STUDIO | LIVE | BROADCAST | CONTRACTING | POST

ProAudio Review

MAY 2008

The Review Resource for Sound Professionals

Gig Tested!

APB Dynasonics ProRack Mixer

P32

Henry Engineering SixMix P48

In This Issue!

- **Ideal for Broadcast!** Henry SixMix
- **Essential Studio Tool!** SSL ProConvert
- **Mixers Reviewed!** Yamaha and Mackie
- **Line Array Advances!** Designers Speak Up

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World Radio History

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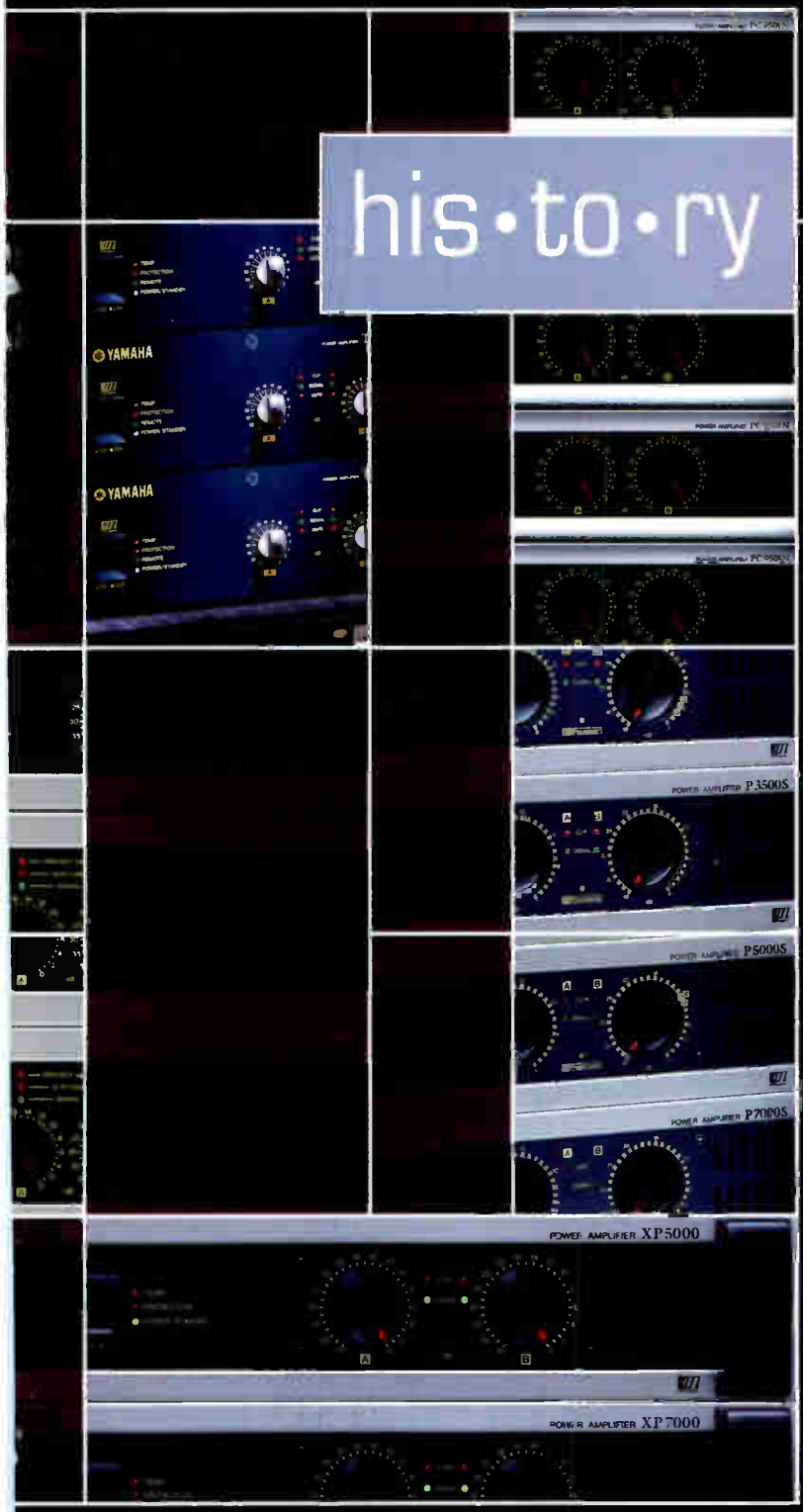

'his te ri, 'his tri – [**his**-*tuh*-ree, **his**-tree]
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1. The branch of knowledge dealing with past events.

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FIRST WE LISTEN

World Radio History

FROM THE PUBLISHER

John Gatski

The Nxtbook of PAR

Those of you who have been reading the digital edition of PAR may have noticed that we have a new delivery vehicle for our online edition. We have switched from Olive Software's Flash-based delivery to a newer, slicker, faster model: Nxtbook, a product of Nxtbook Media LLC.

Now, I am usually an old fuddle duddie about embracing change, but I have to admit that the Nxtbook delivery is a step up from the older Olive system. First of all, it loads nearly instantaneous on a fast computer with speedy Internet connection. And whether you search the pages one flip at a time or you click on page numbers from the table of contents or front cover headlines, it goes right to the page you want very quickly.

A subscriber can also search the book by key words — select an article from the 'Contents,' pull down menu, zoom in and out, then select one or two page view to optimize screen preference. It also offers a 'Tools' menu pull-down to select such option as thumbnail pages, a link-send function, 'post a note' on a page or enable book marks.

My favorite feature versus the old Olive software is the ability to save a version of the issue with a reader so you can permanently keep it on your desktop without being online. The old one would allow the download, but once you shut the computer off it was gone the next time you turned it on. As with the Olive version, you can also print out pages.

By the way, our digital edition continues to make its way around the world. We now have readers in many countries in Europe and far beyond — from the UK through France, the Netherlands, Poland, and Russia; in Africa; in Asia: Japan, Australia, China, and Thailand; and from South through Central America and Mexico. Canada, our neighbor to the north, has the most non-U.S. subscribers.

Many of letters to the editor actually come from people reading the digital edition because they can read an article and click on the 'letters send' box to immediately ask a questions or send a comment. If you have not checked out a sample of the digital edition, go to *www.proaudioreview.com* and check out a sample. If you want the digital version, fill out the free subscription card.

DESIGNERS SPEAK OUT

While you are perusing the pages of this issue — whether digital or print (analog), check out Heather Johnson's feature on the latest trends in line-array technology from some of the major players in today's live sound speakers. Designers, such as Meyer Sound Labs founder John Meyer, share their expertise on the the evolution of these speakers as they add self-power, DSP, and continue to reduce in size.

Speaking of live sound speakers, don't forget to check out the latest live sound console and live sound speaker buyer's guides in the issue.

PAYING TRIBUTE

I would like to dedicate this column to the memory of my oldest brother Frank, or Frankie as we called him. Because we were 11 years apart, we were not the closest of brothers, but it is sad when an illness comes along and steals your life at 59.

Frankie was different from me in many ways, patient, quiet and reserved, but he was the consummate Renaissance man of sorts—a man of many interests and talents. He was an intellectual and avid reader, held a Ph.D. in Philosophy, yet enjoyed the simple, pleasurable things in life, such as fishing, woodworking, restoring old houses, and experiencing the world of travel. I will miss those precious visits he made to my mom's house and all that energy he put into enjoying life that never seemed full of stress.

John Gatski is publisher/executive editor of Pro Audio Review.

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PLEASE?

Dear *Pro Audio Review*,

Could someone do a review on the Roland M-400? It looks like a good shoot-out topic between the M-400, LS9, and the Mackie TT24. If I missed a review of it then please let me know which issue. Thanks.

Randy McIlwain
Manager-LFO
Orange/Port Arthur, TX

HEART AND SOUL, NOT DATA

In the March 2008 issue of *PAR*, live sound contributor Tom Young addressed the increase in stored intellectual property via digital mixer show files. In doing so, he asked the question, "Do engineers have mix rights?" in this, our new era of live sound mixing with increasingly simple mix information recall.

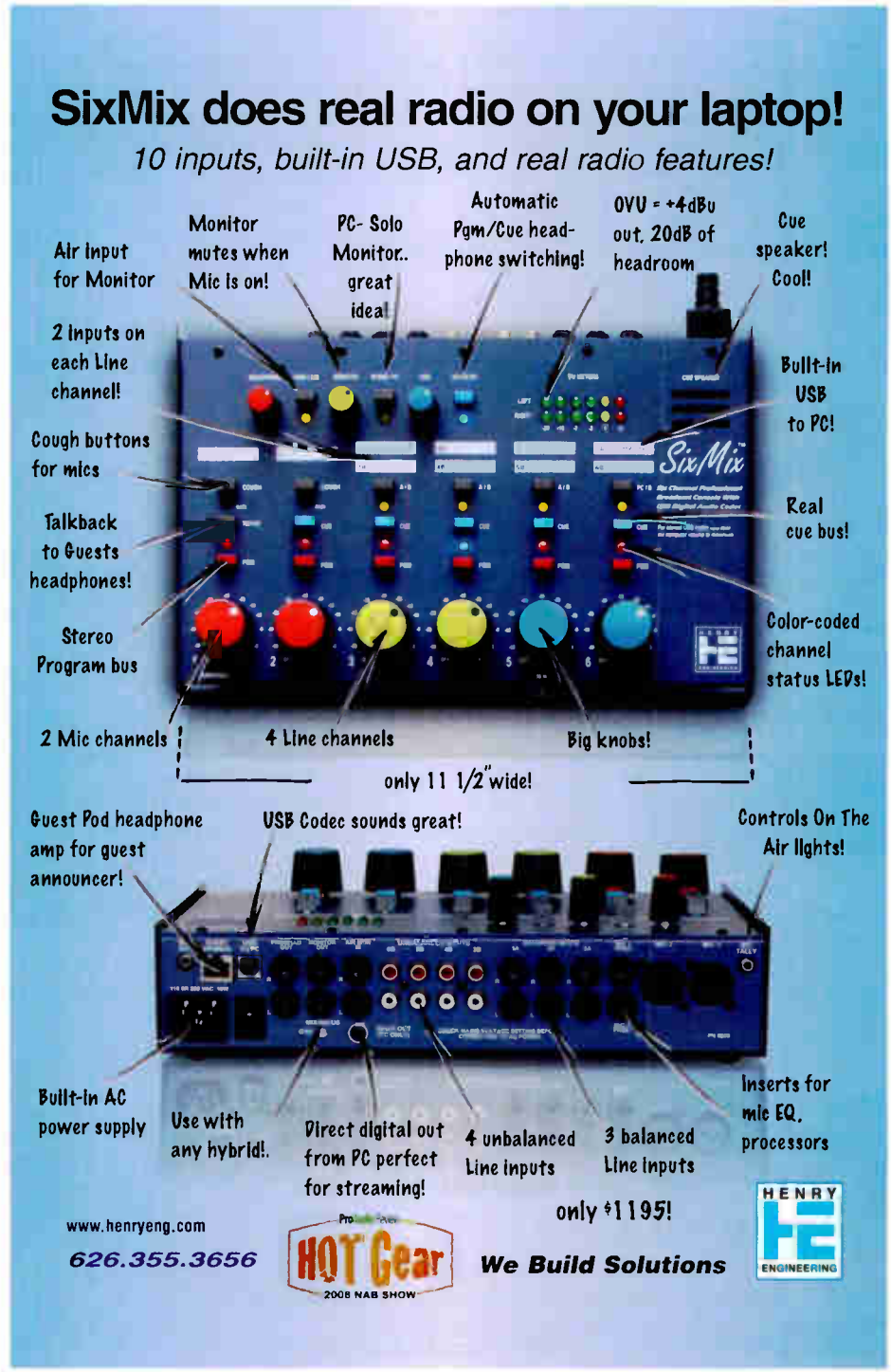
In response, another *PAR* live sound contributor, Will James, shares his perspective on the matter:

"I think that what an engineer brings to the table is an essence that cannot be captured on a thumb drive. The heart and soul of a mix is not a binary function, but a human function. Secondly, I think Tom is a damn good enough engineer that he need not waste his time worrying about some sound company copying his mix ... most of the yahoos out there trying to emulate his style will never happen anyway. He should spend more time looking forward than looking behind, never worrying about some audio guy with no skills stealing his mix. Blaze new trails — no one else can do what you do anyway!"

Will James
Phoenix, AZ

Feedback

We want to hear from you. Send your comments to **jgatski@aol.com**. *Please include name, city, state and job title and firm in the email. For product submissions, contact Strother Bullins at* **newproductsPAR@earthlink.net**.



World Radio History

LIVE

The latest news and products

NEW PRODUCTS

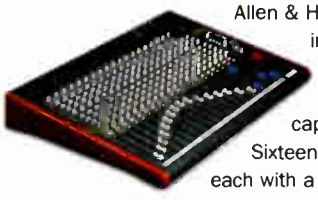
NADY SYSTEMS HM-20U headset microphone

Nady Systems recently announced the addition of their miniature uni-directional electret condenser headset microphone, the HM-20U. A full frequency microphone, the HM-20U has a durable, thin metal frame that can be easily molded to any user. Its ergonomic design and comfortable fit allow it to be used with or without glasses, hats, or headphones. Other features include a 5 x 8mm capsule for lightweight comfort, two sizes of foam windscreen to reduce wind and popping noise, and extendable fully adjustable boom 100 degrees for optimum mic capsule placement. The HM-20U is available with mini-XLR, 3.5mm phono plug (fits most standard wireless bodypack transmitters), or with standard XLR adapter for all wired and wireless applications.

PRICE: TBA

CONTACT: Nady Systems | ☎ 510-652-2411 ➲ www.nady.com

ALLEN & HEATH ZED-24 USB Mixer



Allen & Heath's ZED-24 stereo mixer, which is now shipping, provides 23 independent sources to the mix, 10 independent outputs, four aux sends (two pre and two post fade), a USB send and return (for PC or Mac recording, playback and effects), a dual stereo input capability and advanced monitoring facilities.

Sixteen mono channel strips are complemented by four stereo channels, each with a main stereo input on jack sockets, and with the ability to take additional stereo inputs from phono sockets or from the USB audio input, reportedly enabling the engineer to control and route any source. ZED-24 features a responsive, 3-band swept-mid EQ, with an optimized slope for equalizing individual instruments. The ZED-24 also features the new DuoPre preamps.

PRICE: $799

CONTACT: Allen & Heath | ☎ 866-474-7711 ➲ www.allen-heath.com

AVIOM 6416m Mic Input Module

Aviom has introduced the latest addition to its Pro64 Series of audio distribution products, the 6416m microphone input module. In tandem with this debut are its companion products, the RCI remote control interface and the MCS mic control surface.

The 6416m offers 16 mic-level analog inputs to a Pro64 audio network system. Each channel on the 6416m has a continuously variable gain setting, multi-segment signal level LEDs, and individual channel on/off switches. The 6416m supports all valid Pro64 sample rates, from 44.1/48 kHz ± to 192 kHz ±.

The 6416m can be remote-controlled by adding the RCI and MCS. The 1U RCI provides a network access point and monitor station and accepts the MCS.

PRICE : $6,000

CONTACT: Aviom | ☎ 610-738-9005 ➲ www.aviom.com

MICROSONIC Epic Series personal monitors

Microsonic Music has introduced its Epic Series of sound-isolating personal monitors. The design features Microsonic's Swivel Nozzle, which adjusts to the shape of the individual's ear to reportedly deliver the sound at the correct angle for full frequency response and a comfortable fit. Silicone ear flanges of three sizes are available to further customize to the individual's ear for maximum sound isolation and comfort. A detachable cable allows for replacement in the event damage to the cable.

PRICE : TBA

CONTACT: Microsonic Music | ☎ 877-376-7139 ➲ www.microsonicmusic.com

NEWS NEWS NEWS NEWS NEWS NEWS NEWS NEWS NEWS NEWS

Tour sound superpower Sound Image of Escondido, California recently passed the 5,000,000 watt mark in I-Tech inventory. Sound Image has deployed Crown I-Tech amplifiers on some of the highest profile and most successful tours in the United States over the past few years; Gwen Stefani, Toby Keith, Rascal Flatts, Eric Clapton, Carlos Santana and Jimmy Buffett have all traveled with an arsenal of I-Tech 8000 amplifiers in tow.

Turbosound's Flex Array is a medium-scale professional sound reinforcement system that combines elements of Turbosound's patented point-source system with line-array technology, resulting — according to the company — in a one-box-fits-all loudspeaker product suitable for a variety of venue types. By simply changing the orientation of the cabinet, one enclosure type is capable of being used in either line-array or point-source configurations.

The 10th Ultra Music Festival in Miami, featuring world renowned DJs and electronic music artists, was recently held in downtown Miami's Bicentennial Park on five separate stages. Thanks to Latin America partner Covenant Music and Managing Director Alex Vincero, Powersoft amplification was well represented at the festival with 18 K Series K10, K8, and K6 digital amps. According to the event's organizers, the sound quality provided by Powersoft amplifiers in tandem with DAS speakers was exceptional.

At the new Ovation Lounge music club at Green Valley Ranch Resort in the greater Las Vegas area , Phoenix-based AVDB (Audio Video Design Build) Group supplied and installed a FOH loudspeaker setup comprised of numerous L-ACOUSTICS KUDO enclosures arrayed horizontally above the front of the stage. "Ovation Lounge is an asymmetrical room that requires different horizontal coverage on the sides," offers AVDB Group CEO Scott Oosthuizen. "The room also needs the kind of SPL that is only available from an active three-way system like these powerful KUDO line-array cabinets."

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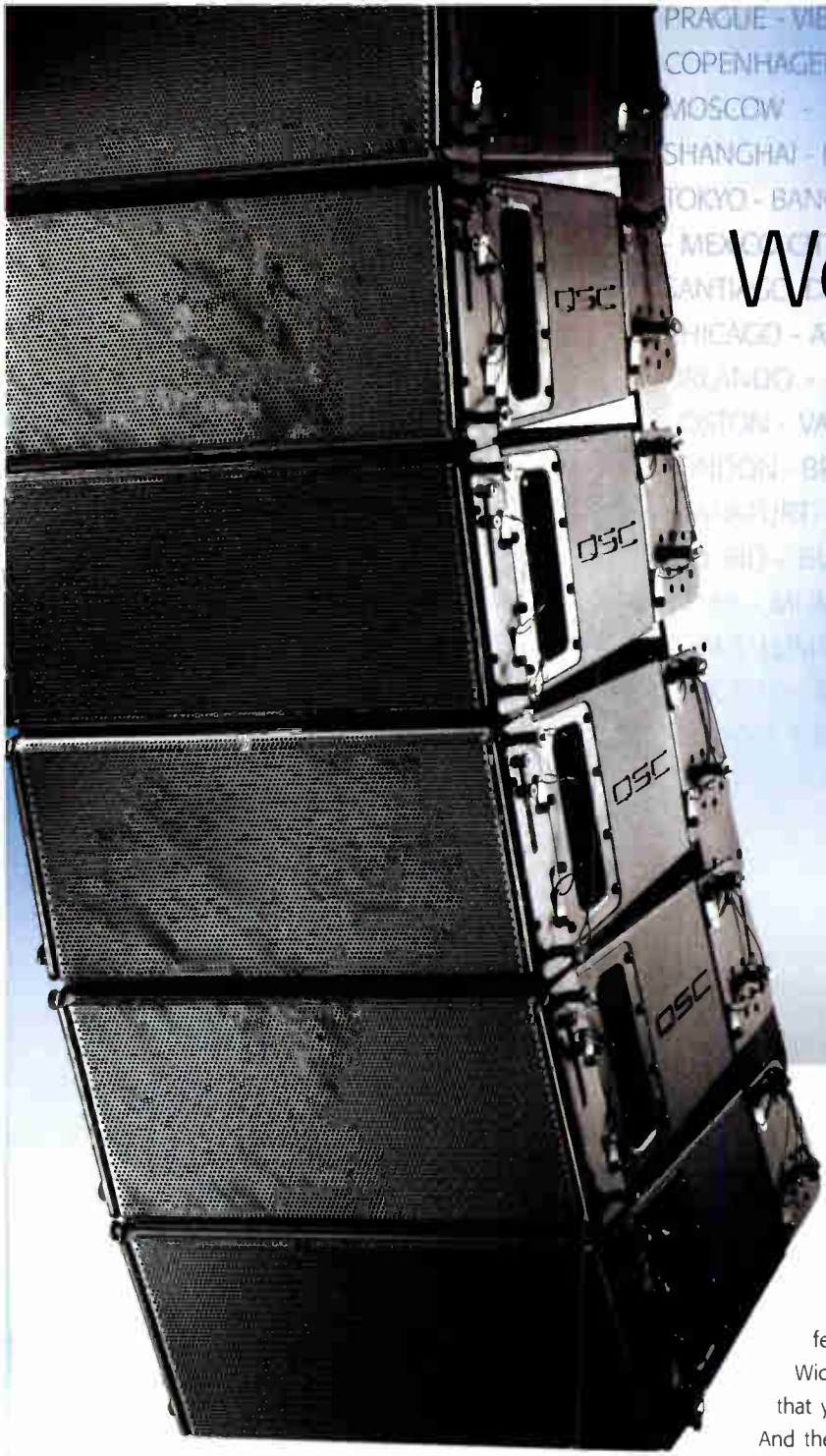

World**Wide**Line

World**Class**

The QSC WideLine-8 line array system is designed to be flexible and scaleable. Its compact size and thoughtful ground-stack features make it a great solution for smaller venues. Assemble WideLine-8 elements into longer arrays and you'll get performance that you would expect from much larger and more expensive boxes. And the signature wide coverage can reduce or eliminate the need for near and out-fill loudspeakers.

