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## COVER FEATURE

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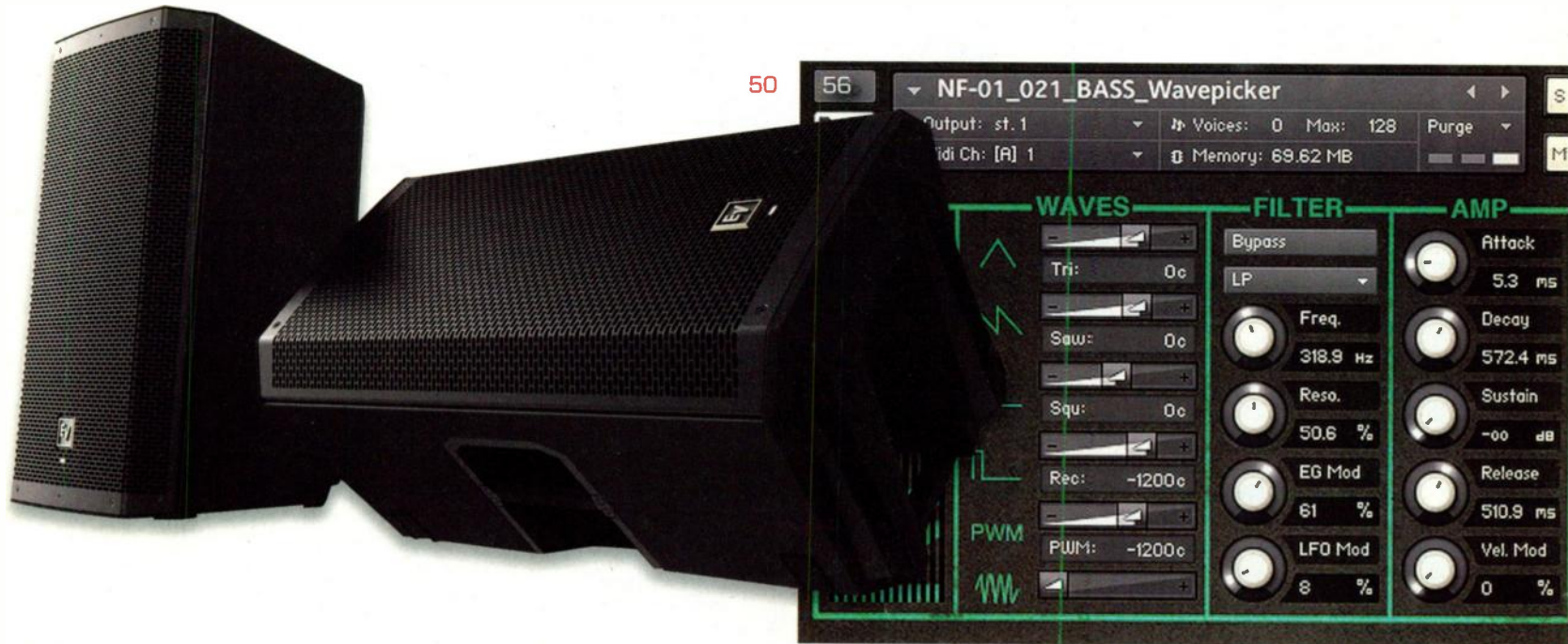
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# 11.2013

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—PAUL WICKENS,  
KEYBOARDS/MUSICAL DIRECTOR, PAUL MCCARTNEY

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insight

## The Element of Surprise

IT'S A given that music lovers want to be surprised. The same is true for those who are making music: Fleshing out your preconceived notion of your song down to the most minute detail doesn't leave room for ideas to develop; it's important to be open to the potential of the unplanned. I'm not saying this is a novel concept, but bear in mind that it can manifest itself in many ways in the studio.

Maybe it's how you approach your writing. In our MGMT cover feature starting on page 14, we learn how Ben Goldwasser and Andrew VanWyngarden broke out of their structured studio mindset by literally surrounding themselves with a giant circle of gear and just jamming, often independently, until songs began to emerge.

Sometimes, it's about experimenting with technology that can be unpredictable in nature. In

"Granular Synthesis 101" (beginning on page 72), we delve into novel ways to reorder and modulate of bits of sonic data to create remarkable new sounds.

The element of surprise can even lie in the gear itself. In our new "Mod Squad" column (page 54), technical editor Gino Robair tours the radical Metasonix R-54 Supermodule MK II. Of it, he says, "Can you tell that I am reveling in the instability aspects of the R-54? Therein lies much of the creative potential."



**SARAH JONES**  
EDITOR  
[sjones@musicplayer.com](mailto:sjones@musicplayer.com)

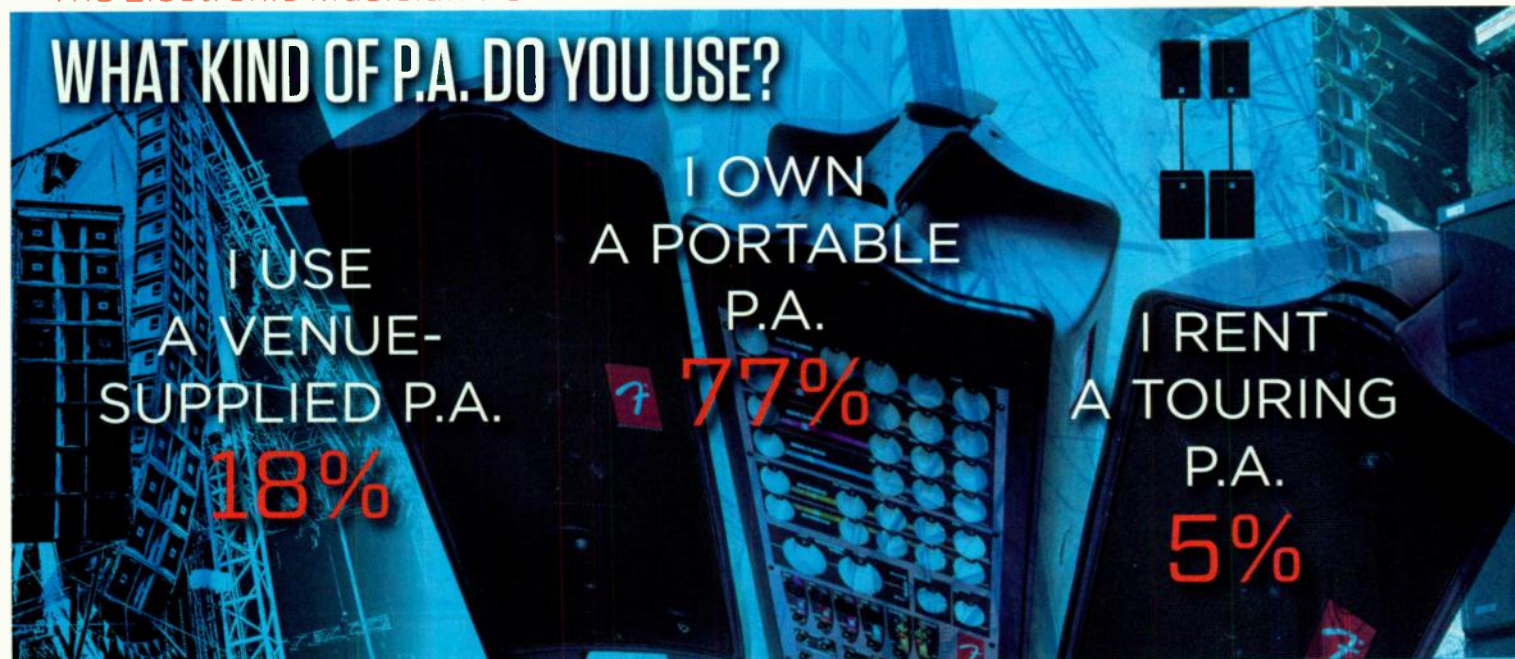
Find yourself in a rut? Give in to the unpredictable. The results might amaze you.

# COMMUNITY

**"YOU CAN GET A BIT DOGGED DOWN IN THE STUDIO APPROACH: SITTING AROUND, TOO MUCH JAMMING. TOO MUCH JAMMING KILLS THE BAND."**

Franz Ferdinand's Alex Kapranos discussing the importance of structure in recording, *NPR*, August 24, 2013

### The Electronic Musician Poll



# DIG MY RIG

Here's a picture of my "gig rig," though it's not exactly easy to lug around.

I'm a guitar player and started collecting Mooger Fooger pedals a couple of years ago. Now it has gotten a little out of hand! Ironically, I got all of them, except their most famous one: The Moog Ladder Filter.

I got the MPC1k because it gets me away from the computer screen. Making music with my hands instead of my eyes has really brought some joy back into the process.

The whole rig is mixed and recorded onto a classic 4-track cassette recorder: the TASCAM 424. It's really hands on and immediate. Brings me back to being 12 years old and making punk rock demos with my friends ... and guess what, I like its sound and it is impossible to re-create in a DAW.

MARTIN YAM MØLLER  
VIA EMAIL



## AES INFORMATION CENTRAL

The 135th international Audio Engineering Society takes place from October 17-20 at the Javitz Center in New York City, and we'll be there in full force, bringing you up-to-the-minute dispatches from the show floor. Visit [emusician.com/AES2013](http://emusician.com/AES2013) for comprehensive coverage, including breaking gear news, daily reports, slideshows, and more. And if you're at the show, don't miss *Electronic Musician*

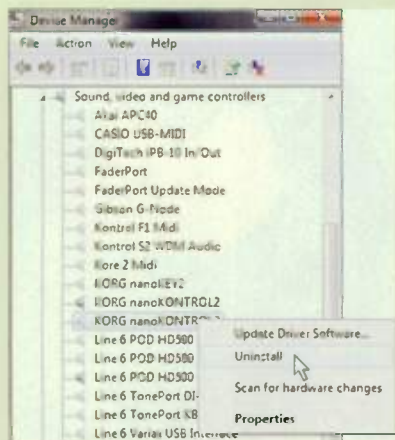


technical editor Gino Robair's "Modular Synthesizers: Creative Uses in the Studio," workshop on Friday at 2pm. In this session, Robair will demonstrate how producers and engineers take advantage of voltage-controllable hardware systems in the modern studio, using DAWs, MIDI, and specialized tools such as MOTU Volta and Expert Sleepers Silent Way.

### ask!

I'VE INSTALLED USB MIDI DRIVERS FOR KORG'S CONTROL SOFTWARE, AND WHILE THE DRIVERS SHOW UP AS EXISTING AND CONNECTED, THE CONTROL SOFTWARE DOESN'T SEE IT. WHAT CAN MAKE MIDI DEVICES JUST DISAPPEAR?

COLIN MCCLINTOCK  
NEW PORT RICHEY, FL  
VIA EMAIL



Device Manager is showing duplicate ports for the Korg NanoKontrol and Line 6 POD HD500. Uninstalling the duplicates frees up ports.

Windows has a limit on the total number of MIDI ports, and worsens the situation by creating duplicate ports if you plug a USB MIDI device into different physical USB ports. The usual solution is deleting duplicate ports.

You can create a batch process file to reveal hidden ports in Device Manager. Type the following in Notepad and save it as a .BAT file (e.g., ShowPorts.BAT):

```
set devmgr_show_
nonpresent_devices=1
start Devmgmt.msc
```

Connect some USB devices you use often. (Note which ports you're using so you can keep associating particular ports with particular devices in the future.) Double-click on the .BAT file to open Device Manager. Choose View > Show Hidden Devices, then open Sound, Video,

and Game Controllers. A speaker icon to each item's left will be solid if the device is connected, and grayed out if not. Right-click on any grayed-out drivers for the connected devices, then choose Uninstall. (Don't Delete the driver.) Once the number of ports goes under the Windows limit, your Control software should recognize the drivers.

THE EDITORS



Got a question about recording, gigging, or technology? Ask us! Send it to [ElectronicMusician@musicplayer.com](mailto:ElectronicMusician@musicplayer.com).

## NINE INCH NAILS ROCK OUTSIDE LANDS

SAN FRANCISCO, CA  
AUGUST 10, 2013

Like San Francisco itself, the city's annual Outside Lands festival lineup is always an eclectic mix, showcasing dozens of acts ranging from Grizzly Bear to Trombone Shorty, Hall and Oates, Jurassic Five, Pretty Lights, and the Red Hot Chili Peppers. Headliner Nine Inch Nails took to the stage on the second evening of the weekend-long extravaganza, thrilling a sold-out crowd of 65,000 screaming and shivering fans hunkered down in the cold fog of Golden Gate Park. In contrast to the pyrotechnic-laden extravaganza brought by the previous evening's headliner, Paul McCartney, Trent Reznor and band offered up stark drama, performing favorites from albums past, along with select tracks from their new album, *Hesitation Marks*. A dark and stormy night, indeed.

PHOTO BY DAVE VANN







DANNY CLINCH

On their self-titled third album, BEN GOLDWASSER and ANDREW VANWYNGARDEN branched out of their old studio mindset by jamming and recording wild tracks inside a super-synth zone “in the round”



BY LILY MOAYERI

**SOUNDING LIKE MGMT** has become a musical genre of its own. Music made by two people that involves as much, if not more, studio manipulation as traditional instrumentation, has vocals, but isn't conventional sounding, and is decidedly dance-y on its surface, but informed by a multitude of genres with many left-of-center musician references at its core.

"I don't like that," says MGMT's Ben Goldwasser. "I feel like 'sounding like MGMT' has become synonymous with self-indulgent party music, which is not what our band is about."



Ben Goldwasser (left) and Andrew VanWyngarden.

Goldwasser formed MGMT, then called The Management, with Andrew VanWyngarden in 2001 when the two were studying music at Wesleyan University. The 2008 release of the duo's debut, *Oracular Spectacular*, catapulted them into the stratosphere with standout tracks "Kids," "Time to Pretend," and "Electric Feel." A testament to MGMT's magic hit-song touch, their songs have been covered by artists ranging from the Flaming Lips to Cage the Elephant, Jack's Mannequin, Sigur Ros' Jónsi, and Katy Perry.

The self-assuredly titled follow-up, *Congratulations* moved from the psychedelic experimentation of *Oracular Spectacular* to a more guitar-driven sound, featuring all members of MGMT's live band and focusing on a whole-album listening experience rather than spiky hits.

On their self-titled third time out, MGMT takes another tack, doing little writing prior to recording, instead jamming for long stretches of time until songs start to emerge. Once again working with producer/engineer/mixer David Fridmann, who produced *Oracular Spectacular* and worked on *Congratulations*, the artists repaired to Fridmann's Tarbox Road Studios in upstate New York, where the writing and recording happened simultaneously.

**Let's Jam!** MGMT was written and recorded in the round. Bringing all of the instruments and pieces of gear that used to live in their Blunker Unsinn studio—which

they gave up a while ago—VanWyngarden and Goldwasser set everything up in a circle with themselves at the center. The two would play for hours, improvising and jamming, at times on headphones, one not necessarily aware of what the other was doing, and often not sure who generated which sound.

"They went crazy for a long time," says Fridmann. "They had set up so many machines and live instruments that were happening simultaneously, they couldn't always hear all the parts. I could hear everything in the control room, but each of them individually would have an impression of what was happening. There would be moments where they would hear enough of the same thing at the same time that they'd be laughing about how crazy what they had created was. We'd flag those moments as something to get back to because obviously, something magical happened there."

As unconventional as MGMT's sound is, the duo's songwriting approach has been fairly traditional—until now. Prior to *MGMT*, the only time they had written in the studio at the same time as recording was for the song "Metanoia," the B-side to "Time to Pretend." The goal was to expand on that approach for the entirety of *MGMT*, and in the process avoid being confined to a specific style or goal.

"The word improvisation has negative connotations for me," says VanWyngarden. "We both went to so many formal concerts in college with experimental people. The air in

the room was always uncomfortable. And in high school, both of us saw a lot of jam bands. There are moments in that music that are painfully not fun to listen to . . . you really have to figure out which moments are worth saving and working on."

Even with the old-school jamming approach, MGMT sounds more electronic than live. Not the big arena dance-y electronic, but dark, once again psychedelic, and unexpectedly lo-fi. "Alien Days"—originally released on Record Store Day—twinkles as it wheezes calliope-style, "Astro-mancy" oscillates in and out with backward-sounding vocals, the eerie "Mystery Disease" has the touch of an old-school sci-fi television show, while "Cool Song No. 2" rumbles agreeably and "A Good Sadness" comes the closest to a pop song. Throughout all, the sheer multitude of sonic layers is impressive, if overwhelming.

The major challenge for VanWyngarden and Goldwasser was to avoid letting working the way they were used to working become a hurdle for continuing with an idea that didn't fit into their comfort zone. In fact, the whole ethos was to try things in as different a way as possible. "Tough for us, but totally worth it," according to VanWyngarden.

"At first, we were having a really good time with the way we were making the music, but having trouble [figuring out] how to translate it into a song," says Goldwasser. "Once we got away from thinking traditionally about songwriting, we could start appreciating having the songwriting process be an







DANNY CLINCH

extension of just playing. That was probably the biggest challenge we got over.”

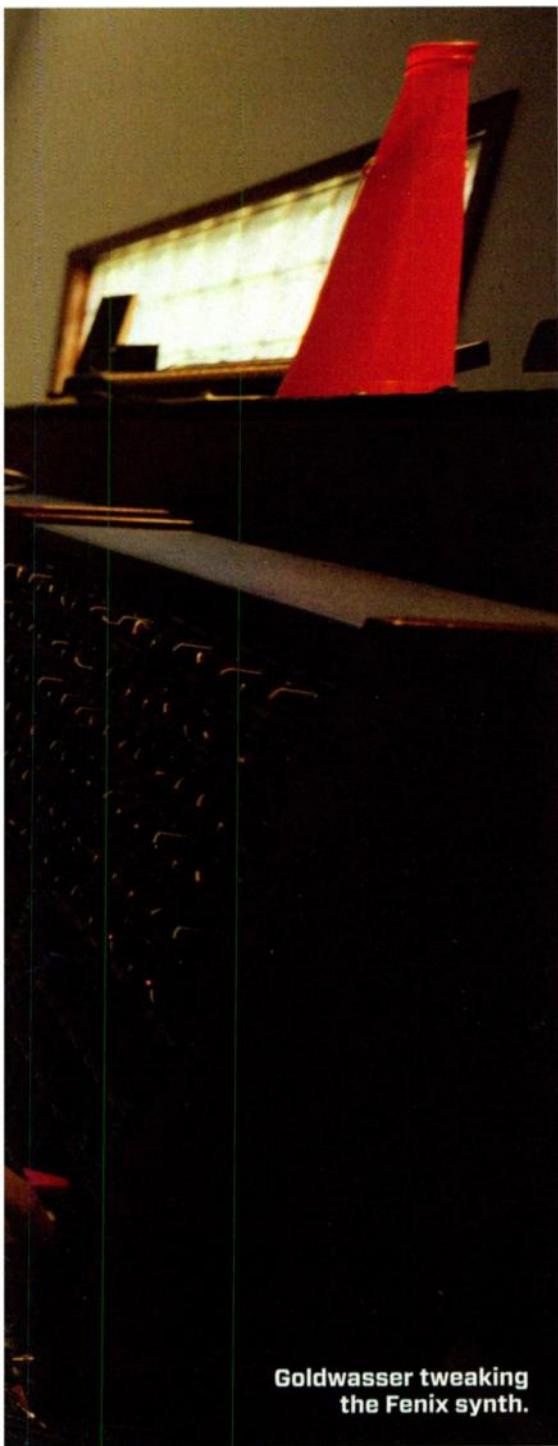
“A lot of times, they would be creating new sequences in real time on different machines simultaneously, not through a computer, just adjusting, making new patterns and new sequences with most of it linked together,” says Fridmann. “One guy would say, ‘Oh, I love what you’re doing,’ and the other guy would start changing it. Neither of them would know what was going to happen next.”

Goldwasser linked synths together via CV rather than MIDI, partially because many of

the pieces are older and not MIDI compatible. “Everyone has problems getting things synchronized,” he says. “I use the Expert Sleepers Silent Way MIDI conversion [plug-in suite designed for controlling analog synths], which made things a lot tighter. We ended up using a modular synth for a lot of the sounds; that had its own CV sequencer built into it. It’s a pretty even blend of the new gear, MIDI, and CV stuff. Having Expert Sleepers was key. It’s a messy-looking thing. We had all these exposed wires and MIDI connectors. It kind of freaked me out looking at it, but it worked out.”

**A New Set of Toys** The blend of gear used on *MGMT* is very different from the gear VanWyngarden and Goldwasser used on either of their previous albums. The Fenix synthesizer—which Goldwasser had been pining for a long while—features prominently on every track; plus, it aided the two in breaking out of the convention of their previous methods.

