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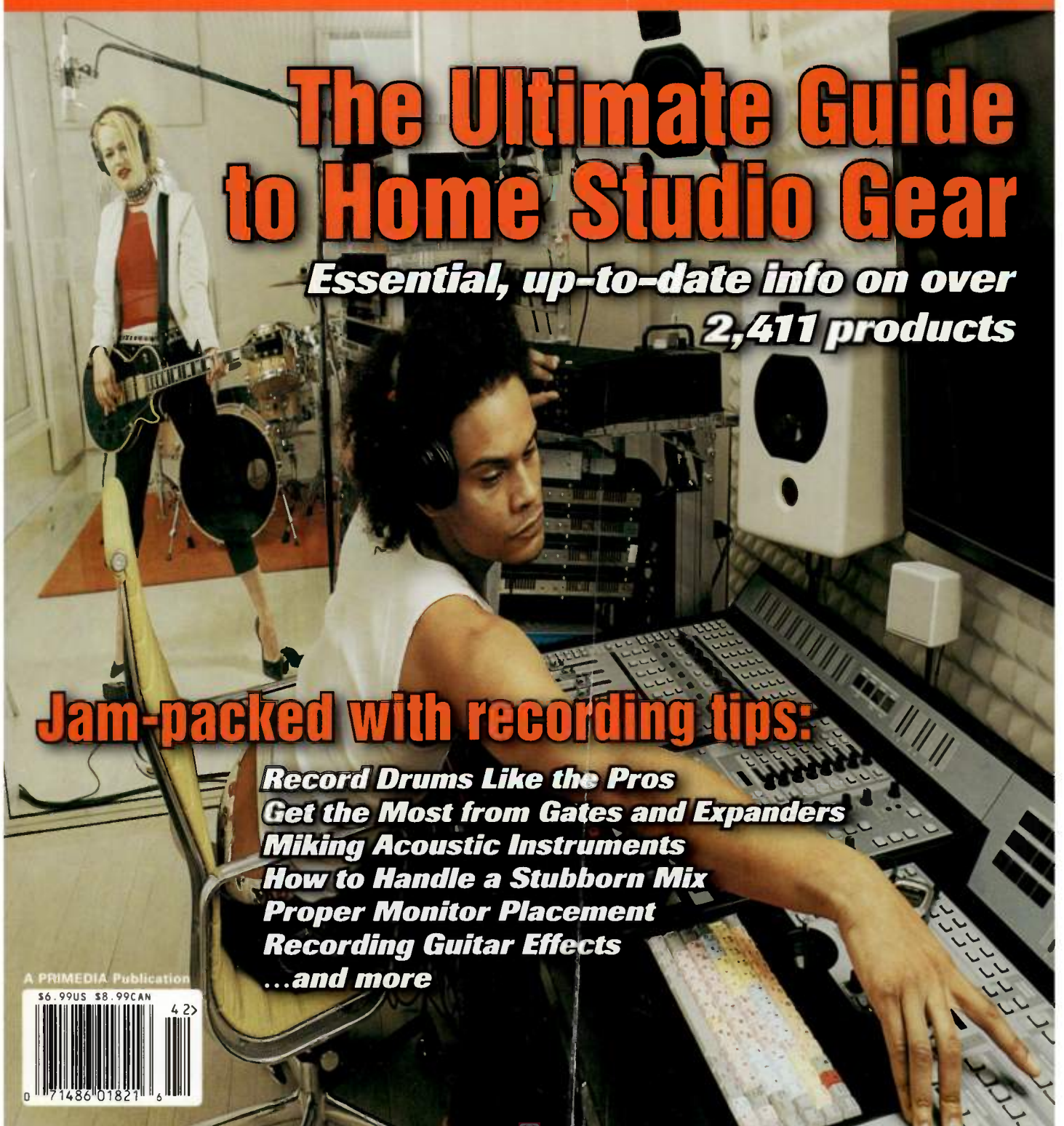

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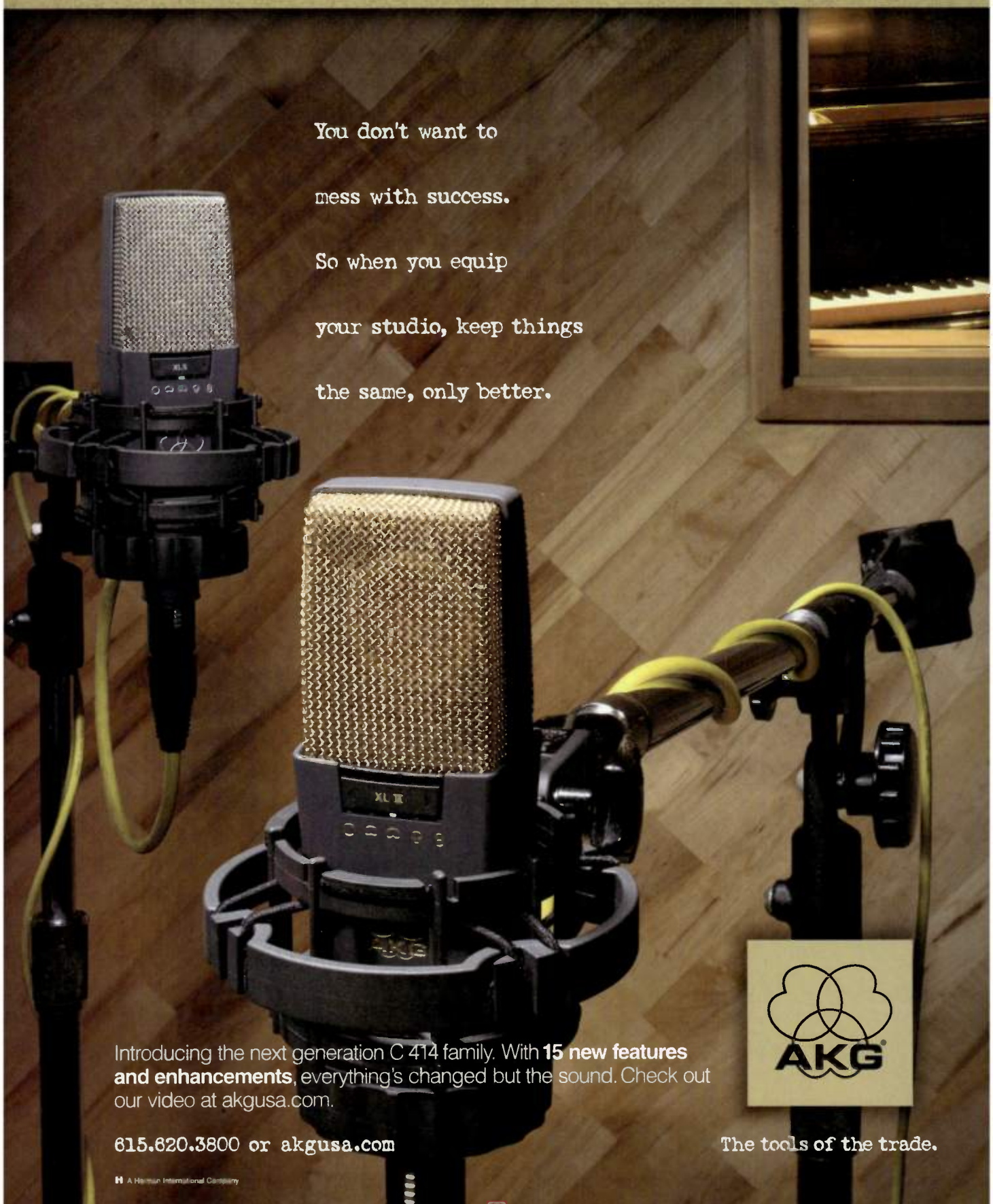

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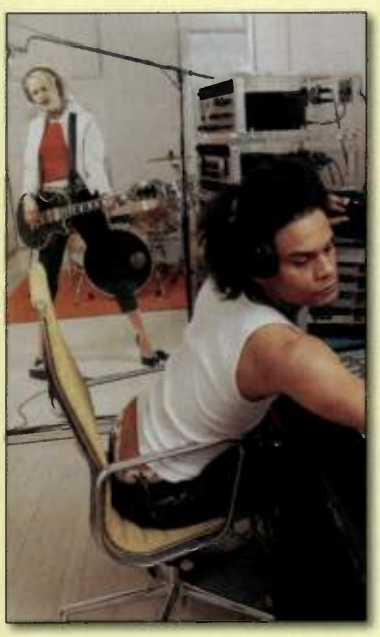

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PRODUCTION NOTES

When you have a proven winner, sometimes the best strategy is to keep it rolling and just make necessary updates. At other times, however, it's better to make changes in order to keep the product fresh. We considered both approaches when we started planning our eighth annual edition of the *Personal Studio Buyer's Guide*, and ultimately we decided to use each one.

We've had eight years to get the specification tables right, and although we might well find room for change in the future, this time we opted to deliver more of the same. We updated the information, adding new products and deleting discontinued ones, but you'll find the same product categories, the same specifications, and the same layouts as in the 2004 edition.

In contrast, we made significant changes to the articles. This was partly to keep the guide fresh, but another reason is that the 2005 *Personal Studio Buyer's Guide* is the 13th issue of *Electronic Musician*, not a supplement, as it was last year. So we wanted to give you a greater variety of stories.

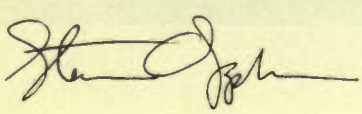
For instance, last year, we had two long interview stories and five shorter "Tips & Tech" items. It was all good material, but we wanted you to have more tips. So for the 2005 edition, we put together nine "Tips & Tech" pieces and two full features.

We jammed in as many good articles as we could, until we ran out of time and pages. The result is a buyer's guide that is also an article-rich issue of *Electronic Musician*. Our only problem was that after we shoehorned in all that editorial we still had several specs tables that wouldn't fit in the magazine, and we had pages of detailed contact information for each manufacturer whose products appear in the tables. We hate waste and we love our readers, so we put it all online, and you can find it on our special PSBG 2005 microsite within EM's Web site (www.emusician.com). The tables are downloadable PDF files, and they're available for a great price: free!

Finally, I want to give special credit to two editors who made all this possible. Tom Fulton is a buyers' guide wizard, and he has put together all of the PSBG and *Computer Music Buyer's Guide* charts for the past several years. Fulton knows how to get all the right information from the manufacturers, include as many appropriate products as possible, ensure a high level of accuracy in two-dozen charts filled with detailed specifications, and bring it all home on time.

EM senior editor Mike Levine took over the job of finding, selecting, and polishing the features and tips. I've done that job for years, so I know it isn't easy, but Levine made it look like a walk in the park.

I hope you enjoy this special issue of *Electronic Musician*. I am confident that you will find it useful now as well as throughout the year.