The WideLine™ system also features the QSC SC28 system controller with Intrinsic Correction™ processing — an innovative approach to creating and programming system tunings that produces amazing accuracy combined with preset recall simplicity. Or choose the flexibility and rich GUI environment of networked QSControl.net™ processors. Lest we forget, no WideLine system would be complete without the PL380 "ultimate Class D" amplifier for efficiency combined with fidelity and audio finesse rivaling the best linear designs. Hear for yourself why QSC line array systems are taking the world by storm. Contact your local distributor, call us at +1-714-754-6175, or visit us online for more information.

www.qscaudio.com

QSC

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World Radio History

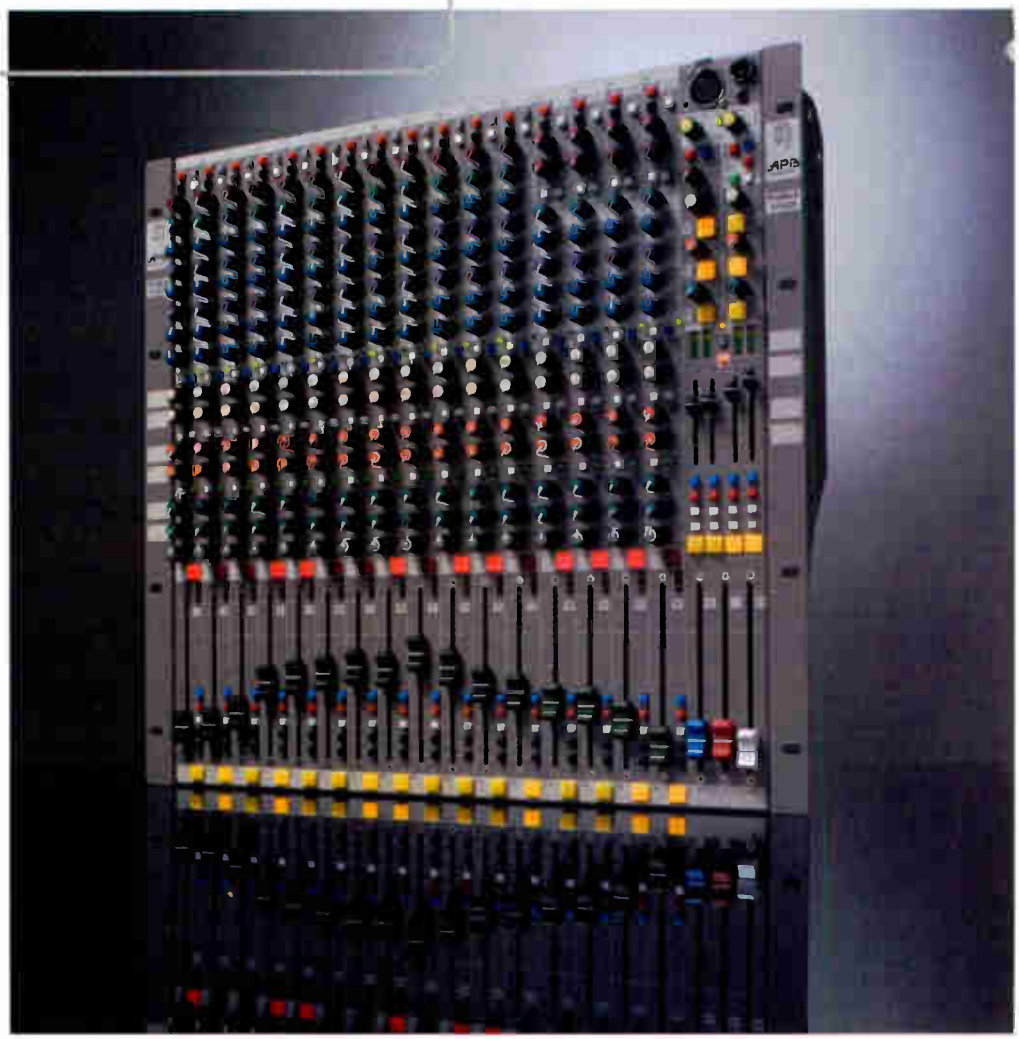
LIVE REVIEW

by **Andrew Roberts**

APB Dynasonics H1020

This may be the king of the mid-priced/rack mount mixer class.

By now, most of us should be familiar with APB Dynasonics — the small manufacturer that, in the face of industry-wide digitization, has chosen to embark on a path of building high-quality analog consoles for the pro user. Following the success of the company's large format Spectra series consoles (reviewed in *PAR* March 2007), they have delved into making utilitarian boards for smaller applications. Called the Pro Rack series, this series features a monitor console and a recently released house console called the H1020. To me, the reason for this foray is easy to understand. For every job I have using a 32-channel or larger-frame console, I probably have 10 that are suitable for a small-frame board of 16 channels or less.



FAST FACTS

APPLICATIONS
Live Touring and Theater, Installation Audio

KEY FEATURES
Mic preamps in total; 12 mono mic/line inputs; four dual-mono/stereo mic/line inputs; per channel: phantom power, polarity reverse, mic/line switch, mic pad switch (combo mic/line/pad switch on stereo inputs), variable frequency high-pass filters with 20-400Hz sweep range at 12dB per octave; four-band EQ; six aux sends; L/R, center, and mono mix bus assignments along with additional assignment switches to subgroups 1-2 and 3-4 with balanced XLR outputs, TRS bus inputs and TRS insert connectors; much more.

PRICE
$3,400

CONTACT
APB-Dynasonics | ☎ 973-785-1101
➲ www.apb-dynasonics.com

FEATURES

The H1020 has a rack-mountable chassis with a rotating input/output bay that allows the board to be configured vertically or horizontally. The chassis, being rack-mountable, is 19-inches wide. It measures 17.47-inches (or 10 rack spaces) deep or high (depending on orientation) and it has a maximum depth of 10.32-inches (when the I/O pod is positioned for horizontal use).

The H1020 has 16 input channels with 12 being dedicated mono and four channels configured for mono/stereo use. All of the board's 16 channels have XLR inputs (in fact, the stereo channels have two) and feature preamplifiers based on the renowned Spectra series desks.

The dedicated mono channels also have 1/4-inch line input jacks, a TRS insert jack (for unbalanced send and return) and a TRS jack for direct output (selectable as pre-fader, post-insert, or post-fader). These mono strips have individual phantom power switching, a mic/line switch (to allow for line level input on XLR), polarity reversal, a pad switch (-26dB) and an input gain control. The mono strips are outfitted with a powerful EQ section that features a variable high-pass filter (20-400Hz), a high frequency control (+/-15dB shelving at 10kHz), a sweepable hi-mid (400Hz-8kHz with a fixed Q of one octave and +/- 15dB), a sweepable low-mid (80Hz-2kHz, +/-15dB, fixed Q), and a low frequency shelf (+/-15dB @ 60Hz). The EQ section (except for the high-pass filter) is engaged by depressing a pushbutton.

The Aux section on the mono channels features six sends that are tied to a "pre" switch by pairs (1-2, 3-4 and 5-6). There is also a master switch to toggle the whole sec-

APB DYNASONICS continues on page 12 ➤

World Radio History

STUDIO POWER
in your POCKET

The POCKETRAK 2G is the smallest, easiest to use and most portable digital recorder available today. It easily fits in a shirt pocket so you can take it everywhere. The 2G features 2GB of built-in memory so you don't need external memory cards, and the built-in USB 2.0 connectivity makes it easy to transfer your linear PCM or MP3 recordings to and from your computer. Long battery life with the eneloop battery technology, a high sensitivity tilt-up stereo microphone and built-in stereo speakers make the POCKETRAK 2G a complete recording stucio in your pocket. The bundled Cubase AI DAW software lets you easily edit and master your audio recording on your computer

1.7 Ounces and slim true pocket-sized design

Tilt-up mic for tabletop recording

Eneloop rechargeable battery with up to 19 hours of battery life

Built-in speaker and headphone outs

Bundled Cubase AI4 DAW software for editing and burning CDs

Built-in 2GB memory and USB2.0 for easy transfers to your computer

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APB DYNASONICS Continued From Page 10

tion's (1-6) pre setting between pre-fader and pre-EQ. Additionally, sends five and six can be coupled to form a stereo pair with one knob becoming the pan and one dedicated to volume for the pair.

The channel control section of each mono strip features a pan control, a large mute switch (internally illuminated), a six-segment LED meter, a 100mm fader, assignment buttons (Mono, Center, L/R, 1-2, and 3-4) and a large PFL switch (also internally illuminated).

As mentioned earlier, the Stereo channels on the H1020 have dual XLR and 1/4-inch inputs. They also have 1/4-inch direct outs but are lacking the inserts seen on the mono strips. As would be expected, these stereo channels feature a scaled-back EQ section (with only one sweepable mid control [200Hz-6kHz] but the same HPF, low and high controls) but, surprisingly, it has dual input trim controls, dual-mono/stereo source switches, a phantom power switch and a polarity reversal switch. This allows the strip to truly function as either a stereo line strip or two mono mic channels (except that one will be without use of the polarity reversal). The stereo strips have a similar Aux section to the mono channels (with a mono sum of the left/right signal feeding the auxes) except that aux sends five and six are only capable of controlling one side of the signal (5 left, 6 right) when in stereo mode. The channel control section of the stereo strips is virtually identical to the mono channels except that the LED ladder is broken into two 3-segment ladders (for left and right) and the pan control is replaced with a balance control (for stereo line use) that reverts to a pan control when the strip is used as a mono channel.

The Master section on the H1020 is home to three 100mm master faders (Mono, Center and L-R) with corresponding LEDs to indicate signal present. Just above this main fader bank is the sub-group section. There you'll find four small faders with assignment buttons and PFL buttons. Above the sub-group area are four 8-segment LED ladders. These can show level at the Main busses (M, C, L&R) or, with the push of a button, the four sub-groups. The L-R ladder also shows signal whenever a PFL button is depressed on the console. Just above the Sub faders are the Aux masters. Each of these six rotary controls has a corresponding AFL solo button (internally illuminated like all the PFL buttons on the desk) and a solitary signal LED. The board has a full-fledged monitor section with source selections, headphone outputs (both 1/4-inch and eighth-inch), headphone level, a monitor output control (great for feeding a cue wedge) and a stereo alt output. There is also a four-pin light socket and an intensity control.

> All of the board's 16 channels have XLR inputs (in fact, the stereo channels have two) and feature preamplifiers based on the renowned Spectra series desks.

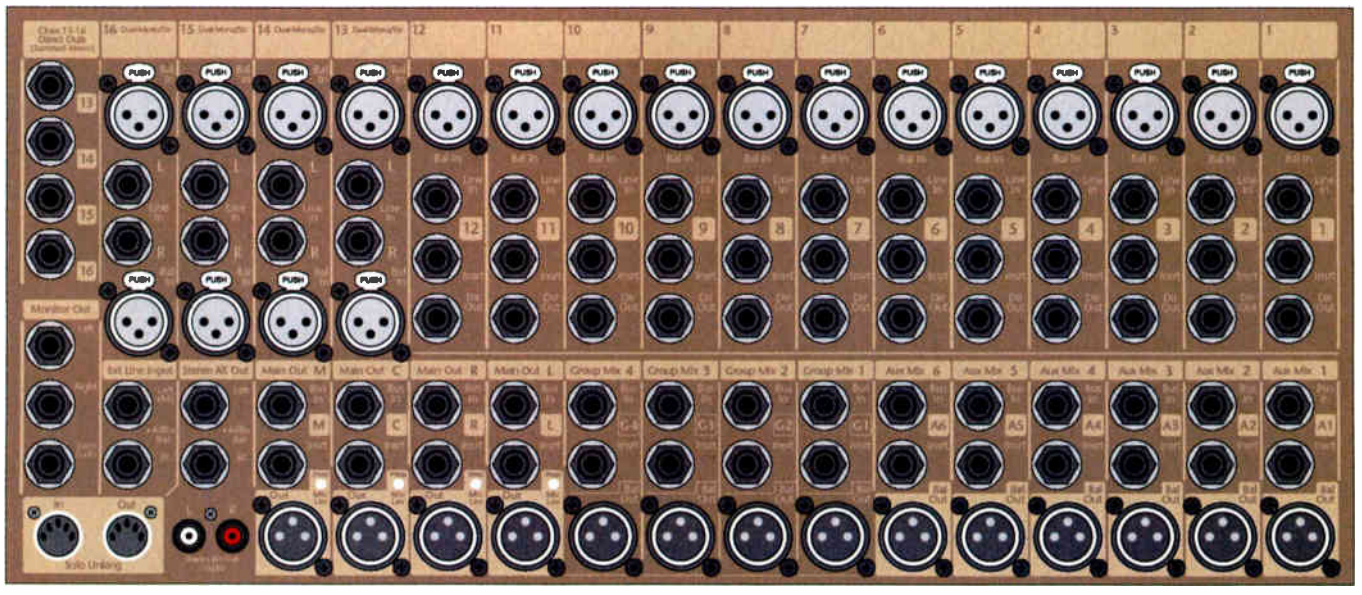
As mentioned, the input/output bay can rotate ninety degrees to facilitate vertical or horizontal (or in between if you have a slant rack case) use. All of the console's main, group and aux outs show up on XLR. All of these connections are mirrored to the inputs. That means that they are turned upside down so that the release tab on the cable's connector will be pointing down and you won't have to try and squeeze your fingers between that and adjacent insert jacks (all of these outputs have them). All of the group masters also have TRS jacks for Bus inputs (handy when linking consoles). Speaking of linking, the H1020 has solo linking jacks (in and out) for linking multiple consoles and maintaining a solitary monitor point (headphones on the master desk).

| IN USE

Based on my previous experience with APB's Spectra board, I had great confidence that this desk would sound and work at a level befitting professional use. So, armed with that confidence, I put the board to use.

My first adventure was a speech by Presidential candidate, Senator Barack Obama, to a group of hundreds of supporters. The venue was a two-story open area in an art museum complete with lots of marble surfaces. The Senator's good mic technique (using a handheld wireless with a hyper-cardioid capsule) and the APB's pristine sonics

APB DYNASONICS continues on page 14 ➤



A drawing of the H1020's rear connections.

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APB DYNASONICS Continued From Page 12

and powerful EQ (as well as a slew of distributed loudspeakers) combined to yield very intelligible results despite the surroundings. Sending autonomous feeds for things like press or a recording deck was a breeze with the H1020's many outputs and routing options.

Later, I used the board on some shows with a dance band that had a house mix and three monitor mixes. Just like my experience with the Spectra console, I was amazed by this console's superior sonics. I strongly suspect that there is not a console in this class, with this feature density, that even comes close to sounding as good as the H1020 does.

My last use of the H1020 was as a dedicated monitor console. This was a performance by gospel singer Martha Munizzi, and she was performing with a keyboardist, three backup singers and pre-recorded tracks. We found that the console was adept at handling the wide variety of signal levels coming into the desk and it processed all that incoming material and spit it out as five great-sounding wedge mixes with a cue wedge. While not as visually impressive as larger analog or digital consoles, this APB makes up for lower channel count with excellent functionality and stellar sound.

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| SUMMARY

Like a fine German automobile, the APB H1020 has been meticulously designed by people that know what users need. From rugged input and output jacks, to the variety of "pre" settings, to the powerful channel EQ, to the mirrored output connectors, to the adjustable lamp, this console is as well thought out as any I've seen — regardless of frame size. Add to that the board's superb sonics, and you have a killer combination.

My only gripes are that the AC power connector is in an awkward place that seems ripe for accidental disconnection. I would suggest putting a strip of gaffer's tape near the connector to prevent this from happening. Also, the high and low frequency controls on the channel EQ aren't labeled with frequency points. That's something that guest engineers would probably appreciate. Lastly, what happens when you jam so many features into such a small amount of space? You lose the place for your board tape. The modest buffer at the top of each channel strip was too narrow for my 1/4-inch tape but that's a trade I'll make any day as the rewards far outweigh this minor inconvenience (there is a small amount of real estate where a grease pencil could work).

Sending autonomous feeds for things like press or a recording deck was a breeze with the H1020's many outputs and routing options.

Overall, the H1020 is, like its larger sibling the Spectra, a remarkable board. It exudes a very rugged feel and at every turn, is a pro piece. I own a high-end, small frame console and a couple other mid-priced rack-mount consoles and, to be candid, think that the H1020 is likely the king of this class. At $3400, it isn't cheap. For the feature set and sound, it is an incredible bargain. Worship house installs, nightclubs, schools, and sound reinforcement providers from local to international are great candidates for this board.

Andrew Roberts is owner of Rockville Music Service, a live sound firm, in Washington, D.C.

World Radio History

Axel, BEHRINGER Germany Systems Engineer, was the proud father of the ground-breaking XENYX mic preamp.

Thomas, BEHRINGER Germany Technical Director drove the technology of the 2442FX to the limits of physics and then half a kilometer beyond.

Thomas, BEHRINGER Germany Software Engineer, steered the USB interface and ASIO drivers for the 2442FX.

Shou Long helps assemble the XENYX 2442FX at BEHRINGER City, our highly advanced manufacturing complex. He may very well have built a 2442FX 4U!

Bing, one of our R&D Assistant Test Engineers, helped make sure that the prototype 2442FX complied with all internationally-recognized safety and RF emissions standards.

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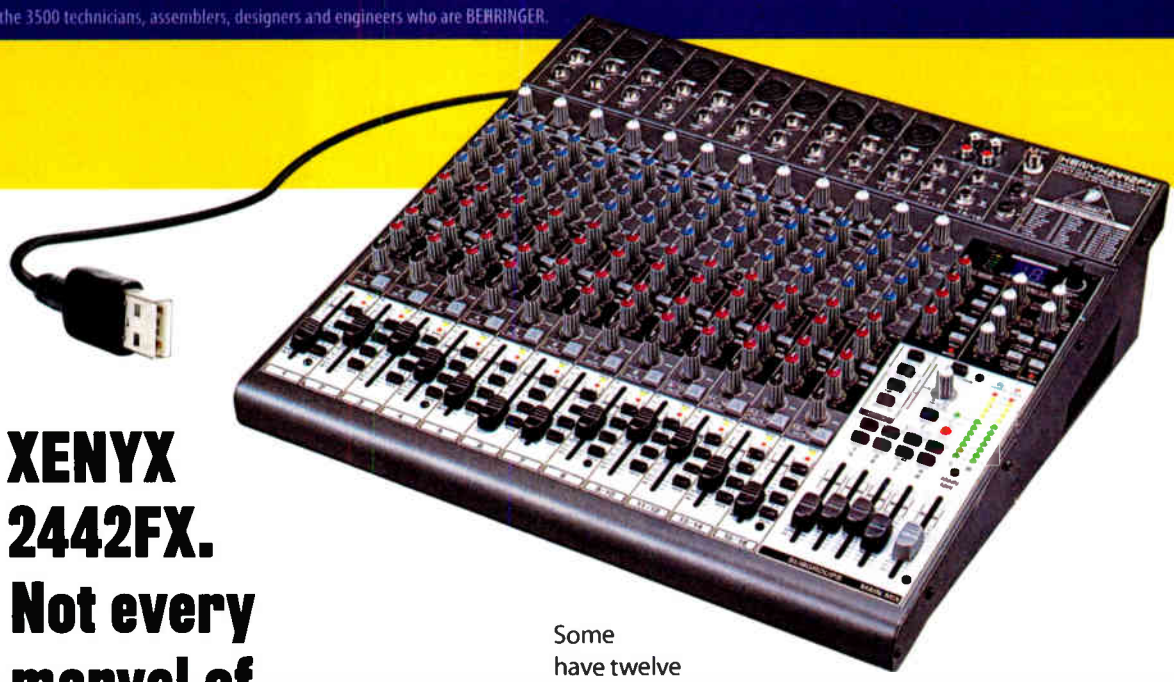

XENYX 2442FX. Not every marvel of German engineering has four wheels.

Some have twelve suhweet-sounding XENYX mic preamps, four buses and an outboard 2-in/2-out USB interface. But the Thomas's, Alex and the rest of the BEHRINGER Germany development team didn't stop there. They included four bands of mellow "British" EQ on each channel. And, so you don't have to spend more bucks on plug-ins or outboard processors, they added 100 24-bit effects including reverbs, delays, phasing and flanging.

Uli Behringer (center) isn't an easy person to please.

When everyone, including the hyper-picky Uli Behringer was satisfied, the XENYX 2442FX emigrated to BEHRINGER City where it underwent grueling stress, life cycle and safety testing...and then final meticulous production.

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World Radio History

by **Heather Johnson**

Line Array Advancements: Designers Speak Out!

Line array loudspeaker systems have eclipsed conventional delay and ground-stacked systems in larger venues since the early 1990s. L-Acoustics played a large role in bringing the J-shaped designs to the forefront with the Dr. Christian Heil–designed V-DOSC system, which revolutionized large-scale shows by producing full, consistent coverage with smaller boxes, and fewer of them. The system also included modeling software that allowed engineers to customize the system to suit each venue with greater accuracy and efficiency than ever before.

From that point forward, loudspeaker manufacturers across the board have produced their own proprietary designs, each putting their own spin on the same basic concept. Recent advancements in everything from materials to design tools have allowed engineers to continually improve the loudspeaker, its components, and a system's companion software, resulting in better performance and durability with each update. To continually uphold industry standards and keep abreast of changing technology, the R&D department's role has become even more complex. To find out how some of the industry's leading design engineers consistently stay at the forefront of live sound technology, we decided to take a tour of their labs.

DOWNSIZING THE SYSTEM

Once resigned mainly to large venues, line array systems can now be found in houses of worship, small to mid-size music clubs, performance theaters, and even corporate events. To meet this demand, manufacturers have developed compact array systems that offer high performance and consistent coverage in a smaller package. This keeps the design teams on their toes. "The design challenges are the same: constant horizontal directivity is vital, and all of our line arrays have 90 degree or so horizontal dispersion," says Bill Webb, technical director of Martin Audio Ltd. "As you go down in size, the maximum SPL achievable per box is less. But that's fine, because you're not trying to throw as far." For example, Martin Audio's W8LM a mini line array enclosure, provides100-degree (-6dB) horizontal mid and HF pattern control and measures 24.41 x 17.5 inches.

New materials such as neodymium in transducers and certain plastics help lighten a loudspeaker's weight. The JBL design team focuses on making lightweight component transducers. "JBL's patented Differential Drive technology coupled with neodymium magnets, with two voice coils in every loudspeaker, enables us to offer loudspeaker components that are one-third the weight of traditional components from other sources and also have increased output capabilities due to the dual voice coil technology," says David Scheirman, JBL's Vice President of Tour Sound. "We also use a lightweight engineered composite wood product called PlyMax, which lets us offer very strong, rigid, robust enclosures and reduced weight compared to traditional materials."