“A lot of the sounds that on first listen sound like guitars or synthesizers are actually the Fenix. [Goldwasser] is really knowledgeable about what the knobs do and



Goldwasser tweaking the Fenix synth.

machine. But also, older synthesizers such as the Nord Lead and Access Virus—whose older digital converters appeal to Goldwasser—as well as the Roland SH-7 found their way into the circle of gear.

Before decamping to Tarbox, VanWyngarden and Goldwasser had been messing around with their “gear in a circle idea” at their previous studio, as well as at Goldwasser’s home. They got comfortable with the set-up, the only drawback being the limitations of recording

VanWyngarden would remove himself from Goldwasser and Fridmann with a stack of books and his laptop to work on lyrics and melody. Upon his return, the entire song would often go through a metamorphosis dictated by his vocal contribution.

Fridmann kept the vocal chain simple in order to not interfere with VanWyngarden’s voice control and the various personalities that emerge with this control. For example, an Altec 639A microphone was used on a couple

**“A lot of the sounds that on first listen sound like guitars or synthesizers are actually the Fenix Synthesizer.**

**Ben Goldwasser is really knowledgeable about what the knobs do and what inputs and outputs are controlling and doing, but even so, the Fenix does what it wants to do. It will surprise you and come up with random sounds on its own. That’s something that helped us branch out of a formal mindset when it came to writing.”**

— ANDREW VANWYNGARDEN



what inputs and outputs are controlling and doing, but even so, the Fenix does what it wants to do. It will surprise you and come up with random sounds on its own. That’s something that helped us branch out of a formal mindset when it came to writing.”

The Korg Mono/Poly vintage synth expolorer, which was heard a good deal on the previous albums, is absent on MGMT. Its place is taken by gear that according to Goldwasser “is trying to be different by emulating a vintage thing.” Elektron pieces such as Machinedrum SPS-1UW+ Mk II function as the main drum

to a laptop. Sending everything through the board at Tarbox took the plan to the next level. “[Fridmann] kept noting the improbable mix of things while we were recording,” says VanWyngarden. “Everybody in the control room would hear a different chord progression while listening to the same bit of music. When you’re trying to control that many things Willy Wonka style, it limits the chord changes you can do, so that’s how that sound came about.”

**Sing to Me** Songs are almost entirely mapped out before vocals are considered.

of the sections, but for the most part, a Bock Audio 241 tube condenser microphone into a Neve 8801 channel strip was the signal path.

“I won’t necessarily know what [VanWyngarden] is going for until after he’s piled on 10 vocals; then I can finally chime in on what he was doing,” says Fridmann. “They are very particular about their vocal sounds so it can be a very delicate operation. Because they want so many effects simultaneously, it’s difficult to bring out all the different subtleties all the time. Usually we’ll have a cleaner version of the vocals, a super-squished



version, three or four delayed ones, sometimes simultaneously, more frequently at different points throughout the song. We'll have one type of delay on the chorus, another type of delay on the verse, sometimes a different one on the bridge, and then some other combination of special effects on top of those. Typically for those, I'm using the TC Electronic 2290. I use a lot of Ursa Major Space Station to create some of the delays, and I have a few old Digitech RDS 3.6s that I like quite a bit but they're cantankerous and difficult to dial in exactly. This is just a big analog dial that goes from 3.6 seconds to 500 milliseconds. Somewhere in there you keep twisting it until you get it right."

During the mixing stage, Fridmann would add vocal treatments that were welcome surprises for the other two. On "Alien Days," Fridmann put a panning delay on the "hey" in the vocals in the verse, and on "Astro-mancy" there is a descending pitch on the voice. He didn't discuss these with VanWyngarden or Goldwasser, but they were completely in line with that they had in mind.

Goldwasser used a Madrona Labs Soundplane—another new toy, for which he writes his own programs—to treat VanWyngarden's vocals. Soundplane is a flat, pressure-sensitive, wooden controller that lets you play notes as you glide over its "keys." "I wrote a granular synthesis program on SuperCollider that if you have a section of recorded music you can scan through it really slowly or choose the speed or back it up or play one part over again. We ended up using that on part of 'A Good Sadness,'" says Goldwasser.

**Track Breakdown** "A Good Sadness" is best representative of the improvisational songwriting MGMT employed for this album: All the sounds and the mix of sounds happened



DANNY CLINCH

## TRACKING MGMT

Ben Goldwasser and Andrew VanWyngarden spent most of their session time jamming inside a circle of synths, but plenty of other recording gear was used to track the record. Below, a select list.

### SYNTHESIZERS

Roland SH-7  
 Roland MKS-80  
 Roland Juno-60  
 Roland Jupiter-8  
 Fénix II and III  
 Access Virus A  
 Access Virus Indigo  
 Nord Lead 2  
 Nord Electro 3  
 Waldorf Microwave XT  
 Moog Voyager  
 Yamaha TG77  
 Yamaha CS-60  
 Ensoniq ESQ-1  
 Suzuki Omnichord  
 Teenage Engineering OP-1

### SOFTWARE

Avid Pro Tools  
 Ableton Live  
 Max/MSP  
 SuperCollider  
 Expert Sleepers Silent Way  
 Valhalla DSP, SoundToys, and  
 Fabfilter plug-ins

### GUITARS AND BASSES

Fender Jazzmaster  
 Gibson SG Special

### AMPLIFIERS

Fender Deluxe Reverb  
 Gibson

### CONTROLLERS

Madrona Labs Soundplane  
 Monome 64  
 Alternate Mode DrumKAT DK10

### DRUM MACHINES AND SAMPLERS

MFB Schlagswerg  
 Elektron Machinedrum SPS-IUW+ Mk II  
 E-mu Drumulator  
 Jax Auto Rhythm  
 Yamaha ED10  
 Akai MPC1000

### EFFECTS

Ekdahl Moisturizer spring reverb  
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 Roland Chorus Echo  
 Roland SVC-350 vocoder  
 Boss RRV-10 reverb



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in the moment, with a loop going on the MPC, the organ at the beginning, with live sampling and

looping, sampling themselves as they played.

In the jam zone, Machinedrum and Schlagzwerk drum machines and a Yamaha drum pad (which is the source of the laser sound on "Alien Days") were set up with cables connecting the Schlagzwerk to the Roland SH-7 synth. VanWyngarden sequenced basslines on the drum machines but also controlled a Moog Minimoog Voyager, which makes the synthesized cowbell sound at the start of the song. At the same time, he played sample strings like the Mellotron organ on the Nord Electro.

In addition to the ever-present Fenix (going through OTO Biscuit pedals), Goldwasser also had control of the Roland Chorus Echo delay guitar effect pedal, the Waldorf Microwave, and a rackmount Jupiter.

"It took us an hour-and-a-half to two hours to get anywhere with what we were doing musically, says VanWyngarden." "A lot of times, I had no idea where the sounds were coming from. For ['A Good Sadness,'] I was playing 29 keys on the Roland through the drum machine, just playing the basslines, improvising this chord progression. There are four or five samples from records. [Fridmann] has a big shelf with a bunch of vinyl and I picked a bunch of records based on what the covers looked like. I threw them on the turntable in the control room and sampled them. It's weird because two of the samples that are the main ones that you hear, like the sitar sample at the end, I just dropped the needle, first take, lined up, and we ended up using it like that."

"Astro-mancy" was the last song recorded, and the one that was causing a lot of disagreement and putting everyone in a bad mood. It turned a corner when VanWyngarden switched to the bass, stumbled onto the bassline, causing the whole song to fall into place. "We started with a standard chord progression, then recording things then slowly stripping away everything we had done," says Goldwasser. "We ended up with crazy loops playing over the chord progression, then the chord progression would taper off. We added a bunch of layers, [Fridmann] set it up on the board, and [VanWyngarden] and I were



"I wrote a granular synthesis program on SuperCollider [for the Madrona Soundplane] where if you have a section of recorded music, you can scan through it really slowly or choose the speed or back it up or play one part over again."

—BEN GOLDWASSER

performing live mixes of the song on half of the board. A lot of it ended up being really spontaneous as far as what was in the mix."

"Cool Song No. 2," on the other hand, came from loops cut out of a long section of improvised music and put together. "We pasted a bunch of stuff in Pro Tools and played other stuff over it, slowly built it up that way," says Goldwasser. "That was one that changed a lot in the course of writing. The middle instrumental section, we decided we wanted another part in the song and arranged that from scratch. There are a lot of overdubs on that one."

In a turnaround, MGMT's cover of '60s troubadour Faine Jade's "Introspective" helped them get through a technical rut. The cover was intended as a fun interlude during the recording, something that didn't need to end up on the album, one that could help them get back in touch with reality after a slew of weird musical landscapes. "Going back to normal for a minute, that gave us a reset and reenergized us to go toward the unknown again," says Fridmann.

**In the End** MGMT took almost a year from start to finish. During this stretch, Fridmann spent a lot of time focusing and refocusing VanWyngarden and Goldwasser. With an improvisational approach, it can be easy to lose track of the exciting part of what you're doing and know how to coalesce it into a final song. "[Fridmann] doesn't have an ego in the studio or about sounds," says VanWyngarden. "He's got an incredible ear and mind for arranging and writing parts."

"He's very good at being a neutral observer, figuring out how we're working, and when to step in, says Goldwasser. "A lot of times it was hard for us to find a good starting point when picking out a jam and trying to make it into a song. He is really good at getting something out there, which can be the hardest part. [Fridmann] is one of my biggest role models for a producer as someone who can remain neutral and not have to put too much of himself into something. That's how I want to be as a producer, try to understand what the band is trying to do before I have to interject something, making it closer to their vision."

"They had an extreme commitment to, 'We're not going to stop this experiment until we succeed,'" says Fridmann of MGMT. "We got to a point on the last session where none of us had anything more to say about the songs we had made. We've mixed and remixed and changed and adjusted and worked on these songs over and over and over, and there's absolutely nothing we want to change anymore, so I guess we're actually done—which any musician will tell you is a pretty rare experience. Most musicians will tell you records are only done when they are no longer allowed to play with them anymore. This was just not the case. We finished it. Every millisecond that you're hearing is exactly what they want you to be hearing." ■

*Lily Moayeri is a freelance writer and teacher librarian living in Los Angeles; track her work at [pictures-of-lily.com](http://pictures-of-lily.com).*

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**LISTEN**

ZACKERY MICHAEL



# Arctic Monkeys

BY LILY MOAYERI







Arctic Monkeys (left to right)—Jamie Cook, Alex Turner, Nick O'Malley, and Matt Helders.

ZACKERY MICHAEL

**British post-punk indie rockers abandoned their trademark big, live sound for a more structured production on *AM*.**

IF YOU'RE ever lost in New York City, Matt Helders is the guy you want at your side. The drummer for the Arctic Monkeys—the prolific, record-breaking, award winning, British post-punk indie rock group—doesn't live in Manhattan. He has, however, been there enough times to be able to direct his driver: "If that was Avenue A, and this is B, then the next one will be C." Helders is in town patiently promoting the Arctic Monkeys' fifth

studio album, *AM*, with the understanding that the band's change in musical direction, songwriting process, and recording practices are going to require explanation.

These changes can be traced back to a birthday present given to Arctic Monkeys vocalist/guitarist, Alex Turner: a cassette four-track. When starting to work out ideas for *AM*, the Arctics, who all are Los Angeles residents, set up camp at the city's Sage & Sound Recording Studios—not so much for recording, but as a rehearsal space. For six months, the four of them, rounded out by guitarist Jamie Cook and bassist Nick O'Malley, were at the studio daily. Here, they experimented with small parts of the sounds, working out rhythm grooves, creating loops, and recording it all on the birthday present.

"We've never been a band that jams," says Helders. That's boring and sounds stupid after a bit. There's usually quite a bit of structure to how we work. This time, because the rehearsal room was a recording studio, we thought we'd record ourselves. You can listen back straightaway and cut out a lot of time by recording, listening, and making a decision, whether it's good to keep or not. Because the four-track has these crap-quality electronics, the tape has a nice, warm sound compared to anything digital."

When it came time to formally record *AM*, the Arctics spiffed up the room in which they were working at Sage & Sound, brought in the informal fifth member of the group, Simian

Mobile Disco's James Ford, to produce (he also produced the group's albums *Favourite Worst Nightmare*, *Humbug*, *Suck It And See*) alongside Add N To (X)/Fat Truckers' Ross Orton (M.I.A.), and traded in the four-track mentality for über-modern recording techniques.

Some of the moments captured on four-track were retained while others were recreated. A number of ideas that remained weren't fleshed out or demoed properly, so Ford built a version on his laptop using Ableton Live. This way, they could mess with the key or feel or structure of the demo, which was then used as a reference for the band's performance.


"We've always gone for a big, live sound," says Helders. "We wanted people to know that we sat there and played it, from start to finish. We would only record something if we could play it the next day. If we can't do it live, why put it on a record? Now that we've gotten more comfortable and better at being a studio band, we relaxed that. We thought it more important to make a good sounding record than hold on to the idea that we should have to be able to play it live."

Instead of all members playing at the same time and capturing that performance, which was their approach on the last album, *Suck It And See*, the focus was on honing individual tracks for *AM*. For example, Helders' drum kit might have been set up unconventionally and played separately to glean a better sound, with overdubs on the bass, or redos on the snare, or layering of sounds.

"For some songs, like 'Fireside,' I did a straight beat with kick and snare for the groove, but then I overdubbed a tribal pattern on the kick drum, playing it with sticks, a weird set-up I had never done before," says Helders. "On other songs, I would play kick drum for a take, then add the snare to try and get an isolated sound. I found the challenge of playing an effect on a drum kit interesting. I didn't understand the appeal of trying to sound like a machine, like Questlove from The Roots, when I first started playing drums, but I get it a bit more now."

"We had a decent selection of different drums: deeper snares or smaller hats that we would swap out for each track," says Ford. "Most of the time, drums and bass were recorded together to get a good rhythm-section feel, with maybe a guide vocal. The



 "It's more detailed production, which was something we were worried about doing before, like it would be too glossy or shiny. It's something we would have thought really cheesy if we had done it when we did the first record."

—MATT HELDERS

bass was mainly recorded through a vintage Ampeg Portaflex amp. The guitars were tracked one by one by [Cook] and [Turner] in the control room with their Selmer Truvoice and Magnatone amps—plus a small pedal-steel amp that [Turner] bought during the session, which we nicknamed 'The New Black'—in the living room."

Vocals, backing vocals, percussion, and keyboard overdubs followed. Going for a smoother, more R&B style vocal with in-time delay rather than their standard distorted, shout-down-the-microphone style, the Arctic's attitude toward this approach started out as jokes that ended up on the finished product.

"You have to be Mariah Carey for a minute, with one headphone on and plugging your

ear with your finger," says Helders. "We're not trained vocalists by any means, so for us to achieve what we want to achieve, we spend loads of time with Pro Tools, comping more than ever before, getting certain words perfect, chopping up one specific sound because we did a particularly good one. We were under the microscope with everyone's parts. You can't get it nearly right, you've got to get it right, which is another challenge. It's more detailed production, which was something we were worried about doing before, like it would be too glossy or shiny. It's something we would have thought really cheesy if we had done it when we did the first record." For all this, the vocal chain is standard—more often than not, a Neumann U67 through a Neve or BAE mic pre and a Universal Audio 1176 or Empirical Labs Distressor for control.

"There were definitely more vocal layers than normal, with important parts tracked in octaves," says Ford. "[Turner] would take the lead and generally double his voice the octave up in falsetto. [Helders] would also track this octave up and do any high backing vocals and [O'Malley] would generally track the octave down with his nice, rich baritone."

This type of detail is all over *AM*. They even threw in drum machines and synthesizers where needed, an unheard of practice for the Arctic Monkeys. "I Want To Be Yours," which takes its lyrics from a James Cooper-Clarke poem that sparked Turner's imagination when he was in high school, features an old drum machine; the song also went from a fast rock song to a slow jam after a pre-production session with Ford. "Do I Wanna Know" had Helders triggering a sample from a drum pad when the band performs the song live. This track also changed dramatically with Ford's input, with an entirely new chorus sketched out on his laptop. "Mad Sounds," on the other hand, kept some of the original 4-track recordings.

No object is safe from use on *AM*. When an EBow wasn't handy, the Arctic's grabbed a small Donald Duck plastic fan, turned it on, and rubbed the end of it on the guitar strings. The vibration came as close to the EBow as they wanted. These instances can be earmarked whenever the guitar sounds like it might be a keyboard. Also featured heavily on *AM* are claps. Helders tips, "Knee slaps sounds like two people clapping. It's about getting a lot of people to clap just

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out of time with each other so it sounds like a slam.”

“We focused a lot on percussion, lots of claps, tambourines, and strangely-miked drum set-ups,” says Ford. “The percussion was generally recorded with a Coles 4038 ribbon microphone, but often there was a trash microphone in the room going through a cassette four-track or a Roland Space Echo

through an amp or even through guitar pedals. Sometimes the simple backbone of a beat was done with a traditional drum set-up and overdubbed with a random set-up in the middle of the room, like [Helders] playing a bass drum with sticks and an old military snare. ‘Knee Socks’ is an example of this. O’Malley doubled his basslines with a baritone guitar.”

He continues, “We went to a great studio called Vox to do keyboard overdubs. They had lots of interesting things to play with like an Orchestron—a bit like a Mellotron that plays sounds from a record—and a great-sounding celesta. We also used a Hohner guitaret—a bit like an electric kalimba and quite tricky to play—to back up some of the guitar lines. The drum machines were also from this studio: Thomas Bandmaster and Selmer through a Fairchild spring reverb.”



“Sometimes the simple backbone of a beat was done with a traditional drum set-up and overdubbed with a random set-up in the middle of the room, like Matt Helders playing a bass drum with sticks and an old military snare.”

—JAMES FORD

“We got two electronic producers to make a rock record,” says Helders. “If we say to people: We’ve made an album that has backing vocals borrowed from R&B and West Coast hip-hop beats, but we’re a rock band, that sounds like it could be terrible. No one wants a rap-rock record. We had to be tasteful about it, choose the write parts, get Ford and Orton, put the two together, and find the right balance of different styles of music.” ■

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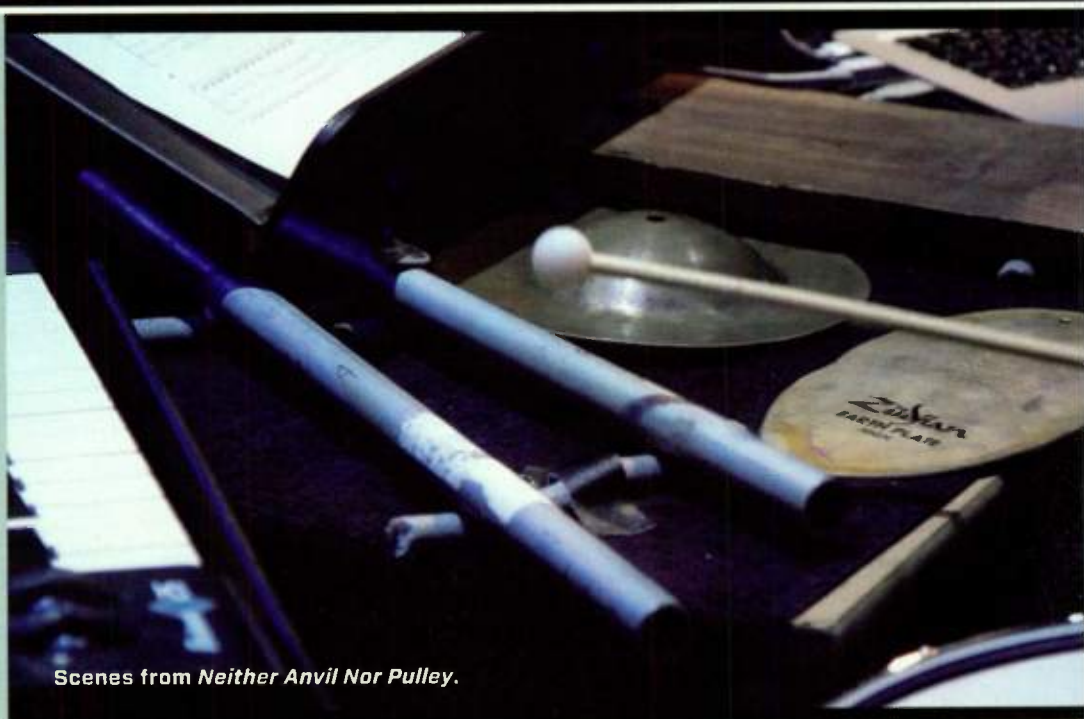
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**DAN TRUEEMAN**



There they were at the Metropolitan Museum of Art, the So Percussion ensemble performing on a jumble of ripcord-rigged electronics, marching band instruments, and homemade percussion, with software, inventions, and compositions provided by Princeton University Professor of Music Dan Trueman. But what is it? An unholy alliance of Max MSP, country fiddle, bastardized bass drum, vibraphones, and laptops, So Percussion's Trueman-composed performance art confused while it entertained, awakening the inner gear-nerd of everyone in attendance. And far from knowing-it-all, So Percussion seem as delightfully bewildered as anyone.



