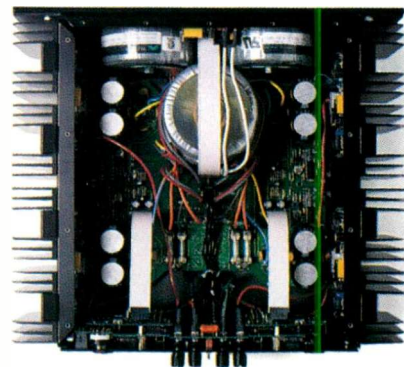
On each side of the speaker outputs are two pairs of input jacks and adjacent switches for selecting balanced or unbalanced input. The unbalanced jacks are the usual RCA type; the balanced jacks are Neutrik combination connectors (new to me) that accept either XLR or ¼-inch tip-ring-sleeve phone plugs. Another pair of slide switches, intelligently oriented at right angles to the input-selector pair (presumably to reduce confusion when you're fumbling by touch with the back panel), selects bridged or unbridged input mode; easily legible graphics outline the speaker connections for each mode. A small toggle switch between the speaker outputs lifts the three-wire power cord's ground, a pro audio feature that is unusual on consumer audio amps. (The manual admonishes never to flip this unless it audibly reduces hum—good advice!)

The last item on the panel is a two-wire clamping input for a low-voltage (nominally 12-volt AC or DC) turn-on signal. Such a signal is available from Lexicon's preamps and processors and from several other high-end A/V and multi-room front-end products. An associated rotary switch has four positions, with which you can select 0 to 4 seconds of turn-on delay when the amp is triggered by this signal; this prevents the circuit breaker on your AC line from tripping in response to, say, four high-power amplifiers trying to juice up their supplies simultaneously.

Under the hood, the Lexicon is no less well crafted than it is externally. Components, printed circuit boards, and jumper wiring are all well above average in quality. Two amp modules stand on edge along each side of the interior, and the individual input circuit boards hang from the rear panel. The circuit is,

for the most part, built up from discrete devices: A single TL074 op-amp appears to be the only signal-path IC in each channel.

In its essence, the Lexicon 412 looks to be a "quad-mono" design: Each channel has its own subcompact toroidal transformer, a pair of fairly squat 10,000-microfarad storage capacitors, and an individual driver/output board. The four toroids, the size



**ON TEST AFTER TEST,
THE FOUR CHANNELS
PERFORMED
ALMOST IDENTICALLY.**

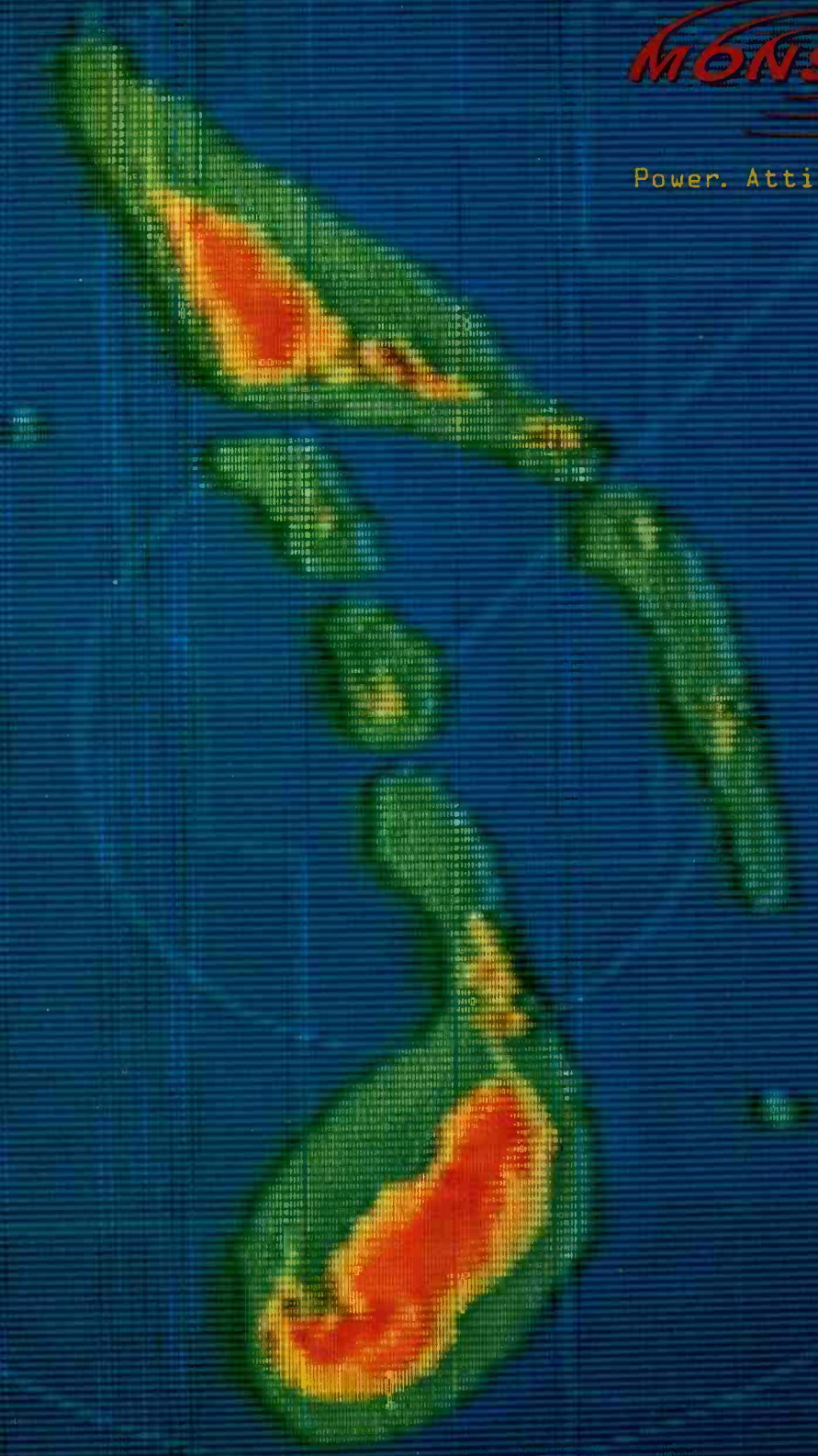
of jelly doughnuts, are arrayed unusually, with two hanging from the front panel and two stacked on the amplifier's floor. I infer that this geometry was adopted for hum-bucking, to reduce radiated interference. And Lexicon does specify such interference (which *very few* manufacturers do) as a very low 3 gauss or less within 2 inches of the case. An informal check, with my Fender Stratocaster guitar's single-coil pickups serving as interference probes, proved that the Lexicon 412 is indeed one very non-polluting power amp.

Measurements

On the test bench, Lexicon's 412 power amp performed impressively, like the proverbial straight wire with gain—but in this case, four of them. Its frequency response (Fig. 1) was the first tip-off: Note the greatly magnified vertical scale! Within the audio band, the response is essentially flatter than my test instruments can measure and is down no more than about 0.25 dB two octaves above the band; only at 200 kHz does response droop by almost—but

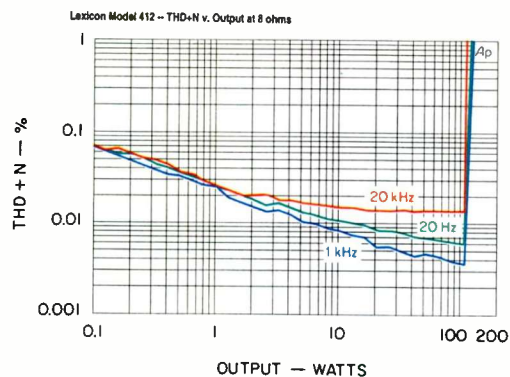


Power. Attitude. Audio.

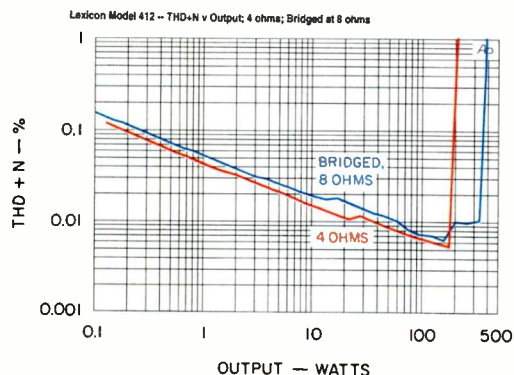


Monsoon. Get caught in it.

A powerful new audio system is approaching, available in select new cars and trucks, like the '97 Pontiac Firebird. It will envelop you in music. Call 888-4-ATTI2D, toll-free. <http://www.monsoonpower.com>



A



B

Fig. 5—THD + N vs. output for three frequencies into 8-ohm loads (A) and for 1 kHz into 4 ohms and bridged into 8 ohms (B).

not quite—3 dB. The curve is for channel 2 only, which I chose at random; the remaining channels matched so closely (within ± 0.05 dB from below 10 Hz to above 30 kHz!) that presenting their responses would have been superfluous.

Figure 2 shows channel separation, at 1 watt output, for leakage from channel 1 into channels 2, 3, and 4. This performance is very good and, as with frequency response, performance of the other channels was so similar that there was no need to present it. I was a bit surprised, however, that there was not noticeably greater separation between channels on opposite sides of the chassis (such as channels 1 and 3) than between physically adjacent channels (such as 1 and 2).

The 412's noise and distortion were, in general, exceptionally low all around. Its A-weighted signal-to-noise ratio measured

**DISTORTION,
EVEN AT ULTRASONIC
FREQUENCIES,
IS REMARKABLY LOW.**

around 96 dB (referred to 1 watt output) for all channels; though not record-setting, that's very fine. The noise spectrum (Fig. 3) is solidly below -100 dBW, except around the 60-Hz power-line frequency. (The two blips at about 30 and 60 kHz are lab pollution, related to computer-monitor sync signals that I've pretty much given up trying to exorcise.) The AC-line fundamental frequency bumps up to the -85 dBW level, as seen, no matter what combination of grounding, ground lift, or input connection (or shorting plugs) I tried, so I take it as "real." Note that the AC power line's second, third, and fourth harmonics (120, 180, and 240 Hz) are very well suppressed.

It's common to measure distortion only up to 20 or 22 kHz. However, since it's by no means unusual for amplifiers to encounter relatively high levels of ultrasonic signal (especially from digital audio components), I decided to make all my distortion measurements with an 80-kHz upper limit. This wider bandwidth lets me see if the amplifier remains linear at those frequencies.

Figure 4 shows total harmonic distortion plus noise (THD + N) versus frequency at 1 and 50 watts, both into 8 ohms. I opted not to clutter the graph with an additional curve at rated output (120 watts), since this virtually overlaid the 50-watt curve. These curves pretty much speak for themselves; the absence of distortion in the ultrasonic region is exceptional. Only channel 1's performance is shown, for clarity's sake; the other channels were essentially identical.

Figure 5A shows THD + noise versus output level (also for channel 1), for three frequencies, with all four channels driven into 8-ohm loads. (In all cases, the four channels' performance was extremely similar.) Figure 5B displays the 1-kHz distortion versus power for 4-ohm loads (all channels driven) and for bridged output (two chan-

nels driven) into 8-ohm loads. Impressively, each of the curves in Fig. 5B nearly duplicates the four-channel 8-ohm results, with the exception that both are just shy of Lexicon's specs. This is easily explained by the fact that my lab's AC line voltage was sucked down a good 6 or 7 volts by these tests (particularly the bridged go-round); presumably, a stiffer 115-volt line would kick these plots to the right a tick or two.

Use and Listening Tests

I used the Lexicon 412 in a four-speaker Dolby Pro Logic surround system, with B&W 803 Matrix Series 2 front speakers and a pair of Citation 7.3 surround-channel speakers placed high and to the sides. For the purposes of this test, I set up the system with a "phantom" center channel and with all four speakers operating full-range, the

MEASURED DATA

Measurements made with all channels driven and bandwidth of 20 Hz to 80 kHz, except where noted. Data is for worst-case channel.

Output Power at Clipping (1% THD + N at 1 kHz): Into 8 ohms, 134 watts per channel; into 4 ohms, 210 watts per channel.

Dynamic Power: Into 8 ohms, 181 watts per channel; into 4 ohms, 133 watts per channel.

Dynamic Headroom: Into 8 ohms, 1.8 dB; into 4 ohms, 2.2 dB.

THD + N, 20 Hz to 20 kHz: Into 8 ohms, less than 0.023% at rated output and less than 0.02% at 10 watts out; into 4 ohms, less than 0.06% at full output and less than 0.05% at 10 watts out.

Damping Factor re 8 Ohms: 493 at 50 Hz, 202 at 20 kHz.

Output Impedance at 1 kHz: 20 milliohms.

Frequency Response at 1 Watt Out: Below 10 Hz to 20 kHz, $+0.03, -0$ dB; 1 dB down at 170 kHz.

Sensitivity: 99 mV for 0 dBW (1 watt), 1.077 V for rated output.

A-Weighted Noise: -99.1 dBW.

Input Impedance: 51 kilohms.

Channel Separation at 1 Watt: Greater than 63 dB, 20 Hz to 20 kHz.

To everyone who fell in love with the Optimus PRO LX5,



it's time you met the rest of the family.



PRO LX10
33" 2-way tower



PRO LX7
19" bookshelf



PRO CS5
center channel



PRO LX8
18" bookshelf



PRO X77
mini speaker

Audio experts gushed about our affordable Optimus® PRO LX5. "... the best-sounding \$300 pair of loudspeakers I have ever heard." — *Video*, March 1995. "... an astonishing hi-fi bargain if there ever was one." — *Audio*, April 1995. They fell in love with the dramatic sound dispersion, smooth bass, soaring highs and seamless crossovers that come from the LX5's innovative design. That same Linaeum® technology is now used in a whole family of speakers exclusively from RadioShack. Living up to their reputation for great sound at a great price, these speakers are sure to make a lasting impression. Come in and hear what all the talk is about. For a store near you, call 1-800-THE-SHACKSM.



RadioShackSM
You've got questions.
We've got answers.®

Linaeum is a registered trademark of Mystical Audio Limited, Inc.

better to wring out the 412's four channels. The system's front end was the excellent Citation 7.0 preamp/surround processor, and sources included CDs, laserdiscs, and DSS satellite audio/video.

The Lexicon 412's performance can be summed up quickly and easily: Plays loud, sounds clean, stays quiet. The four-channel Lexicon delivered very dynamic, sharply etched, highly defined sound with no hint of transient harshness or hardness. Low-end impact was particularly impressive: The 412 was quite adept at wringing every

last hertz out of the front-channel B&Ws, with a maximum of timbral definition and natural acoustic feel. Overall tonal balance seemed perfectly neutral. While I could not characterize the 412 as noticeably "warm" or "liquid," neither did it ever show any hint of artificial brightness or extra snap on percussion, horn attacks, and the like. The sole exception was that the Lexicon did take on a slight sheen when pushed well into clipping—but this was at painfully loud levels. Spatial reproduction was equally balanced, with good soundstage depth and

breadth, free of any apparent limitation or exaggeration.

About the only aural wart I could find was a faint mechanical buzz from the 412's transformers. As near as I could tell, this was constant; it was never obtrusive and was all but impossible to hear when any program material was playing, even at the faintest levels, unless I placed my ear to the top cover. But in a quiet room, say, reading with the amp powered on but inactive, the buzz will be audible.

The Lexicon's *output*, however, was impressively quiet. Noise at idle was about as low as I've encountered; even when I set my system's volume control to produce full movie-theater level in the listening room, then put the laserdisc on pause, I could hear

Better AUDIO for your VIDEO!

VANDERSTEEN AUDIO

Model 2

Phase-correct main speaker

"Legendary performance on both films and music."

In its pursuit of perfection, specialty audio has established high-fidelity standards that only the best speakers can reach.

Model 1

Phase-correct main speaker

"The standard for affordable speakers."

Model 2W

Three driver, 300 watt amplified subwoofer

"Rocks the foundation."

VCC

Phase-correct center speaker

"Ultimate realism."

VSM

Phase-correct wall-mount loudspeaker

"The ideal surround speaker."

Model 3

Ultra high-performance phase-correct main speaker

The ultimate embodiment of the VANDERSTEEN boxless full-range design.

"Incomparable detail and resolution."

Now your home theater system can meet these standards. A VANDERSTEEN phase-correct home theater system creates a coherent and expansive sound-field with exceptional detail and superior dialog intelligibility. You will hear why "boxless" is definitely better as the system's incredible realism heightens your emotional involvement in your films.

For almost 20 years, VANDERSTEEN AUDIO has built affordable loudspeakers true to both science and music. If you are looking for a system that convincingly reproduces every nuance of a film as easily as it conveys the essence of music, we can direct you to your nearest carefully selected VANDERSTEEN dealer.

DIMENSIONAL PURITY

Please write or call for a brochure and the name of your nearest dealer.

VANDERSTEEN AUDIO

116 West Fourth St, Hanford, CA 93230
(209) 582-0324

CIRCLE NO. 42 ON READER SERVICE CARD



**THE LEXICON 412
PLAYS LOUD,
SOUNDS CLEAN,
AND STAYS QUIET.**

no noise until my ear was within about a foot of a tweeter or midrange. The amp turned on and off gracefully, without snaps or thumps, though its lack of any output muting system means a dying "fizz" can be heard as the output circuits starve out.

The 412 was almost cool to the touch when idling and most of the time ran just barely warm. Even under the abuse of the test bench, the amp never became too hot when I left my hand on it (though it wasn't terribly comfortable to touch), and it never once shut down, popped a fuse, wafted unpleasant odors, or otherwise complained.

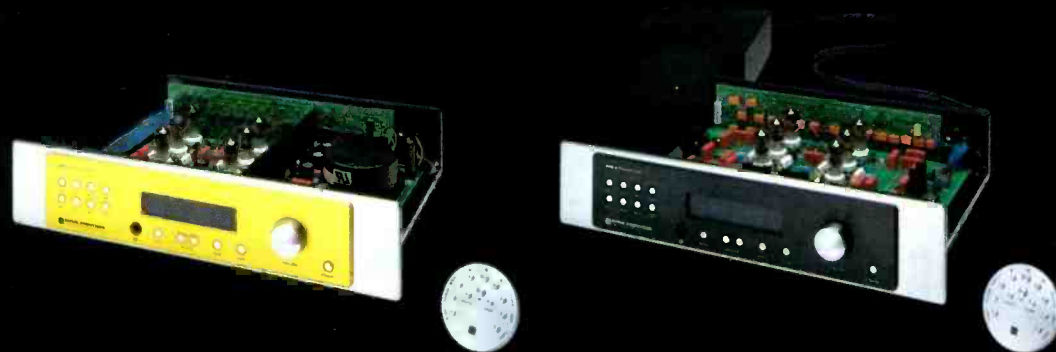
The Lexicon 412's outstanding performance and truly professional build quality complement a comparatively livable size for a multichannel power amp. The 412 is not cheap, but it is an attractive package for the multiamping power needs of any high-end home theater or multiroom installation. A

NOW WHO'S IN CONTROL?

TUBE LINSTAGE PREAMPLIFIER COMPARISON CHART*

	SONIC FRONTIERS LINE-2	SONIC FRONTIERS LINE-1	AUDIO RESEARCH LB-15	CONRAD-JOHNSON PREMIER 14
SEPARATE OUTBOARD POWER SUPPLY	YES	NO	NO	NO
FULLY BALANCED DESIGN	YES	YES	YES	NO
DIRECT COUPLED OUTPUT	YES	YES	NO	NO
INPUTS/OUTPUTS	8/5	8/5	7/4	7/4
FULL FUNCTION REMOTE CONTROL	YES	YES	YES	YES
REMOTE CONTROL HOUSING	ALUMINUM	ALUMINUM	PLASTIC	PLASTIC
REMOTE CONTROL FUNCTIONS	10	10	6	6
DISPLAY/LED DIMMING	YES	YES	NO	NO
RELAY SWITCHING	YES	YES	YES	YES
OUTPUT IMPEDANCE (SE/BAL)	150/300	150/300	300/600	230
REGULATION STAGES	19	15	7	6
STANDBY FUNCTION	YES	YES	NO	YES
BALANCE CONTROL	YES	YES	NO	YES
VOLUME STEPS	191 - 0.5dB	191 - 0.5dB	68 - 0.5 to 3dB	100 - 0.67dB
CONSTANT ON FILAMENT	YES	YES	NO	NO
HEADPHONE AMPLIFIER	YES - Headroom™	YES - Headroom™	NO	NO
BBP "BYPASS" LOOP	YES	YES	NO	NO
MONO FUNCTION	YES	YES	NO	NO
TAPE LOOP - ACTIVELY BUFFERED	YES	YES	NO	NO
IR JACK	YES	YES	NO	NO
RELAY TRIGGER	YES	YES	NO	NO
PHASE CONTROL	YES	YES	NO	NO
DETACHABLE AC POWER CORD	YES	YES	NO	NO
CHASSIS DAMPENING	YES	YES	NO	NO
SMD PCB CONSTRUCTION	YES	YES	NO	NO
TOROIDAL POWER TRANSFORMER	YES	YES	NO	NO
WEIGHT (NET)	33 LBS.	24 LB.	11.6 LBS.	23 LBS.
ELECTRONICS WARRANTY	5 YEAR P&L	5 YEAR P&L	3 YEAR P&L	3 YEAR P&L
TUBE WARRANTY	1 YEAR	1 YEAR	90 DAYS	30 DAYS
M.S.R. PRICE (US\$)	\$2995	\$1995	\$2995	\$3995

* The information contained in this chart has been sourced from manufacturer brochures, reviews and physical examinations. It is accurate to the best of our knowledge, as of October 1st, 1996. Sonic Frontiers Inc. makes no warranty, either expressed or implied, as to the accuracy of this chart. Manufacturer specifications are subject to change. Contact them directly to confirm.



SONIC FRONTIERS
INCORPORATED

BREAKING THE SOUND BARRIER

SONIC FRONTIERS LINE 1 & LINE 2 PREAMPLIFIERS

Contact Sonic Frontiers for the dealer nearest you.
2790 Brighton Road, Oakville, Ontario, Canada, L6H 5T4 Tel: (905) 829-3838 Fax: (905) 829-3033 E-Mail: SFI@sonicfrontiers.com WWW:http://www.sonicfrontiers.com
CIRCLE NO. 37 ON READER SERVICE CARD

AURICLE

COREY GREENBERG

ATLANTIC TECHNOLOGY SYSTEM 250.1 HOME THEATER SPEAKERS



When I auditioned Atlantic Technology's flagship \$3,500 System 350 last year, I was really amazed by this Home THX-certified speaker system's high degree of musicality, even when playing straight two-channel recordings. With the memory of System 350's excellent sound still fresh, I looked forward to more great things from Atlantic Technolo-

Company Address: 343 Vanderbilt Ave., Norwood, Mass. 02062; 617/762-6300.
For literature, circle No. 94

gy when it sent me the new \$1,736 System 250.1.

Spurred by the success of Dolby Digital (AC-3) discrete soundtracks on laserdiscs, the System 250.1 is essentially a retooled and beefed-up version of Atlantic's older \$1,500 System 250. The new models are designed to play much louder in all five speaker positions around the room and to have greater high-frequency extension in the surrounds

to accommodate Dolby Digital's full-range stereo surround tracks. At a system price of just \$1,736 with one subwoofer or \$2,385 with two, Atlantic is again throwing a lot of speaker for the money into one of the most competitive price ranges for home theater speakers.

The Model 251.1 LR main-channel speaker (\$369 per pair in black) and Model 253.1 C center speaker (\$319) feature a pair of 4-inch woofers sandwiching a 3/4-inch dome tweeter. The woofers, as well as the crossover circuits, have been upgraded from those of the System 250 for higher power handling and lower distortion. The 3/4-inch dome tweeter remains unchanged from the older system, although a circle of foam now surrounds it to reduce cabinet reflections. All three drivers are on a composite-plastic front panel that is attached to a 3/4-inch, medium-density fiberboard cabinet (upgraded from the half-inch-thick cabinets of the older System 250).

The Model 253.1 C center speaker is nearly identical in design to the 251.1 main speaker but incorporates a few significant changes. A pair of continuously adjustable knobs on the 253.1's rear panel, labeled "Midrange Timbre" and "High Frequency Level," enable you to vary midrange and treble response if you want to match the sound of the 253.1 to another manufacturer's main speakers (the default settings for use with the rest of the System 250.1 are clearly marked on each control). The 253.1 is meant to be used on its side

**ATLANTIC'S NEW SYSTEM
WAS DESIGNED
TO SMOOTH OVER
THE SOUND OF BRIGHT
MOVIE SOUNDTRACKS.**

as a horizontal center speaker, so it's got a pair of wooden rails on its belly that fit snugly into the scooped-out channels of the supplied low-

profile stand. Unlike the 251.1's rectangular cabinet, the 253.1's is tapered toward the rear. Thus, no matter how high or low you place

Photo: Michael Groen

A close-up portrait of Michael Tilson Thomas, a man with dark hair and a slight smile, wearing a dark button-down shirt. He is looking directly at the camera. The background is dark and out of focus.

“It’s been a first for me to be able to listen to my own work on equipment that is so true to life.”

—*Michael Tilson Thomas*
Music Director, San Francisco Symphony
Artistic Director, New World Symphony

When asked why he had four Parasound high-end audio systems installed throughout his home, Michael Tilson Thomas said it’s because his favorite music system has over 100 musicians and doesn’t fit in his living room.



PARASOUND

950 Battery Street • San Francisco, CA 94111
(415) 397-7100 • Ex (415) 397-0144

this center-channel speaker, you can tilt it up or down to aim it at the listening position.

The Model 254.1 dipole surrounds (\$399 per pair) are an all-new design with more extended treble response. A pair each of ½-inch dome tweeters and 4-inch woofers replace the two 2-inch cone tweeters and single 4-inch woofer of the older Model 254 dipole surround. Unlike most dipole surrounds, however, the 254.1's fore- and aft-firing drivers are angled into the room slightly, rather than facing fully forward and backward. This is to strike a balance between the "disappearing" job of a true dipole and having just enough directivity to enable good localization from Dolby Digital's stereo surround tracks. As with all dipole surrounds, Atlantic Technology recommends placing the 254.1s on the walls to the sides of the listener, a few feet above the seated listener's ear level.

The new Model 262 PBM powered subwoofer (\$649) has a 150-watt amplifier versus the older Model 252 PBM's 90-watt amp. Along with a subwoofer level control, the front panel sports an LED that glows green when the auto-on circuit senses an input signal and glows yellow for standby mode (after 7 to 10 minutes of no signal). Stereo line- and speaker-level inputs and outputs accommodate anything from a budget A/V receiver to high-end separates. As with all of the models in System 250.1, the speaker posts are gold-plated five-way types. A two-position polarity switch is also provided. Although many rooms will be more than adequately served by a single 262-PBM, Atlantic recommends using two in a "Twin Turbo" arrangement (no special hookup mojo, just an action-packed name for using two subs instead of one). This will produce more gut slam in a large room.

The high-frequency response of the 262 PBM's sealed-cabinet, 12-inch woofer is rolled off with a nondefeatable, 24-dB/octave low-pass filter adjustable from 60 to 125 Hz. I would prefer that the low-pass filter be defeatable, as many line-level subwoofer outputs on surround processors (and even some A/V receivers) are themselves low-pass-filtered at 80 to 100 Hz. Even with the 262 PBM's crossover set to its upper frequency limit, its combination with the rolloff of a low-pass filter on a sub output will usually yield thinned-out mid-bass,

where the subwoofer's contribution overlaps that of the main speakers.

Atlantic Technology sent me a pair of optional 156 ST tubular steel stands to use with the 251.1 main speakers, but I don't recommend using them. Although they raise the speakers to an appropriate height, they tilt the 251.1s upward so that the tweeters are aimed above the listener's head, not at him. And despite the stands' hollow, steel-tube construction, you can't fill them with sand, so there is no way to damp the metallic ringing that occurs when

**THE DIPOLE SURROUNDS
DID A GOOD JOB
OF CREATING THE KIND OF
DIFFUSE AMBIENCE
THAT DIPOLES DO BEST.**

they are tapped (or, more significantly, when they are excited by speaker resonances). But above all, the stands have no provision for threaded spiked feet, which I think is a must for achieving rigid, wobble-free support. I got much better sound when I used 24-inch, sand-fillable Merrill stands, and I can also recommend similar stands from Target and Sound Anchor.

I spent several weeks listening to the System 250.1 driven by my reference system: Theta Digital's Data III LD/CD transport and DS Pro Generation V D/A converter, an RCA DSS with a modified digital audio output feeding Meridian's 563 D/A converter, a Rega Research Planar 3 turntable with a Sumiko SHO phono cartridge and McCormack Audio's Micro Phono Drive phono stage, a Citation 7.0 surround pre-amp, a Marantz DP-870 Dolby Digital processor, Aragon 4004 Mk.II and Acurus 200X3 power amplifiers, API Power Pack AC line filters, Kimber Kable PBJ and Silver Streak interconnects and 4TC speaker cables, and Canare 75-ohm digital/video cables. Before attempting any serious listening, I broke in System 250.1 by playing high-level pink noise from an XLO test CD continuously for 48 hours.

Like most people, I have one main system in my home that I fire up for music, movies, television, and the occasional Joyce Chen *How To Steam Perfect Fluffy Rice Every Time*

instructional tape. So a home theater speaker system has got to be able to shine on both music and movies to get my thumbs-up. Contrary to THX wisdom, I strongly prefer a matched quintet of neutral, musically accurate speakers for home theater. This type of system not only "does" music but also sounds better and more involving on soundtracks than any of the "movie-optimized" speakers I've heard.

Atlantic's new speaker system, on the other hand, was expressly designed to smooth over and warm up the sound of bright soundtracks. And this it does: The shrillest laserdisc in my collection, the wretched-sounding *Stargate*, was smoothed out enough to be almost listenable, even with my Citation processor's THX mode disengaged. But while System 250.1 reproduced an expansive, full-range movie surround experience, its performance on stereo music was not nearly so impressive.

My main criticism centers on System 250.1's rolled-off tonal balance. Despite a bit of low-treble peakiness that lent dialog a cutting presence, both the 251.1 main speakers and 253.1 center speaker suffered from a distinct lack of top-octave air. Atlantic's Peter Tribeman says that System 250.1 was designed to sound a bit warmer than neutral, to counter the overbrightness of many movie and TV soundtracks. However, although System 250.1 did render bright-sounding soundtracks more listenable, it also made many of my music CDs and LPs sound rather dull and lacking in detail. Even with the speaker grilles removed, which is how I did most of my listening, System 250.1 sounded too dark.

System 250.1's problem in this area isn't just quantity of treble but also quality. The fine sense of treble definition I'm used to hearing from the best speakers in this price range just wasn't there. I'm usually forgiving of a warm, low-rez treble when it comes to budget speakers, but these aren't budget speakers. Atlantic should have upgraded System 250.1's tweeters along with the rest of the retooling from System 250, because they're the most obvious weakness.

System 250.1's performance was much more impressive on film soundtracks, where, given their frequent overbrightness, its rolled-off treble was less of a hindrance and more of a help. The Model 251.1 main speakers, as well as the nearly identical

DP-870 DOLBY DIGITAL AC-3

DEMODULATOR/ DECODER:

- discrete 5.1-channel decoding for Dolby Digital AC-3 soundtracks • DSP decoder with Zoran AC-3 chip • AC-3 RF input for LD • digital AC-3 inputs for future sources with digital AC-3 output (DVD, DSS) • channel level and balance controls
- configuration switches match output to system speakers
- connects directly to the SR-96
- connects to existing A/V systems (separate processor/ power amps or A/V receiver with 5 pre-out/main-in loops)
- **SR-96 THX AUDIO/VIDEO**

- RECEIVER:** premium dual DSP decoder features all-digital Dolby Pro Logic and THX Home Cinema processing • 5 high-current power amps • 110 W x 3 front, 90 W x 2 surrounds (into 8 ohms) • discrete 6-channel input connects to Marantz DP-870 Dolby Digital decoder
- AM/FM tuner with station naming • 5 pre-out/main-in loops
- 4 audio inputs, 5 video inputs with A/V copy features
- composite and S-video switching • advanced multi-room mode provides two independent sources • headphone jack with auto stereo switching • auto power-on sensing on TV input
- on-screen display • banana-jack connections on all 5 speaker terminals
- **RC-2000 LEARNING REMOTE:**

- total control of your A/V equipment • learns hundreds of IR codes • macro keys store 20 commands each for one-button operation • LCD window and keys illuminate automatically
- ergonomic design with logically grouped functions • LCD displays up to 32 special commands for each component • label naming feature • built-in commands for popular DSS equipment • built-in commands for Marantz and other brands using RC-5 codes

One Great Idea on Top of Another: Introducing the Marantz SR-96 THX Receiver and DP-870 Dolby Digital Decoder



Start with the Marantz SR-96 THX Audio/Video Receiver, a perfect blend of powerful technology and thoughtful design. Premium dual DSPs provide all-digital Dolby Pro Logic decoding and THX Home Cinema processing. Five high-current power amps deliver 110 W continuous to the fronts and 90 W to the surrounds (into 8 ohms). A versatile complement of A/V inputs manages even the largest theater systems. And should you ever actually leave your theater, the SR-96 offers an advanced multi-room mode that can play two sources independently. The SR-96 is the ideal centerpiece for any entertainment system.

Top it off with the Marantz DP-870 Dolby Digital AC-3 Demodulator/Decoder. The DP-870 connects directly to the SR-96 to deliver the most advanced surround sound ever. The DP-870 can even be connected to many existing surround sound systems that use separate surround processor and power amps, and other A/V receivers that feature 5 pre-out/main-in/subwoofer connections. Featuring the high precision Zoran DSP Dolby Digital AC-3 decoder chip, the DP-870 is prepared for the future with additional inputs for other digital AC-3 sources, such as DSS and DVD components.