Editor in Chief

Electronic Musician

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Editor in Chief
– Steve Oppenheimer, soppenheimer@primediabusiness.com
Managing Editor
– Patricia Hammond, phammond@primediabusiness.com
Associate Editor, Tables
– Tom Fulton
Assistant Editor
– Matt Gallagher, mgallagher@primediabusiness.com
Web Administrator
– Dan Cross

Art Director
– Linda Gough
Senior Art Director
– Dmitry Panich, dpanich@primediabusiness.com
Associate Art Director
– Mike Cruz, mcruz@primediabusiness.com
Informational Graphics
– Chuck Dahmer

Senior Vice President – Entertainment Division
– Peter May, pmay@primediabusiness.com
Administrative Assistant
– Julie Birum, jbirum@primediabusiness.com
Publisher
– Dave Reik, dreik@primediabusiness.com
Associate Publisher
– Joe Perry, jperry@primediabusiness.com
East Coast Advertising Manager
– Jeff Donnenwerth, jdonnenwerth@primediabusiness.com
Northwest/Midwest Advertising Associate
– Greg Sutton, gsutton@primediabusiness.com
Southwest Advertising Manager
– Mari Deetz, mdeetz@primediabusiness.com
Sales Assistant
– Anthony Gordon, agordon@primediabusiness.com
Marketing Director
– Christen Pocock, cpocock@primediabusiness.com
Marketing Manager
– Angela Muller Rehm, arehm@primediabusiness.com
Marketing Trade Show Coordinator
– Megan Koehn, mkoehn@primediabusiness.com

Classifieds/Marketplace Advertising Director
– Robin Boyce-Trubitt, rboyce@primediabusiness.com
West Coast Classified Sales Associate
– Kevin Blackford, kblackford@primediabusiness.com
East Coast Classified Sales Associate
– Jason Smith, jasmith@primediabusiness.com
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– Mary Mitchell, mmitchell@primediabusiness.com

Advertising Production Coordinator
– Jennifer Hall, jhall@primediabusiness.com

Group Audience Marketing Director
– Philip Semler, psemler@primediabusiness.com
Audience Marketing Managers
– Craig Diamantine, cdiamantine@primediabusiness.com
– Jef Linson, jlinson@primediabusiness.com

Director of Human Resources
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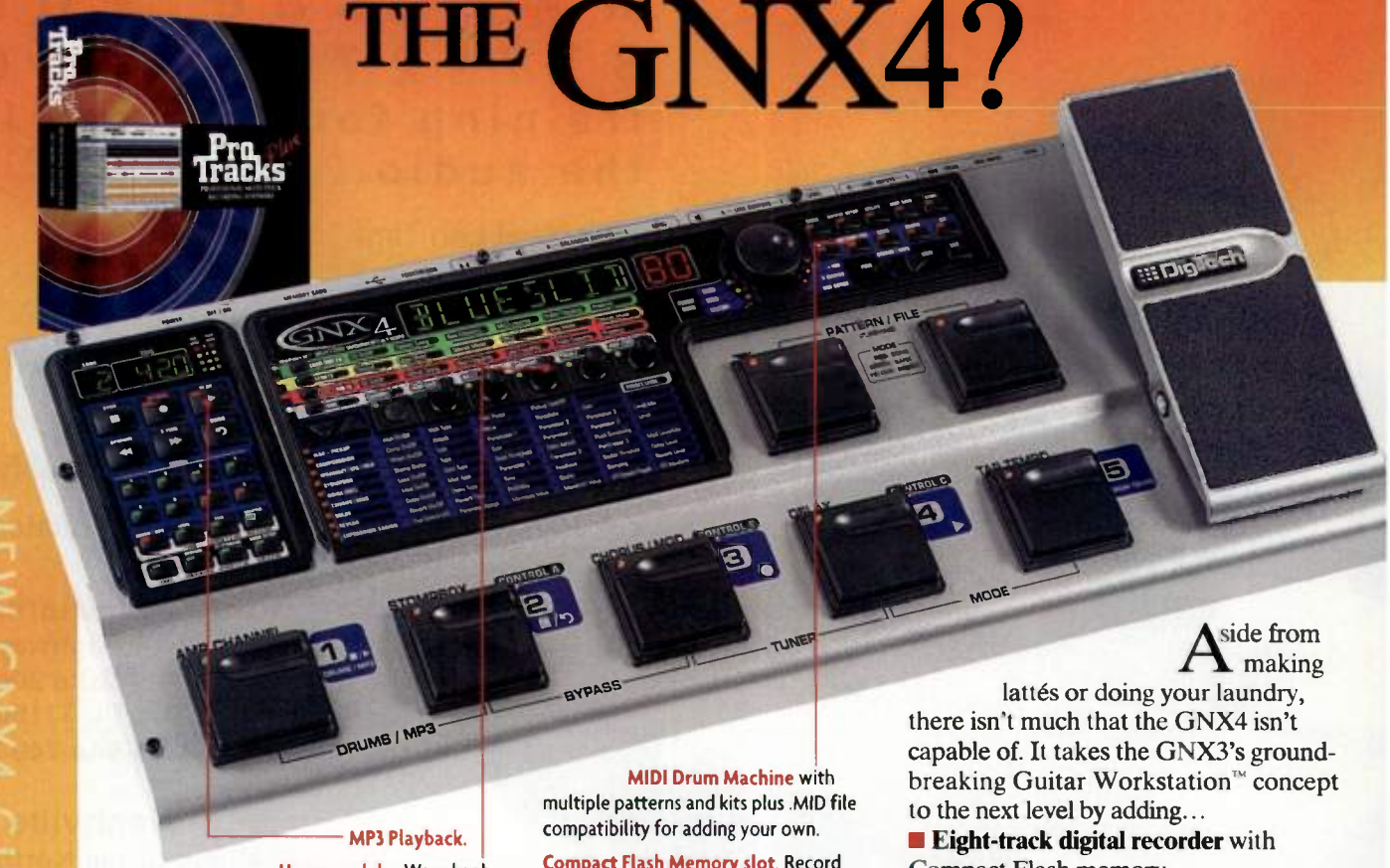

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The Big Bang

Three engineers give their tips on recording drums.

By Michael Cooper

Drum-recording techniques have undergone dramatic changes over the years, in part because of the options afforded by virtually unlimited track counts in modern DAWs. Long gone are the days of recording traps and cymbals to four tracks. In addition to using a stereo pair of overheads, most engineers like to mic each and every piece of the trap set with a separate mic to have the greatest control over levels at mixdown. But beyond that basic foundation, all bets are off. In the never-ending quest for new drum sounds, today's leading engineers are combining adventurous miking and signal-processing techniques with the tried-and-true.

For this story, three top-drawer engineers—David Bianco, Ed Seay, and David Thoener—were interviewed about their approaches to recording drums. (For a look at the interviewees' credits, see "Bad Boys of Bang.") These pros offered a wide range of cool and often opposing recording techniques that they are happy to share. Yet, they all emphatically agreed that the key to slammin' drum tracks starts with a great-sounding source.

Go to the Source

"Truth be known," Bianco says, "the key to the best drum sounds is great drums that are well-tuned and played by pros."

Thoener concurs. "The most important things in getting a great drum sound," he says, "are tuning and technique. Tuning is absolutely the most important element. You can have a great drummer, but if the drums are not tuned properly, they're not gonna sound good. You can take the same exact kit and have a person who does drum tuning for a profession come in and tune it, and you won't believe it was the same kit [you started with]. It's a combination of

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changing heads, [adjusting the] tension, and tuning the bottom head against the top head." He says that once that's done properly, "the toms, especially, just ring out and sound amazing."

Seay recalls the exact moment in his long career when he realized how critical it is for the source to sound great. He was assisting for engineer Cal Harris on a Commodores session in 1981 (recording the album *In the Pocket* for Motown) when he had "a real moment of clarity." Seay describes it like this: "Harris pushes up the kick drum mic's fader and, 'wow,' that sounds great right off the bat! And on the snare drum, damn! He barely touched the EQ! I thought, 'No wonder these records sound so good. They've come in with great-sounding instruments. Duh!' Even though I knew that the sound has to be great at the source, I didn't know how bad the sources I'd been given [in the past] were until I heard professionals. I'd been working with a lot of road bands, live groups, and rock groups with ragtag gear. Now, it's like, 'Boy, look at how much better my engineering just got today when all these good people came in.'"

Ed Seay

Mano a Mono

Each of the engineers interviewed for this article has a different approach to miking drums. Bianco shoots for a very cohesive effect, where the individual pieces of the kit don't sound separate from one another. To achieve this effect, he always begins with "a mono microphone in front of the drum kit, placed where it will get the most complete picture of the drums: an equal amount of kick and snare, and just enough cymbals to where it's not overdoing it. I add some cardioid mics on the left and right to that," he says. "Then I fill it in with [separate mics on] the other drums."

Bianco likes to place a kick drum mic "maybe four to six inches off the beater and pointed right at it." He'll often take the front head completely off of the kick, though he notes that it can sometimes impart flattering resonance if it's left on and tuned a half-step higher than the pedal-side head.

Bianco often likes to experiment with using a second "crazy" mic on the kick drum. "Sometimes, I put an additional condenser microphone on the pedal side of the kick drum and squash the heck out of it with as inexpensive of a compressor as I can get," he says with a laugh. "That gives you a really crazy, almost gated-reverb kind of sound. It adds size to the kick drum and serves as a snare under-mic, as well. In fact, I've been using a pedal-side kick mic more often than an underneath snare mic. I'll go in on the hi-hat side with a U87 and place the mic two inches off the beater-side head, pointed right at it. I'll flip the mic's phase and use a dbx 160x or something else on it.

David Bianco

"On its own, it sounds crazy, but mixed in, it gives the kick drum a lot more low-end punch. If you do it right, it almost sounds like there's a lower octave to the kick drum. I find it sounds more effective than using an outside kick drum mic [on the front head]. For bands that are trying to be more like Beck or the Beastie Boys, it's a wild-sounding drum sound on its own. But, I've also run it through a [Line 6] Pod or some kind of amplifier to get a great drum loop sound. It's astounding." To keep his options open at mixdown, Bianco prints the beater-side mic's signal to a separate track.

Thoener takes a decidedly different approach to miking a kick drum. He typically aims at getting a natural sound, and one that has more low end than beater click. "I place an [AKG] D112 flush with the front head of the kick drum," Thoener notes. "The mic would be touching the head if the hole wasn't there. Then, I'll mess with the angle to find the sweet spot."

Thoener will often build a two- to three-foot-long tunnel in front of the kick drum by draping a heavy packing blanket over two flanking mic stands. "I'll put a Neumann U47 inside the tunnel, about two feet back from the front head. I'll adjust [the U47's mic height to be somewhere] between the middle of the drum and the floor. That mic picks up a lot of bottom that you don't get from the closer mic." To get even more low end, Thoener will set up the drums on a riser whenever possible, thus isolating the kit from the damping effect of the studio's floor.

Seay usually avoids miking the kick drum with two mics because of the phase cancellations that can result when the two signals are combined. When he does use two mics, he'll align the two signals so that their waveform spikes line up in Pro Tools. But most of the time, he'll simply place one mic just inside the hole in the kick's front head and adjust the mic's angle to get the sound he's after. The Audio-Technica ATM25 and Neumann U47 FET are his favorite mics to record kick drum.

My Hi-Hat's Off to You

When he is putting a microphone on the snare drum, Thoener always asks the drummer to move the hi-hat as far over to his or her left as possible while still

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playing comfortably. This allows Thoener to place a Shure SM57 on the snare drum so that the mic's null point is directly facing the hi-hat. "I try to angle my snare mic underneath the hi-hat, but place it about two fingers' [width] in height above the [perimeter] of the shell," he explains. "That way, I'm going to get some air off of the snare drum. I try to never choke on any of my microphones. If you place the mics too close to the source, you get too much proximity effect."

Thoener typically places two SM57s on snare, one on the top and the other on the bottom of the drum. He usually flips the phase of the bottom mic's signal to align it with the top mic's.

Thoener recalls the days when the total tracks available for recording drums were meager, usually forcing him to use only one mic on the top of the snare drum. To compensate at mixdown, he would re-excite the snares by feeding the pre-recorded snare track to an Auratone speaker aimed at the live drum. For isolation, both the speaker and snare drum would be placed out in the studio. Thoener would turn the snare drum upside down and suspend it off of the floor between stacks of books. Then, he would place the Auratone underneath the snare and on the floor so that it was facing up at the top head of the drum. Finally, he'd mike up the snares, which would rattle whenever the Auratone would voice the pre-recorded snare hits.

Of course, one person's pleasure is another one's pain. Seay never mikes the bottom of the snare drum. "I've played with that," he says, "and I just don't love it. It never sounds like a big improvement to me. It's not the way my ear hears the snare drum out in the room."