Scenes from *Neither Anvil Nor Pulley*.



Ensemble/composer partnership  
pushes the boundaries of control and  
chaos with *Neither Anvil Nor Pulley*



**So Percussion**  
(left to right)—  
Adam Sliwinski,  
Jason Treuting,  
Eric Beach, and  
Josh Quillen.

“We’re a percussion quartet and we’ve played John Cage’s music using drums and tin cans,” explains So Percussion’s Josh Quillen. “There are no tricks to that; what you see is what you hear. We’re used to that world. But as

“The woodblock triggers a contact mic that speaks to an electronic metronome in ChucK. We’d strike the woodblock and the metronome beeped at 120 bpm. Every time we hit the woodblock, it reset the metronome. The metal pipes are cut to different lengths and pitches; they also had contact mics. When we struck them, the sound was recorded, processed, and pitch-shifted differently depending on the program preset.”

—JOSH QUILLEN

soon as we got Dan’s instruments in the mix—now here’s an instrument I have no idea how to fix if it breaks down live! Rehearsals felt like we were circling the drain because it was so frustrating with these new instruments. But Dan doesn’t get freaked out when a computer crashes; that is his instrument.”



Dan Trueman

A four-piece ensemble of Yale University grads that has collaborated with the crème de la crème of percussion-oriented composers including Steve Reich, Paul Lansky, and Arvo Pärt, So Percussion partnered with nutty professor Trueman on *Neither Anvil nor Pulley* (Canteloupe), their second project together. Fellow percussionists Quillen, Adam Sliwinski, Jason Treuting, and Eric Beach emanated a placid resistance performing Trueman’s music onstage at the June Met performance celebrating the release, concentrating furiously as they maneuvered such instrumental challenges as “Wallpaper,” “120 bpm (or What Is Your Metronome Thinking?)” and “Feedback (In Which A Famous Bach Prelude Becomes Ill Tempered).”

Silences turned to squealing feedback, tick-tock metronomes blipped against cruising fiddle tunes, pastoral vibraphone arpeggios arced against booming bass-drum beats. It was all too much to decipher or easily grasp. What was seen wasn’t necessarily heard. It was symphonic sweet, but sonic-boom heavy.

And the instruments were as devious as the music: Along with the obvious stuff made for banging, each So Percussion-ist stood before a

small table that held two metal pipes; a small record player; a PreSonus FireBox; a laptop (running Max MSP, ChucK, and Ms. Pinky applications); a woodblock that “beeped” an electronic metronome; Trueman’s “Tether controller,” which was played by pulling its long strings into the air; a Coke bottle; a controller keyboard; mallets; a drum machine; and in the center of it all, a concert bass drum with another Trueman invention, the “speaker driver,” attached to its skins.

“The woodblock triggers a contact mic that speaks to an electronic metronome in ChucK,” Quillen explains. “We’d strike the woodblock and the metronome beeped at 120 bpm. Every time we hit the woodblock, it reset the metronome. The metal pipes are cut to different lengths and pitches; they also had contact mics. When we struck them, the sound was recorded, processed, and pitch-shifted differently depending on the program preset. Dan’s ‘Tether Controller,’ a repurposed video game controller, holds two samples: piano and fiddle. When we pulled the Tethers from the base, it would sample, stop, and freeze a part of the sample and loop it. We can move the Tethers independently to sweep across the samples. We



# BASS STATION II



## BACK DESTROYING SUBS

In 1993 the original Bass Station found its way onto countless early dance music classics. It's now back: bigger, fatter and bassier. Bass Station II is a fully analog mono synth featuring two oscillators, a sub-oscillator, two filters, overdrive, arpeggiator, step sequencer and much much more.

The hardware has been laid out in modules with dedicated pots, switches, sliders and buttons for all major parameters. You can store and recall patches on Bass Station II. It comes with 64 killer factory presets, space for 64 of your own sounds on the hardware, and you can store more on your computer.

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**novation**

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can also control vibrato and volume with the Tethers. The record player plays a fiddle tune (performed by Trueman) using Ms. Pinky via Max; it's basically a record with timecode on it. You can load any sample or recording into Ms Pinky. The timecode on the record sounds like you are playing a record."

Trueman's toys were played simultaneously with the percussion instruments, making

it impossible to know the origin of any one sound. And if even you knew, you still wouldn't know. But Professor Trueman does.

"The group wanted something involving laptops," Trueman explains from Princeton University. "I didn't want samples playing or a pre-recorded track, but something physically engaging, which drummers need. After the performance, they were all dripping with

sweat and I thought, 'This is good!'"

How did So Percussion manage playing Trueman's inventions alongside their standard instrumentation and laptops? "Dan explained that all of the sounds in the program are delayed in such a way that they always land on something," Quillen says. "We had to become familiar with that delay to know where to place the notes. At first we had a problem dialing in the Tethers because they were super loud. We devised a monitoring system so we could turn things down. We played the piece for two years before Dan told us there was a volume knob on the program! The slider wasn't labeled. Dan!"

Trueman's first invention, which originated with his first "band," the Princeton Laptop Orchestra (a.k.a. PLOrk), was the electronic metronome. "I created the metronome instrument with Chuck," Trueman explains. "It's a language that was created by Ge Wang, the co-founder of Smule. I use Chuck in all of my work now. It's different than Max because it's text-based. It looks more like old-fashioned programming language, whereas with Max you drag objects around and connect them via graphical patch cords."

Then the cryptic "Tether controller," which sounds like something used with a zip line, but which produces a Theremin-like gracefulness. "The Tether strings go out about 12 feet so you can use your whole body to manipulate the sound," Trueman says. "It basically allows you to freeze-frame a sample the way you would through a film. We've got a spectral analysis of one sound in each hand, and as you pull the Tether, it goes through the spectral analysis and resynthesizes the sample based on where you have located the cursor. You locate the cursor by pulling the Tether in and out. All the way out and you're at the beginning of the sample and as you release it, it goes toward the end of the sample. So you could play the sample beginning to end as you might normally hear it. But you can also go very slowly, you can go backward and forward, you can freeze it. The samples change over the course of the piece to produce different chords by hitting a foot pedal."

Trueman's most primitive invention is the "speaker driver," which smacks of a cheap toy found in the back pages of a 1950s sci-fi comic book next to exploding cigars and fart bombs.

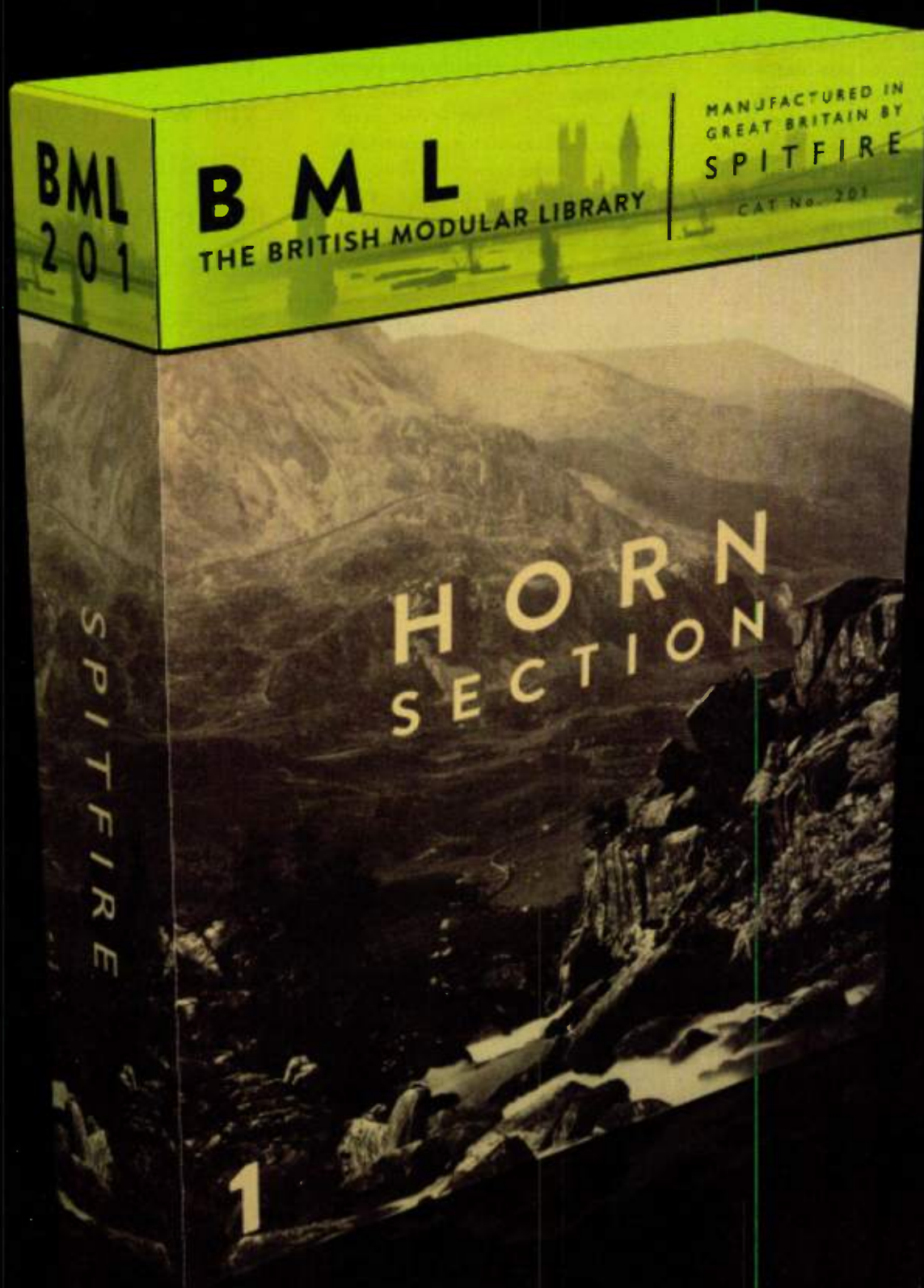
"It's a stick-on speaker that you attach to anything you want to make vibrate," Trueman reveals. "I put one on each side of

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this concert bass drum so it became a speaker. Then instead of playing the bass drum with drumsticks, they used microphones. The mics are fed into the laptop where they are filtered with a program I wrote in ChuckK. The filtering limits the feedback to particular pitches. So each skin on the drum can feedback at a particular note and the notes change over the course of the piece. So instead

of wild feedback, you've got feedback that changes pitches, based on the notes from a Bach Chorale."

Besides teaching music at Princeton, Trueman also founded the (occasionally) 45-member strong Princeton Laptop Orchestra, which sounds a little cutesy, but served its purpose. It set the stage for So Percussion's magical MET performance.

"[The 'speaker driver'] is a stick-on speaker that you attach to anything you want to make vibrate. I put one on each side of this concert bass drum so it became a speaker. Then instead of playing the bass drum with drumsticks, they used microphones."

—DAN TRUEMAN

## Looking for a 2<sup>nd</sup> opinion on your 1<sup>st</sup> channel strip?



"Without a doubt, the m103 channel strip is a winner. Its as clean and pristine as you would expect from Grace Design with a sweet EQ and smooth compression. Its build quality is solid and the knobs are smooth and sure. Its flexible design, clarity and super-accurate sound have made it a permanent part of my mic pre arsenal. Yep, I bought it!"

- **Rich Tozzoli**, Pro Audio Review

"Subjectively, the sound quality proved to be exactly what I'd expect from a Grace Design product: dynamic, transparent, musical and very revealing of its sources. Form, function and build quality are all exemplary and these, coupled with its very high level of sonic performance, make the m103 a very capable and desirable unit indeed."

- **Bob Thomas**, Sound on Sound

"Instead of searching for that ever elusive box that's going to magically make your sh\*\*ty mics sound like rainbows, consider investing in an m103, which will afford you the ability to capture the true color of the source and the dynamic detail of the performance."

- **Scott McChane**, TapeOp

"Polished, solid and hi-fi like are all adjectives that spring to mind. But more importantly, it has everything you need, nothing that you don't and is executed to near perfection."

- **Jon Thornton**, Resolution

"The m103 let the sonic characteristics of the mics shine through. Even when hammered by a strong level, the m103 didn't change during dynamic peaks. After several hours of testing, I could only conclude that if there's a weak link in my recording chain, it won't be the m103."

- **Steven Stone**, Vintage Guitar

"With the m103, Grace Design provides an elegant, simple, and beautiful sounding entry into the big leagues for the small studio owner, at a price that's very reasonable for what you're getting. There are other channel strips out there, some offering more features for way less money...but if you're buying with your ears, the m103 is something truly special."

- **Mike Metlay**, Recording

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"In the Laptop Orchestra," Trueman explains, "each player has a hemispherical speaker coming out of the laptop. The speaker is omnidirectional, filling the room with sound. So each player in the laptop orchestra is a source of sound in the same way as an orchestral musician. It's great to make music with computers in kind of an old-fashioned way."

Currently developing a "prepared digital piano" which he also describes as a "piano gone haywire," Trueman is a man out of time, one foot in tomorrow's software, the other in yesterday's folk music.

"I have my fiddles on the wall and if something I have created with the laptop isn't as fun as playing fiddle, then I lose interest," Trueman laughs. "The acoustic instruments are the litmus test. I am drawn to this notion of finding out which machines can be made in the computer and how we can interact with them in musical ways." ■

*Ken Micallef is freelance writer and photographer based in New York City. His work has appeared in many publications, and a few of them still exist, including DownBeat, eMusic, and Modern Drummer.*



### More Online

Watch So Percussion perform *Neither Anvil Nor Pulley*.

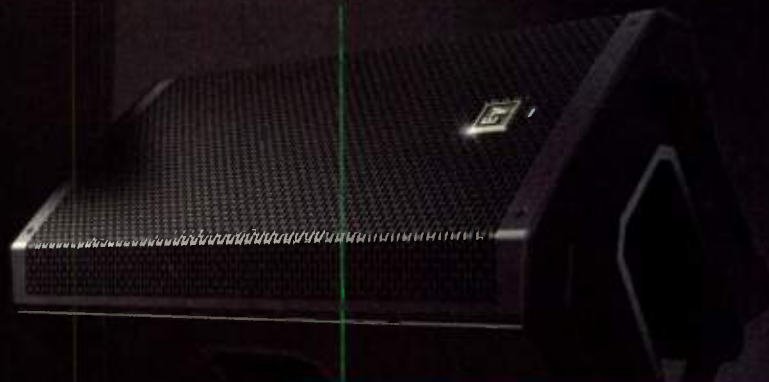
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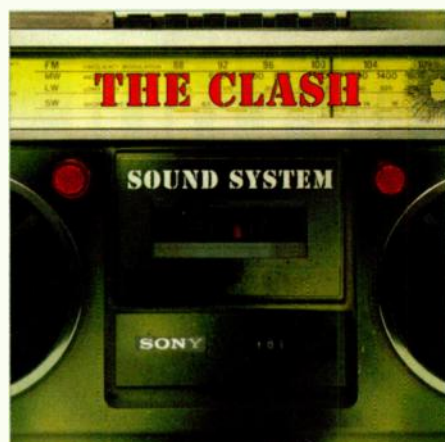


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## The Clash

### *Sound System*

SONY MUSIC

It's the definitive box set from "the only band that matters." *Sound System* comprises 15 discs with all the original albums and singles, outtakes, rarities, previously unreleased songs, and newly unearthed concert footage. Just as important, the tracks are beautifully remastered by Tim Young—with input from Mick Jones and engineer Bill Price—to enhance more detail and clarity in the tracks. This collection won't come cheap, but for Clash fans, this is the ultimate, and probably the last, big reissue project from the best-ever English punk band.

BARBARA SCHULTZ



### Panic! at the Disco

#### *Too Weird To Live, Too Rare To Die!*

FUELED BY RAMEN/  
DECAYDANCE

Years after leaving Las Vegas, Panic! pays homage to its hometown on its fourth album. Much like the city, the record is super-glittery, trashy, and highly commercialized. It's unabashedly pop with slick production and a solid dose of Vegas EDM thrown in, cases in point: "The Vegas Lights," and the bleating basslines of "Nicotine," this album feels like a reconciliation and celebration of Panic!'s familial roots.

LILY MOAYERI



### Cage the Elephant

#### *Melophobia*

RCA

Cage the Elephant topped the indie charts with 2011's *Thank You Happy Birthday*. The Kentuckians inhabit multiple pop eras, plying a melody-rich sound somewhere between The Pixies, the Monkees, and Mott the Hoople. *Melophobia* is all gooey sonority, one fuzzy pop nugget bumping against the other like bubbles in a screen saver. "Telescope" crescendos psychedelic glory; "It's Just Forever" is rave-up sing-along bliss; "Halo" matches funky shoutouts with a puppy dog chorus. *Melophobia* demands sweet surrender.

KEN MICALLEF



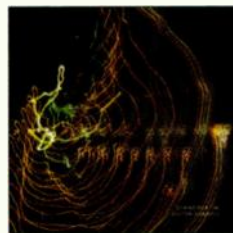
### Ha Ha Tonka

#### *Lessons*

BLOODSHOT

Missouri band Ha Ha Tonka joyfully fuses elements of Americana, rock, and synth-pop. On one track, distorted guitars and ultra-present lead vocals are backed by choir-like vocals and strumming. On another, acoustic instruments and keyboards follow the same melody line, and drums take a back seat, till the music builds into a sort of anthemic hipster wall of sound—but they always break for air. This is a beautiful record, in its blown-up and its quiet moments.

BARBARA SCHULTZ



### Schneider TM

#### *Guitar Sounds*

BUREAU B

German electronic mind-twister Schneider TM (a.k.a. Dirk Dresselhaus) seemingly gives up his sampler for a guitar pick, and the results are both fruity and foreboding. "First of May" is as sweet as "Caroline No," all shimmering plucking, but it follows "Landslide," a splayed, damaged tone poem of feedback and quivering ennui. "Elefantenhaut" and "Uberzahl" are the most satisfying, Dirk twisting guitar sounds into ominous napalm quagmires, all booming, distended tones and distorted mushroom clouds.

KEN MICALLEF



### The Dismemberment Plan

#### *Uncanny Valley*

PARTISAN

Back from a decade-long recording hiatus, the Dismemberment Plan still fidgets in the rhythmic gradient between jazzy and funky while delivering indie-jangle-synth-dub-post-pop, and now tosses in country-rock and affectionate sing-a-longs. Despite this string of signifiers and modifiers, the result isn't overthought; compared to past efforts, the production is discernibly unclenched. *Uncanny Valley* is more mature without feeling less intense, achieved by trading some sonic density for emotional dexterity.

TONY WARE



### The Crookes

#### *Hold Fast*

MODERN OUTSIDER

Half The Crookes' second album, *Hold Fast*, could have been released in the '50s, the other half, the early '90s. The British foursome commends its influences (Beatles, Smiths), but sounds more like those groups' copycats (Oasis, Gene). "The Cooler King" plays like a mid-century spontaneous pub sing-along and "Sal Paradise" slots smoothly into a diner jukebox. Mostly, The Crookes disguises its mopey-ness in jangly guitar riffs, as on the title track. It's on "Bear's Blood," however, that The Crookes sounds its raucous best.