Meyer Sound Principal John Meyer

"Some of the integrated systems that we've designed have self-contained DSP and amplifiers, so you have these high efficiency amps that are super-small, don't really generate a lot of heat, and are super lightweight," says EAW principal engineer Nathan Butler. "For the EAW NTL720 we have a 1,500-watt amplifier that weighs just over nine pounds. Ten or 15 years ago, that would have been unheard of."

Looking at the enclosure, the "baby" NTL720 and NTL730 line array modules both feature side-mounted LF drivers, another space-saver. "We basically achieved the same beam width as we would if those woofers were firing forwards, but if they were firing forwards the physical width of the box would be larger," says Butler.

Rigging systems can be built from aluminum instead of steel, while new analysis software allows designers to model stress failures, which allows them to maximize a component's strength with the least amount of material. That's especially important in the U.S., where gas prices have reached an all-time high, and therefore production companies aim to take as few trucks on the road as possible. "Truck-pack is always a consideration when designing new equipment for the professional sound industry," says Tim

Roger Waters on Coachella 2008's main stage —left and right main PA arrays each are comprised of 15 L-ACOUSTICS V-DOSC enclosures with three dV-DOSC hung below

World Radio History

Tardo, transducer engineer at Peavey Electronics. In addition to neodymium magnets, Tardo notes that Peavey's "proprietary planar manifold technology allows us to place more drivers in a very compact space without incurring acoustic interference patterns that you would get with traditionally spaced drivers." The Versarray 212 line array enclosure packs 16 components—two 12-inch woofers, four ribbon drivers and 10 midrange speakers—in one small box without compromising performance.

ADVANCED TECHNOLOGY MADE EASY

With a broader range of line array-equipped venues comes a pool of engineers with a broader range of skill sets. Therefore, designers must make sure that even the most complex loudspeaker management systems and modeling software have a reasonable learning curve to ensure proper alignment. "The way a line array works acoustically is not as straightforward as it might appear," says Webb. "Correct set-up is critical, both in terms of the curvature of the array and the signals fed to it. At Martin Audio we develop an accurate, virtual acoustic model of the line array in 3-D based on high-resolution measured data. This is fed into our DISPLAY 3-D software, which will compute the correct splay angles of the array for each particular venue and the electronic controller settings required."

In JBL's VerTec line, as well as their compact constant-curvature VRX line, designers work to create easy-to-assemble suspension hardware. "The customer does not have to make choices or decisions about optional, add-on suspension accessories," says Scheirman. "The ease of assembling and reconfiguring the array, which is especially important for portable applications, is an inherent feature of the product line. The VerTec's software calculator allows the user to quickly make decisions about coverage, SPL capabilities, and directionality for the line array. This puts some of the complex technological decisions within the reach of many more people."

Peavey's Versarray Series line array enclosures feature an adjustable rigging system that allows easier setup and teardown. Users can adjust the angles between the array modules from 0 degrees (straight) to 10 degrees, and quick-release pins are available for the rigging hardware to provide efficient field adjustments or reconfigurations. The company also wants to make it easy for their systems to sound good. "The linking hardware is designed to optimize the arrays by keeping the pivot point between the two boxes where it belongs," says Tardo. "It maintains the integrity of the high-frequency line by minimizing the separation between the manifolds in adjacent arrays. This gives you the proper spacing for the horn manifold."

For Meyer Sound, ease of use goes hand-in-hand with their self-powered products. "The linear systems that we've created are optimized for being plug-and-play; they are very straightforward so all you really need to do is plug in and go," says president John Meyer. "In addition, we have the Galileo Loudspeaker Management System, which has been designed to make it very easy to 'dial-up' the size of the array and drive line array system with audio."

EAW offers loudspeakers with three levels of usability. "With the NTL720 Series, we've actually worked a lot of features into the input panel that allow you to emulate some of the software functionality without

LINE ARRAY continues on page 18 ➤

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- Black, white and unfinished versions
- 3-standard sizes for uniform clusters
- Classic designs blend with decor

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LINE ARRAY Continued From Page 17

ever having to use the EAWPilot software package," says Butler. "So people who aren't as PC savvy or who chose to leave their PC at home can utilize three back panel switches that allow for basic control and tonal adjustment. The next step up involves utilizing EAW Pilot to connect with the system through its on board proprietary network called U-NET to adjust front-end EQ and tailor the high frequency EQ to adjust for air loss effects–typical functions that an engineer might be used to. The third level is to actually get into each individual loudspeaker enclosure and adjust delay and EQ."

While the loudspeaker systems lighten their loads, the live sound system overall is becoming more streamlined, thanks to the increased use of digital consoles, wireless mic systems, PC-controlled amp racks and modeling software, among other components. Tuning a room via a laptop PC offers greater control, consistency, and efficiency, while CAT5 cabling, Ethernet connections, and Fiber Optic wires lessen the number of cables and keep computers running at top speed. "It's getting to the point where you can connect everything with CAT5 cables and define how you want all of your audio channels routed through the computer screen via the DSP," says Butler.

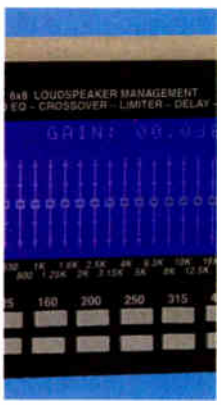
With that in mind, manufacturers have to ensure that their products network properly with a variety of digital components. In coordination with sister company Crown, JBL's R&D Department developed DrivePack technology for use in creating integrated, powered loudspeaker systems, as well as network input modules to allow certain JBL products to link into parent company Harman Pro Group's HiQnet networking protocol. "We have networking embedded as an integral part of the system," says Scheirman. "Ethernet connectors are built into the signal processing module, and all of the different control and monitoring parameters of the loudspeaker systems can be addressed with standard information technology, such as CAT5 cabling, and treated as a single network. Literally hundreds of devices can be controlled and monitored simultaneously over the same network with

The new self-powered, compact EAW NTL720 line array in tandem with the KF730 Series small-format line array

LM15

TRX153N

DCM2000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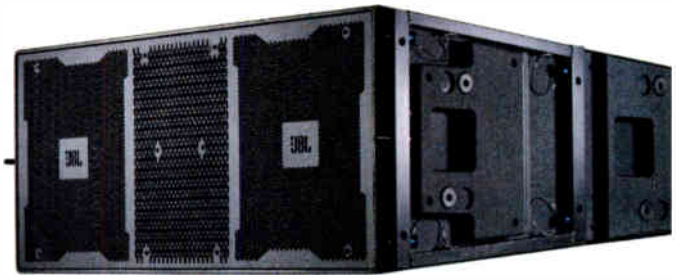
that capability."

EAW introduced their network system last year with the UX8800 digital signal processor. "Most of our products will be integrated systems with onboard amplifiers and DSP," says Butler. "Essentially, if it has a power cord on it in the near future, it'll also have a U-NET port on it. We don't consider a loudspeaker with integral DSP and amplification to be just a sum of its parts. It opens new doors for the designer, allowing us to provide a level of control and adjustment that is difficult to realize with the individual pieces alone." Nexo added EtherSound capability—which has low latency and is accepted among many manufacturers, including partner company Yamaha—to the company's NX242 controller and the NXAMP.

Building on the concept of system integration, a number of loudspeaker manufacturers operate as part of a larger pro audio umbrella and aim for synergy among brands. Nexo aligned with Yamaha in 2005, and Meyer Sound acquired LCS Audio the same year. EAW is a part of LOUD Technologies, which also encompasses Martin Audio, EAW Commercial, Mackie, Tapco, Ampeg, and Crate, among others. JBL is part of the Harman Pro Group that includes Crown, Soundcraft, Lexicon, DigiTech, AKG, BSS, dbx, and Studer. Naturally, these companies want to achieve system congruency between brands, which is a point to consider in product development.

Aside from sharing EtherSound capability, Nexo and Yamaha are beginning to jointly develop products, with NXAmp marking the first foray. EAW can work with multiple design centers worldwide to share various levels of expertise and operate more efficiently. Meyer Sound aligned with brilliant minds at LCS Audio to develop the Constellation electroacoustic architecture. "It was decades of research into the attributes that make for exceptional listening spaces combined with advanced digital and transducer technologies that culminated in creating a system that provides natural-sounding variable acoustics."

JBL similarly has the advantage of teaming Harman's various R&D departments to create synchronized systems and discuss ideas for future integrated products. "A single software package allows the system designer and operator to interface with all product classes in the Harman Pro system, from the wireless mic systems and mixing console all the way out to the amplifiers or powered loudspeakers," says Scheirman.



The JBL VT4880ADP ultra long excursion array-able subwoofer with DrivePack technology

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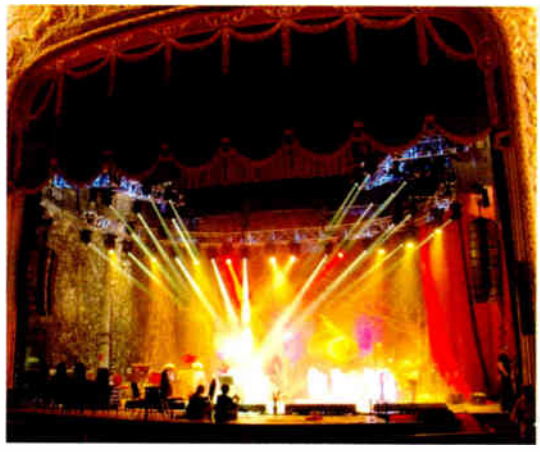
World Radio History

by **Tom Young**

Line Arrays Good (But Not New) News



For well over 10 years, speakers have seen a significant change in design with the use of "Vertical Line Array" systems. The idea of line array systems is not new at all. Actually, line array systems were used a lot in the 70's with "column" design speakers. Does anyone remember a Bogen or Shure Vocalmaster PA? There were several issues that existed with column speakers, one being that large-wattage power amps weren't available and eventually those systems were replaced with bi-amplified systems. With advanced speaker and driver design, larger power amplification, along with improved high frequency wave-guide horn design, line array systems have seen a major resurgence in the professional audio market and travel on all major tours.

CORRECT USE

As in all speaker systems, the main element for using a line array is to use it correctly. The solution to line array systems is how the drivers work together in multiple speaker configurations. The benefits of vertical line array systems are long throw coverage and low frequency directionality. When building the array, several speakers should point into the seating area farthest away from the stage, then adding angle between each speaker to provide coverage as you get closer to the stage. Usually, you would end up with only one speaker covering the area closest to the stage. As your speakers cover areas that are closer to the stage, you have fewer speakers pointing in that area. This contributes to why most vertical line arrays have a "J" type of look to them. High frequency horn designs are built to have a real narrow vertical coverage (normally five to 10 degrees), while providing coverage horizontally at a very wide angle (normally 90 to 120 degrees).

The more the line array stays in a straight line, the better the directionality of the frequencies. When you take multiple low frequency cone drivers and array them together into a straight vertical line and all of the drivers are an equal distance apart and operating at the same volume and frequency response, the combination of the array actually causes lower frequencies to exhibit directionality in the vertical plane. Putting all of your lower frequency drivers in a row will provide increased output of the array while keeping lower frequency energy off of the ceiling.

When calculating what frequency your directionality extends to, you have to consider only the speakers that are essentially in a straight line. Once the angle between speakers is more than about four to five degrees, you will lose the effect. By using a typical "J" array, you still keep a significant amount of low frequency sound off of the ceiling. Low frequency directionality is directly related to the vertical height of the line array, which is equivalent to the frequency wavelength of the lowest frequency that exhibits directionality control.

HELPFUL SPECS

Speed of Sound: 1130 ft. per second in air (rounded up) 20∞C

Wavelength: 1130 ÷ frequency = wavelength (or 1130/Wave = Freq)

So, let's say you have 5,6 or 8 speakers in a straight line: 1130 ÷5 = 226 Hz/1130 ÷5 = 188Hz /1130 ÷8 = 141Hz

This is helpful in making a quick determination on what you are achieving in LF directionality based on the size of your array.

THE OMNI-DIRECTIONAL NATURE OF SUBS

With subwoofers being omni-directional in nature of each element in the array, there is no front-to-back directionality. This can cause low end to spill onto the stage and interfere with the monitor sound you are trying to achieve. Currently, cardioid and hyper-cardioid subs are being used on tours and now more than ever you are seeing subs flown with the main arrays. Cardioid loudspeakers are two transducers separated by an exact distance within the enclosure, with delay on the rear driver, creating a directional radiation pattern. Cardioid subs have a maximum level cancellation straight back of 180 degrees behind them, while the hyper-cardioid have maximum level cancellation at or around 120 degrees off-axis.

CHOOSING LINE ARRAY

When considering a line array, the vertical coverage of this type of speaker is normally well controlled and fairly even in most systems offered today. The horizontal coverage varies as you move off axis of the vertical line array, and frequency response is not consistent from one product to another, so listen to the differences before making your purchase. In some venues the only hanging points are close to a theater wall, so a line array located close to a wall can be problematic for reflections. Also, in venues with balconies, the balcony wall can provide a direct reflective surface that cannot be avoided when hanging a straight line array.

Additional benefits of choosing line arrays are found in touring load-in and set up. Hands down, line array speaker systems are easier and quicker to rig. Most arrays are rigged using only one or two motors and two crew members. The manufacturer designs of rigging systems are constantly improving based on end user comments. I see more and more vertical line array systems traveling on rolling carts with almost all of the rigging attached to the speakers. After attaching the main bumper bar and motor, it is ready to fly. There is no comparison to the time conventional speaker arrays require and additional parts needed to achieve similar results.

Fewer speakers are required to get better coverage of your seating area using a line array as opposed to a conventional array. The distance requiring delays has been extended with long throw array designs. Also, with the size of the enclosures and box count required on the truck, it saves drastically on the trucking required to do a show or tour. And these days, with the cost of trucking and fuel the savings is significant.

This is an exciting time to be mixing sound or designing sound systems with the options of speakers available today. The abundance of good speaker products has never been more evident. Manufacturers' improvements to DSP control of these systems are constantly evolving, making more systems closer to plug and play.

Tom Young is lead engineer for Tony Bennett.

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LINE ARRAY Continued From Page 19

CHALLENGES AHEAD

With such a wide range of customer and industry demands to consider, loudspeaker designers have much to consider when sitting at the drawing board. "Our team is now multi-disciplinary, with specialist acoustics, electronics, DSP, software and mechanical engineers," says Webb. "Patents are also a big issue and can take up an increasing resource. Time is the other challenge: balancing new research projects alongside medium and short-term projects. Good problems to have, really, but challenging nevertheless." Webb and his multi-disciplinary team are currently focusing on Martin Audio's OmniLine micro-line array, which is aimed at architectural environments such as churches, transport terminals, and conference centers. "With the OmniLine, we focused on eliminating the side lobes which can plague such applications and developed new software techniques to target the sound on the audience and keep it away from the roof or back wall."

Yorkville U15 Unity Series array

EAW rebuilt the popular Smaart sound system measurement/optimization software from the ground up, a lengthy project that involved providing both Mac and PC compatibility. They're also putting a solid focus on their U-NET digital audio network. JBL continues to look at stronger, yet lighter weight materials, as well as more powerful component transducers. Meyer Sound recently developed the diminutive MM-4XP 4-by-4 inch miniature self-powered loudspeaker. "The fact that we were able to make the MM-4 self-powered is pretty remarkable," says Meyer. "We had to incorporate an amplifier that was the size of the package, and while the finished product was two inches deeper than the MM-4, it's pretty incredible because it's powered by 48 volts."

Whether it's creating smaller, lighter boxes, updating software, or building a network, loudspeaker designers continue to raise the bar in line array systems. And no matter what approach they take, the listening public reaps the benefits.

"When you boil a speaker down to its basic parts, the transducer hasn't really changed much—it's a piston moving air driven by a coil of wire," says Butler. "Given the most common means of generating sound, manufacturers have come up with different ways of packaging systems and making horns, phase plugs, and other components, which is pretty exciting. We're all shooting for the same target, but we're all taking different ways to get there."

Heather Johnson is a San Francisco-based journalist and author whose books include "If These Halls Could Talk: A Historical Tour Through San Francisco Recording Studios"

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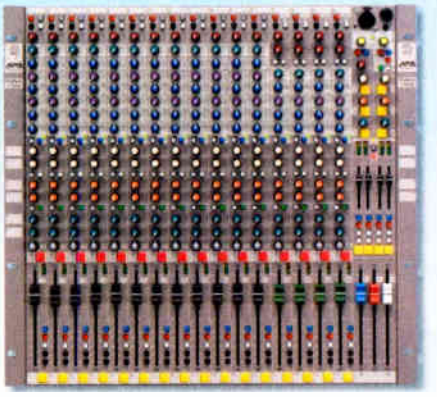

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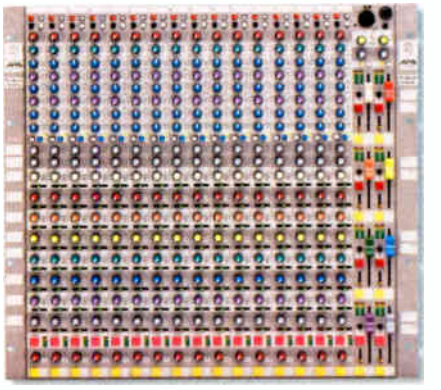


APB DynaSonics

Detailed Product Info Available at
www.apb-dynasonics.com

World Radio History

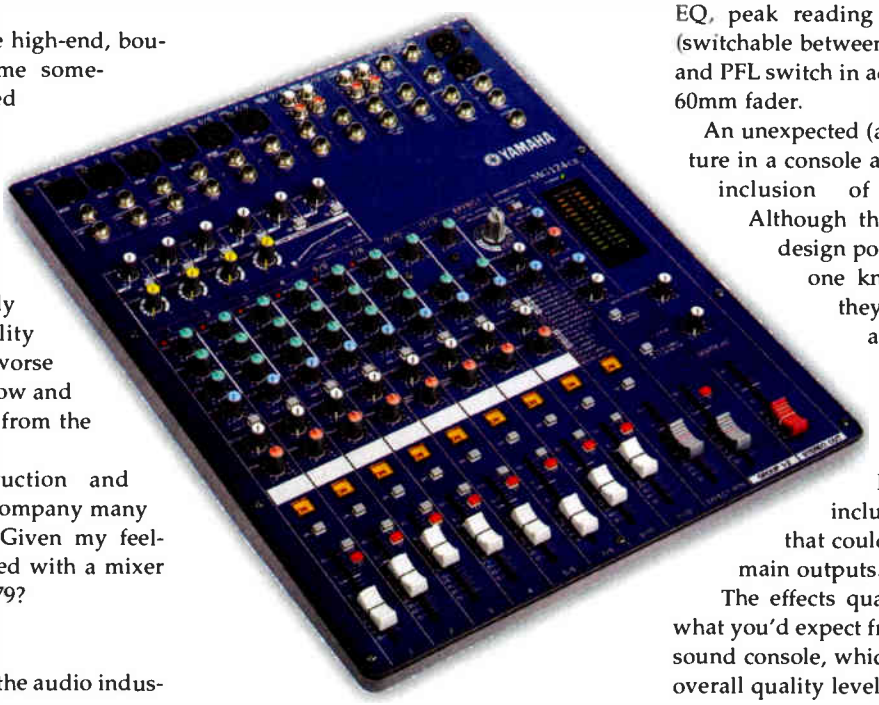
by **Richard Alan Salz**

Yamaha MG124cx Small Format Mixer

Yamaha offers high-quality, low-cost mixer with built-in digital effects … and a lot more.

Let me be honest: I love high-end, boutique electronics. Show me something with 1/4" anodized aluminum faceplates or polished rosewood sides and I'll be a happy guy. On the other hand, while those aspects of big-ticket products are nice, they're hardly necessary for functionality and there's truly nothing worse than a product that's all show and no go (to borrow a phrase from the automotive world)!

Still, high-end construction and materials often seem to accompany many great sounding products. Given my feelings, why am I so impressed with a mixer that carries an MSRP or $379?



| FEATURES

No one who has been in the audio industry for any length of time could possibly be unaware of Yamaha's dominance at the upper middle (and top end) of the live sound console market. I remember working with a small format Yamaha console in the mid 1980's and being very impressed with its clean sonics and good build quality. Yamaha has now produced a console at the bottom end of the market that incorporates many of the things they've learned along the way.

The MG124 console is available in two variants: the regular MG124c and the MG124cx. The

difference between them being the inclusion of a stereo digital effects processor in the 'x' version reviewed here. As you would expect at the console's price point, the construction materials are not of battleship-grade quality, but the console feels surprisingly sturdy given its partially plastic construction. Unlike some other (considerably more expensive) consoles I've recently used, there is no wiggle in the pots of the MG124cx, nor does it feel cheap.

The MG124cx offers six microphone inputs on XLR jacks with available phantom power. The first four channels of the Yamaha console are what I would call 'dedicated' microphone channels; the next two channels in line can be used as mic inputs or stereo line inputs. The main input channels feature a good sounding three-band EQ, peak reading LED, gain, pan, aux (switchable between pre and post), effects, and PFL switch in addition to a nice feeling 60mm fader.

An unexpected (and most welcome) feature in a console at this price point is the inclusion of four compressors. Although they are of the simplest design possible — they offer just one knob for adjustment! — they actually sound good and operate in the analog domain. I found them quite useful for drum overheads and vocals. It's too bad they didn't include a stereo compressor that could be patched across the main outputs.

The effects quality is probably about what you'd expect from an inexpensive live sound console, which is not to say that the overall quality level of onboard processing hasn't vastly improved over the years; it's more that the choices in effects (there are 16 available) are typical in the types of effects that are included. The eight available reverbs are all usable to some degree, the 'room' presets being my favorite. Also included are echo, flange, phase, chorus, auto-wah, and an awful distortion preset

Additionally, there are two stereo channels, which devoid of microphone inputs are for line level stereo signal use. They are configured in a similar way to the main inputs, although they lack the midrange EQ.

Also cool are the lighted channel selection switches. They look and feel like they were lifted from a multi-thousand dollar console — nice touch, Yamaha!