Now that you have the best in home-theater sound, check out the remarkable Marantz RC-2000 Learning Remote. Designed with input from leading custom A/V installation experts, it's the only remote you'll need for complete and convenient control of your entire entertainment system.

All You Need is One



Get total control and complete convenience with the new Marantz RC-2000 Learning Remote.

marantz®
PURE HIGH FIDELITY

Marantz America, Inc.

440 Medinah Road, Roselle, IL 60172-2330 Tel 708-307-3100 • 708-307-2687 Fax

THX is a registered trademark of Lucasfilm Ltd. "Dolby," "AC-3," "Pro Logic," and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.

Model 253.1 center speaker, sounded acceptably smooth in the midrange, although some peakiness in the low treble lent dialog and percussive sounds a bit more of an edge than I'm used to hearing from speakers in this price range. Overall, dialog intelligibility was good, and the close timbre match between the 251.1s and the 253.1 made for smooth pans across the front.

The Model 254.1 dipole surrounds did a good job of throwing up the kind of cloudy, diffuse ambience that dipoles do best. But because these dipoles' front- and rear-facing drivers are angled slightly into the room, the 254.1s are more localizable and less "lush" and fully ambient. Atlantic says this is an intentional effect, for improved sound on Dolby Digital soundtracks. Still, I would have preferred a closer timbre match between the main and the surround speakers. I felt Dolby Digital soundtracks sounded much better and more coherent when I used an additional pair of Model 251.1 main speakers for the surround channels, placed in the rear corners of the room.

System 250.1's greatest strength is the Model 262 PBM powered subwoofer. I re-

member well the older 90-watt 252 PBM, and the 262 stomps all over it. The sealed-system 262 goes loud and low; unlike many of the ported and bandpass-loaded subs in its price range, it produces bass that is tight, well defined, and more than "fast" enough for music. Most subs in this price range can rumble real well on movie soundtracks, but

**THE MODEL 262 PBM
IS ONE OF THE BEST SUBS
I HAVE HEARD
IN ITS PRICE RANGE.**

they sound thick and sluggish on music, turning good bass lines into unrecognizable mush. Not the 262 PBM—it's one of the best subs I've heard in its class. And when I used two of them, the quality and quantity of bass were clearly in line with what I've heard from the better \$1,500 subs around.

But except for the excellent 262 PBM subwoofer, I can't give Atlantic Technolo-

gy's System 250.1 an unqualified thumbs-up. Three years ago, an \$1,800 home theater speaker package like this would have garnered an unqualified rave, because high-end music performance just wasn't expected from home theater speakers in this price range. But today that same amount of money can buy you a full-range surround system that offers true audiophile-grade sound on both music and movies. That's why I find it hard to recommend a similarly priced system whose tonal balance and treble quality are so skewed toward mellowing film soundtracks that it renders music recordings uninvolved (especially when so many A/V processors, preamps, and receivers provide switchable or adjustable means for taming overaggressive soundtracks when that is necessary). I look forward to hearing a future System 250.2, with (I hope) upgraded tweeters and a more neutral tonal balance. As it is, only the 262 PBM sub stands out as a good value. The complete System 250.1 performs well as a reproducer of movie and TV soundtracks, but if you want music, too, you can do better for the money. A

We Put the **Home** In Home Theater

Today's home theater systems demand innovative and flexible furniture solutions. CWD Insights is a real hand-crafted American furniture that provides convenient, practical storage for any audio/video system, with Classic and Traditional styles that will enhance any decor. Available in a range of finishes and an unlimited choice of rear-projection or direct-view configurations, CWD Insights provides the quality furniture solution at an affordable price. Call 1-800-323-2159 for the authorized audio/video or furniture retailer nearest you.



Insights Classic

The Home Entertainment Furniture Solution

Custom Woodwork & Design / P.O. Box 219 / Bensalem, PA 19020 / (800) 323-2159

CIRCLE NO. 16 ON READER SERVICE CARD

Classic

"High-End
now comes
with a new
price tag."

\$2450 /pr

delivered

The new Classic is deeper, faster,
and cleaner than ever.

Nearly 200 inches of piston area
driven by 28 pounds of rugged
motor structure.

Low mass ribbon tweeters and
imported KEVLAR Hexacone
midranges crossed over in a
proprietary configuration.

Impeccable build quality backed
by the ten year warranty that's
become a Legacy tradition.

...At a price that will make the
other guys *cringe*.

For your free
LEGACY AUDIO
1997 Reference Guide
call

1-800-283-4644



Classic

3021 SANGAMON AVE., SPRINGFIELD, IL 62732

FAX (217) 744-7269

The Classic is shown in black satin oak. Also available in rosewood, walnut, medium oak and ribbon mahogany.

When you've got questions about Audio and Video,

see a specialist

Q Can I use my existing stereo system or will I have to get a completely new system to have surround sound capability?

A The answer is both yes and no. For some customers we have add on processors that can turn any high quality stereo system into a Dolby Pro Logic system. For others, a brand new receiver with surround sound processing is far more cost effective. As an audio dealer for over forty years, we find that most customers have some existing equipment that they can use. Hi-Fi VCRs, laserdisc players, small speakers and stereo television sets are usually the most common pieces of equipment that we can build on. Very often, once you've purchased a new surround sound receiver, you'll find the desire to begin upgrading all of your remaining components; be it a big screen television, better surround speakers or a subwoofer. Many customers are so impressed with the results from their enhanced systems that they ultimately upgrade to complete Dolby Digital AC-3 or THX systems for the most realistic home theater experience around.

—Woody Cade
Almas Hi-Fi Stereo
Dearborn, Michigan

Almas HI-FI STEREO INC.

Q Should I buy a laserdisc player now, or wait for DVD?

A It depends on how long you want to wait and why. When compact disc players were first released, it took pressing plants over four years to distribute enough titles to make it an attractive alternative to the LP. By that time, the performance and features of compact disc players had improved measurably as well as dropped in price. I hate to say it, but there may be some benefit to waiting to purchase the new DVD technology, even if it comes to market in early 1997. There's no escaping the fact that it will eventually become the leading digital format for audio and video playback. Meanwhile, a laserdisc player for between \$400 and \$600 will give you an immediate selection of over 20,000 titles providing top-flight picture and superior sound quality (now including Dolby Digital AC-3). You will be able to enjoy your laserdisc player now and for years to come. So why bother waiting?

—Dave Smyth
Soundscape
Baltimore, Maryland



SOUNDSCAPE

Each month, Audio Magazine's feature "See a Specialist" showcases the finest audio/video dealers from across the country. The dealers, chosen as a result of recommendations from equipment manufacturers, Audio Magazine staff and industry organizations, exemplify the best audio/video dealers from New York to California. The chosen dealers offer solutions to problems that can best be handled by a specialty audio/video retailer.

If you would like to submit questions to dealers in your area please write to :
See a Specialist, c/o Audio Magazine, 1633 Broadway, NY, NY 10019

Q Since many stores do not carry the same lines of equipment, how can I fairly compare the products that interest me?

A The smartest thing you can do is bring your own demo music, say three to five compact discs, and always listen to the same music in the same sequence at each store you visit. The CDs you bring should definitely include music that you know intimately and is representative of what you normally listen to. Ideally, your demo music should be well recorded and cover a wide range of frequencies and dynamics. I like to bring at least one recording of someone who I have heard play in a live situation, that way I have a clear frame of reference for judging the believability of the product I'm evaluating. If you are looking for some suggestions, many of the audiophile labels such as Mobile Fidelity, Audioquest, Chesky, and Sheffield Labs have beautifully mastered discs that are great for testing systems. Finally, listen to suggestions made by your audio specialist, but ultimately trust your own ears and heart. Happy listening!

—Jeff Fandal/Irv Gross
Soundings
Denver, Colorado

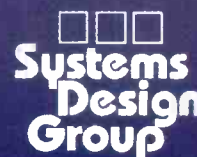


Fine Audio Video

Q I am disappointed with the sound coming from my center channel speaker. What can I do to get better sound?

A Properly positioning the center-channel speaker and acoustically isolating it from the TV can make a dramatic difference in sound quality. There are several ways of achieving this. Using isolation cones under the center-channel speaker can effectively decouple it from the TV. A better method is to purchase a steel center-channel speaker stand called a "Director." This raises the center channel speaker about one inch above the top of the TV. The center-channel speaker should be positioned to project forward of the TV, eliminating any acoustic interference from the sound reflecting off the top of the TV. This also will diminish defraction from the front surface of the TV as well as help eliminate possible vibration of the TV cabinet. The rear spike of the "Director" is adjustable in height and should be raised slightly so that the center speaker is angled down to direct sound toward the listeners. Once positioned in this manner, you will notice a discernable improvement in clarity and a much more natural sound.

—Peter Horvath/Chris Anderson
Systems Design Group
Redondo Beach, CA.



HALES DESIGN GROUP CONCEPT FIVE SPEAKER



The owner's manual for the Hales Design Group Concept Five recommends that this speaker be "burned in for at least 100 hours before any critical listening is performed." The manual is correct: The Concept Five did perform better with extended burn-in. However, it also proved to be a superb speaker right out of the box. It began by do-

ing everything very well, then proceeded to do it better.

The Concept Five may not provide the ultimate in bass or dynamics or provide the soundstage size and drama of a large electrostatic or ribbon speaker, but its transparency, soundstage focus, and natural musical timbre are truly outstanding. At a price of \$6,150 per pair (\$5,800 without grilles), the Concept Five

competed favorably with speakers that are priced well in excess of \$10,000 per pair. In fact, its performance was just about as good as high-end sound gets.

The Hales speaker's styling was the first indicator of its quality; it is not just another box that sticks out in the middle of a room. Hales followed the lead of a number of other manufacturers by sloping the speaker's front panel to improve time coherence. There's an almost parallel slope on the back, emphasizing the speaker's depth over its width. As a result, the Concept Five has a streamlined look—even though it measures 12 inches wide, 21 inches deep, and 48 inches high. It has an excellent veneer and finish. The grille is nicely styled, too, but the speaker sounds slightly cleaner without it.

The most striking aspect of the Concept Five is its sheer mass. Each speaker is in a tuned, sealed, low-Q enclosure weighing 225 pounds, making this one of the heaviest speakers around. As with some other high-end designs, the drivers are on an extremely heavy, resonance-resistant front baffle of 3-inch-thick cast cement reinforced with fiberglass. The cabinet is similarly dense and vibration-resistant; its rear and front panels are 2-inch-thick slabs of medium-density fiberboard; the sides are 1 inch thick.

This mix of mass and solidity paid off in sonic transparency, absence of bass coloration, and smooth, clean performance at high sound levels. At reasonable listening levels, the Concept Five was exceptionally free of the common tendency to add increasing coloration as the music becomes more dynamic. It had excellent consistency during transitions to loud, complex passages—such as in full orchestra, grand opera, and

Company Address: 16812
Gothard St., Huntington
Beach, Cal. 92647; 714/841-
6884.

For literature, circle No. 95

New Product Showcase: Nitro Series™ from Jensen®



©1995 Jensen is a registered trademark and Nitro Series is a trademark of International Jensen Incorporated

SO LOUD YOUR EYES WILL RING. Jensen Nitro Series car audio gear. At finer audio stores. Call 1-800-67-SOUND.

CIRCLE NO. 21 ON READER SERVICE CARD

big band jazz—and it stayed clean even during prolonged loud passages.

In fact, I would urge you to audition the Concept Five simply to hear what a speaker with properly controlled cabinet resonance can do—as distinguished from what is accomplished by some accessory devices being sold for resonance control. Although good stands, for example, can help most speakers to a degree, the Concept Five demonstrates that there is no substitute for size, weight, and the laws of physics. When mass and solidity are necessary, you need mass and solidity.

The Hales Concept Five is a three-way design comprising a 10-inch Kevlar woofer, a 2-inch aluminum-dome midrange, and a 1-inch aluminum-dome tweeter. The midrange is a European driver that is exclusive to Hales in the United States. The tweeter and woofer are proprietary drivers designed by Hales and manufactured by Vifa and Focal, respectively. The tweeter is particularly outstanding. Its underhung voice-coil is intended to provide better linearity through its audible range. The bass driver has exceptional damping for a woofer made for sealed enclosures, and it has a very heavy magnet structure, a long linear excursion, and a rigid, low-mass Kevlar sandwich cone.

Hales put a major effort into this speaker's fourth-order Linkwitz-Riley crossovers. (Crossover points are specified as 600 Hz and 2 kHz.) They are hard-wired with Cardas cable, have short signal paths, and use low-inductance resistors, proprietary capacitors, and air-core inductors.

The Concept Five proved to be a very easy load on amplifiers and was compatible with a wide range of speaker cables, including those from AudioQuest, Goertz, Discovery, and Wireworld. This speaker's nominal sensitivity is very low (86 dB), and I strongly recommend using a high-powered amplifier to get optimum bass and dynamic performance.

Speaker setup and placement were relatively simple in one sense and a bit complicated in another. It was difficult to find a bad place for the Concept Five. It is de-

signed to ensure that any halfway reasonable placement, a few feet away from the nearest walls, will produce good results. At the same time, this speaker is capable of extraordinary resolution if you minimize side reflections and is capable of equally extraordinary bass reproduction if you spike it properly and minimize the effects of room interference. Yet it takes extended listening to different placements, left/right speaker spacings, and toe-in angles to get the level of excellence the Concept Five can provide. Happily, Hales' instructions on speaker placement are the best I have ever read (with the possible exception of those from Vandersteen). The instructions are complex

THE CABINET'S MASS AND SOLIDITY PAY OFF IN TRANSPARENCY, GOOD BASS, AND SMOOTHNESS AT HIGH SOUND LEVELS.

and seem to assume you have an ideal, sealed rectangular room whose walls, ceiling, and floor are free from absorption and transmission in the low frequencies. Nonetheless, the directions are good enough to help even the most seasoned audiophile place the speakers optimally.

It is hard to put the sound of a product like the Hales Concept Five into perspective. You have to pay a lot for excellence at a time when you can buy a pair of good floor-standing, three-way speakers for several hundred dollars and a pair of *very* good floor-standing, three-way speakers for around \$1,000 from mainstream manufacturers. And once you rise above that level, much depends on your personal taste, associated equipment, and listening room.

I listened carefully to a fully burned-in pair of Concept Fives with test records, DAT tapes of live performances, acoustic recordings of different types of voice and solo instruments, and a wide range of classical, jazz, and rock albums. At no time did the Hales falter. The Concept Five had one of the smoothest and most natural timbres, or overall frequency responses, I have ever heard. It was exceptionally free from the minor colorations in specific frequency ranges that can affect the timbres of certain instruments or the human voice. Further, the timbre of the Concept Five was consistent at all dynamic levels.

I found the Concept Five to be exceptionally live and dynamic. It had outstand-

ing musical life and the speed and power-handling capability necessary to resolve loud bass transients and musical changes with even the most demanding recordings. This was evident on guitarist Carlos Heredia's *Gypsy Flamenco* (Chesky WO126). There were rational limits as to how loud I could drive these Hales speakers, however. If I pushed the envelope to ear-bleeding levels, the woofer began to break up when I played ultra-demanding deep bass, such as Pink Floyd's famous heartbeats on *Dark Side of the Moon* or the bass drum on Eiji Oue's recording of *Le Sacre du Printemps* (Reference Recordings RR-70). Let me emphasize that you'll encounter this problem only if you play deep bass transients at levels greater than 100 dB. (And if you listen a lot to massive bass pressure waves at these levels, it won't be the speaker that will need its screws adjusted.)

Although the Concept Five's deep bass was flat, extended, and well defined, it was not as deep as that of subwoofers or speakers whose woofers and enclosures are far larger. By using a 10-inch woofer in a sealed enclosure rather than a larger driver or a ported enclosure, Hales Design traded off some frequency extension and power-handling capability in order to gain exceptional bass detail, transient performance, and flat bass response.

With several recent high-end speaker systems, I have been particularly impressed by the smoothness of the transition from the deep bass to the midrange; the Concept Five handled this as well as any system I have heard. The Hales brought the guitars alive on the Newman and Oltman Guitar Duo's *Passions* (Sheffield 10058-2 F) and gave the cello a special magic on William DeRosa and Noreen Cassidy-Polera's *Celist's Holiday* (Audiofon CD 72046).

The Concept Fives are "voiced" differently from the Thiel CS7s I used for comparison, in the sense that the Thiels had distinctly more upper-octave energy. The Concept Fives also had slightly less apparent upper-octave energy than Apogee Studio Grands and B&W 801 Matrix Series 3s. Yet the Hales reproduced the upper octaves with great success. Their upper midrange and treble were very smooth and had great detail. The upper strings were sweet. Female vocal sibilants were extremely realistic, without the touch of harshness found even

Make enough trouble and people always start talking



At Carver, we've found that making trouble is usually the first step in making real audio progress. For nearly twenty years we've built audio components around controversial design concepts in order to break through traditional price/performance barriers.

The three amplifiers shown here continue that tradition. The awesome Lightstar Reference is our most articulate technical statement ever as well as Carver's blueprint for the future. The lessons we learned during its development are now common denominators for every Carver amplifier design. As a result, people are talking about the latest Carver amplifiers in terms usually reserved for far more expensive models, such as "innovative," "powerful," and even "magic."

To achieve this level of performance, technology and value in a single precision chassis, we design and build these amplifiers in our own factory just outside Seattle, Washington. Hear the technology that has the experts talking at your authorized Carver dealer.

Carver Research Lightstar Reference Amplifier

Recommended Component, *Stereophile*, April 1996
(Vol. 19, No. 4)

"Innovative, powerful (350 Wpc) power amplifier that impressed RD [Robert Deutsch] with its dynamics and sense of power in reserve, while sounding impressively neutral."

Carver TFM-35x THX Amplifier

Stereophile Guide to Home Theater, Fall 1996
(Vol. 2, No. 3), Robert Deutsch

"It's very modestly priced but doesn't sound like it... There are two groups of audiophiles to whom I particularly recommend the TFM-35x: those who are drawn to the tonal qualities of tube amplifiers but don't want the responsibility of their care and feeding, and those who are attracted to the sound of the Carver Lightstar Reference but deterred by the price... In the right system, it can give the big boys a good run for their money."

Carver AV-806x Multi-channel Amplifier

Recommended Component, *Stereophile*, April 1996
(Vol. 19, No. 4)

"I was expecting competent performance; what I got instead was magic," enthused TJN [Thomas J. Norton] about the six-channel Carver... "My favorite current multichannel amp."

CARVER

Carver Corporation, P.O. Box 1237, Lynnwood, WA 98046
For authorized dealer locations call (206) 775-1202
<http://www.carver.com>

in some of the best speakers; reproduction of male voice was equally exceptional.

The dynamics, timbre, and transient performance of the Concept Fives were remarkably consistent from very soft to all but the very loudest levels. Many speakers seem to have a single listening level for best performance. You have to play music at this level to make the speaker come alive and deliver a natural frequency response, being careful not to push the overall listening level any higher because the response will start changing or the sound will begin to harden. The Concept Fives can sneak up on you in this respect. In fact, I'd be a bit careful about letting their transparency and speed seduce you into listening at too high a level. These speakers are a little like a fine Mercedes: Everything goes so smoothly that you don't realize it when you have pressed too hard on the accelerator.

The Concept Five's soundstage was natural, not bigger than life. It extended to the right and left of the speakers and had exceptional depth. It also had superb focus and stability and an unusual degree of center fill. The Concept Five provided as good a

soundstage as any speaker using conventional drivers I have heard, and its soundstage definition equaled that of the best bipolar speakers that use cone and dome drivers. This was clearly audible on naturally miked CDs or LPs—as well as in more

**THE CONCEPT FIVE HAS
ONE OF THE SMOOTHEST
AND MOST NATURAL
TIMBRES I'VE HEARD.**

complex mixes, such as on Bernard Herrmann's LP *The Four Faces of Jazz* (Mobile Fidelity MFSL 255).

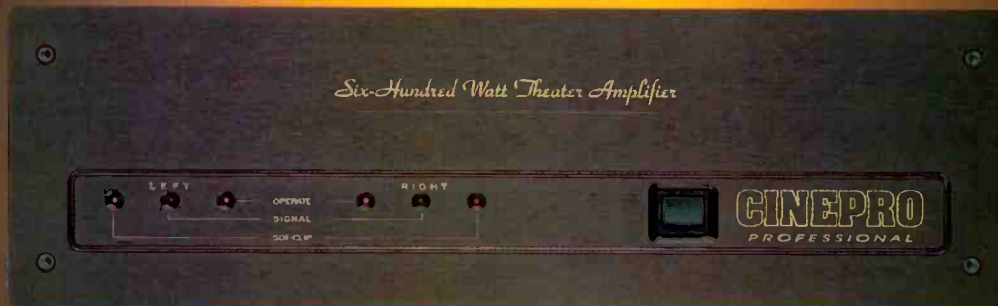
The Concept Fives provided a generously sized, two-person listening area where soundstage detail was simply superb. I heard none of the etching or artificial precision that tends to make speakers more like sound-effects machines than reproducers of music. A few small reference monitors on stands come close to furnishing the same

left-to-right imaging, but they seldom yield anything approaching the Hales' depth, extended frequency response, and smoothness. If you listen to live acoustic music, you will find that the soundstage delivered by the Concept Fives is about as musically realistic as the recording permits.

I am all too aware that praising the Concept Five, which costs around \$6,000 per pair, is praising a product few people can afford. In defense of its price tag, this is a truly outstanding speaker whose sound quality is competitive with that of a number of speakers costing \$10,000 per pair or more. I realize this is not much consolation if you don't have the money in the first place. So let me give you a bit of good news: Hales Design Group has two other, more affordable models whose technology is very similar. The Concept Three costs \$4,100 per pair (\$3,800 without grilles), and the Concept Two costs \$2,245 per pair (\$1,995 without grilles). Still not cheap, yet certainly within the budget of more audiophiles. But, like every other glorious excess in the high end, even the Concept Five can be rationalized as a bargain! A

Power from the Gods...

"It can deliver 500 watts per channel into 4 ohm loads, with negligible distortion."
—Julian Hirsch
Stereo Review,
July 1996



"Frankly, it's price is almost too low to be real (I suspected a typo at first)."
—Julian Hirsch
Stereo Review,
July 1996

priced for the people!

**Cinepro proudly presents the best value in power amplifiers today.
The Cinepro 600x2.**

A professional quality amplifier, that has garnered rave reviews both here and abroad. Perfectly at home in the finest high end audiophile systems, this amplifier can drive virtually any speaker made today, even down to 2 ohms!

A back panel switch converts the 600x2 into a 600 watt mono-block for center channel, or dual amplifier stereo.

The amplifier features both balanced and unbalanced inputs, backup fan cooling, and outstanding sound...

"(the Cinepro's) sonic characteristic was preferred to a set of pure class A mono-blocks by two of our three referees"

—*Secrets of Home Theater and High Fidelity*. J. Johnson, Jan. 1996.

**We sell the 600x2 on a 30-day, no hassle, money-back guarantee (excludes shipping).
3 year parts and labor warranty.
We ship FedEx 2nd day air for just \$25.**

CINEPRO™

PROFESSIONAL

1030 VICENTE, SAN FRANCISCO, CA 94116

CIRCLE NO. 13 ON READER SERVICE CARD

Factory Direct Save 50%

(vs. competitive amplifiers)

\$799

FREE 30-day home trial

1-800-395-1222

Limited time offer!

Sanus Systems

AUDIO • VIDEO FURNISHINGS



Audio



Home Theater



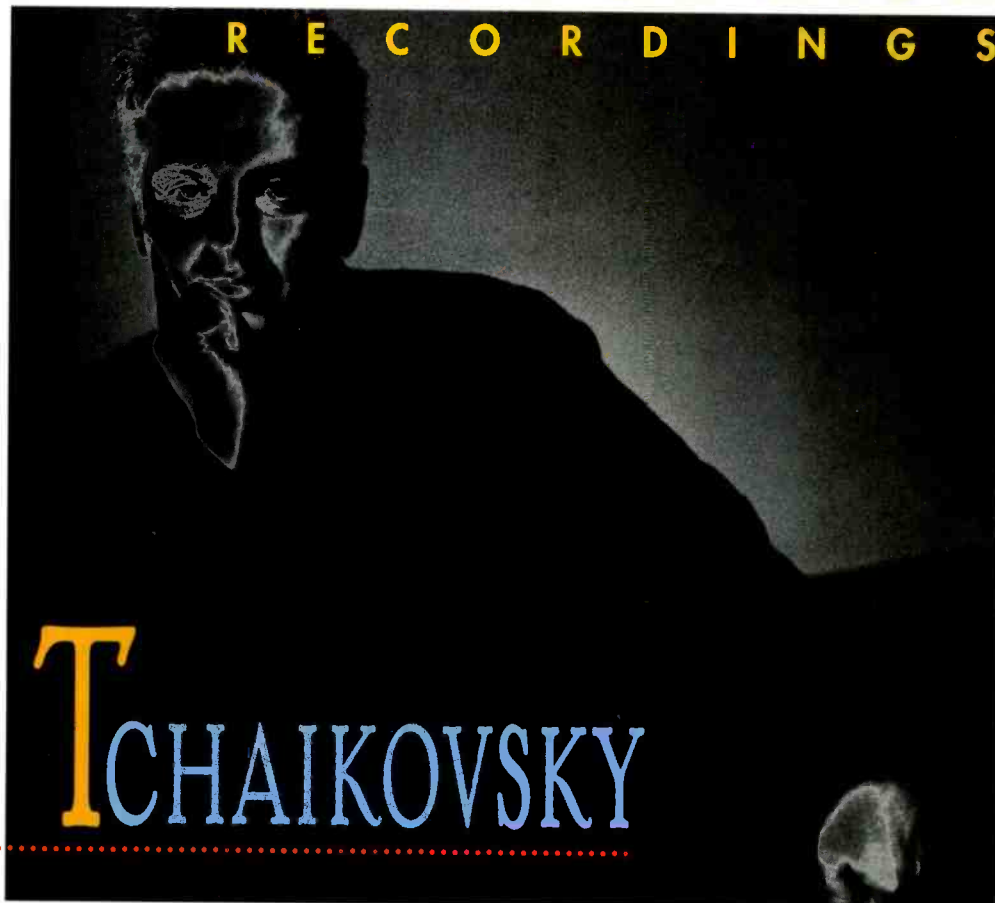
Video

Euro Furniture

The list of consumer electronics manufacturers and journals that use or recommend Sanus Systems furniture is truly impressive. Why Sanus? Because Sanus furniture makes high performance audio and video equipment look and sound its very best.

Euro Furniture is a modular design. Buy exactly the number of shelves that you need now, then add shelves as you add new components. The open architecture design provides superior acoustic isolation and keeps your system running cool. Columnar sandwich construction provides high rigidity and is a stylish alternative to the utilitarian look of traditional steel racks. Fulfilling esthetic and acoustic needs equally, Euro Furniture highlights rather than hides your equipment.

CLASSICAL RECORDINGS

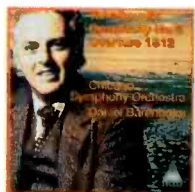


**Tchaikovsky: Symphony No. 5
in E Minor, Op. 64;
Overture "1812," Op. 49**
Chicago Symphony Orchestra,
Daniel Barenboim
TELDEC 0630-10904
CD; DDD; 59:41
Sound: A-, Performance A+

Tchaikovsky's symphonies are so popular that, all too often, conductors simply read through the work with little forethought. For this very reason, the Chicago

Symphony Orchestra's new recording of Tchaikovsky's Fifth is a breath of fresh air. Its conductor, Daniel Barenboim, acknowledges, "We relearned the work specially for this recording, and I can truthfully say that there isn't a single note in the whole recording that hasn't been thought afresh."

One of Barenboim's novel ideas is to perform all four movements "attacca," or without a break. It becomes quite a recording challenge to



give the impression of a live, straight-through performance (though without extraneous audience noise). Although this approach would be meaningless with most symphonies, it works well in Tchaikovsky's Fifth. The end of each movement is tonally, and often melodically, related to the beginning of the next. Barenboim's interpretation is forceful and triumphant, and the Chicago Symphony Orchestra's execution is without blemish. The brass is particularly excellent, and Dale Clevenger's horn solo in the second movement displays the sweetness and control of a true virtuoso.

Likewise, the Chicago's "1812" presents us with a distinctive performance. Even from the opening chords, you'll likely notice a difference: Where the Russian hymn is typically performed by the entire string section, often doubled by many of the winds (especially in outdoor concerts), it is played here by a sextet of violas and cellos, according to Tchaikovsky's original version. The effect is intriguing and creates

Photo: Marczewski

GOLDENTHAL

Goldenthal: *Fire Water Paper, A Vietnam Oratorio*

Yo-Yo Ma, solo cello; Ann Panagulis, soprano; James Maddalena, baritone; Pacific Chorale; Pacific Chorale Children's Chorus; Vietnamese Children's Chorus; Pacific Symphony Orchestra, Carl St. Clair
SONY CLASSICAL SK 68368
CD; DDD; 65:43
Sound: A, Performance: A

Elliot Goldenthal is probably best known by film-score fans for his cinema music, including *Alien 3* and *Interview with a Vampire*. Like many other film composers, he has also labored in the abstract-music field, and the Pacific Symphony commissioned this work from him for the 20th anniversary, in 1995, of the formal end of the Vietnam conflict.

The sprawling work combines orchestral, choral, and ethnic elements in Asian and Western forms, and the many contrasting texts (both spoken

and sung) address the emotions of those involved in the war and its memories, often with great poignancy. The performers include a soprano, baritone, one adult and two children's choruses, and an orchestra enhanced by an expanded percussion section. There's even a snippet of Jimi Hendrix's famed "Star-Spangled Banner."

Cellist Yo-Yo Ma plays a role in the first and longest movement, including a moving solo cadenza; the images here deal with fire and the sacrifice of individuals who immolated themselves as a protest to the war. The second movement follows the metaphor of paper, using quotes about war from many texts, ranging from the ancient Romans to the Pentagon Papers. The closing Hymn movement follows the theme of water with descriptions of the travails of the "boat people." Undeniably moving words and ideas, but musically the sum is not greater than the parts.

John Sumier



A LITTLE PIECE OF HEAVEN AT A DOWN TO EARTH PRICE.

The sound of the Sonographe components is, well, heavenly. But the price is very down to earth at just \$995 each for the SC26 remote-controlled line-stage pre-amplifier and the SA250 power amplifier. Using premium quality parts, both units are built to Conrad-Johnson's rigorous high standards. The Sonographe series might be our least expensive electronics, but like all Conrad-Johnson components, they sound like music. They just sound right.



conrad-johnson It just sounds right.

2733 Merrilee Drive • Fairfax, VA 22031 • Phone: 703-698-8581 • Fax: 703-360-5360

an enormous contrast with the thunderous bombast that follows. The mixing of the canons and bells is tastefully balanced, and even during the most cacophonous sections of the Overture's battle scenes, the acoustical resplendence of Chicago's Orchestra Hall is unmistakable.

There are those who will find fault with these works just because they're so popular. But if you want to have a Tchaikovsky experience, this performance is both sumptuous and original. Barenboim wisely concludes, "With a piece that's so well known—perhaps too well known and overexposed—you really have to forget that you've already played and heard it a thousand times before. The main thing is to break free from this sense of routine and to relearn the piece as though for the first time. . . ." I think you will be grateful for such a fresh perspective.

Patrick Kavanaugh

Honegger: Pacific 231, Rugby, Concerto da camera, Pastorale d'été, and Symphonie Liturgique

Radio Philharmonic Orchestra of the Netherlands, Jean Fournet
DENON CO-78831, CD; DDD; 73:51
Sound: A-, Performance: A

There's real, old-fashioned hi-fi orchestral fare here, done up in zesty style by Jean Fournet and his players. "Rugby" and "Pacific 231," the latter named for a steam locomotive, were favorite demo blockbusters in the early years of audio (and *Audio*). The gentle "Pastorale" has been a favorite of mine since the Capitol Classics EP (remember those?) conducted by Vladimir Golschmann. The Concerto and Symphony reveal yet other sides of Arthur Honegger's music. All in all, a fine cross-section of his orchestral works.

The sound, captured in the Hilversum Music Center in the Netherlands, is very good, with fine spread and depth to the soundstage. I don't get a very specific sense of stereo space from it; it gives the aural impression of a more than competent studio job rather than a hall performance. But the orchestration is so rich and varied that the want of that extra dimension goes almost unnoticed.

Robert Long

Portraits in Blue

Marcus Roberts, piano;
Members of the Orchestra of St. Luke's and Lincoln Center Jazz Orchestra, Robert Sadin
SONY CLASSICAL SK 68488, CD; DDD; 62:00
Sound: A, Performance: A+

Early in his career, Marcus Roberts was helped by both Ellis and Wynton Marsalis.

Like Wynton, the blind pianist has a strong interest in exploring the jazz heritage but focuses on the American solo-piano tradition. This exciting release presents three of Roberts' very personal and inventive improvisations for piano and "crossover" orchestra.

One might wonder what fresh approach could be taken on Gershwin's "Rhapsody in Blue." Yet Roberts does more than lift quotes and wail on them before continuing with roughly the original score: He creates new



bridging sections that often comment on Gershwin's themes and adds entirely new material inspired by the original. (This track runs double the work's normal playing time.) It's a bit like hearing a complete ballet for the first time when you're familiar only with its suite.