LILY MOAYERI

# PROFOUND SOUND



#1 MONITOR BRAND GLOBALLY

## New! ROKIT Generation 3

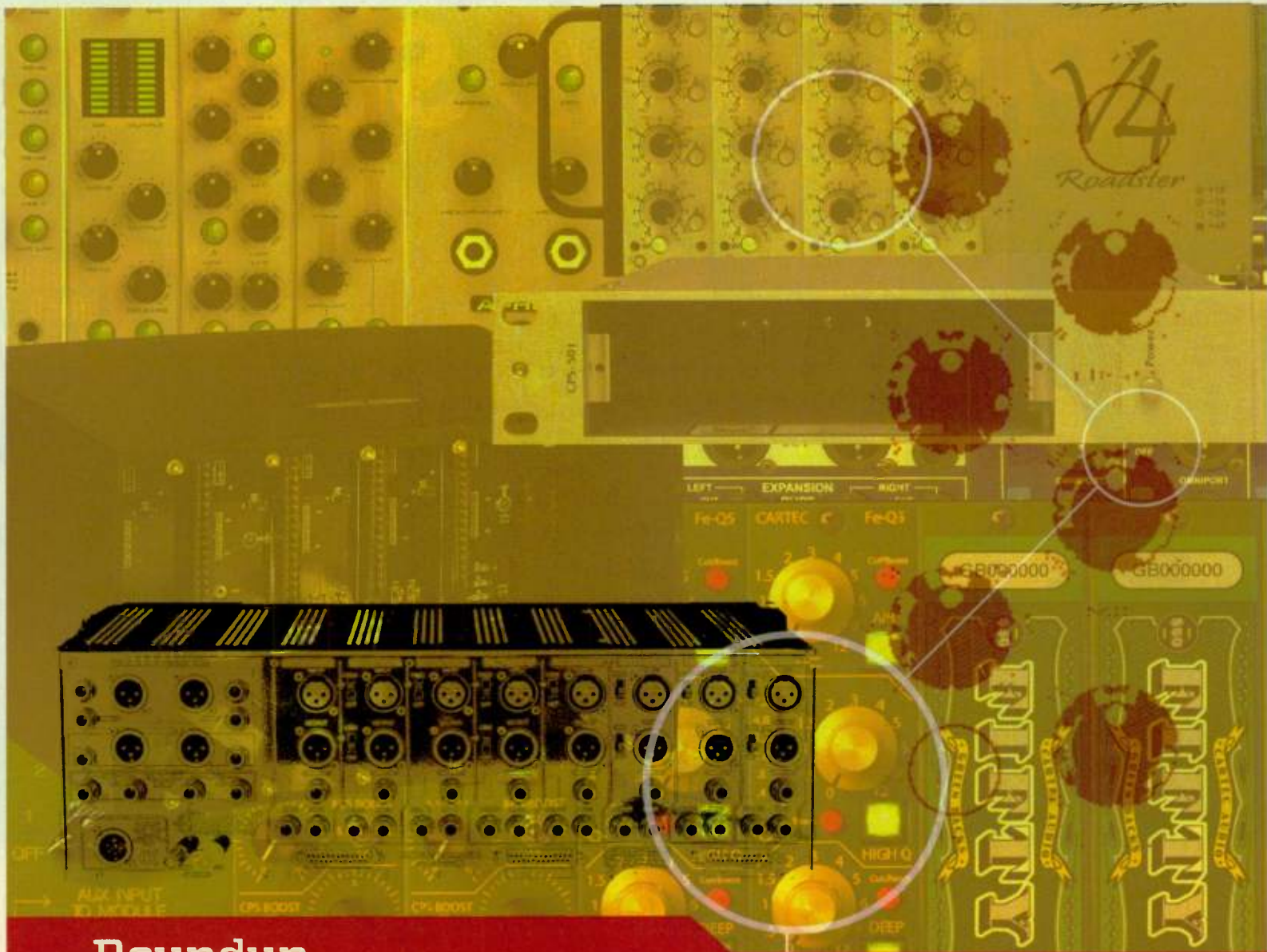
For a quarter of a century KRK has been the professional's choice for mixing and mastering hit records around the globe. And KRK's ROKIT studio monitors have been the most popular choice for accurate monitoring, selling one million systems over the years. Now KRK introduces the new ROKIT Generation 3, continuing the legacy of performance ROKIT's have become known for. So whether you're just starting out in desktop recording, or you've already laid down a few thousand tracks, give a listen to the ROKIT Generation 3 line of monitors and experience a standard in performance and accuracy that raises the bar once again.

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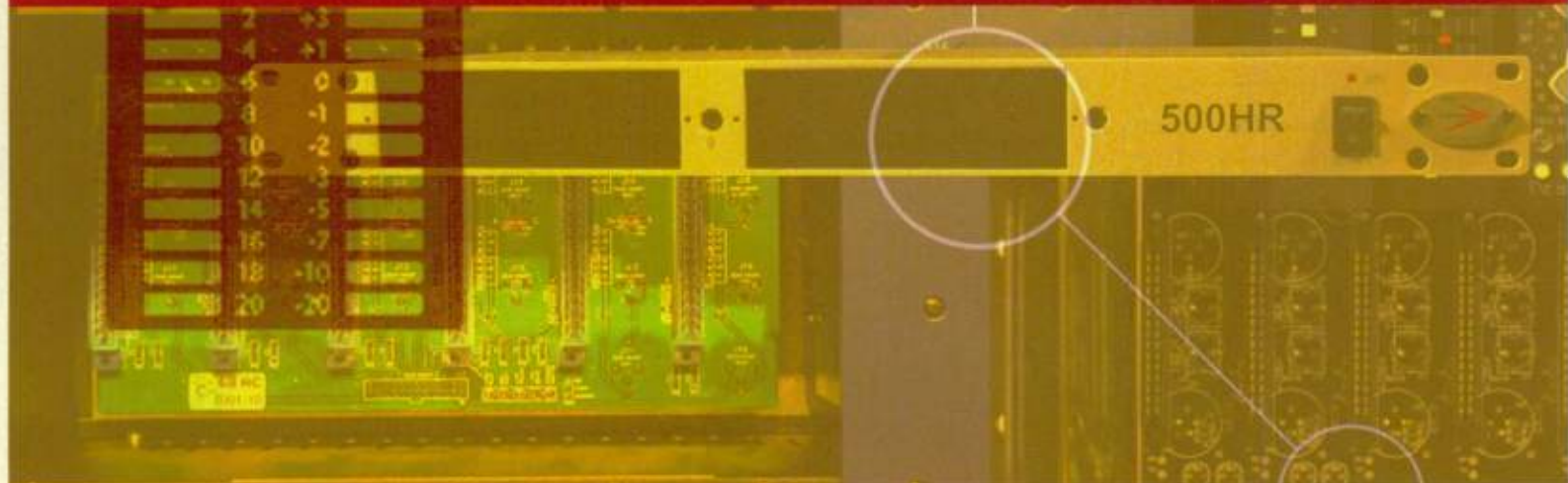
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SYSTEMS

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Roundup

# 500 Series Chassis





# LUST

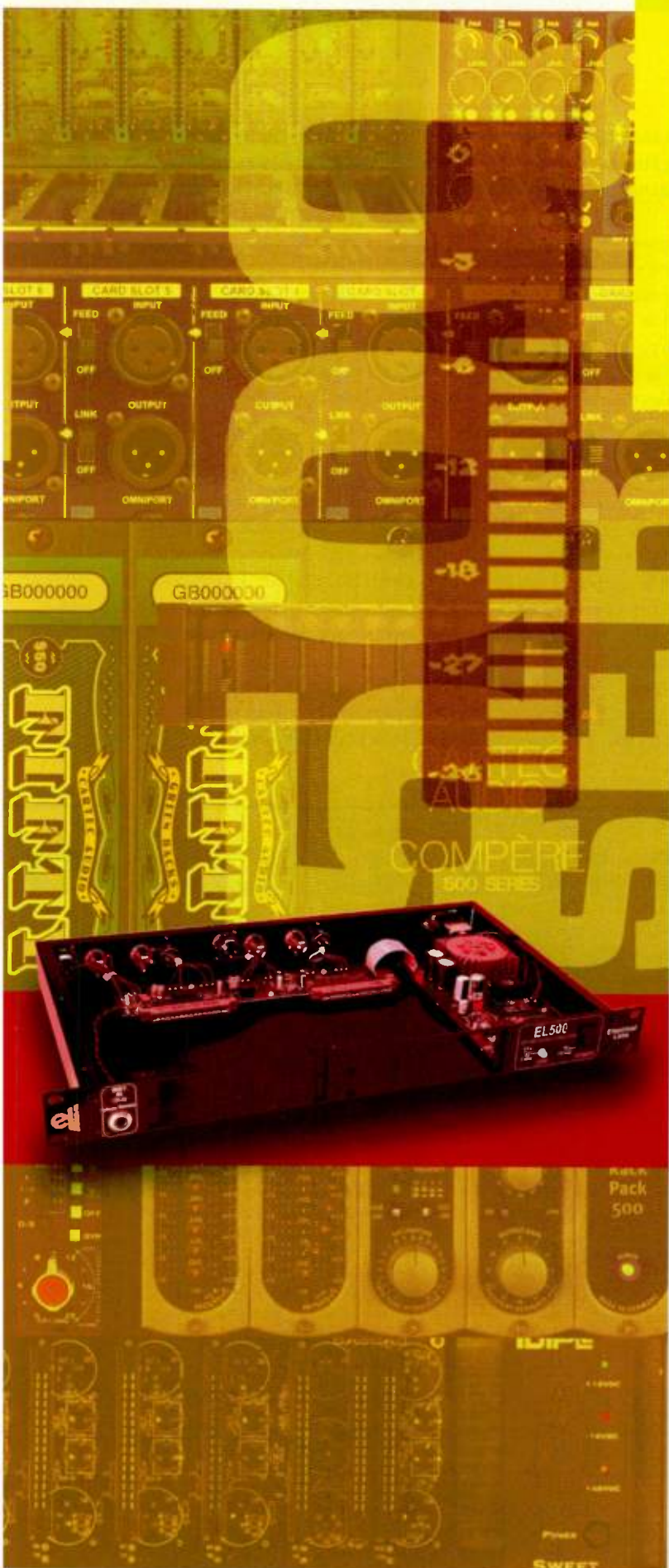
Get the most from your modules by choosing the right rack

BY GINO ROBAIR

ONE OF the most exciting hardware categories in pro audio is the 500 Series format. Originally based around a modular system developed for Aphex and API products, the 500 Series has increased in popularity to such a degree that manufacturers are retooling their standard products as modules, as well as developing new ideas for the platform.

Modular systems not only provide a way for you to create a setup that fits your immediate needs, but one that can grow as your projects do. Among the tasks that 500 Series systems excel at are voice and instrument tracking, audio processing, analog summing from a DAW, and live-performance applications. While preamps, EQs, and dynamics processors are among the most common modules, utility modules are also available, such as the spring reverb and guitar-speaker simulator from Radial Engineering, and the dynamic ladder-style filter and analog delay from Moog Music.

At first glance, a modular system may seem expensive, but they are priced in line with other hardware of this quality. Individual modules range in price from a couple hundred bucks to well over \$1,000, with the price of a manufacturer's module reflecting the



product in its traditional format. In the modular format, you're paying for the ability to assemble a custom, portable rig that shares a power supply and chassis, and may have additional features, such as integrated signal routing and mixing.

The heart of a 500 Series system is a powered rack or chassis, which is available in different shapes and configurations that support from one to 11 modules. Some of the chassis can be rackmounted for studio or stage use, while others are designed for desktop use and portability. This roundup will explain the typical features of a 500 Series rack and describe several popular models. (Prices are retail unless otherwise noted.)

**Rack 'em Up** The 500 Series specs, such as the slot sizes (5.25" x 1.5" for a single panel) and  $\pm 16$ VDC per rail are, for the most part, standardized. Behind each module is a 15-pin card that fits into a slot on the inside back-wall of the rack. The pin connections must conform to the standard spec—for example,

pin 1 is for chassis ground and pin 15 is for +48 VDC phantom power. However, some manufacturers use redundant pin connections in different ways.

These systems are designed for pro studio use, so they typically feature +4dB output levels using balanced I/O connections—XLR and 1/4" TRS jacks, as well as 25-pin D-sub connectors. However, rack power supplies vary among makes and models, as do the power requirements of the modules themselves, which draw a certain number of milliamps (mA) of current. As you're shopping for a chassis, be sure the power supply provides enough power for the system of modules you plan to assemble.

Because of the growth in the 500 Series market, API launched the VPR Alliance in order to provide "complete design specifications for manufacturers interested in producing third-party modules that physically fit and electronically conform to API's rack specifications." This provides API a means to avoid potential warranty issues. For example, if an unapproved third-party module is used in

an API rack and it causes problems or damage due to the module's design, wiring, or power draw, it essentially voids the warranty of your API chassis. A list of compatible modules can be found at [apiaudio.com/vpr\\_alliance.html](http://apiaudio.com/vpr_alliance.html). At the time of this writing, no third-party chassis have been VPR approved.

However, inclusion on the list of VPR Alliance-approved products is not a requirement in order for a module or chassis to be well within, or even surpass, the 500 Series spec.

Like all pro audio gear, hearing is believing: While price, style, and brand loyalty all play a role in the products we buy, sound and performance should be among the biggest considerations in the purchase of your modular system. Some resellers offer a try-before-you-buy deal for serious customers, allowing you to spend some time with a system before you make the final purchase. At the very least, the salespeople specializing in this product category should be able to give you expert advice in compatibility between modules and rack chassis.

# PowerTools for Studio



## Gold Digger™ mic selector

Instantly select and compare your four favorite microphones to find the one that best suits a particular vocal or instrument track. The Gold Digger features built-in 48V phantom power generator, trim controls for a fair comparison and solid wire connection to ensure the pure mic signal arrives without coloration.



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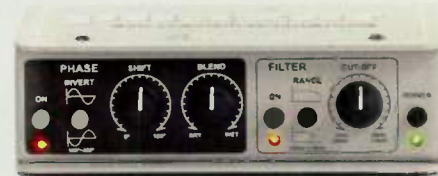


## Cherry Picker™ preamp selector

Plug in your favorite mic and instantly compare between four mic preamps to find the one that best suits the instrument or vocal track. The Cherry Picker features 100% pure copper signal path with gold contact relays for absolute signal integrity. You'll love the way it improves your workflow and efficiency!



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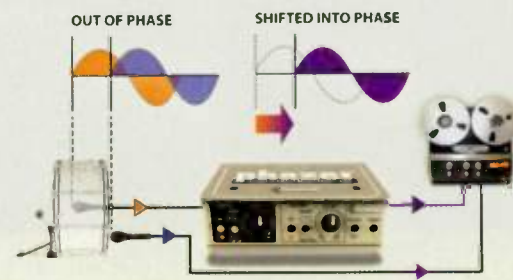
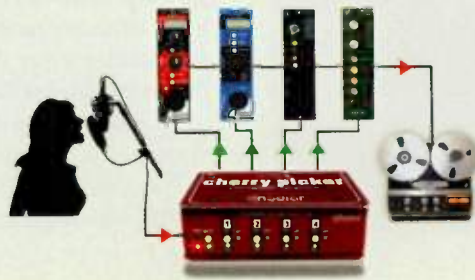


## Phazer™ phase alignment tool

Add realism and depth to every instrument! The Phazer is an analog tool that lets you adjust the phase relationship between two sources such as two mics in a room so that the fundamentals arrive at the same time. Think inside and outside the kick drum, top and bottom of a snare, or near and far with an acoustic guitar.



QR VIDEO LINK





A Designs

500HR

\$299 STREET

ADESIGNSAUDIO.COM

By mounting a pair of 500 Series modules sideways, the A Designs 500HR takes up only 1RU, including internal power supply (which supplies 140mA per channel). Each slot has XLR inputs and outputs, and +48VDC phantom power is provided.

independently. The interface offers 24-bit, 96kHz resolution, with support for Mac OS and iOS and Windows.

The rear panel includes balanced TRS 1/4" analog outputs, as well as MIDI, S/PDIF, and Word Clock I/O. The front features a pair of 1/4" headphone jacks with dedicated controls, a master output knob, and buttons for Dim and Mono. As a nice touch, the rear-panel XLR inputs for the module slots can be used on their own as the front-end of your DAW, even when modules are not in the rack. The system is designed to simultaneously accept six input signals (four from the modules, two via S/PDIF) and output eight channels from the computer (four through

modules, two through the TRS jacks, and stereo S/PDIF).

The module section has standard XLR I/O. Rear-panel switches link pairs of modules, or bus the signal through all four modules in series. The switches also allow you to send a DAW track through a module and back to the computer. The unit has an internal power supply yielding 220mA per module slot.

Aphex

USB 500 Rack

\$949

APHEX.COM

The Aphex USB 500 Rack combines a 4-space chassis with an integrated USB 2.0 audio interface, which can be used together or



# Professionals...



## EXTC™ guitar effects interface

Add excitement and uniqueness to every track by incorporating funky sounding guitar pedals to your signal chain. Imagine... adding a wah to a kick drum, distortion to a vocal or a jet flanger to the keyboards. The EXTC makes it easy by unbalancing the signal, adjusting the impedance and then re-balancing it for you.



QR VIDEO LINK



## MC3™ monitor controller

Select between two sets of monitors without adding any form of buffering electronics in between your recording system and monitors. The MC3 features a pure copper connection to eliminate distortion. Turn on or off a sub and adjust the level, collapse the mix to mono and monitor your mix using headphones or ear buds.

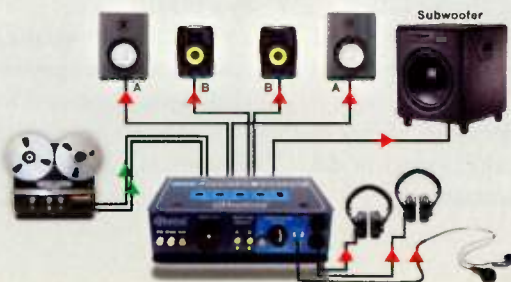
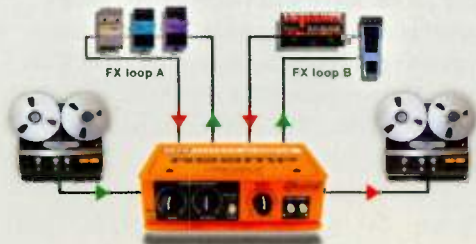


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## Radial's new 'Studio Essentials'

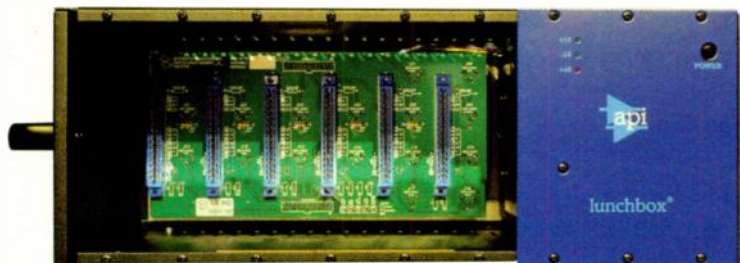
...are made for making great music. Five unique PowerTools that help you streamline your music production, improve productivity and enhance recording quality. Each tool is carefully designed to optimize the signal path for minimal coloration where it matters and maximize your tonal universe when following that creative spark.



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\* Specifications and appearance subject to change without notice.



## API Audio 500-6B and 500VPR

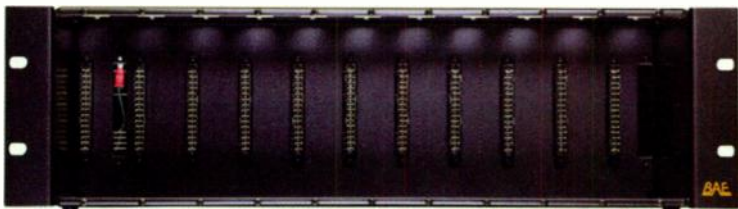
**\$424 STREET, \$845 STREET**

**APIAUDIO.COM**

API offers two 500 Series racks—the 6-slot 500-6B “lunchbox” with internal power supply, and the 10-slot 500VPR, which comes with an external power supply.

The 500-6B is a portable unit for desktop, studio, or stage use, weighs just under 10.25 lbs., and has a handle on the left side and rubber feet on the bottom. (API also sells rack ears for the unit.) Each rack slot features rear-panel XLR I/O. The unit also features a DB-25 connector for input and output, with two additional XLR pass-through inputs and outputs provided for channels 7 and 8 of the D-Sub.

The 500VPR has rear-panel XLR I/O and uses a hefty external power supply: The L200PS is a linear design with current limiting and short-circuit protection that provides 1.4 amps symmetrically. API products come with a 5-year warranty.



## BAE Audio Various chassis configurations

**\$425-\$950 STREET**

**BAEAUDIO.COM**

In addition to its 2-space DLB “Desktop Lunchbox” (\$425 street), 6-space rackmount (\$550 street) and table-top (\$550 street) chassis, BAE Audio also offers an 11-space chassis (\$950 street). Each model has XLR I/O and eschews PCBs for individual card connectors with shielded wiring. Steel is used throughout the chassis.

External power supplies are included in the prices. The 2-space and 6-space supply provides 1.6A, while the supply for the 11-space model delivers 3A. Each product comes with a one-year warranty.