The Master section of the console has the faders for the stereo mains and ? subgroups, also present are a two-track input, headphone/monitor level, global phantom power switch, effects send and returns, the

YAMAHA continues on page 24 ➤

FAST FACTS

APPLICATIONS
Live sound, desktop recording

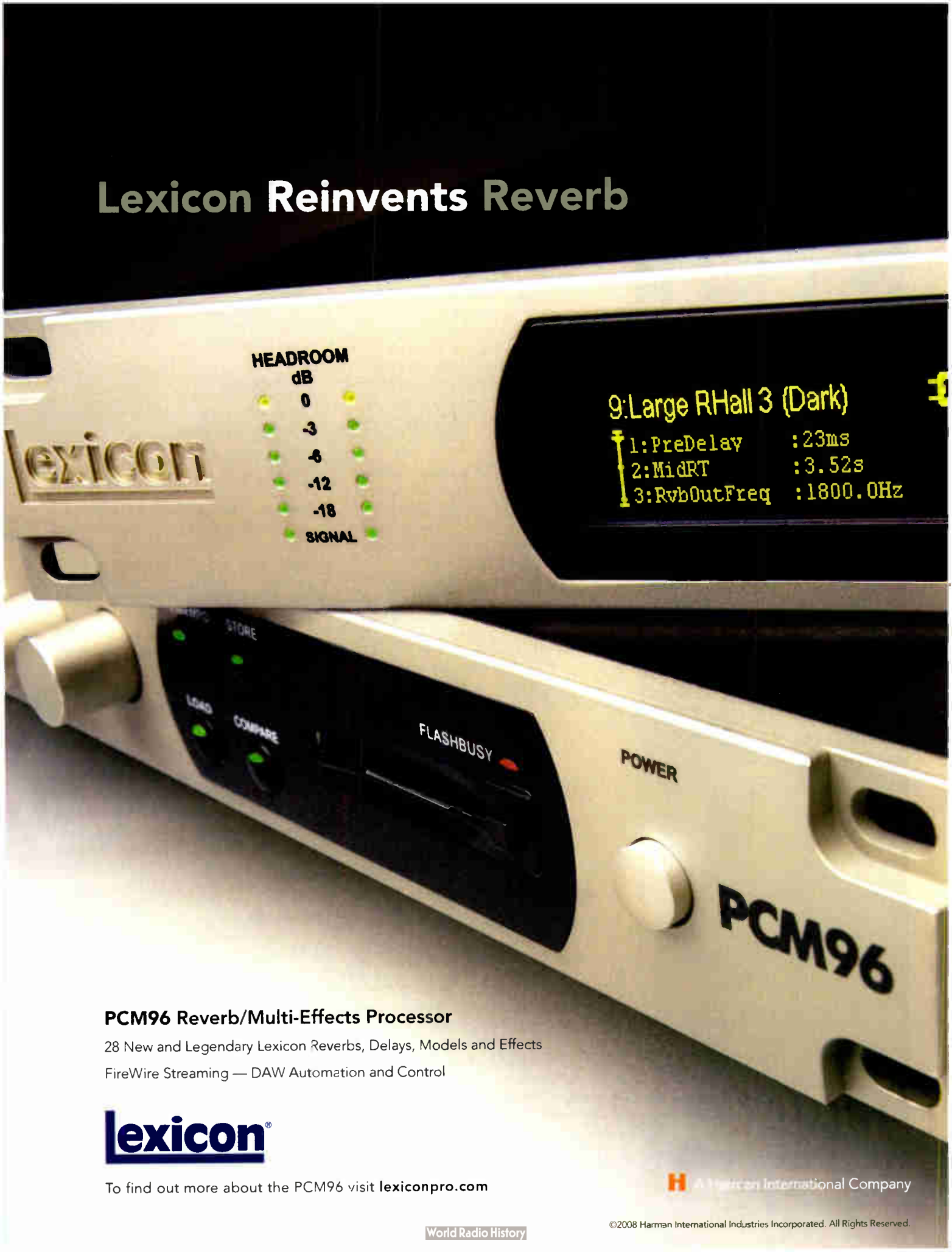
KEY FEATURES
12 inputs total including 6 microphone inputs; onboard effects processor; four analog compressors, lighted channel selectors; two track inputs.

PRICE
$379

CONTACT
Yamaha | ☎ 714-522-9000
➲ www.yamaha.com

World Radio History

Lexicon Reinvents Reverb



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World Radio History

YAMAHA Continued From Page 22

multi-effects selection area, and a 12 segment LED meter. The main outputs are on balanced XLR connections. TRS connectors comprise the rest of the I/O'S other than the record and playback inputs and the two stereo line input channels, which have RCA inputs in tandem with the TRS inputs.

| IN USE

It is interesting how preconceptions can subtly influence ones reactions to products or experiences. In this case Yamaha's excellent track record somewhat blunted my expectations concerning the sound of what can rightfully be considered a very inexpensive console. That said, I wasn't expecting all that much from the MG124cx when it came to audio quality.

Well, I was wrong; I was very pleasantly surprised by the overall refinement of the little Yamaha console. Drum overheads are generally a good test of consoles and preamps. Using the Yamaha with a pair of Microtech Gefell M71K's on a Premier birch drum kit, I was generally impressed by the way the Yamaha handled the transients and gave a good rendition of the acoustic space of the room. The included compressors (while not 1176 quality, of course) sounded quite good, and enhanced the sound of the overheads quite nicely.

> I put an Audix D6 on the kick drum, and a newer Shure SM57 on the snare drum and also liked what I heard. If I didn't know better, I would have easily believed that I was listening to a much more costly console.

I put an Audix D6 on the kick drum, and a newer Shure SM57 on the (Ayotte 4" maple) snare drum and also liked what I heard. If I didn't know better, I would have easily believed that I was listening to a much more costly console.

I think that the microphone preamps are probably they key to this console's excellent sound. I wouldn't be at all surprised to find that they were related to the preamps in Yamaha's more ambitious consoles.

I had similar good results with the MG124cx on vocals with microphones ranging from the Audio-Technica 4060, beyerdynamic m88tg, to the aforementioned SM57. The included compressor once again was a useful addition.

The equalization section on the main channels sounds good, although it's a little easy to overdo it with the +/- 15dB of travel available from the pots. A light touch does well in this application. Overall though, the EQ is more than respectable.

The included digital effects are acceptable for live sound use, but I wouldn't plan on using them for recording projects. That said, they're certainly no worse than what you'd find on competing products. If you don't really need the onboard effects, then the MG124c (which still includes the four analog compressors) might be an even better choice.

| SUMMARY

It really seems like Yamaha has the live sound console market just about sewn up. From the large frame digital PM1D and analog PM5000 to the small frame LS9 digital consoles, Yamaha has been a market leader for some time. Now it appears that the MG124cx will extend Yamaha's reach into the low-end of the live sound console market as well. The MG124cx has redefined my expectations for sonic quality in an inexpensive console.

Richard Alan Salz is owner of Vermont Audio Labs.

PRODUCTPOINTS

- Very good sonics
- Four analog compressors
- Easy to use layout

- Effects quality isn't the greatest
- Lightweight construction

SCORE

The MG124cx redefines expectations for sonic quality in an inexpensive console.

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World Radio History

CONTRACTING

The latest news and products

NEW PRODUCTS

SHURE UR1M Micro-Bodypack

Shure has debuted its UR1M Micro-Bodypack. Offering wireless audio in a compact package that is about half the size of most standard bodypacks and weighing three ounces with two AAA batteries, the UR1M is designed to be concealed and worn by actors, performers, musicians and public speakers.

Operating with the Shure UHF-R wireless microphone system using the latest version of the Shure Wireless Workbench software, the subminiature device uses the patented Shure Audio Reference Companding technology to deliver audio and a 60-75 MHz tuning range (region dependent). Tunable in 25 kHz increments and providing up to 3,000 selectable frequencies, the UR1M additionally offers selectable 10mW or 50mW RF power, up to nine hours of battery life, audio level metering and a backlit LCD display.

PRICE: $3,198

CONTACT : Shure | ☎ 847-600-2000 ➲ www.shure.com

MEYER Sound UPQ-1P loudspeaker

The latest addition to Meyer Sound's UltraSeries of loudspeaker products, the UPQ-1P demonstrates the same consistent and smooth sonic signature of Meyer Sound products found in an impressive list of theatrical productions as well as live performance venue and nightclub installations. UPQ-1P delivers a robust peak power output of 136 dB SPL with low distortion while offering flexible rigging options, wide vertical coverage and gradual off-axis rolloff to accommodate a range of installation requirements.

PRICE : TBA

CONTACT : Meyer Sound | ☎ 510-486-1166 ➲ www.meyersound.com

CREST AUDIO CC 5200 amplifier

Crest has added to its successful CC Series amplifiers with the new flagship CC 5200 offering 5,200 watts into 4 ohms in bridged mono mode. Based on proven Crest Audio Pro 200 Series technology and utilizing a linear power supply, the CC 5200 delivers 5,200 watts of clean power for main systems, monitors and subwoofers. Features include Crest Audio-designed toroidal transformers for consistent, robust output, tunnel-cooled heat sinks, variable-speed DC fans and extensive protection circuitry, plus a switched-rail class H output stage and triple-compound design to provide low distortion and excellent thermal stability.

PRICE : TBA

CONTACT: Crest Audio | ☎ 866-812-7378 ➲ www.crestaudio.com

AURALEX Large Room Analysis Form

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Customers can download both the original Personalized Room Analysis and new FREE Large Room Analysis forms as PDFs from Auralex's home page, or can call Auralex directly to have a copy of either form faxed. Once the form is downloaded, customers must print it out and fill out all sections. The more information included, the more accurate the recommendations from Auralex's expert engineers. Info required includes room type, use and dimensions, to name a few.

Price: Free!

Contact: Auralex | 800-95WEDGE | www.auralex.com

NEWS NEWS NEWS NEWS NEWS NEWS NEWS NEWS NEWS NEWS

MediaMatrix by Peavey has released version 1.4.2 of its NWare software, as well as memory upgrades and new I/O hardware, for the NION® programmable digital audio processing node.

NION NWare version 1.4.2 is fully compatible with the Windows Vista OS and adds support for network time protocols that allow NION to sync with network time servers or an Internet-based atomic clock.

Symetrix has issued free software upgrades for its Deuce 722 and Zone Mix 760 single-rack space processors. Version 2.1 of the Deuce 722 and version 2.1.1 of the Zone Mix 760 are compatible with Microsoft's new Vista operating system and add support for EAW's Smaart software. In addition, the new Deuce 722 software adds a host of functionalities released in previous versions of the Zone Mix 760.

The RapcoHorizon Company is introducing the LTI-1 stereo interface, perfect for connecting laptops, MP3 players or any other stereo 3.5mm audio output to a professional audio mixer. The LTI-1 is equipped with built-in ground lift switches and a -20db pad and also features left and right XLR outputs. The LTI-1 is available through The RapcoHorizon Company dealers and is priced at an MSRP of $135.

A new revolution in sound technology — 3-D sound — is about to come to live theatre, in a brand new staging of The Who's "Tommy," which will play in LA at the Ricardo Montalban Theatre in Hollywood for two weeks, June 18-29. Each guest will have headphones to wear, but unlike conventional headphone experience, where the soundscape is a straight line between the wearer's ears, EXP3D sound gives the listener a fully dimensional room of sound with height, width, and depth. The sound is designed by James Johnson, who created the EXP3D sound delivery system for this production.

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:: **GREG NELSON**, FOH: Pearl Jam and Incubus

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IN THE CONSOLE OR IN THE RACK

World Radio History

POST
The latest news and products

NEW PRODUCTS

DYNAUDIO ACOUSTICS AIR 12 Monitor

Dynaudio Acoustics has introduced the AIR 12, the latest addition to its AIR Series of reference monitors. AIR 12 integrates into any AIR network and provides all the features and system conveniences from the AIR range of networked studio monitors. The 1.1-inch soft-dome tweeter offers a 4mm die cast aluminum voice coil. To complement the lowest frequencies, the AIR 12 features an 8-inch woofer allowing an overall frequency range of 37 Hz-22kHz and up to 128 dB peak SPL. AIR 12 includes AIR monitor control with central remote control, preset storage and recall, calibrated levels, and integrated bass management. Other features include internal precision EQs and delay lines (accessible from the dedicated Installers PC Package.

PRICE: $2,095 - $2,495

CONTACT: Dynaudio Acoustics | ☎ 818-665-4900 ➲ www.dynaudio.com

GENELEC 6010A Monitor/5040A Subwoofer

Genelec has launched its smallest speaker system to date —the 6010A. The system has been designed for computer sound systems, workstations and other close-proximity listening applications requiring a low-profile monitoring solution. It can even be plugged directly into personal music players for enhanced acoustic enjoyment.

Designed as an active loudspeaker, the 6010A contains proprietary drivers, advanced power amplifiers matched to the drivers, active crossover filters and protection circuitry. The 6010A has a die-cast all-aluminum Minimum Diffraction Enclosure (MDE), which reportedly features large internal volumes, curved edges and mechanical strength. The 5040A subwoofer provides a partner to the 6010A for both stereo and surround applications.

PRICE: TBA

CONTACT: Genelec | ☎ 508-652-0900 ➲ www.genelecusa.com

DRAWMER M-Clock Plus Clock Generator

TransAudio Group has introduced Drawmer's M-Clock Plus, an AES Grade 1 master clock generator. M-Clock Plus supports clock rates from 44.1 to 192 kHz and additionally incorporates dual sample rate converters, allowing material to be re-sampled and synchronized to the selected high-precision clock.

In addition to its precision internal word clocks, M-Clock Plus can synchronize to an external word clock input or retrieve the clock from an AES audio signal via an AES11 input. The unit offers 10 word clock outputs, eight on the rear connector panel, plus two at the front for easy access when the unit is rackmounted. The exact frequency of the selected internal or external clock is measured and displayed with an accuracy of 2ppm.

PRICE: $2,199

CONTACT: TransAudio Group | ☎ 702-365-5155 ➲ www.transaudiogroup.com

AUDIO PRECISION APx585 Audio Test Solution

Audio Precision has unveiled its APx585, an audio analyzer capable of testing HDMI and Blu-ray audio. According to the company, engineers working with HDMI can now benefit from the speed and ease of use of the APx585 multichannel audio analyzer to measure HDMI audio quality on devices such as surround sound receivers, set-top boxes, HD TVs, and DVD and Blu-ray disc players. The APx HDMI option for the APx585 includes a fully compliant HDMI 1.3A Source and Sink interface that can generate and analyze test signals in real time on up to eight channels. In addition to linear PCM audio streams, APx can generate lossless formats such as dts-HD Master Audio, and compressed formats such as Dolby Digital and dts Digital Surround. All signals are available in 24-bit, 48 kHz versions; the linear and lossless tones can also be generated at sample rates up to 192 kHz.

PRICE: starts at $21,000

CONTACT: Audio Precision | ☎ 503-627-0832 ➲ www.ap.com

NEWS NEWS NEWS NEWS NEWS NEWS NEWS NEWS NEWS NEWS

John Bidasio, president of Burbank, California-based Westwind Media, love his new ICON D-Control ES systems: "Six of our mixers went for a demo session on the ICON ES, and they all came back saying this is it — this is the next step in mixing technology." The company recently installed a two-station ICON D-Control ES system to meet the demand for more

inputs and tighter integration with its Pro Tools|HD system. "The decision was unanimous," Bidasio says. "There's really nothing that's as powerful or offers as many features, and the graphic layout of the console really makes an impact on our workflow."

ATC Labs, a global audio and speech technology development and services firm, today announced that it has introduced the recording industry's first automatic, real-time software-based noise removal and reduction product. The ATC Labs AutoAudioDenoizer will provide professional broadcast engineers, sound field recording engineers, audio restoration professionals, and forensic audio engineers, among others, with an easy-to-use software product that can perform real-time, on-the-fly automatic noise reduction (ANR).

Within days of learning that Prism Sound had acquired the business and intellectual property rights of SADiE, Fluid Mastering in West London felt sufficiently confident in the ongoing success of the product line to place an order for a new SADiE PCM4 desktop mastering editor. The mastering facility, which was set up in 2006 by former Townhouse mastering engineers Tim Debney and Nick Watson, already has a SADiE PCM8M digital audio workstation operating in its main studio.

World Radio History

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World Radio History

by **Alex Oana**

Waves SSL 4000 Collection

The most important sound ever is now available as a plug-in.

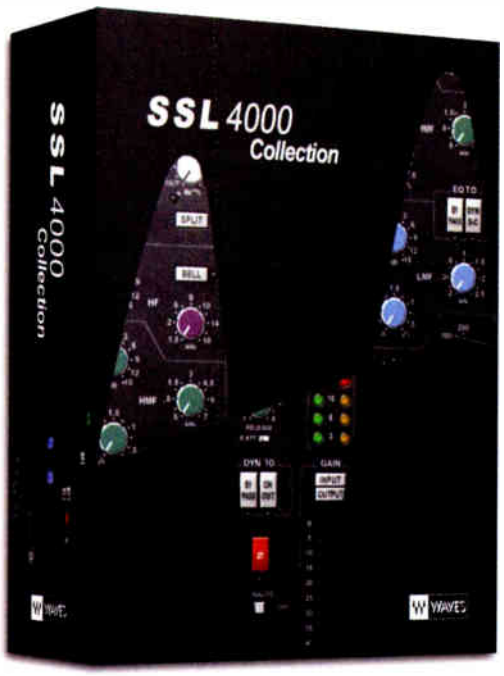
To begin this review, please make the connections between the following years and landmarks in time:

1984 — During the last chorus of "Almost Paradise," 14-year-old gets up courage to lower his hands to partner's hips before end of junior high dance

1988 — Peter Gabriel scores Scorsese's controversial take on life of Jesus. Thousands give/receive massages to same otherworldly soundtrack

1999 — Cher's "Believe" wins pop Grammy

2006 — In Los Angeles hillside home studio, analog-weaned engineer enjoys DAW EQing for the first time



FAST FACTS

APPLICATIONS
Studio, project studio

KEY FEATURES
Developed under license from Solid State Logic; up to 24-bit, 96 kHz resolution; mono and stereo components; supports TDM, RTAS, Audio Suite, VST, AU; PC and Mac compatible

PRICE
$1,000 list

CONTACT
Waves | ☎ 865-909-9200
➲ www.waves.com

The layman would say music is the common denominator. The engineer knows it's the SSL 4000, the recording console that has channeled more emotional juice than perhaps any other in history. As the de facto popular mixing standard since its introduction in 1977, the SSL 4000 has trained generations of listeners and engineers what a record should sound like. It is a sound so important and a tool so effective that I entertained buying a used SSL 4k console for $60,000 until I realized I'd need also to hire a full-time assistant and a part-time tech to keep it running. Today, Waves has endeavored to channel these 30 years of collective emotion into a more manageable 256MB of data. Waves they have made.

Nine years ago, around the time he started mixing his own projects in Pro Tools LE and just after Tom Lord Alge — one of the most notorious SSL 4000 devotees — had mixed seven songs to my three on Spymob's Epic Records debut, my drummer friend Eric Fawcett (N*E*R*D, Spymob, Lee-Hom Wang) wondered aloud why no one had yet offered SSL processors in plug-in form. In 2004, Digidesign aped the SSL stereo bus comp with its visually similar "Impact" plug-in ("Fool me once, shame on — shame on you. Fool me — you can't get fooled again." — G.W. Bush). The real impact came at NAMM in January 2006 where Waves announced its SSL 4000 Collection. The announcement went beyond buzz; the Waves SSL Collection hit the market less like a piece of software and more like an answer to a collective prayer.

To this date, Waves plug-in offerings had been widely respected, pioneering examples of the clean, modern, utilitarian ilk: the epitome of the early sound of the DAW movement. Surprising then, Waves would be the one to crack the vintage code of such a notoriously analog character, yet at the same time reassuring, because of Waves' reputation, of precision and excellence. Waves is part of a groundswell of plug-in companies offering authentic recreations of time-tested analog favorites. We — the end-users — are lucky that a company as trustworthy as Waves jumped on this trend.

The question flying over emails, instant messages, message boards, and cellphones was this: "Did they do it? Did Waves manage to clone SSL DNA?" Because there would be giant implications if they did; the post-DAW hit on sales of analog multitracks was shocking enough: would a perfect digital copy of one of analog's poster children spell certain doom for analog equipment as we know it?

FEATURES

The two vital elements of SSL 4000 console alchemy are the channel strip — which includes dynamics and E or G series equalizers — and the stereo bus compressor. For its collection, Waves has represented the above with the E-Channel, the G-Equalizer, and the G-Master Buss Compressor. [And could someone please put in print, once and for all, how to properly spell "bus" when referring to a console? OK, I will. It's 'b-u-s.' — Alex.]

The E-Channel is the most powerful and feature-filled part of the package, whose components include HP+LPF, EQ, comp, and gate. The steep high and low pass filters can be in the audio chain or used in the side chain of the compressor or gate. The compressor is

WAVES continues on page 32 ➤

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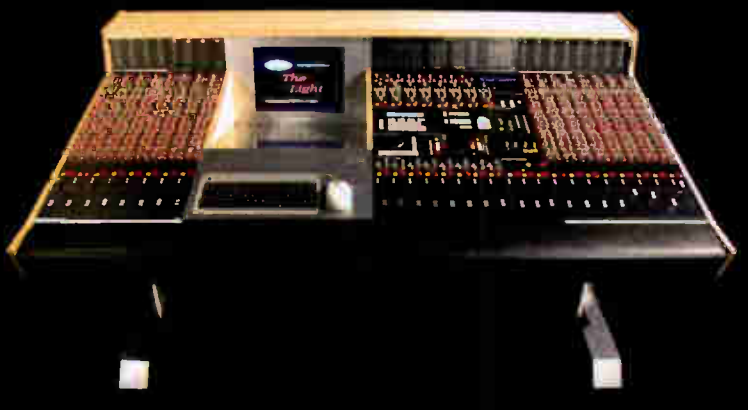

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WAVES Continued From Page 30

great for adding punch in auto mode and ruthless as a dynamics conformer in fast attack mode. The expander/gate is by far the most musical and immediately usable digital exp/gate I've ever used. I don't know how they figured out back in 1977 to make it listen so effectively to transients, but it just works. According to Waves, the EQ section of its SSL E-Channel is based on "the renowned Black Knob equalizer, developed in 1983 with legendary producer George Martin." It sounds so great, you can really dig yourself into or out of a gorgeous hole. Having all this power in one place, on each channel, at the mixer's fingertips for the first time back in 1977 changed the sound of music forever. Today, you can have it on each channel of your DAW and change your world forever.