The 38-member band includes a dozen top jazz musicians; the longhair members can really cut a rug, too. Roberts had observed that Gershwin's melodies are blues-based, and he and the band play the bluest "Rhapsody in Blue" ever! The verve and vitality conveyed in "Rhapsody," as well as in Gershwin's "I Got Rhythm" Variations and James P. Johnson's "Yamekraw," are a delight. You can never predict what's going to happen in this bubbling-over classical/jazz stew.

This is obviously a multimiked studio recording, with all the aural spotlighting that entails. But it's appropriate here and probably makes the sound more exciting.

John Sunier

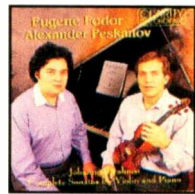
Brahms: Complete Sonatas for Violin and Piano

Eugene Fodor, violin;
Alexander Peskanov, piano
CLARITY RECORDINGS
GCD-1014, CD; 69:06
Sound: A+, Performance: A

Full of soaring melodies and deep emotional feeling, Brahms' three violin sonatas are gems of the Romantic chamber repertory. Each is quite different from the others, yet they share an energy that often seems to be breaking out of the chamber music mold into what the composer Robert Schumann called "veiled symphonies."

American-born violinist Eugene Fodor has enjoyed more than three decades of concert acclaim, and Russian pianist Alexander Peskanov has appeared with many orchestras in the West. Their music-making is first-class.

Clarity used a purist two-mike approach for this recording, and what results is the most silken, musically natural violin tone I have



heard in a digital violin and piano recording. Even on my standby CD player, which errs by often adding a steely edge to high violin registers, this disc did not cause the least bit of filling-rattling.

John Sunier

Sky Music

Yolanda Kondonassis, harp
TELARC CD-80418, CD; DDD; 55:34
Sound: A, Performance: A

The Clarinet Alone

Jonathan Cohler, clarinet
ONGAKU 024-105, CD; DDD; 53:23
Sound: B+, Performance: A+

Admittedly CDs for specialists, these one-instrument outings are both superb examples



of their kind. Harpist Yolanda Kondonassis performs Salzedo, Faure, Debussy, Hovhanness, and Rorem, some in transcriptions but all in debt style and captured

immaculately. Clarinetist Jonathan Cohler displays his enormous virtuosity in a brace of mostly untranscribed modern works, including Messiaen and Persichetti, and concluding with—of all things—the Paganini "Moto Perpetuo." The Ongaku Records sound is a touch overly reverberant for my taste (hence the B+), but you may very well love it.

Robert Long



Piazzolla: Concerto for Bandoneon, Three Movements of Buenos Aires Tangos, and Tangos

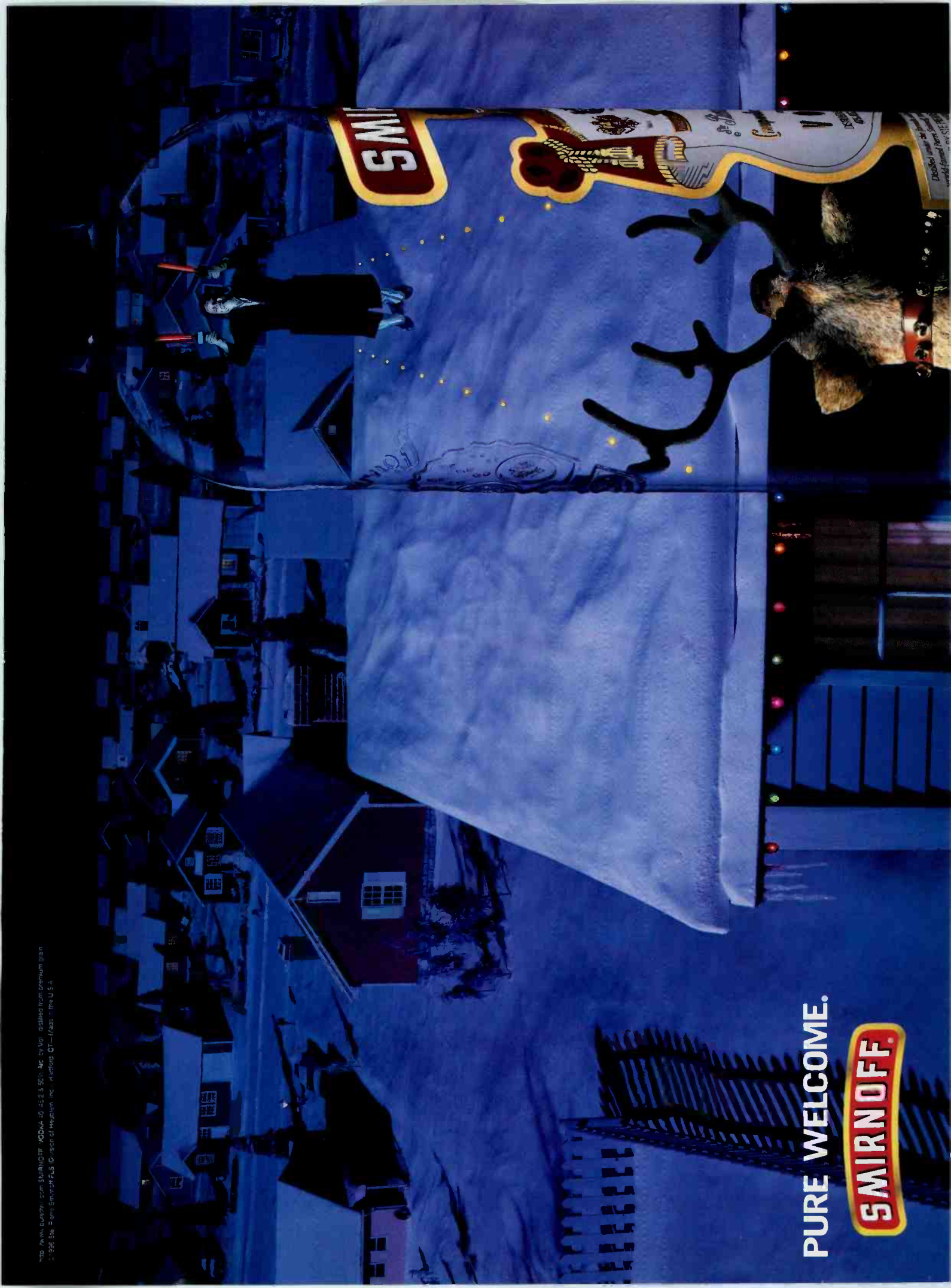
Pablo Mainetti, bandoneon; Chamber Orchestra of Lliure Theater, Josep Pons
HARMONIA MUNDI FRANCE
901595, CD; DDD; 67:28
Sound: A+, Performance: A+

This is not the first recording of the Concerto for Bandoneon (a member of the accordion family), but it is probably the best. The highly structured work, almost a concerto grosso, was commissioned for a radio broadcast in Argentina. Against wailing strings, the bandoneon cries out its lament, much in the manner of a blues singer. Also like the blues, repetition is used in the 21-minute piece. (As a young man, Astor Piazzolla preferred Cab Calloway's jazz to the tango.) A strong rhythmic foundation is always present in Piazzolla's music, whether for his tango ensemble or for these Catalonian symphonic players; this is quite amazing, considering there are no drums or other percussion instruments in his music.

http://www.smirnoff.com 50% alc/vol (100 proof) Vodka 40-45% alc/vol (80-90 proof) Imported from premium grain.
© 1995 Smirnoff, Inc. Division of Heublein, Inc., Hartford, CT—MADE IN THE U.S.A.

PURE WELCOME.

SMIRNOFF.



End your audio quest. Find the audio truth. XLO.



For your nearest dealer call 1-888-XLO-CABLES

Let Us Entertain You!

As a professional association of audio/video specialty stores, PARA sets the standards for high quality retail shopping. Member dealers know quality, service, and most of all, they know music and home theater.



Photo by: Mike Orsini/Money

PARA Home Theater Specialists

- ▼ PARA stores will take the time to ask about what you already own and suggest home theater components that will integrate into your current system.
- ▼ PARA home entertainment professionals are educated to explain the newest technologies in clear, friendly language, helping you get the best value for your money.
- ▼ Let us help you choose the system that's just right for you.

PARA

CALL 1-800 4-PARA 94 to find the PARA dealer nearest you!

Professional AudioVideo Retailers Association

It may come as a shock to realize that something is missing from the Three Movements of Buenos Aires Tangos: It's the bandoneón! In this very concentrated and intense contemporary orchestral work, Piazzolla poured the emotion he normally expressed on his instrument into the complex and virtuoso parts for the other players. The final five tangos are more than fillers, including such gems as "Adiós Nonino" and "La Muerte del Ángel." *John Sunier*



Schumann: Songs, Volume 1

Christine Schäfer, soprano;

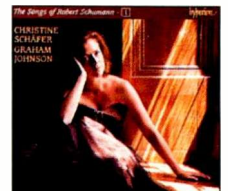
Graham Johnson, piano

HYPERION CDJ33101, CD; DDD; 75:11

Sound: A, Performance: A-

Hyperion and, even more to the point, Graham Johnson have decided to do for Robert Schumann's song literature what they have been doing for Schubert's. How pianist Johnson manages all he does, let alone manages to do it all with such polish, thoroughness, and evident enthusiasm, is unfathomable. He is among the very finest and most prolific of accompanists, and his voluminous notes are wonders of scholarship and enlightenment.

This first volume is devoted to 32 late songs, including the six of Opus 107 and the "Six Poems and Requiem" of Opus 90. Few will be on the favorites list of even a devoted Schumannophile, but their relative obscurity is, in fact, a major recommendation for this CD. Christine Schäfer sings very well indeed but without much individuality. Presumably, as in the Schubert project, a variety of singers will appear in future volumes. *Robert Long*



Mozart: String Quartet No. 22 in B-Flat Major, K. 589; String Quartet No. 23 in F Major, K. 590

The Shanghai String Quartet

DELOS DE 3192, CD; DDD; 51:49

Sound: A, Performance A+

Mozart's last three string quartets are often labeled the Prussian Quartets or the Berlin Quartets, but musicians often call them the Cello Quartets because of the instrument's prominent part. All of these names make historical sense: In 1789, Mozart was desperately in need of money and traveled to Berlin to meet William II, King of Prussia, who was also a music patron and a talented cellist.

This financial venture produced some of the greatest works of the quartet repertoire

Home Theater Systems by Bell'Oggetti

Bell'Oggetti - the name means "beautiful objects" - offers the finest in furnishings for the home audio/video system. Unique, contemporary, innovative. Bell'Oggetti furniture is the crowning touch for any premium-quality component, and a complement to virtually any decor. Showing a distinct flair of Italian design. Bell'Oggetti offers a full line of home-entertainment furnishings, centering around furniture for large-screen televisions and extending through speaker stands, audio racks, and complete entertainment centers.

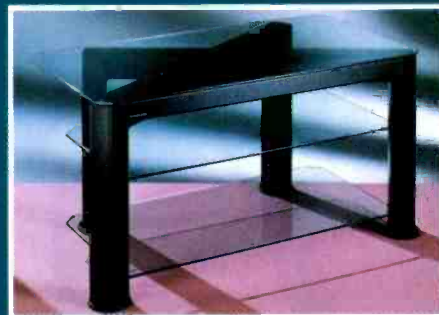
Bell'Oggetti also features a cable management system (CMS) for securely hiding power cords and interconnect cables.



▲ WU 810



▲ AVS 707



▲ AVS 790

▲ AVS 780 ▼



BELL'OGGETTI®

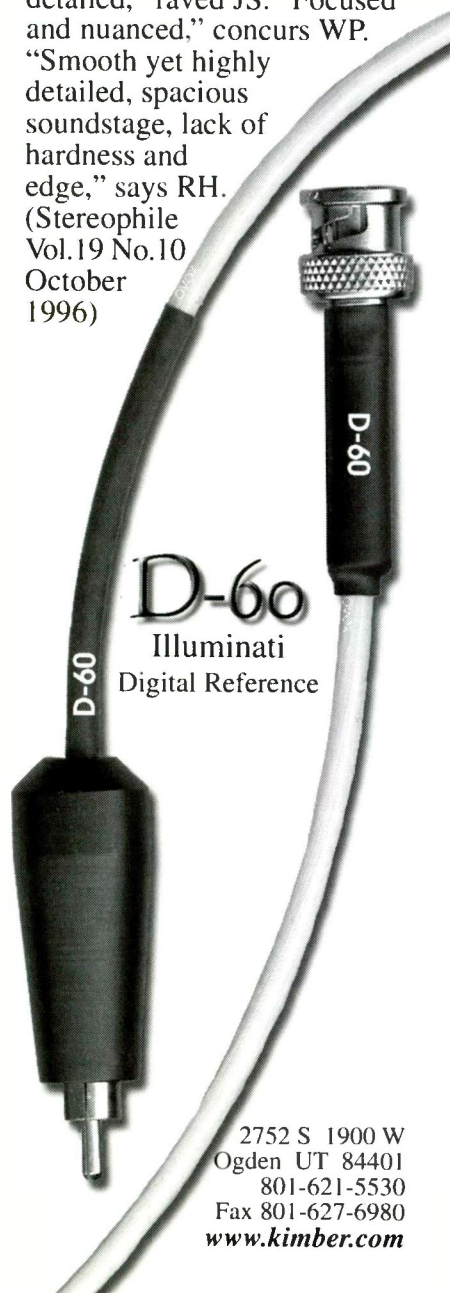
HOME THEATER DESIGNS FOR LIVING

711 Ginesi Drive, Morganville, NJ 07751, Telephone : 908-972-1333, Telefax: 908-536-6482

D-60

The Digital Reference

"It's hard to get *Stereophile* writers to agree on *anything*, but Robert Harley, Jonathan Scull, Kalman Rubinson, Lonnie Brownell, Robert J Reina, and Wes Phillips all use this as their reference." "Sometimes mercilessly revealing... but never harsh" KR "Fast, open, and detailed," raved JS. "Focused and nuanced," concurs WP. "Smooth yet highly detailed, spacious soundstage, lack of hardness and edge," says RH. (Stereophile Vol.19 No.10 October 1996)



but very little wealth for the composer. Despite the brilliant composition and the inclusion of outstanding parts for the royal cellist, the king was not interested in supporting the composer. Mozart later wrote that he had "now been forced to give away my quartets (that exhausting labor) for a song." They were not published until after his death.

What a shame that composers cannot receive royalties posthumously, for in the next two centuries the Prussian Quartets have become staples for every string quartet on the globe. Last year I even heard one transcribed for saxophone quartet, and it sounded marvelous. The two quartets on this CD represent the zenith of Mozart's chamber music, and their performance by the Shanghai Quartet is extraordinary.

From the opening flourish of K. 590's first movement, the clarity and refinement of the Shanghai String Quartet is unmistakable. The



impeccable intonation, sensitive phrasing, and strength of interpretation create a performance that sounds more like one player than four. Especially notable is the care given to subtle nuances of tempo, as in the slow movement of K. 589, where each instrumentalist perfectly anticipates the rhythm of his fellow players.

The sound quality corresponds to the temperament of the Shanghai Quartet: strong, clear, and concentrated. Recorded at the First Congregational Church of Los Angeles (using Sennheiser MKH-20 and Neumann KM140 microphones), the tone may seem a bit dry to those who prefer a lavish Romantic blend. But the joy (and difficulty!) of performing Mozart's string quartets is essentially in their audacious forwardness—there's simply no place to hide: Every note must be flawless. As the Shanghai's first violinist Weigang Li concluded, "If you can play Mozart well, you can play anything." Patrick Kavanaugh

Richard Robbins: *Via Crucis* (The Way of the Cross)

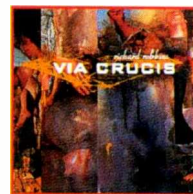
Richard Robbins, keyboards;
sextet of instrumentalists; three vocalists
POINT MUSIC 454-055-2, CD; DDD, 61:14
Sound: A, Performance A

Via Crucis is the second release of new liturgically oriented works by composers known mainly for film scores (Elliot Goldenthal's *Fire Water Paper*, reviewed on page 92, is the other). Richard Robbins' scores include *Remains of the Day* and *Howard's End*.

This powerful work is not your normal choral meditation on the Stations of the Cross. The small performing group includes six synthesizers, an electronic reed instru-

ment, a violin, a cello, two ouds, a psaltery, and percussion instruments. There are three voices, usually vocalizing wordlessly, plus church bells and environmental sounds, all skillfully blended into a very moving experience.

Robbins originally created the music as a sound painting to accompany 14 visual collages on the Passion. They are printed on the album insert, but too small to be appreciated. "Via Crucis" is a modern religious "Pictures at an Exhibition," with a closer connection and flow between images.



Within minutes, the mesmerizing story in sound changes from Arabic prayer chanting to gamelan music, African drums, strumming piano strings, and meditative Spanish guitar over nocturnal insect sounds and thunder. You can either follow the Christian images or float along with the sounds, creating your own visual impressions

John Sunier

Mussorgsky: *Songs and Dances of Death* et al.

Marjana Lipovsek, mezzo-soprano;
Graham Johnson, piano
SONY CLASSICAL
SK 66858, CD; DDD; 62:37
Sound: A, Performance: mostly A+

Though this CD carries the title of Mussorgsky's best-known song cycle, *Songs and*



Dances of Death, it contains a lot more: the other two cycles, *The Nursery* and *Sunless*, plus the individual songs "Hebrew Song," "The Song of the Flea," and "Hop-

ak." This is not everything Mussorgsky ever wrote for voice and piano, but it includes all of his most famous works.

Marjana Lipovsek is a born actress. Her fine voice, which she uses with much imagination and craft, gives the songs wonderfully vivid contours. The mother-and-child songs, in particular, are harrowing in their dramatic impact. Least successful is Lipovsek's "Song of the Flea"; perhaps I'm just not ready for a female Mephistopheles, despite her blood-curdling laugh at the end. Graham Johnson is, as always, a superb accompanist.

The recording was made in Vienna, in the Brahms Hall of the Musikverein, and the sound is fine—though you may never notice once the songs get to you. Sony Classical has supplied full transliterations and English translations (French and German editions evidently are available as well), for which, heartfelt thanks. It adds up to an outstanding package. But be warned: Mussorgsky songs can be depressing.

Robert Long

Spatializer 3-D Stereo Surround Sound

HEARING IS BELIEVING

"...Spatializer's sonic achievement seems nothing less than phenomenal."

JOHN SONIER - *Audio Magazine*

"...the HTMS-2510 provided a clear and well-localized phantom center, with distinct spatial cues well outside the front speaker boundaries."

KIM WILSON - *The Audio Adventure*

Utilizing Spatializer's patented 3-D Stereo technology, originally created for use in the professional recording industry, the Spatializer HTMS-2510™ provides an audio experience that is nothing short of unbelievable. The same technology that enhanced the soundtracks for *Crimson Tide* and *The Lion King*, along with

recordings by artists such as Michael Jackson, Bonnie Raitt, and Gloria Estefan, is now available for you to enjoy in your home - without adding additional speakers or amplifiers. Spatializer Audio Laboratories, the leader in advanced audio solutions - chosen to enhance the broadcast of The Games of the XXVIth Olympiad in Atlanta, Georgia.



The HTMS-2510™ utilizes Spatializer's revolutionary 3-D Stereo technology to create a Virtual Speaker Array™ around the listener.

SPATIALIZER™
HTMS-2510™



Call (800) 470-7281 for the location of the Spatializer dealer near you or to order the HTMS-2510 directly from Spatializer.



Spatializer Audio Laboratories, Inc. • 453 Ravendale Drive, Suite C • Mountain View, CA 94043 • (415) 428-0400 • Web site: <http://www.spatializer.com/> • E-Mail: htms@spatializer.com
©1996 Desper Products, Inc. Spatializer™ and HTMS-2510™ are trademarks of Desper Products, Inc. All other corporate and product names are trademarks of their respective owners.

CIRCLE NO. 39 ON READER SERVICE CARD

LOOK FOR US AT THE
1997 WINTER CES SHOW
IN LAS VEGAS!
ALEXIS PARK HOTEL • RM 2717AP

ORIGINAL

NATURE'S ENCORE



The GAIN System™

Welcome to the Next Level in Audio Engineering

Ultradisc II™, the original 24-karat gold CD, is now mastered through a network that is the only one of its kind in the world—The GAIN System™. This custom-designed process brings to the CD format what both critics and advocates have found lacking since its inception: warmth.

Working only with original master tape source The GAIN System™ delivers audio at a full 16 bits. The network includes a “no missing codes” analog-to-digital converter, repro-amp electronics and a new, completely neutral interface module. And the results are startling. Your favorite artists have been freed from the sterile digital box to a far more spacious soundstage, with improved detailing, more stable imaging and better frequency response.

Ultradisc II™ with The GAIN System™—equalled only by the live performance.

For a more detailed explanation of The GAIN System™ or for a free color catalog call 1.800.423.5759 or e-mail: mofi@mofi.com. Access the catalog and technical information online at WWW/Mosaic url address: [HTTP://www.mofi.com/](http://www.mofi.com/). Or write Mobile Fidelity Sound Lab, 105 Morris St., Sebastopol, CA 95472-1657.

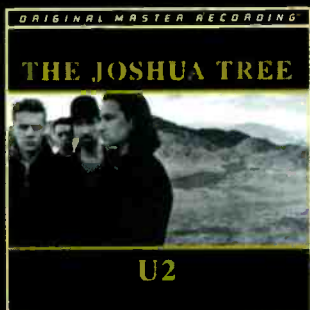
In Canada, please call 1.800.267.1216.

 mobile fidelity
sound lab
a division of MFSL, INC.

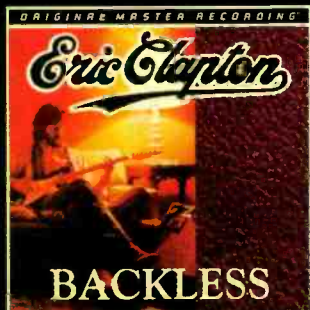
**BEST
BUY**

MASTER RECORDING™

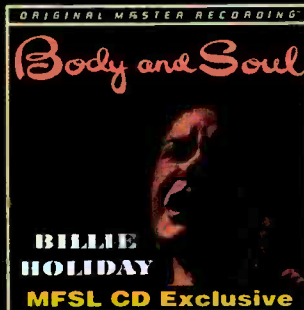
ULTRADISC II™ — The GAIN System —



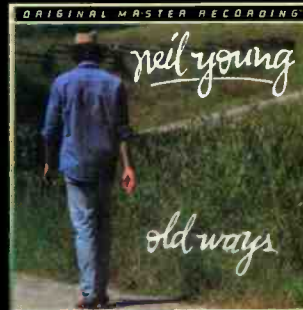
UDCD 650



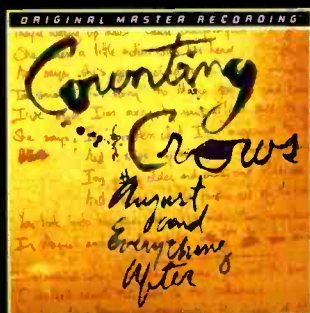
UDCD 653



UDCD 658



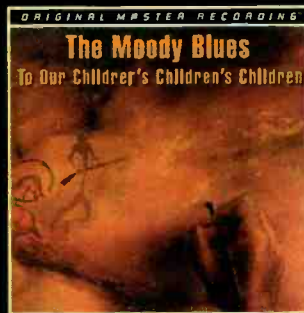
UDCD 663



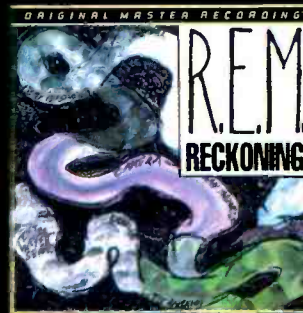
UDCD 664



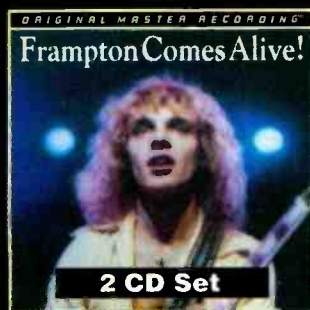
UDCD 666



UDCD 671



UDCD 677



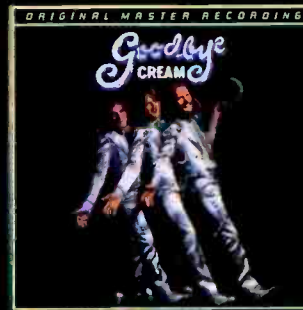
UDCD 2-678



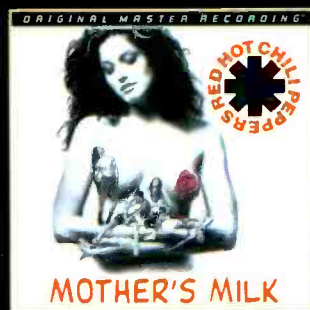
UDCD 679



UDCD 680



UDCD 681



UDCD 683



UDCD 684



UDCD 692

These great titles and more available at:



ROCK~POP RECORDINGS



Photograph: Maria Mochnac

cathartic essence of the music. She knows that the simple act of singing—even if you're singing about how much life sucks—is, in fact, life-affirming.

Publicists have stressed that *Dance Hall at Louse Point* is a collaboration: Harvey wrote the words to the 11 originals, while guitarist/percussionist John Parish wrote the music, mostly during 1995's busy year of touring. But for all intents and purposes, this is a new P. J. Harvey album. She leaves her mark on every tune, transforming the simple musical backgrounds of a guitar riff, some organ, and maybe a bit of clattering percussion into dramatic passion plays. In "Taut," she takes Patti Smith's version of "Gloria" (with its "Jesus died for somebody's sins but not mine" intro) a huge step further, contrasting the blind faith in an abusive relationship by singing in an angry growl during the song's verses, then mockingly crooning "Jesus save me" in the choruses.

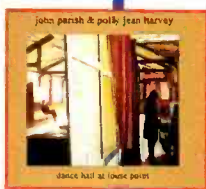
Nearly every song boasts that kind of intensity, and the chameleon-like Harvey changes her persona and vocal histrionics to match each role,

Dance Hall at Louse Point

John Parish and Polly Jean Harvey

ISLAND 314-524 278, 39:57

Sound: B+, Performance: A



Nihilism never goes out of style in rock; for proof, all you have to do is tune into your local modern rock radio station for half an hour. Listening to *Dance Hall at Louse Point*, it would be easy to accuse Polly Jean Harvey of being a nihilist (she even covers that old chestnut of existential angst, Peggy Lee's "Is That All There Is?"). But Harvey isn't your average rock 'n' roll bonehead advocating "live fast and die young 'cause life is not worth living." She's got deep, deep roots in the blues, and although we can argue about authenticity and whether a Gen X intellectual from rural Yeovil, England, can ever really understand, say, Otis Rush, I think she truly feels the

Afro Celt Sound System

Volume 1: Sound Magic

REALWORLD CAR 2359, 65:53

Sound: A-, Performance: B

Afro Celt Sound System ladles a global-Celtic potion into a hallucinogenic cauldron that mixes technology and mysticism, dance and music. Such artists as Clannad, Enya, and Seamus Egan exploit the serene, slow Aires of Ireland and Scotland, but Afro Celt grooves toward a more dance-oriented Celtic sound. It's heard in the music of Ancient Beatbox, Mouth Music, Baka Beyond, and Talitha MacKenzie.

The writing credits of *Volume 1: Sound Magic* reveal a collectively composed album, much of it generated during jam sessions at Real World Recording Week (an annual

event that strives to mix and match musicians, particularly Real World recording artists, from around the world). These were sampled and reprocessed by guitarist Simon Emmerson, the project's concept master. Raging African drums and storming bodhrans are topped by uilleann pipes and Irish whistles. Harps and koras spin out transmuted reels on "Whirl-Y-Reel" and prayer-like dirges on "Nil Cead Againn Dul Abhaile/We Cannot Go Home," with African and Irish singers creating cosmic calls and responses.

Although there's an aroma of well-timed, calculated fusion on *Volume 1: Sound Magic*, its ecstatic grooves and melodic ornamentation keep drawing me back to Afro Celt Sound System. *John Diliberto*



LISTEN AND COMPARE

JVC MUSIC

announces its next five **XRCDs**, the enhanced process of mastering and manufacturing that brings the listener higher fidelity and improved audio quality.

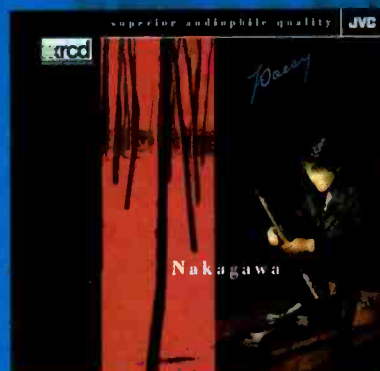


TIGER OKOSHI

Two Sides To Every Story

JVCXR-0004-2

This Stereophile Recording of the Month features Mike Stern, Gil Goldstein, Dave Holland and Jack DeJohnette.



NAKAGAWA

Poesy

JVCXR-0006-2

Japanese flutist Nakagawa bridges the gap between classical and jazz while capturing the essence of both with incredible finesse and spontaneity.

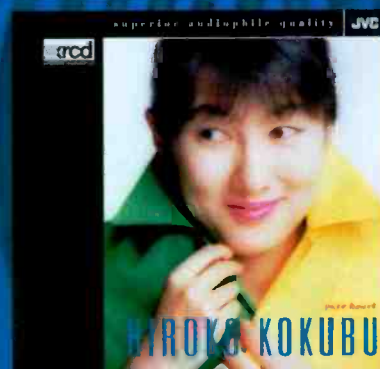


SPIRIT TRAVELER

Playing The Hits From Motor City

JVCXR-0007-2

This project features new versions of Motown hits performed here by Wah Wah Watson, Eric Gale, David T. Walker, Phil Upchurch, James Jamerson, Jr., James Gadson and Ali "Ollie" Woodson.



HIROKO

Pure Heart

JVCXR-0009-2

Pure Heart is sparkling, uplifting, joyful music from pianist Hiroko with Michael Landau, Oscar Castro-Neves, Abe Laboriel, Alex Acuna, Gary Herbig, Chuck Findley and Larry Williams.



MISHA

Connected To The Unexpected

JVCXR-0011-2

Misha's unprecedented use of acoustic piano, trombone, spoken word and fresh urban rhythms is captured here, not only on XRCD, but through the three dimensional sound of the Spatializer Recording System.

Also available on XRCD:

JVC XRCD SAMPLER JVCXR-0001-2

BILL HOLMAN A View From The Side JVCXR-0002-2

ERNIE WATTS Unity JVCXR-0003-2

CARMEN LUNDY Self Portrait JVCXR-0005-2

OSCAR CASTRO-NEVES Tropical Heart JVCXR-0008-2

TOM COSTER From The Street JVCXR-0010-2

To order by phone with a major credit card,

call toll free 1-800-JVC-1386



JVC Music
3800 Barham Blvd., Suite 305.
Los Angeles, CA 90068
phone: 213.878.0101
facsimile: 213.878.0202

JVC 20bit K2 SUPER LOGIC

**EXCLUSIVE AUDIOPHILE DISTRIBUTION
BY MAY AUDIO MARKETING, INC.**

CIRCLE NO. 23 ON READER SERVICE CARD

imperial drag

IMPERIAL DRAG

WORK OK 67378, 57:32

Sound: A-, Performance: B+

rather than make a third album as Jellyfish, key members Eric Dover and Roger Manning jettisoned the name and the record deal, found a new rhythm section, and renamed their group Imperial Drag. Here, they've assimilated more '70s influences while moving away from their signature Badfinger-esque sound.

It's glam rock for the '90s, with a little Led Zep and Deep Purple thrown in. The result is quite engaging, with a high degree of mu-



sicality and intelligence. Songs like "Boy or a Girl" and "The Man in the Moon" evoke T-Rex, while "Zodiac Sign" and "Kiss It All Goodbye" summon up golden-era Zeppelin songs such as "Trampled Underfoot" and "Houses of the Holy." There's a Queenish touch to the production throughout, and clever segues make the album appear more as a unified whole than just a bunch of songs put together.

Will heavy rock from 1977 make a comeback via these neo-'90s glitterati? Can Jellyfish find happiness as Imperial Drag? Only their hairdressers know for sure.

Jon & Sally Tiven

We should be thankful for that, because there isn't much rock music these days that's as moving as Polly Jean Harvey's. *Jim DeRogatis*

The Subtle Body

Arto Lindsay

BAR/NONE RECORDS AHAON-078, 34:06

Sound: A-, Performance: A-

During his time in the downtown ensemble DNA, Arto Lindsay developed a new vocabulary for the electric guitar, altering his instrument into a rhythmic noisemaker. As a member of the Ambitious Lovers, he dipped into his childhood in Brazil, along with downtown jazz, funk, and whatever else happened to be available. On this solo record, he leans heavily on the samba, sounding much closer to Michael Franks than No Wave, New Wave, or any wave. Indeed, the wry "Child Prodigy" could segue neatly in so many ways with Franks' "Popsicle Toes." Tunes like "Unbearable" and "Enxugar" sound as familiar as the lone Jobim cover on the album, "Este Seu Olhar."

The musical subversion for which Lindsay earned notoriety is, as the album title suggests, subtle here, present in strange harmonies, themes, and altered sonics—all courtesy of



whether it's the spurned lover of "Civil War Correspondent," a woman lost in the ecstasy of what sounds like some mighty unsafe sex in "Heela," or a raging rocker (the female Iggy Pop?) in the title track. Her instincts are never wrong. She even breathes new life into "Is That All There Is?" by dryly underplaying the bathos of the original and most subsequent versions. (The song was used to great effect in the film *Basquiat*, and it appears on the thoroughly enjoyable soundtrack album.)