Ground Control to Major Toms

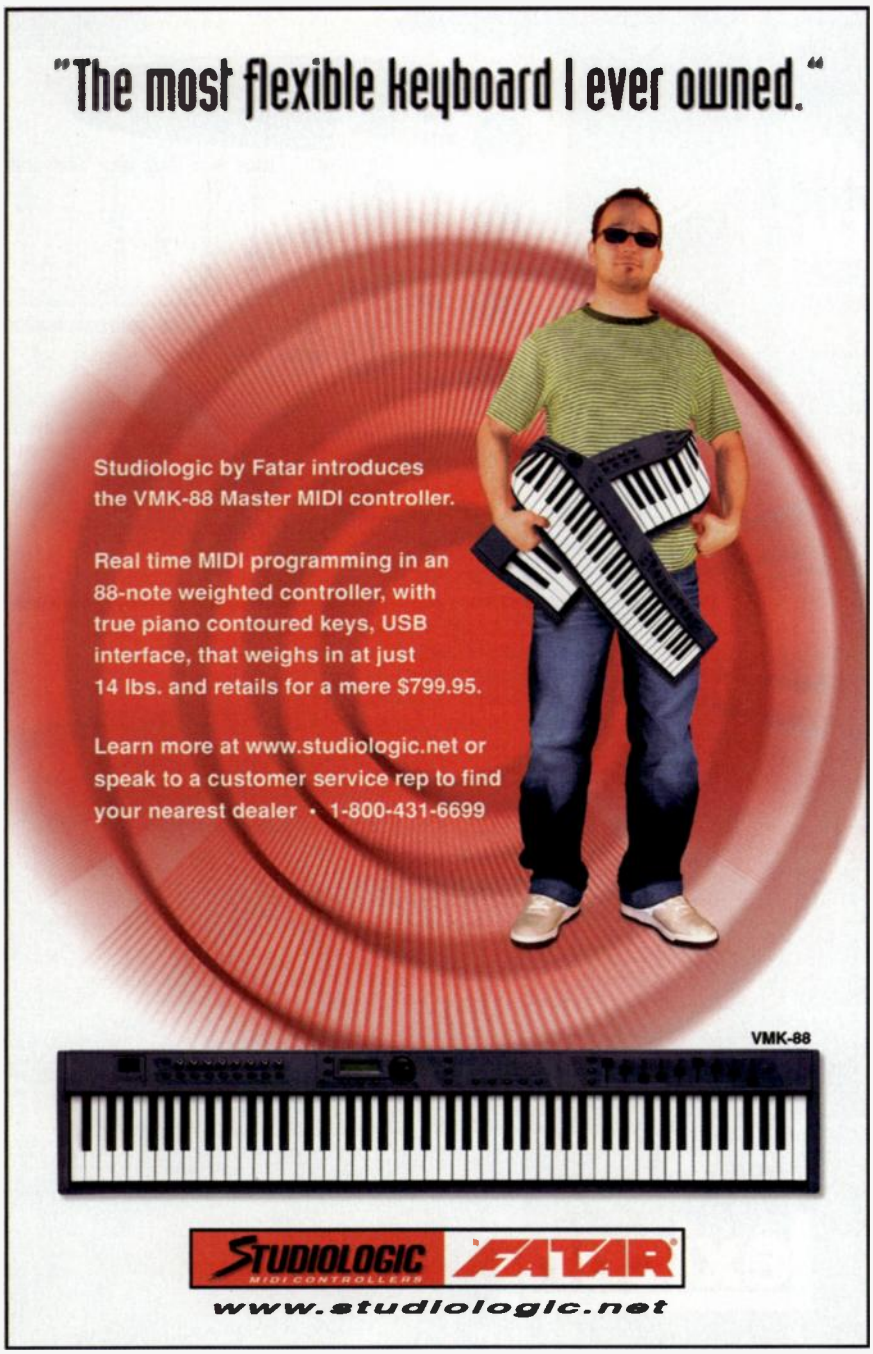
All three of these engineers generally prefer to record each tom with a separate mic placed on the top side of the drum only. In rare instances where Thoener feels he needs more bottom from a floor tom, he'll also place a Sennheiser 421 on the bottom head of that drum. "I'll start with a 421, and if that's not working, I'll switch to a U87," Thoener says. He cautions that the bottom mic should be pointed in a way so that it rejects the sound of the other drums.

Seay very rarely mics the bottom of the toms. "But every now and then, I do," he admits. "I think that it provides a very neat perspective. It adds a depth and body to the sound that you can't get any other way."

As for topside tom mics, Thoener likes to use 421s with one exception: Where a drummer has a few "bongos," or very small toms, in addition to the standard-sized rack toms, he'll place a sole SM57 across all of the bongos.

Bianco also likes using 421s on toms. "I try to mic toms from as far away as I can," he notes, "so I get as much ring [as possible] and not just attack. Usually, I end up with the mic five-to-seven inches away and pointed toward the center of the drum."

A potential drawback to such a setup is



that the tom mics may pick up excessive cymbal bleed. Bianco offers a creative solution for both cymbal and hi-hat bleed: "I'll build a cardboard hood for snare and tom mics. "I'll tape the hood to the microphone's body or to the rim of the drum to make the mic reject the cymbals and hi-hat a little bit more." If the cardboard causes any diffractive effects, he'll put a bit of absorptive foam inside the hood, as well.

Miking up the cymbals themselves, Bianco likes to use AKG 414s, 452s, or C12s. He will sometimes place a pair of 452s in an X-Y configuration, "just above where the drummer's ears are," and pointing toward the front of the kit. But he stresses the importance of optimizing the exact placement of the overhead mics in order to minimize phase cancellations. "If you use wide cardioids," Bianco says, "you'll find that your kick drum starts to disappear until you find the right spot for the mics." Just moving the overhead mics a few inches can make a big difference in the sound.

Thoener avoids phase problems with overheads by spacing cardioid-mode AKG C 414 B-ULS mics above the far left and right sides of the kit, "on the outer edges of the cymbals." Seay likes using AKG 414s, 451s, or 452s, or Sanken cardioids in a spaced-pair or an X-Y configuration for overheads.

Room to Grow

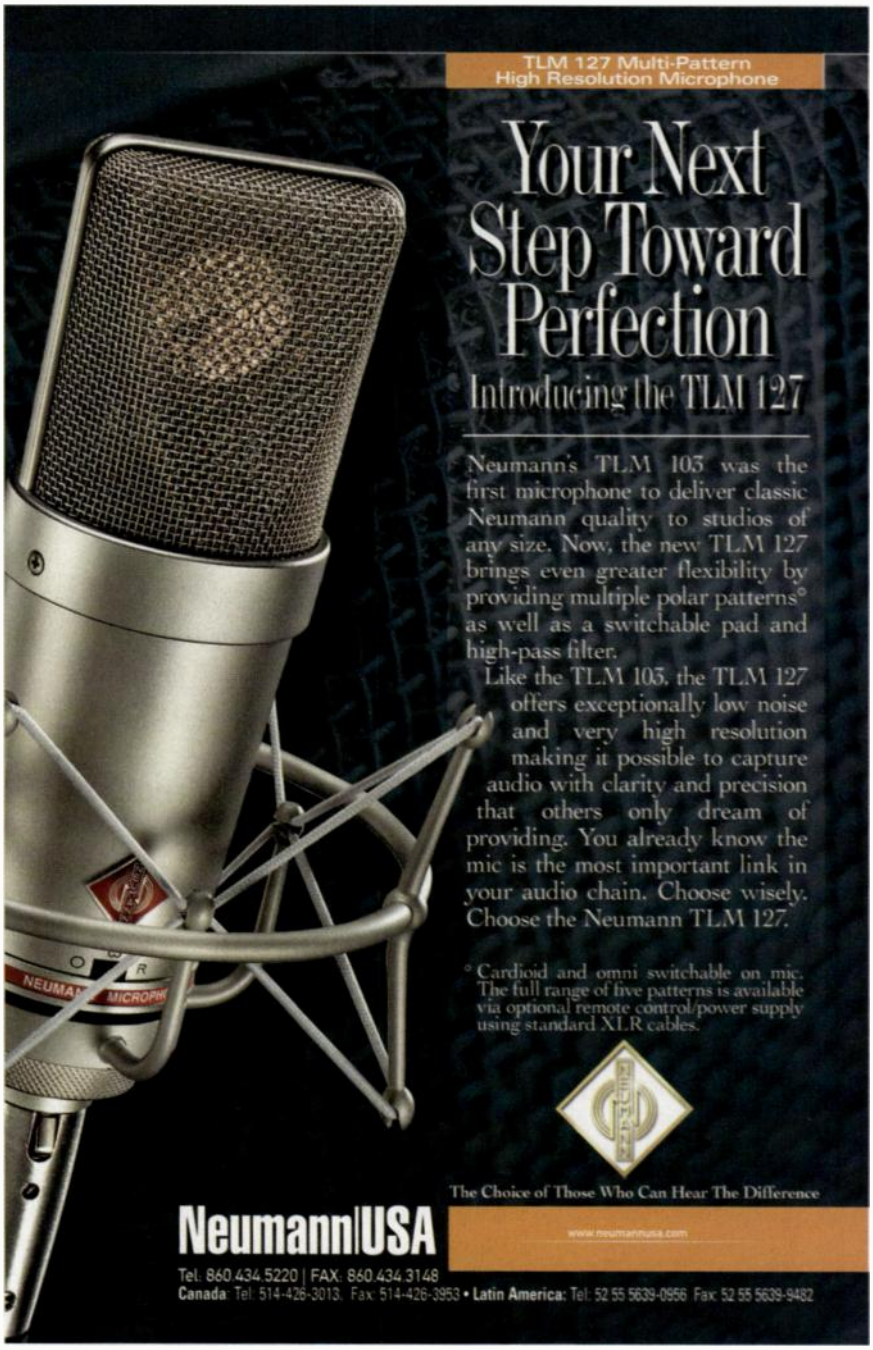
Room mics make a huge contribution to achieving a big drum sound. "I think the room mic is just as important as any other element [of the mic setup]," Seay says. "Even if the room mics are pulled in really tight in a really dead room, the sound is more pleasing and accurate to my ear than without [using them]. For more bombast or more rock, you can pull them back [farther away from the kit]."

Seay sometimes ends up using the tracking room's talkback mic as an extra room mic, in addition to using two room mics that are placed in a spaced pair or an X-Y configuration. He cautions that when using a widely spaced pair of mics, one should make sure that one isn't picking up a lot more snare than the other; otherwise, it can throw off the stereo image of the overall sound.

If he wants to capture more bottom-end guts from the drums, Seay will place his room mics "almost on the floor, so that the reflections are negated, and looking up at the kit. That's a good way to avoid all of the cymbal bleed. It 'plays up' the bottom of the kit.

"Almost anything will work for room mics," Seay continues, "as long as the mic is decent; 414s or [Audio-Technica] 4033s do well. Sometimes, SM57s are perfect if you're really going for crack and raw harshness."

Thoener always records room mics in case he can use them in the mix, although they don't always end up being useful. He likes using a stereo AKG C24 or Royer or Coles mics for "rooms," placed roughly 15 feet away from the kit—as long as there are no other instruments in the room besides drums that could bleed into



those mics. "I'll usually keep the mics up fairly high," he notes.

"I really don't want my room mics to pick up too much kick drum. If I've got an uptempo song or 60 faders on the mix, I really don't want my kick drum getting too ambient because it's just going to get lost in the mix. A lot of times, I find myself rolling off the bottom on those room mics so that I can work them into the mix without them taking presence away from the drums. Sometimes, if I like what they do for the snare but not for the other elements of the kit, I'll gate the room mics and key them with the snare [mic's signal].

David Thoener

"Instead of using room mics," Thoener continues, "sometimes I'll put one [Telefunken] 251 about three or four feet above the drummer's head height, placed dead center right over the snare drum. Sometimes, I compress that just a little bit. I find that adds a natural ambience to my snare drum that the overheads don't get."

Bianco is a fan of using multiple room mics—including some with extreme processing applied—when recording drums. "I always have some tracks that use heavily compressed microphones for the more crazy kit sounds," he enthuses. "I'll use a mono omni or a stereo pair that are distressed big time with an [Empirical Labs] Distressor compressor. A four-to-one ratio sounds the best to me, but I really crank the input. Omni mics, even if they're close in, can give you that Led Zeppelin kind of sound. I'll also use the Distressor's Distortion 2 setting a lot of the time; you get a little more grind using that."

Process This

Thoener will also use a Distressor while tracking drums, but only to achieve a relatively mild effect. He'll typically use it on the snare drum to elongate the decay. "I'll do maybe 4 or 5 dB of compression at three-to-one [ratio]," Thoener explains, "using a slow attack and a fairly quick release. That gives me a little more ring on the drum."

Seay typically only applies compression to the room mics during tracking. He'll compress the kick drum, however, if the dynamics are a little erratic or if the drum "needs a little pop on the front end."