The famous G Series EQ, known for even more aggressive capabilities than the E, is offered as a stand-alone equalizer plug-in. I don't know if it's right to single out one of these three components as most identifiable with the sound of pop music, but the stereo bus compressor just might be able to claim the crown. Commonly known as the "glue" that holds mixes together, it's as familiar and important as the sound of FM compression. I've done several mixes now where I've chosen the Waves SSL Stereo Bus Compressor over my Alan Smart hardware comp — the latter a unit widely accepted as a more "hi-fi" version of the hardware SSL stereo bus comp.

Regarding ratios, frequency ranges, bandwidth, and gain stages: It's a big, fun sandbox to play in. Having mixed on an SSL 4056 at Mastermix on many occasions, I was excited to see how much the Waves collection also looks like the real thing, right down to dirty smudges on the faceplate of the stereo bus compressor. In terms of functionality, those brilliant Israeli plug-in designers reaped the rewards of those brilliant English console designers' innovative concepts for a clear, logical, functional layout of controls; everything is in its right place. If you've never touched the console, the 30-year-old ergonomics still make good sense and take only a few minutes to get used to.

| IN USE

The first time I used the Waves SSL E Channel was the first time I enjoyed using an EQ in the box: the first time I had an emotional response. I actually smiled and, though I was by myself, exclaimed something aloud, an experience no doubt repeated by hand-on-mouse hopefuls around the globe. You can crank the top end all the way and it just keeps sounding sweet and more exciting. The entire Waves SSL Collection sounds amazing and easily stands above 99 percent of plug-ins out there. Much like SSL itself, Waves has set the gold standard to beat. Waves SSL is one of a handful of plug-ins I need to do what I do. For a full mix, I regularly put only the E-Channel on all but a couple channels. Between my Pro Tools HD|3 cards and RTAS power, I can insert as many as I need at 44.1 and 48 kHz. I have to be more judicious above that sample rate as the processing power gets tapped quickly and card slots aren't used to 100 percent capacity before another is required for the next instance. One instance in which digital is less flexible than analog.

All the anecdotal evidence about this collection that passed through my ears amounted to this: Waves nailed it. No discernable differences were reported when some users applied the identical setting to a plug-in and a hardware version. Does this mean by using the Waves SSL Collection your mixes will sound the same as if you mixed them on an actual SSL console? It does not. For the reasons of workflow, analog busses analog summing, console resonances and reflections, VCAs, P+G faders, and that one module with Coke spilled in it, the current state of the art of mixing in the box cannot replicate the sound and experience of mixing on a real desk.

Of the most exciting plug-ins, many are based on analog forebears. That this collection of plug-ins had to be a virtually indiscernible clones of the originals in order to qualify as a success speaks to the ongoing value of analog gear. But the Waves SSL bundle's value to you and me depends on only one thing: Does it sound great? Oh my, yes it does. And if everyone bought one, which you should, maybe we could engineer a group discount.

| SUMMARY

Do you identify with any of the following?

Why does EQing in my computer never sound as exciting or smooth or musical as it does/did with analog gear?

It seems like even when I use radically different EQ settings on plug-ins from different manufacturers, tracks lose their individuality in a dense mix.

My EQ plug-ins all look different from one another, but I think they all sound the same.

How do I get that slammin', in-your-face sound I hear on all the big records?

The Waves SSL collection will shift your "paradigidigm," if you will. If you want the most exhilarating EQ experience you've ever had in a DAW — to punch up your tracks with exuberant dynamics and the feeling of the legendary yet still contemporary hit making SSL sound at your fingertips — the Waves SSL Collection is a bargain at twice its selling price. If you want to reinforce your studio floor, build a machine room, hire a tech and a tea boy to get the same effect, then buy a used SSL console and download a do-it-yourself divorce with your last $249. (Sing it, Phil: "And you coming back to me/Is against all odds/It's the chance I've gotta take.")

Alex Oana is an award wining engineer, who mixes and masters at his studio in Los Angeles. He'd love to hear from you at alexoana.com.

The G-EQ

The E-Channel is the most powerful and feature-filled part of the package, whose components include HP+LPF, EQ, comp, and gate.

The E-Channel

World Radio History

"I have been collecting two things for 40 years – Acoustic Guitars and Condenser Mics. It shouldn't surprise anyone ADK mics sound fantastic on acoustic instruments!"

– Larry Villella
ADK President and Co-Founder

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World Radio History

by **Steve Murphy**

Solid State Logic Pro-Convert V5 Audio Project Translation Tool

This well-appointed conversion solution from SSL puts the Holy Translation Grail within reach.

Transferring a multitrack session with edits and handles intact from one DAW application to another is a generally fragile process—a process that can break in many different ways and at many different places. The commonly supported EDL (Edit Decision List) and object-oriented exchange standards—most notably OMF, AAF, MXF, AES31 and OpenTL—are no doubt powerful tools. Developed to varying degrees of success by manufacturer consortiums and associations, these standards have gone a long way towards realizing the near-divine quest for free and unfettered media project exchange.

But unilateral changes, application updates, multiple standards versions, handling errors, unsupported/mismatched features and file formats, and countless other quirks introduced by specific platforms conspire to routinely shift the sand underneath what those of us on the sending or receiving end hope will be a stable and predictable transfer process. Add to that the large install base of programs that offer no standard EDL standards support (many "LE" versions) and/or charge a premium to get it as an add-on, and the shifting sands start to spin.

Enter the Pro-Convert V5 ($699) audio project translation tool from Solid State Logic.

FAST FACTS

KEY FEATURES
DAW/NLE session conversion supporting over 40 different audio applications and versions; context-sensitive feature set and method of conversion per export format; standalone Audio Tool file format and attribute conversion.

PRICE
$699

CONTACT
Solid State Logic | ☎
➲ solid-state-logic.com

FEATURES

SSL acquired developer Cui Bono Soft and its well-regarded interchange application EDL-Convert just prior to the 2007 AES convention in New York, where it promptly announced the first major update to the software in several years.

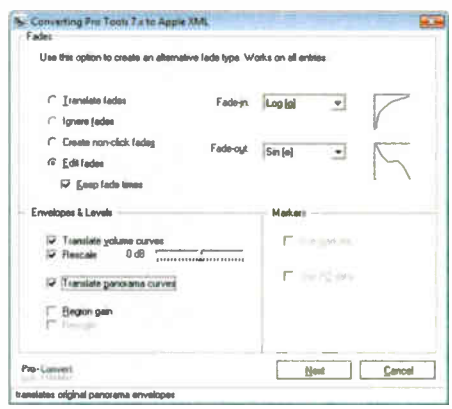
In the years since its introduction in 2001, EDL-Convert has grown to be one of favorite stealth ninja tools of post houses. With the acquisition and the addition of significant new and updated features, SSL hopes to bring this powerful "secret weapon"—rebranded as Solid State Logic Pro-Convert V5—to a much wider user base.

Pro-Convert aims to be a one-size-fits-all tool that acts as a go-between for a variety of popular DAW and NLE platforms. Depending on the selected source and output targets, Pro-Convert allows for the translation of edit points, fades, crossfades, markers and PQ data, clip gain, volume and pan curves/automation, track names, clip names and other session data.

The program supports what I would describe as three levels of conversion integration: proprietary, intermediary, and open standard. At the highest level, Pro-Convert can access and translate an application's native session file format directly without the need for any intermediary export steps.

For example, a stunning new feature in Pro-Convert V5 is the ability to directly read and write proprietary Digidesign Pro Tools 7.x session files (*.PTF), in addition to the previously supported Pro Tools 5.1 format. Other native session file formats supported include Adobe Audition/Cool Edit (*.SES), Steinberg Wavelab Montage (*.MON) and SSL's own Soundscape Arrangement format (*.ARR).

At the intermediary level, Pro-Convert supports several application-specific interchange formats. These formats were created by a platform's developer to facilitate the exchange of session data between various versions of the same application, within an application "family" or suite, or the import/export of a specific set of tracks from one project to another within the same application. Unlike proprietary session formats, these intermediaries are XML- or text-based EDLs and thus expose the session data in a readable and ultimately parse-able manner. Also unlike the proprietary formats, the



Fades Automation and Markers Dialogue Box

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PRODUCTPOINTS

- Unprecedented detail and control of conversion process
- Directly supports native Pro Tools 7.x session files
- Many program-specific OMF templates maximize functionality of transfer and minimize incompatibility

- Poor Acid-ized file handling
- No AAF support
- Expensive for those paying in USD

SCORE

Pro Convert offers the ability to overcome audio file interchange problems with relative ease.

deliberate action of exporting a session from the timeline into the intermediary format is required before it can be used in Pro-Convert. The most notable intermediary formats supported by Pro-Convert include Steinberg XML (Nuendo, Cubase), Apple XML (Final Cut Pro, Logic, Soundtrack Pro), Sony Vegas TXT and XML, Samplitude and Sequoia EDL, and SADiE Interchange.

Pro-Convert also includes standards-based EDL format conversion using OMF (V.1, V.2, and a slew of program-specific OMF templates), AES31, and OpenTL; there is no AAF or MXF support as yet.

According to SSL, when all applications, application versions and interchange standards are counted, over 40 different file formats are supported. Pro-Convert also includes the standalone (though launched from the main program) Audio Tool file format and attribute batch conversion utility.

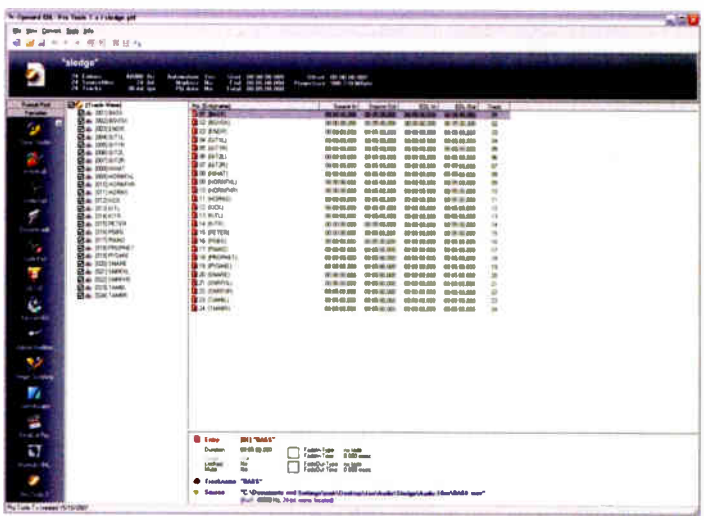
A detailed list of file formats and supported features can be found on the Solid State Logic website and in the Pro-Convert PDF manual. Note that Pro-Convert, like other conversion software, translates overall session data, timeline audio events and associated pan and level information; it does not convert MIDI tracks, static mixer positions (without automation envelopes) or plug-ins.

| IN USE

Pro-Convert runs under the Windows operating system (all standard versions between Windows 98 and Vista; 64-bit versions not supported), but can be successfully run on Macs using Boot Camp, Parallels or Fusion. As the manual states, Pro-Convert is not heavy on system resources, and indeed it would be extremely difficult to unearth a computer that doesn't meet the minimum system requirements – 266MHz processor, 64MB, 20MB hard-disk space, VGA display. For authorization, Pro-Convert uses a CodeMeter USB dongle that is multi-user/multi-license capable for networked facilities.

At the top of the Pro-Convert main interface is a concise "Project Strip" summary of the source project's vitals that includes the number of clips, source files and tracks referenced on the timeline, as well as project sample rate, bit depth, frame rate, length, size, and offset information; there is also indication of whether the project contains automation, PQ and/or marker data.

Below the Project Strip is a three-pane project explorer that includes a Project Tree (selectable between physical files and track view), a Clip Window that displays all the timeline clips (with source file I/O and timeline I/O points) that belong to the track or file selected in the Project Tree, and a Detailed Clip Window that provides additional data such as fade type and time, mute and lock status and level of any selected clip. On the far left of the main interface is the Convert Strip, which contains all the export file types and associated icons. The strip can be toggled between an overall pool of conversion formats and a user-defined (via drag-and-drop) pool of favorites.



SSL Pro-Convert Main Screen

For many interchange tasks, the general conversion process in Pro-Convert can be quite simple: open a supported session file using the standard Windows File>Open dialog; choose the export file type from the pool on the left; use the default settings on the options pages that follow, and choose a location to save the converted project. Once a conversion has been completed, Pro-Convert's main project explorer interface can be toggled between source and converted session data.

Much of the in-depth power of the program lies in the customization of the conversion dialog pages, which display a set of options tailored specifically to each export type. Though the most commonly appropriate values for each export type are already preset as defaults, it most certainly pays to get familiar with all of Pro-Convert's conversion options (and limitations) *and* the capabilities of the respective input and output applications. The excellent Pro-Convert manual provides clear and detailed information on the above; even a brief survey of this information provides insight into the Herculean efforts required to develop and maintain this application's conversion matrix and its adept, context-sensitive interface.

While there are far too many to list all settings for each export type, common export options include fade management (translate, ignore, replace with alternate type), level and pan automation envelope and region gain management (translate, rescale levels), file location and replace, and audio file and session export options (link to existing source files, create new files, stereo-to-mono split file conventions, change file container type).

During the testing process for this review, I produced a number of sessions designed to test a range of (hopefully) translatable information. These sample sessions were created in Steinberg Nuendo 3 and 4, Pro Tools LE 7.1 and Sony Vegas 7, and cross-tested using Pro-Convert on the local machine. I then enlisted several colleagues around the country to test exports on a variety of other platforms including Logic, Final Cut Pro, Avid Media Composer, Sonar, Samplitude, and Cool Edit/Adobe Audition; I also received sessions to test that originated on several of these platforms.

The results of this mass testing effort were

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generally impressive—all of the session exports created with Pro-Convert were successfully opened on the target platforms and all incoming sessions were opened on my local programs after using Pro-Convert. That said, even with such a comprehensive "go-between" a few of the projects suffered from perplexing interchange quirks similar to those that can occur with good old OMF transfers.

For instance, a simple four-track Samplitude project with the same two-bar audio file placed on each track (but stair-step staggered so it plays for a total of eight bars) loaded into both Nuendo and Pro Tools missing the first two-bar clip. This project was created to test the handling of fades, region gain, and level and pan automation, all of which translated just fine. Using the project strip and explorer in Pro-Convert, I was able to confirm the error: the clip on the first track was listed as having zero length. This may well have been a problem with the originating program or in the conversion process, but a problem nonetheless. Sometimes there's just no escaping ...

As I stated earlier, most conversions worked flawlessly, and, in general, I couldn't have been more impressed with the power and speed (or the peace of mind) of Pro-Convert. Oddities such as the above happened very rarely throughout this fairly exhaustive testing process. When certain issues arose, usually a quick trip to the program look-up and cross-capabilities grid in Pro-Convert's reference materials confirmed the limitations to be with the specific platform (e.g. Steinberg XML does not export marker tracks).

The one thing with which I persistently had trouble—and on which I could find no information—was Acid-ized loops. Without fail, and across many different test sessions and exports, these audio files would result in tiny slices of the audio being dispersed like debris across *hours* on the timeline. The only solution here was to bounce/consolidate tracks with Acid loops in the session.

SUMMARY

Much of my post-production and sound design work these days is conducted remotely via FTP or FedEx. In these cases—as well as in "client-supervised" sessions—the seamless translation of timeline exports is paramount, especially in tight-turnaround situations. While the concept of truly seamless conversion may be a bit like tilting with windmills or questing for the Grail, the ability to overcome interchange problems with as little friction and minimal back-and-forth with busy production editors is now a real-world, attainable goal.

Solid State Logic Pro-Convert 5—with its direct support of programs such as Pro Tools, Final Cut Pro, Logic, and Nuendo, as well as its custom-designed OMF templates for many more programs including Avid, Digital Performer, Sonar, and AMS Audiofile—is an essential tool to help reach this goal. The ability to not only accommodate these disparate formats but also get a look-in at (and modify if necessary) the specifics of the incoming and outgoing session data makes Pro-Convert an extremely valuable asset for any engineer or facility that deals regularly with project exchange.

PAR *Studio Editor Stephen Murphy has over 20 years production and engineering experience, including Grammy-winning and Gold/Platinum credits. His website is* www.smurphco.com.

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STUDIO

The latest news and products

NEW PRODUCTS

KRK SYSTEMS Rokit G2 Series studio monitors

KRK Systems has launched the second generation of their industry-standard Rokit monitor. The second generation Rokit incorporates several technologies from the company's flagship VXT and E8B lines, including radically radiused edges along the front of the cabinet. The new Rokits replace the current Rokit 5", 6" and 8" models.

The Rokit G2's curved front baffle was engineered to minimize diffraction of high-frequencies, resulting in a sweet spot that is significantly larger than products with square or lightly rounded baffles. The baffle also houses a molded front-facing bass port that minimizes low-frequency phase distortion and unwanted frequency emphasis typical of rear-facing bass ports. The end result is a harmonious yet accurate blend of low and high-frequency components that result in a more accurate speaker. Additionally, the Rokit G2's voicing has been slightly enhanced to provide even better mix clarity and precision.

PRICE: $149 - $249.

CONTACT: KRK Systems | ☎ 818-534-1500 ➲ www.krksys.com

WAVES Gold Native/Ableton Live 7 Bundle

DSP specialists Waves have joined forces with Ableton to offer two essential software collections — Waves Gold Native and Ableton Live 7 — together as a single low-priced package.

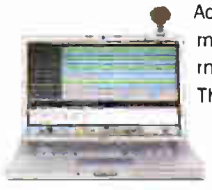
Waves' Gold Native brings a wealth of signal processing power to users' studios, geared toward tracking, mixing and mastering. The Gold Bundle now features over 20 plug-ins, including Waves Tune LT, IR-L Convolution Reverb and Doubler, as well as many other highly sought-after processors developed by Waves.

Ableton Live 7 is a uniquely powerful sequencing, recording and mixing environment. With built-in software instruments, REX and ReWire support and real-time time stretching, Live 7 is fast becoming the host of choice on stage and in the studio.

PRICE : $1,500

CONTACT : Waves | ☎ 865-546-6115 ➲ www.waves.com

BLUE MICROPHONES Snowball professional USB microphone



According to Blue, the Snowflake is the first professional quality portable USB mic, combining a USB bus powered capsule with a class compliant design to make the Snowflake truly plug and play on both Mac and PC.

The Snowflake's form factor is functional, too; the mic folds into a single compact case which also houses a USB cable for easy transport in a laptop bag or even a pocket. Unfolded, the case serves as a desktop stand or a laptop clip, making the Snowflake a natural for everything from podcasting, calling over the web, narrating a home video, or sketching out a song idea on the go.

PRICE : $79

CONTACT : Blue Microphones | ☎ 818-862-5200 ➲ www.bluemic.com

UNIVERSAL AUDIO 710 Twin-Finity Tube/Solid-State Preamp/DI

Universal Audio has introduced the 710 Twin-Finity Single Channel, Tube & Solid-State, Tone-Blending Preamp. This radically new UA preamp design with dual signal paths is centered around the innovative phase-aligned 'Tone-Blending' knob, which is continually variable from 100 percent tube (12AX7) to 100 percent solid-state, offering easy access to a myriad of unique pre-amp tones.

PRICE : $799 (w/ single or dual-unit 19" pro rack mount kit)

CONTACT : Universal Audio | ☎ 831-454-0630 ➲ www.uaudio.com

NEWS NEWS NEWS NEWS NEWS NEWS NEWS NEWS NEWS NEWS NEWS NEWS

(ART AVAIL., SSL-ARStudios) When AR Studios was looking to upgrade Studio A, their search ended with a 48-channel, Solid State Logic Duality console — the first in South America. Studio owner Andre Rafael, a respected singer/songwriter and long-time SSL user, enthuses about his new purchase: "You can always trust SSL's products ... the sound is wonderful. We have been booked solid since the room opened and I haven't even had the chance to use it for my own projects yet!"

The Recording Academy Producers & Engineers Wing has announced its partnership with digital archiving and migration specialists BMS/Chace and the Library of Congress' "Preserving Creative America" program (www.digitalpreservation.gov) on a project to create a standardized protocol for music-related metadata that would travel with recorded music projects from inception to archive. "We are extremely proud to be a part of this important project," said Maureen Droney, Executive Director of The Recording Academy, P&E Wing. "It addresses many challenges in today's recording industry that stem from our rapid transition to the digital environment."

Telefunken USA, LLC has installed an API 1608 discrete analog recording console at its newly expanded headquarters in Connecticut. The mixing console has been installed in a new product development and test facility as part of a 2,500 square-foot expansion of the microphone manufacturer's corporate offices. "The API 1608 is the centerpiece for a brand new research, test and design studio facility here in South Windsor, Connecticut, just outside Hartford," explains Alan Veniscofsky, director of operations at Telefunken USA.

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by **Mike Rivers**

Mackie Onyx 1200F FireWire Audio/MIDI Interface

This comprehensive, great-sounding I/O offers a dozen nifty Onyx preamps, four stereo headphone amps, 30 inputs and 34 outputs of all sorts, etc., etc — all for a darn good price.

The Mackie Onyx 1200F, big brother of the Onyx 400F (reviewed in *PAR* June 2007) has finally arrived on the scene after being introduced at the October 2005 AES show. At first glance, the $1599 (street price) 1200F is a FireWire audio interface with 12 mic inputs, but there's much more when you look behind the front panel: a whopping 30 independent input channels and 34 output channels.

| FEATURES

The Onyx 1200F offers 12 high-quality Mackie Onyx mic preamps, which share XLR Combo jacks with line inputs; 16 ADAT Optical, and stereo digital AES/EBU or S/PDIF comprise the input list. The assortment of output channels is only slightly different; eight balanced analog, 16 ADAT optical, an AES/EBU or S/PDIF pair, and four stereo headphone outputs. There are two MIDI inputs and outputs, word clock in and out, pre-A/D inserts on analog inputs one and two, and analog inputs 11 and 12 can be switched to high-impedance instrument jacks on the front. Whew! It's all housed in a single, two-rack space, solid-steel box, it's 24-bit throughout, and supports sample rates up to 192 kHz.