Yes, the subject matter is unrelentingly dark. That's why we rock critics, a generally miserable lot, love Harvey so much. But the result, like the best blues, is uplifting and spiritually enriching. The key line comes in "Girl," when she pays her lover the ultimate compliment. "You move me like music," she sings, but the way she savors each syllable, wrapping her supple instrument around every note, indicates that she's lying. Nothing—not even great sex—moves her the way that music does.

just listen

Life is stressful. You could spend a few thousand dollars rushing to a weekend getaway at a rejuvenating retreat. You could mortgage your home for one of those "quiet as a recording studio" motor cars you've seen on television. Or you can keep the family fortune and relax in the sanctity of your own home with a pair of Sennheiser headphones. Discover the ultimate in surround sound... at a budget you can easily afford.

HD 56
HD 36
HD 26

HD 445
HD 435

HD 465
HD 455

HD 265
HD 25 SP

HD 565
HD 545
HD 535

HD 580

HE 60
HEV 70

SENNHEISER

6 VISTA DRIVE, P.O. BOX 967, OLD LYME, CT 06371 - TEL: 203.434.9190 FAX: 203.434.1759
IN CANADA: 221 LABROSSE AVE, POINTE-CLAIRE, PQ H9R 1A3 - TEL: 514.426.3013 FAX: 514.426.2979
WORLD WIDE WEB: <http://www.sennheiserusa.com>

CIRCLE NO. 36 ON READER SERVICE CARD

ORPHEUS



contributors Brian Eno, Yuka Honda, and Towa Tei. The delightfully ingenuous voice with which Lindsay performs these sambas and ballads undergoes intentional sonic decay in "Anima Animale." Odd sounds fill the sonic cracks where more conventional records might have used strings. The record also makes some strange bedfellows. Japanese composer/synthesist Ryuichi Sakamoto plays acoustic piano on tracks with earthy Brazilian percussionist Naná Vasconcelos. Deee-Lite DJ Towa Tei plays alongside master Brazilian guitarist Romero Lubambo. Lubambo also gets the opportunity to duet with downtown "fission" guitarist Marc Ribot.

Lindsay occasionally lapses into annoying distortion; this only serves to illuminate how good the recording sounds otherwise. The songs come through with no-nonsense sonic clarity, while the understated treatments and samples of Eno, Honda, and Tei remain substantial in the mix. *Hank Bordowitz*

Everything Must Go

Manic Street Preachers

EPIC EK-48393, 45:19

Sound: B-, Performance: B

It's been over a year since Manic Street Preachers' co-founder, Richey James, was reported missing from an English hotel. At first,

Orbital

In Sides

FFRR 697-124 087, 71:55

Sound: A, Performance: A+

Since the early '90s, brothers Paul and Phil Hartnoll, a.k.a. Orbital, have been on a mind-bending crusade to free techno music from its conservative, booty-shaking shackles. Though kids dancing at all-night raves may think they're living on a radical tip, the uniform drudgery of most techno equals a brain-dead bore. But the Hartnolls have always injected a dollop of human passion and kindness into their sequencer-realized mixes.



With *In Sides*, the U.K. pair moves past categories, creating nothing less than a contemporary masterpiece, a sonic fruit basket bulging with many colors, scents, and flavors. With Paul on sequencers and Phil on the mixing board, Orbital creates a dense world of slithering beats, subsonic low notes, and cascading melodies, all drenched in a warm symphonic

sheen. Most of this double CD's tracks are written in two "movements" that seamlessly undulate from one melody to the next with unusual clarity and beauty.

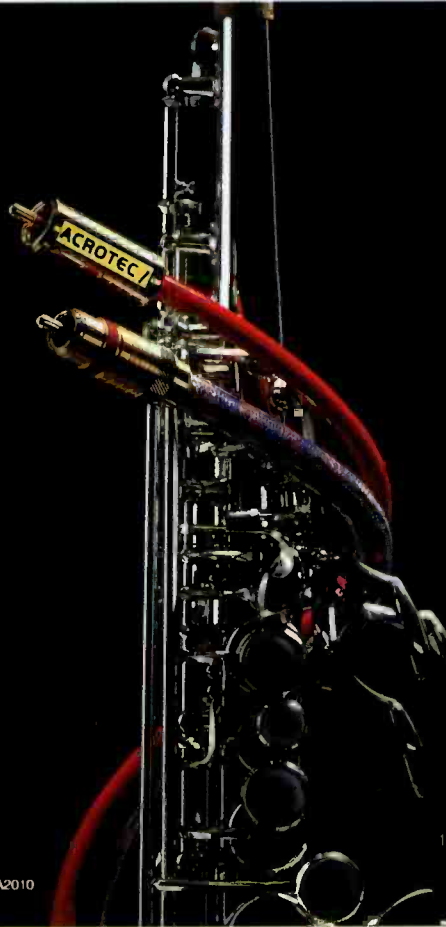
Touched by the recent death of a close friend, the Hartnolls fuel their copious imaginations and technical prowess into what is largely a sad, emotionally moving work. "The Girl with the Sun in Her Head" begins with the sound of a motorized heartbeat, blossoming into a spiraling maze of quavering, neo-Teutonic melodies and brisk, dub-like rhythms. "The Box" should have been the recent *Mission: Impossible* movie's theme, its lush harpsichords and ominous guitars resembling a clandestine crossing over enemy borders. "Dwr Budr" is as melancholy and bittersweet as a Gregorian chant, while "Out There Somewhere?" explores the current obsession with alien abduction.

With one shimmering, fell swoop of their bald heads, the Hartnolls have made an entirely original recording that leaves less inventive souls scurrying in their tracks. It's Orbital's future—we're just living in it. *Ken Micallef*

it seemed impossible that the group could continue without its tortured, flamboyant rhythm guitarist/lyricist, but the Manics have created their most passionate music to date.

Everything Must Go isn't the cynical, unruly disc fans might expect from the frustrated quartet (now, however fleetingly, a trio); it's an album of hope and discovery, a testament

ACROTEC



**SIX NINES FOR
SUBLIME SOUND**

99.99997%. Remember that figure—it can do wonders for your sound. It's the purity of the copper in the world's finest audio cables. A figure that translates directly into ultimate sonic purity. Don't compromise your system's performance, use ACROTEC Stressfree 6N Copper Reference Cables—the purest on the planet.

AXISS

17800 South Main Street, Ste. 109 Gardena, CA, 90248
Tel. 310 329 0187 Fax 310 329 0189

CIRCLE NO. 1 ON READER SERVICE CARD

Shown ACROTEC 6N-A2050 and 6N-A2010

to adaptation and survival. Instead of striking out in frustration, the bandmembers have delved within themselves and discovered that the best way to cope with pain is to celebrate pleasure.

Not that *Everything Must Go* is a hedonistic excursion. It's more like a self-confidence seminar. Many of the songs swell with strings and jaunty rhythms, and "Elvis Impersonator: Blackpool Pier" and "Kevin Carter" resonate with harps and horns, respectively. Throughout, vocalist/guitarist James Dean Bradfield sings in a triumphant howl and plays in a flashy style reminiscent of Journey or Night Ranger.

Even so, the band's lyrics still exhibit its struggle. Four of the songs were penned at least in part by James, and even those that weren't openly reveal the group's fears and foibles. On "A Design for Life," Bradfield sings, "I wish I had a bottle/right here in my pretty face/to wear the scars/to show from where I came." And on "Removables," he laments, "No one made the holes but me/Misery mourns to be devoured." But it's lines like "All I want to do is live/no matter how miserable it is," from "En-



ola/Alone," that sum up the group's new lease on life.

On *Everything Must Go*, Manic Street Preachers tap into the pulse of pop music and joyfully discover that there's more to life than teenage angst. *Jon Wiederhorn*

Out of Nowhere

Vinnie Moore

MAYHEM 11084, 45:22

Sound: C+, Performance: B-

An extremely talented guitarist, Vinnie Moore became a cult hero among guitar-music aficionados in the late '80s. Although virtuosic, instrumental guitar-hero albums are currently as hip as baggy, pleated pants and shirts with diagonal button flaps, on his latest release Moore continues to party like it's 1989. Full of blazing displays of speed, *Out of Nowhere* will certainly please those who judge an album's entertainment value by the number of notes it contains.

Possessing a chameleon-like ability to play various styles convincingly, Moore comes across like a latter-day Steve Morse. He flaunts his diversity on the funk/metal-flavored "With the Flow," the country-shred showdown "VinMan's Brew," the Hendrix-like "Time Traveller," and Steve Vai-inspired "Am I Only Dreaming?" But unlike Morse, he lacks an identifiable signature tone and idiosyncratic style. Because of this, *Out of Nowhere* sounds more like a studio musician's demo tape than an artist's fully realized work. And while the compositions are competent, Moore's mind-boggling licks provide the majority of the album's most memorable moments—not the melodies.



Out of Nowhere's biggest flaw may be that it offers too much blazing guitar and little else—especially songs. Moore's rhythm section, consisting of drummer Brian Tichy and bass player Dorian Heartson, provides a solid backbone but minimal interaction or intervention, depriving the album of sorely needed tension, drama, and relief from Moore's relentless six-string onslaught.

Surprisingly, Moore's solo acoustic pieces—"She's Only Sleeping" and "Winter Sun"—offer the most satisfaction. Perhaps his most fully realized musical visions, these songs allow Moore to ease back on the groove, finally letting his passion and true guitar personality emerge. Forced into a more supportive rhythmic and melodic role, Moore exhibits a greater emotive depth and sense of dynamics than is discernible on his electrified performances. These two songs hint that his true calling is as a solo acoustic guitarist or, at the very least, that less is Moore. *Chris Gill*

CHESKY RECORDS

NEW



WO144

Ching is an exotic mix combining the haunting melodies of the Far East with the pulse of Western percussion—recorded in Natural Surround Sound. A true innovation in sound recording.

NEW



JD146

"Phil Woods is one of the greatest musicians I've heard in my life... one of the giants!"
Gene Lees
Jazzletter



WO126

"Heredia is a remarkable guitarist. *Gypsy Flamenco* is a marvelous recording of amazing music. Buy it immediately..."
Wes Phillips, *Stereophile*, Vol. 19, No. 6, June 1996



JD139

"...an especially haunting creation—mysterious and melancholy. That the recorded sound on this disc is powerful and realistic will surprise no one..."
Mark Lehman—*FI*, July/August 1996

"Give the reedman credit for brilliant programming and his most no-nonsense work... a project that inspired all of its participants... on the more exceptional order of *Sketches of Spain*."

Bob Blumenthal,
Boston Globe,
May 6, 1996



"...this album is his [Paquito D'Rivera] set of the very sweetest and magnanimous of remembrances... a jazz classic..."

Fred Bouchard
JazzTimes, Sept 1996

JD145

You Can Hear The Difference

Chesky Records, Radio City Station, P.O. Box 1268 New York, NY 10101
for a free catalog or to order 1-800-331-1437 or 212-586-7537 listen and learn <http://www.chesky.com/music>

AUDIO/DECEMBER 1996

AUDIO... THE EQUIPMENT AUTHORITY

SOLD AT THESE SPECIALTY DEALERS

**The following are just some of the fine audio/video dealers that sell
AUDIO Magazine:
Dealers, call: 1-800-221-3148 if you are interested in selling
AUDIO...THE EQUIPMENT AUTHORITY**

ESOTERIC AUDIO

4120 N. MARSHALL WAY
SCOTTSDALE, AZ 85251

PACIFIC AUDIO & ALARM

2370 E. ORANGE THORPE AVE.
ANAHEIM, CA 92806

SOUND TECH/LOS GATOS

15330 LOS GATOS BLVD.
LOS GATOS, CA 95032

STEREO PLUS

2201 MARKET STREET
SAN FRANCISCO, CA 94114

JACK HANNA AUDIO/VIDEO

6130 PACIFIC AVE.
STOCKTON, CA 95207

SOUND EYE

1317 SARTORI AVE.
TORRANCE, CA 90501

WESTSIDE INT'L NEWS INC.

11949 WILSHIRE BLVD.
W. LOS ANGELES, CA 90025

DURANGO MUSIC CO.

902 MAIN AVE.
DURANGO, CO 81301

VIDEO 7 WEST

22 KNEEN STREET
SHELTON, CT 06494

SOUNDS EXCLUSIVE/HANKS

757 N. MONTROSE STREET
CLERMONT, FL 34712

BOB'S NEWS & BOOKS

1515 ANDREWS AVE.
FORT LAUDERDALE, FL 33316

AUDIOMASTERS

102 LAFAYETTE STREET
ANMA, IL 62906

SOUNDS DESIGNS

808 COLDWATER ROAD
MURRAY, KY 42071

GOODWINS AUDIO

870 COMMONWELTH AVE.
BOSTON, MA 02210

NEW HORIZON BOOKS

20757 13 MILE ROAD
ROSEVILLE, MI 48066

AUDIO-VIDEO ALTERNATIVES

4526 N. WOODWARD AVENUE
ROYAL OAK, MI 48073

SOUND ADVICE INC.

3348 NILES ROAD
ST. JOSEPH, MI 49085

MATLACK COMMUNICATIONS

2866 FOXWOOD DRIVE
MARYLANE HTS, MO 63043

HARVEY'S STEREO

2646 SOUTH GLENSTONE AVE.
SPRINGFIELD, MO 65804

PRO AUDIO

1630 COUNTRY CLUB PLAZA
ST. CHARLES, MO 63303

AUDIO VISIONS

136 MAIN STREET
KALISPELL, MT 59901

SOUND SYSTEM

3201 STATE ROUTE 27
FRANKLIN PARK, NJ 08823

MARIO'S SOUND ROOM

176 FRANKLIN AVE.
FRANKLIN SQUARE, NY 11010

SOUND CONCEPT INC.

264 EAST ROUTE 59
NANUET, NY 10954

DALBEC AUDIO LAB

51 KING STREET
TROY, NY 12180

AUDIO ENCOUNTERS

4271 W. DUBLIN GRANVILL
DUBLIN, OH 43017

SOUND STATION

601 SE FRANK PHILLIPS BLVD.
BARTLESVILLE, OK 74003

SOUND SERVICE

621 NORTH MAIN STREET
GUYMON, OK 73942

DAVID LEWIS AUDIO

9010 BUSTLETON AVE.
PHILADELPHIA, PA 19152

STEREO SHOPPE

900 WASHINGTON BLVD.
WILLIAMSPORT, PA 17701

SOUND DECISION

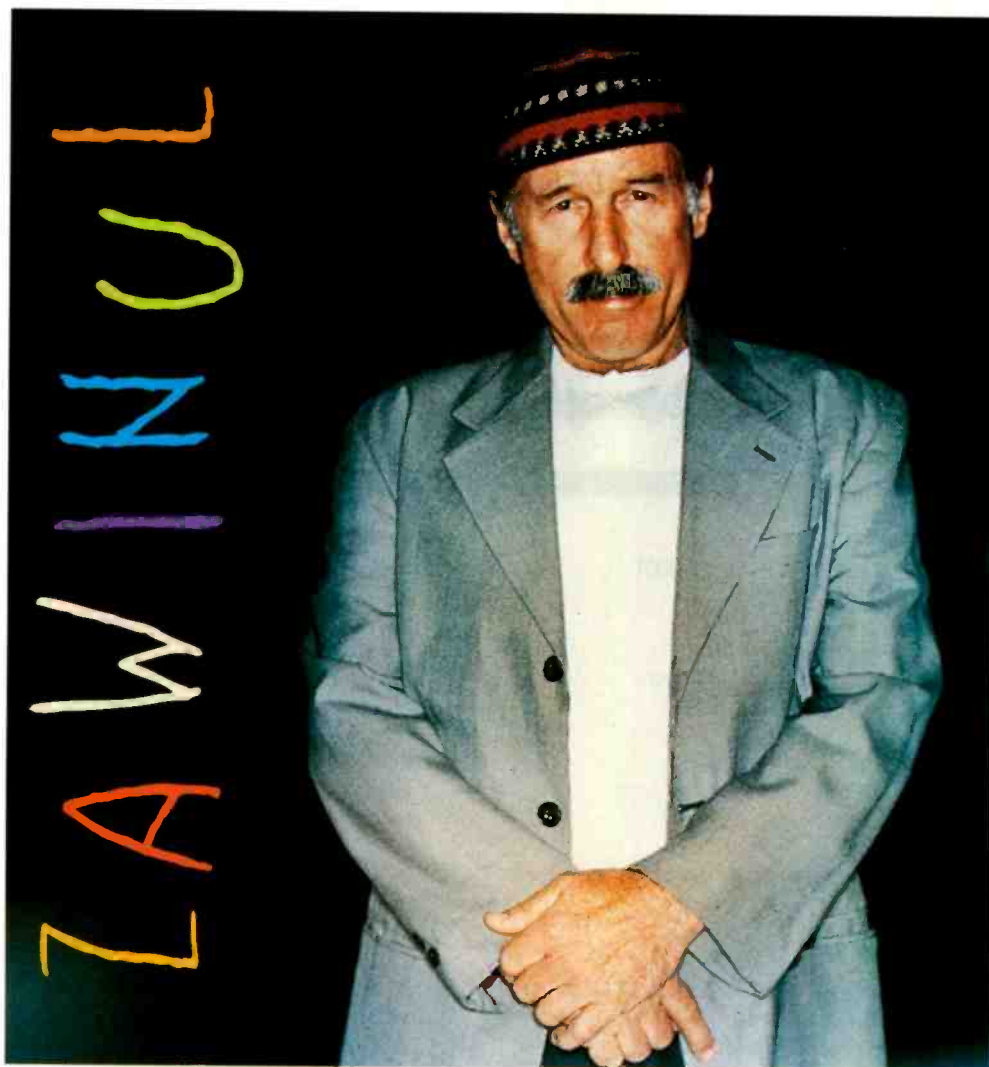
3727 FRANKLIN ROAD
ROANOKE, VA 24014

SOUND STAGE

5900 N. POINT WASHINGTON RD.
MILWAUKEE, WI 53217

JAZZ ~ B L U E S

R E C O R D I N G S



simply moved on to something else (corporate-sponsored trad jazz, lite-jazz, or rock).

Many people credit (or lay blame on) Weather Report, a band that originated from Miles Davis's late-'60s electric-jazz sessions, as the archetypal fusion group. In retrospect, it was a World Music group long before the media conjured the label. Weather Report foresaw the merging of colliding cultures and electro-organic music by some 25 years.

That said, *My People* is Zawinul's best album since Weather Report's final album, *This Is This*. As far back as 1979's live *8:30* and its snippets of continent-crossing radio dialogs, Weather Report reflected its endless travels. Zawinul continues the ritual. Opening with Duke Ellington's sampled voice ("My people? Which people are my people? *The people are my people*") over a backwards-looped choir, "Waraya" sneaks in as hip-shaking world boogie, with Zawinul's rich voice boiling through rumbling effects. His keyboards scoot and swirl through *My People* like a familiar friend—familiar, because the bear-like Austrian hasn't bothered to update his sound, and each scrunchy call-and-response fingering run or resounding chordal layer acts as sly commentary. Zawinul

My People

Joe Zawinul

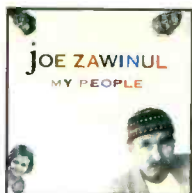
ESCAPADE MUSIC

ESC 63651, 52:40

Sound: B, Performance: B

When Weather Report dis-

banded in 1986, its guiding light, keyboardist Joe Zawinul, began searching for his own sound. Immersing himself in the South African music of Salif Keita, he released three consecutive albums that were chock-full of exotic vocals, four-on-the-floor grooves, and his trademark masterful keyboards. *The Immigrants*, *Black Water*, and *Lost Tribes* had trouble finding an audience, however, as Zawinul's fans tired of his fascination with African music or



NEW YORK DANCES

The Jack Jeffers

N.Y. Classics Big Band

MAPLESHADE MS 03632, 65:52

Sound: B-, Performance: A-

Bass trombonist/composer Jack Jeffers' N.Y. Classics Big Band album begins with a flourish that sounds like the intro to a 20th Century Fox movie, but it quickly morphs into a funkified march. This very uptown 12-piece band's sound swings from New Orleans to Latin, gospel, and blues while working through a host of Jeffers' originals and reworkings of the "classics." These guys never stand still for too long. The centerpiece suite, "New



York Will Keep You Dancing," is a dazzling musical tour of the N.Y. street-dancing scene.

Sonically, *New York Dances* is a mixed bag. Mapleshade's sound is crystal clear, but the discrepancy in perspective between some instruments is unfortunate (close-up tuba and percussion versus a distant ensemble horn sound, for example). Back on the music front, producer Hamiet Bluiett has nurtured a joyously loose and easy atmosphere throughout; *New York Dances* is a feel-good, toe-tappin', big band romp. (Available from Mapleshade Productions, 2301 Crain Highway, Upper Marlboro, Md. 20774.) *Steve Guttenberg*

CRUTCHFIELD

\$3.00

Sony DSS is Here!

SAVE!

on the perfect stereo

Audio • Car Stereo
Video • Home Theater

PLUS MORE CAR STEREO

FREE Stereo Catalog

Discover the fun, comfortable alternative to those dizzying, frustrating mega-stereo stores. Relax with your new Crutchfield catalog and find out why *Catalog Age* magazine calls Crutchfield the "King of Service."

Information you can't find anywhere else

You'll love the detailed product descriptions, color photos, comparison charts and honest specs. All those technical terms are explained in the simple language that's helped make Crutchfield famous.



You'll find Home Theater components and Digital Satellite Systems, too.

You won't believe the selection

We're a full-service, factory-authorized dealer

offering discount prices

on top name brands including **Sony, Kenwood, Pioneer, JVC, Polk, Bose, Advent, Infinity and Yamaha.**

Fantastic service seven days a week

- Information and advice you just won't find *anywhere else.*
- FREE technical advice when you need it—days, nights, even on the weekend!
- Nobody ships faster!

Call for your FREE catalog

1-800-955-9009

CRUTCHFIELD

1 Crutchfield Park, Dept. AU, Charlottesville, VA 22906
Check out our Web site at <http://www.crutchfield.com>

continues his collaboration with Keita ("Bimoya") but sounds more comfortable embracing European music, playing a more supportive role or just building a groove-quake.

"Ochy-Bala/Pazyryk" features the raspy "throatvocals" of Siberian singer Bolot, and the sparse keyboard treatment recalls a Theremin controlled by a voodoo priest. Perhaps as a taste of what's to come (the reformed Weather Report is currently recording), "Mi Gente" percolates with buzzing keyboards and five noisy percussionists wrapped in a fiery explosion of Afro-Cuban accents. And in what could be Zawinul's second radio smash, the lilting reggae sway of "In an Island Way" makes for perfect sunrise music.

Joe Zawinul has aged gracefully, *My People* confirming his garrulous sense of humor and youthful vision. May the new Weather Report be as rich as this.

Ken Micallef

Time and Circumstance

Marcus Roberts

COLUMBIA CK 67567, 76:42

Sound: B+, Performance: A-

Pianist Marcus Roberts has long been considered Wynton Marsalis' prime disciple; since 1989, he's created a string of recordings that have been overtly reverential of his musical heroes and influences. His first few CDs felt more like recitals than real jazz albums, but he seemed to catch his stride on 1992's *As Serenity Approaches*. Still, his devotion to past masters—notably Monk, Ellington, Jelly Roll

Morton, Fats Waller, and Gershwin—has overshadowed any sustained exposure of Roberts' own music.

Until now. *Time and Circumstance*, his impassioned 77-minute suite, thematically contemplates a lifelong love affair. That's quite a task for a piano trio, but Roberts and his youthful bandmates, 18-year-old bassist David Grossman and 19-year-old drummer Jason Marsalis, prove themselves more than ready for the challenge of conveying a range of emotions with limited instrumental colors.

The album's theme is clear from the get-go, as the lovers' attraction heats up pretty quick-



ly on the smoldering opening track, "Soul Mates." Roberts charts the lovers' growing sense of trust and commitment, but by the middle of the disc,

"Alone" shows that some painful realities have set in. Grossman's heart-wrenching *arco* bass solo plays off Roberts' sweeping piano, and together they find resolution. To ignite the title track's propulsive thrust, Roberts employed a cue-based system to enable each member of the trio to lead the group during his solo. Here, Marsalis' powerful Tito Puente-influenced groove translates as a choppy, nervous energy; that's certainly a first for a Marcus Roberts CD.

Roberts' densely packed romance can become slightly claustrophobic at times, but there's also a wealth of beauty sandwiched in

PAQUITO D'RIVERA

Portraits of Cuba

CHESKY JD145, 60:36

Sound: A, Performance: A

Cuban expatriate Paquito D'Rivera is a true jazzman renowned for his pyrotechnical, Latin-accented saxophone and clarinet improvisations. Carlos Franzetti is a master arranger who knows the robust tendencies of Cuban music but chooses also to explore softer hues. Put the pair together with 18 of New York's finest players, and an historic repertoire (some 100 years of Cuban music, including originals by D'Rivera and Franzetti) comes alive with the sounds of D'Rivera soaring over dramatic orchestrations of smooth, elegant woodwinds and bold, emphatic brass.

D'Rivera, who spends five of 13 cuts on soprano (his main axe when he was a child prodigy), alternates subtle displays of

melancholia with dynamic outbursts of intense joy. He eases into his solos, probing every nuance of Franzetti's lush orchestrations, all of which seem capable of inducing D'Rivera's recollection of his earlier life experiences.

Portraits of Cuba is a fine example of jazz concertos, prodding the soloist with

lush, big band voicings and providing all of the ingredients necessary for his spontaneity. As each arrangement unfolds, D'Rivera's eloquently spinning lines heat up, becoming more and more aggressive without forsaking the highest degree of musicianship. Described by D'Rivera as "a jazz tribute to the Cuban tradition," this joint venture between soloist and arranger invites comparison to a similar Miles Davis/Gil Evans collaboration, *Sketches of Spain*. Perhaps *Portraits of Cuba* will also come to be known as a classic.

James Rozzi

new west

ELECTRONICS

The Audio/Video Specialist

AC3 • Audio Separates • A/V Receivers
Camcorders • DSS • DVD • Industrial
Laser Disc • Mobile • PTV • Speakers
THX • TVs • VCRs

All Major Brands Including

AR • Aiwa • Audio Alchemy • B&K
Celestion • Harman Kardon • Hitachi
JBL • JVC • Kimber Kable • Monster Cable
OmniMount • Panamax • Premier • RCA
Sony • Toshiba

New West Credit Card

Card holders enjoy special discounts & benefits.
Call 1-800-733-1366 for application & details.

Honest Prices - Friendly Service

800-488-8877

All Prices Include Delivery!

(Federal Express on all packages under 20 lbs)

COD's & PO's Welcome!



A Division of Clarity Electronics LTD.

4120 Meridian • Bellingham WA 98226 • Fax (360)734-3314

All Times PST: MON-FRI 7:00A to 6:00P • SAT & SUN 8:00A to 4:00P

CIRCLE NO. 30 ON READER SERVICE CARD

DEALS!



state of the art
HOME THEATER

Factory Authorized
BLOW OUT!



Complete Altec Lansing
THX Home Theatre Package for:

1499⁰⁰ Delivered
FedEx!

Suggested retail 2995⁰⁰

Add ...

A famous THX certified, high current
A/V receiver with AC-3 processing.
Other features include On-Screen
Menu, Learning Remote, S-VHS switch-
ing, Multi-Room Control, Multiple auto
& video inputs, and pre-amp outputs
for all channels.

Total Package Price, Delivered FedEx!

2999.95

Suggested retail 5399⁰⁰

Looking for more info?

<http://www.newest.com>

The Original Sound City

Meadtown Shopping Center • Rt 25 • Kinnelon, NJ 07405

1-800-542-7283

Sennheiser HD 580
Dynamic high end hi-fi stereo "open-air" headphone. The HD 580 offers the fan of classical music in particular an unparalleled music reproduction. 300 Ohm FR: 12Hz-38kHz

Brand Name Surround Processor
• Dolby® Pro Logic decoder
• 50W/Ch 8 Ω for center
• 20W x 2 8Ω for rear
• Dolby® 3, Hall & Stadium smodes
• Programmable remote control
Stock #3235

Orig \$425
\$229

CALL

Soundstream Reference 300
2/1 Channel Amplifier

Technics SLPD1010
Rotary CD Changer

• 75W x 2
• 300W x 1
• Dual Class A drivers
• Coherent stereo/mixed mono and mono
• High power and high current

• Front loading 5-disc design
• Digital memory reserve system
• Optical digital output
• MASH 1-bit DAC
• Remote control

Orig \$399
\$229

Technics SATX1000
Home THX® Receiver

MB Quart CTR
Center Channel

• Dolby® Pro Logic surround
• Class H+ amplifier circuitry
• 120W/Ch for front L/R/C
• 55W/Ch for surround
• AV Remote control

• 2-Way design
• 5 1/4" Copolymer woofer
• 3/4" Titanium dome tweeter
• 100W Power handling
• FR: 70Hz-22kHz

Orig \$1300
\$579

Orig \$249
\$99

Sonance SF400
On Wall/In Wall Speakers

NAD502
CD Player

• 1" Soft dome tweeter
• Dual 4" poly woofer
• 90W Handling
• White metal grilles

• Balanced MASH 1-bit D/A converter
• 32X Oversampling
• Serial digital output
• Signal transfer
• Remote control

Orig \$500
\$149^{pr}

Orig \$269
\$269

Technics SA-TX50
THX® Receiver

BBE ARS
Audio Restoration System

• 120W/Ch for front L/R/C
• 60W/Ch surround
• 6 Ch. all discrete inputs for AC-3
• 5 Video and 3 audio inputs
• 10 DSP modes
• Remote control

2 Channel signal processor that will benefit any audio system. It will restore much of the original live performance sound quality to old LPs and tapes. Helps restore the sparkle and clarity and adds warmth and musicality to original master recordings.

Orig \$269
\$179

CALL

FACTORY AUTHORIZED

- ADS • Advent • Audio Control • Aiwa • AKG
Altec Lansing • Audio Quest • Acoustic Research
Audio Alchemy • Audio Source • Atlantic
Technology • B&K • B&O • Bazooca • BBE
BeyerDynamics • Bellogetti • Brother • Canon
Carver • Cerwin Vega • Celestion • Canton
CodeAlarm • CWD • Denon • Dynamat • Grado
Harmon/Kardon • Hitachi • Infinity • Jamo
JBL • JVC • K40 • Koss • Lexicon • Mitsubishi
Monitor Audio • Monster Cable • Niles • Panasonic
Pioneer • Panamax • PPI • Proscan • PS Audio
Rane • Rockford Fosgate • Runco
Soundstream • Sennheiser • Sherwood • Sharp
Sony • Sonance • Stewart • Tannoy • Target
Technics • Terk • Thorens & More!

1-800-542-7283

For Information & Customer Service: 201-263-6060



CALL & ORDER TOLL FREE

there. And when *Time and Circumstance* is all over, you'll be amazed that a piano, bass, and drums can so eloquently tell the story of a man and a woman.

Steve Guttenberg

But Beautiful

The Bill Evans Trio featuring Stan Getz
MILESTONE 9249, 69:47
Sound: B+, Performance: A

Bill Evans' longtime producer/manager Helen Keane fought long and hard to gain the necessary clearances to release this dynamic music from two 1974 European concert radio broadcasts. Norman Granz recorded these two giants together in 1964, but the limited outcome from that session never hinted at what would be heard in these later sessions.

It's an accepted fact that both Getz and Evans are not only true stylists but also virtuosos. Evans' skillful blend of classical piano technique and harmonic coloring with the rhythmic aspects of jazz remains unmatched. And Getz's smooth tone and complex, cool lines redefined the tenor saxophone, spawning a host of imitators.

Given the inclinations of these two, it should be no surprise that half of the songs are beautifully performed ballads ("But Beautiful," "Emily," "Lover Man," and "The Peacocks"). The subtle, empathic backing given to Getz's smooth, linear flights is absolutely sublime. What may prove a bit surprising is the manner in which the program's remainder ("Grandfather's Waltz," "Stan's Blues," "Funkallero," and "You and the Night and the Music") was accomplished: Tarzan couldn't have swung any harder.

As an added bonus, two tracks sans Getz ("See-Saw" and "The Two Lonely People") are tacked on at the end, presenting Evans, bassist Eddie Gomez, and drummer Marty Morell doing what they did better than any other trio in jazz. The choice of material, polished arrangements, and skillful interplay add up to nothing short of magic.

James Rozzi

Labyrinth

Tom Harrell

RCA VICTOR 09026-68512, 66:05
Sound: A, Performance: A

Tom Harrell has always sounded ready to burst, even explode, at the seams. At the Village Vanguard with Joe Lovano in 1994, the trumpeter/flugelhornist played with such melodic potency and rapid-fire accuracy, it seemed the bandstand would careen off into space. On his RCA Victor debut, Harrell is no less impressive as a composer and arranger. His dense voicing for quintet and nonet give

RODNEY

Last Chance for Common Sense
GITANES/VERVE 314 531 536, 56:56
Sound: B, Performance: A+

Rodney Kendrick's *Last Chance for Common Sense* is an evocative trip into a fertile delta of Monkish logic, Mingus freedom, and Westonian daring. But Kendrick is no mere sample jockey of the mind. The pianist's compositions buck and sway with originality and humor, like a jam session among the aforementioned fathers in a Louisiana rhumba room.

Surprise, exuberant melody, and spontaneous freedom are mainstays in Kendrick's repertoire. His near-big band (including Graham Haynes, Badal Roy, and Dewey Redman) glories in the twists and turns of his compositions, and Badal Roy, in particular, transforms the texture of the music with his sonorous tabla work.