Thoener, Seay, and Bianco are not shy about applying EQ to drums when tracking, as long as they've taken mic choice and miking techniques as far as they can go. Seay is the most outspoken of the three on the subject, confessing that he always applies some EQ. "My philosophy is, 'Make it sound as good as possible, as quickly as possible,'" Seay elaborates.

It's totally valid to beef-up the drums by any means while tracking, as long as you're absolutely certain that they need it. That said, Thoener makes a plea to up-and-coming engineers who are tracking cuts that other engineers will mix. "Please, please," Thoener implores, "stop over-compressing drums to tape. Compression should be used as little as possible [when tracking]. You'd be surprised by how many tapes I get in which the overheads and room mics are compressed 20-to-1." Thoener acknowledges that a heavily compressed sound might be what the tracking engineer was shooting for, "but if you decide, all of a sudden, that that sound is not working for you any longer [at mixdown]," he warns, "you can't change it. There's nothing you can do about it." ■

Bad Boys of Bang

From Mudhoney (*Tomorrow Hit Today*; Reprise, 1998 and *March To Fuzz*; 2000, Sub Pop) to Ozzy Osbourne (*Ozzmosis*; Epic, 1995) to John Hiatt to the Black Crowes (*Sho' Nuff*; Universal Sony, 1998), David Bianco's engineering and mixing credits span a wide range of musical styles. Bianco also often lends his skills as a multi-instrumentalist to the records he produces. It was Bianco who tracked Tom Petty's *Wildflowers* (Warner Bros., 1994), which won a Grammy for Best Engineered Album.

Ed Seay has recorded, mixed and produced scores of hit records since the late '70s. His early successes with pop artists Paul Davis (*Paul Davis*; Arista, 1980), Marie Osmond (*All in Love*; Curb, 1988), and Melissa Manchester (*Essence of Melissa Manchester*; Arista, 1997) were followed by hit records for country icons Martina McBride (The *Way That I Am*; *RCA*, 1993), Highway 101 (*Reunited*; Intersound, 1996), Ricky Skaggs (*My Father's Son*; Epic, 1991), and Collin Raye (*The Walls Came Down*; *Sony, 1998*), to name just a few.

David Thoener has tracked and/or mixed hit records for Matchbox Twenty (*Mad Season*; Atlantic, 2000), Wheatus (*Wheatus*; Columbia, 2000), Aerosmith (*Get a Grip*; Universal, 1993), Phil Vassar (*Phil Vassar*; Arista, 2000), and many more. Thoener won two Grammys—Record of the Year and Album of the Year—for mixing the single "Smooth" by Santana, featuring Rob Thomas (Supernatural, Arista, 1999).

—Michael Cooper

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Get the Most from Gates and Expanders

USE THESE DEVICES TO KEEP OUT NOISE AND ADD A VARIETY OF EFFECTS.

By Paul White

As far as I'm aware, gates were first devised to solve a problem in the film industry, where dialogue was often recorded under less-than-ideal conditions due to the need to keep the microphone out of the shot. Their purpose is to shut down the signal path when the signal falls below a threshold set by the user. Normally, this threshold will be set just above the ambient noise floor. When the gate is open, both the wanted signal and the unwanted noise pass through, the noise (hopefully) being masked by the signal. During pauses in the wanted signal, the gate closes and, in doing so, shuts off the background noise, which would otherwise be clearly audible in the absence of any signal large enough to mask it.

Gates have undergone a process of refinement since their invention, and modern models can be quite sophisticated. Like the compressor, they have attack and release controls that determine how quickly they respond, enabling them to be used to process most types of sound without undue difficulty. The fastest attack settings are used to allow percussive or highly transient sounds to pass through cleanly, while slower attack settings enable the gate to open more smoothly when processing signals that themselves have longer attack times, such as bowed strings.

The variable release time of a gate is also vital in that it enables the gate to close gradually when sounds with a slow decay are being processed. Examples of such sounds are plucked strings, some synthesized sounds, and sounds that have a long reverberant "tail." As with the compressor, problems can arise if the fastest attack and release times are set, as this means that the gate triggers on each individual cycle of the input, producing a badly distorted, gritty sound.

The solution is the same as that for the compressor—many gates have a hold feature or a built-in hold time. In the absence of hold time (where the gate is forced to remain open for a short time after the signal falls back below the threshold), it's necessary to extend the release time until the problem disappears. The envelope structure of a typical gate is shown in Fig.1.

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Get the Most from Gates and Expanders

The hold facility may also be used in a creative way to produce hard "gated" reverb or ambience sounds. If the reverberant sound is fed into the gate and then triggered externally using a mic located close to the drum, the gate can be used to impose an envelope on the reverberant sound. A fast release time combined with half a second or so of hold time produces the familiar gated drum sound when used to treat percussion.

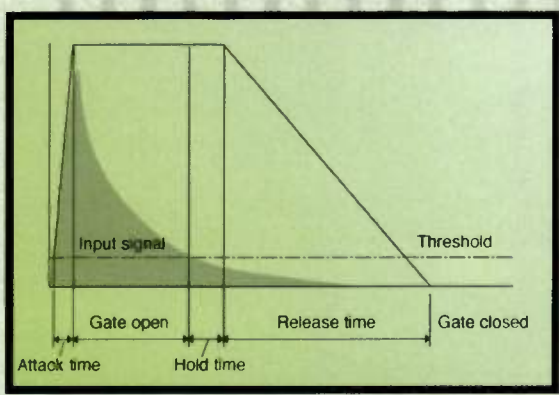

FIG. 1: A typical gate envelope.

Today, gates are available as hardware units, software plug-ins, and also as part of the processing capability of most digital mixing consoles. As a rule, gates are really effective against noise only when used on individual tracks rather than complete mixes, although their creative uses shouldn't be underestimated.

Sidechain Filters

A common feature on many gates is sidechain filtering. This usually takes the form of a pair of shelving equalizers, one highpass and one lowpass, connected in series with the sidechain circuitry. By varying the filter settings, it's possible to make the gate respond only to a selected band of frequencies, which helps avoid false triggering in situations where bleed from other instruments is present. An example of a situation in which filters can be helpful is when miking a drum kit, where sounds from all of the drums leak into all of the mics to a greater or lesser degree. By making the gate frequency selective, it's possible to reduce the risk of, say, the hi-hat triggering the snare gate.

By setting the filters to minimize the amount of hi-hat bleed fed to the side chain while at the same time maximizing the amount of snare signal, a greater degree of separation can be obtained. This can only be achieved by listening to the filter output while adjusting the controls when "Key Listen" is selected during setting up. It's important to realize that the filters are only connected in series with the sidechain signal path and so don't affect the sound of the main input in any way. The only exception to this rule is when the filters are deliberately used as an equalizer by leaving the gate set to the Key Listen mode.

Gating While Mixing

Gates are very important in multitrack recording, even when the recordings appear to be relatively free of noise. In a multitrack situation, the noise from all of the tracks is cumulative, so if a track can be gated into silence when nothing is playing, the finished mix can be made considerably cleaner. For example, the vocalist won't be singing during instrumental breaks and solos, so it makes sense to gate the vocal track in order to mute any tape noise from that track, as well as breath noise, and any bleed from the headphones that might otherwise be audible during pauses in the singing.

It's also desirable to gate electric guitars, because they have a relatively poor noise performance, especially when used for overdriven or heavily distorted lead-guitar sounds. Using a gate will remove the hum, hiss, and buzz generated by a guitar amplifier and can significantly improve the clarity of the final recording.

Gating is best carried out after the signal has been recorded rather than during recording, for the obvious reason that an incorrectly set gate at the recording stage can ruin a take beyond any hope of salvage. Nevertheless, sometimes it's necessary to gate while recording—for example, in situations where several signals have to be mixed onto one tape track and only one of these is to be gated. In this instance, it's wise to set the gate attenuation control to give only as much attenuation as is really necessary and to err on the side of caution when setting the threshold. It's better to put up with a little unwanted leakage than to have a signal with vital sections cut out of it by an overzealous gate!

Gate plug-ins are useful for cleaning up audio tracks recorded into a sequencer or other multitrack software program, as no permanent change needs to be made to the audio file. Once the gate settings have been optimized, the processed track may be bounced to a new track to make the changes permanent, but still without discarding the original version, enabling you to go back to it later if required. Where gate plug-ins have a sidechain access facility to permit chopping or ducking effects to be created, these are normally fed from a designated audio track rather than from a live input.

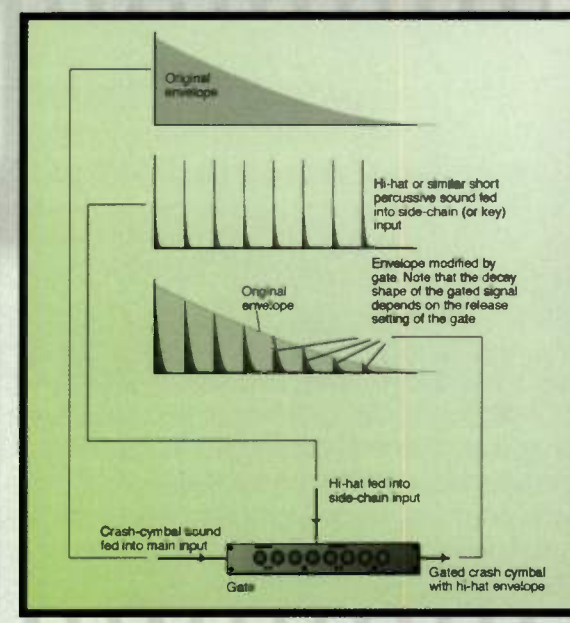

FIG. 2: Gating a slowly decaying sound.

Alternative Filter Applications

The sidechain filters used in gates necessarily have a very sharp response curve—usually 12 dB per octave. This

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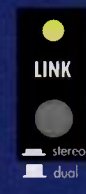

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Get the Most from Gates and Expanders

makes them far more selective than most conventional equalizers, and in some circumstances the filters in a spare gate can be used to supplement the basic console EQ. To do this, it's necessary only to leave the gate switched to Sidechain Listen; the gate will be bypassed and the filters placed in line with the signal path.

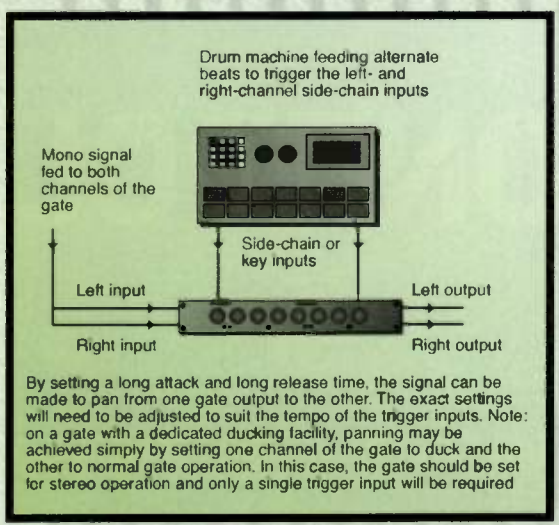

FIG. 3: Panning with a gate.

The lowpass filter can work wonders in removing high-frequency noise from an electric-guitar track without significantly changing the character of the basic guitar sound, while the highpass filter can be used to remove low-frequency hums and rumbles, as well as to "thin out" rhythm-guitar or backing-vocal parts.

In very desperate circumstances, the lowpass filter can even be used to reduce the effects of overload distortion on recordings of rhythm guitar and other dynamic sounds, where a little too much enthusiasm on the part of the player can drive the tape machine or mixing console into clipping. When working with plug-ins in a software environment, a shelving-filter plug-in can be used for this purpose.

External Control

Gates can be triggered externally through their sidechain access points, allowing the level of one signal to be controlled by another. An "External" switch is usually provided to enable the sidechain input, although some models may simply be fitted with a sidechain-access jack wired in the same way as a console insert point.

Used normally, this facility enables the signal routed through the gate to be turned on and off by the signal fed into the side chain. This is commonly known as *chopping* because, if fast attack and release times are set, extremely abrupt, rhythmic effects can be created. Where the triggering source is very short (as it would be if a beat from a drum machine was used), the "on" duration of the gate must be set using the Hold Time control. Here are some practical examples:

A sustained sound fed through the gate could be turned on and off by a drum beat fed into the sidechain input. The rate at which it turns on and off depends on the attack and release settings, but it does provide a novel way of synchronizing a sustained sound with a percussive one (see Fig. 2). This technique is often used to beef up kick-drum sounds by adding a gated, low-frequency synthetic sound and works well in the context of dance music. In this instance, the gate would need a fast attack but a slightly longer release time to create the impression of a decaying drum sound.