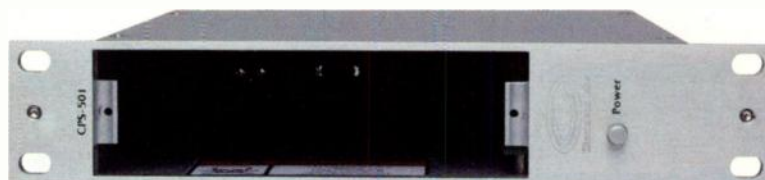
## Cartec Compère 500

**\$799 STREET**

**CARTECAUDIO.COM**

The Compère 500 is an 8-slot rack with internal power supply that provides 3A per rail. One feature that sets this unit apart from other 8-module racks is the Aux Input To Module switch. This lets you assign the front-panel XLR input to any of the eight modules, so you can, for example, compare the sound of one mic going through each of the rack’s preamps individually (hence the play on words of the product name), without interruption to phantom power.

The Aux Output from Module switch routes the chosen slot to a dedicated rear-panel XLR output. An additional XLR jack, the Routing Section Line input, sits below it. As you would expect, each module slot has individual XLR I/O. Rear-panel switches let you internally bus a module into the one to its immediate right. Four blank panels are included with the rack, each of which has a voucher that can be redeemed towards the purchase of a Cartec module.



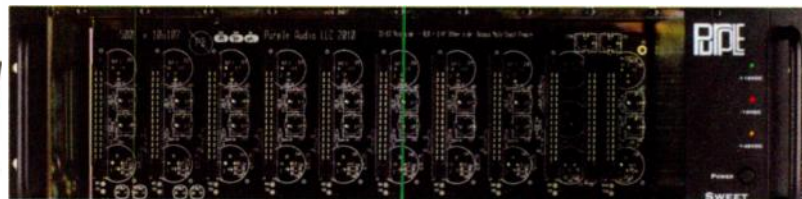
## Chameleon Labs CPS-501

**\$189**

**CHAMELEONLABS.COM**

The CPS-501 powers a single module in a half-rack space and includes XLR I/O. The back-panel 1/4” TRS jack, marked Special, provides a switchable send-and-return for modules that support an insert. The rack also allows you to lift pin 15 for modules that will be damaged by +48VDC.

The CPS-501 weighs a mere 2.5 lbs. and uses an external AC power adapter. A second power-adapter port on the rear panel lets you daisy-chain up to eight units together using the included extension cable. Two CPS-501s can be combined using the company’s RM-1 (\$49) rackmount kit and RM-2 (\$39) dual-rackmount buckle. The unit comes with a one-year warranty.



## Empirical Labs EL500

**\$399 STREET**  
**EMPIRICALLABS.COM**

The EL500 houses two 500 Series modules in a 1RU rack with internal power supply (with over 280mA available from both supplies). Rear-panel I/O includes XLR and TRS 1/4" input jacks and XLR and unbalanced 1/4" outputs. The high-impedance 1/4" input on the front acts as a DI and accepts an instrument-level signal. (An internal jumper adds +10dB of gain if needed to accommodate the instrument.) The left module's slot defaults to the front-panel jack when you plug something into the DI input.

The EL500 provides +48VDC phantom power, and you can internally link a pair of modules, such as dynamics processors. The rack comes with a 3-year limited warranty.

## Purple Audio The Sweet Ten

**\$800 STREET**  
**PURPLEAUDIO.COM**

The Sweet Ten holds up to 10 modules and has a 1.3A internal, switching power supply. In addition to the rear-panel XLR I/O, each module is supplemented by balanced 1/4" I/O that utilizes pins 3 and 6 (output) and 7 and 9 (input) of the card connector. Module slot 9 has an additional XLR output designed for use with the company's Modyn module, an 8-channel summing amp that treats slots 1 through 8 as input modules to form an 8x2 mixer.

According to the manufacturer, the frequency bypass capacitors on each slot of The Sweet Ten improve filtering, while the chassis's cold-rolled steel top, back, and side panels are finished in trivalent chromate to improve grounding and shielding.

elements into its rack designs, which clearly differentiates them from the VPR spec. For example, each module slot in its racks features an Omniport, a 1/4" TRS jack that can be used by manufacturers for auxiliary functions, such as a key input for a dynamics processor or a switch. Although Radial's racks accept standard 500 Series modules, companies such as Burl Audio, Grace Design, Maag Audio, and Millennia Media are designing products with Radial's rack specs in mind.

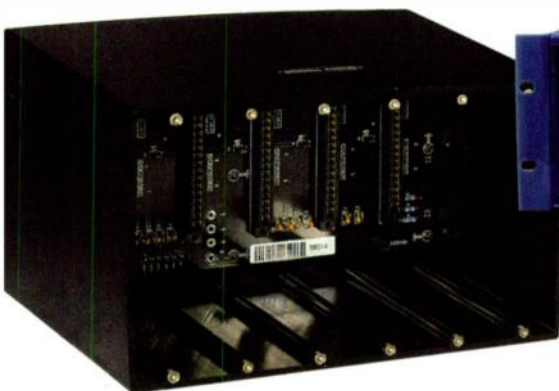
Radial's chassis configurations include the 3-module/1RU PowerStrip (\$349 street), the 3-module desktop Cube (\$349), the 6-module SixPack (\$449 street), the 10-slot Powerhouse (\$899), the Workhorse (\$1,399 street), which includes an integrated mixer; and the WR-8 (\$749 street), which doesn't include the mixer. In addition to XLR and balanced 1/4" I/O and an Omniport on each channel of every Radial chassis,

you'll find a rear-panel Feed switch that sends audio to the adjacent module, and a Stereo Link switch.

The 8-slot Workhorse includes an 8x2 summing mixer with inserts, as well as monitor and main outputs on XLR and TRS 1/4" jacks, phantom power, a pair of headphone jacks, pan and level controls and an on/off button for each channel, a Mono switch, and level controls for main, monitor, and headphone outputs. (The mixer

is also available as a separate module, the WM8, for \$749 street.) Rear-panel D-Sub connectors offer eight channels of direct input, output, and summed output. You can connect Workhorse units together using the back-panel Expander Buss. The WR8 also holds eight modules, but it doesn't include the mixer.

All Radial chassis include external power supplies. The Workhorse and WR8 power supplies provide 1.6A.



## Lindell 506

**\$329.99 STREET**  
**LINDELLAUDIO.SE**

As the name suggests, the Lindell 506 holds six modules and is made from aluminum. The internal power supply provides 2.4A (400mA per module slot). Twelve gold-plated XLR connectors fill out the back-panel I/O. A neoprene gig bag is included.

## Radial Engineering Various chassis configurations

**\$349-\$1,399 STREET**  
**RADIALENG.COM**

Radial has implemented a number of new

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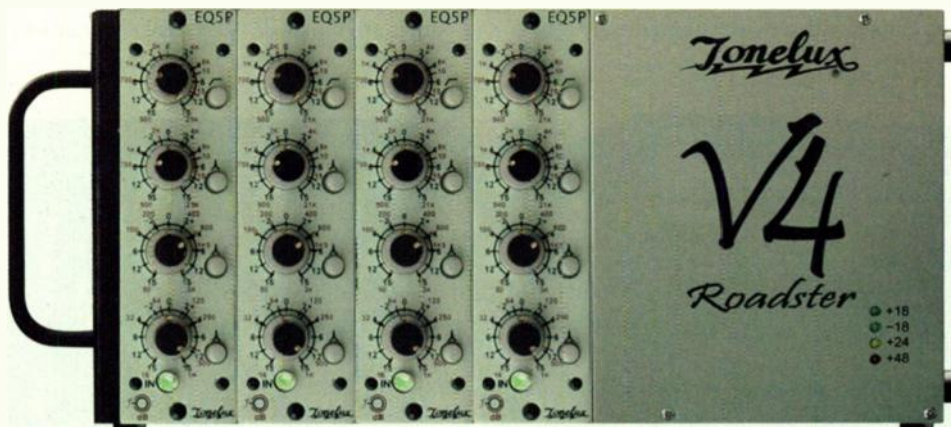
## SPL RackPack500

\$999

[SPL-USA.COM](http://SPL-USA.COM)

The RackPack500 is an 8-module rack that accepts four 500 Series modules in addition to four of SPL's proprietary modules. Each module slot has two XLR outputs and one input. Phantom power (+48VDC) is available. The rack is just shy of 13.5 lbs. when empty, and it has a rear-panel ground-lift switch and comes with an external power supply.

SPL also makes 4- and 8-space RackPacks for its own modules, but these chassis do not support 500 Series modules.



## Tonelux V4 Roadster and X4 Expander

\$649, \$499

[TONELUX.COM](http://TONELUX.COM)

The V4 Roadster (\$649) is a steel 4-space desktop chassis with an internal power supply providing 425mA per slot. The V4 can also power the X4 Expander (\$499), which holds four additional 500 Series modules, or the TX4 Expander, which holds four of Tonelux's proprietary VRack modules.

I/O is on XLR jacks throughout. The V4's D-Sub connectors provide 8-channel I/O when either of the expander modules are used. ■

*Gino Robair is Electronic Musician's technical editor.*

# Sum Total.

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**Mark Linett**

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## iZ Technology Radar 6

With this recorder, you definitely get what you pay for

BY NICK PECK

### SUMMARY

**STRENGTHS:** Excellent sound quality. Reliable performance. Variety of connectivity options. Optional touchscreen and remote control. A decade of free tech support.

**LIMITATIONS:** Requires mixing console and outboard processing gear to use it at its best. Premium price.

**\$4,495 MSRP and up**  
[izcorp.com](http://izcorp.com)

THE iZ Technology Radar hard-disk multitrack-recording system has been around for two decades, with major revisions appearing approximately every five years. This year, the company released Radar 6, a stellar update that is smaller, quieter, faster, and cheaper than the previous incarnations, while offering a host of improvements in its feature set and audio quality. Yet, the system has retained the same uncompromising design principles that have guided all previous versions: to provide a rock-solid, dedicated recording system that emphasizes sound quality, ergonomics, and reliability. (During the eight years I've used my Radar V system, it has never crashed.)

**That's Dedication** Although Radar 6 is a multitrack digital recorder, the philosophy behind its design is closer to an analog tape machine than a full-featured DAW: It offers no plug-ins, automation, or mixing capabilities. Radar 6 is designed to be the core of a larger hardware ecosystem that includes a mixer and outboard processing.

The Radar 6 system starts with a purpose-built engine that runs a proprietary operating system. The majority of its connectivity is located on the rear panel of the 4RU box: AES/EBU, S/PDIF, MIDI, SMPTE LTC, Word Clock, Ethernet, and DVI ports. The front panel has transport controls, removable drive

bays, a Blu-ray/DVD-R combo drive, and USB 2.0 and eSATA ports for connecting external drives. The DVI output supports a standard widescreen LCD monitor (up to 1,600 x 900 resolution), which displays all session and waveform information within a single page view. An optional touch-sensitive LCD monitor (\$700) shows the same information and lets you control the system from the front panel.

Audio I/O options are configured to the user's preference and budget, and include the Classic 96 (\$1,295 per 8 channels) and Ultra-Nyquist (\$1,995 per 8 channels) analog I/O cards, as well as AES (\$1,995), MADI (\$1,995), ADAT Lightpipe (\$995), and TDIF (\$750) digital cards. The Ultra-Nyquist has a redesigned D/A, resulting in the lowest noise floor and least distortion of any Radar analog I/O card yet. All Radars I've heard share a smooth, rich sound, with a big low end, punchy midrange, and detailed but understated high end, without the abrasiveness in the high frequencies that lesser-quality converters sometimes display.

Radar 6 has internal system and archive drives, and it can hold two high-capacity removable SATA solid-state record drives (\$395 each for the standard 120GB drive). You can also record directly to USB 2.0 hard drives and solid-state thumb drives as long as they are fast enough. Sessions can be archived to the Blu-ray/DVD-R combo drive, and files



can be transferred directly between Radar and your Mac or PC via FTP over Ethernet or using a thumb drive with one of the front-panel USB ports. This makes it possible to track within Radar, then transfer the files to your DAW for additional work.

The KC24 dedicated keyboard (\$195) or the Session Controller Pro Remote (\$1,995) are used to control Radar 6. The optional meter bridge (\$995) bolts to the top of the Session Controller. With its jog wheel and dedicated

function keys, the Session Controller Pro Remote can control as many as eight Radar 6 systems via RadarLink quickly and efficiently, resulting in 192 tracks of sample-accurate 192kHz recording.

**From V to 6** Because the Radar system is a mature product, improvements tend to be incremental rather than revolutionary. Still, it offers significant hardware updates between Radar 6 and Radar V. The CPU is now a 3GHz Pentium, increasing the data transfer speed threefold. The custom SCSI bus has been replaced with a high-speed SATA bus, allowing the chassis to be 40% smaller and 14 pounds lighter. And the redesigned, high-efficiency power supply runs much cooler than the previous unit, eliminating the need for additional fans and significantly lowering the noise that the unit generates. (A complete list of updates can be found on the iZ website.)

The workflow and setup are similar enough in Radar 6 to have any Radar veteran up and running in minutes. For this review, I disconnected my Radar V chassis and replaced it with the Radar 6. It uses the

same DB25 analog cabling and the same connection to the Session Controller Pro Remote. I only had to swap the older VGA monitor with a newer DVI widescreen monitor, and I was recording right away.

Radar 6 costs a bit less than Radar V, but there is no sacrifice in quality. You can purchase a bare frame for as little as \$4,495, but a typical system with a touchscreen, two record drives, 24 channels of Classic 96 I/O, and a Session Controller will run \$12,523. Software updates are expensive, but these prices must be taken in context: Radar 6 systems have a lifetime measured in decades, and the price includes 10 years of free tech support by iZ experts.

**Top Notch** Radar 6 is not for everyone. It is a premium product with a price tag aimed at professionals. But if your emphasis is on capturing expressive performances from musicians who can lay it down without a great deal of editing, and you like a streamlined workflow, then Radar 6 is a superb choice. ■

*Nick Peck is a composer, sound designer, and audio director, based in Studio City, CA.*



# Hands-On!

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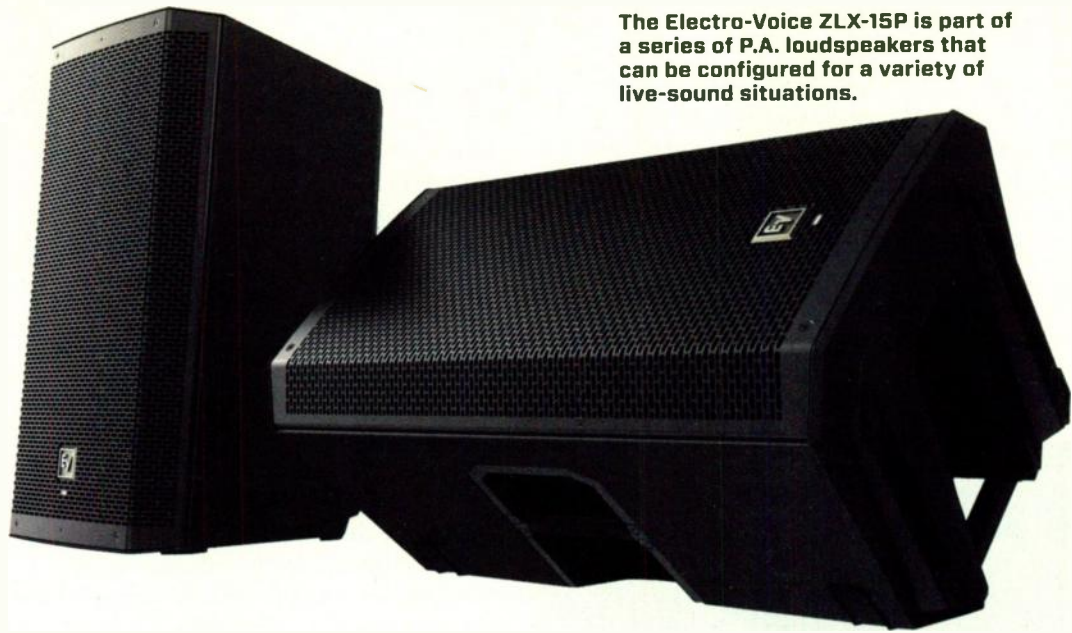
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The Electro-Voice ZLX-15P is part of a series of P.A. loudspeakers that can be configured for a variety of live-sound situations.

## Electro-Voice ZLX-15P Loudspeaker

A P.A. system for every occasion

BY STEVE LA CERRA

### SUMMARY

**STRENGTHS:** Simple operation. High-quality sound. Easy system expansion.

**LIMITATIONS:** No phantom power on the microphone input. Limited EQ controls for monitor use.

**\$875 MSRP; \$499 street**  
[electrovoice.com/zlx](http://electrovoice.com/zlx)

I'M ALL for big, crankin' P.A. systems—especially when I don't have to move them—but for local gigs, less is definitely more. An ideal club system should sound great and be self-contained, simple to operate, and expandable for larger rooms. The Electro-Voice ZLX Series meets these requirements and then some by offering two models of powered loudspeakers with DSP (ZLX-12P and ZLX-15P) and two passive versions (ZLX-12 and ZLX-15).

For this review, Electro-Voice sent a pair of the ZLX-15Ps, each of which features a 15-inch woofer and a 1.5-inch HF driver mounted and time-aligned using EV's Split Baffle design. A built-in Class D amplifier in each delivers 1,000 watts peak power. The ZLX-15P produces a maximum SPL of 127dB; I got them up to around 115dB before common sense and self-preservation kicked in.

The ZLX-15P's front panel has a steel grille and an LED power indicator. Rear-panel inputs include two XLR/TRS combo jacks (each with gain control) and an 1/8-inch Aux input for use with an MP3 player. The aux input accepts a stereo signal and sums the channels to mono. A small LCD screen illuminates when power is applied, and a single large knob accesses the speaker's DSP functions and master volume. The unit's XLR output can feed the mixed inputs to another ZLX-15P or to an EV ELX118P powered subwoofer for enhanced low end. Crossover frequency options include Off (no sub), 80, 100, or 120Hz, or "ELX118P," making the addition of a sub painless.

A DSP Mode function engages different EQ curves for Music (pre-recorded), Live (voice and instrument), Speech, and Club (pre-recorded electronic music) applications, while the Location parameter compensates for

proximity to boundaries, offering choices for Pole, Bracket, and Monitor. Additional DSP adjustments include Bass, Treble, and LED on/off/limiting.

Setting up the ZLX-15Ps was a breeze. The cabinets are easy to manage due to placement of the handles; I did not bust a disk lifting them. For a singer-songwriter in a small bar, I used one ZLX-15P as a floor monitor and pole-mounted the other for the house. A vocal mic was plugged into Channel 1 of the floor monitor and an acoustic guitar (via DI) into Channel 2. Output of the floor monitor fed the house speaker. The rear-panel LCD defaults to a two-channel input meter. If gain is set too high, the display shows "Clip." Once you've set the input gain, the master control determines volume.

Used with a Yamaha 01V96i to mix a small band, the ZLX-15Ps achieved SPLs between 105 and 108 dB (C-weighted) while maintaining clarity and intelligibility. Kick drum and bass sounds were tight, which was somewhat surprising since the cabinets flex at high SPLs. I set the front-panel LED to "Limiting," in which it only blinks when limiting occurs. It would have been nice to have had the ELX118P subwoofers on hand for some extra whump in this situation, but the ZLX-15Ps fared well without them.

Electro-Voice has done an excellent job with the ZLX-15P. It sounds very good, is easy to use, and it can be the nucleus of a larger system. Small venues, DJs, and houses of worship with modest sound requirements will find this loudspeaker very user friendly. And given the street price, it offers a lot of bang for the buck. ■

*Steve La Cerra mixes front-of-house for Blue Öyster Cult and teaches audio at Mercy College, Dobbs Ferry campus.*

# OMNISPHERE

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The standalone version, seen here, lets you load soft synths and amp modeling devices, and then blend them. In plug-in mode, you can either load an internal synth or trigger multiple synth tracks on your DAW.

## Jam Origin MIDI Guitar

It doesn't get any easier than this, folks

BY MICHAEL ROSS

### SUMMARY

**STRENGTHS** Easy to set up and use. No extra pickups and hardware converters required. Tracks mono and polyphonic playing very well.

**LIMITATIONS** Can't split string or neck areas for different sounds. Can't change patches from guitar.

**\$99.99 (Mac/Win);  
\$19.99 (iOS)**  
jamorigin.com

GETTING GUITARISTS to adopt guitar synthesizers has been an uphill battle for decades, but Jam Origin has come up with a new and much easier way for guitarists to access this world of sounds and textures. MIDI Guitar turns any guitar into a polyphonic MIDI controller. It requires no special pickup, and it is available as a stand-alone application, plug-in, or iOS app. Merely plug your guitar into a computer or iOS device through any audio interface and MIDI Guitar lets you control almost any soft synth.