It's easy to let *Last Chance* wash over you, but there are distinct moments that'll

full blossom to the abundance of musical ideas inhabiting his prolific mind.

Offering a full plate in a variety of styles—Brazilian ("Samba Mate"), a ballad (the standard "Darn That Dream"), and some free playing ("Cheetah")—Harrell adds contemporary styling to some remarkable wind voicing. Like a time-traveling sponge, he's absorbed many decades of jazz into his own brew. His compositions are jewels of melodic logic, and some of his solos (such as in the wistfully beautiful "Majesty,") seem to arrive from some higher plane. Often the breeziness of their execution belies the subtle intelligence at work.

The assembled cast of Joe Lovano, Gary Smulyan, Billy Hart, Larry Grenadier, Don Braden, Steve Turre, and Kenny Werner warm to the richness of Harrell's compositions, creating something of a player's feast. On "Blue in One," the cinematic feel of the intro, with its mournful rise and fall, recalls the theme for *Taxi Driver*, until the melody topples into a hoary blues swagger. All the selections build to Harrell's solos, which, as if applying oil to some dreamlike shape, are entrancing and over too soon.

Labyrinth is a vibrant recording, with Billy Hart's drums and cymbals sounding particularly resonant. While Harrell's trumpet always sounds bright and spacious, the winds seem a



KENDRICK

grab your attention. After we've tiptoed on the netherworldish "Sun Rays," ridden shotgun on the swinging rails of "The Nac," and pondered the pointed wit of "Remember," "Led Astray" reveals the eye of a hurricane. Written by Rhonda Ross (Kendrick's girlfriend and the daughter of Diana Ross), the song is framed by Kendrick's sparse chords, its supple melody stated by alto saxophonist Justin Robinson. Elegant and melancholy, "Led Astray" is one of those rare moments when musicians are granted a sublime melody, then gracefully build on it. Kendrick's piano commentary alone sends chills up the spine.



As humorous and unpredictable as his music is exciting, Rodney Kendrick knows his history but isn't chained by it. *Common Sense* wins out over blind worship any old day.

Ken Micallef

bit muted at times, but this is a minor qualm. Overall, *Labyrinth* is a very satisfying album.

Ken Micallef

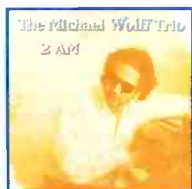
2 AM

Michael Wolff

CABANA BOY/WAP CAB 9605, 58:05

Sound: B, Performance: B-

Michael Wolff was an in-demand sideman (Nancy Wilson, Cal Tjader) before he was lured away to Easy Street, playing musical foil on Arsenio Hall's defunct late-night talk show. On *2 AM* (his second release since the Arsenio "daze"), he demonstrates that the big rack o' synthesizers was just meant to complement the "whoop-whoop-whoops" and Hall's obnoxious purple suits. His real calling is piano—impressionistic, Bill Evans/Ahmad Jamal-like piano. And with a trio filled out by legend Tony Williams and lion Christian McBride, he explores the ground broken and expanded upon by Evans, Jamal, Keith Jarrett,



Kenny Barron, and a host of others. The results are somewhat, well, mixed.

Wolff's pianistic explorations sometimes come precariously close to George Winston's New Age noodling, but his improvisational ambition and the album's spontaneous approach is, on the whole, enjoyable. It's on the title track that the trio moves

into fifth gear and demonstrates some unrestrained interplay. But that said, it would've been nice to hear Tony Williams *really* play the drums like the innovator he is—stuck in "ballad" mode for most of this album, he doesn't really solo until the final cut.

Which is essentially what *2 AM* is—an album of textural, ballad-tempo compositions. If you're a fan of this genre, by all means check it out. But if you're looking for a barn-burner, don't look here. *2 AM* is nice, and it's pretty, but it's not about up-tempo "excitement." Perhaps that's for subsequent Michael Wolff albums.

Mike Bieber

Number Two Express

Christian McBride

VERVE 314 529 585, 63:58

Sound: A, Performance: A

Bassist Christian McBride's second album as a leader dispels the notion that current jazz lacks innovation. Although the advances of modal and free jazz of the '60s continue to form the basis of today's acoustic jazz, McBride demonstrates that there's plenty of room for individualized update.

A quantity of thoughtful, original compositions unlocks the musician's creativity. "Whirling Dervish," for example, doesn't sound like the basic 12-bar blues that it is. And what's more, it's in the key of F sharp, an unlikely choice capable of nullifying musical clichés (i.e., those same old boring riffs) during improvisation.

The name of the composition "EGAD" is derived from the notes of its bass line. As the form unfolds, the same intricate rhythmic and harmonic variants heard in the opening statement are inserted as accompaniment behind the tune's improvisations, spurring the soloists to exciting heights.



Now add to the mix some of the most talented, individual voices in jazz today: masters Kenny Barron and Chick Corea share the piano duties, alto saxophonists Gary Bartz and Kenny Garrett cover the gamut of emotions from cool to frenzied, and Steve Nelson adds his vibraphone to two of the smoother cuts. Percussionist Mino Cinelu gives added color to a reading of Freddie Hubbard's "Little Sunflower," featuring four harmonized, overdubbed acoustic basses with an electric bass playing the melody.

McBride has quickly established himself as one of the most talented young bassists to hit the jazz scene in a long while. With many other album credits already under his belt as a sideman, this particular release presents him as a dynamic writer and leader in his own right.

James Rozzi

WHOLESALE TO THE PUBLIC

1.800.370.3156

WHY PAY RETAIL?



JVC JXS300

A/V Selector

- 4 AV inputs and 3 AV outputs including 3 S-Video terminals for both input and output
- Remote controlled input/edit mode selection
- Incorporates Y/C separator

\$179

JVC JXS100

AV Selector with 4 inputs, and 2 outputs

\$79

JVC JXS700

AV Selector w/7 inputs, 4 outputs and 1 monitor out

\$369

JVC JXSV55

Video Editing Processor

- Joystick color corrector
- Full range of wipes and fades
- 4 Line audio mixing with level meter
- Y/C Separated (S-Video) inputs and outputs

\$319

JVC JXED11

Wireless video editing controller with shuttle control

\$79

JVC HR-S5300U

S-VHS Hi-Fi Stereo VCR

- High resolution Super-VHS picture
- Hi-Fi VHS stereo
- VCR Plus+ w/cable box controller
- Multi-brand remote control

\$469

JVC HRS7300U

Top-of-the-Line S-VHS VCR...Call for price!

Advent A1028

The Advent Heritage

- Floorstanding tower loudspeaker
- 600W Peak handling
- 2-Way system with Dual 8" high excursion woofers
- 1" Ferrofluid-filled dome tweeter
- FR: 40Hz-23kHz

TOO LOW TO ADVERTISE

Sony MHC-C70

Bookshelf system

- 50W/Ch Power output
- Digital tuner with 30 AM/FM station presets
- 5 Disc, single drawer CD changer
- Dual auto reverse cassette deck
- 3-Way loudspeaker system
- Remote control

\$449

JVC CS-103

Component Car Speakers

- Baffleboard type
- 2-Way design
- 4" High carbon cone woofer
- 1" Tweeter
- 60W Power handling
- Door/rear deck mountable
- 4 Ohm

WHOLESALE EXCLUSIVE

Orig. \$229 \$39^{PR}

CAR AUDIO CLEARANCE

Sony XRC610

AM/FM Cassette deck with CD changer controls

\$219

Aitec Lansing ALA200

100W x 2 Bridgeable car stereo power amplifier

\$129

Sony XM2025

20W x 2 Car stereo power amplifier w/variable input

\$69

Sony CDX3100

AM/FM CD player, 30W x 4 built-in power, preout

\$189

Pioneer KEH1100

AM/FM Cassette w/detachable faceplate

\$137

JVC KSRT311

AM/FM Cassette w/22W x 4, auto reverse

\$147

WHOLESALE TO THE PUBLIC

BUY DIRECT AND SAVE

1.800.370.3156

CIRCLE NO. 43 ON READER SERVICE CARD

AUDIO CLASSICS, LTD.

Audio 1. of or pertaining to the high-fidelity reproduction of sound. Classic 1. of the highest rank or class. 2. Serving as an outstanding representative of its kind; model. 3. Having lasting significance or recognized worth.

Buys-Sells-Trades-Repairs

Clean, Tested, Guaranteed High End & Vintage Audio Since 1979

Looking for something special? We'll find it or we may have it ! New items arrive daily! CALL NOW!

8AM-5PM Monday-Friday **607-865-7200** Fax: 607-865-7222

Web: <http://www.audioclassics.com> -or- E-mail: info@audioclassics.com

34 Gardiner Place. Post Office Box 176, Walton, NY 13856

Over 16,000 items in stock. NOTE: Not all items are in stock at all times. New equipment arrives daily. All items subject to prior sale. This list supersedes all previous price lists. Prices subject to change without notice. Some prices are negotiable. call for details. For information on any product listed call.

D=Demo, M= Mint, N=New, NOS=New Old Stock, EX=Excellent, G=Good, F=Fair, P=Poor, AI=As Is, BO=Best Offer.

ACCESSORIES

Amco
ASC1(EX) \$49
PM2(EX) \$49
dbx
200X(EX) \$99

AMPLIFIERS

Adcom
GFA555(EX) \$499
GFA5400(N) \$589
GFA5800(EX) \$1099
ADS10(G) \$249
Accuphase
P260 \$759-999

Air Tight

ATM2(D) \$5995
APT-1(EX) \$449
Audio Research
Classic-30(EX)
\$1499

D110B(EX) \$999
D120(EX) \$995
D125(EX) \$1995
M300-MKII(EX)
\$5399

VT150SE(EX) \$9995
B&K
TX4430(D) \$1328
BGW 500R(G) \$199

Carver

A400X(D) \$439
AV64(D) \$299
AV634(D) \$5249
AV405(D) \$499
AV634(D) \$469

AV705X(N) \$1139
AV806X(D) \$1249
TFM6cb(D) \$289
TFM35X(D) \$699
TFM55(D) \$735

TFM55X(D) \$875
TFM75 \$1589-1759
Cary
CAD300B(D) \$3239
CAD805(EX) \$5899

SLA70-MKII
\$799-995
SLA70-SIG(EX)
\$895 Classe
DR8(EX) \$1399

CM Labs
80MRM(F) \$299
CM911(AI) \$49
Counterpoint
SA12(EX) \$699

SA100(EX) \$749
SA220(EX) \$1499
Crown
D150A-II(D) \$755
DC300A-II(D) \$999

MACRO-REF(EX)
\$2499,
PS200 \$349-549
REFERENCE-2
\$2145-2349

Dynaco
ST70 \$299-399
ST70-II(D) \$749
ST120(EX) \$98
Executone

PBK675(AI) \$49
Fairchild
702A(AI) \$499
GAS
SON-OF-AMPZILLA
(EX) \$199

Golden Tube Audio
SE40(N) \$980
SE300B-MKII(D)
\$1480
Harman Kardon
PA2100(D) \$319
PA2400(D) \$699

Heathkit
AA1640(AI) \$199
W5M(AI) \$99
Krell
ALTAIR(EX) \$1995

KAS(EX) \$17999
KMA100(EX) \$2375
KMA200 \$3647-
4395 KSA100S(M)
\$3625

KSA200S(EX)
\$4595 KSA250(EX)
\$3400
MDA500(EX) \$6995
MB Electronics
2120MB(G) \$799

Marantz
8B(EX) \$2495
9(EX) \$7495
9-1I pr(N) \$8400
15 \$399-499

Mattes
SSP200(F) \$49
McIntosh
50W2(G) \$799
A116(EX) \$599

MC30 \$599-1000
MC40 pr. \$1995
MC60(EX) \$2000
MC75s(EX) \$4000

MC150 \$1995-2475
MC225 \$999-1495
MC240 \$1299-1995
MC250E(EX) \$799
MC275 \$2000-4995

MC300(EX) \$3099
MC502 \$450-599
MC752 \$599-669
MC754(EX) \$799
MC1000(EX) pr
\$8800

MC2100 \$227-449
MC2002 \$999-1399
MC2100 \$349-449
MC2105 \$299-899
MC2120 \$699-799

MC2125 \$1199-1399
MC2155 \$1399-
1599
MC2200 \$629-999
MC2205 \$1549-1649

MC2250(EX) \$1299
MC2255(EX) \$2499
MC2300 \$1399-1899

MC2505 \$5-699
MC2600(EX) \$3899
MC3500 \$14000

MC7100(EX) \$999
MC7104 \$2089-2750
MC7106 \$2296-2888
MC7108 \$1599-
1799

MC7150(EX) \$1699
MC7270 \$1895-2249
MC7300 \$1995-2699
MI200 \$995-
2000/ea

Mesa
BARON \$2995-3395
MFA
M200C(EX) \$3995
Motif
MS100(EX) \$1369

MS1001(M) \$1899
MS2001(M) \$2499
Nobis
CANTABILE(D)
\$1299

Parasound
HCA2200-II(EX)
\$899
Phase Linear
Phase Linear 400(G)
\$299

PS Audio
DELTA-200(EX)
\$1199
TWO-C(EX) \$129
SAE P50(AI) \$99

Sunfire
CINEMA-GRAND(D)
\$2299
SUNFIRE \$1884-
2175

Tandberg
TPA3026A \$599-669
TPA3036A(EX) \$349
VTL
RENAISSANCE-80
(EX) \$999

Yamaha
M70(AI) \$187
AMP STANDS Call.

ANTENNAS
Magnum Dynalab
ST2(N) \$79
McKay-Dymek
DA100(EX) \$99

BOOKS on
acoustics audio high
fidelity tubes & more
in stock CALL

CABINETS
CWD
Marantz
7 \$99
10B \$149

McIntosh
all types \$49-169
Sonrise CALL

CARTRIDGES Too

many CALL:
Grace F9(D) \$80
Grado
DJ100 \$59
TLZ-II \$399

Z1+ \$129
Z2+ \$169
ZF1+ \$69
ZF3E+ \$39
Stanton CS100(N)
\$239
Yamaha MC1X(D)
\$49

CASSETTE DECKS
Denon
DN770R(EX) \$599-
699
DRM33HX (AI) \$49
DRM710(AI) \$99

Luxman
K112(EX) \$149
Marantz
SD535(N) \$269
NAD 6040A(F) \$39

Sony
TC131SD(AI) \$39
Tandberg
TCD440(AI) \$189

CD PLAYERS
Accuphase
DP55(N) \$3995
DP70(EX) \$3999

Bang & Olufson
CD50(AI) \$49
CAL
TERCET(EX) \$299
Carver
SDA360(D) \$451

SDA370(D) \$476
SDA390(D) \$559
Denon
DCM360(N) \$320
DN650F(N) \$788

DN961FA(D) \$1465
Harman Kardon
FL8000(D) \$199
FL8400(D) \$259
HD710(D) \$199

TL8600(D) \$249
Krell
KPS30I \$3369-3695
Marantz
CD53(N) \$199

CD63SE(EX) \$349
CD72(N) \$349
McIntosh
MCD7000 \$3-549
MCD7005 \$1189

MCD7007 \$1199-
1499
MCD7008(EX)
\$1599 MCD7009
\$1995-2169

MLD7020 \$1995-
2399
Meridian
208(EX) \$639

NAD 5240(G) \$149
Nakamichi
1000MB(M) \$4995
Philips
CD40(AI) BO
CDC925(D) \$187

Rotel
RCD820(AI) \$49
Sony
D5(AI) \$49
Yamaha
CD1000(AI) \$45
CDX5000(EX) \$499
CDC805(AI) \$75

CD TRANSPORTS
Audio Alchemy
DDS-PRO(D) \$1282
PS Audio
ULTRALINK-
TWO(M) \$1250

Krell
MD10(EX) \$3295
DT10 \$3995-4495
Wadia
WT3200(EX) \$699

CROSSOVERS
Newmark
EC2800(AI) \$59
University
N3(AI) \$25

DIGITAL AUDIO
PROCESSORS
Aragon
D2A-II \$699-999
Audio Alchemy
DAC-MAN(D) \$129

DITB(D) \$239
DTI-PLUS(D) \$239
XDP(EX) \$199
Audio Research
Corp DAC2(EX)
\$1169

CAL
Sigma(EX) \$299
EAD
DSP1000(EX) \$499
Krell
REFERENCE-64
(EX) \$6839

SBP32X(EX) \$13-
1499
STEALTH(EX)
\$1199
STUDIO(EX) \$1995
STUDIO-2(EX)
\$1399

EQUALIZERS
Advent FBC(F) \$49
Audio Control
C101-III(N) \$449
C131 pr(N) \$999

RICHTER SCALE(N)
\$349
OCTAVE(N) \$159
RIALTO(N) \$599
TEN-III \$169-229

TEN-PLUS-II(N)
\$299
McIntosh
MQ101 \$79-249
MQ102 \$79-99
MQ104 \$75-249
MQ107 \$299-699
MQ108 \$339-419

MXR
124 \$49-357
125 \$49-99
Shure
SR107 \$99-199
Spectro-Acoustics
210R(EX) \$99
Soundcraftsmen
20-12(F) \$49

White
4500(EX) \$299
Yamaha
GE5(EX) \$99
GUITAR
ACCESSORIES
CB Labs
Pocket Rocket \$75
Matrix
SR-4000 \$25

GUITAR AMPS
Ampeg
GS12R \$379-499
V4(EX) \$250
VT22 \$250
ART 490(EX) \$499
Fender
BANDMASTER(AI)
\$299
VIBRO-CHAMP(EX)
\$299
Peavey
COMPANION-15
\$49
TNT130(EX) \$299
MARK-III(EX) \$299
Traynor TS15 \$99.

GUITAR
ACCESSORIES
CB Labs
Pocket Rocket \$75
Matrix
SR-4000 \$25

GUITAR AMPS
Ampeg
GS12R \$379-499
V4(EX) \$250
VT22 \$250
ART 490(EX) \$499

Fender
BANDMASTER(AI)
\$299
VIBRO-CHAMP(EX)
\$299
Peavey
COMPANION-15
\$49

TNT130(EX) \$299
MARK-III(EX) \$299
Traynor TS15 \$99.

GUITARS
Fender
STRATOCASTER
(EX) \$799
TicePOWER-BLOC
K-II(EX) \$799
Tripp-Lite
LC1800(M) \$199
VPI PLC \$229-349

MAGAZINES
Back issues for
most audio related
maga ines bought
sold traded

MANUALS
Thousands in stock
for Classic USA
made components
CALL.

MICROPHONES
Electro Voice
664(G) \$49

PARTS McIntosh
Thousands in stock
CALL.

PHONOGRAPHS
Berliner
1895 \$1499
Edison
Tin-Foil \$1495

PRE-PREAMPS
Athena
MC1(EX) \$49
Audio Alchemy
VITB(N) \$229
Audio Standards
MX10A(EX) \$275
Krell
KPA(EX) \$995
McIntosh MCP1
\$299

PREAMPLIFIERS
Acoustech
IV(AI) \$39
Air Tight
ATC2(D) \$3995
Audio Research
LS2(EX) \$1299
PH3(EX) \$1149
REFERENCE-ONE
(EX) \$6495
SP6(EX) \$995
SP9(EX) \$995
SP15(EX) \$3339
Belles
XLM \$113-179
Carver
C5(D) \$375
C20V \$455-759
Cary
CAD5500(EX) \$599
SLP94L(EX) \$1365
Coda 01P(D) \$1999
Counterpoint
SA3.1(EX) \$399
SA1000 \$455-599
SA5000 \$1999-
2649
Crown
IC150 \$149-229
Dynaco
PAT4 \$99-199
GAS
THOEBE(G) \$199
Golden Tube Audio
SEP1(N) \$889
Harman Kardon
CITATION-I \$249-
449
CITATION-11(AI) \$99
CITATION-25(D)
\$299
Heathkit
WAP2 \$39-99
Krell
KBL \$1995-2669
KSL2 \$1799-1995
Lazarus
CASCADE-

LINE
CONDITIONERS
Lightspeed
CLS3200(N) \$239
CLS6400ISO20AH
(N) \$660
CLS9600ISO(N)
\$674
CLS9900 AMP(D)
\$674
McIntosh
PC1(EX) \$99
PC2(EX) \$99
TicePOWER-BLOC
K-II(EX) \$799
Tripp-Lite
LC1800(M) \$199
VPI PLC \$229-349

HEADPHONES
AKG K340 \$49
Grado
HP2 \$249
RS1 \$599
SR80 \$89
SR100 \$129
SR125 \$129
SR225 \$129
SR325 \$159
Stax
LAMBDA-
CLASS-MX(D) \$649
LAMBDA-

BASIC(EX) \$449
Lexicon
DC1(N) \$1995-4500
Luxman
5C50(EX) \$299
Marantz
7 \$2500-3999
7-II(N) \$3800
7T \$399-499
McIntosh
C8 \$99-400
C8S \$200-500
C11 \$995-1995
C20 \$399-1995
C22 \$1495-2495
C22-II \$1495-1995
C24 \$199-349
C26 \$299-449
C27 \$569-669
C28 \$249-649
C29 \$999
C30 \$759-995
C31V \$799-1089
C32 \$299-999
C33 \$995-1499
C34V \$999-1499
C35(EX) \$995
C36(M) \$999
C37 \$1399-1995
C38(EX) \$1799
C39(EX) \$2799
C104 \$99-399
C108 \$99-200
C504(EX) \$549
C710 \$799-899
C712 \$995-1099
CR7 \$99-399
CR10(EX) \$995
CR12(EX) \$1995
MVS3 \$99-399
Mission
776 \$199-299
Music & Sound
DCC1(EX) \$499
Nakamichi
CA5 (EX) \$399
Nobis
PROTEUS(D) \$1299
Panasonic
RP966(AI) \$39
Perreaux
SM2(EX) \$299
Precision Fidelity
C8(AI) \$299
Proton
AP1000(EX) \$125
SUMO
ATHENA(G) \$199
HL1(EX) \$49
VAC
VINTAGE-LINE
\$839-1139
VTL TL2(EX) \$499

PROCESSORS
ADS-10(AI) \$149
Advent 101 \$49
Audio Control
PCA200(D) \$179
PCA-III(N) \$299
Bozak 902(EX) \$79
CBS 220(EX) \$39
dbx
1BX \$39-49
2BX \$45-89
3BX \$199-349
3BX-II \$99-199
21(EX) \$49
124(EX) \$79
224(EX) \$149

503(G) \$299
Fisher K10(AI) \$99
JVC4DD5(EX) \$49
Marantz
AX1000 \$5995
McMartin
LR1004C(G) \$139
McIntosh
MVS1(EX) \$149
Phase Linear
1000(EX) \$99
Pioneer
SR101(EX) \$49
SR202(EX) \$49
SAE
5000 (EX) \$299
Sony
SQD1000(EX) \$99
SQD2020(G) \$99
Sound Concepts
SX80(EX) \$39
Sound Workshop
220(AI) \$49
Teac
AN80(F) \$39

RACKS Call

RECEIVERS
Carver
HR742 \$417-519
HR895(N) \$919
Harman Kardon
AVR30(D) \$995
HK3350(D) \$299
KLH
TWENTY-SEVEN
(AI) \$199
Lafayette
LR2200(AI) \$ 45
Marantz
Eighteen \$285-499
SR73(N) \$459
SR92(D) \$549
SR4000(EX) \$149
2220B(C2) \$49
McIntosh
MAC1500 \$499-599
MAC1700 \$499-599
MAC1900 \$449-599
MAC4100 \$999-1299
MAC4200(EX) \$1699
MAC4280 \$1099-1299
Scott 315(AI) \$49
Stereotech
1200(AI) \$499

RECORD CLEANERS
VPI
HW16 \$ 5349-375
HW17 \$449-769

REMOTE CONTROLS
McIntosh
CR7 \$99-298
CR8 \$79-498
HC1(EX) \$399
MSI1(EX) \$219
R606 \$47-85
R624 \$99-149
R626(EX) \$266
R657(EX) \$198
RCT1(EX) \$219
RCT2(EX) \$219

WK2(EX) \$175
WK4(EX) \$299
Meridian 609 BO

SPEAKER CABINETS
Imperial(N) \$2000

SPEAKER CABLES
Audioquest, Cardas
and many more
CALL.

SPEAKER STANDS
Call.

SPEAKER SWITCHES
Amco CM3(EX) \$49
McIntosh
P349 \$150-400
SCR1 \$75-99
SCR2&2A \$99-149
SCR3 \$99-1199

SPEAKERS
ALON
Petite w PW1 \$1399
AR
AR2 \$49-99
AR2A(F) \$79
AR9LS(EX) \$699
CLASSIC-12 \$299-399
ADS L810(G) \$199
Altec
AL(G) \$1995
511(EX) \$1199
Apogee
CALIPER-SIG
\$1495-1995
CENTAUR \$999-1250
COLUMN(D) \$999
DUETTA-SIG \$3577-4495
IN-WALL-3 \$995-1299
MINOR \$399-799
RIBBON-LCR(D) \$669
RIBBON-MONITOR(D) \$795
SLANT-6(D) \$1499
SLANT-8 \$2999-3995
STAGE \$2227-3295
Audio Classics Ltd
LS10 \$4995-6995
B&W
DM640(EX) \$839
HTM-MATRIX(EX) \$625
801-III(EX) \$4299
802-MATRIX-II(EX) \$1995
802-MATRIX-III(EX) \$3099
804-MATRIX(D) \$1899
DM640(N) \$899
GOLDEN-FLUTE
(EX) \$199
BIC V62(N) \$179
Bose
101-MM(EX) \$99
301-AVM(EX) \$198
Bozak
DS1800(G) \$99
Celestion

SL6SI(N) \$599
Clements
105DI(N) \$199
107DI \$189-339
108DI \$247-474
204C \$129
208DI \$261-598
308DI(N) \$499
dbx
SF100(EX) \$149
ess AMT1(G) \$99
Energy
5.1E(D) \$379
ess AMT1(F) \$99
Fisher
XP7B(EX) \$199
Heil AMT1(G) \$99
JBL
SVA1800 \$1199-1679
SVA2100(D) \$1599
Joseph Audio
RM7SI(D) \$1089
KEF
LS3/5A-SIG(D) \$1199
ONE(EX) \$1155-1499
FOUR(D) \$4099
Q50(D) \$575
TWO(EX) \$1660-1995
104/2 \$1199-1499
Klipsch
CHORUS-II(EX) \$799
CORNWALLI(G) \$699
HI-SM(G) \$199
KLIPSCHORN \$1995-3495
Martin Logan
CLS(EX) \$1250
SEQUEL-II(EX) \$1995
McIntosh
HT1BA \$529-599 ea
HT3F \$399-599 ea
HT3W \$399-599 ea
HT4(EX) \$699 ea
LS310 \$549-699pr
LS330(EX) \$1399 pr
LS350W(EX) \$879
ea ML1C \$499-899 pr
ML2C \$12-1800 pr
ML2M(P) \$699 pr
ML4C(EX) \$1499 pr
ML4M \$499-1499 pr
WS210(EX) \$499 pr
XL1(EX) \$249 pr
XL1W(EX) \$199 ea
XL10 \$299-399 pr
XR5(EX) \$499-265ea
XR6(EX) \$699 pr
XR7(G) \$999 pr
XR14(EX) \$499 pr
XR16(EX) \$599 pr
XR19 \$1995-4200 pr
XR230(EX) \$499 pr
XR240 \$699-1199 pr
XR250(EX) \$1199 pr
XR1051(G) \$599 pr
XRT18 \$23-2500 pr
XRT20(EX) \$2995 pr
XRT22 \$4785-5195pr
XRT22(M) \$2600ea
XRT24(EX) \$4995 pr
XRT26(EX) \$9995 pr
Meridian

D600(EX) \$995
Merlin
VSM(N) \$2799
Mirage
M5 \$699-799
NEAR
AEL1.1(N) \$249-299
Ohm 4(EX) \$759
Platinum
SF100(D) \$1399
Proac
RESPONSE-3(EX) \$3995
Sound Lab
Quantum(D) \$1995
Synthesis
LM260A(D) \$759
Tannoy
D10(D) \$299
D80(D) \$1345
D700(D) \$3995
D5R(N) \$329
D6C(N) \$419
SUBSAT-3(D) \$579
SYSTEM-12-II(N) \$2599
SYSTEM-15(D) \$3995
SYSTEM-600(D) \$699
Thiel
CS3.5(EX) \$1499
Wilson Audio
WAP \$1829-2994
WATT-III \$3995-4495
SPEAKERS-RAW
All types of speakers
repaired/reconed
Call.
Bozak Call
Electro Voice
EVM15B \$99
30W(EX) \$449
JBL
2130(EX) \$149
2402(G) \$125
D120F(NOS) \$149
D123 \$79-125
D140 \$199
LE20 \$75-99
LE175(AI) \$75
McIntosh drivers
Call.

SUB-WOOFERS
BIC V12(N) \$399
McIntosh
HT2(EX) \$1239
Sunfire TRUE-SUBWOOFER
(N) \$1095
Tannoy
PS115(D) \$995
Velodyne
F1500R \$995-1419
ULD-15-II \$1699-1859
VA1215(D) \$749

SURROUND PROCESSORS
Audiosource
SS-ONE(AI) \$49
Carver
DPL20(D) \$229
DPL33 \$199-289
Dynaco QD1 \$49-79
Fosgate

3601(EX) \$119
DSM3610(EX) \$299
Harman Kardon
44+(AI) \$49

SYSTEMS
Marantz
ARCH(N) \$1169.

TAPE DECKS
3M 6200(AI) \$39
Akai X355(AI) BO
Ampex
1160(AI) \$49
1260(AI) \$79
Crown
715(AI) \$49
Revox
A700(G) \$699
PR99 \$1399
Sony
DTCM100(EX) \$499
Tandberg
10XD(AI) \$189
Teac
A2340R(AI) \$299.

TELEVISIONS
Pioneer, Toshiba
Call.

TEST EQUIPMENT
Audio Control
R130 \$560-649
SA3050(EX) \$600
SA3050A(N) \$995
SA3050A-PKG \$1098-1299
Audio Technology
510-AT(EX) \$69
BPI 1600-BPI(AI) \$99
BSR SLM1(EX) \$39
B&K
3010(EX) \$99
General Radio
1396A(EX) \$499
Kaye Audio Labs
SSTC(D) \$499
Gold Line
ASA10(EX) \$199
DSP30(M) \$899
Heathkit
IMD-202-2(AI) \$35
Hewlett Packard
200CD(AI) \$75
334A \$395-995
3400A \$199-395
5300B/5308A \$99-299
Ivive
IE20A \$49-99
Justi-Meter-III(AI)
BO
Leader
LAG120B \$99-199
McIntosh
AA2 \$440-749
MI2 \$1500
MI3 \$349-999
MPI4 \$995-1995
RCA
WV510A(EX) \$49
Realistic
33-1028(EX) \$50
Simpson
710(EX) \$49

Sound Technology
1000A \$1599-2400
1100A \$499-999
1500A(EX) \$2999
1701A \$1799-3271
Tektronix
C5C(G) \$99
465B(EX) \$995
2213(EX) \$499
2235(EX) \$1495

TONEARMS
Eminent Technology
2 \$699
Graham 1.5t \$1995
Keith Monks
M9BA-III(G) \$49
M9E CA1(EX) \$42
VPI
JMW \$1995
and more CALL

TUBES Thousands
in stock CALL

TUNER PREAMPS
Carver
CT3(D) \$349
CT27V(D) \$625
CT28V(D) \$699
CT27V(D) \$569-625
CT28V(D) \$699
CT29V(D) \$899
McIntosh
MX110 \$199-1699
MX112 \$399-449
MX113 \$399-549
MX114 \$399-499
MX117 \$999-1099
MX118 \$1799-2339
MX130 \$2499-3499

TUNERS
Accuphase
T107(G) \$379
T109(D) \$2469
Acoustic Research
FM(AI) \$99
Carver
TX8R(D) \$319
Day Sequerra
1(M) \$7000
BROADCAST-MONITOR \$7680
FM-REFERENCE(D) \$4479
STUDIO \$2279
Dynaco
AF6 \$99-199
FM3 \$49-199
Fisher
FM270A(AI) \$39
50R(F) \$49
Harman Kardon
CITATION-23 \$149-199
F1000T(AI) \$49
IIIX \$99-399
Lafayette
LT225(AI) \$479
Magnum-Dynalab
ETUDE \$759-1299
F205B17(D) \$239
FT101AB17(D) \$729
FT-R(D) \$398
Marantz
10B(EX) \$2995
McIntosh

MR55 \$299-1000
MR55A \$299-599
MR65 \$399-999
MR65B \$199-800
MR66 299-799
MR67 \$249-799
MR71 \$199-1299
MR73 \$3-499
MR74 \$549-699
MR75(EX) \$899
MR77 \$599-699
MR78 \$999-1995
MR80 \$999-1599
MR500 \$549-649
MR7082(EX) \$995
MR7083(M) \$1299
MR7084(EX) \$1099
Meridian
104(EX) \$99
204(AI) \$199
Onkyo
T9090-II(D) \$699
Proton
AT670(EX) \$199
Scott 315(AI) \$49
Sony
ST3950SD(EX) \$49
Tandberg
TPT3001(EX) \$299

TURNTABLES
Acoustic Research
XA \$99-199
B&O
RX2(AI) \$49
Dual
1215(F) \$45
1226(F) \$35
Fons CQ30(EX)
\$199
Marantz SLT12
\$299 **Sota**
SAPPHIRE(EX)
\$499
Tensai DL102(N)
BO Thorens
TD124(G) \$399
VPI
ARIESJMW(D)
\$3589
HW19-JR/PT6(D)
\$895
HW19(EX) \$399
HW19-III(EX) \$949
TNT-JR(D) \$2369
TNT-3(D) \$4216

VIDEO DISC PLAYERS
Marantz
LV500(D) \$349
McIntosh
MLD7020(EX) \$2399

Philips
CDV487(N) \$520
CDV600(EX) \$299
Pioneer
LD660(EX) \$199
LD1100(EX) \$199

VIDEO EQUIPMENT
Philips
VR6705(M) \$379
Sony
XV5000W \$49-99

-WANTED TO BUY- Trade in your old components

Accurus, Acoustic Research, Apature, Apogee, Aragon, Audio Alchemy, AudioControl, AudioQuest, Audio Research, B&K, B&W, Cardas, Carver, Cary, Cello, Conrad-Johnson, Counterpoint, Crown, dbx, Dahlquist, Denon, Dunlavy, Duntech, Dynaco, Infinity, JBL, KEF, Klipsch, Krell, Levinson, Lexicon, Magnum-Dynalab, Marantz, Martin-Logan, McIntosh, Nakamichi, Proac, Proceed, Quad, Revox, Rotel, Rowland, Sequerra, Spectral, SOTA, Sound Lab, Stax, Tannoy, Theta, Thiel, VAC, VTL, VPI, Vandersteen, Velodyne, Wadia, Western-Electric, Wilson & other High End and Vintage Audio Equipment.