Synthesizer chords can be gated from a rhythm pattern to create a synchronized arpeggio effect.

Bass-synth or bass-guitar sounds can be gated so that they're audible only when a kick drum is present. A popular trick is to use the kick-drum track to trigger the gate while passing the bass-guitar track through the gate. The Attenuation Range control may then be set to reduce or even remove any bass-guitar notes not falling directly on top of kick-drum beats, which can help to tighten up an otherwise sloppy track. The gate Release Time control is set to allow the bass-guitar notes to decay at an appropriate rate.

Gate Ducking

If the gate has a Duck facility, it can be used as a ducker in a similar way to a compressor. The Attenuation control of the gate can be used to determine exactly how much the signal level drops once the sidechain input signal (a voice, for example) exceeds the threshold, and as this control is calibrated directly in decibels, it's much easier to set up a precise ducking effect using one of these gates than it is using a compressor. Again, the gate's attack and release times determine how fast the ducked signal will fade out and in again in response to the sidechain input.

Gate Panning

The sidechain access facility of a gate also means it can be used to produce a limited range of panning effects, which can be useful in a hardware recording environment as relatively few sophisticated panners are available. In a software environment, dedicated panners are usually available with Tempo Sync facilities, so it may not be necessary to use a gate to achieve the effect, but it's still worth knowing how to do it.

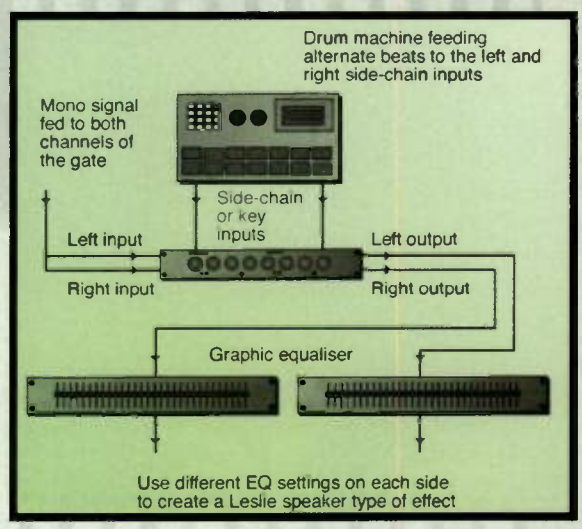

FIG. 4: Rotary-speaker simulation using panned EQ.

If the signal to be panned is fed into both channels of a two-channel gate, the sidechain inputs could alternately be fed with percussive sounds from a drum machine (synchronized to the track) to act

—continued on page 30

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"Once upon a time, I had a studio setup in a room in my basement. A room with enough space for my gear and my instruments and a comfortable chair and some bookshelves. I liked to record in there. I spent hours and hours recording and mixing, and then I would proudly march my mixes to my car stereo, where they sounded terrible. What a huge disappointment to know how I'd been misled by my own basement. To the rescue came Primacoustic, with a whole bunch of affordable solutions. With the addition of some Freeports and some Australis bass traps, I could actually HEAR what I was mixing! Then, later, in my car, I could proudly crank mixes with confidence! See, it doesn't take a million dollars to help out your room!"

~ Steve Page, Barenaked Ladies

Steven Page and Jim Creeggan with Primacoustic's Peter Jenis.

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* estimated street price per unit

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ANALOG MIXING CONSOLES

MANUFACTURER	PRODUCT	MIXER CONFIGURATION	MIC INPUTS (XLR)/ LINE INPUTS	# OF INSERTS / DIRECT OUTS	# OF AUX SENDS / RETURNS / TYPE	# OF BUS OUTPUTS / TYPE	EQ	MUTE	SOLO-IN-PLACE	FREQUENCY RESPONSE	SIGNAL-TO-NOISE RATIO
Alesis	Studio 12R	14x2	8/14	8/0	(2/1) 1/4"	N/A	High/low shelving	No	No	20 Hz–50 kHz	90 dB
Alesis	MultiMix 6FX	6x2	2/6	0/0	(1/2) 1/4"	0	3-band; shelving	No	No	20 Hz–22 kHz +/–	N/A
Alesis	MultiMix 8FX	8x2	4/8	0/0	(2/4) 1/4"	0	3-band; shelving	No	No	20 Hz–22 kHz =/-0	N/A
Alesis	MultiMix 12FX	12x2x2	4/12	0/0	(2/4) 1/4"	(2) 1/4"	3-band; shelving	Yes	Yes	20 Hz–22 kHz	N/A
Alesis	MultiMix 12FXD	12x2x2	4/12	0/0	(2/4) 1/4"	(2) 1/4" TRS	3-band; shelving	Yes	Yes	20 Hz–22 kHz	N/A
Alesis	MultiMix 16FXD	16x2x2	8/16	0/0	(2/4) 1/4"TRS	(2) 1/4" TRS	3-band	Yes	Yes	22 Hz–22 kHz	N/A
Alesis	GigaMix 4FX	4x2	4/6	0/0	(1/2) 1/4"	0	3-band, active	No	No	10 Hz–50 kHz	>95 dB
Alesis	GigaMix 6FX	6x0	6/8	0/0	(1/2) 1/4"	0/01	3-band	No	No	10 Hz–40 kHz	>95 dB
Alesis	GigaMix 8FX	8	8/8	0/0	(1/2) 1/4"	1	3-band	No	No	10 Hz–40 kHz	>95 dB
API	7600	4x1	8/8	4/1	4/0	N/A	HP/LP filters	Yes	Yes	30 Hz–20 kHz	-128 dB
Ashly Audio	MX-508	8x2	8/8	8/8	(2/2) 1/4"	N/A	3-band; mid-sweep	Yes	No	20 Hz–20 kHz	-90 dBu
Behringer	UB502	5x0x02	1/5	0/0	N/A	N/A	2-band	No	No	10 Hz–150 kHz	110 dB
Behringer	UB802	8x0x2	2/6	0/0	(1) 1/4"	N/A	3-band	No	No	10 Hz–150 kHz	110 dB
Behringer	UB1002	10x0x2	2/10	0/0	(1/0) 1/4"	N/A	3-band	No	No	10 Hz–150 kHz	110 dB
Behringer	UB1202	12x0x2	4/12	0/0	(1/0) 1/4"	N/A	3-band	No	No	10 Hz–150 kHz	110 dB
Behringer	UB1204-PRO	12x2x2	4/12	0/0	(2/2) 1/4"	(2) fader	3-band	Yes	No	10 Hz–150 kHz	110 dB
Behringer	UB1204FXPRO	12x2x2	4/8	0/0	(2/2) 1/4"	(2) knob (fader)	3-band	Yes	Yes	10 Hz–150 kHz	110 dB
Behringer	UB1622FXPRO	16x2x2	4/12	4/0	(2/2) 1/4"	(2) 1/4"	3-band mono; 4-band stereo	Yes	Yes	10 Hz–150 kHz	110 dB
Behringer	UB1832FXPRO	18x3x2	6/14	6/0	(3/2) 1/4"	(2) 1/4"	3-band mono; 4-band stereo; 9-band graphic	Yes	Yes	10 Hz–150 kHz	110 dB
Behringer	UB2222FXPRO	22x2/2x2	8/16	8/0	(3/3) 1/4"	(2) 1/4"	3-band mono; 4-band stereo	Yes	Yes	10 Hz–150 kHz	110 dB
Behringer	UB2442FXPRO	24x4x2	10/16	1-8/8	(4/4) 1/4"	(8) 1/4"	3-band mono; 4-band stereo	Yes	Yes	10 Hz–150 kHz	110 dB
Behringer	PMX2000	10x0x4	9/12	0/0	0/0	N/A	3-band	No	No	10 Hz–150 kHz	110 dB
Behringer	Eurorack MX602A	6x2x2	2/2	0/0	2/2	N/A	3-band	No	No	10 Hz–60 kHz	-129.5 dBu
Behringer	Eurorack MX802A	8x2x2	4/4	0/0	2/2	N/A	3-band	No	No	10 Hz–120 kHz	-129.5 dBu
Behringer	Eurorack MX1604A	16x4x2	4/4	0/0	2/2	N/A	3-band parametric mids	Yes	Yes	10 Hz–60 kHz	113.6 dB
Behringer	Eurorack MX2004A	20x4x2	8/8	8/0	2/2	N/A	3-band parametric mids	Yes	Yes	20 Hz–40 kHz	-129.5 dBu
Behringer	Eurorack MX2642A	24x8x4	8/8	10/8	6/4	4	3-band parametric	Yes	Yes	20 Hz–40 kHz	-129 dBu
Behringer	Eurodesk MX2442A	24x8x2	16/16	20	6/2	4	3-band parametric	Yes	Yes	20 Hz–40 kHz	>129.5 dBu
Behringer	Eurodesk MX3282A	24x8x2	24/24	24	8/4	8	3-band parametric	Yes	Yes	20 Hz–40 kHz	>129 dB
Behringer	Eurodesk MX9000	24x8x2	24/24	24/24	6/6	3	4-band	Yes	Yes	20 Hz–40 kHz	>129 dBu
Behringer	Pro Mixer DX1000	12x2	2/10	0/0	1/2	2	3-band	Yes	Yes	10 Hz–100 kHz	115 dB
Behringer	MX3242X	16x4x2	16/16	16/16	(6/4) 1/4"	(4) 1/4"	4-band parametric	Yes	Yes	10 Hz–130 kHz	-97 dB
Carvin	SM162 Studiomate	16x2	8/16	8/8	(2/2) 1/4"	(2) 1/4"; (2) RCA	3-band	No	No	20 Hz–20 kHz	90 dB
Carvin	C844	8x4x2	8/10	8/8	(4/4) 1/4"	(4) 1/4"	3-band; mid-sweep	Yes	Yes	20 Hz–20 kHz	90 dB
Carvin	C1644	16x4x2	16/10	16/16	(4/4) 1/4"	(4) 1/4"	3-band; mid-sweep	Yes	Yes	20 Hz–20 kHz	90 dB
Carvin	C2444	24x4x2	24/10	24/24	(4/4) 1/4"	(4) 1/4"	3-band; mid-sweep	Yes	Yes	20 Hz–20 kHz	90 dB
Carvin	C3244	32x4x2	32/10	32/32	(4/4) 1/4"	(4) 1/4"	3-band; mid-sweep	Yes	Yes	20 Hz–20 kHz	90 dB
Carvin	S/L24	24x8x2	24/32	24/32	(2/2) 1/4"	(2) 1/4"; (2) RCA	Sweep mid/lo	Yes	Yes	20 Hz–20 kHz	90 dB
Carvin	S/L40	40x8x2	40/48	40/48	(2/2) 1/4"	(2) 1/4"; (2) RCA	Sweep mid/lo	Yes	Yes	20 Hz–20 kHz	90 dB
Carvin	S/L56	56x8x2	50/58	50/58	(2/2) 1/4"	(2) 1/4"; (2) RCA	Sweep mid/lo	Yes	Yes	20 Hz–20 kHz	90 dB
Crate	CSM8	8x2x1	8/8	8/8	4/2	(2) XLR; 1/4"	3-band	Yes	Yes	20 Hz–20 kHz	94 dB
Crate	CSM12	12x2x1	12/12	12/12	4/2	(2) XLR; 1/4"	3-band	Yes	Yes	20 Hz–20 kHz	94 dB
Crate	CSM1402	18x2x1	6/18	6/0	2/2	N/A	3-band	Yes	Yes	70 Hz–120 kHz	N/A
Crate	CSM16	16x2x1	16/16	16/16	4/2	(2) XLR; 1/4"	3-band	Yes	Yes	20 Hz–20 kHz	94 dB
Crate	CSM24	24x2x1	24/24	24/24	4/2	(2) XLR; 1/4"	3-band	Yes	Yes	20 Hz–20 kHz	94 dB
D&R	Vision 8	8x4x2	8	8/8	4/4	8/+ 4/-10 dBv	3-band	Yes	No	20 Hz–120 kHz	N/A
Edirol	M-10E	10x2	0/10	0/0	0/2	0	0	No	No	10 Hz to 50 kHz	107 dB
FBT	Pickup 44-E	6x2	4/6	1/2	(1/1) 1/4"	(2) 1/4"	3-band	No	No	20 Hz–20 kHz	96 dB
FBT	Pickup 64-E	8x2	6/8	2/2	(2/2) 1/4"	(2) 1/4"	3-band parametric	No	No	20 Hz–25 kHz	96 dB
FBT	Pickup 88-E	12x2	8/12	2/2	(2/2) 1/4"	(2) 1/4"	3-band parametric	Yes	No	20 Hz–25kHz	96 dB
Mackie	1202-VLZ Pro	12x2x2	4/12	4/4	(2/4) 1/4" TRS	(2) 1/4" TRS	3-band fixed	Yes	Yes	20 Hz–60 kHz	>107 dB
Mackie	1402-VLZ Pro	14x2x2	6/14	6/6	(2/4) 1/4" TRS	(2) 1/4" TRS	3-band fixed	Yes	Yes	20 Hz–60 kHz	>107 dB