The 1200F also integrates 17 32-input DSP mixers and comprehensive (and some not so comprehensive) routing capabilities. In describing the 1200F, I'm reminded of the late-night TV commercial: It dices! It slices! It mixes! But wait! There's more! Let's have a look at the details ...

The main attraction for many will be the dozen Onyx mic preamps. Channels 1 and 2 have balanced insert points between the mic preamp and A/D converter configured as a pair of normalled TRS jacks. Four TOSLink connectors provide 16 ADAT Optical I/O channels at 44.1/48 kHz and eight channels at 88.2/96 kHz using the S/Mux ADAT protocol extension.

The eight balanced analog outputs are on a 25-pin D-subminiature connector (TASCAM wiring), each fed from its own mixer. A single front-panel volume control adjusts all eight simultaneously, handy when using those outputs to feed a surround monitoring system. For other applications, this master analog output level control can be bypassed with a button, sending full level to all eight outputs.

Individual front-panel volume controls are provided for the stereo control room monitor outputs and front-panel headphone jacks. A button or footswitch selects between two pairs of rear-panel control room output jacks to accommodate main and alternate speakers. Talkback to the headphone outputs is accommodated by an XLR mic input with a front-panel on/off switch and volume control.

Each analog input channel has a gain control, mic/line switch, and phantom power switch with an indicating LED. Front-panel level monitoring is via 12 4step LED meters.

The A/D converter reaches 0 dBFS at the same point that the analog input stage reaches clipping, so the top red LED—really, no foolin'—means clipping. The LED meters can also be switched to display digital output levels and the input level to each of the headphone amplifiers. Higher resolution metering is available on the software console, but the front-panel LEDs will keep you out of trouble if you're careful to keep them in the green or orange range.

Clock source and sample rate can be selected from the software control panel or from the front panel when not connected to a computer, with LEDs to indicate the current settings.

The 1200F features a worldwide power supply (100-240 VAC, 5060 Hz) with both a US and European power cord supplied. Two parallel FireWire connectors allow daisy chaining of other FireWire devices which, with the latest firmware version, can be a second Onyx 1200F or a 400F.

Due to FireWire streaming rate limitations, only 16 inputs and 16 outputs are allowed at 88.2/96 kHz, or eight of each at 176.4/192 kHz. Input and output limits are counted independently, so at 192 kHz, you can't, for example, use all 12 mic inputs even though you need only one stereo headphone or control room output.

The software console consists of one setup page and 17 pages of mixers. On a PC, it's installed along with the drivers. On a Mac (which requires no additional drivers), the console is installed directly. Tabs along the top and bottom edges of the screen select the Settings window or one of the mixers. It looks complicated at first, but it's pretty easy to navigate.

The left-hand pane of the Settings window selects the sample rate, clock source, the active stereo digital input (AES/EBU or S/PDIF—both outputs are always live) and its channel status bit format (Professional or Consumer), the source for the Control Room outputs, and the ASIO buffer size. The right-hand pane is for selecting the active inputs and outputs when operating at higher sample rates. The mixer can be disabled, turning the 1200F into a straight FireWire I/O interface with 30 inputs and 34 outputs available to the DAW program.

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There are 17 stereo mixer "layers," one for each output pair, with 30 input channels and a DAW return pair for each mixer. Mixers controls are limited to level faders, pan sliders, and mute, and solo (to the control room outputs) buttons.

The faders have a comfortable working range, though the pan sliders are rather small and touchy. Each input channel has a bar graph level meter adjacent to its fader. The meters are skinny and it takes a sharp eye to read them, but they're accurate and have a useful ballistic response as well as a "sticky" overload indicator. There's no provision for copying one mix to another mixer, so each output mix must be created from scratch. Initial setup for a tracking session with several headphone mixes can be time-consuming.

Closing the Console program saves all current settings (both setup and mixes) in the 1200F's flash memory. When the 1200F is powered up without the computer connected, those settings will be in place. This can be convenient or a nuisance, depending on what you were doing when you shut down and what you'll be doing when you power up. The intent is to be able to use the 1200F as a standalone mixer, but without the on-screen console, relative levels, panning, and mute status are as-remembered, with mixing control limited to adjustment of the input gains.

Setups can be named, saved as a computer file, and recalled from the software console, making it quick to reset the 1200F if you have several work-in-progress projects or standalone mix configurations.

The mic preamp is identical both in sound and circuitry to that of the well-respected Onyx mixers, so there are no surprises here. Quiescent noise at maximum gain with the input terminated with a 150-ohm resistor peaks at around 68 dBFS, typical for this sort of preamp. Wideband EIN measured at the insert output is –128 dBu, which is pretty close to the theoretical maximum. THD+N is below 0.01 percent (my measurement limit) at 35 dB gain. There's no audible power line frequency hum or buzz.

Frequency response from mic input to monitor out is essentially flat up to half the sample rate, with the low end being about 1.5 dB down at 20 Hz at maximum gain, though it's only about 0.1 dB down at 20 Hz when running at 30 dB gain. Mic input impedance is 2.4 kilo-

MACKIE continues on page 42 ➤

FAST FACTS

KEY FEATURES
12 excellent-sounding mic preamps (and four more than the average multi-pre box); expandable up to 18 additional I/O channels via ADAT Optical and AES/EBU or S/PDIF digital I/O; two MIDI inputs and outputs; four independent headphone outputs; eight analog outputs with a common volume control for surround monitoring; low latency monitor mixing; dual, switchable control room monitor outputs; talkback to headphones; clock synchronization to word clock, ADAT, S/PDIF, or AES/EBU data stream; BNC word clock input and output

PRICE
$2,049 list

CONTACT
Mackie | ☎ 800-898-3211
➲ www.mackie.com

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MACKIE Continued From Page 41

ohms. This provides a good match for most of today's popular transformerless condenser mics, but an SM-57 will sound better with a 500-ohm load, a trick I picked up from experimenting with input impedance switch on a Mackie 800R preamp.

Internal gain structure (preamp gain plus A/D converter sensitivity) is similar to other contemporary mic preamps with digital output; a calm speaking voice a foot away from a

The Virtual Console

typical dynamic mic won't hit 0 dBFS even at full gain, but sensitivity is completely adequate for typical studio applications such as close miking of acoustic instruments and vocals, or distant miking of drums, orchestra, or choir. With exception of the high impedance instrument pickup inputs, all analog inputs are differential, and all outputs are single-ended balanced (no signal on the low side). Polarity is preserved throughout.

A/D and D/A conversion employs AKM AK5385 and AK4358 chips, respectively. These are mid-range chips in a high-grade product line and the 1200F's performance, end to end, is excellent. Mixing is done with a DSP chip, and an FPGA chip handles the routing tasks. The box isn't crowded, and the circuit boards and chassis are nicely laid out, but there's a lot of circuitry and firmware here.

PRODUCTPOINTS

- Sounds great – mic preamps, A/D, D/A
- Lots of inputs and outputs of many flavors
- Input routing is highly flexible

- Reduced I/O capacity above 48 kHz sample rate
- DAW returns have dedicated assignments
- Mixer latency may cause problems for vocalists

SCORE

The 1200F is for the serious DAW user, particularly in the working environment with a separate studio and control room. For the small project studio, it may be overkill.

| IN USE

The 1200F uses the standard Core Audio drivers in Macintosh OS X 10.3.9 or newer, while Windows requires installing a Mackie driver. The installation procedure, including installing the software console, is straightforward. After a bit of poking around to get the feel of the console, I plugged in some mics and started listening.

The preamps are clean and quiet, with no obvious coloration, but the input gain knobs are rather touchy. With about half of their 60 dB gain adjustment range occurring in the last 90 degrees of rotation, optimizing gain with low output mics or quiet sources is fiddly. The gain knobs feel wobbly, and at the top of the range, the gain can jump a dB or by just touching the knob.

Other controls worked and felt fine, though turning the Analog Output level control rapidly produces a curious echo-y zipper noise on the monitored signal. The high-impedance (1 M-ohm) instrument inputs sounded excellent on both a guitar and a bass, with plenty of headroom, good clarity, and no unexpected hum or buzz.

I wanted to see how close the 1200F's internal mixer could get to the functionality of tracking with a real console. My dream was to emulate a split console, with the 1200F's mixer serving as the "input" part of the monitor mix and the DAW's mixer representing the "tape returns." It sort of worked, but it would take some getting used to, and I'm not sure this is the optimum dream.

The 1200F has many signal paths, some of which are (virtually) hard-wired; this can sometimes make things more complicated than they should be. Take headphone mixes for example; each headphone output has its own dedicated mixer, and each mixer has its own dedicated pair of DAW returns to bring recorded tracks into the mix. Headphone Mix #1 uses DAW outputs 25-26, Headphone Mix #2 uses DAW outputs 27-28, and so on. If you want four headphone mixes (or even if you want to send the same headphone mix to each of the four headphone jacks) you need four stereo auxiliary sends on each of your DAW's tracks to get a mix of those tracks into the 1200F mixer.

At times, having independent mixes of the recorded tracks is important, for example when overdubbing a group of players. But more often than not—and particularly when tracking a band together—a single mix (which could be as simple as a click track) will satisfy everyone in the studio. It would be nice to be able to use the same stereo DAW output in more than one 1200F mixer. Since you have full control over the inputs (which *are* available in every mix) you could easily give each player a basic mix of recorded tracks plus "more me," which is usually what's requested during tracking.

Setting up a mix with the on-screen faders is fairly quick, though the pans are a bit finicky and don't follow the "constant power" law, common to Mackie's mixers. What's missing, however, is channel equalization. With a conventional console, you can easily brighten the rhythm guitar in the headphones while recording the track flat (to make final EQ decisions later), but there's no provision for doing that in the 1200F mixer. Should you want to add reverb to a monitor mix while tracking, you'll probably have enough outputs so that you can use one mixer as a reverb send, though if you're using all the mic inputs, you might come up short finding a return input. Since many FX units today have digital I/O, this might be a good application for the 1200F's AES/EBU or S/PDIF connections.

One of the touted features of the 1200F is its ability to function as a standalone mixer when not connected to a computer. With only the input trims to adjust the balance between inputs, and the routing and panning fixed by what was saved when it was last shut down, its flexibility is rather limited.

It's hard to talk about digital recording without mentioning latency. Computer latency is largely dependent on how large a sample buffer is required for glitch-free operation. The 1200F's driver can be set to buffer between 32 and 2048 samples, but your particular system might need more. The modest 1.3 GHz Pentium laptop I used for most of my testing needed an ASIO buffer setting of 96 samples (about 2 milliseconds worth at 44.1 kHz) for clickless playback of an eighttrack project. Naturally, your mileage will vary.

Since input monitoring during tracking is an important feature, let's take a look at the latency of the monitor path. The 1200F manual uses the phrase "zero latency," but it really isn't. (Other Mackie publications more accurately describe it as "low latency.") There's delay

MACKIE continues on page 55 ➤

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by **Tom Jung**

Primacoustic Recoil Stabilizer Nearfield Monitor Platform

Thanks to physics, metaphysics, or both, the Recoils improve acoustic imaging, focus, and depth perception.

When I first heard about the Recoil Stabilizer I thought, "Right—yet another foam pad for speakers," but a friend of mine (whose ears I trust) told me it was the most exciting thing he saw demonstrated at AES in New York last fall. With that kind of approval, I ordered some for review—one per each of my three SLS PS8R ribbon monitors.

FEATURES

The Recoil Stabilizer is made from three basic components. First, a high-density urethane foam layer isolates the speaker from a meter-bridge or stand; this is designed to decouple the speaker and reduce vibration-borne resonance to the area below the speaker, like many other foam pads.

Next is where things get different: a heavy laser-cut steel plate is added to the mix, sandwiched between the isolation layer and the next layer, a non-slip neoprene friction pad to keep the speaker from sliding around. The curved front 1/4-inch thick steel plate introduces substantial mass to the overall structure helping to stabilize the speaker. My own monitors have sat contentedly on solid speaker stands for many years without any concern of compromise, so I was naturally skeptical of the Recoil Stabilizers making any real improvement.

When the Recoil Stabilizers first arrived, I placed them on my speaker stands and realized that the ribbon tweeters were now positioned too high at the listening position because of their total thickness — about three inches. One of many the things I like about the SLS ribbon speakers is the vertical dispersion is fairly narrow which keeps floor and ceiling reflections to a minimum. The Recoils are also available angled, so that more directional monitors can be focused in on the listening position. So, in my situation, I decided to build new stands at the correct height in order to make an effective "with/without" Recoil Stabilizer comparison.

This is a little strange: with the Recoils, the speaker is no longer as steady due to the foam used for decoupling; however, it is apparent that the weight, mass and shape of the steel plate assembly is more than enough to compensate for the loss in rigidity. If I had to make a guess, I would choose rigidity over decoupling as a matter of importance, but as it turns out here, I would be wrong. A ratio of 4:1 speaker to Recoil Stabilizer weight is recommended; that is, the speaker should be no more than four times the weight of the Recoil Stabilizer, yet heavy enough for proper loading of the system. This ratio was apparently decided through extensive listening tests, and it is fairly obvious that the folks at Primacoustic have done their homework.

I can remember a time when I would have rejected the idea of such a product, but it seems the older I get the more open I am to a new idea even if the physics do not totally make sense to me.

IN USE

After setting up the Recoil Stabilizers on my new speaker stands with the SLS monitors, it was listening time. The height of the speakers was now perfect but the stability still bothered me a little. I started off listening to a project I recorded with Warren Bernhardt on piano, Jay Anderson on bass and Peter Erskine on drums. The best way I can describe the piano sound is this: if it was a photograph, the focus just got sharper. Warren's nine-foot Steinway sounded even more like it was in my room with me, almost like you could reach out and touch it. Jay Anderson's acoustic bass went deeper without losing definition — more often than not acoustic bass extension can result in loss of pitch definition. Peter Erskine's bass drum sounded fuller and fatter than I had heard it before, much more like it did in the room where we recorded. I always felt that I didn't have quite enough in the mix, but now it sounds just right to me. Everything I played improved with the Recoil Stabilizers — it was clearer, offered sharper imaging and focus with more precise localization of instruments within the soundstage. Even depth perspective was better.

SUMMARY

Personally, I don't think that the Recoil Stabilizers should work as well as they do —

FAST FACTS

APPLICATIONS
Studio, broadcast, post, mastering, and consumer/audiophile

KEY FEATURES
High-density urethane foam layer; a heavy laser-cut 1/4-inch steel plate; non-slip neoprene friction pad

PRICE
$100 to $150 list

CONTACT
Radial Engineering, Ltd.
☎ 604-942-1001
➲ www.primacoustic.com

SECOND OPINION
"Recoils: Good For Golden Eared Masters ... And Everyone Else, Too"

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but hey, what do I know? They come in many sizes, selected for most of the major monitors in use today with the ability to order custom sizes and angles. Average price for smallish monitors is about $100 each, which makes them an excellent upgrade value. You really have to hear them to believe all that they do so well.

Tom Jung, a pioneer in digital music production, owned and operated the DMP label for more than 20 years.

SECOND OPINION: RECOILS GOOD FOR GOLDEN EARED MASTERS ... AND EVERYONE ELSE, TOO

The ears have spoken: a notable cross-section of golden-eared and industry-known recording engineers, mixers, and producers have given their official nod to the Primacoustic Recoil Stabilizer. The fact is, even if you aren't exactly sure what you're supposed to be listening for, you will hear an improvement with a couple of Recoils under your nearfields.

For the tech-heads, Primacoustic's in-depth description of the Recoil (at www.primacoustic.com/recoil-detail.htm) will give you the skinny on how it works. Apparently it's pure physics.

I bought a pair of KRK VXT8 powered monitors (pair, $1598 list) late last year; I had just reviewed them for *PAR*. They're built better than solid, measured quite accurately in a *PAR* bench test, and are relatively weighty; I thought they were really great monitors for my needs. Now, they're even better monitors for my needs.

The budget conscious will ask, "Is the Recoil worth its cost?" To find my own answer, I did the math; the pair of Recoils I reviewed is 12.5 percent of the total cost of a pair of VXT8s. I can say that there was, at the very least, a 12.5 percent increase in performance, which is significant enough for me. (Just a thought: political elections are won and lost with smaller percentages. If people are critiquing my tracks on a regular basis, I would prefer a 12.5 percent increase in 'yes' votes on any day.)

They worked well with a pair of Alesis M1 Active monitors, too (pair, $599 list). They may have even worked a little more magic with the less expensive speakers! (My guess is that the M1 Active's build isn't anywhere nearly as solid as the VXT8. Even if not, these acoustic improvements are due to that physics thing, as mentioned above.)

Left to the best of descriptions, a Recoil Stabilizer's performance sounds something like ... well, stuff like what Tom just said. It will help your speaker become sharper in its delivery of acoustic detail because it actually improves the environment where your speaker physically resides and works.

Best of all, it works with a very wide range (some may say an entire range) of nearfield monitors available today. Thus, you won't have to have all the gold in Mr. Jung's ears to experience the difference between the Recoil and no Recoil. This product really is a good buy and a solid investment in a better monitoring setup

—Strother Bullins

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BROADCAST

The latest news and products

NEW PRODUCTS

HOLOPHONE PortaMic 5.1

Holophone has launched its PortaMic 5.1 camera-mountable surround microphone. It reportedly offers discrete 5.1 audio quality with portability that targets audio and video applications, including in-studio, field recording, documentary and ENG.

Like the company's H4 SuperMINI, the PortaMic features a 2.5 x 1.5-inch mic head with six separate mic elements arranged to correspond with the typical 5.1 speaker setup in a studio or home theater. This design allows users to capture, from a single point source, a discrete surround recording. According to Holophone, the PortaMic's encoder, equipped with Dolby Laboratories' Dolby Pro Logic II encoding technology, provides a low profile when connected to the camera, offering an uninterrupted sightline.

PRICE: $599

CONTACT: Holophone | ☎ 416-362-7790 ➲ www.holophone.com

SENNHEISER MKH 800 Twin Mic

Sennheiser has introduced its MKH 800 Twin microphone. Based upon the company's MKH 800, the MKH 800 Twin multiplies recordists' abilities by offering polar pattern switching after the recording session.

The MKH 800 Twin can be thought of as a multi-pattern microphone without the pattern switches. The MKH 800 Twin is equipped with both front and back capsule outputs. In a standard multi-pattern mic, like its predecessor, the pattern of the mic is derived by adding and subtracting the back capsule. Thanks to the MKH 800 Twin's dual outputs, recordists can simply plug both of these capsules into a DAW or recorder and create the pattern desired during mix-down. The MKH 800 Twin is targeted for film scoring, symphonic recording, broadcasting, 5.1 surround, and studio and field recording.

PRICE: $3,356

CONTACT: Sennheiser USA | ☎ 860-434-9190 ➲ www.sennheiserusa.com

AUDIO-TECHNICA AT8004/AT8004L Mics

Audio-Technica has introduced its AT8004 and AT8004L omnidirectional dynamic microphones, two new microphone solutions designed specifically for the broadcasting market. The AT8004 (5.93") and the longer AT8004L (9.43") both reportedly offer natural sound reproduction, targeted for handheld interviews, ENG/EFP and sports broadcasting applications, or as the 'mono' mic when used in conjunction with a stereo mic. Additionally, the AT8004L's longer handle accommodates a microphone flag while still providing sufficient space for the talent to grip the microphone.

The AT8004 and AT8004L offer a frequency response of 80-16,000 Hz and an omnidirectional polar pattern. In addition, they each feature a hardened-steel grille as well as internal shock mounting. They are also RoHS-compliant, free from all substances specified in the EU directive on the reduction of hazardous substances (RoHS).

PRICE: $135 (AT8004)

CONTACT: Audio-Technica | ☎ 330-686-2600 ➲ www.audio-technica.com

STUDER OnAir 2500 Compact Broadcast Console

Studer's OnAir 2500 digital, all-in-one, radio on-air console utilizes the software technology derived from the company's OnAir 3000 console. The OnAir 2500 is a totally self-contained system and builds upon the operational concepts of its predecessor, the OnAir 2000. With the OnAir 2500, the control surface, I/O breakout, DSP Core and power supply are all integrated within a single compact chassis.

The fader strips include a graphical OLED (Organic LED) screen, which contains a channel label, level and gain reduction meter and parameter readouts, adjustable via a rotary encoder and two push buttons below the display. OLED screens have a wider viewing angle than LCDs, and have much higher definition, so operators can immediately see information much more clearly.

PRICE: POA

CONTACT: Studer | ☎ 818-920-3212 ➲ www.studer.ch

NEWS NEWS NEWS NEWS NEWS NEWS NEWS NEWS NEWS NEWS NEWS NEWS

On a recent business trip to Nashville to attend the Religious Broadcasters Show, Bob Heil took time out to visit the busy Country Music Television (CMT) studios. The purpose was two fold, one to see old friends Shipley Landiss, Engineering Technical Manager, and Jim Gilmore, Audio Maintenance Engineer, and to deliver three new PR 22 microphones to be awarded during the Nashville AES Section Spring Mixer competition.

While being given a tour of the facilities located in the heart of downtown Nashville, Bob was able to see CMT's new PR 40s in action as country stars Emerson Drive stopped by for a live in-studio interview.

WAWS-TV Fox 30 News is now BAS Relocation compliant after a microwave equipment overhaul led by RF Central. With three of its skilled technicians on site over a seven-day period, RF Central replaced three transmitters and two receivers as well the station's remote control unit to help WAWS-TV Fox 30 News through its transition.

As a team of climbers scaled the icy sides of Mount Everest carrying the Olympic torch to the summit, Chinese broadcaster CCTV used a Euphonix System 5-B to broadcast live this monumental event. With 16 different channels of programming, CCTV is mainland China's major television broadcaster. As one of only six Chinese broadcast companies to be selected to publicly broadcast the Beijing Olympics, CCTV has been eagerly preparing for the upcoming Olympic Games. With ten Euphonix on-air mixing systems installed for on-air, HDTV and OB productions, CCTV is prepped and ready to go.