Looking for something special? We'll find it or we may have it! New items arrive daily! CALL NOW!

AUDIO CLASSICS, LTD. 8AM-5PM M-F ET 607-865-7200 FAX: 607-865-7222

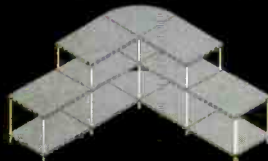
E-Mail: info@audioclassics.com

CD STORAGE CONNECTION
 CALL 1-800-445-6066, 9AM-5PM EST.
 FOR ADVERTISING INFORMATION

Don't read this if you already own a Component Rack ...
because you'll probably want to replace it with Asana[®] by Soricé.
The most versatile and innovative acoustical shelving system ever!



- Here are just a few reasons why...
- Units assemble quickly without tools
 - Flexible shelf spacing accommodates all audio/video components
 - Premium solid hardwood shelves
 - Solid steel 3/4" dia. support columns
 - Vibration absorbing design for improved performance & sound
 - Durable maintenance-free finishes provide a lifetime of service
 - Versatile, expandable modular design
 - Make corner units & more with the unique in-line bridge system
 - Leveling feet are included with all units. Acoustical spiked feet & twin-wheel casters are available



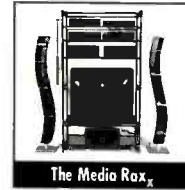

SORICÉ *Setting the Standards in Audio/Video Storage Systems*
 PO Box 747-63, Nutley, NJ 07110
 Call: 800-432-8005 Fax: 201-667-8688
 e-mail: sor.ceav@aol.com

We encourage you to get our free full-color literature package. When you compare Asana[®] with any other system we're sure you'll agree that nothing even comes close.

BILLY BAGS
 AUDIO/VIDEO FURNITURE
 DESIGN

"We will even design a piece to your exact specifications".

Call us today for your local dealer and a copy of our Newsletter with product photos and specifications.

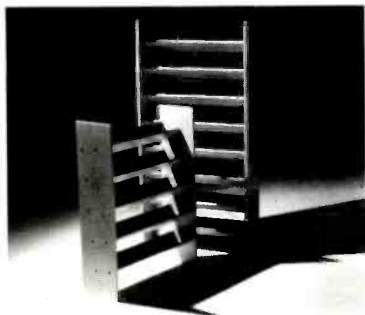


NEW!



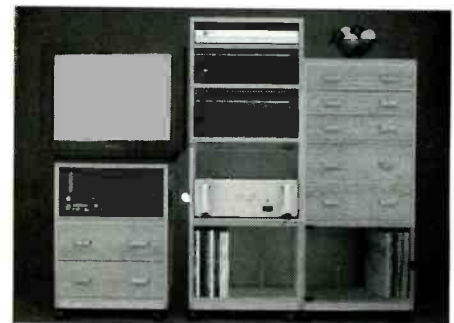
The City CD Towers
 Modular CD storage. Available in 6 different sizes. Easy to assemble.

4147-A Transport St. - Ventura, CA 93003
805-644-2185 Fax 805-644-0434



STORADISC™ - See why CD Review picked our Library Series as their "top choice". Fine-furniture quality in a variety of finishes and sizes. Call or write DAVIDSON-WHITEHALL, 555 Whitehall Street, Atlanta, GA 30303. 1-800-848-9811.

Great For Home Office & Travel
 Call to Order and for Color Brochure
1-800-260-9884 *\$49.95 Includes a Free binder
  **Radial Access**
 Compact Storage for Compact Discs



America's best disc, tape and component storage system
 Free mailorder brochure (please mention Audio)
 Per Madsen Design (415) 822-4883
 P.O. Box 882+64, San Francisco, CA 94188

MODULAR STORAGE CABINETS

Design your own entertainment center. This modular grouping accommodates a large rear projection TV & A/V equipment and up to 1,600 CDs or 360 videos, lasers, LPs, liquor, photos, etc. All for only \$1,394. Let your imagination run wild.

Open Wide & Say Ahhhh!
 This Cabinet holds 800 CDs or 180 videos
 Caddy Optional

The Look of Leather CAN-AM The Strength of Steel
800-387-9790 or 905-475-6622 <http://www.io.org/~canam>

The DISC BLOCK™

\$14.99
 + \$3.50 s&h
 M/C, VISA, Chk. or M.O.



- Convenient and attractive method for organizing up to 5 jewel boxes after loading CD player
- Milled from a 2" block of solid Rock Maple hand rubbed to a beautiful satin finish
- Unique inclined design allows you to easily identify titles of CD's in play
- Rubber feet grip tight and prevent marring of fine furniture or stereo components


 P.O. Box 91402, Santa Barbara, CA 93190
Call 1-800-910-0087
Fine Wood Products

The Ultimate
STORAGE CABINET

Made in USA



The Cube

by Lorentz Design

Stores
306 CD'sor any combination
of CD's, CD-ROM, VHS Cassettes, etc.

- Featuring our patented ALLSTOP STORAGE SYSTEM, no slots, no plastic molds, no wasted space • Full-extension drawer slides • From high quality oak veneers and hardwood
- 23" H x 19 1/2" W x 17 1/2" D • Fully assembled • Stackable •

Available In Light, Medium, Dark Oil Stain(\$225) & Black (\$235) - Plus shipping and handling.

to order or for a free, color brochure

Call 800-933-0403

LDI, Inc. • P.O. Box 277 • Lanesboro, MN 55949

Fax: 507-467-2468 • Or e-mail us your brochure request at lorentz@polaristel.netAt last.....
the perfect way to store
CD's; our CD box holds

60 CDS

in light or dark oak

@ \$69.00, or walnut,

@ \$74.00, all plus \$7.00
for shipping & handling.

Hills Products

P.O. Box 55 Candia, NH 03034 - call us at
1-800-247-2018 with orders - or for a free
catalog of all our fine products!The **AUDIO**
CD STORAGE CONNECTIONputs manufacturers of CD
storage units in touch with
the ideal audience...
CD purchasers
unsurpassed in size, buying
activity & the need for storage
of their ever-growing
CD collections!Take advantage of this ideal
opportunity to increase your
company's sales by
participating in the next
CD STORAGE CONNECTION

For advertising information call:

1-800-445-6066

(Monday-Friday, 9-5 EST)

or Fax 212-767-5624

ARIZONA

High End.

Finally a store that offers *real* advice,
from *real* people on products that can
make a difference.The Finest in Home Audio, Theatre and Custom
From Around the World Including:ADCOM AUDIOQUEST AUDIOTRUTH
CALIFORNIA AUDIO LABS CLEMENTS ENERGY
EXPOSURE GRADO LEXICON LINN
MARK LEVINSON MARANTZ MIRAGE
NAKAMICHI PROCEED PROTON REL ROTEL
SHARPVISION SOLID SONUS FABER
TARA LABS VIDIKRON WADIA and more.*Sounds Like Music*
REAL HI FI SYSTEMS

2734 W. BELL RD., SUITE 1306, PHOENIX, AZ 85023

Servicing the Southwestern United States • Territorial Restrictions

602-993-3351

CALIFORNIA

dream
systemCall us today and let us make your
dreams a total reality!

Reference
AudioVideo
Ask us how.

310 517-1700

310 517-1732 fax

18214 Dalton Avenue, Dept A
Gardena, CA 90248
email: rav2000@aol.comCertified installations (CEDIA, THX)
State contractor's license #725552

MAINE

Acurus ... Aragon ... Audio Research
... Creek ... CWD ... Denon ... Grado
... Jamo ... JM Labs ... Jolida ...
Lexicon ... Magneplaner ... Magnum
Dynalab ... Mark Levinson ... NAD ...
Prometheans ... PSB ... Revolver ...
Rotel ... SME ... Sota ... Sound
Connections ... Stax ... Stewart ...
Sumiko ... Syndex ... Synergistic
Research ... Thoren ... Transparent
Audio ... And Much More!

Hi Fi ExchangeFORESIDE MALL • ROUTE ONE
FALMOUTH, ME 04105

(207) 781-2326

CALIFORNIA

EXPERIENCEOUR 25 YEARS OF EXPERIENCE
DESIGNING QUALITY AUDIO/VIDEO
SYSTEMS WILL PROVIDE YOU WITH THE
BEST EXPERIENCE IN YOUR OWN HOME.OFFERING YOU THE BEST VALUE
ON OVER 40 QUALITY LINES INCLUDING:Adcom, Angstrom, Apogee, Atlantic Technology, Audible Illusions,
Audiolab, Audoprisim, AudioQuest, AudioTruth, Definitive
Technology, Denon, Grado, Hitachi, Lexicon, Livan, Mc Cormack,
M & K, NAD, NEAR, Paradigm, Parasound, Pioneer, Power
Wedge, Rotel, Runco, Stax, Sumiko, Sunfire, Theta, Totem,
Toshiba, VAC, Velodyne, XLO, and more!!

**Systems
Design
Group**

(310) 370-8575

1310 Kingsdale Ave.
Redondo Beach, Ca.
90278Tue-Fri 11 am - 7 pm
Sat 11 am - 6 pm

ILLINOIS

ELECTRIFY
YOUR LISTENING EXPERIENCE

FOR YOUR FREE CATALOG
CALL 1-800
AUDIO-HI
(1-800-283-4644)

LEGACY
A-U-D-I-O
3021 SANGAMON AVE.
SPRINGFIELD, IL 62702

MASSACHUSETTS

The Best Values In Hi End Hi-Fi.

audio studioAuthorized sales and service for:
Audible Illusions, Audioquest, B&K,
Beyerdynamic, Counterpoint, Dual,
Klyne, Maplenoll, Marantz, Mirage,
Mission, Monster Cable, Morel,
NAD, Nakamichi, Oideon Products,
Ortofon, Project, Proton, QUAD,
Renaissance Audio, Revox,
Sennheiser, SME, Shure, Stax,
Straight Wire, Sumiko, Thorens,
Velodyne, VPI, and many more.

414 Harvard St., Brookline, MA 02146

(617) 277-0111

FAX (617) 277-2415

INTERNATIONAL BUSINESS ACCEPTED

DEALER SHOWCASE

NEW YORK

HIGH-END AUDIO... MADE EASIER

Serving the serious music lover since 1985, we have realized that High-End Audio has become a confusing term. Random matching of quality components, will not assure you of a system that can reproduce music. A call or visit to Audio Outlet will. We specialize in products that offer exceptional performance and value. Give us a call, lets talk music. If you just want to know what we sell, call us and ask, or order a copy of our 96 page catalog. It's only \$4.00.



**AUDIO
OUTLET** Inc.

69 S. Moger Ave., Mt. Kisco, NY 10549
914-666-0550 • FAX 914-666-0544

NEW YORK

SHOP US LAST

FACTORY AUTHORIZED DEALERS HOME THEATER

SINCE 1979
ADS • ALPINE • ATLANTIC TECH
BOSE • CARVER • DENON • INFINITY
KENWOOD • NAKAMICHI
ONKYO • SONANCE • SONY ES
VELODYNE • YAMAHA
and many we can't print!

CAR STEREO

The Sound Approach

6067 Jericho Tpke., Commack, NY 11725

800-368-2344

FULL FACTORY WARRANTY

*IN-STORE WARRANTY

PENNSYLVANIA

21 spectacular show rooms in our new, state-of-the-art facility!

SOUNDEX

HIGH-END AUDIO • VIDEO • HOME THEATER

1100 Easton Road
Willow Grove, PA 19090

215-659-8815

Acurus • Anthem • Aragon • Audio
Alchemy • Audio Research • B&K •
Cal Audio Labs • Dunlavy Audio Labs
• Dynaudio • Faroudja • Forté •
Grado • Krell • Lexicon • Magnum
Dynalab • Mark Levinson • Mirage •
Niles Audio • Onkyo • Pioneer Elite •
ProAc • Proceed • Sonic Frontiers •
Sony • StraightWire • Sumiko • Tara
Labs • Threshold • Tice Audio •
Transparent Cable • VPI • Vidikron •
Wilson Audio •
AND MANY MORE!

PENNSYLVANIA

VIDEO PLUS AUDIO

WE DELIVER

SPEAKERS & SUBS

AUDIO COMPONENTS



VIDEO
EQUIPMENT

HOME THEATER PACKAGES

We carry too many
products to list.
Stop in our
showroom at

6533 Roosevelt Blvd.,
Philadelphia, PA 19049
MON-SAT 10-9 SUN 12-5

or call us for door to door delivery

800-226-6784

<http://www.videoplusaudio.com/> -VPA
email: info@videoplusaudio.com

VERMONT

SENSIBLE, PERSONAL HiFi ADVICE,
TOLL-FREE

HERE IN VERMONT, PEOPLE DEMAND VALUE
WE DON'T WASTE CUSTOMERS' MONEY,
AND NEITHER DO THESE FOLKS.

ADCOM ATLANTIS AudioQUEST
BiW* CASTLE GRANO
MONSTER NAD ONKYO
ORACLE PSB ROTEL*
STANDESIGN TARGET
TDL WHARFEDALE
* TERRITORIAL RESTRICTIONS

800 456-4434

(802) 251-5855

100% FINANCING AVAILABLE
FREE INSTALLATION IN
NEW ENGLAND & NYC
5-YEAR WARRANTIES
ON ALL NEW EQUIPMENT

SCIENTIFIC
STEREO

128 Main St

BRATTLEBORO VT 05301

TEXAS

AUDIO BY DESIGN

MAKE US AN OFFER... WE DELIVER!

Acurus
Angstrom
Aragon
Arcam
AudioQuest
Bryston
CAL Audio
Citation
Enlightened Audio
Denon
Jelosa
Melos

Mirage
Niles
Onkyo
Parasound
Quicksilver
Rega
Ruark
SharpVision
Snell
Sonic Frontiers
Stand Design
Threshold

FACTORY AUTHORIZED

CALL FOR LINES NOT LISTED

(512) 458-1667

911 W. Anderson Ln. #116
Austin, TX 78757

VIRGINIA

THE BEST IN HOME GROWN AUDIO

With over 20 years of experience in
hi-end audio equipment, we proudly
inventory the following products:

- ◆ Quad
- ◆ Accuphase
- ◆ OCM
- ◆ Magnum
- ◆ Cardas
- ◆ Epos
- ◆ Von Schweikert
- ◆ Sonic Frontiers
- ◆ Spondor
- ◆ Coda
- ◆ Kimber
- ◆ B&K
- ◆ Acrotec
- ◆ Tara Labs
- ◆ Alon
- ◆ Creek

We have a huge assortment of accessories and
many more brands to choose from. We also
offer a large inventory of used equipment.

Call For Information Toll Free:
1-800-752-4018



Hi-Fi Farm

616 Plaza, Suite 5, Moneta, VA, 24121
Or Order On Line At:

<http://www.hififarm.com>

WISCONSIN

the Sound Seller

Authorized Dealer For:

- ADCOM
- ALTEC LANSING
- ATLANTIC TECHNOLOGY
- AUDIOCONTROL
- CARVER
- CELESTION
- CLARION
- CWD
- GRADO
- HARMAN KARDON
- JAMO
- KEF
- KICKER
- LEXICON
- MONSTER CABLE
- MTX
- NAD
- NAKAMICHI
- NILES AUDIO
- NITTY GRITTY
- OMNIMOUNT
- ONKYO
- PANAMAX
- POLK AUDIO
- PROAC
- PSB
- RECOTON
- ROCKFORD FOSGATE
- SANUS SYSTEMS
- SONY DSS
- SONY ES
- SONY VIDEO
- SOUND ANCHORS
- SOUNDSTREAM
- STAX
- TARGET
- THORENS

2808 Cahill Road, P.O. Box 224
Marinette, WI 54143 • (715) 735-9002

1-800-826-0520

WISCONSIN

the Happy Medium
Expensive Electronics Without the Expense!

* ARCHITECTURAL AUDIO	* FIELD RECORDERS
* DAT	* DSS
* MINDISC	* SONY DST
* WORLD BAND RADIO	* CUSTOM INSTALLATION
* PRO WALKMAN	* HOME THEATER
* CABLES	* ACCESSORIES

* ADS	* NAKAMICHI
* ATLANTIC TECHNOLOGY	* NILES AUDIO
* BANG & OLUFSEN	* ONKYO
* CARVER	* POLK AUDIO
* CELESTION	* PSB
* ENERGY	* PROAC
* GRADO	* SANUS
* HARMAN KARDON	* SONY DSS
* JVC	* SONY ES
* KEF	* SONY VIDEO
* LEXICON	* SENNHEISER
* MONSTER CABLE	* TARGET
* NAD	* THORENS

430 State St. Madison, WI 53703 • FAX 1(608)255-4425
1-800-906 HI-FI (4434)

DEALERS...

The best place to be seen is where people are looking. And each month, both enthusiasts & dealers read **AUDIO** for information.

The **AUDIO** Dealer Showcase

is an ideal forum to reach interested audio/video enthusiasts who are active buyers themselves, and who advise others on stereo and video purchases.

The Dealer Showcase is an exclusive section designed to showcase your advertising in **AUDIO**.

To place your ads, or for further information call Toll Free:

1-800-445-6066

9am to 5pm est
or

Fax your order to
(212) 767-5624

PLEASE NOTE: It is impossible for us to verify all of the claims of advertisers, including product availability and existence of warranties. To confirm that an advertiser is authorized to sell a product, we suggest you contact the manufacturer directly. Please review our *Tips for Mail Order Purchasers* in this section.

AUTHORIZED

AUDIO UNLIMITED in Colorado offers Accuphase, Acoustic Energy, Acrotec, AirTight, Airtangent, Audio Meca by Pierre Lurme, Audio Note, Basis, Benz-Micro, Bitwise, Chang, Chario, CODA, Zoethecus, Day-Sequerra, Dynavec-tor, Ensemble, Graham, Harbeth, Ikeda, JM Labs, Kuzma, Magnum Dynalab, Magro, Micromega, Wilson Benesch, Morch, Musical Design, Music Metre, Muse, Symphonic Line, Onix, RoomTunes, Solid Steel, Sonoran, Sound An-chor, SOTA, Decca, Totem, Unity Audio, Vimak, Wheaton Triplane, YBA and more...PHONE/FAX John Barnes at (303)691-3407. Audio Unlimited, 2341 West Yale Ave., Englewood, CO 80110. VISA and MC accepted.

AUDIO VIDEO SPECIALTIES. Authorized dealer for AMC • Arcam • Audio Magic • Conrad-Johnson • Dynaudio • Elac • Grado • Jamo • Janis • Panamax • Platinum • Proton Audio • Sanus • Sonographe • PH: (414) 963-9928. 3801 N. Oakland Ave., Shorewood, WI 53211.

AUDIOPHILE & SCHOLAR

UNIVERSITY AUDIO SHOP, MADISON, WI
AUDIO RESEARCH, KRELL, Linn, YBA, Aragon, Acurus, B&K, MARTIN LOGAN, VANDERSTEEN, NHT, PARA-DIGM, Spica, Hales, Totem, Von Schweikert, Ariel, Creek, EAD, Micromega, CAL, Golden Tube, Tara, Lexicon.(608) 284-0001.

FOR SALE

Long Islands' Entertainment Expert

AudioDen

Knowledgeable Service, Exceptional Products and Competitive Prices. Call us!

Acurus	Mesa
Adcom	Mirage
Angstrom	MIT
Aragon	Nakamichi
Audible Illusions	Paradigm **
BAT	Proceed
B&W **	REL
CAL	Rotel **
Citation	Sonus Faber
Definitive Tech.	Sonic Frontiers
Dunlavy	Theta
Elite Pioneer	Velodyne
Magnepan	Vidikron
Marantz	Von Schweikert
Mark Levinson	Yamaha
McIntosh	** In Store Only

Visit Our New Location!

2845 Middle Country Road - Lake Grove New York 11755

516 - 585 - 5600

SAVE 40% ON HIGH-END home speak-ers, subwoofers, amplifiers. FREE CAT-ALOG, 3021 Sangamon Avenue, Spring-field, IL 62702. 1-800-283-4644.

ONKYO, PIONEER ELITE, many more! Call for our list of Demo's and Trade-ins CHAMPAGNE AUDIO: (217) 355-8828.

TIPS FOR MAIL ORDER PURCHASERS

It is impossible for us to verify all of the claims of advertisers, including product availability and existence of warranties. Therefore, the following information is provided for your protection.

1. Confirm price and merchandise information with the seller, including brand, model, color or finish, acces-sories and rebates included in the price.
2. Understand the seller's return and refund-policy, including the allowable return period, who pays the postage for returned merchandise, and whether there is any "restocking" charge.
3. Understand the product's warranty. Is there a manufacturer's warranty, and if so, is it from a U.S. or foreign manufacturer? Note that many manufac-turers warranty card, if you purchase from an unauthorized dealer, you are *not* covered by the manu-facturer's warranty. If in doubt, contact the manufacturer directly. In addition to, or instead of, the manufac-turer's warranty, the seller may offer its own warranty. In either case, what is covered by warranty, how long is the warranty period, where will the product be serviced, what do you have to do, and will the product be repaired or replaced? You may want to receive a copy of the written warranty before placing your order.
4. Keep a copy of all transactions, including cancelled checks, receipts and correspondance. For phone orders, make a note of the order including merchandise ordered, price, order date, expected delivery date and salesperson's name.
5. If the merchandise is not shipped within the promised time or if no time was promised, 30 days of receipt of the order, you generally have the right to cancel the order and get a refund.
6. Merchandise substitution without your express prior consent is not allowed.
7. If you have a problem with your order or the merchandise, write a letter to the seller with all the pertinent information and keep a copy.
8. If you are unable to obtain satis-faction from the seller, contact the consumer protection agency in the seller's state or your local Post Office.

If, after following the above guide-lines, you experience a problem with a mail order advertiser that you are unable to resolve, please let us know. WRITE to Susan Ross, Special Marketing, 45th floor, Hachette Filipacchi Magazines, 1633 Broadway, NY, NY 10019. Be sure to include copies of all correspondence.

CLASSIFIED ADVERTISING
 CALL 1-800-445-6066, 9AM-5PM EST.
 FOR ADVERTISING INFORMATION

FOR SALE

NEW JERSEY'S BEST SELECTION AUDIO CONNECTION

STATE OF THE ART SYSTEMS FROM \$1,500+

Vandersteen	Rotel	Wadia
B and W	Sonic Frontiers	Cary
Proac	Audible Illusions	Arcam
Epos	Naim	Audio Alchemy
PSB	Quicksilver	Ayre
Platinum	Music Reference	Audiolab

615 Bloomfield Avenue, Verona, New Jersey 07044
 Phone: (201) 239-1799 • Fax: (201) 239-1725

HI FIFEXCHANGE. Large selection of quality USED highend components at huge discounts. We buy, sell & trade. Call for inventory list. (718) 423-0400 or visit our showrooms at 251-11 Northern Blvd, Little Neck, NY 11363.

ABARGAIN: STAX SIGN/LAMBDA \$1,350; OMEGA/SRMT1 \$2,900; SIGN/LAMBDA SRD/7 \$499; ED-1; AUDIO-TECHNICA AT-OC9 \$259; ALL UNUSED (212)966-1355.

WHOLESALE CONNECTION
 TO ORDER CALL **1-800-226-2800**
<http://www.wholesaleconnection.com>

Receivers

JVC	
RX518	Call RX718
RX618	Call RX818
TECHNICS	
SAEX500	Call SAE900
SAEX700	Call SATH50
KENWOOD	
KRV6080	Call KRV9080
KRV7080	Call KRV9080
KRV8080	Call KRX1000
PIONEER	
VSX455	Call VSXD704S
VSX505S	Call VSXD903S
VSX604S	Call VSXD3S
HARMON KARDON	
AVR20	Call AVR80
AVR25	Call FL8300
AVR70	Call FL8450
ONKYO	
TSXV525	Call DXC220
TSXV727	Call DXC320

CALL FOR OTHER BRANDS

CD Players

JVC	
XLF152	Call XLM218
XLF252	Call XLM418
TECHNICS	
SLPD887	Call SLMC400
SLPD1010	Call SLMC50
KENWOOD	
DPR4080	Call DPJ1070
DPR5080	Call DPJ2070
DPR6080	Call
PIONEER	
PDF605	Call PDF905
PDF805	Call PDF1005

CALL FOR OTHER BRANDS

Tape Decks

JVC	
TDW218	Call TDW718
TDW318	Call TDV662
TECHNICS	
RSTR252	Call RSTR575
RSTR373	Call
KENWOOD	
KXW4080	Call KXW6080
PIONEER	
CTW505	Call CTW704RS
ONKYO	
TARW411	Call TARW505

CALL FOR OTHER BRANDS

DAT RECORDER

Portable & Home

MINI DISC RECORDER

Portable & Home

DVD - Now Available

DSS - All Brands Available

Camcorder

JVC

GRAX810 Call GRAX1010 Call

GRAX910 Call GRVD1 Call

PANASONIC

PVD406 Call PVD506 Call

SHARP

VLE39 Call VLE49 Call

CANON SONY

ESS900 Call CCDTRV30 Call

Portable CD Players

SONY

D247 Call D844 Call

D242CK Call D848 Call

KENWOOD

DPC662 Call DPC861 Call

PANASONIC

SLS241C Call SLSW202 Call

SLS341C Call SLSW404 Call

CALL FOR OTHER BRANDS

Home Speakers

BOSE	
AMSII	Call 901
AM7II	Call 701
LS12	Call 501
LS20	Call 301
100BK	Call 151BK
INFINITY	
RS2000.2	Call SM55
RS2000.3	Call SM85
RS2000.4	Call SM105
RS2000.5	Call SM125
RS2000.6	Call SM155
RSVIDEO	Call VIDEO1
B.I.C.	
ADATTO	Call V802
V52si	Call V504
V52cir	Call V604

Powered Subwoofer

INFINITY	BU1	Call
INFINITY	BU2	Call
MTX	P5W101	Call
KENWOOD	SW200	Call
KENWOOD	SW300	Call
B.I.C.	V1000	Call
B.I.C.	V1200	Call
AIWA	TSW5	Call
AIWA	TSW9	Call

Mini Systems

AIWA	
NSXV8000	Call NSXAV800
NSXV9000	Call NSXAV900
PIONEER	
CCS205	Call SCCH64
CCS305	Call SCCH94
JVC	
UXC30	Call MXD7T
MXD47	Call MXD8T

Car Stereo

JVC	
KSRT404	Call KDG5711
KSR414	Call KDG5911
KDMK78RF	Call KDMK79RF
PIONEER	
KEHP404	Call DEH53
KEHP505	Call DEHP625
KEHP606	Call DEHP725
KEHP808	Call DEHP825
DEH43	Call DEHP88
DEH59	Call CDXFM67
DEH43	Call CDXFM128
KENWOOD	
KRC302	Call KDC5005
KRC502	Call KDC6005
KRC702	Call KDC7005
KRC802	Call KDC8005
KRC902	Call KDCPS905
KDCC604	Call KDCC803

Radar Detectors

BEL	
840	Call 945i
850sti	Call 615sti
855sti	Call
WHISTLER	
1430SWH	Call 1490SWH
1465SWH	Call
UNIDEN	
LRD6199	Call LRD6499
LRD6399	Call

Telephones

SONY	
SPPQ120	Call SPPD900
SPPQ25	Call SPPD910
PANASONIC	
KXT9500	Call KXT9550
KXT9520	Call KXT9300
Laser Discs	
CLDD505	Call CLDD704

CALL FOR OTHER BRANDS

Call for Brands & Models Not Listed

24 HR. FAX (718) 997-6652 P.O.'s Welcome
 We accept M/C, Visa, Amex, & C.O.D. We ship UPS & FEDEX

WHOLESALE CONNECTION 63-48 108th St. Forest Hills, NY 11375

FOR SALE

AUDIO BY VAN ALSTINE ΩMEGA III active feedback amplifiers, full function buffered preamplifiers, basic line-headphone preamplifiers, phase inverters, and parallel processing DACs provide stunning clarity and musicality with economical prices. rugged engineering, and long-term durability! New ultratransparent BIRO LOUDSPEAKERS give \$6000 performance for under \$1600. FET-VALVE hybrid tube DACs, amplifiers, and preamplifiers achieve ultimate faithfulness to the spirit of the music. Active feedback circuits for DYNACO and HAFLER amplifiers set new standards for transparency, dynamic range, and liquidity. Recycle your PAS, PAT-4, PAT-5, and ST-70 with AVA circuits (kit of wired) from \$199 including new cards and precision controls. Free illustrated catalog with reviews. Audio by Van Alstine, 2202 River Hills Drive, Burnsville, MN 55337. (612) 890-3517. Fax: (612) 894-3675. E-mail: avahifi@aol.com

BUY DIRECT FROM JAPAN AND SAVE \$\$\$!
SUPPLIERS OF JAPANESE FAMOUS BRANDED ELECTRONICS. WORLD-WIDE SHIPPING AVAILABLE. RAMSONS CORPORATION (JAPAN) LTD. TELEPHONE: 6-271-6185; FAX: 6-271-6183. E-MAIL: ramsons@sun-inet.or.jp

JPS LABS, The GOLDEN FLUTE Bass Alignment Filters, The SUPERCONDUCTOR line of unique cables; analogies for beautiful music. Please ph/fax 716-685-5227 or visit <http://jypn.com/jpslabs> anytime.

REMOVE VOCALS from music- Tanco Voice Decoder-\$79.95. Fully guaranteed. Call (813) 847-9319 for pre-recorded demo/ordering information.

FREE SHIPPING! PLUS:
 FRIENDLY ADVICE! MIRAGE, PS, KEF, PARASOUND, KINERGETICS, NAD, AUDIOQUEST, CARVER, KIMBER, STRAIGHTWIRE, MORE! READ BROTHERS, 593 KING, CHARLESTON, SC 29403. (803) 723-7276.

MUSICAL CONCEPTS SIGNATURE
 Signatures have arrived! New mods with HyperFast diodes, BlackGate caps and more. Signature updates for all previous mods—now! Adcom, Audio Alchemy, B&K, Dyna (tubes, too!) and Hafler mods! PA-2 front-end board for Hafler amps! Signature CD is ready! Enigma, Epoch CD players and CDT-4 Transport \$795—Highly-rated by *The Audio Adventure*. Marantz, Rotel, Pioneer CD mods. Musical Concepts, 5749 Westwood Dr., St. Charles, MO 63304. (314) 447-0040.

High-end audio components. All brands available. The lowest prices. Friendly service and advice. Call today. AUDIO AMERICA (Virginia). 1-540-745-2223.

HOME THEATER SPECIALISTS!!! 70 premier brands. Alon, Angstrom & Carver to HK/Citation & VMPS. 30 subwoofers!!! Honest Advice. **TECH ELECTRONICS (352) 376-8080.**

DJ & Nightclub Sound, Lighting & Video CATALOG

FREE 88-Page Catalog with a huge selection of name brand professional gear for DJ's, Clubs & Musicians all at discount prices!

Call Today 800-672-4268

Mail Order Center: 11711 Monarch St., Garden Grove, CA 92841 Retail Super Store: Music To The Max 14200 Beach Blvd., Westminster, CA 92683 (714) 379-1994



PRO SOUND & STAGE LIGHTING™ OUR 20th YEAR!

SINGERS! REMOVE VOCALS

Unlimited, Low Cost, Instantly Available Background Music from Original Standard Recordings! Does Everything Karaoke does... Better and gives you the Thompson Vocal Eliminator™ Free Brochure & Demo Tape

LT Sound Dept. Ad-1
 7980 LT Parkway, Lithonia, GA 30058
 Internet-<http://ltsound.com>
 24 Hour Demo/Info Request Line (770)482-2485-Ext 51
When You Want Something Better Than Karaoke!



MONEY SPENT SOUNDLY

AUDIO EXCELLENCE, INC.

THE BEST AUDIO & VIDEO EQUIPMENT FROM ALL MAJOR MANUFACTURERS
DENON • NAKAMICHI • ONKYO
SONY ES • YAMAHA • BOSE • KLIPSCH
B+W • VELODYNE • AND MORE!

SPECIALISTS IN HOME THEATRE SYSTEMS & HIGH-END AUDIO

CALL NOW (212) 229-1622

145 West 24th Street, New York, NY 10011
 All Major Credit Cards Accepted

FOR TWENTY-FIVE YEARS WE HAVE BEEN THE SOURCE FOR ALL OF YOUR BLANK AUDIO/VIDEO TAPES AND ACCESSORIES, EVEN REEL-TO-REEL TAPES FOR STUDIOS, AT DISCOUNTED PRICES. CATALOG AVAILABLE. SOUND INVESTMENT CORPORATION, 3586 PIERCE DRIVE, CHAMBLEE, GA 30341. (800) 659-TAPE (8273). IN GA (770) 458-1679. FAX: (770) 458-0276.