TOTAL HARMONIC DISTORTION	DYNAMIC RANGE	CHANNEL CORSSTALK (@1 KHZ)	PHANTOM POWER	TALKBACK/ONBOARD OSCILLATOR	DEDICATED 2-TRACK RETURNS	SPECIAL FEATURES	DIMENSIONS	PRICE
<0.005%@1 kHz	108 dB	>85 dB	Global	N/N	Yes	Rackmount; head/control room outs	19x6x5.25	$449
<0.01% THD+N	>100 dB	N/A	2@48V	N/N	Yes	100 built-in digital effects	7.25	$149
<0.01% THD+N	>100 dB	N/A	4@48V	N/N	Yes	100 built-in effects	9.25x3.5x10.25	$199
<0.01% THD+N	>100 dB	N/A	4@48V	N/N	Yes	101 built-in effects	13.0x3.2x13.4	$299
<0.01% THD+N	>100 dB	N/A	4@48V	N/N	Yes	100 built-in effects; S/PDIF output	13.0x3.2x13.4	$399
N/A	N/A	N/A	8@48V	N/N	Yes	100 28-bit digital effects; S/PDIF output HPF on channels 1-8	13.0x3.2x15.2	$499
<0.04%	N/A	N/A	4@48V	N/N	No	225W-75 Hz highpass filter	26.5x20x17.5	$499
<0.04%	N/A	N/A	6@48V	N/N	Yes	100 built-in digital effects; 75 Hz HPF; 325Wx2	26.5x20x17.5	$649
<0.04%	N/A	N/A	8@48V	N/N	Yes	100 built-in digital effects; 75 Hz HPF; 425Wx2	26.5x20x17.5	$799
<0.05%	N/A	N/A	48V	N/N	No	Units stack to build 4-bus console/sidecards	1U	$2,995
<0.05%	-128 dBu	-85 dB	Yes	N/N	Yes	Rackmount	19.0x5.25x9.6	$1,519
0.005%	N/A	N/A	No	N/N	Yes		1.83/1.5x5.25x7	$60
0.005%	N/A	N/A	Yes	N/N	Yes		1.83/1.5x7.4x8.67	$90
0.005%	N/A	N/A	Yes	N/N	Yes		1.83/1.5x7.4x8.67	$100
0.005%	N/A	N/A	Yes	N/N	Yes		1.83x9.5x8.67	$130
0.005%	N/A	N/A	Yes	N/N	Yes		3.88x9.69x13	$180
0.005%	N/A	N/A	Yes	N/Y	Yes	FX unit	3.88x9.69x13.16	$210
0.005%	N/A	N/A	Yes	N/Y	Yes	FX unit	3.88x11.88x13.88	$250
0.005%	N/A	N/A	Yes	N/Y	Yes	FX unit; XPQ 3D surround function; 9-band stereo graphic EQ	3.88x16.06x14.06	$310
0.005%	N/A	N/A	Yes	N/Y	Yes	FX unit	3.88x16.06x14.06	$380
0.005%	N/A	N/A	Yes	N/Y	Yes	FX unit; mic ins on stereo ch. 9/10, 11/2; direct outs (ch. 1-8, post fader)	5.38x16.5x17.25	$440
0.001%	N/A	N/A	Yes	N/Y	No	Powered 2x250W w/24-bit multi-fx processor	18.13x10.63x11	$380
0.007%	N/A	N/A	48V	N/N	Yes		1.3x6.3x8.2	$85
0.007%	125 dB	-95 dB	48V	N/N	Yes		3x9x10.6	$125
0.007%	125 dB	-95 dB	48V	N/N	Yes	Alternate 3/4-bus; rackmount kit included	3.5x16x15	$209
0.007%	125 dB	-95 dB	48V	N/N	Yes	Alternate 3/4 bus; rackmount kit included	3.5x16x15	$309
0.007%	125 dB	-95 dB	48V	N/N	Yes	Rackmount kit included	6x19x14	$499
0.007%	125 dB	- 95 dB	48V	Y/N	Yes		4x28.5x18	$869
0.007%	125 dB	-95 dB	48V	Y/N	Yes		4x41x21	$1,479
0.007%	125 dB	-95 dB	48V	Y/N	Yes	24 inputs with 2-band EQ; built-in meter bridge	8.6x37x29.5	$2,399
0.003%	N/A	N/A	No	N/N	No	Talkover mic function; remote start buttons	6x17.5x6	$449
0.006%	N/A	N/A	Global	Y/N	Yes	Digital effects/Mix-B	19x3.75/9x21/22.5	$999
<0.01%	104 dB	N/A	Yes	N/N	Yes	Low-noise toroid transformer	16x12x3	$240
<0.01%	104 dB	N/A	Switchable	N/N	Yes	XLR outs; 24-bit 256 voice DSP; dual 9-band graphic EQ	14.5x3.25x14.25	$400
<0.01%	104 dB	N/A	Switchable	N/N	Yes	XLR outs; 24-bit 256 voice DSP; dual 9-band graphic EQ	22.5x3.25x14.25	$700
<0.01%	104 dB	N/A	Switchable	N/N	Yes	XLR outs; 24-bit 256 voice DSP; dual 9-band graphic EQ	30x3.25x14.25	$900
<0.01%	104 dB	N/A	Switchable	N/N	Yes	XLR outs; 24-bit 256 voice DSP; dual 9-band graphic EQ	38.1x3.25x14.25	$1,100
<0.01%	104 dB	N/A	Yes	N/N	Yes	Low-noise toroid transformer	34.5x22.7x8	$2,000
<0.01%	104 dB	N/A	Yes	N/N	Yes	Low-noise toroid transformer	52x22.1x8	$3,000
<0.01%	104 dB	N/A	Yes	N/N	Yes	Low-noise toroid transformer	69.5x22.7x8	$3,700
<0.1%	N/A	-70 dB	48V	N/N	No	Balanced XLR & 1/4" outs; PFL output	20.25x4.25	$480
<0.1%	N/A	-70 dB	48V	N/N	No	Balanced XLR & 1/4" outs; PFL output	25.13x4.25	$600
N/A	N/A	N/A	Yes	N/N	Yes		N/A	$580
<0.1%	N/A	-70 dB	48V	N/N	No	Balanced XLR & 1/4" outs; PFL output	29.75x4.25x16.5	$750
<0.1%	N/A	-70 dB	48V	N/N	No	Balanced XLR & 1/4" outs; PFL output	40.75x4.25x16.5	$950
0.015%	Hdrm >22 dB; max output 26 dBu	>90 dB	Per channel	Y/Y	Yes	Fully modular; optional meter bridge	19" frame (can be rack-mounted)	$3,748
<.05%	N/A	NA	0	N/N	No	9V battery operation	8.6x6.75	$155
0.025	118	77 dB	Global	N/N	Yes	Built-in DSP 24-bit; 16 selections	7.65x3.25x9.75	$459
0.025%	>118 dB	77 dB	Global	N/N	Yes	Built-in 24-bit DSP; 16 selectable effects; self switching power supply	9.75x3.25x10.4	$549
0.025%	>118 dB	77 dB	Global	N/N	Yes	Built-in 24-bit DSP; 16 selectable effects; self switching power supply	12.5x3.5x13.4	$749
0.007%	130 dB	-84 dBu	48V	N/N	Yes	XDR mic preamps; alternate 3/4 bus	2.6x11.8x11.2	$489
0.007%	130 dB	-84 dBu	48V	N/N	Yes	XDR mic preamps; alternate 3/4 bus	2.9x14x12.9	$659