**Plug and Play** I installed the MIDI Guitar VST and Audio-Unit plug-ins easily and booted up Ableton Live. Installing it on an audio track gave me two options: I could run a soft synth within the MIDI Guitar plug-in, as I would in standalone mode (with a drop-down list of the synth's presets and access to the actual synth's GUI); or, if I wanted to be able to create a piano roll or access multiple synths, I could have MIDI Guitar send MIDI data to separate MIDI tracks. (As of this review, Live sends MIDI from the VST version only.)

I was able to install a variety of soft synths directly in MIDI Guitar, including Native Instruments' Reaktor. Using it to send MIDI data to a separate track allowed me to play any synth supported by Live—including the proprietary ones.

Setup involves adjusting overall string sensitivity. I couldn't set individual string sensitivity, but I could set the sensitivity of each note over four octaves. This helped with tracking accuracy, and could be saved as separate setups for different instruments.

**Tracking** Once set up, the software responded well to both pick and finger-style playing. As with every synth guitar, MIDI Guitar tracked better in some synths and patches than others. Hammer-ons worked better than slides, while

pitch-bend settings responded well to string bends and whammy-bar work.

As with other systems, if you want to play fast, you have to be extremely accurate in your picking technique. (I found that palm-muting helped.) I spent hours creating ambient, rhythmic, and melodic landscapes with a minimum of false triggering. I could also send velocity information by varying my pick attack, creating some cool virtual string slides within Reason's upright bass sample.

**Shortcomings** Unlike some hardware guitar synths, Jam Origin's software cannot split your strings or neck positions into different sounds. For example, there is no way to play a bass instrument with the bottom two strings and piano with the top four.

With no onboard hardware, you can't change synth sounds from the guitar as you roam the stage. However, you can control synths on a MIDI track using MIDI footswitches and expression pedals.

**Is It for You?** I can't imagine an easier or cheaper entry into guitar-controlled synthesis. The computer version is still in beta, but it already works well enough to be worth purchasing. MIDI Guitar is in active development, and a steady stream of updates are being released almost daily.

If you have ever longed to create filter-sweeping pads, play piano samples with your guitar, or transcribe parts simply by playing them into a notation program, now you can for the price of a mass-market effects pedal. If you have an iOS device and are already playing guitar into it, for less than a night at the movies for two you can play any soft synth on your iPhone or iPad. ■

*Michael Ross is a writer/musician/producer/bon vivant living in Nashville.*

# iOS RECORDING



## Record Anywhere, Anytime

From your couch to the studio to the stage, tablet technology makes high-quality music production incredibly portable and immensely powerful. Whether you're sketching out a new tune, crafting a beat, scoring a music cue or working on a tricky mix, our selection of flexible iOS-ready hardware and accessories helps you make music wherever you happen to be. From studio-quality mics that plug directly into your tablet to versatile audio and MIDI

interfaces, you can take full advantage of the very best audio software iOS has to offer. Plus, a variety of stands, clips, and other accessories mean you can set up your tablet to work comfortably anywhere, so you're always ready to capture the moment when inspiration strikes, or when you just need to check that score or lyric sheet. Wherever you are, however you make music, iOS makes it easier—and Guitar Center is here to help you make the most of it.

### BLUE BLUEBIRD LARGE DIAPHRAGM RECORDING MIC

Designed for versatility, the Blue Bluebird large-diaphragm condenser is a perfect complement to your iOS recording setup. Equally at home recording vocals or instruments from delicate acoustic sound to loud guitar amps, Bluebird's fully discrete Class-A circuit and custom transformers make it an indispensable sonic tool. (22200)



### IK IKLIP STUDIO IPAD STAND

With the wide variety of available music software, both for creation and performance, an iPad has become an essential part of every musician's toolkit. IK's iKlip gives you a safe, secure way to mount your iPad to a mic stand, so it's there when and where you need it. (IPIKLIPSTUDIOIN)



### APPLE LIGHTNING TO 30-PIN ADAPTER

Apple's new Lightning connector is small, fast, and power efficient, but may leave many of your older iPad and iPhone accessories disconnected. This Lightning to 30-pin Adapter gives your accessories a new lease on life, enabling you to use them with the latest generation of iOS devices. (MD8232M/A)



### APOGEE DUET 2 iOS-READY INTERFACE

Apogee's Duet audio/MIDI interface, with single-knob simplicity and their renowned converters, rapidly became a standard for mobile laptop recording. The latest generation of Duet adds iOS compatibility for even more record-anywhere versatility, with a feature set that stands apart from other iOS audio interfaces.

LIMITED AVAILABILITY (DUET IOS MAC)



### APOGEE MiC

Once again, Apogee's dedication to impeccable audio quality shines through with MiC, a compact condenser mic with a direct connection to your iOS device. Once you hear the results, it will become an integral part of your mobile recording toolkit. (MiC)



### APOGEE JAM AUDIO INTERFACE

One of the best-sounding ways to get guitar or bass into your iOS device, Jam uses Apogee's PureDIGITAL connection and renowned converters for the pristine sound quality you've come to expect. Best of all, it's completely plug-and-play with any CoreAudio compatible application. (JAM)



### SENNHEISER HD280 PRO HEADPHONES

The Sennheiser HD280 Professional is designed to exceed the demands of the professional environment, with robust construction and extensive features that meet the requirements of today's most demanding applications. (HD280)



For more info on iOS-based recording, go to: [guitarcenter.com/iOS](http://guitarcenter.com/iOS) or scan the QR code

# Metasonix R-54 Supermodule Mk II

New timbres with tubes

BY GINO ROBAIR

WELCOME TO the first installment of “Mod Squad,” our new column focusing on modular synthesizers and the products that support them. I wanted to begin the series with something out-of-the-ordinary, so, naturally, I thought of Metasonix, a synth company that utilizes unconventional vacuum tubes in its designs. While Metasonix has introduced several modules into the Eurorack format, there is no better place to start than with its R-54 Supermodule Mk II.

The manual describes the R-54 as a “Wien-bridge bandpass filter” that doubles as an oscillator and uses a dual-element Vactrol optocoupler for tuning. The design was inspired by a circuit that Eric Barbour, the man behind Metasonix, found in a textbook from 1964. The module features a 19KG8 triode-pentode and a 6AK5 pentode tube, which poke out from the front panel. It’s old-school technology, but it provides a sound palette that is simultaneously classic and modern.

When you use its audio input, the R-54 acts as a resonant 2-pole bandpass filter. Although the Master Tuning control doesn’t completely remove the input signal when set to its lowest point, sweeping through the frequencies results in a rich and pleasing set of timbres. Depending on the position of the Resonance and Master Tuning controls, you’ll get a range of sounds that goes from mildly gnarly to unstable (with, perhaps, a bit of tone provided by filter resonance).

With nothing patched into the audio input, the module acts as an oscillator, which you can control using the two CV inputs as well as the Master Tuning and Resonance



The Metasonix R-54 Supermodule Mk II uses two tubes and a Vactrol for a circuit that can work either as a bandpass filter, a resonant-filter-based VCO, or a combination of both.

knobs. Beyond producing sine tones, the filter oscillation can be harmonically enriched using the module’s Overdrive knob.

The oscillator can be further unstabilized in a number of interesting ways. For example, setting the Resonance control near its lowest point often yields a pulsing sound, which may or may not change over time. Turning any of the knobs even the tiniest amount can result in a big change in timbre, so take your time moving the controls as you get to know the module.

The Mk II version of the R-54 adds a VCA CV input to control the 6AK5’s screen grid, so you can play with the level and amount of clipping at the output tube. The switch labeled Harsh adds a feedback loop to the circuit, which introduces a bit more unpredictability.

Can you tell that I am reveling in the instability aspects of the R-54? Therein lies much of the creative potential of this module.

Like other Metasonix products, the CV inputs for pitch follow the Hz/V standard, which most MIDI-to-CV interfaces—including

the company’s R-60 self-tuning version—support. That allows you to use the R-54 for melody and bass duties, which is an aspect of the module you will want to explore, because this baby can growl and scream like no other VCO on the market.

The key to getting the most out of any piece of audio gear is headroom, and this includes tube-based products in particular. Metasonix modules require a greater amount of current than the average Eurorack module. Although the R Series modules are compatible with low-cost power supplies, Metasonix recommends getting a high-quality PSU, such as the ones included in cases made by Monorocket (monorocket.com). That way, you won’t have any issues when you add more Metasonix modules to your system. And believe me, you will want to add more! ■



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Only new StudioLive AI mixers give you an actively integrated hardware/software system.

Solve problems with Smart® measurement and analysis (and more GEQs than any other mixers in their class).

Mix easier and more creatively with one-to-one controls, powerful double signal processing Fat Channels and four 32-bit effects buses.

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- 32, 24 and 16-channel AI-series models
- Superior sound with Burr-Brown A/D:A processors and 64-bit Studio One® internal processing
- Wireless and wired connectivity
- Two Fat Channels per mixer channel with A/B
- All channel controls and metering accessible without bank switching





**1**  
**FutureRetro db**  
 16-channel summing mixer/  
 monitoring system  
**\$2,500**  
**HIGHLIGHTS** 16 channels of  
 balanced, passive summing •  
 8 channels of stereo inserts • 2  
 microphone inputs • two 1/4"  
 instrument inputs • stepped  
 monitor output control • 3  
 stereo monitor outputs • stereo  
 Record outputs • headphone jack  
 with level control • Mid/Side  
 processing  
**TARGET MARKET** Recording and  
 mastering engineers, personal  
 studio owners  
**ANALYSIS** A rugged device, made  
 in the USA of high-quality parts,  
 that packs a lot of useful features  
 into a small amount of space.  
**futureretro.com**



**2**  
**Akai Pro MPX8**  
 Sample player/MIDI  
 controller  
**\$99**  
**HIGHLIGHTS** 8 pressure- and  
 velocity-sensitive pads • 8-voice  
 polyphonic sample playback  
 • reverb • balanced 1/4" audio  
 output • USB and standard  
 MIDI I/O • USB bus powered •  
 drag-and-drop Mac/Win editor  
 • headphone output • loads files  
 from SD and SDHC cards • 3  
 triggering modes  
**TARGET MARKET** Anyone who needs  
 a portable instrument/controller  
**ANALYSIS** It's hard not to like a  
 sample player that weighs 1 lb.  
 and doubles as a MIDI controller  
 for DAWs and hardware synths.  
**akaipro.com**



**3**  
**McDSP AE400 Active EQ**  
 DSP plug-in  
**\$299 street**  
**HIGHLIGHTS** Overlapping 4-band  
 EQ • double-precision processing  
 • controls for frequency, Q, and  
 output on each band • active  
 and fixed gain response • EQ  
 ratio response control • mono  
 and stereo versions • sidechain  
 features • Pro Tools 11 64-bit  
 AAX DSP (HD) and Native  
**TARGET MARKET** Recording and  
 mastering studios, live sound,  
 post-production  
**ANALYSIS** McDSP is always  
 pushing the envelope: This  
 active EQ's ratio feature sets the  
 input-level sensitivity to control  
 the amount of equalization that  
 occurs.  
**mcdsp.com**



**4**  
**KRK Rokit 8 Generation 3**  
 Active studio monitor  
**\$249 street**  
**HIGHLIGHTS** 8" aramid glass-  
 composite woofer • 1" soft-dome  
 tweeter • 100W power output •  
 35Hz–35kHz frequency response  
 • 3 analog inputs: RCA, balanced  
 1/4" TRS, XLR • high-frequency  
 and low-frequency level  
 adjustment • output level control  
 • front-slotted bass port  
**TARGET MARKET** Professional and  
 project studios, editing suites,  
 educational facilities  
**ANALYSIS** A highly anticipated  
 rev of KRK's popular, affordable  
 studio monitors, which gives you  
 more of everything, including  
 wattage and frequency range.  
**krksys.com**



5



5

Icon Digital  
**QCON Pro-3D**

USB/MIDI Control surface  
**\$829.99**

**HIGHLIGHTS** 9 touch-sensitive motorized faders (8 channel, one master) • 8 rotary encoders • 18 assignable buttons • jog wheel • class-compliant Hi-Speed USB 2.0 • assignable function buttons • transport and directions controls • Mackie HUI-compatibility • DAW template labels • slot for UMix Satellite 1008 audio interface

**TARGET MARKET** studios, classrooms, desktop editing suites  
**ANALYSIS** A competitively priced control surface that offers pro-level features while remaining relatively portable.

**icondigitalusa.com**

6

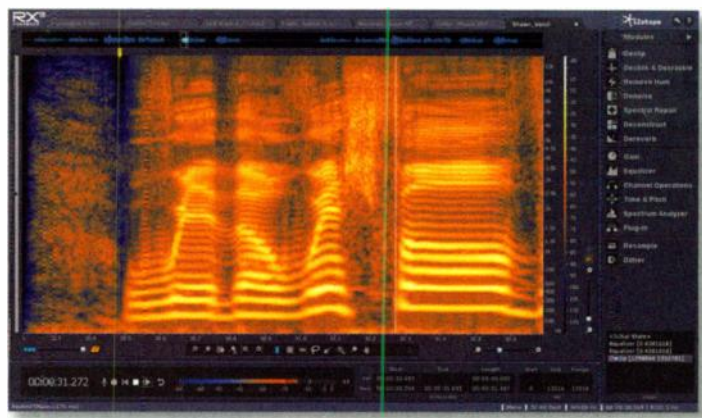
Noisefirm  
**NF-01**

Software synthesizer  
**\$49**

**HIGHLIGHTS** Inspired by the Yamaha CS01 synthesizer • works with NI Kontakt, Logic EXS24, and Ableton Live • 6 independently tunable waveforms plus noise • mono, poly, and legato modes • 3-mode filter • 8-voice unison mode • reverb, delay, and speaker simulation • 1.15GB of content

**TARGET MARKET** Musicians and composers who use Kontakt, EXS24, and Ableton Live synths  
**ANALYSIS** Despite being an inexpensive subtractive synth, NF-01 is remarkably powerful and has an old-school user interface.

**noisefirm.com**



7

iZotope  
**RX 3**

Audio restoration software  
**\$349 (\$1,199 for RX3 Advanced)**

**HIGHLIGHTS** Spectrum audio editor • reverb removal • de-click algorithms • realtime, dialog-specific de-noiser functionality • takes advantage of multithreading to support multicore processing • pitch-contour feature uses XY controller • pro-level loudness metering • unlimited undo, saved with audio data • standalone or plug-in mode • discount for students

**TARGET MARKET** Recording and mastering engineers, post-production facilities, audio forensics specialists

**ANALYSIS** State-of-the-art audio restoration is very data intensive. This update takes advantage of the processing power in the latest computers.

**izotope.com**

8



8

Griffin  
**StudioConnect**

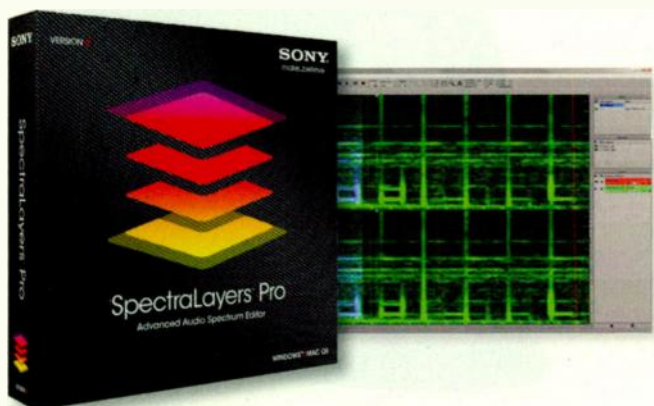
iPad dock and audio/MIDI interface  
**\$129.99**

**HIGHLIGHTS** 30-pin connector • supports iPad, iPad 2, and iPad 3 • 1/4" mono audio input • 3.5mm stereo audio input • stereo RCA audio output • 3.5mm headphone jack • 5-pin DIN MIDI I/O • 10W charging dock

**TARGET MARKET** Musicians who want to get the most out of their iPads, onstage or in the studio  
**ANALYSIS** With so many music apps on the market, it makes sense to have one interface that can deal with them all.

**griffintechnology.com**

*Continued*



**9**  
 Sony Creative Software  
**SpectraLayers Pro 2**  
 Audic spectral editor  
**\$399.95**  
**HIGHLIGHTS** Noise extraction • Spectral Casting/Spectral Molding features let you impose the frequency spectrum of one layer onto another • time- and pitch-editing tools • modify, clone, and draw functions • Windows version is bundled with Sound Forge Pro 11 within the Audio Master Suite for \$849.95  
**TARGET MARKET** Recording and mastering engineers, post-production facilities  
**ANALYSIS** Sony's premiere audio-spectral editor works faster than ever, and it has an integrated workflow with Sound Forge 11.  
[sonycreativesoftware.com](http://sonycreativesoftware.com)

**10**  
 AudioEase  
**Snapper 2 (Mac)**  
 Digital audio utility application  
**\$79**  
**HIGHLIGHTS** Audition, convert, and export from the Finder any audio file and resolution • 64-bit file support • drag and drop all or part of a file from the Finder to the cursor in most DAWs • change playback speed without altering pitch • editing tools include normalization, trim, and fade • 100-day demo  
**TARGET MARKET** Anyone who works with audio within Mac OS X  
**ANALYSIS** A quick and easy way to work with sound files. Period.  
[audioease.com](http://audioease.com)



**11**  
 Radial Engineering  
**USB-Pro**  
 Stereo DI for USB output  
**\$220**  
**HIGHLIGHTS** 24-bit, 96kHz resolution D/A converter with USB input and balanced (XLR) analog audio outputs • stereo 1/4" headphone jack • output level control • mono sum switch • ground lift • rugged casing  
**TARGET MARKET** Anyone who wants to record (or amplify through a P.A.) a stereo signal using your computer's USB port  
**ANALYSIS** An elegant and roadworthy way to increase the audio quality of your computer output by avoiding the compromised signal from the headphone jack.  
[radialeng.com](http://radialeng.com)



**12**  
 Hal Leonard  
**Pitch Correction Software Now!**  
 Production guide  
**\$14.99**  
**HIGHLIGHTS** Gives an overview of several popular pitch-correction software applications • offers techniques for tracking vocals that will make pitch correction less obvious • individual how-to chapters devoted to Antares Auto-Tune and Auto-Tune EFX 2, Celemony Melodyne, Waves Tune, and iZotope Nectar and The T-Pain Effect • includes a DVD of tutorials  
**TARGET MARKET** Musicians, recording engineers, sound designers  
**ANALYSIS** Pitch correction is here to stay; this book shows you how to achieve pro results using the technology.  
[halleonardbooks.com](http://halleonardbooks.com)

# The Audix SCX25A

"... destined to become a classic."

*Dennis Leonard, Supervising Sound Editor, Skywalker Sound*

The Audix SCX25A large diaphragm condenser mic is perfect for live or studio. The SCX25A delivers a pure, open-air sound with exceptional detail and realism. With its patented internal suspensions system, wide cardioid polar pattern, frequency response of 20Hz - 20kHz and SPL levels up to 135dB, there's virtually no live or studio miking challenge that the SCX25A can't handle.

"I use the Audix SCX25A as the foundation for my acoustic bass recording recipe. It's a beautiful, warm, full-spectrum microphone that is just a great all-purpose mic."

*Steve Bailey - Bassist Extraordinaire*

"We used two SCX25As to mic Peter's Bösendorfer piano for the acoustic section of the 'Back To Front' tour. To my ear, it was the best live acoustic piano sound I have achieved to date."

*Ben Findlay, Front of House - Peter Gabriel*

"With the Audix SCX25A's, I can tell exactly which cymbal is which. They sound creamy, organic and natural; just the way they do sitting at ground-zero at the drum kit as I play them. SCX25A's are the most amazing overhead mics I've ever used."