STEVE'S CONSIGNMENT SHOP HI FI FARM AND STEVE'S AUDIO ADVICE NOW OFFERS CONSIGNMENT OPPORTUNITIES FOR THE USED AUDIO MARKET. TOP DOLLAR OFFERED. CALL FOR INFORMATION. NEW EQUIPMENT ALSO. CALL 1-800-752-4018.

LOWEST PRICES! ADCOM, ARAGON, B&K, B&O, B&W, BRYSTON, CARVER, CELESTION, CITATION, CLASSE, DEFINITIVE, DENON, DYNAUDIO, H/K, KEF, LUXMAN, MIRAGE, NAKAMICHI, NHT, ONKYO, POLK, SUNFIRE, THIEL, VELODYNE, WADIA, YAMAHA & 36 MORE. INCORPORATED 1964.

NORCROSS, INC.
(770) 772-7700

AFFORDABLE JITTER-FREE SOUND! Our Basic Player (\$549) and the Reference One transport (\$649) have made BOUND FOR SOUND'S Components of Merit List. Jitter reducing updates and kits also available. Dealer inquiries welcome. G&D TRANSFORMS, (602) 650-1155. E-mail transforms@aol.com

AUDIO CABLES & MORE



DON'T PAY EXORBITANT PRICES! FOR TOP QUALITY!

We have equaled the high-priced brands. Sonic equivalents at a fraction of their cost. We demystify wire technology. Ask for literature.

AND MORE! DACS, Anti-Jitter Units, CD Players/Transports, Speaker Stands, Speakers, Home Theater, Prologic, Accessories-& MORE.
 Call 800-321-2108 24hrs./day for free catalog.

L A T INTERNATIONAL
 Dept. A 317 Provincetown Road
 Cherry Hill, NJ 08034

LOUDSPEAKERS

LOUDSPEAKER COMPONENT - KITS. Audio Concepts, Dynaudio, Eclipse, Elton, LPG, Vifa, more! Crossover parts, design books & repairs. "MENISCUS", 2575 28th St., S.W., Dept. A., Wyoming, MI 49509. (616) 534-9121. meniscus@iserv.net

LOUDSPEAKERS

REPAIR FOAM ROT YOURSELF!

- Save \$\$\$ with original kit!
- Kits to fit any speaker—Advent, AR, JBL, Bose, Infinity, EV, etc.
- Surrounds, adhesive & instructions
- MC/VISA/Discover—no CODs
- Call with make & model for best price
- Phone 24 hrs. 704-697-9001

or Toll Free 800-747-3692
P.O. Box 1088 • Flat Rock, NC 28731



STPEP
AUDIO TECHNOLOGIES



\$499.95 FOR PR. OF JBL 4312CBK STUDIO MONITOR SPKRS! BRAND NEW! USED BY 70% OF ALL RECORDING STUDIOS FOR MIXING & EVALUATION. 3-WAY WITH 12" WOOFER, 5" MID-RANGE & DOME TWEETER. 100 WATT CAPACITY. MFC. LIST \$950/\$1380 WALNUT. JBL PARAGONS \$19 995. HARTSFIELD 085s \$6.999(REPRO)-\$20,000(ORIG)/PR. OLYMPUS S8-R \$4.999/PR-L200 \$1.999/PR. 300B AMPLIFIER KITS \$999! SHIPPED WORLDWIDE. VISA/MC. HAL COX, SINCE 1947. (415) 388-5711, FAX: (415) 388-3359. 164 TAMALPAIS AVENUE, MILL VALLEY, CA 94941. SAN FRANCISCO AREA.

TRUE SUBWOOFER

With phenomenal true deep bass extending below 20Hz with low distortion at a very affordable price.

The HRSW12V will extend the bass of your stereo or video system for that "air shaking all around you" effect.



HSU Research HRSW12V

Here's what experts are saying about the HRSW12V:

"...the Hsu has to be considered an outstanding bargain." Robert Deutsch, *Stereophile Guide to Home Theater* Vol. 1 No. 2, 1995

"Prodigious bass that shakes the walls..." one heck of a thunder buster." John E. Johnson, Jr., *Secrets of Home Theatre and High Fidelity*, May 1995

"...this woofer achieves a combination of extremely quick speed and gut massaging bass impact that I have seldom experienced from any subwoofer." Peter Mitchell, *Stereophile* Vol. 18 No. 1, January 1995

"has developed an enviable reputation in its few short years of existence" Thomas J. Norton, *Stereophile Guide to Home Theater* Vol 1 No. 1, 1995

"Hsu's HRSW12V is a wonderful subwoofer. It's good looking and simple to use, and its performance invites nothing less than superlatives, especially given its price" Tom Nounsaine, *Sound & Image*, February/March 1995

"The HRSW12V is one of the most potent subwoofers we have used. Sonically, it is all one could wish for, and the price is right." Julian Hirsch, *Stereo Review*, December 1994

"...all of the non-boomy, stomach-massaging bass energy was coming from a single 12-inch powered subwoofer..." Peter Mitchell, *Stereophile* Vol. 17 No. 4, April 1994

"...delivered enough punch to shake the sturdiest shelf..." Brent Butterworth, *Video Magazine*, April 1994

Send for full details on the 12V and the new 10V.



Write or call:
HSU RESEARCH
14946 Shoemaker Ave. Unit L
Santa Fe Springs, CA 90670
1-800-554-0150 (Voice)
1-310-404-3848 (Voice/Fax)

Sold factory direct with a 30 day trial - money back guarantee. 5 year manufacturer's defect warranty.

SOLEN

EUROPEAN SPEAKER DRIVER UNITS CATALOG

AIRBORNE

LA PASSION DU HAUT-PARLEUR

AUDAX

DYNAUDIO®

EDON



Peerless

scan·speak

seas

vifa

SOLEN CROSSOVER COMPONENTS CATALOG

HEPTA-LITZ INDUCTORS PERFECT LAY HEXAGONAL WINDING

STANDARD INDUCTORS PERFECT LAY HEXAGONAL WINDING

FAST CAPACITORS METALLIZED POLYPROPYLENE

SOLEN CROSSOVER & SPEAKER PARTS



SOLEN INC.
4470 Ave. Thibault
St-Hubert, QC J3Y 7T9
Canada

Tél.: 514-656-2759

Fax: 514-443-4949

E-mail: solen@quebec.net

WWW: http://www.quebec.net/solen/

Catalog US\$8.00 Refundable

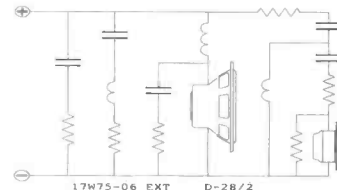
MDY-4 Dynaudio Speaker Kit

Audio enthusiasts have long known that a Dynaudio two way system is an effective way to create quality sound without creating significant debt. In comparison with any system at any price, the combination of the Dynaudio 17cm woofer with the incomparable 28mm tweeter is exceptional in all of these areas:

- Dynamic range
- Smooth response
- Phase and frequency fidelity
- Transient attack
- Reproduction of the human voice
- Lack of compression.

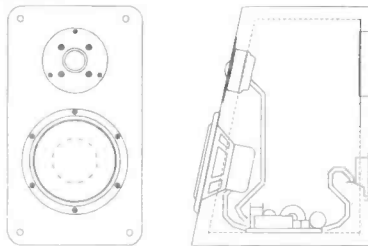
To be fair, these modest drive units cannot produce infrabass (those frequencies below 50 Hz), but in the other 99.75% of recorded material, they equal products that cost up to 10 times as much.

Madisound is proud to introduce a further refinement of this combination, the MDY-4. This quality kit uses high order filters to eliminate sweet spots in the off-axis response. The imaging is exceptional, a result of precise phase and time delay, refined in a sophisticated 14 ele-

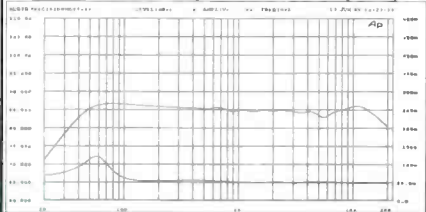


ment filter. Every part is of the highest quality; every detail is the culmination of three years of careful analysis.

Best of all, the MDY-4 is modestly priced. The complete system with oak veneer cabinets in either a clear finish or black stained finish, is \$620. Cabinets are finished, and the system can be assembled in one evening. Hundreds of satisfied music lovers have built and cherish the earlier Image Systems, and now Dynaudio and Madisound have taken another step toward Audio Perfection. Isn't it time for you to build a standard to evaluate your success as a Speaker Builder?



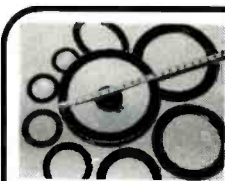
16" tall x 9" wide x 12" deep on bottom / 8.5" deep on top.



Madisound Speaker Components
(8608 University Green)
P.O. Box 44283
Madison, WI 53711 U.S.A.
Tel: 608-831-3433
Fax: 608-831-3771

LOUDSPEAKERS

CUSTOM ACTIVE ELECTRONIC CROSSOVERS, 6 to 36 dB/Oct. Also Snell, Magnepan versions. DB SYSTEMS, POB 460, RINDGE, NH 03461. (603) 899-5121.



ROTTEN FOAM?

Simply Speakers - Factory Authorized Service - All Brands JBL, Bose, Advent, EPI, CV, AR, Infinity & More!
 • Worldwide Service - Re-coning & Re-foaming.
 • Huge selection of D.I.Y. Foam Kits - We Ship Daily!
 • Foam Rot Preventative Kits.

CALL TOLL FREE TODAY!

1-800-767-4041 = SIMPLY SPEAKERS. MC/VISA/NOVUS/AMEX. 11203 49TH STREET N., CLEARWATER, FL 34622. E-MAIL: Simplyspkr@AOL.COM. D.I.Y. KITS INCLUDE: ILLUSTRATED INSTRUCTIONS, ADHESIVE & TECHNICAL SUPPORT. BEST PRICES / SERVICE / WARRANTY—GUARANTEED!!

D.I.Y. NEW FOAM KITS

A JOURNEY OF A 1000 HERTZ, BEGINS WITH A SINGLE KIT.

NEW-FOAM

CALL TOLL FREE

Speaker Repair & Replacement Parts
 Nationwide Service Since 1979

1-800-NEW-FOAM = 1-800-639-3626 NATIONWIDE SPEAKER REPAIR, PARTS, AND ACCESSORIES. Call us with your speaker problems. VISA/MC/AMEX/DISC. EMAIL NEWFOAM@msn.com

ONLY ONE BRAND



www.OhmSpeaker.com

Service, upgrades, trades and new speakers. Factory direct from Ohm Acoustics, 241 Taaffe Place, Brooklyn NY 11205 (718) 783-1555; FAX (718) 857-2472; email OhmSpeaker@AOL.com

RECORDS

LV/CD/RECORD COLLECTOR'S SUPPLIES. Jewel boxes, record jackets, sleeves, storage boxes, 78 sleeves, dividers, much more! Free brochure: CABCO PRODUCTS, ROOM 663, POB 8212, COLUMBUS, OH 43201. (614) 267-8468.

PRESERVE + ENHANCE + RESTORE™
 We Sell Audio Dynamite!

From Spinning 78's To The Outer Limits of Hi-Fidelity! Sound Enhancers by Philips • NuReality • Aphex • Free Catalog • KAB Electro-Acoustics, P.O. Box 2922, Plainfield, NJ 07062-0922 (908) 754-1479 • VISA/MC.

NEEDLES/CARTRIDGES & Belts—Expert Consultations, All Major Brands, One of Largest Stocks in Country including Old/Obsolete Models. NEEDLE EXPRESS. 1-800-982-2620.

HALF MILE VINYL. Large Inventory Quality Prewound LP's cleaned and graded. Send SASE for catalog to Box 98, East Wareham, MA 02538. Call 508-295-2508.

WANTED TO BUY

MARANTZ & ALL VINTAGE EQUIPMENT, HIGH-END. No one pays MORE, working or not! N.Y.S.I. (718) 377-7282, 2-6pm, WEEKDAYS.

WANTED: TUBE HI FI, CORNER/HORN SPEAKERS! Altec, Jensen, Marantz, Leak, Quad, McIntosh, Western Electric, EV, JBL, Tannoy ETC. Sonny (405) 737-3312. Fax 3355.

WANTED TO BUY

Integrated buyer, David Yo, since 1977 always buying: vintage tube Marantz, McIntosh, ARC, Quad, Leak. Vintage speakers, units from Western Electric, JBL, EV, Jensen, Altec, Tannoy, Thorens TD-124, Garrard 301. P.O. Box 80371 San Marino, Ca 91118-8371. Tel: 818/441-3942.

WANTED—JBL HARTSFIELD, EV PATRICIAN, Paragon and other speakers; Western Electric theatre equipment; tube equipment by Marantz, McIntosh etc. Bob Aranyi, 500 Satinwood Terrace, Buffalo Grove, IL 60089. (847) 634-3199.

CASH for USED AUDIO & VIDEO EQUIP. BUYING and SELLING by PHONE. CALL for HIGHEST QUOTE. (215) 886-1650 Since 1984. The Stereo Trading Outlet, 320 Old York Road, Jenkintown, PA 19046.

AUDIOPHILE RECORDS

The #1 source for audiophile LP's & CD's

Analogue Productions, Mobile Fidelity, Reference, Chesky, Sheffield, Classic, Audioquest, DCC, Golden Strings, HDCD's, [RCA LSC, Mercury, EMI & Decca originals & re-issues] & much more!
CATALOG
 \$5 USA, \$10 elsewhere, refunded with order.
1-800-716-3553

SERVICES

ACCUPHASE

AUTHORIZED SERVICE AND PARTS for all Accuphase products. Contact: ACCUTECH, 206 E. Star of India Lane, Carson, CA 90746. TEL. (310) 324-7406, FAX (310) 324-7422. Hours: 9am-4pm Pacific Time.

PARTS AND ACCESSORIES

WELBORNE LABS

200 PAGE CATALOG and DESIGN MANUAL OF HIGH QUALITY AUDIO KITS and SUPPLIES!!!

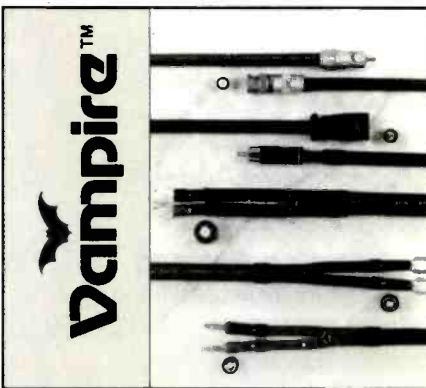
We've got Vacuum Tube and mosfet Amplifiers, Linestages Phonostages, Active Crossovers, Power Supplies, AC Line Conditioners and many other Audio Kits and Schematics.

Parts and Supplies

Hovland MusiCaps, Kimber Kaps, MIT MultiCaps, Solen WIMA and Wonder InfiniCaps; Caddock, Holco, Mills and Resista resistors; Golden Dragon, NOS RAM Labs, Sovtek and Svetlana tubes; Cardas, DH Labs, Kimber Kable Neutrik, Vampire and WBT connectors and wire; Alps Noble and stepped volume controls; Enclosures, Books and other Supplies for DIYers. International Orders Welcome. For our Catalog and Manual, send \$12 (US/Canada) \$18 (International) or call (303) 470-6585, fax (303) 791-5783 or e-mail to: wlab@ix.netcom.com with your Visa/Mastercard.

WELBORNE LABS

P.O. Box 260198, Littleton, CO 80126-0198
 Visit our Website for more info: <http://www.welbornelabs.com>



...audible results with the finest in connecting components!

SOUND CONNECTIONS INTERNATIONAL, INC.
 203 Flagship Dr.—Lutz, FL USA 33549
 PH: 813-948-2707 Fax: 813-948-2907

PARTS AND ACCESSORIES

Premium Grade Parts

Best Prices, Fast Delivery!

Absolutely the best selection of audiophile grade parts at fair prices! Extensive deep in stock inventory featuring these vendors and many more. Free catalog! MIT MULTICAP, INFINICAP, HOVLAND, SOLEN, SCR, REL-CAP, NICHICON MUSE, BLACK GATE, CADDOCK, VISHAY, MILLS, HOLCO, RESISTA, TDK, ALPS, NOBLE, EAR, DEPLEX PANELS, CARDAS, KIMBER, ACROTECH, & pure silver chassis wires, HEXFRED diodes, SOLO foil inductors, all types of audio connectors, silver contact toggle & rotary switches, stepped attenuator kits, hospital grade plugs, tubes, tools, IC's, super selection of damping materials & feet. International/overseas orders are especially welcome! Phone (415) 669-7181 or fax (415) 669-7558 for a catalog. Michael Percy, Box 526, Inverness, CA 94937

SPEAKER CABLES

GET THE MOST FROM YOUR AUDIO EQUIPMENT WITH GOLD LINE CABLE AND INTERCONNECTS
 SPENCER AUDIO TOLL FREE 1-888-421-9881

(The Affordable Aficionado)

PUBLICATIONS

Build a better loudspeaker... than anything you can buy!

Speaker Builder can show you how.

Fax your request for a FREE ISSUE to 603-924-9467 or write to: PO Box 494 Dept AU6, Peterborough, NH 03458-0494 USA

BLANK TAPES

1-800-TAPE WORLD or 1-800-245-6000
 We'll beat any price! 5.95 SHIPPING • FREE CAT.

SONY	MAXELL	TDK	FUJI
DAT-120 5.99	XLI-90 1.59	D-90 79	SVHS-T120 6.49
DAT-124 8.99	XLI-S 90 1.99	SA-90 1.49	HI 8 120 5.99
T-120V 1.69	T 120 HGX 2.49	SAX-90 1.99	BMM-120 3.49
L750BTHG 4.49	ST 120 6.99	SAX-100 2.49	DCC-90 6.99
ST-160 7.99	DAT-124 7.99	T 120 EHG 2.49	DR-190 6.99
CDR-63 5.99	UD35-90 8.99	DAT-120 6.49	JVC ST 120 5.99
MDW-74 6.49	MD-74 6.99	CDR-74 6.49	XELI-30 9.99

TAPE WORLD 720 SPRING ST. BUTLER PA 16003 FAX 412-283-8298
 QUANTITY DISCOUNT! SAME DAY SHIPPING M-F 8-5

SATELLITE TV

18" DSS DISH

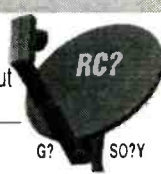
Now Descrambled
 All Channels, Movie, Local Blackout
 Sports, Special Events, All Sports

Buy New Access Card Today

Where To Get One & How Much

Send \$21.00 to: DBS DESCRAMBLERS

3993 Tyrone Blvd #608 - 170 St. Petersburg, FL 33709



NEW PRODUCTS

TIRED OF BROKEN JEWEL CASES? Discover the Allsop StrongBox™! A unique new jewel case "guaranteed not to break." For a FREE STRONGBOX™ SAMPLE call 1-800-426-4303; ask for CD offer #102.

HOME THEATER

LCD VIDEO PROJECTORS- GIANT 5' - 25' PICTURES!!!
 ULTRA BRIGHT SCREENS!!! UNBEATABLE PRICES!!!
 FREE CATALOG!!! POLI-VISION, 187-A CYPRESS, THROOP, PA 18512-1429 (PH: 717-489-3292).

TUBE COMPONENTS

SOUND VALVES™ -Quality AFFORDABLE U.S.-Made Tube Components! FREE CATALOG. Internet: www.soundvalves.com. E-Mail: jopets19@mail.idt.net. SOUND VALVES, 185 N. Yale Ave., Columbus, OH 43222-1146. Fax: (614) 279-0368; (614) 279-2383, 10-4 Eastern.

CABLE TV

CABLE DESCRAMBLERS—FM VIDEO COMMUNICATIONS: 30-DAY TRIAL, 1-YEAR WARRANTY. LOWEST PRICES! C.O.D., VISA, MC, DISCOVER. 1-800-805-8464.

Why Rent?

CABLE TV CONVERTERS & DESCRAMBLERS

1 YEAR WARRANTY!

30 DAY MONEY BACK GUARANTEE!

ABSOLUTELY LOWEST WHOLESALE/RETAIL PRICES!

MASTERCARD • VISA • DISCOVER • AMEX • COD TOLL FREE

1-888-430-4301

C.D. ELECTRONICS IS NOW SELLING CONVERTERS/DESCRAMBLERS DIRECT TO THE PUBLIC AT WHOLESALE PRICES! 30-DAY TRIAL. QUANTITY DISCOUNTS! 1-800-842-9670.

WIZARD COMPONENTS DESCRAMBLERS

WOW This is great!!

All Makes And Models Available

CABLE TV DESCRAMBLERS—We beat all prices...get cable direct! Boxes Guaranteed 2 years!! Professional, Friendly & Quick Service. Order Toll Free: 1-888-595-5456; Ext. 61.

CABLE DESCRAMBLERS/CONVERTERS. REPLACEMENTS FOR ALL MAJOR BRANDS. BEST PRICES! MONEYBACK GUARANTEE! FREE CATALOG. ALLSTAR: 1-800-782-7214.

STOP! We have the best in converters & descramblers. Call: **FOX ELECTRONICS** 1-800-888-5585

CALL 1(800)-72-BOXES FOR UNBEATABLE PRICES ON CABLE CONVERTERS & DESCRAMBLERS. MONEY-BACK GUARANTEE. DEALERS WELCOME. VISA/MASTERCARD/DISCOVER/C.O.D. QUALITY ENTERTAINMENT. WE WILL NOT BE UNDERSOLD!

CABLE TV

CABLE TV DESCRAMBLERS Best Buys Best Service Full Warranty

800-835-2330

NU-TEK ELECTRONICS Leading the way to excellence

Cable TV Converters & DESCRAMBLERS

30 DAY MONEY BACK GUARANTEE ONE YEAR WARRANTY

FREE CATALOG

1-800-956-8835

FREE CATALOG - NEW TECHNOLOGY BREAKTHROUGH - T.V. CONVERTERS AND DESCRAMBLERS SAVE \$1000's. CALL NOW - MEGA 1-800-676-6342.

GIANT SALE!!! CABLE TEST CHIPS and DESCRAMBLERS on SALE TODAY!!! BEST PRICES and SELECTION!! Let us beat your best price. UNBEATABLE GUARANTEE!! 1-800-449-9189 Anytime.

E-Z CABLE DESCRAMBLER-ANYONE can build in SEVEN STEPS with RADIO SHACK parts. PLANS/KIT FROM \$5.00 plus FREE BONUS!! 1-800-818-9103.

ATTENTION ADVERTISERS

Reach proven mail order buyers!

They turn to us when they are looking for purchasing information and advise. Advertise your products and services in a low-cost environment that sells.

Millions of your prime prospects can be found in the industry leading titles of

Hachette Filipacchi Magazines, Inc.

To place a classified ad, simply call us *Toll-Free* and reserve your space today!

1-800-445-6066

(9am- 5pm EST)

or

FAX: 212-767-5624

AD INDEX

Firm (Reader Service No.)	Page
Acrotec (1)	105
Adcom (2, 3)	7, 61
Audio Classics (4)	114 & 115
Axiss Distribution (1)	105
B & K (5)	47
B&W Loudspeakers (6)	19
Bacardi	11
Bell'Oggetti (7)	97
Bose/Wave Radio	21
Bryston Ltd. (8)	49
California Audio Labs (9)	67
Cambridge SoundWorks (10, 11)	51, 53
Carver	89
Centasound (12)	20
Chesky Records	106
Cinepro Theater Products (13)	90
conrad-johnson (14)	93
Crutchfield (15)	110
Custom Woodwork & Design (16)	82
Dave's	*107
Definitive Technology (17)	Cover II & 1, 126
Delco Electronics	73
Dunhill	17
EchoStar	21
Eosone (18)	39
Esoteric Audio (19)	13
J & R Music World (20)	109
Jensen (21)	87
Jolida (22)	25
JVC Musical Industries (23)	103
Kimber Kable (24)	98
Krell	Cover IV
Legacy Audio (25)	83
Lexicon (26)	63
M & K Sound	71
Marantz	81
Mobile Fidelity (27)	100 & 101
Music Interface Technologies (28)	2 & 3
NAD (29)	9
New West Electronics (30)	111
Paradigm (31, 32)	43, 45
Parasound	79
Pioneer	14 & 15, 55
Polk (33)	59
Radio Shack	75
Rotel of America (34)	23
Sanus (35)	91
Sennheiser (36)	104
Smirnoff	95
Sonic Frontiers (37)	77
Sony	16a-h, Cover III
Sound City (38)	112
Southern Comfort	5
Spatializer (39)	99
Tandberg (40)	33
Thiel	24
Ultimate Technologies (41)	65
Vandersteen (42)	76
Velodyne	57
Wholesale to the Public (43)	113
XLO Electric	96
Yamaha	69

*Regional Ad

Audio Annual Index

SUBJECT INDEX

ACOUSTICS

Spectrum (Bose Modeler and Auditor computer programs for designing a building's acoustics), Ivan Berger, March, 20.

ADDENDA

Who Really Invented Radio?, (Dec. 1995, 26), March, 8.

Equipment Profile: JoLida SJ 302A Integrated Amplifier (March, 70), April, 6.

Equipment Profile: EAD (Enlightened Audio Designs) TheaterMaster Dolby Digital (AC-3) Surround Processor (March, 42), April, 6.

Noise Shaping: 19 Bits in a 16-Bit Sack? (March, 32), May, 7.

Auricle: NuReality Vivid 3D Theater SRS Processor (April, 74), June, 14.

AMPLIFIERS

Mondo Audio (single-ended triode amplifiers), Ken Kessler, Oct., 40.

Pure Power: Amplifier Design & Sound Quality, Tomlinson Holman, Nov., 26.

CAR STEREO

Spectrum (developments at Winter CES), Ivan Berger, May, 20.

Spectrum (system design and installation), Ivan Berger, Aug., 32.

COMPUTERS AND AUDIO

Spectrum (Bose Modeler and Auditor computer programs for designing a building's acoustics), Ivan Berger, March, 20.

Spectrum (difficulties adding multimedia to a PC), Ivan Berger, July, 25.

Mondo Audio (audiophile Web sites), Ken Kessler, July, 32.

Front Row (computer industry meddling with hi-fi), Corey Greenberg, Sept., 38.

Mondo Audio (bad computer audio), Ken Kessler, Sept., 42.

DIGITAL TECHNOLOGY & TECHNIQUES

The Trouble with Jitter, Ken C. Pohlmann, Jan., 26.

Fast Fore-Word (DVD), Michael Riggs, March, 6.

Currents (RCA Digital Satellite System), John Eargle, March, 24.

Noise Shaping: 19 Bits in a 16-Bit Sack?, D. W. Fostle, March, 32 (*Addendum*, May, 7).

Fast Fore-Word (HDCD), Michael Riggs, April, 4.

Spectrum (DVD buzz), Ivan Berger, April, 20.

Digital Deliverance: Noise Shaping, HDCD, and Other Alternatives, D. W. Fostle, April, 26.

Mondo Audio (Audio Alchemy Enhanced Digital Resolution System), Ken Kessler, May, 24.

Spectrum (Delos Virtual Reality Recording surround CDs), Edward M. Long, June, 32.

Currents (DVD delay), John Eargle, Sept., 32.

Currents (Sony Direct Stream Digital recording), John Eargle, Oct., 32.

DSP in Audio: The Promise, Reality, and Future of Digital Signal Processing, Ken Kantor, Dec., 26.

DVD

Fast Fore-Word, Michael Riggs, March, 6.

Spectrum (DVD buzz), Ivan Berger, April, 20.

Fast Fore-Word (copy protection), Michael Riggs, June, 6.

Spectrum (DVD update), Ivan Berger, June, 30.

Front Row (predictions on success or failure), Corey Greenberg, July, 26.

Currents (DVD delay), John Eargle, Sept., 32.

DIRECTORIES

Annual Equipment Directory, October Introduction, 49; CD Players & Transports, 52; D/A Converters, 64; Amplifiers, 71; Pre-amplifiers, 110; Tuners, 136; Receivers, 137; Turntables, 142; Tonearms, 144; Phono Cartridges, 146; Headphones, 150; Analog Cassette Decks, 158; Digital Player/Recorders,

162; Blank Tapes & Discs, 162; Equalizers, 164; Surround Sound & Ambience Processors, 166; Signal Processors, 174; Crossovers, 164; Speaker Cables, 182; Loudspeakers, 194; Company Addresses, 337.

Annual Equipment Directory Addenda, November

Analog Interconnects, 82; Digital Interconnects, 94.

EMERGING TECHNOLOGIES

Fast Fore-Word (DVD), Michael Riggs, March, 6.

Spectrum (Bose Modeler and Auditor computer programs for designing a building's acoustics), Ivan Berger, March, 20.

Spectrum (DVD buzz), Ivan Berger, April, 20.

Fast Fore-Word (copy protection of new digital formats), Michael Riggs, June, 6.

Spectrum (DVD update), Ivan Berger, June, 30.

Spectrum (Delos Virtual Reality Recording surround CDs), Edward M. Long, June, 32.

Front Row (predictions on DVD's success or failure), Corey Greenberg, July, 26.

Currents (DVD delay), John Eargle, Sept., 32.

Front Row (computer industry meddling with hi-fi), Corey Greenberg, Sept., 38.

Currents (Sony Direct Stream Digital recording), John Eargle, Oct., 32.

EQUIPMENT PROFILES

Acoustic Research 312 HO Loudspeaker, Dec., 60.

AKG Acoustics K 290 Surround Headphones ("PlayBack"), Aug., 96.

Allsop StrongBox CD Box ("PlayBack"), May, 96.

AMC AV81HT Preamp/Surround Processor ("Auricle"), Jan., 72.

Ångstrom 200 A/V Preamp/Processor ("Auricle"), Feb., 66.

Apollo CKD Speaker Stands ("PlayBack"), Sept., 104.

Aragon 8008ST Amplifier, June, 46.

Atlantic Technology System 250.1 Home Theater Speakers ("Auricle"), Dec., 78.

Audio Advisor ELFIX AC Polarity Tester ("PlayBack"), April, 96.