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by **Steve Murphy**

Henry Engineering SixMix Broadcast Console/USB Interface

Henry steps out from behind the curtain in a big (yet diminutive) way with this feature-packed micro-broadcaster.

Since 1982, Henry Engineering's ubiquitous blue boxes—including the popular Matchbox series of pro/consumer level matching interfaces—have made their homes at the back of racks, under consoles, behind studio furniture, screwed to flight case covers and tucked away in myriad machine room recesses. Almost without exception, Henry's utilitarian products are designed to solve problems and add value to existing equipment in an unobtrusive and predominately unattended manner. Trim pots and DIP switches aside, most have no traditional controls or indicators and once set, require no regular user intervention.

With that in mind, the new Henry Engineering SixMix small-format broadcast console ($1,195) marks a major new direction for the company. Sporting extra-large knobs, LED VU ladders and buttons and knob caps coded in bright primary colors, this endearing little guy provides a wealth of hands-on, at-a-glance functionality for self-broadcasters and remote broadcast engineers.

FAST FACTS

APPLICATIONS
Broadcast Audio
Features: 10-input mini broadcast mixer with 2 x mic inputs plus 4 x balanced +4dBu line and 4 x unbalanced -10dBv inputs; USB 1.1 bi-directional stereo computer interface; automatic monitor muting; tally light output; mix-minus support; cue/preview bus and auto-switching; built-in cue speaker and rear-panel cue out.

PRICE
$1,195

CONTACT
Henry Engineering | ☎ 626-355-3656
➲ www.henryeng.com

| FEATURES

The diminutive and highly portable SixMix broadcast console measures a mere 12 x 8 x 3 inches, weighs 5 pounds and most definitely bears a strong Henry-family "blue-box" resemblance despite the presence of its many large, multi-colored user controls. It has a built-in power supply/transformer fed by a standard removable IEC power cable.

The console accommodates an impressive 10 mono/stereo input sources, with six input sources available to the mix bus at any one time. Channels 1 and 2 are configured for dedicated microphone use, with respective XLR inputs on the rear panel. Channel 1 is designated for the console-operator's use and channel 2 is for a guest/booth microphone. Both mic channels feature momentary cough/mute switches and program bus (PGM) assignment switches with corresponding PGM/Cue-assign LED indicators. Channel 1 has a momentary talkback switch that works in conjunction with Henry Engineering's MultiPhones Guest Pod to provide a guest/booth announcer with a dedicated headphone audio feed that has Talkback (IFB) from the console operator.

Mix Channels 3 through 6 are for stereo (or mono if externally summed) line-level sources such as CD players, tape decks, carts, and other playback sources. Each of these channels offers an A and B input source selection (with respective green/yellow LED indication), bringing the non-mic source inputs to eight total. The "A source" inputs 3 through 5 support professional-level (+4 dBu) stereo input sources on balanced TRS 1/4-inch jack pairs, while the "B source" inputs 3 through 6 support consumer-level (-10dBv) stereo input sources on RCA jack pairs.

Input 6A is normalled to accept input audio from an attached computer via the SixMix' internal codec and external Type B female USB connector. The SixMix PGM bus feeds the A-to-D section of the USB codec for direct recording (and later editing if desired) of the program material.

| IN USE

The thing that unquestionably sets Henry Engineering's SixMix apart from the popular micro-format mainstay mixers (e.g., sub-$700 Mackie, Allen & Heath, Yamaha consoles) is that the SixMix is designed explicitly for broadcast use. For those who have toiled with bending those consoles backwards to make them work for live radio broadcast applications—myself included— will not find the near $1,200 list price out of line. Aside from the fact that broadcast products in general command a higher price than their pro-audio

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counterparts, the large number of broadcast-ready features and the on-air error-free performance (and resulting peace of mind) they enable can easily justify the cost.

For this review, I put the SixMix to work for "live-to-tape" (well, computer) duty in my own production studio and for "live-to-air" duty at the National Press Club. In both applications, a Dell Duo-Core laptop running Sony Sound Forge 9 was used to record the program mix output via the console's built-in USB interface. Because the SixMix codec uses the broadly supported USB 1.1 specification, the SixMix requires no special drivers (it instantly showed up as "USB Audio Codec" on my computer and used the "Windows Classic Wave Driver" in Sound Forge) and should be compatible with any USB-enabled computer.

Audio quality of both the analog mixer and AD/DA sections of the SixMix was very good and decidedly clean; though I didn't get to do any head-to-head comparisons with the console set mentioned above, I would suspect the SixMix boasts better noise performance since it lacks the non-fully bypassable EQs and aux/sub returns found on many of the aforementioned project-studio and live-oriented console ranges.

In fact, not only does the SixMix have no EQs, pan knobs, aux sends, aux returns or subgroups, it also has no master bus output control. For some, this may be taking the streamlined-operation and spartan-mix-path thing one step too far (myself included), but I recognize that for others, the less controls in the hands of the on-air broadcaster (and perhaps the more overall control ceded to the Technical Operations Center), the better. Note that the two mic inputs do have preamp gain trimmers, and TRS (send/return loop) insert points for processing with external EQ, compression, etc.

What the console does have are plenty of features that allowed me to be up and running with a full-featured on-air broadcast setup virtually anywhere in just a matter of minutes. In addition to the aforementioned talkback-interruptible phones bus, the SixMix provides the console operator with a full auto-switching cue monitoring system (with dual-color LED indicators for PGM bus and cue bus assign) plus auto-muting of the control room monitor outputs when a mic is open (user-programmable via internal switches) and built-in tally light ("On-Air") support for the more permanent installations.

Other features I found most welcome on the SixMix were: dedicated balanced "Air Monitor" confidence inputs that can be quickly auditioned in the CR monitors via the PGM/Air switch; a handy front-panel input (duplicate of rear-panel 5A RCA inputs) on a stereo mini jack for iPods etc.; a S/PDIF digital out connection (computer L/R output signal), though oddly on a 1/8-inch jack; and an unbalanced parallel output of the main balanced outputs ("Rec Out") on mini.

Also of high value for many potential users is a dedicated mix-minus output for use with telephone hybrids. The "minus input" (from hybrid) can be internally set to use either channel 2 or 3. Note that a special wiring scheme is implemented whereby the mix-minus output signal appears on the tip of a TRS output jack; this is, of course, so Henry could cram even more functionality into the mixer, namely a dedicated mono output of the cuing bus on the ring of the connector. This is especially handy for feeding a dedicated cuing speaker when headphone previewing is not possible (like during hectic video satellite media tours when one's ears must be available to hear orders barked from many directions at all times).

Definitely on my wish list—should panel surface real estate somehow be freed up or expanded, that is—are built-in phantom powering and actual knobs instead of trim pots for setting mic preamp gain. Program bus inserts and some kind of output control would also be appreciated (though a trusty Aphex 312 Compellor—with its excellent metering and linked output control—solved both of theses "wants" for me).

SUMMARY

The deceptively small SixMix console adeptly fills a large and long-standing void in the market: a reasonably priced, small-format mixer with much of the cuing, mix-minus, IFB and auto-switching/muting/tallying functionality required of larger on-air broadcast console counterparts. Add in its no-muss USB computer audio interface and at-a-glance color-coded controls and Henry Engineering has not simply filled a need, but also produced a winner with the SixMix.

PAR *Studio Editor Stephen Murphy has over 20 years production and engineering experience, including Grammy-winning and Gold/Platinum credits. His website is* www.smurphco.com

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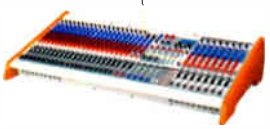
CREST CV-20

FEATURES: 24, 32, 40, 48 and 56 mono input configurations; four-band sweepable EQ and fully parametric mid-frequency control on each input; 12 aux masters; eight subgroups; 128 VCA assignment and 144 mute scenes with MIDI control.
PRICE: $15,695 - $30,125.
CONTACT: Crest Audio at 866-812-7378, www.crestaudio.com.

PEAVEY S32 Sanctuary Series



FEATURES: 32 channels; automatic features such as Synchrosonic* delay-speaker setting and Automix* enable hands-free mixing; DSP; USB output; Mid-Morph EQ.
PRICE: $3699.99
CONTACT: Peavey at 866-443-2333 www.peavey.com.

MIDAS Verona

FEATURES: 24 to 64 inputs; four-band EQ; 48V phantom power; phase reverse; high-pass filter; pan controls; inserts; PFL; 100 mm faders.
PRICE: starts at $14,043.33.
CONTACT: Midas at 952-884-4051, www.midasconsoles.com.

STUDER Vista 5

FEATURES: Up to 240 channels; modular; 32- and 42-fader models; onboard DSP; 5.1 surround sound; Vistonics touchscreen controls; external I/O box and processor; compatible with Harman HiQnet routing system.
PRICE: $125,000 - $200,000.
CONTACT: Studer/Harman Pro North America at 818-920-3212, www.studer.ch.

SOUNDCRAFT Vi4 Digital Live Sound Console

FEATURES: 48 inputs on 24 faders; Vi6 features/functionality with a smaller footprint; 27 output buses; FaderGlow LEDs; Vistonics II touchscreen user interface; compatible with Harman HiQnet routing system.

PRICE: $75,000.
CONTACT: Soundcraft/Harman Pro 818-920-3212, www.soundcraft.com.

ALLEN & HEATH iLive

FEATURES: 80-, 112-, 144- and 176-channel control surfaces; separate DSP mix rack; up to 64 inputs, 32 assignable mixes; 16 DCA groups; up to 10 eight-channel I/O cards in rack, four in surface; eight analog inputs/outputs; assignable surface strips; PAFL masters; MIDI controllers; LCD, touchscreen.
PRICE: starts at $49,999.
CONTACT: Allen & Heath at 818-597-7711, www.ilive-digital.com.

FBT Formula 248 Mixer

FEATURES: 24 or 32 x 8 bus; balanced XLR mic ins, plus stereo inputs with individual level controls; four-band EQ with dual mid sweeps, HF/LF shelving; eight aux sends; two stereo effects returns; mute; switchable 48V phantom power; 100 mm faders, PFL/AFL on all.
PRICE: TBA.
CONTACT: FBT USA, Inc. at 800-333-9383, www.fbt.it.

INNOVASON Sy48

FEATURES: 128 input channels; up to 144 outputs; 16 x 16 local inputs/outputs for inserts/sends; 72 inputs x 40 buses mixing; two monitor buses; DSP; 48 faders; 12" TFT screen; one-touch parameter access; separate rackmountable I/O box via Cat5, Fiber/Coax/Ethersound.
PRICE: starts at $60,000.
CONTACT: InnovaSON at 888-344-3375, www.innovason.com.

YAMAHA M7CL

FEATURES: 32, 48-channel; 96 kHz sample rate; 24-bit/96-kHz A/D-D/A; onboard digital effects; four-band parametric channel EQ; delay; graphic EQ; 100 mm faders; three mini-YGDAI expansion slots.
PRICE: starts at $19,999.
CONTACT: Yamaha at 714-522-9011, www.yamahaca.com.

APB-DYNASONICS Spectra Series Analog Consoles

FEATURES: 24 to 56 mono input channels; four stereo input channels; four-band EQ with variable high-pass filter; switchable HF/LF with 1-octave sweepable mids (Spectra C and Ci) or all bands sweepable including shelving/bell switches on HF/LF bands (Spectra T and Ti); TRS (Spectra C and Spectra T) or balanced sends and returns (Spectra Ci and Spectra Ti). Burr-Brown mic preamps, THAT VCA elements.
PRICE: start at $13,500 (Spectra C 24 P) and go up to $28,000 (Spectra Ti 56 P).
CONTACT: 973-785-1101, www.apb-dynasonics.com.

EUPHONIX SYSTEM 5-BP Digital Audio Mixing System

FEATURES: 24 to 112 faders controlling up to 300 channels; Digital and analog I/O with remote mic preamps and fiber options available; designed for live broadcast or live-to-tape; also for audio post of performance recordings.
PRICE: starts at $200,000.
CONTACT: Euphonix Inc. 650-855-0400, www.euphonix.com.

YAMAHA LS9

FEATURES: 32, 64 mono channel; 16 or 32 on-board mic preamps; onboard digital effects, EQ, dynamics; built-in MP3 recorder; MY card slots.
PRICE: $5,999 (32-channel), $10,999 (64-channel).
CONTACT: Yamaha at 714-522-9011, www.yamahaca.com.

DIGICO D1 Live

FEATURES: Up to 160 input channels; four-band parametric EQ; comp/limiter; gate; six effects banks; 5.1 surround sound; 38x8 output matrix; TFT touchscreens; LED meters; separate rackmounted I/O box.

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PRICE: starts at $69,000.
CONTACT: DiGiCo at 310-326-5266, www.digico.org.

BEHRINGER Eurodesk MX9000

FEATURES: 24 fully inline channels with MIC/LINE, MIX B/TAPE RETURN paths; eight group buses; stereo main bus; six aux sends; four-band EQ with two semi-parametric mid-frequency bands; 15 dB boost/attenuation; low-cut filter; two-band shelving EQ; pan, level controls; mute; LED meters.

PRICE: $1,629.99.
CONTACT: Behringer USA at 425-672-0816, www.behringer.com.

DIGIDESIGN VENUE D-Show

FEATURES: Up to 96 input channels; 16 stereo effects returns; 27 buses; eight mono matrices; eight stereo matrices; onboard DSP; 24 assignable graphic EQs; external I/O box; rackmounted digital mix engine; compatible with Pro Tools DAWs.

PRICE: Call.
CONTACT: Digidesign at 650-731-6100, www.Digidesign.com.

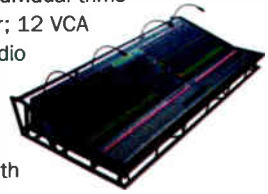
NADY CMX-16A

FEATURES: 16 channels; eight mono balanced (XLR, 1/4" TRS) inputs; eight balanced stereo (1/4" TRS) inputs; two aux sends, stereo aux returns; eight mono inserts; Master Mix, Control Room, Headphone Outputs; 60 mm faders; 10-segment LED meters.

PRICE: starts at $419.95.
CONTACT: Nady Systems at 510-652-2411, www.nady.com.

AUDIENT AZTEC Live Performance Console

FEATURES: 32, 40, 48 or 56 input frames; L, C, R buses with individual trims on each output fader; 12 VCA sub-groups; eight audio sub-groups; eight mono, two stereo aux sends; 12x8 matrix; 4-band EQ with parametric mids, switchable bell/shelving HF/LF; mute.



PRICE: starts at $20,000.
CONTACT: Audient/Chris Walsh at 909-948-0997, www.audient.co.uk.

CADAC S-Digital Mixing Console

FEATURES: From 72 input channels, 66 mix buses, three stereo listen buses; multiple operator/listen systems/control surfaces configurable; separate rachmounted I/O, processor racks; all I/O module hot swappable; propriety high-speed communications protocols linking core elements.

PRICE: starts at $380,000.
CONTACT: Cadac Electronics at +44-1582-404202, www.cadac-sound.com.

SOLID STATE LOGIC C100 HD-S

FEATURES: 24, 32, 40, 48 and larger "slimline" frames; up to 256 DSP channels (with EQ, dynamics), 256 additional inputs on faders; 80 output buses; scalable I/O (MIC/LINE, analog, digital, MADI); TFT display channel monitoring/touchscreen; integrated workstation control option.

PRICE: starts at $250,000.

DIGICO D5 Live

FEATURES: Up to 96 full channels; 38x8 output matrix; 40 buses; permanently allocated DSP for EQ, dynamics and bussing; TFT touchscreens; LED meters; separate rackmounted I/O box; 24-bit AES/EBU; 56 2-bit channels MADI; 512 channel redundant optical loop.

PRICE: starts at $144,000.
CONTACT: DiGiCo at 310-326-5266, www.digico.org.

ALTO Typhoon4800 Console

FEATURES: 48 input with 40 mic preamps (48V Phantom Power, four-band parametric EQ w/ sweepable center), 8 Auxiliary sends and returns, 8 subgroups, talkback functions, inserts on every channel, weight-66 lbs., plywood flight case included. ALTO is a Yorkville Group Brand.

PRICE: $4,718.
CONTACT: Herb Venticinque, United States ALTO Brand Manager via email at herb@yorkville.com or at 716-297-2920 ext. 32 for more info.

CARVIN SL40

FEATURES: Four-band EQ; 48V phantom power; low-cut filter; 100mm faders; inserts; eight auxes; PFL; LED meters.
PRICE: $2,999.
CONTACT: Carvin at 800-854-2235, www.carvin.com.

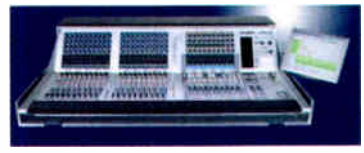
ALESIS GigaMix 4CD

FEATURES: Four-channel; three-band channel EQ; 48V phantom power; nine-band master graphic EQ; 100 preset digital effects; high-pass filter; onboard CD player; onboard 200 W amp.

PRICE: $549.
CONTACT: Alesis at 401-658-5760, www.alesis.com.

STUDER VISTA 5 SR Digital touring desk

FEATURES: Studer-patented Vistonics technology offering encoders mounted directly in TFT screens; expandable I/O system for Studer D21m Series cards (including CobraNet and Aviom A-Net); MADI standard; preset configurations for FOH and monitor use; standalone Config Editor tool; expandable I/O system, where the whole range of available Studer D21m series I/O cards (including CobraNet and Aviom A-Net); MADI standard; compact, portable, and easy to set up.
PRICE: POA
CONTACT: Studer USA at 866.406.2349, www.studer.ch.



World Radio History

MACKIE DESIGNS SA1232z Powered Speaker

FEATURES: Three-way; 1100W RMS low-frequency, 100W RMS mid-frequency, and 100W RMS high-frequency amps; WaveFront high/mid horn system; 1.75" neodymium HF compression driver; 6" horn-loaded neodymium mid-frequency transducer; two 12" LF woofers; 136dB SPL @ 1kHz/1 meter; 39Hz to 20kHz.
PRICE: $2,059.
CONTACT: Mackie Designs at 800-258-6883, www.mackie.com

YAMAHA MSR250 Powered Speaker

FEATURES: 200W; 10" LF driver; 1" titanium diaphragm compression driver; 55 Hz - 20 kHz; 3ch mixer with XLR, quarter-inch and RCA input; a two-band EQ and line-out; ferrofluid high frequency driver, ensuring natural frequency response and dependable performance quality under heavy use.
PRICE: $599.
CONTACT: Yamaha Pro Audio at 714-522-9011, www.yamaha.com/proaudio.

ADAMSON M15 Multi-Purpose Monitor

FEATURES: Two-way; neodymium ND15-L multilayer Kevlar cone driver; 50 x 50-degree conical waveguide; 15" long-excursion woofer; symmetrical trapezoid cabinet design; 131.3dB max SPL with Xover Preset; accessories include MASS (Multi Angle Suspension System).
PRICE: POA
CONTACT: Adamson Pro Audio at 905-982-0520, www.adamsonproaudio.com.

EAW/RAT Sound MicroWedge MW12 Stage Monitor

FEATURES: Dave 'Rat' Levine design; 12" woofer with a 3" (diaphragm) HF compression horn driver with 90-degree horizontal dispersion; large front port; passive/active mode switch; dual input connectors; integral rigging hardware.
PRICE: TBA
CONTACT: EAW at 508-234-6158, www.eaw.com.

MARTIN Audio W8VDQ

FEATURES: Three-way; passive or bi-amp operation; four 8" LF and MF drivers; four 1in HF horn-loaded drivers; the system achieves a maximum SPL of 131dB (continuous) max SPL, 137dB peak; vertical differential directivity (VDQ); short-throw horizontal dispersion of 120°, narrowing to 100° as throw increases.
PRICE: POA
CONTACT: Martin Audio at 519-747-5853, www.martin-audio.com.

JBL PROFESSIONAL VERTEC VT4889ADP

FEATURES: Three-way; two 15" LF transducers, four 8" MF components; three 1.5" neodymium compression drivers with beryllium diaphragms; 143 dB SPL maximum output; V4 DSP preset data; optional networked DPCN (Cobranet-compatible); HiQnet compliance.
PRICE: POA
CONTACT: JBL Professional at 800-852-5776, www.jblpro.com.
08 PIC, ENCLOSED

YORKVILLE Unity U15P Powered Speaker

FEATURES: Three-way; 15" neodymium woofer; three 5" ceramic mid range drivers; 1" throat HF horn. Class A/B amplifier topographies; 900W program; integrated DSP; integrated fly points; 5/8 birch wood ply trapezoidal enclosure.
PRICE: $1,899 (Black Ozite finish), $2,099 (Black Ultrathane finish).
CONTACT: Yorkville at 716-297-3689, www.yorkville.com.

CARVIN TRX153B Loudspeaker

FEATURES: Three-way; 15" woofer; 8" medium throw midrange driver; 3" voice coil; 60 X 40 horn; passive, internal crossover or tri-amp access via NL8 Speakon; recessed handles; metal corner protectors; metal grille; 13-ply Baltic Birch DuraTex-coated enclosure.
PRICE: $599.
CONTACT: Carvin at 800-854-2235, www.carvin.com
07 PIC

COMMUNITY Loudspeakers TLF218

FEATURES: Dual 18" woofer high-efficiency subwoofer; 40 Hz – 125kHz; 800W RMS, 2000W PGM; 4 ohm; Active Air cooling; Balanced Cone Loading; Ergo-Grip handles; black Tuf-Coat finish; four-point seat track rigging; stacking feet/cups; optional caster kit.
PRICE: $2,583.
CONTACT: Community at 610-876-3400, www.communitypro.com.

PEAVEY Versarray 112 Line Array

FEATURES: Two-way; 12" Neo Black Widow woofers with dual 4" flat-wound voice coils; dual-ribbon driver; neodymium magnet with Ram Air Cooling; rigging hardware; 13-ply Baltic birch cabinet.
PRICE: $1,599.
CONTACT: Peavey Electronics at 866-443-2333, www.peavey.com.

YAMAHA Installation Series Speakers

FEATURES: Three, two-way systems and subs; rotatable horns; barrier strip and Neutrik connectors; Finnish Birch cabinets; foam-backed elements; 14-guage steel grilles; rigging points; YS3 software compatible.
PRICE: $1,249-$2,999.
CONTACT: Yamaha at 714-522-9011, www.yamahaca.com.