ANALOG MIXING CONSOLES

MANUFACTURER	PRODUCT	MIXER CONFIGURATION	MIC INPUTS (XLR) LINE INPUTS	# OF INSERTS / DIRECT OUTS	# OF AUX SENDS / RETURNS / TYPE	# OF BUS OUTPUTS / TYPE	EQ	MUTE	SOLO-IN-PLACE	FREQUENCY RESPONSE	SIGNAL-TO-NOISE RATIO
Mackie	1642-VLZ Pro	16x4x2	10/16	8/8	(4/8) 1/4" TRS	(4) 1/4" TRS	3-band; mid-sweep	Yes	Yes	20 Hz–60 kHz	>107 dB
Mackie	1604-VLZ Pro	16x4x2	16/16	16/8	(6/8) 1/4" TRS	(4) 1/4" TRS	3-band; mid-sweep	Yes	Yes	5 Hz–100 kHz	>107 dB
Mackie	CFX-12	12x4x2	12/4	8/8	(4/2) 1/4" TRS	(4) 1/4" TRS	3-band; 9-band graphic	Yes	Yes	32 Hz–20 kHz	>105 dB
Mackie	CFX-16	16x4x2	16/4	12/12	(4/2) 1/4" TRS	(4) 1/4" TRS	3-band; 9-band graphic	Yes	Yes	32 Hz–20 kHz	>105 dB
Mackie	CFX-20	20x4x2	16/4	16/16	(4/2) 1/4" TRS	(4) 1/4" TRS	3-band; 9-band graphic	Yes	Yes	32 Hz–20 kHz	>105 dB
Mackie	DFX-6	6x2	4/8	2	(2/2) 1/4"	N/A	5-band graphic	Yes	No	20 Hz–60 kHz	>90 dB
Mackie	DFX-12	12x2	6/8	4/0	(2/2) 1/4"	N/A	5-band graphic	Yes	No	20 Hz–60 kHz	>90 dB
Mackie	406M Powered Mixer	8x2x2	6/6	6/6	(2/2) 1/4" TRS	N/A	3-band fixed; 9-band mono	Yes	No	10 Hz–30 kHz	>105 dB
Mackie	808M Powered Mixer	10x2x2	8/12	6/6	(2/2) 1/4" TRS	N/A	3-band fixed; 9-band graphic	Yes	No	10 Hz–30 kHz	>105 dB
Mackie	808S Powered Mixer	10x2	8/12	6/6	(4/2) 1/4" TRS	N/A	3-band fixed; 9-band graphic	Yes	No	32 Hz–20 kHz	>105 dB
Mackie	Onyx 1220	12x2	4	4/12	(2/2) 1/4"	(2) 1/4"	3-band; mid-sweep	Yes	Yes	10 Hz–100 kHz	90 dB
Mackie	Onyx 1620	16x2	8	8/16	(4/4) 1/4"	(2) 1/4"	4-band; dual mid-sweep	Yes	Yes	10 Hz–100 kHz	90 dB
Mackie	Onyx 1640	16x4x2	16/16	16/16	(6/6) 1/4	(4) 1/4"	4-band, dual mid-sweep	Yes	Yes	N/A	N/A
Mackie	24-8/32-8	32/24x8x2	24/32	24/32	6 mon/6 ster	(24) 1/4"	4-band; low-cut filter	Yes	Yes	20 Hz–60 kHz	90 dBu
Oram Pro	Octamix	8x2x1	8	N/A	N/A	(2) XLR	N/A	No	No	18 Hz–73 kHz	N/A
Peavey	16 LM	8x2	8 stereo	N/A	N/A	N/A	No	No	No	20 Hz–20 kHz	92 dB
Peavey	RQ 200	6x2	6/6	2	2	N/A	2-band; shelving	No	No	20 Hz–20 kHz	128 dBu EIN
Peavey	RQ 2310	10x2x2	8/8	4/2	4/2	N/A	3-band; mid-sweep	Yes	Yes	20 Hz–20 kHz	128 dBu EIN
Peavey	RQ 4324	24x4x3	24/24	24/0	6/2	7/Group 1-4	3-band; mid-sweep	Yes	Yes	20 Hz–20 kHz	128 dBu EIN
Peavey	RQ 4332	32x4x3	32/32	32/0	6/2	7/Group 1-4	3-band; mid-sweep	Yes	Yes	20 Hz–20 kHz	128 dBu EIN
Phonic	MR7X	18x4x2	18/10	10/10	(8/8) 1/4" TRS	(4) 1/4" TRS	4-band rotary; mid-sweep	Yes	Yes	10 Hz–30 kHz	>90 dB
Phonic	MR4283D	28x8x2	24/28	24/24	(8/8) 1/4" TRS	(8) 1/4" TRS	4-band rotary; mid-sweep	Yes	Yes	10 Hz–30 kHz	>90 dB
Phonic	MM2005	8x2x2	8/4 stereo	8/0	(2/2) 1/4"	(2) 1/4"	3-band; mid-sweep	Yes	Yes	10 Hz–30 kHz	>90 dB
Phonic	MR2443a	16x4	16	16/16	(4/4) 1/4"	(4) 1/4"	3-band rotary	Yes	Yes	10 Hz–30 kHz	90 dB
Phonic	MRS1-20	20x6x4	20/20	20/20	(6/6) 1/4" TRS	(6/6) 1/4" TRS	3-band rotary	Yes	Yes	10 Hz–30 kHz	>90 dB
Rolls	MX56s Playmate	4x2	1/3	N/A	N/A	(1) 1/4"	No	No	No	20 Hz–20 kHz	>80 dB
Rolls	MX54 ProMixPlus	3x2	3	N/A	N/A	(1) 1/4"	No	No	No	25 Hz–16 kHz	84 dB
Samson	MPL 1204	12x4x2	12/12	12/12	24	N/A	3-band	Yes	Yes	<10 Hz–60 kHz	-90 dB
Sony	SRP-X100	N/A	6	3 st.	N/A	N/A	N/A	No	No	20 Hz–20 kHz	-126
Sony	SRP-V110	34x8x2	10/24	10/8	(8/8) 1/4"	(8) RCA	3-band; mid-sweep	Yes	Yes	20 Hz–20 kHz	-95 dB
Soundcraft	Compact 4	4x2	2/2	2/0	0/0	0	3-band	No	Yes	20 Hz–20 kHz	N/A
Soundcraft	Compact 10	10x2	4/12	4/0	0/0	0	3-band	No	Yes	20 Hz–20 kHz	N/A
Soundcraft	Spirit E6	10x2	6/10	8/0	(2) 1/4"	(2) XLR	3-band; mid-sweep	Yes	Yes	20 Hz–20 kHz	N/A
Soundcraft	Spirit E8	12x2	8/12	10/0	(2) 1/4"	(2) XLR	3-band; mid-sweep	Yes	Yes	20 Hz–20 kHz	N/A
Soundcraft	Spirit E12	16x2	12/16	14/0	(2) 1/4"	(2) XLR	3-band; mid-sweep	Yes	Yes	20 Hz–20 kHz	N/A
Soundcraft	Spirit ES	24x2	4/24	6/0	(2) 1/4"	(2) XLR	3-band; mid-sweep on monos	Yes	Yes	20 Hz–20 kHz	N/A
Soundcraft	Spirit FX8	16x2x2	8/16	8/8	(3) 1/4"	(4) 1/4"	3-band; mid-sweep	Yes	Yes	20 Hz–20 kHz	N/A
Soundcraft	Spirit FX16	16x2x2	16/16	16/16	(3) 1/4"	(4) 1/4"	3-band; mid-sweep	Yes	Yes	20 Hz–30 kHz	N/A
Soundcraft	Spirit M4	12x2	4/16	8/8	(4/8) RCA	2	4-band; 3 mid-sweep	Yes	No	20 Hz–20 kHz	N/A
Soundcraft	Spirit M8	16x2	8/16	8/8	(4/8) RCA	2	4-band; 3 mid-sweep	Yes	No	20 Hz–20 kHz	N/A
Soundcraft	Spirit M12	20x2	12/16	8/8	(4/8) RCA	2	4-band; 3 mid-sweep	Yes	No	20 Hz–20 kHz	N/A
Soundcraft	Spirit Notepad	8x2	4/8	N/A	(1) 1/4"	N/A	2-band; fixed	No	No	20 Hz–20 kHz	N/A
Soundcraft	Spirit Powerpad	8x2	4/8	N/A	(1) 1/4"	N/A	2-band; fixed	No	No	20 Hz–20 kHz	N/A
Soundcraft	Spirit SX	12x2x2	16/20	12/8	(3) 1/4"	(4) 1/4"	3-band; mid-sweep	Yes	Yes	20 Hz–30 kHz	N/A
Soundcraft	LX7ii-16	16x4x2x1	16/16	16/8	(6) 1/4"	(7) 1/4"	4-band; 2 mid-sweep	Yes	Yes	20 Hz–20 kHz	N/A
Soundcraft	LX7ii-24	24x4x2x1	24/24	24/16	(6) 1/4"	(7) 1/4"	4-band; 2 mid-sweep	Yes	Yes	20 Hz–20 kHz	N/A
Soundcraft	LX7ii-32	32x4x2x1	32/32	32/24	(6) 1/4"	(7) 1/4"	4-band; 2 mid-sweep	Yes	Yes	20 Hz–20 kHz	N/A
Soundcraft	Ghost LE:24	24x8x2	24/24	24/24	(8/8) 1/4"	(8) 1/4"	4-band w/2 para bands	Yes	Yes	20 Hz–20 kHz	N/A
Speck Electronics	Xtramix	40x8x2	0/72	10/0	(8/8) 1/4	(10) 1/4	N/A	Yes	Yes	10 Hz–154 kHz	-90.8 dBu
Speck Electronics	LiLo Line Mixer	16x2x2	0/40	16/16	(4/2) 1/4"	(4) XLR	N/A	Yes	Yes	10Hz–105 kHz	-92 dB
SPL	MixDream	16x2	N/16	18/16	N/N	(1) stereo XLR	N	Yes	Yes	1 Hz–220 kHz	-97 dBu
STK	STK-VX802	6x2	4/4	N/A	(2) 1/4"; 1/4" st.	(2) 1/4"	3-band fixed	No	Yes	20 Hz–60 kHz	>90 dB

TOTAL HARMONIC DISTORTION	DYNAMIC RANGE	CHANNEL CORSSTALK (@1 KHZ)	PHANTOM POWER	TALKBACK/ONBOARD OSCILLATOR	DEDICATED 2-TRACK RETURNS	SPECIAL FEATURES	DIMENSIONS	PRICE
0.007%	130 dB	-84 dBu	48V	N/N	Yes	XDR mic preamps	5.45x16.63x17.28	$1,049
0.007%	130 dB	-84 dBu	48V	N/N	Yes	XDR mic preamps; rotatable patchbay	5x19x17.6	$1,299
<0.05%	120 dB	-90 dB	48V	N/N	Yes	Built-in effects; 75Hz/XLR subwoofer output	4.6x17.2x15.7	$719
<0.05%	120 dB	-90 dB	48V	N/N	Yes	Built-in effects; 75Hz/XLR subwoofer output	4.6x21.4x15.7	$929
<0.05%	120 dB	-90 dB	48V	N/N	Yes	Built-in effects; 75Hz/XLR subwoofer output	4.6x25.6x15.7	$1,129
<0.05%	N/A	-90 dB	Yes	N/N	Yes	32-bit EMAC digital EFX processor w/16 effects	11.8x14.4x4.1	$379
<0.05%	N/A	-90 dB	Yes	N/N	Yes	32-bit EMAC digital EFX processor w/16 effects	16.1x14.4x4.1	$479
<0.10%	120 dB	75 dB	15V	N/N	Yes	Built-in effects; switchable stereo/mon. mains	11.7x20.5x13	$699
<0.10%	120 dB	75 dB	15V	N/N	Yes	Built-in effects; switchable stereo/mon. mains	11.7x 20.5x13	$979
<0.10% @ 8Ω	120 dB	>75 dB	15V	N/N	Yes	Built-in effects; switchable stereo/mon. mains	11.7x20.5x13	$1,079
.01%	113 dB	-75 dB	48V, 4-ch	Y/Y	Yes	FireWire option	13.9x17.3x5.9	$639
.01%	110 dB	-105 dB	8, 48V	Y/Y	Yes	FireWire option	17.3x20.3x6.6	$919
N/A	N/A	N/A	48V, 16-ch	Y/Y	Yes	FireWire option	N/A	$1,539
0.0013%	114 dBu	-91 dBu	Yes	Y/N	Yes	Inline monitoring	Config-dependent	$3,599–$4,499
>0.005%	N/A	N/A	No	N/N	No	Pan; 2 stereo XLR mix outs; headphone cue	1U	$1,895
<0.01%	110 dB	N/A	No	N/N	No	1U	19x7x1.7	$180
<0.01%	102 dB	N/A	Yes	N/N	No	AC/battery power	14x10x3	$230
<0.005%	110 dB	> 80 dB	Yes	N/N	Yes	2 "super channels"	16.2x19x4.5	$420
<0.005%	110 dB	> 85 dB	Yes	N/N	No	2 "super channels"	36.5x19x9	$2,000
<0.005%	110 dB	>85 dB	Yes	N/N	No	2 "super channels"	44.5x19x9	$2,500
<0.005%	>90 dB	<-84 dB	Yes	N/N	Yes	2 XLR inputs per stereo ch; linkable: 54 inputs/1 master	17.3x5.1x19.2	$1,030
<0.005%	>90 dB	<89.5 dB	Yes	Y/N	Yes	S/PDIF in/out assign; level meters for all mic ins/grp outs	45.57x4.15x21.42	$2,100
<0.005%	>90 dB	<-86 dB	Yes	N/N	Yes		17.3x2.4x15.4	$360
<0.005%	90 dB	84 dB	Yes	N/N	Yes	16 true mic inputs	17.5x2x19	$700
<0.005%	>90 dB	89.5 dB	Yes	Y/N	Yes	5.1 surround ctrl room monitor	33.9x43x21.5	$1,700
<0.05%	84 dB	-70 dB	12VDC	N/N	No		19x2.5x1.75	$100
0.02%	84 dB	-70 dB	+18VDC	N/N	No		5.3x3.7x2	$150
0.056%	N/A	80 dB	48V	N/N	No	10-segment LED meters; headphone out; 56 mm faders	7x19x7.1	$600
0.005%	N/A	-80 dB	48V	N/N	Yes		19x1 3/4x7	$675
<0.005%	>95 dB	90 dB	Yes	N/N	No	Rackmounts optional	17x4.75x 5.625	$2,180
<0.007%	N/A	>80	Global +48V	N/N	Yes	DI for instruments; RIAA turntable EQ; zero-latency monitoring; dedicated artist and engineer headphone monitoring	10.9x2.2x9.7	$150
<0.007%	N/A	>80	Global +48V	N/N	Yes	DI for instruments; RIAA turntable EQ; zero-latency monitoring; dedicated artist and engineer headphone monitoring	18x2.2.9.7	$300
<0.007% @ 1 kHz	N/A	>96 dB	Global	N/N	Yes	100mm faders; rackmountable (w/rack extender) (9U)	14.8x16.3x3.5	$380
<0.007% @ 1 kHz	N/A	>96 dB	Global	N/N	Yes	100mm faders; rackmountable (9U)	16.8x16.3x3.5	$430
<0.007% @ 1 kHz	N/A	>96 dB	Global	N/N	Yes	100mm faders; rackmountable (9U)	20.8x16.3x3.5	$530
<0.007% @ 1 kHz	N/A	>96 dB	Global	N/N	Yes	10 stereo, 4 mono in; 100mm fader; rackmountable (9U)	20.8x16.3x3.5	$640
<0.009%	N/A	>96 dB	Global	N/N	Yes	Built-in Lexicon effects	17.5x16.5x4.1	$700
<0.009%	N/A	>96 dB	Global	N/N	Yes	Built-in Lexicon effects; rotatable patch bay	17.5x18x6.3	$1,200
<0.008% @ 1kHz	N/A	<90 dB	Global	N/N	Yes	S/PDIF digital output; integral rack rails	20.9x16x5	$600
<0.008% @ 1kHz	N/A	<90 dB	Global	N/N	Yes	S/PDIF digital output; integral rack rails	20.9x20.2x5	$780
<0.008% @ 1kHz	N/A	<90 dB	Global	N/N	Yes	S/PDIF digital output; integral rack rails	20.9x20.2x5	$920
<0.005%	N/A	>90 dB	Global	N/N	Yes	Optional mic stand adapter	8.7x9.6x2	$216
<0.005%	N/A	>90 dB	Global	N/N	Yes	Built-in 30Wx2 power amp	9.8x9.3x4	$460
<0.006%	N/A	>95 dB	Global	N/N	Yes	100 mm faders	19x20x2.8	$750
<0.007%	N/A	>98 dB	Global	Y/N	Yes	Left, right, and mono outputs	19.8x25.7x7	$1,900
<0.007%	N/A	>98 dB	Global	Y/N	Yes	Left, right, and mono outputs	19.8x33.7x7	$2,350
<0.007%	N/A	>98 dB	Global	Y/N	Yes	Left, right, and mono outputs	19.8x41.7x7	$2,800
0.002%	N/A	-100 dB (mic in)	Yes	Y/Y	Yes	Ultra-quiet preamps; in-line multitrack mixes with Mix B path	41.71x30.75x8.97	$5,500
0.008%	N/A	N/A	No	Y/N	Yes	Compact line mixer for DAW mixing	19x7x7	$4,950
<.002%	N/A	>88 dB	No	N/N	Yes	16 channel modular line mixer	29x7x24	$7,850
-104 dB	125 dB	-97 dB	No	N/N	No	Stereo expansion, limiter, master inserts, 60 V Class A circuitry	2U	TBA
<0.005%	N/A	-85 dBu	Global	N/N	No	Stereo channel switchable to RIAA level/EQ	10x10x3	$275