- Audio Alchemy DTI•Pro 32 Digital Interface ("Auricle"), July, 68.
- Audio Alchemy HPA v1.0 Headphone Amplifier ("PlayBack"), Dec., 128.
- Audio By Van Alstine Ω mega III 440hc Amplifier and FET Valve EC Preamplifier ("PlayBack"), April, 96.
- AudioQuest 7000Fe5 Phono Cartridge ("PlayBack"), June, 96.
- AudioSource Project One Loudspeaker ("PlayBack"), July, 96.
- Audio-Technica AT-ML150 Phono Cartridge ("PlayBack"), Jan., 128.
- Audix Nile X Loudspeaker ("PlayBack"), June, 96.
- Biró t2c Digital Interface ("PlayBack"), Nov., 120.
- Bryston 4B ST Amplifier, Feb., 46.
- B&W 803 Matrix Series 2 Loudspeaker ("PlayBack"), Feb., 96.
- Carver AV-705x Five-Channel Amplifier, Sept., 64.
- Case Logic CDV-12 CD Visor ("PlayBack"), Dec., 128.
- Castle Acoustics Isis Loudspeaker ("PlayBack"), Nov., 120.
- Classé Audio CP-60 Preamplifier ("Auricle"), May, 66.
- conrad-johnson MF2300-A Amplifier ("Auricle"), March, 74.
- Continuum 4*3*2 Four-Channel Amplifier, Aug., 54.
- Creek Audio OBH-11 Headphone Amplifier ("PlayBack"), July, 96.
- Digital Phase AP-2.1 Loudspeaker, Nov., 42.
- Dynaclear Postman Wrench ("PlayBack"), May, 96.
- Dynaco CDV-1 CD Player, Feb., 56.
- Dynaco Stereo-80 Amplifier ("PlayBack"), May, 96.
- EAD TheaterMaster Dolby Digital (AC-3) Surround Processor, March, 42 (*Addendum*, April, 6).
- Egglestonworks Andra Loudspeaker ("Auricle"), Feb., 62.
- Eosone Millennium Home Theater Speaker System ("Auricle"), Nov., 70.
- Esoteric Sound Aten Turntable ("PlayBack"), March, 96.
- Galaxy Audio Cricket Polarity/Continuity Tester ("PlayBack"), Aug., 96.
- Golden Sound DH Cone Feet ("PlayBack"), April, 96.
- Hafler Trans-Nova 9505 Amplifier, April, 44.
- Hales Design Group Concept Five Loudspeaker ("Auricle"), Dec., 86.
- Harman Kardon Citation 7.0 A/V Preamplifier/Processor, April, 36.
- Infinity Compositions P-FR Loudspeaker, March, 52.
- Jamo SW 505E Powered Subwoofer, July, 60.
- JBL HT Series THX Loudspeakers, Jan., 66.
- Jensen RA 2040CLX Car Amplifier ("PlayBack"), Sept., 104.
- JoLida SJ 302A Integrated Amplifier, March, 70 (*Addendum*, April, 6).
- KEF Reference Series Model Four Loudspeaker, June, 50.
- Kimber Kable Speaker Cables ("PlayBack"), Nov., 120.
- Lamm Audio Laboratory L1 Preamplifier ("PlayBack"), March, 96.
- Lexicon DC-1/THX A/V Preamplifier/Processor, May, 42.
- Lexicon 412 Four-Channel Amplifier, Dec., 70.
- MacTec EZ-CD CD Opener ("PlayBack"), Aug., 96.
- Marantz SM-5 Amplifier and SC-5 Preamplifier, Jan., 56.
- Marantz SR-96 A/V Receiver, Aug., 48.
- Marantz DP870 Dolby Digital (AC-3) Surround Decoder, Nov., 52.
- Martin-Logan SL3 Loudspeaker ("Auricle"), Jan., 81.
- McIntosh MCD7009 CD Player, Jan., 41.
- Meridian 565 Digital Surround Processor ("Auricle"), Sept., 84.
- Mesa Engineering Baron Amplifier, Dec., 50.
- Mirage MBS-2 Satellites, BPSS-210 Subwoofer, and LFX-2 Crossover, Sept., 70.
- Mission 735 Loudspeaker, Jan., 46.
- Muse Electronics Model Two D/A Converter ("Auricle"), Jan., 84.
- NHT SuperOne Loudspeaker ("Auricle"), Aug., 68.
- NHT VT-1A A/V Loudspeaker ("PlayBack"), June, 96.
- NSM 10S Loudspeaker, April, 50.
- NuReality Vivid 3D Theater SRS Processor ("Auricle"), April, 74 (*Addendum*, June, 14).
- Onkyo TX-SV919THX Receiver ("PlayBack"), Jan., 128.
- Panasonic PV-4564 VHS Hi-Fi VCR ("PlayBack"), Feb., 96.
- Paradigm Reference Studio/100 Loudspeaker, July, 46.
- Paradigm Micro/SB-90 Home Theater Speaker System ("Auricle"), Nov., 76.
- Parasound P/LD-2000 Preamplifier, May, 48.
- Parasound HCA-2003 Three-Channel Amplifier, Nov., 32.
- Pass Laboratories Aleph 1 Mono Amplifier ("Auricle"), Feb., 72.
- Pass Laboratories Aleph-P Preamplifier, Nov., 60.
- Philips Key Modules IS 5021 Digital Signal Processor, Aug., 58.
- Pioneer Elite PDR-99 CD Recorder, Feb., 36.
- Platinum Audio Duo Loudspeaker, May, 54.
- Polk Audio Signature Reference Theater Speaker System ("Auricle"), Sept., 80.
- PS Audio Lambda Two CD Transport and SL Three D/A Converter ("Auricle"), June, 60.
- Salamander Designs Archetype Modular Shelving ("PlayBack"), Feb., 96.
- Sennheiser HD 580 Precision Earphones, June, 56.
- Shure V15VxMR Phono Cartridge ("PlayBack"), Dec., 128.
- Sonance DL1200 Powered Subwoofer, Sept., 76.
- Sonic Frontiers Power-3 Mono Amplifier, Aug., 64.
- Sony CDP-XA7ES CD Player, March, 62.
- Soundwave VR-3.5 Loudspeaker ("Auricle"), Aug., 72.
- Spatializer HTMS-2510 Stereo-Image Processor ("Auricle"), June, 66.
- Spectron 1KW Switching Amplifier, July, 64.
- SRD Speakerworks VM-1 Center-Channel Speaker ("PlayBack"), Sept., 104.
- Staedtler Erasable Cassette Labels ("PlayBack"), Jan., 128.
- Tascam DA-P1 Portable DAT Recorder ("PlayBack"), July, 96.
- Technics SE-A1000 Amplifier and SU-C1000 Preamplifier, May, 62.
- Technics SA-TX50 Home THX Receiver, Dec., 40.
- Tekna Sonic C-5 and C-10 Vibration Absorbers ("PlayBack"), March, 96.
- Theta Digital Data III CD Transport and DS Pro Generation V-a D/A Converter ("Auricle"), April, 70.
- VAC Renaissance Seventy/Seventy Amplifier and CPA1 Mk II Preamplifier ("Auricle"), May, 68.
- VPI TNT III Turntable with Flywheel ("Auricle"), Jan., 90.
- VPI JMW Memorial Tonearm ("Auricle"), June, 69.
- Wilson Audio Specialties WATT V/Puppy V Loudspeaker System, Feb., 50.
- Yamaha RX-V2090 A/V Receiver and DDP-1 Dolby Digital (AC-3) Decoder, April, 58.
- Yamaha DSP-A3090 A/V Integrated Amplifier, July, 52.

Authorized Dealers

AK- Alaska Audio: Juneau • Pyramid: Anchorage.
AL- Cohen's Electronics: Montgomery • Kincaid's TV: Tuscaloosa • Likis Audio: Birmingham.
AR- Custom Audio Video: Little Rock.
AZ- Jerry's Audio Video: Phoenix, Tucson.
CA- Access to Music: Larkspur • Accurate A/V: S. Lake Tahoe • Audio Concepts: Long Beach, San Gabriel • Bay Area Audio: San Jose • Boots Camera: Fresno • Christopher Hansen: West LA • Coast Satellite: Atascadero, Santa Maria • Creative Stereo: Santa Barbara, Ventura • David Rutledge Audio: Palm Desert • DB Audio: Berkeley • Digital Ear: Tustin • Dow Stereo Video: San Diego & Suburbs, La Jolla, El Cajon, Chula Vista, Escondido • Larson's • Redding • Lee's Home Theater: Visalia • Monterey Stereo: Monterey • Pacific Coast A/V: Newport Beach • Paradyme: Sacramento • Performance Audio: San Francisco • SpeakerCraft: Riverside • Systems Design: Redondo Beach • Videotek: Westminster • Westchester TV: Bakersfield • Wilson Home Theater: Woodland Hills.
CO- Audio Visions: Grand Junction • Listen Up: Denver, Boulder, Colorado Springs • Soundtrack: Denver & Suburbs, Boulder, Ft. Collins, Colorado Springs.
CT- Al Franklin's: Greenwich • Audio Etc.: Orange • Carlson's Audio Video: Danbury • Roberts Audio Video: New London • The Sound Room: Westport • Stereo Shop: Hartford.
DC & Suburbs- Myer-Emco.
DE- Sound Studio: Newark, Wilmington.
FL- Absolute Sound: Winter Park • Audio Advisers: West Palm Beach • Audio Center: Deerfield Beach • Audio Video Store: Tallahassee • The Audiohouse: Vero Beach • Cooper for Stereo: Clearwater • Hoy! Stereo: Jacksonville • Palm Audio: Destin • Sound Components: Coral Gables • Sound Ideas: Gainesville • Sound Insight: Ft. Pierce • Stereotypes: Daytona Beach • Stuart A/V: Stuart.
GA- Audio Warehouse: Savannah • Ken's Stereo Jct.: Macon • Warner Robbins • Laser Disc Enterprises: Atlanta • Merril TV: Columbus • Stereo Connections: Valdosta • Stereo Festival: Atlanta.
HI- Audio Center: Honolulu, Waipahu.
IA- Audio King: Cedar Rapids, Des Moines • Archer Audio Video: Ft. Dodge • Audio Video Logic: Des Moines • Audio Visions: Sioux City • Camera Corner: Davenport.
ID- Ultimate Electronics: Boise • Wise Buy: Idaho Falls.
IL- United Audio Centers: Chicago & Suburbs • Camera Corner: Bloomington • Good Vibes: Champaign • Jon's Home Ctr.: Quincy • Sound Forum: Crystal Lake • Sundown A/V: Springfield.
IN- Classic Stereo: Ft. Wayne, Mishawaka • Good Vibes: Lafayette • Kings Great Buys: Evansville • Ovalation Audio: Clarksville, Indianapolis.
KS- Accent Sound: Overland Park • Advance Audio: Wichita • Audio Junction: Junction City, Manhattan.
KY- Ovalation Audio: Lexington, Louisville.
LA- Allerman Audio: New Orleans, Metairie • Lake Charles Music: Lake Charles • Mike's Audio: Baton Rouge • Wright's Sound Gallery: Shreveport.
MA- Cookin': Chestnut Hill, Saugus • Goodwinds Audio: Boston • Shrewsbury • Nantucket Sound: Hyannis • Northampton Audio: Northampton • Pittsfield Radio: Pittsfield.
MD- Gramophone: Baltimore, Ellicott City • Myer-Emco: Gaithersburg, Beltsville, Rockville • Soundscape: Baltimore.
ME- Cookin': Portland.
MI- Pecar's: Detroit • Troy • Classical Jazz • Holland • Classic Stereo: Kalamazoo, Grand Rapids • Stereo Center FRAV: Flint • Gourd St. Listening Room: Midland, Saginaw.
MN- Audio King: Minneapolis & Suburbs, Rochester, St. Cloud • Audio Designs: Winona.
MO- Independence A/V: Independence • Reference Audio: Sedalia • Sound Central: St. Louis.
MS- Ideal Acoustics: Starkville • McLelland TV: Hattiesburg • Players A/V: Ridgeland.
MT- Aspen Sound: Missoula • Avitel: Bozeman.
NH- Home Stereo Ctr.: Billings • Rocky Mt. Hi Fi: Great Falls.
NC- Audio Video Systems: Charlotte • Audio Visions: Wilmington • Now Audio Video: Durham, Greensboro, Raleigh, Winston Salem • Audio Lab: Wilmington.
NF- Custom Electronics: Omaha, Lincoln.
NJ- Cookin': Nashua, Manchester, Newington, Salem, S. Nashua.
NL- Hal's Stereo: Trenton • Monmouth Stereo: Shrewsbury • Sound Waves: Northfield • Woodbridge Stereo: West Caldwell, Woodbridge.
NM- Ultimate Elect.: Albuquerque • Sound Ideas: Albuquerque.
NV- Ultimate Elect.: Las Vegas • Upper Ear: Las Vegas.
NY- Audio Breakthrough: Manhasset • Audio Den, Lake Grove • Audio Expressions: Newburgh • Audio Junction: Watertown • Clark Music: Albany, Syracuse • Stereo Exchange: Manhattan • Hart Elect.: Vestal • Innovative Audio: Brooklyn • Listening Room: Scarsdale • Rowe Camera: Rochester • Speaker Shop: Amherst.
OH- Audio Craft: Akron, Cleveland, Mayfield Hts., Westlake • Audio Etc.: Dayton • Classic Stereo: Lima • Paragon Sound: Toledo • Stereo Visions: Columbus • Threshold Audio: Heath.
OK- Ultimate Electronics: Tulsa • Photo World: Bartlesville.
OR- Bradford's Hi-Fi: Eugene • Chaisea A/V: Portland, Beaverton • Kelly's Home Ctr.: Salem • Larson's: Medford, Roseburg • Stereo Plant: Bend.
PA- Audio Junction: Harrisburg • Gary's Elect.: State College • Hi-Fi Stereo: Lancaster • Hart Elect.: Bala Cynwyd, Kingston • Hi-Fi House: Abington, Broomall, Camp Hill, Harrisburg • Listening Post: Pittsburgh • Palmer Audio: Allentown • Pro Audio: Bloomsburg • Stereo Shoppe: Selinsgrove, Williamsport • Stereoland: Natrona Heights • The Stereoshop: Greensburg • Studio One: Erie.
RI- Stereo Discounct: Providence.
SC- A/V Design: Charleston • Custom Theater & Audio: Myrtle Beach • Upstairs Audio: Columbia.
SD- Audio King: Sioux Falls • Sound Pro: Rapid City.
TN- College Hi-Fi: Chattanooga • Hi-Fi Buys: Nashville • Now Audio Video: Knoxville • Modern Music: Memphis • Sound Room: Johnson City.
TX- Home Entertainment: Dallas, Houston, Plano • Audio Tech: Temple, Waco • Audio Video: College Station, Brock A/V: Beaumont • Bunkley's Sound Systems: Abilene • Bion's: San Antonio • High Fidelity: Austin • Crystal Clear: Dallas • Marvin Electronics: Ft. Worth • Sound Quest: El Paso • Sound Systems: Amarillo • Sound Towne: Texarkana.
UT- Alpine Elect. Provo: Audio Works: Salt Lake City • Crazy Bob's: St. George • Sikes Bros.: Logan • Ultimate Elect.: Layton, Murray, Orem, Salt Lake City.
VA- Myer-Emco: Falls Church, Tyson's Corner, Fairfax • Audio Connection: Virginia Beach • AudioTronics: Roanoke • Home Media Store: Richmond.
VT- Audio Video Authority: S. Burlington.
WA- Aspen Sound: Spokane • Definitive Audio: Bellevue, Seattle • Evergreen Audio: Silverdale • Pacific Sight & Sound: Wenatchee • Tin Ear: Kennewick.
WV- A Sound Post: Princeton.
WI- Audio Emporium: Milwaukee • Absolute Sound & Vision: Sheboygan • Hi-Fi Heaven: Appleton, Green Bay • Sound World: Wausau.
WY- Radio Rite: Precincton Audio: Rio Piedras.
Canada- A & B Sound: Calgary, Edmonton, Kelowna, Vancouver & Suburbs, Victoria • Advance Electronics: Winnipeg • Bay Bloor Radio: Toronto • Digital Dynamics: Clearbrook • Great West Audio: London • Hebeson: Montreal • Lipton's: New Market Ontario • Peak Audio: Halifax • Sound Room: Vancouver • StereoLand: Windsor • Treble Cleft: Ottawa.
Mexico- Contact Grupo Volumen: Mexico City.

HISTORY

The Audio Interview: Arnie Nudell, David Lander, July, 40.

Fast Fore-Word (audiophile recordings of re-producing pianos), Michael Riggs, Sept., 6.

Mondo Audio (vintage audio gear), Ken Kessler, Nov., 22.

Mondo Audio (vintage and reissued audio gear), Ken Kessler, Dec., 22.

HOME THEATER & SURROUND SOUND

Fast Fore-Word (surround sound for music), Michael Riggs, Feb., 4.

Multichannel Music Recording: A View from the Console, Daniel Sweeney, Feb., 20.

The Audio Interview: Me&K's Ken Kreisel, Daniel Levitin, Feb., 28.

Currents (RCA Digital Satellite System), John Eargle, March, 24.

Spectrum (Delos Virtual Reality Recording surround CDs), Edward M. Long, June, 32.

Placing the Bass: Two Subs in a Corner Beats Five in the Round, Tom Nousaine, June, 40.

Fast Fore-Word (VLS Auri headphone surround system), Michael Riggs, July, 4.

Tuning Up for Surround Sound: Tips on Getting the Room Right, Thomas R. Horrall, Aug., 40.

DSP in Audio: The Promise, Reality, and Future of Digital Signal Processing, Ken Kantor, Dec., 26.

INTERVIEWS

Herb Belkin, Ken Kessler, Jan., 32.

Ken Kreisel, Daniel Levitin, Feb., 28.

Mark Isham, John Diliberto, May, 36.

Arnie Nudell, David Lander, July, 40.

Kavi Alexander, Bruce Bartlett with Jenny Bartlett, Dec., 34.

LISTENING &

LISTENING ROOMS

Placing the Bass: Two Subs in a Corner Beats Five in the Round, Tom Nousaine, June, 40.

Tuning Up for Surround Sound: Tips on Getting the Room Right, Thomas R. Horrall, Aug., 40.

DSP in Audio: The Promise, Reality, and Future of Digital Signal Processing, Ken Kantor, Dec., 26.

LOUDSPEAKERS

The Audio Interview: Me&K's Ken Kreisel, Daniel Levitin, Feb., 28.

More Bass in Less Space: A New Approach to Subwoofer Design, Matthew Polk, May, 28.

Placing the Bass: Two Subs in a Corner Beats Five in the Round, Tom Nousaine, June, 40.

Spectrum (B&W's Prism speaker enclosure), Ivan Berger, July, 24.

The Audio Interview: Arnie Nudell, David Lander, July, 40.

Tuning Up for Surround Sound: Tips on Getting the Room Right, Thomas R. Horrall, Aug., 40.

MISCELLANEOUS

Spectrum (Elcom and Terk Technologies multiroom A/V distribution systems), Ivan Berger, April, 25.

Mondo Audio (newsletters from audio manufacturers), Ken Kessler, Aug., 38.

OBITUARY

Peter W. Mitchell, May, 22.

PSYCHOACOUSTICS

Noise Shaping: 19 Bits in a 16-Bit Sack?, D. W. Fostle, March, 32 (*Addendum*, May, 7).

Upside-Down Sound: Listening for Polarity Inversion, Edward M. Long, July, 34.

Fast Fore-Word (VLS Auri headphone surround system), Michael Riggs, July, 4.

RECORDING

The Audio Interview: Mobile Fidelity's Herb Belkin, Ken Kessler, Jan., 32.

Fast Fore-Word (surround sound for music), Michael Riggs, Feb., 4.

Multichannel Music Recording: A View from the Console, Daniel Sweeney, Feb., 20.

Noise Shaping: 19 Bits in a 16-Bit Sack?, D. W. Fostle, March, 32 (*Addendum*, May, 7).

Digital Deliverance: Noise Shaping, HDCD, and Other Alternatives, D. W. Fostle, April, 26.

The Audio Interview: Mark Isham, John Diliberto, May, 36.

Spectrum (Delos Virtual Reality Recording surround CDs), Edward M. Long, June, 32.

Mixing It Up: The Modern Art of Studio Recording, Daniel J. Levitin, Sept., 46.

Currents (Sony Direct Stream Digital recording), John Eargle, Oct., 32.

The Audio Interview: Kavi Alexander, Bruce Bartlett with Jenny Bartlett, Dec., 34.

REISSUED RECORDINGS

The Audio Interview: Mobile Fidelity's Herb Belkin, Ken Kessler, Jan., 32.

Front Row (Norton Records rock 'n' roll reissues and new releases), Corey Greenberg, Oct., 28.

AUTHOR INDEX

Bartlett, Bruce with Jenny Bartlett, *The Audio Interview: Kavi Alexander*, Dec., 34.

Berger, Ivan, *Spectrum* (Bose Modeler and Auditor computer programs for designing a building's acoustics), March, 20; *Spectrum* (DVD buzz), April, 20; *Spectrum* (Elcom and Terk Technologies multiroom A/V distribution systems), April, 25; *Spectrum* (developments in car stereo at Winter CES), May, 20; *Spectrum* (DVD update), June, 30; *Spectrum* (B&W's Prism speaker enclosure), July, 24; *Spectrum* (difficulties adding multimedia to a PC), July, 25; *Spectrum* (car stereo system design and installation), Aug., 32.

Diliberto, John, *The Audio Interview: Mark Isham*, May, 36.

Eargle, John, *Currents* (RCA Digital Satellite System), March, 24; *Currents* (DVD delay), Sept., 32; *Currents* (Sony Direct Stream Digital recording), Oct., 32.

Fostle, D. W., *Noise Shaping: 19 Bits in a 16-Bit Sack?*, March, 32 (Erratum, May, 7); *Digital Deliverance: Noise Shaping, HDCD, and Other Alternatives*, April, 26.

Greenberg, Corey, *Front Row* (predictions on DVD's success or failure), July, 26; *Front Row* (computer industry meddling with hi-fi), Sept., 38; *Front Row* (Norton Records rock 'n' roll reissues and new releases), Oct., 28.

Holman, Tomlinson, *Pure Power: Amplifier Design & Sound Quality*, Nov., 26.

Horrall, Thomas R., *Tuning Up for Surround Sound: Tips on Getting the Room Right*, Aug., 40.

Kantor, Ken, *DSP in Audio: The Promise, Reality, and Future of Digital Signal Processing*, Dec., 26.

Kessler, Ken, *The Audio Interview: Mobile Fidelity's Herb Belkin*, Jan., 32; *Mondo Audio* (Audio Alchemy Enhanced Digital Resolution System), May, 24; *Mondo Audio* (audiophile Web sites), July, 32; *Mondo Audio* (newsletters from audio manufacturers), Aug., 38; *Mondo Audio* (bad computer audio), Sept., 42; *Mondo Audio* (single-ended triode amplifiers), Oct., 40; *Mondo Audio* (vintage audio gear), Nov., 22; *Mondo Audio* (vintage and reissued audio gear), Dec., 22.

Lander, David, *The Audio Interview: Arnie Nudell*, July, 40.

Levitin, Daniel, *The Audio Interview: M&K's Ken Kreisel*, Feb., 28; *Mixing It Up: The Modern Art of Studio Recording*, Sept., 46.

Long, Edward M., *Spectrum* (Delos Virtual Reality Recording surround CDs), June, 32; *Upside-Down Sound: Listening for Polarity Inversion*, July, 34.

Meyer, E. Brad and Michael Riggs, *Coda: Peter W. Mitchell*, May, 22.

Nousaine, Tom, *Placing the Bass: Two Subs in a Corner Beats Five in the Round*, June, 40.

Pohlmann, Ken C., *The Trouble with Jitter*, Jan., 26.

Polk, Matthew, *More Bass in Less Space: A New Approach to Subwoofer Design*, May, 28.

Riggs, Michael, *Fast Fore-Word* (surround sound for music), Feb., 4; *Fast Fore-Word* (DVD), March, 6; *Fast Fore-Word* (HDCD), April, 4; with E. Brad Meyer, *Coda: Peter W. Mitchell*, May, 22; *Fast Fore-Word* (copy protection of new digital formats), June, 6; *Fast Fore-Word* (VLS Auri headphone surround system), July, 4; *Fast Fore-Word* (audiophile recordings of reproducing pianos), Sept., 6.

Sweeney, Daniel, *Multichannel Music Recording: A View from the Console*, Feb., 20.

AUDIO, December 1996, Volume 80, Number 12. **AUDIO** (ISSN 0004-752X, Dewey Decimal Number 621.381 or 778.5) is published monthly by Hachette Filipacchi Magazines, Inc., a wholly owned subsidiary of Hachette Filipacchi USA, Inc., at 1633 Broadway, New York, N.Y. 10019. Printed in U.S.A. at Dyersburg, Tenn. Distributed by Warner Publisher Services Inc. Periodicals postage paid at New York, N.Y. 10019 and additional mailing offices. One-year subscription rates (12 issues) for U.S. and possessions, \$24.00; Canada, \$33.68 (Canadian Business Number 126018209RT); and foreign, \$32.00.

AUDIO® is a registered trademark of Hachette Filipacchi Magazines, Inc. ©1996, Hachette Filipacchi Magazines, Inc. All rights reserved. The Editor assumes no responsibility for manuscripts, photos, or artwork. The Publisher, at his sole discretion, reserves the right to reject any ad copy he deems inappropriate.

Subscription Service: Postmaster, please send change of address to **AUDIO**, P.O. Box 52548, Boulder, Colo. 80321-2548. Allow eight weeks for change of address. Include both old and new address and a recent address label. If you have a subscription problem, please write to the above address or call 303/604-1464; fax, 303/604-7455.

Back Issues: Available for \$6.95 each (\$8.25 Canada; \$13.25 other foreign) in U.S. funds. Please add \$1.00 for the Annual Equipment Directory (October issue). Send a check or money order to ISI/AUDIO Magazine, 30 Montgomery St., Jersey City, N.J. 07302, or call 201/451-9420.

**NEEDED:
EXCELLENT
COOK TO
SHOP AND
PREPARE
MEALS FOR
110,000
PEOPLE A
MONTH.**

**(CAN'T DO THAT?
THEN HOW ABOUT
A DONATION?)**

Your contribution not only feeds the homeless but also helps the more than 130 different agencies the United Way supports.



United Way

1212 Griswold Detroit, MI 48226 (313) 226-9200

MICS-11502-1096

PlayBack

Audio Alchemy HPA v1.0 Headphone Amplifier

Another entry in the growing lineup of dedicated headphone amps, the HPA v1.0 is a small Class-A power amp with the HeadRoom Audio Image Processor circuit built in. As with any headphone amp used with quality 'phones, the immediacy of the sound makes it easy for you to focus in on even the smallest changes in your audio chain—for example, you may suddenly notice that the sound is better if you feed the signal from your D/A converter or CD player rather than via your system's tape or line output.

The HPA v1.0's sound was top-notch; it lost just a pinch in bass foundation to my reference headphone amp—but the Audio Alchemy, at \$295 (including the Power Station One power supply), costs about one-fifth as much. The HPA v1.0 delivers 1.5 watts into an 8-ohm load; that was plenty, even for inefficient 'phones.

GRADE: A

Even if all the Audio Alchemy did were amplify, it would be a best buy. But it provides the HeadRoom circuit (also included in the amps made

by HeadRoom). Switching this circuit in when you listen to stereo recordings through headphones reduces the tendency of sounds to clump together at your ears and the center of your head, and it spreads them more seamlessly (though it does not move those sounds outside your head). I found the circuit most useful

with studio-created pop and rock, least noticeable with classical and jazz. It is neither needed with, nor suitable for, binaural recordings.

John Sunier

For literature, circle No. 120

Shure V15VxMR Phono Cartridge

Shure's new V15VxMR moving-magnet cartridge (\$299.95) is essentially identical to its predecessor, the V15 Type V-MR, except for a burgundy hue on the Dynamic Stabilizer brush and a somewhat warmer tonal balance. Boasting a rigid, low-mass beryllium stylus cantilever tube and a Micro-Ridge hyperelliptical stylus, it is specified to track optimally at 1.5 grams (the dynamic stabilizer absorbs 0.5 gram, for a net pressure of 1 gram at the stylus, 1.25 grams maximum).

I installed the V15VxMR in the tonearm of a mammoth Yamaha YP-D10 PLL direct-drive turntable, after discovering that years of listening to CD had sensitized me to the intrinsic flutter of my audiophile belt-drive table, which made solo piano LPs unlistenable. Alignment was checked with Shure's supplied gauge, then verified with a DB Systems protractor.

The V15VxMR effectively suppressed the hum field radiated by the Yamaha's motor (some poorly shielded competitors don't). And it sailed through the tortuous flute, harp, and orchestral bells tracks from various Shure *Audio Obstacle Course* test records. Only the highest level of complex tones on Shure's TTR117 disc caused the V15VxMR to mistrack slightly. I suspect that in a better arm it would have taken even the top levels in stride.

On LPs of all sorts—direct-to-disc, half-speed mastered, and 45-rpm audiophile platters to commercial rock and pop albums—the V15VxMR proved a neutral window to some of the best and worst sounds from the heyday of vinyl. If, like me, you have hundreds (or thousands) of LPs tucked away that you never seem to play anymore, there's much to rediscover, and I know of no better cartridge for the purpose.

Alan Lofft

For literature, circle No. 121

Case Logic CDV-12 CD Visor

It's not a good idea to leave CDs naked and defenseless in your car, but it's a pain to juggle them in and out of their jewel boxes while you drive. When I change the disc in my in-dash CD player, all I have to do now is flip down my car's visor, slip the old CD into a cloth-lined slot in Case Logic's CDV-12 CD Visor, and pluck out the next disc I want to play. The CDV-12 has pockets for 12 CDs, an elastic loop for a pen or tire gauge, and a mesh bag for change and toll tickets. (You can also use the mesh bag to hold a 13th CD.) The more colorful your CD collection, the easier it will be to find the disc you want; if all your discs are standard silver, make sure you orient them so that you can read the disc titles quickly.

The CDV-12 attaches with straps you adjust via hook-and-loop fasteners—ugly, but convenient. The straps also let you flip the holder up to use the vanity mirror (ain't technology grand?). Inserting the CDs in the side of the visor that's normally folded out of sight makes them a bit less ac-

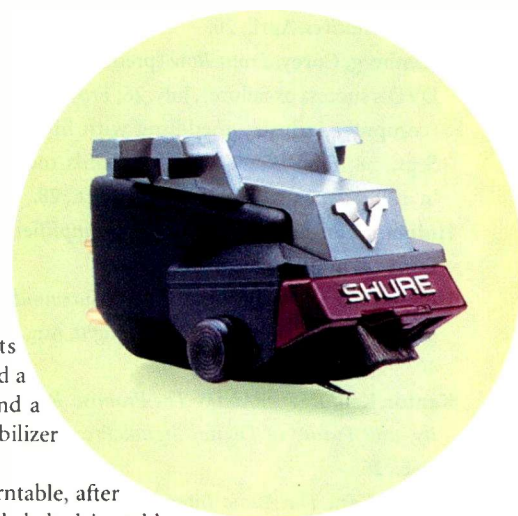
GRADE: A

cessible but keeps them away from sunlight and the eyes of thieves. I tried it the other way but disliked the oppressive mass of black just at the top of my field of vision.

List price is only \$9.95, certainly cheap enough to consider using multiple CDV-12s: I'd put another CD holder on the passenger-side visor for long trips or let every driver in the family have one to preload with favorite discs. People with children might want a pair of CDV-12s in hopes of keeping the kids relatively quiet on a trip to Grandma's or the mall.

Ivan Berger

For literature, circle No. 122



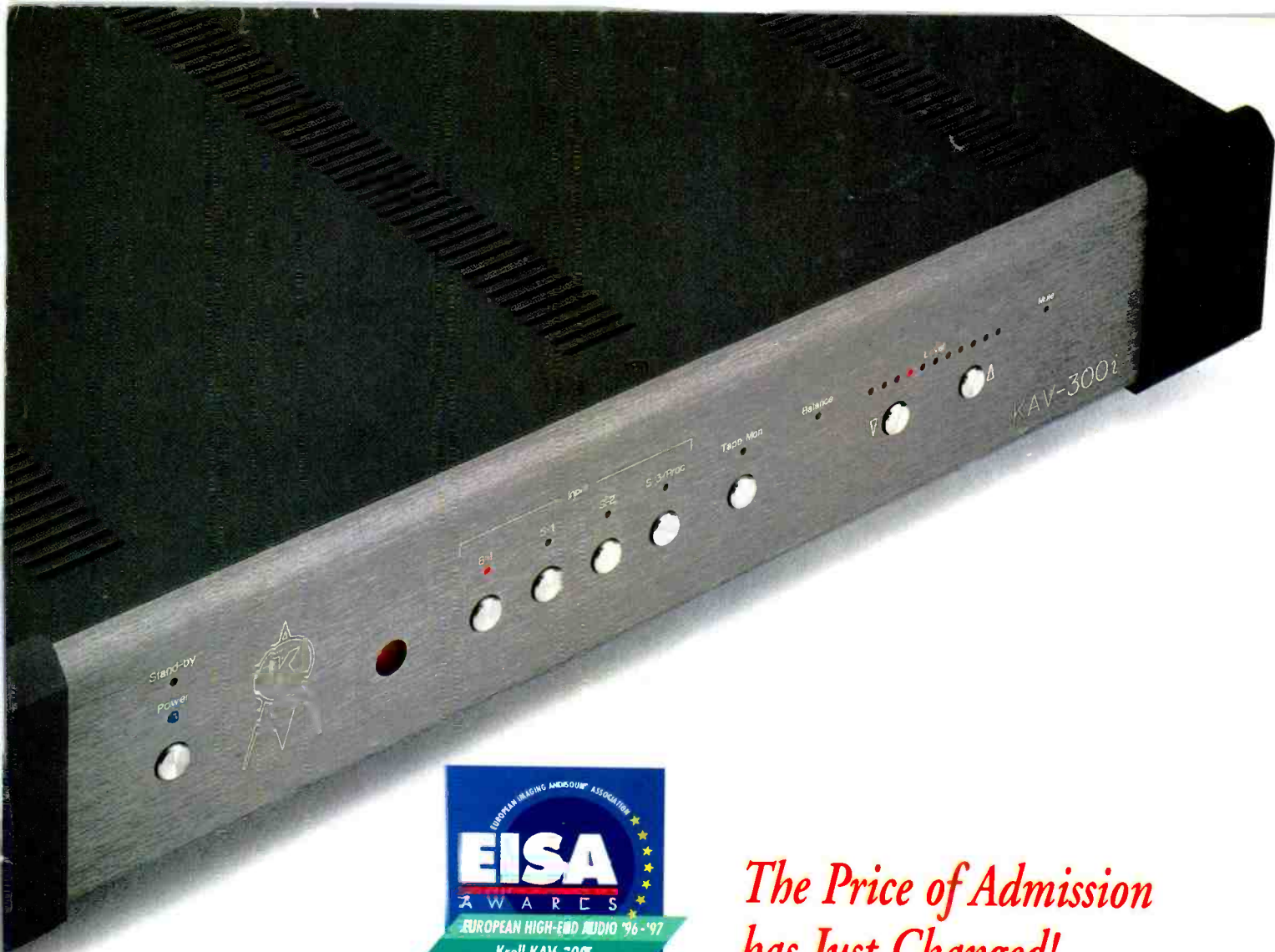
GRADE: A+



SONY

Sony headphones...They make rock come alive.

Get a bigger rush from your music. Only Sony headphones can capture the spirit and sound of the original recording. That's because no one knows more about sound reproduction than we do. And no one applies that technology to headphones better. We make more headphones than any other manufacturer—from noise cancellation to wireless. There's only one way to make your favorite rock livelier. Sony headphones.



With the introduction of the Krell Audio+Video line, entry into the world of high performance audio has just become more accessible. The new Krell KAV-300i integrated amplifier delivers sonic quality never attainable before at this price level.

Integrated is the key word here. The KAV-300i integrates a discrete, Class A, remote controlled preamplifier with a potent 150 watt/channel power amplifier that just happen to share the same chassis. The KAV-300i also shares the same engineering, production and parts quality as every other Krell product manufactured at our Connecticut factory. In fact, the proprietary output devices used in

The Price of Admission has Just Changed!

the KAV-300i are identical to the ones used in our reference amplifiers. Innovative engineering, unmatched capabilities, flawless build quality—fundamental elements of the KAV-300i and standard in all components bearing the name Krell.

The KAV-300i—Out of this world performance at a real world price.

Under \$2,400. From Krell—The Leader in Audio Engineering.



Krell Audio+Video

The Krell KAV-300i

T H E K A V - 3 0 0 i I N T E G R A T E D A M P L I F I E R

KRELL ■ 45 Connair Road ■ Orange, CT 06477 ■ Phone: 203-799-9954 ■ FAX: 203-799-9796