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L-ACOUSTICS 12XT Coaxial Loudspeaker

FEATURES: Two-way; 12-inch woofer; 55Hz – 20 kHz; switch for passive/active operation (active filtering by La4 amplified controller); wedge-shaped, bass-reflex tuned enclosure.
PRICE: $1,980.
CONTACT: L-Acoustics US at 805-604-0577, www.l-acoustics-us.com
07 PIC

D.A.S. AUDIO Aero 38A Line Array Element

FEATURES: Three-way; twin 12" woofers with 4" voice coils; twin 10" mid range drivers with 3" voice coils; 4" diaphragm; 1.5" exit throat compression HF driver; Birch plywood cabinet; Isoflex coating; Class D amp; protections on each channel.
PRICE: $7,400.
CONTACT: D.A.S. Audio at 305-436-0521, www.dasaudio.com.

FBT Verve 15a Powered Speaker

FEATURES: Two-way; 15" woofer; 80 X 50 horn; two-band EQ; 48 Hz – 20 kHz; 350W RMS Class G LF amp; 100W RMS Class G HF amp; ADAP protection circuitry; fly points; socket mount; Baltic Birch plywood cabinet with steel handles; Tour Grade black finish.
PRICE: POA.
CONTACT: FBT USA, Inc. at 800-333-9383, www.fbt.it.

BEHRINGER Eurolive Professional B1800X PRO Subwoofer

FEATURES: 18" woofer; 1,600W peak, 800W RMS; 40 – 300Hz; switchable crossover for optional passive or bi-amping operation; Neutrik Speakon connections.
PRICE: $439.
CONTACT: Behringer at 425-672-0816, www.behringer.com.

NEXO GEO S 12 Series

FEATURES: Two-way; 12" woofer; 1.4" Hyperboloid Reflective Wavesource HF driver; S 1210 and S 1230 with horn dispersion variances; compatible with Nexo GeoSoft2 controller software; crossbow flying assembly; metal grille; Baltic Birch ply trapezoid cabinet.
PRICE: $3,200.
CONTACT: Nexo/Yamaha CA at 714-522-9011, www.yamahaca.com.

ELECTRO-VOICE PX2122 Phoenix Loudspeaker

FEATURES: Two-way; dual 12" woofer; dual 2" HF compression drivers; 45 X 30 rotatable manifold horn; 1,200 W bi-amp only; integral handles; rigging points; black EVCOAT 13-ply cabinet.
PRICE: 2,290.
CONTACT: Electro-Voice at 952-884-4051, www.electro-voice.com.

QSC AUDIO HPR122i

FEATURES: Two-way; 12" woofer; 3" voice coil and neodymium magnet; compression driver with 1.4" diaphragm with 75-degree conical horn; operable between 53Hz – 20kHz.
PRICE: $799.
CONTACT: QSC Audio at 800-854-4079, www.qscaudio.com.

CERWIN-VEGA! Active CVA-121 Subwoofer

FEATURES: 21" woofer with Stroker; 35 – 135Hz; built-in amplification; 1,200W continuous, 2,400W peak; onboard parametric EQ; master/slave outputs; aluminum grille and heat sink; hardwood enclosure available with casters and paint or carpet.
PRICE: $1,999.
CONTACT: Cerwin-Vega! at 818-534-1500, www.cerwin-vega.com.

DANLEY SOUND LABS SH-DFA

FEATURES: Two-way; 10" woofer; 1" HF driver; asymmetrical full-range horn; 13" tall; seamlessly integrated with SH-50; 80Hz – 18kHz; 500W continuous/1,000W program.
PRICE: $2,088 (passive), $3,340 (powered with built-in DSP).
CONTACT: Danley Sound Labs at 770-534-7620, www.danleysoundlabs.com.

TURBOSOUND NuQ-12DP

FEATURES: Two-way; 12" low frequency driver; 1.4" HF compression driver on a rotatable 80 X 50 Converging Elliptical Waveguide; self-powered; networkable; Powercon, XLR, and RJ45 network connectors; metal grille; onboard rigging; pole mount/OmniMount compatible; birch plywood trapezoidal cabinet.
PRICE: $3,770.
CONTACT: Turbosound/Sennheiser at 860-434-9190, www.sennheiserusa.com.

EAW NT29 Compact Powered Loudspeaker

FEATURES: Two-way; 12" (3" voice coil) neodymium magnet cone; 1.4" throat (3" voice coil) horn-loaded neodymium compression driver; self-powered; bi-amped; onboard DSP; Baltic Birch plywood enclosure.
PRICE: $4,991.
CONTACT: Eastern Acoustic Works at 508-234-6158, www.eaw.com.

WORXAUDIO TECHNOLOGIES TL118SST-P Sub Bass System

FEATURES: 18" LF high-excursion transducer; under hung, 4" X 1.5" voice coil; neodymium magnet; self-powered, 1,000W; twin digital processors; XLR transformer with isolated I/O; PowerCon switchgear I/O; tuned 21-ply Baltic Birch enclosure; weather-resistant; catalyzed polyurethane finish.
$5,350.
CONTACT: WorxAudio Technologies at 336-275-7474, www.worxaudio.com.

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MACKIE Continued From Page 42

A-LINE EMMA Solutions-1 High-Definition Line-Source System

FEATURES: Two-way EMMA 806A module with 8 X 6.5" LF drivers; 8 X 6.5" HF ribbon drivers; EMMA S410A 4 X 10" subwoofer; 1,500W Bang & Olufsen ICEpower; onboard DSP; DuraTex-coated birch ply enclosures; transport system; all hardware.

PRICE: $8,799.

CONTACT: A-Line Acoustics at 716-524-4084, www.a-lineacoustics.com.

SLS LOUDSPEAKERS PLS8695 Powered Line Array

FEATURES: Two-way; eight 6.5" woofers; nine PRD500 ribbon HF drivers; onboard amplifier; NeverMar coating.

PRICE: $5,495.

CONTACT: SLS Loudspeakers at 417-883-4549, www.slsloudspeakers.com.

TANNOY iQ 10/15

FEATURES: Three-way; 15" woofer; 10" PowerDual concentric driver; biamp/triampable; birch plywood cabinet; steel grille; onboard mounting hardware.

PRICE: $5,865.

CONTACT: Tannoy North America at 519-745-1158, www.tannoyna.com.

DYNACORD D-Lite 2000 System

FEATURES: Subwoofer/satellite system; 15" powered subwoofer; two satellite speakers with 12" woofers; polypropylene cabinets; 1,000W Class D amplifiers; cables.

PRICE: $5,500.

CONTACT: Dynacord/Telex at 952-884-4051, www.dynacord.com.

MEYER SOUND M2D Compact Curvilinear Array

FEATURES: Two-way; twin 10" low-frequency/mid drivers; 4" high-frequency driver; Ribbon Emulation Manifold; onboard 600W amplifier; QuickFly rigging system.

PRICE: $7,500.

CONTACT: Meyer Sound at 510-486-1166, www.meyersound.com.

BAG END P-Quartz-R Subwoofer

FEATURES: Four 18" INFRA cone woofers; two Minima One onboard 1,000W amplifiers.

PRICE: $5,750.

CONTACT: Bag End at 847-382-4550, www.bagend.com.

ALESIS ProVenue 15

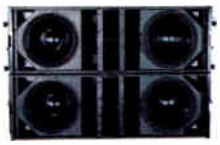
FEATURES: Two-way; 15" woofer; 1" compression HF driver; pole mount socket; powder-coated metal grille; mounting hardware; polycarbonate cabinet.

PRICE: $399

CONTACT: Alesis at 401-658-5760, www.alesis.com.

TALOS LK-2236L

FEATURES: Three-way; two 12-inch LF neodymium drivers; one hornloaded 10" MF driver; two 1.5" exit HF compression drivers with 3" voice coils and wave-shape device; 48Hz – 17kHz; 120-degree dispersion; triampable; flying points; integrated handles; metal grille.



PRICE: $2,120.

CONTACT: Talos at 703-764-7005, www.musictechnology.com.

MCCAULEY FM850 Floor Monitor

Features: Two-way bi-ampable vented high pass enclosure; direct radiating 15" LF loudspeaker; horn loaded compression driver HF; 50Hz – 20kHZ; power handling: 1000W (low), 220W (high); max peak SPL: 134dB; 12-Ply birch construction; dual NL4 connectors.

PRICE: $3,750

CONTACT: McCauley Sound at 877-McCauley, www.mccauleysound.com

through the A/D and D/A converters, plus some time is required for DSP number-crunching in the mixer. A trip from mic in to line or headphone out takes just under 3 milliseconds at 44.1 kHz. Doubling the sample rate cuts that delay in half, suggesting that nearly all of the monitor latency is a function of the digital filters in the A/D and D/A converter chips.

Most players won't be thrown off by a 3 ms delay, but vocalists might have a different problem. The delayed sound of your voice in the headphones arrives at your eardrum at a slightly different time as the direct sound from your vocal cords. When added together, there will be phase cancellation at certain frequencies. The singer's voice will sound fine on the control room monitors and in everyone else's headphones, but it might sound odd in the singer's own headphones. Some singers find this bothersome, some don't notice or can ignore it, and others turn up the phones volume so the electronic signal swamps out the acoustic one and the comb filter nulls become negligible. During my preamplifier testing, my voiceover subject asked me if the mic was in the wrong position when she first heard herself from the 1200F's headphone output.

I used my Mackie 800R preamp to check out the 1200F's ADAT optical input, comparing the sound of a mic connected to the 1200F with the same mic connected to the 800R. Since they use the same mic preamp circuit and A/D converter chips, I expected the sound to be essentially identical through both paths, but it wasn't. The high end sounded slightly harsher through the 1200F. As a sanity check, I connected an analog output of the 800R to the 1200F through an Insert input. Now the two preamps sounded identical.

Q: What can make a digital interface less than perfect?

A: Clocking.

For my initial ADAT input check, I had set the 1200F to synchronize its word clock from the incoming ADAT stream. Returning to the ADAT connection between the 800R and 1200F, I set the 1200F to internal word clock, the 800R to external word clock, and used the 1200F's BNC word clock output to sync the 800R. Now, the mic sounded identical through either preamp. This tends to support the lore that deriving a clock signal from an incoming ADAT optical stream isn't quite as robust as a direct word clock connection. Since I rarely use ADAT I/O, I can't vouch for the quality of the cables lying around the shop, but this illustrates the importance of good digital connections or at least a

MACKIE continues on page 56 ➤

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STUDIO | REVIEW

MACKIE Continued From Page 55

reason to question them if something doesn't sound right.

There's something here for everybody ... almost. But there are some things I'd like to see done a little differently. Here are some of my thoughts:

Talkback goes only to the headphone outputs. It would be nice if it also went to the FireWire outputs for slating tracks. The ability to copy and paste between mixers would be a real timesaver, allowing you to use one mix as a template for others. Along the same line, rather than having each mixer's DAW returns hard-wired to a specific pair of FireWire streams, I'd like to be able to select the DAW outputs used in each mix. If only one mix of the recorded tracks is required, there's no need to send multiple copies of it back through the FireWire stream. And along those same lines, being able to bring more than one DAW stem mix into each mixer (for example, drums) would be welcome.

I couldn't come up with a good reason to use a foot switch for swapping between the two sets of control room monitors, but a switch to turn the monitor mix on or off in the second set of monitor jacks would be handy. The alternate monitor jacks could then feed a set of speakers in the studio so the musicians could hear the playback without coming into the control room.

Since not all inputs and outputs are available at higher sample rates, having the deselected channels grayed out on the mixer screen would reduce confusion.

Finally, and this is strictly personal thing, but I found the concept of a switching among a bunch of similar-looking mixers to be confusing. I'd rather see a more conventional mixer layout with the various outputs controlled by traditional "send" controls on a single screen.

| SUMMARY

The 1200F is a great-sounding FireWire interface priced at less than you'd expect to pay for a dozen pro-quality mic preamps. With the monitor mixer, four headphone amplifiers, and expansion via two sets of ADAT Optical I/O and stereo digital ports, two MIDI inputs and outputs, plus a full version of Mackie's Tracktion 3 DAW software, and you have the basis for a very sophisticated recording system. With the 1200F's versatility, it would fit nicely either in a one-room personal studio or a traditional studio and control room setup.

There's a lot to the 1200F, and it deserves a detailed application guide in addition to the fairly basic manual. While many individual users may be initially attracted to the 1200F simply for its large number of inputs, it really doesn't show its full colors until you start recording the whole band, giving everyone a custom headphone mix while tracking, and then mixing the project in surround.

Mike Rivers, a retired location sound recording engineer, operates a studio in Falls Church, Va.

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Single Slice

by Strother Bullins

"If I Never See Your Face Again" | Maroon 5 featuring Rihanna

SINGLE: "If I Never See Your Face Again"
ALBUM: *It Won't Be Soon Before Long* (A&M/Octone)
DATES: Duet vocals recorded on February 14, 2008 at Henson Recording Studios, Studio D, Hollywood, CA; mixed in February 2008 at Scream Studios, FL
PRODUCERS: Mike Elizondo, Mark 'Spike' Stent, Mark Endert, Eric Valentine, and Maroon 5
ENGINEERS: Mark 'Spike' Stent and Mark Endert
MIXER: Mark Endert
OTHER PROJECTS: Endert works with artists including The Fray, Anna Nalick, Gavin DeGraw, Madonna, Vertical Horizon, Five For Fighting, Fiona Apple, Tonic, Quietdrive, and others.
SINGLE SONGWRITERS: Adam Levine and Eric Valentine
MIX CONSOLE: Solid State Logic 9072J (Scream Studios, FL)
MIX MONITORS: Yamaha NS-10 and Genelec 1031A
AUDIO PLATFORM/DAW: Pro Tools|HD
VOCAL MICROPHONES: Sony C-800G (Rihanna) and Neumann U67 (Adam Levine)
SELECT VOCAL TRACKING PROCESSORS: Neve BCM-10 sidecar (Neve 1073 mic pre-amps), Universal Audio/Teletronix LA-2A leveling amplifier, GML 8200 parametric EQ

Strother Bullins is a music and pro audio industry writer based in North Carolina

PRODUCER'S DIARY

As the duet version of "If I Never See You Again" recently hit radio, iTunes, and so on, Maroon 5's It Won't Be Soon Before Long—the band's 2007 full-length album—was already deemed a success. The original version of "If I Never ..." kicked off the album, and after successfully sending other album tracks to radio, the band and producer/mixer Mark Endert were ready for a new challenge, one that involved re-cutting vocals.

"It's amazing how radio changes constantly," Endert begins. "In the time it took for their record to transpire through the singles, they had an opportunity to do a duet with Rihanna. They thought it would be great to take 'If I Never ...' and do it as a duet."

Mark Endert

Before tracking Rihanna's vocal alongside Maroon 5 vocalist Adam Levine at Henson in LA, Endert made a few tweaks to 'If I Never ...' for Rihanna to vibe on during the sessions. "I suggested, 'Let's go more track-oriented with this,' diminishing some of the actual drum kit that was recorded and leaning a bit heavier on the programming," he explains. "The idea behind that was to get the song into the shape of what she was used to. We relied more on keyboards and programming to get her pumped up when she heard the version. It was a new perspective of looking at a 'band' track."

Using a Sony C-800G condenser on Rihanna, a Neumann U67 for Levine, and Neve 1073 mic pres for both—"a favorite of mine for both male and female vocals," offers Endert—the three captured this cleverly cynical duet, ironically, on Valentine Day. "I like LA-2As for cutting vocals to the Pro Tools system, and I ended up throwing a GML EQ for notching out or enhancing—it's such a precise EQ. For Rihanna, I wanted a little top added with a little midrange out. So, it was LA-2A and GML to Pro Tools for the vocals."

Citing his job as a prolific mixer, Endert is an advocate of committing to decisions 'in the moment.' "If you leave too many things to the end, it requires a lot of gear and processing at the mix stage," he offers wisely. "For the things that I'm mixing myself, I try and commit to those decisions, like for vocals, immediately."

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The Answer.

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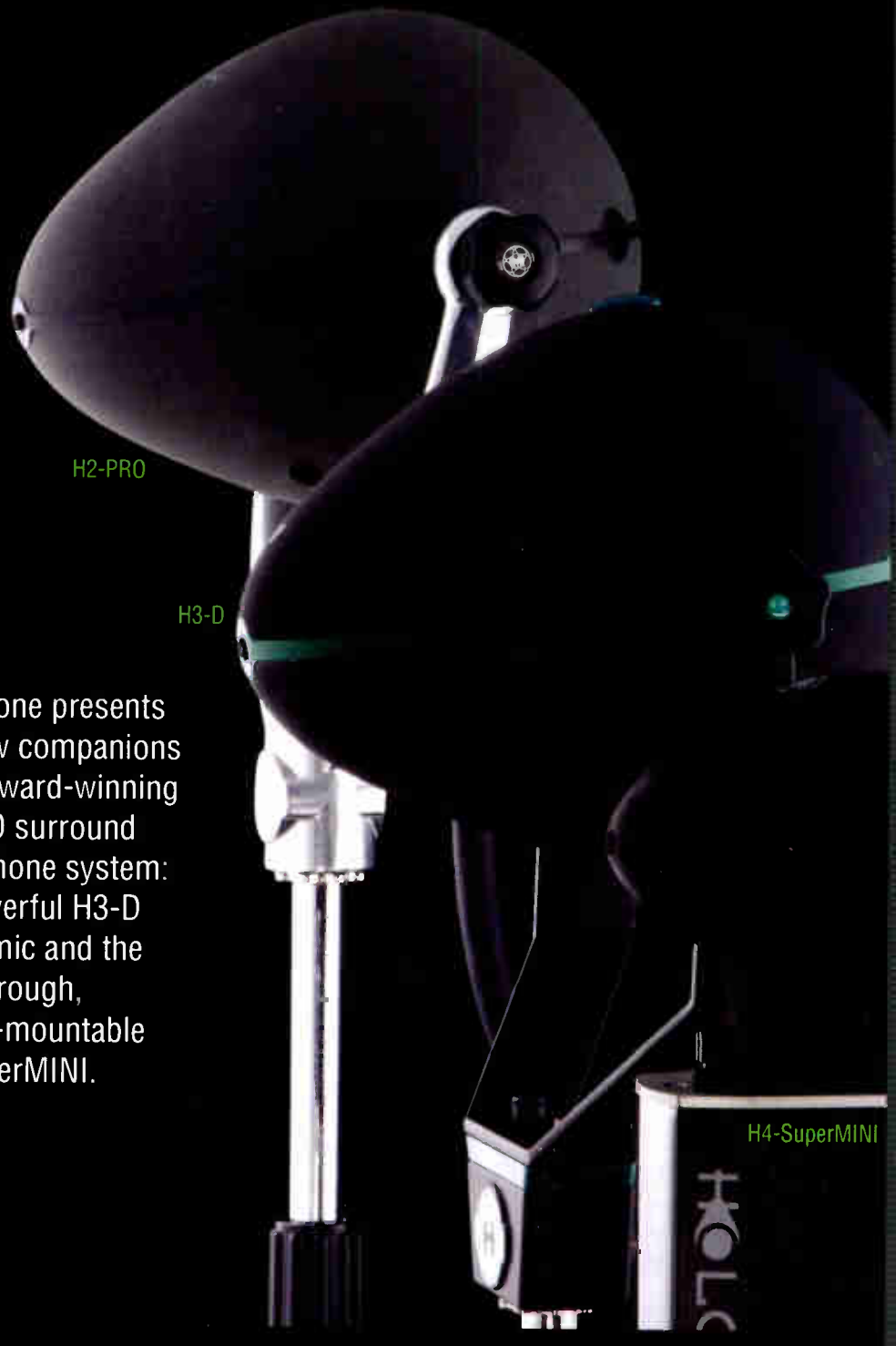

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- Asbury College, KY
- ATK Audiotek
- Bell Expressview-Canada
- Bose Corporation
- Branford Marsalis live in Amsterdam
- BTV Beijing TV - China
- Bonnaroo Festival
- CBC HDTV
- CBS HDTV
- Celine Dion
- Central Michigan University
- City TV-Canada
- Cowboy Junkies
- Cristiano Pinheiro, Brazil
- CTV, Canada
- Dave Matthews Band
- Dome Productions
- Dolby Labs
- Drew Carey Show
- EA Sports
- Eddie Mapp
- Elton John
- ESPN
- Evanescence
- Extreme Makeover, Home Edition TV
- Fogo Labs
- FOX HDTV
- Frank Serafine
- Genie Awards
- George Jonsen - Mortal Kombat III,
- London Philharmonic
- Hank Neuberger - Third Wave Productions
- Hiroshima TV - Japan
- Hong Kong TV (ATV)
- Iron Maiden
- John Cale
- Joss Stone
- Kansai TV (Osaka, Japan)
- Kanye West
- King Bolden, film
- Kitanihon TV - Japan
- Klaus Landsberg
- Korn
- LDS Motion Picture Studio
- Lionel Ritchie
- Mammoth Sound and Vision
- MBC TV - Korea
- Mexico Soccer
- Mormon Tabernacle Choir
- Moscow International House of Music
- MTV Canada
- MuchMusic Video Awards
- NBA Basketball
- NBC HDTV
- NFL Football
- NHL Hockey
- NHK Japan
- North by NorthEast Music Festival
- One Love – Bob Marley Tribute
- Paul McCartney
- PBS HDTV- USA
- Pelissippi State University
- RAI, Italy
- Real Madrid (Soccer)
- Resul Pookutty, India
- Robert Margouleff
- Sam Roberts
- Sandia Labs
- Sapporo (TV) - Japan
- Shakira
- Teatro Municipal do Rio de Janeiro
- Televisione Svizzera DI Lingua Italiana
- The Kentucky Derby
- The Church of Scientology
- Three Superbowls
- TNT HDTV
- TSN HD
- TV Asahi -Japan
- TV Azteca (Mexico)
- Universidad Francisco Marroquin
- University of Central Florida
- Van Morrison, Grand Ol' Opry
- Warner Music Group, Flaming Lips
- Waterman, Andrew
- Whitesnake
- 47th and 48th Grammy Awards

And the list goes on...

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