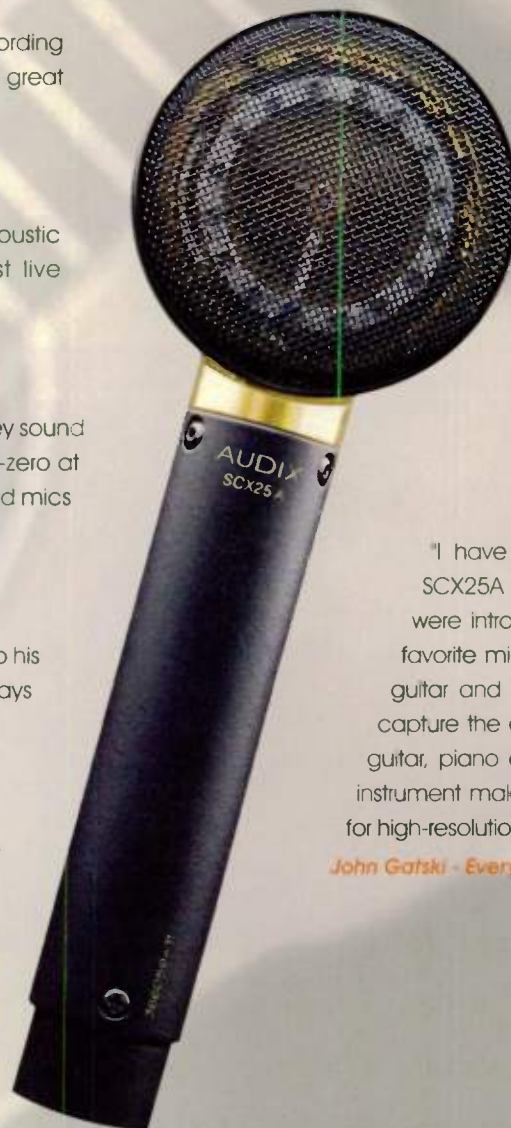
*Todd Sucherman, Drummer - Styx*

"Whenever I go to a new studio, I always ask the in-house guy to put up his best pair of piano mics. Then I put up the Audix SCX25A's. They always out-perform. They're my go-to piano miking solution."

*Paul Mitchell, Front of House - Joe Sample, Jazz Crusaders*

"On any night in the Forbes Center's Concert Hall we might be presenting a soloist with piano, opera, large ensemble jazz, or the Mozart Requiem with symphony and chorale. Across this musical spectrum I can count on our SCX25A's to give me outstanding definition with every recording. They really are amazing."

*Tom Carr - Recording Engineer/Sound Designer - Forbes Center for the Performing Arts*



"I have owned a pair of the SCX25A lollipops since they were introduced. It is one of my favorite microphones for acoustic guitar and jazz guitar. Its ability to capture the essential sonic detail of guitar, piano and any other stringed instrument makes the SCX25A perfect for high-resolution 24-bit/DSD recording."

*John Gatski - Everything Audio Network*

**AUDIX**  
MICROPHONES

[www.audixusa.com](http://www.audixusa.com)

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The Audix SCX25A is available as a single mic, matched pair or as a bundled piano miking kit. Try the Audix SCX25A for yourself and see why so many professionals agree that it is a premium performer for any task.

# Hear the world's sounds

Explore the largest community of artists, bands, podcasters and creators of music & audio

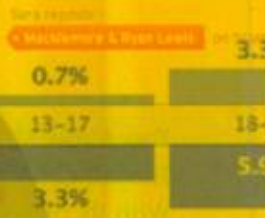
Sign up for SoundCloud | Log In

# FREE



Female 43%

Male 55.5%



## Do you create music & audio?

Post your sounds to share them with friends, fans and followers everywhere. Connect with the community on SoundCloud to build your fan base.

## RouteNote

### Music Distribution Simplified

#### Free Distribution

No royalties  
No advertising  
No promotion

#### Premium Distribution

100% royalties  
100% advertising  
100% promotion

#### RouteNote Direct

100% direct to fans  
100% 5% of royalties  
Organise your store

amazon.com | iTunes | RIAA | Spotify | Register | SoundCloud | YouTube

© 2013 RouteNote, Inc. All rights reserved. 271099 Thanks for 488 Countries to 18 Partners

### RouteNote Direct

#### Random Releases

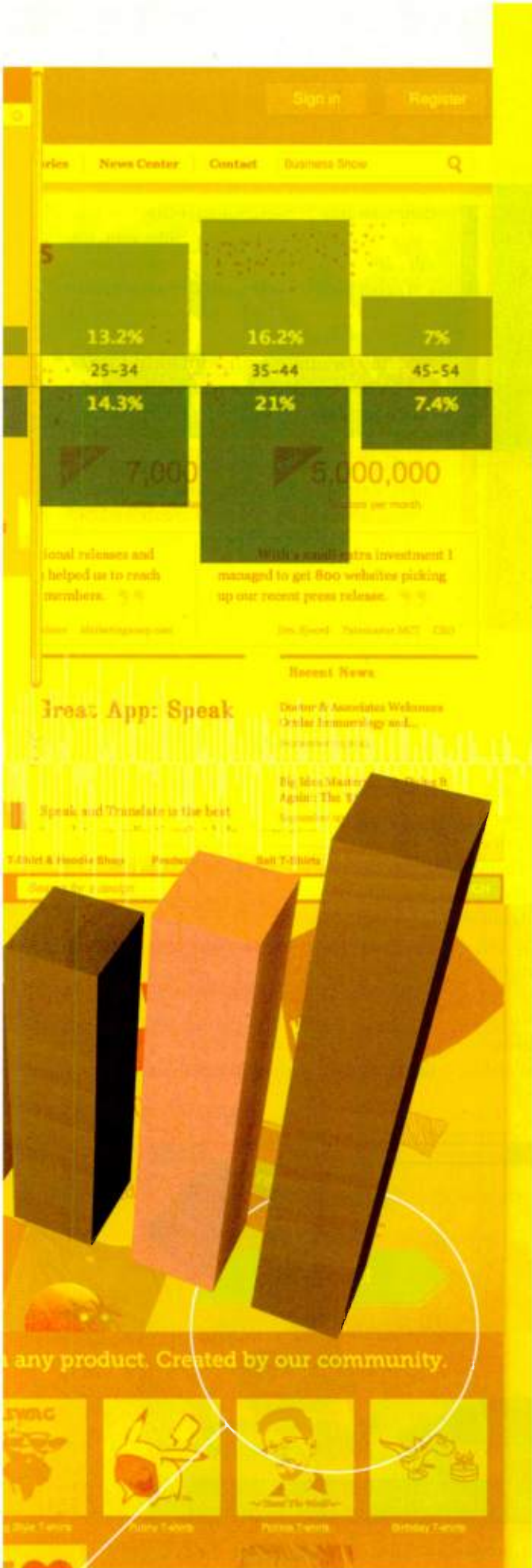


#### Featured Artist



### Find the right design





# LEARN

master class

# Starting a Music Business for \$0

Seven ways to get music distribution, merchandise, and royalties for free

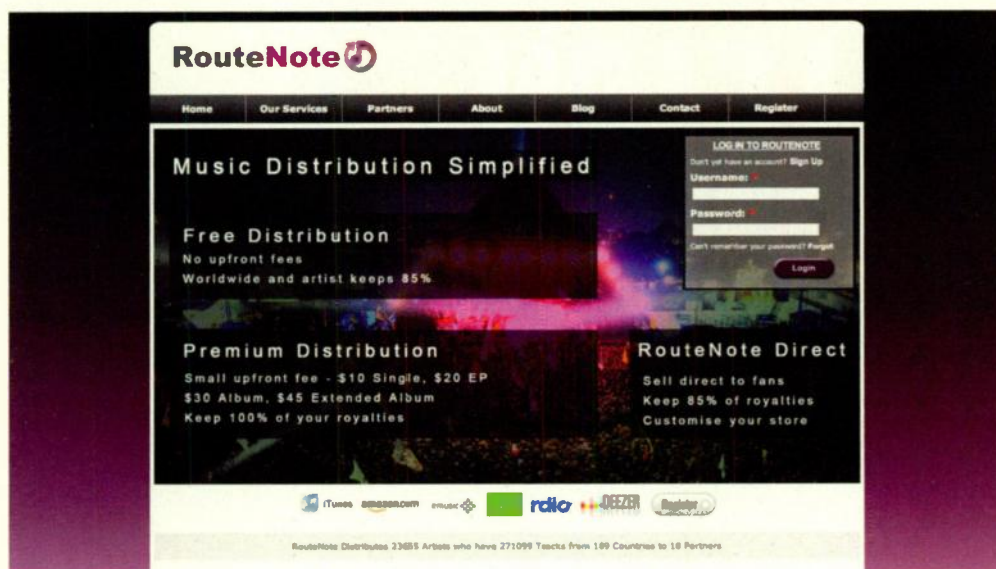
BY RANDY CHERTKOW AND JASON FEEHAN

ONE SIMPLE formula applies to all business. It's true whether you have a multinational oil company, a taco stand, or a band:

**How Much You Make - How Much You Spend = How Much You Keep**

Most musicians focus on simply increasing the amount that they make. Yet, most businesses fail because they simply spend too much of the income they take in. The good news is that just about every core part of the music business today—music distribution, merchandising, marketing, even CD and DVD manufacturing—can be done for *free*. You don't have to lay out any money to get your music business started.

Below, we tackle seven business areas that will help you get your music out there and generate revenue for a cost of \$0. So, grab your recorded music, carve out some time, and let's get started.



RouteNote, a digital aggregator, will put your music into digital stores such as iTunes for free.

### 1 How to get worldwide digital music distribution on iTunes and other digital distributors for \$0

Digital aggregators are companies that handle the relationship between you, the musician, and digital distributors like iTunes. While most aggregators charge an up-front fee, digital aggregators such as RouteNote (routenote.com) will put your music into digital stores like iTunes for free. Instead of charging you up front, RouteNote takes a percentage of any sale you make, on top of the amount the digital distributors like iTunes keep. Even better, if your album starts making consistent sales, RouteNote lets you switch to a subscription fee so you cut out their percentage. This option allows you to find out which songs or albums have enough sales to justify the fee, and after that, you'll get a much higher percentage (and you can even pay the fee with the successful sales, so you won't have to spend anything out of your own wallet.)

### 2 How to get CD and DVD manufacturing, sales, and fulfillment for \$0

One of the bigger expenses for musicians is shelling out money to build an inventory of CDs or DVDs to sell. Today, however, musicians can simply create a free account and upload their music, videos, and cover art to services like CreateSpace (createspace.com) or Lulu (lulu.com) and these services will take

care of the rest. They'll handle manufacturing, take orders from customers, and even ship the product. All you need to do is set the price for the item. When you generate a sale, you'll keep the difference between the price you set and the cost to manufacture and handle the sale. In addition to selling through their site, these services will sell through Amazon as well as give you a sales widget so you can sell the product online through your website or web presences.

Keep in mind that most of these services have affiliate programs, so if you sign up for those, you can make money on the front end

as well as the back end for sending sales to their websites. It doesn't matter that you are linking to your own items—they just want the sales and will reward you for any purchases you generate. Sign up for affiliate programs on every site where you sell your music or merch.

### 3 How to make, sell, and ship CDs/DVDs, t-shirts, merchandise, and more for \$0

Print-on-demand sites like DistrictLines (districtlines.com), SpreadShirt (spreadshirt.com), Zazzle (zazzle.com), and Cafepress (cafepress.com) allow you to create and sell all types of merchandise—t-shirts, wall clocks, mugs, stickers, posters, Christmas ornaments, and more—for free. All you need to do is create a free account, upload an image such as your logo or artist photo, and pick the merchandise you want it to appear on. Once you've got an item you're happy with, these services let you set a price (at or above a minimum amount they've set) and will take it from there. They'll handle the online store, manufacturing, sales, tax, and shipping. There is no money up front and you will make money on every sale. While your margins may be slim, using print-on-demand services let you try out new merchandise designs at no cost and see which ones sell.

Note that the payment terms vary among these stores. Some of them set income minimums before they pay you and may keep the money if you don't reach their minimum



SpreadShirt is one of many free print-on-demand sites.



# Got Everything?

McDSP's award winning plug-ins are available in AAX Native, AAX DSP, and Audio Unit formats. Legacy support for TDM and RTAS formats is available in most plug-ins.

Visit [mcdsp.com](http://mcdsp.com) today to demo the latest and greatest plug-ins including the all new 6020 Ultimate EQ, the AE400 Active EQ and the SPC2000 Serial/Parallel Compressor! McDSP's v5 release includes support for Pro Tools 10 and 11, and is the largest third party developer product line for the AAX Native and AAX DSP formats. McDSP plug-ins are a great addition to Pro Tools, Logic, Garage Band, Digital Performer, Ableton Live, and other DAWs supporting the AAX or AU plug-in formats.



Pro Tools 11

P R O F E S S I O N A L   A U D I O   P L U G - I N S



**If you sign up for affiliate programs, you can make money on the front end as well as the back end for sending sales to websites. It doesn't matter that you are linking to your own items—they just want the sales and will reward you for any purchases you generate.**

in a certain amount of time. Also, the base prices for merch items are wildly different depending on the print-on-demand service. It's well worth your time to shop for the best prices for the items that you plan on selling.

As with tip 2, many of these stores have affiliate programs. Sign up for those so you can make money on both the front and back end.

#### **4 How to get video licensing income for \$0**

Actively trying to get your music used in films and video so it can generate royalties can be time consuming and costly. However, with YouTube, the largest video site in the world, you can collect sync-licensing revenue for free. Doing this lets you get a share of the advertising revenue that your music/video content generates on their site. See our recent article "Monetizing YouTube: Making Money From The Most Popular Music Search Engine In The World," (*Electronic Musician*, October 2013) to learn how to use YouTube's ContentID to make income from your audio and video content.

#### **5 How to get music royalty income for \$0**

Whenever your music is streamed online

through services like Pandora, Last.FM, or other webcasters, U.S. law states you're owed money. Money for your streaming music is collected on behalf of musicians and labels by an organization called SoundExchange (soundexchange.com). Signing up for this organization is free. Once you've registered your sound recordings with them, they'll know who to write a check to if services that report to SoundExchange stream your music. Also, sites such as Last.FM and Reverb Nation have their own royalty programs that you can join for free for when your music is played on their sites. Don't leave this money sitting on the table.

#### **6 How to get the press and media to notice you for \$0**

For the press and media to cover you, they need to discover you. Blogs, podcasts, and the new media that write about music are a great start and well within reach of every musician. To generate awareness, it's as simple as sending emails to those sites telling them about your new release so you can get coverage. That initial new-media coverage gives you the credibility you can use later to reach bigger, more established press and media outlets. But emailing sites directly isn't the only way to reach the media; check out the free newswires that the media scour for news and ideas that you can use. Try sites like Mi2N (mi2n.com), Rock and Metal (RockandMetal.com), and Free

Press Release (Free-Press-Release.com) to help you get your music and message noticed by the press.

#### **7 How to Get Promotion for \$0**

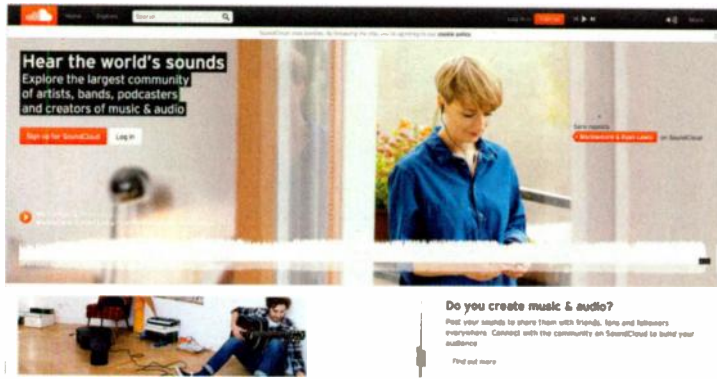
Your music and merchandise won't sell unless you promote it. Thanks to social networking, you can reach fans directly through any number of ways. Sign up for free social sites like Facebook (facebook.com) and Twitter (twitter.com) so you can promote your music and merchandise directly to fans and followers. Create free accounts on video sites like YouTube (youtube.com), Ustream (ustream.tv), or Livestream (livestream.com) so you can use their video services to build an audience. Sign up on audio hosting sites like Soundcloud (soundcloud.com) and Reverbnation (reverbnation.com) as well as gigging calendars and demand sites like Eventful (eventful.com), too. All of these sites help you get your music and merchandise out there, connect directly with fans, and build awareness. They are all free, and signing up just takes a few minutes each.

**Pros and Cons** Although there are plenty of good reasons to choose these free options, there are some downsides as well. The best part is there's very little risk—you can get things rolling right away, generate revenue immediately, and you won't have to spend any money to make it

The screenshot shows the homepage of the Free Press Release website. At the top, there's a navigation bar with links for Home, Why Us, How It Works, Pricing, Video Stories, News Center, Contact, and Business Show. Below the navigation bar is a large banner with a world map and the text "Reach your prospects" and "Whether they're around the world or around the corner." To the left of the map are social media icons for Facebook (4k), LinkedIn (712), Twitter (1,286), and YouTube (1,286). Below the map are four statistics: 800,000 Registered users, 2,000,000 Online press releases, 7,000 Partner websites, and 5,000,000 Visitors per month. At the bottom, there are three testimonials from Eric Howard, Michael Peinboer, and Dr. Sward.

The Free Press Release site can help you get noticed by the media.





Be sure to sign up for Soundcloud and other audio-hosting sites.

happen. After all, a box of t-shirts sitting in your basement is money you've locked up in inventory and can't spend elsewhere. So avoiding that problem while making some money at the same time is a good thing. But because these services require no up-front fees, the margins for their products or services can be very thin. Even though you'll make money on each sale, it may not be much. And if you get very successful, the services will take higher sales percentages, which add up.

Because of this, we recommend using these no-cost options as a low-risk way to start your music business; a free trial to see what actually works in the real world. For instance, using

**We recommend using these no-cost options as a low-risk way to start to your music business; a free trial to see what actually works in the real world.**

on-demand t-shirt options lets you try out a lot of designs at no cost and see which ones fans actually like and buy. Once you know which designs are actually selling, it's not as big a risk to manufacture an inventory with a proven design so you can make a much higher margin on each sale.

Finally, keep in mind that business has only one mark of success: whether it's profitable or not. If you use these techniques, you can create a music business

that is profitable from the very first sale that you make—profits that can fund future opportunities as you grow your music business. ■

*Randy Chertkow and Jason Feehan are authors of The Indie Band Survival Guide (St. Martin's Griffin), now in its second edition.*



Earthworks 521

## No artificial flavors or colors.

Just pure preamp goodness. Free from artificial colors, flavors, noise and distortion, the Earthworks 521 preamp is engineered to deliver the cleanest amplification in your 500 series rack. All of the color from the 521 preamp will come from your microphone, instrument & signal processing, with the 521 only amplifying pure sound, with no fillers.

Whether it's the natural sound of the room or unique sound of a guitar, you'll discover a fresh taste from all your favorites. Clean preamps don't need to be boring when you have instruments with flavor all their own. No distortion (less than .0001%), no noise, no artificial flavors and no artificial coloring. Just 100% clean, pristine Earthworks.



Add a Clean Snack to your Lunchbox.  
Get the facts at [earthworksaudio.com/521](http://earthworksaudio.com/521)

MADE IN USA • 15 YEAR WARRANTY  
[info@earthworksaudio.com](mailto:info@earthworksaudio.com) • [earthworksaudio.com](http://earthworksaudio.com)

**Earthworks®**  
ZDT PREAMPLIFIERS

# Improve Your Mix with Bass EQ

Three equalization techniques sculpt the bottom end to perfection

BY MICHAEL COOPER

STEERING THE bass-frequency band of a mix into good balance with midrange and high frequencies is arguably the most difficult task in music production. Boosting low frequencies—or the instruments that produce them—too much can make a mix sound boomy or muddy. On the other hand, minimizing their contribution to the mix might leave you with a thin, strident sound.

In this article, I'll show you three ways to equalize bass frequencies to attain a perfectly sculpted bottom end. I'll start with treating the bass guitar.

**Shelve and Roll Off** If the bass guitar needs to thunder more, try boosting its bass frequencies using low-shelving EQ. Keep in mind that the fundamental frequencies for virtually all notes on a four-string electric bass guitar lie in the bass-frequency band. Boosting with a bell-curve filter in lieu of shelving EQ would result in a peak sloping downward on both sides; that would boost some bass frequencies more than others, causing certain notes to pop out of your mix and others to be too quiet. A shelving filter, on the other hand, will boost all notes more or less equally below the frequency where its slope levels off.

The only problem is that the shelving filter's effect will also extend below where it's musically useful, causing rumble and eating up valuable headroom. To prevent the attack of every bass note from sounding like concrete



**Fig. 1.** Shelving and highpass filters are used at once in the Waves H-EQ Hybrid Equalizer plug-in to shape a bass guitar's sound.

pylons falling off a truck, activate a highpass filter (HPF) on the equalizer's lowest band and roll off its response below roughly 35 to 40Hz (see Fig. 1). Adjusted correctly, the shelving boost will moderate the HPF's roll-off around its corner frequency, preventing low notes on the bass guitar from being attenuated. Be careful, though, when using an HPF modeled on a classic analog filter. Any overshoot (resonant boost) around 40Hz will boost notes on the bass guitar's bottom string. A little extra boost there might sound good (or not); too much will make your mix sound uneven at times. Often, a linear digital algorithm is the best tool for highpass filtering on bass guitar.

**Shift It** Bass-shift filters and Pultec-style equalizers are fantastic tools for shaping a kick-drum track. The bass-shift filter in the Brainworx bx\_digital V2 equalizer plug-in can be used to boost lower-bass frequencies while simultaneously cutting the adjacent upper-bass and lower-midrange bands (see Fig. 2). This prevents the reinforced kick drum from sounding too muddy and masking other bottom-dwelling elements of your mix. By clearing out a portion of the kick's bass and midrange spectra—even as it adds punch and girth—bass-shift EQ gives the bass guitar room to speak in your mix.

Pultec-style passive equalizers—and the plug-ins that emulate them—create much the same effect. Simultaneously boosting and

cutting an identical amount and at the same center frequency with Pultec filters doesn't result in zero net gain. Because the two filter circuits have different slopes and bandwidths, you end up instead with a bass-shift response curve. The PSP NobleQ plug-in uses filters loosely based on Pultec curves. Incredibly inexpensive, NobleQ nevertheless sounds fantastic. Try using a little more boost than cut



**Fig. 2.** Bass-shift filtering is used in the Brainworx bx\_digital V2 equalizer plug-in to simultaneously add punch and clarity to a kick drum track.



**Fig. 3.** The speed switch in Slate Digital's creamy-sounding Virtual Tape Machines plug-in can be used at different settings on various instruments to preserve track separation while warming up a mix.

on the same bass-frequency setting to bless kick-drum tracks with thunderous lows and Windex-clear mids.

**Change Speed** While not exactly equalizers, plug-ins that emulate analog tape decks can be used to bolster bass and thicken low-midrange frequencies—and do so in one particular way

that the imitated hardware can't.

Tape machines produce what is known as a head bump: a boost in frequency response that occurs in either the low or middle bass band depending on the speed of the tape machine's transport. A tape recorder's transport operating at 30 ips (inches per second) produces a head bump one octave higher than one operating

at 15 ips. You can't change the speed of a tape recorder to move the head bump (boosting different bass frequencies) without also pitch-shifting tracks already recorded—but you can by using a tape-emulation plug-in.

The Slate Digital Virtual Tape Machines (VTM) plug-in is the most authentic and best-sounding tape-emulation plug-in available today (see Fig. 3). By setting VTM to 15 ips on a bass track and 30 ips on electric guitar, you set apart the head bumps imparted to each track, creating better separation in your mix. The bass and midrange bands still get that thick, creamy analog sound, but the instruments' composite sound remains open. This is just another example of how selective reinforcement and attenuation of bass frequencies, on a track-by-track basis, can elevate your mix to perfection. ■

*Michael Cooper is a recording, mix, mastering, and post-production engineer, a contributing editor for Mix magazine, and owner of Michael Cooper Recording in Sisters, Oregon ([www.myspace.com/michaelcooperrecording](http://www.myspace.com/michaelcooperrecording)).*



Booking gigs can be time-consuming, overwhelming, and even demoralizing. But it's also a necessary part of the business of being a band.

## Booking Your Own Gigs

DIY tips from bands and bookers

BY OWEN O'MALLEY

EVERY BAND starts off as a DIY concern. You write your own songs, you record your own demos, you pick out your own stage garb, and—perhaps least glamorously—you book your own shows. Booking gigs is usually the first responsibility that bands would happily hand off to someone else; it can be time-consuming, overwhelming, and even demoralizing. But it's also a necessary part of the business of being a band. And when you're starting out, if you don't do it, no one will.

The good news is that plenty of bands have found success booking themselves. We spoke with a few musicians (and one musician who

pulls double-duty as a talent buyer) to find out how they've kept themselves on the road and in the good graces of promoters. Like most aspects of being in a band, learning how to book effectively can feel like trial-by-fire. Heed the advice here and ease that burning sensation. As Vincent Joseph from Model Stranger ([modelstranger.com](http://modelstranger.com)) asserts, "Booking is not fun but it is necessary work that, if done right, pays off—literally."

**First Impressions Last** Every first contact with a venue is like a job interview, or a first date. Getting to the next step in a booking conversation has almost everything to do with the first impression you make. As Hemmingbirds ([hemmingbirds.com](http://hemmingbirds.com)) frontman Yoo Soo Kim puts it, "as 'sell-out' as it sounds, when you book, you are a salesperson and your product is your band; if you look put together, the venue will see it as less of a risk to invest in you." At the very least, this means providing an easy way to listen to your music and see who you are. An online EPK is an effective way to present all the most pertinent information about your band to an



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**Do Their Work for Them** Promoters and talent buyers receive hundreds of emails weekly, if not daily. Even if it seems to you like they should be responsible for checking their own calendar and pairing you with appropriate bands, most simply don’t have the bandwidth. By doing this basic legwork yourself, not only will you look like a serious band, but you’re making it easier for the promoter to do his or her job: Book a show.

**Spamming a promoter with an email every hour is a great way to get blacklisted from ever playing his or her venue.**

In addition to having played in local and touring bands, Chicago musician Dave Stach also dabbles as a talent buyer for local promoter House Call Entertainment: “I’ve gotten emails that say, ‘Hey, I’d like to play your venue sometime, sincerely, Tom,’” he says. “That gets us nowhere; tell me exactly what you are looking for—keep it simple and give all the details up front so we don’t have to go back and ask any questions.”

Part of this effort means helping the promoter assemble a bill—which means networking. “The greatest success for me has been just trying to obtain as many band contacts as possible,” says Kim, “and when you name-drop to a venue that you reached out to all these locals for a date, they’ll be more inclined to pursue your hold.” Patrick Ogle, who’s toured both solo and as the frontman for Thanatos ([thanatos.biz](http://thanatos.biz)), concurs, saying, “try to get several bands together and work on booking shows as a group; coming to a venue with a full bill can be useful.”

More than one of the musicians we talked to suggested signing up for IndieOnTheMove.com ([indieonthemove.com](http://indieonthemove.com)), an invaluable resource for people on both sides of the booking effort. The website provide a list of all U.S. venues that’s searchable by location and sortable by capacity, and allows bands and promoters to post show and touring avail. And it’s free to sign up.

**Be Persistent, Not Annoying** Sending one email and throwing your hands up when you don’t get a response is no way to book a show. On the other hand, spamming a promoter with an email every hour is a great way to get blacklisted from ever playing his or her venue. “Find the right balance between friendly reminders and pestering,” says Maimone, adding, “every promoter has a different tolerance—if you’re getting three-word replies from someone, keep it short on your end, too.” Joseph believes it’s a boon to go beyond mere electronic communication. “Given the current

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email-driven world we live in now, I have found that a phone call goes a long way," he says. In his capacity as a buyer, Stach echos this sentiment, stating, "I still believe a phone call is the quickest and most effective way to book a show; we could go back and forth with multiple emails, or we could get it all out of the way in one five-minute phone call."

However—and this is a big “however”—pay special attention to venue booking instructions, and follow them to the letter or risk immediate rejection. For example, Cake Shop in New York City (cake-shop.com) specifically requests “No calls, please!” If a venue provides guidelines and it’s obvious that you’ve ignored them, that’s a great reason for them to ignore you, too.

**The more you think of touring as a business, and each promoter as a potential partner, the more success you’ll find in getting into good venues—both at home and out of town.**

**Uphold Your End of the Bargain** It’s one thing to land your first gig at a venue; your next move determines whether you’ll be coming back. The work of ensuring you get a second (or third, or fourth) show begins once you’ve secured the initial booking. “Send posters/fliers to the venue right away so they have time to put them up; promptly announce shows on your website and make sure the venue puts them on its site, too; follow up to make sure the venue got the posters and ask if it has a media list so you can try getting local coverage for your show,” advises Maimone. And of course, put on the best show that you can.

If your first show does lead to more gigs, make sure you don’t oversaturate your market. “Sure, playing Chicago every week would be a gas . . . until you realize your crowd is

quickly dwindling,” says Joseph. “Space out your shows so that you aren’t playing the same market without 6–8 weeks between shows, at least.” It’s a simple economic principle that increased scarcity breeds increased demand. The inverse is also true.

The more you think of touring as a business, and each promoter as a potential partner, the more success you’ll find in getting

into good venues—both at home and out of town. Offer something of value, exhibit due diligence, and invest in a long-term relationship with a venue and you’ll start to feel that most coveted of entrepreneurial sensations: momentum. Good luck! ■

*Owen O’Malley is a musician and freelance writer living in Chicago.*

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# Granular Synthesis 101

Enhance your sound-design skills with these creative techniques

BY JIM AIKIN

MUSICIANS WHO use synthesizers have an amazing smorgasbord of sound design tools to work with: analog, FM, sample playback, physical modeling, wave sequencing, and other technologies are all found in a variety of instruments. Granular synthesis is not the most popular technique, but it's a terrific resource for producing floating clouds of sound, rich animated pads and drones, pitch shifting, madly stuttering vocals, and glitch textures.

Several software instruments, including Camel Audio Alchemy (see Figure 1) and Native Instruments Reaktor (see Figure 2), have excellent granular synthesis implementations. Using experimental freeware such as Csound and Pd, you can take the granular experience even further. A few granular-based plug-in effects processors are also available.



**Fig. 1.** Each of Camel Audio Alchemy's four oscillators can perform granular synthesis. The relevant parameters for granular control are the Position and Stretch knobs in the top row; the Size, Dens (density), RTIME (random time amount), and RPAN (random panning amount) knobs in the bottom row; and the Window drop-down.

**What's in a Grain?** In granular synthesis, the sound you hear is built up out of dozens, hundreds, or thousands of short sonic elements called grains. In most granular sounds, the listener doesn't perceive the grains separately; they tumble on top of each other to make a smooth texture, not unlike how a beach is made up of grains of sand. (Using larger grains and separating them from one another is also a useful technique.)

In the early days, primitive forms of granular synthesis were accomplished using analog tape decks, but these days, all granular synthesis is digital. The source material for granular can be any digitized sound, from a sine wave to a recording of people speaking. Sampled sounds generally produce richer and more evocative results than simple waveforms.

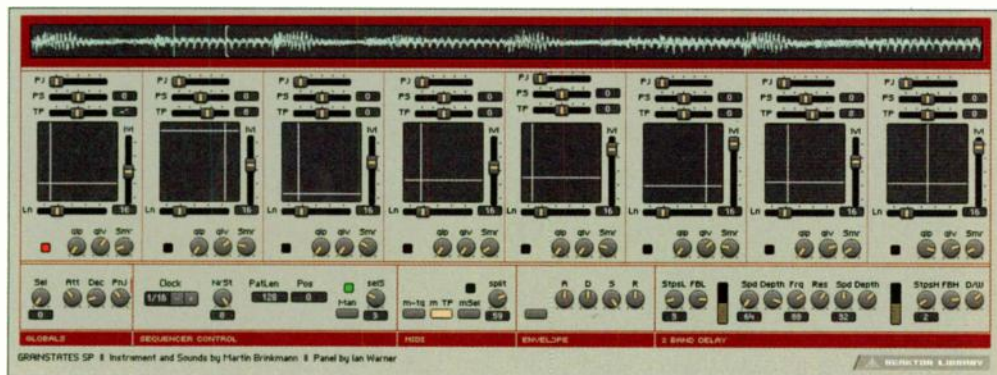
If you're using a spoken word or instrument phrase sample as a source, you should truncate the start and end so that the whole sample contains sound. Compressing and normalizing the source file would also be a good idea, so that the dynamic level is fairly uniform.

It would be impractical to try to specify the characteristics of each grain individually, so a granular synth will give you higher-level macro parameters. Using these parameters, you can dial in the details of all of the grains at once. By modulating one or more of the parameters while the sound is being generated, you can easily conjure up a granular texture that changes over time.

**Dimensions of Control** The parameters you'll be able to control in a granular synthesis engine include the source sound material to be used; the type of amplitude envelope the grains will have; the lengths, amplitudes, pitches, and pan positions of the grains; the playback start point for the individual grains within the source sound file; and the density of the granular texture—that is, how frequently new grains start sounding.

In some instruments, the amplitude, pitch, panning, and start point can be varied randomly if desired. The amount of randomness is also an important parameter. For instance, by starting with a tone that has no pitch randomness and then increasing the pitch randomness, you can create a pitched pad tone that evaporates into a cloud of noise.

With a sampled source sound, you will probably be able to control the start point of the grain within the sample. If the sample varies,



**Fig. 2.** Grainstates SP, one of the instruments bundled in Native Instruments Reaktor, can load a sample file and sequence up to eight different granular "snapshots," each of which provides control over the pitch jitter, pitch shift, length, and so on. The three knobs along the bottom of each snapshot control the crossfades between settings as Grainstates moves from one snapshot to the next.



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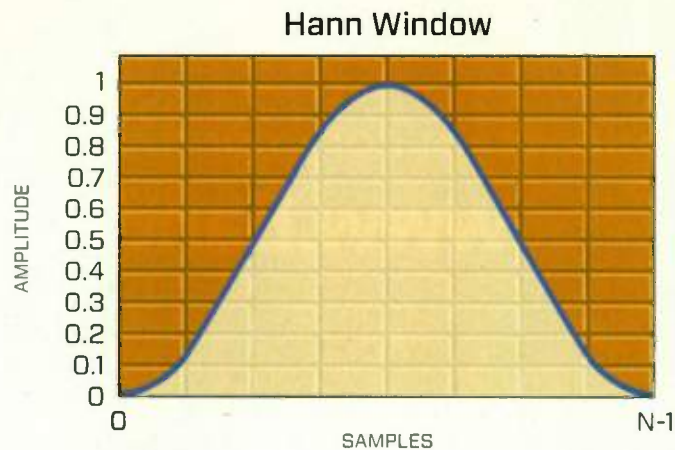
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moving the start point (forward or backward) from one grain to the next will cause the granular tone to evolve. This technique is extremely useful. If the start point moves through the sample more slowly than the sample was recorded, the sample will be time-stretched. When the start point is stationary, a sample becomes essentially a bank of static waveforms that can be used in subtractive synthesis.



**Fig. 3.** The Hann window is one of several mathematically derived window types used as amplitude envelopes for individual grains.



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The envelopes of the grains are often specified using a parameter called the window type (see Figure 3). Windows with squared-up rise and fall times will add noisy high frequencies to the tone; windows with gradual rise and fall times will give you a smoother tone. In some implementations, such as when using Csound's *granule* opcode, you may be able to control the rise and fall times separately.

The density and grain length parameters work together to determine whether individual grains can be heard in a sparse texture, or whether the grains overlap, blending together into a smooth tone. When the grains overlap, the overall sound will be louder, and you may also hear phase cancellations as the waveforms of the overlapping grains blend together.

By moving the start points of successive grains through the sampled source material at something like real time (the speed at which the source was recorded) while shifting the pitches of individual grains up or down, granular synthesis can perform a type of pitch-shifting.

**Ear Food** To hear a few examples of granular synthesis tones, visit [emusician.com/november2013](http://emusician.com/november2013). The ideas in these sound clips may be more useful for experimental music than for mainstream pop styles, but pop producers are always looking for fresh sounds, and granular certainly does fresh. ■

*Jim Aikin has written hundreds of product reviews and tutorials for Electronic Musician and other magazines over the course of more than 30 years. His books on music technology include Power Tools for Synthesizer Programming (Hal Leonard Publishing) and Csound Power! (Cengage Learning).*



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# Propellerhead Reason

## Add rack effects to Kong percussion

BY JIM AIKIN

### OBJECTIVE

Enhance the sounds in Kong with effects processing through rack devices.

### BACKGROUND

The Kong Drum Designer module in Reason has its own suite of built-in mini-effects. It also gives you three different ways to add effects using other Reason modules. (The signal routings are shown on pages 780-782 of the operation manual PDF.) First, Kong has two aux sends. Second, it has rear-panel patch points between its Bus FX and Master FX, where another module can be inserted. It also has 14 individual audio outputs, configured as seven stereo pairs. Any of Kong's 16 percussion pads can be routed to an output pair. This is the most flexible way to add effects to Kong sounds, so let's look at the details.

### TIPS

■ Step 1: The Combinator is not strictly needed; start by creating a Line Mixer 6:2, which will automatically create a console input strip and connect the Line Mixer to it. But a Combinator is very useful both for keeping your rack organized and for routing modulation signals to the parameters of devices.

■ Step 3: If you need to process more than seven pads in a single Kong, pan one pad hard left and another hard right to use the stereo output pairs as mono outputs.

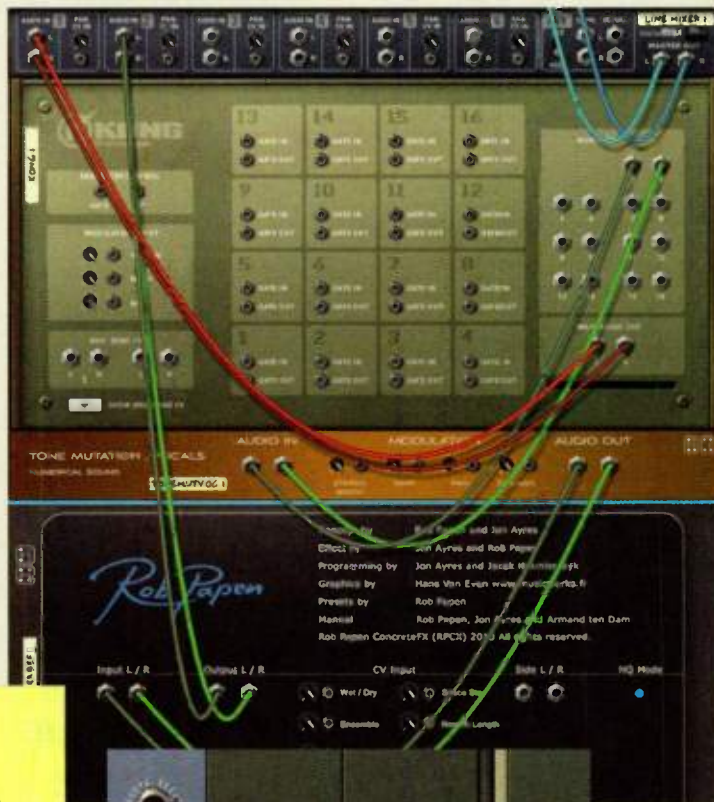
■ Step 3: The aux sends on a Mixer 14:2 can be used to route several Kong pads through the same set of FX, if more than Kong's two aux sends are needed.



**Step 1** Create a Combinator. Create a Line Mixer 6:2 and then a Kong inside the Combinator.



**Step 2** In the Combinator, hold the shift key (to prevent automatic signal routing) and create the effects you want to apply to a specific drum sound.



**Step 3** On the rear panel, connect Kong outputs 3 and 4 to the input of the first effect. If necessary, continue patching effects in a chain. Connect the output of the last effect in the chain to an input of the mixer.



**Step 4** Click on the pad that features the sound you want to process, to select it. Open up the drum-editor panel and select outputs 3 and 4 from the drop-down menu.



**Step 5** Most Reason FX modules are created with the wet/dry knob at 100% wet, so adjust the wet/dry mix (and other parameters) to taste.

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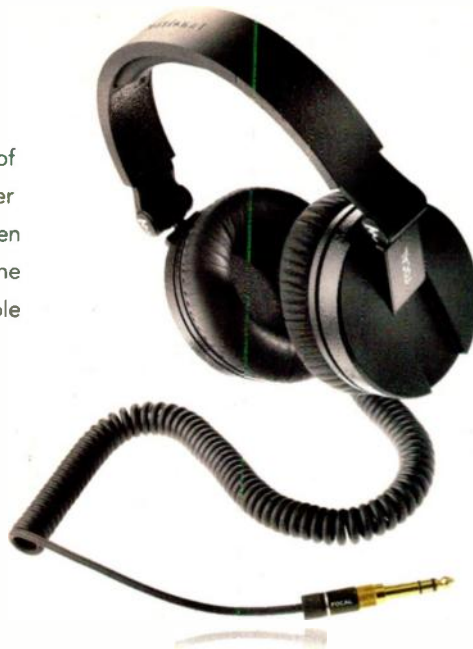
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BY CRAIG ANDERTON



# 1

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## Five Reasons Why Cassettes Were the Best Gosh-Darn Playback Medium Ever!

Let's celebrate the technology that featured sound quality that was exceeded only by its mechanical perfection

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