ANALOG MIXING CONSOLES

MANUFACTURER	PRODUCT	MIXER CONFIGURATION	MIC INPUTS (XLR)/ LINE INPUTS	# OF INSERTS/ DIRECT OUTS	# OF AUX SENDS/ RETURNS/TYPE	# OF BUS OUTPUTS/TYPE	EQ	MUTE	SOLO-IN-PLACE	FREQUENCY RESPONSE	SIGNAL-TO-NOISE RATIO
STK	STK-VX802FX	6x2	4/4	N/A	(2) 1/4"; 1/4" st.	(2) 1/4"	3-band	No	Yes	20 Hz–60 kHz	90 dB
STK	STK-VX1202N	8x2	8/8	2/0	(3/2) 1/4" st.	(2) XLR; 1/4"	4-band	Yes	Yes	20 Hz–60 kHz	>90 dB
STK	STK-VX1443R	12x4x2	10/4	10/8	(4/2) 1/4" st.	(4) 1/4"	4-band fixed	Yes	Yes	20 Hz–60 kHz	>90 dB
STK	STK-VX1602N	12x2	8/8	4/0	(3/2) 1/4" st.	(2) XLR; 1/4"	4-band fixed	Yes	Yes	20 Hz–60 kHz	>90 dB
STK	STK-VX2043FX	18x4x2	16/4	16/0	(4/4) 1/4" st.	(4) 1/4"	4-band	Yes	Yes	20 Hz–60 kHz	>90 dB
STK	STK-VX2442N	20x4x2	20/8	16/8	(4/4) 1/4" st.	(4) 1/4"	3-band; mid-sweep	Yes	Yes	20 Hz–60 kHz	>90 dB
STK	STK-VX3242N	28x4x2	24/8	24/16	(6/4) 1/4" st.	(4) 1/4"	3-band; mid-sweep	Yes	Yes	20 Hz–60 kHz	>90 dB
Studiomaster	162BP	16x2	16/14	16/14	2/1	(2) XLR	3-band; mid-sweep	No	Yes	20 Hz–20 kHz	85 dB
Studiomaster	Pro 2 163	12x2x1	12/14	12/0	(5/2) 1/4"	(3) XLR	3-band; mid-sweep	Yes	Yes	20 Hz–20 kHz	89 dB
Studiomaster	Pro 2 203	16x2x1	16/18	10/0	(5/2) 1/4"	(3) XLR	3-band; mid-sweep	Yes	Yes	20 Hz–20 kHz	89 dB
Studiomaster	Trilogy T 166	12x4x2x1	12/14	14/10	(6/18) 1/4"	(4) 1/4"	3-band; mid-sweep	Yes	Yes	20 Hz–20 kHz	89 dB
Studiomaster	Trilogy T 206	16x4x2x1	16/18	18/14	(6/18) 1/4"	(4) 1/4"	3-band; mid-sweep	Yes	Yes	20 Hz–20 kHz	89 dB
Studiomaster	Trilogy T 326	24x4x2x1	24/28	24/20	6/8	(4) 1/4"	3-band; mid-sweep	Yes	Yes	20 Hz–20 kHz	89 dB
Studiomaster	Trilogy T-406	32x4x2x1	32/28/4	32/28	6/4	(4) 1/4"	3-band; mid-sweep	Yes	Yes	20 Hz–20 kHz	89 dB
Studiomaster	Mixdown Classic 24	24x16x8x2	24/24	34/24	(6/18) 1/4"	(8) 1/4"	3-band	Yes	Yes	30 Hz–20 kHz	92 dB
Studiomaster	Mixdown Classic 32	32x16x8x2	32/32	42/32	(6/18) 1/4"	(8) 1/4"	3-band	Yes	Yes	30 Hz–20 kHz	92 dB
TL Audio	M-3 Tube Tracker	8x2	8/8	8/8	(2/2) 1/4"	N/A	4-band; mid-sweep	Yes	No	10 Hz–40 kHz	-127 dBu
Trident Audio Ltd	S100	8x2x1	8	N/A	N/A	(2) XLR	N/A	No	No	18 Hz–73 kHz	N/A
Vermona	Rack Mix	8x2	4 stereo	N/A	(1/1) 1/4"	N/A	N/A	No	No	20 Hz–22 kHz	>110 dB
Yamaha	MG 10/2	10x2	4/10	2/0	(2/2) 1/4"	(2) 1/4"	3-band	No	No	20 Hz–20 kHz	128 dBu
Yamaha	MG 12/4	12x4x2	6/6	4/0	(2/2) 1/4"	(2) 1/4"	3-band	Yes	Yes	20 Hz–20 kHz	128 dBu
Yamaha	MG 16/4	16x4x2	10/8	8/0	(2/1) 1/4" st.	(2) 1/4"	3-band	Yes	Yes	20 Hz–20 kHz	128 dBu
Yamaha	MG 16/6 FX	16x4x2	10/8	8/0	(3/1) 1/4" st.	(4) 1/4"	3-band; mid-sweep	Yes	Yes	20 Hz–20 kHz	128 dBu
Yamaha	MG 24/14 FX	24x4x2	16/24	16/0	(6/2) 1/4" st.	N/A	3-band; mid-sweep	Yes	Yes	20 Hz–20 kHz	128 dBu
Yamaha	MG 32/14 FX	32x4x2	24/32	24/0	(6/2) 1/4" st.	(6) 1/4" TRS	3-band; mid-sweep	Yes	Yes	20 Hz–20 kHz	128 dBu

From page 24, Gates and Expanders

as timing triggers.

By setting the attack and release times of the gate to fairly long values and panning the two outputs hard left and right in the mix, the signal will appear to move back and forth between the speakers as first one channel is triggered and then the other (see Fig. 3).

If the gate has a ducking function, the process is simplified further: one channel is set to gate, the other to duck, and the two channels are linked for stereo operation. Feeding a single pulse or drum sound into one sidechain input will cause the signal to pan and then return.

If the tempo of the drum machine is synchronized to that of the music by means of a tape time code track or something similar, the pan timing will remain accurately synchronized to the tempo of the music. Furthermore, the pan triggers don't have to be evenly spaced but can follow a suitable rhythm, allowing more complex effects to be created. Given the extent to which this technique is used in dance-music production, it's surprising that more time-clocked rhythmic effects haven't been produced.

This basic triggered-pan setup can be further modified to produce a rough approximation of a rotary-speaker simulation simply by feeding the two gate outputs into two equalizers, each set to give a noticeably different sound (see Fig. 4).

Expanders

Although they perform a similar task to gates, expanders are easier to understand if you think of them as compressors in reverse. Compressors reduce the gain of a signal once it exceeds a predetermined threshold whereas expanders apply gain reduction to signals that fall below the threshold. Whereas a gate will close completely when the signal falls below its threshold, the expander reduces the gain of signals that fall below the threshold by a user-definable ratio, in just the

TOTAL HARMONIC DISTORTION	DYNAMIC RANGE	CHANNEL CORSSTALK (@1 KHZ)	PHANTOM POWER	TALKBACK/ONBOARD OSCILLATOR	DEDICATED 2-TRACK RETURNS	SPECIAL FEATURES	DIMENSIONS	PRICE
<0.005%	N/A	-85 dBu	Global	N/N	No	Stereo channels switchable to RIAA level EQ	10x10x3	$380
<0.005%	N/A	-86 dBu	Global	N/N	Yes	Channels sent to separate "B" mix outputs when Mute is pushed	12x14x3	$450
<0.005%	N/A	-85 dBu	Global	N/N	Yes	On board 7-band master graphic EQ; built-in subwoofer output	19x15x4	$800
<0.005%	N/A	-86 dBu	Global	N/N	Yes	Channels sent to separate "B" mix outputs when Mute is pushed	16x14x3	$580
<0.005%	N/A	-86 dBu	Global	N/N	Yes	On board digital effects; 7-band master graphic EQ; subwoofer send	29x15x4	$1,000
<0.005%	N/A	-86 dBu	Global	Y/N	Yes	Switchable in 2 groups of 8-ch	31x15x4	$1,420
<0.005%	N/A	-86 dBu	Global	Y/N	Yes	Switchable in 2 groups of 8-ch	38x20x4	$2,200
0.006%	108 dB	85 dB	48V global	N/N	Yes	Rack mount; internally modular; rear patching	19x4.8x10.5	$649
0.0085%	112 dB	90 dB	48V	N/N	No	100 Hz channel HPF; rackmountable	21.19x2.13x 3	$870
0.0085%	112 dB	90 dB	48V	N/N	No	100 Hz channel HPF	24.19x21.13x3	$1,070
0.0085%	112 dB	90 dB	48V	N/N	Yes	Expandable to 22 channels; rackmountable	21.19x2.13x3	$995
0.0085%	112 dB	90 dB	48V	N/N	Yes	Expandable to 26 channels	24.19x21.13x3	$1,195
0.0085%	112 dB	90 dB	48V	N/N	Yes	Combo XLR/stereo, monitor/stereo channels	34x21.125x3	$1,595
0.0085%	112 dB	90 dB	48V global	N/N	Yes	Expandable to 42 and 52 channels	42.6x21.125x3	$1,895
0.005%	N/A	-95 dB	48V per ch	Y/Y	Yes	MIDI muting; split design; meter bridge	47.2x25.5x5	$2,995
0.005%	N/A	-95 dB	48V per ch	Y/Y	Yes	MIDI muting; split design; optional meter bridge	58.5x25.5x5	$3,595
0.05% @ 1 kHz	110 dB	-100 dB	Global	N/N	No	Tube gain stages; linkable; digital out option w/work clock in	19x17.4x4.92	$3,549
>0.005%	N/A	N/A	No	N/N	No	Pan; 2 stereo XLR mix outs; headphone cue	1U	$1,000
<0.005%	>110 dB	75 dB	No	N/N	No		N/A	$269
0.1%	N/A	-70 dB	Global	N/N	Yes	Optional stand mount	10.25x11.38x2	$129
0.1%	N/A	-70 dB	Global	N/N	Yes	Rackmount kit incl.	12.5x16.5x4	$239
0.1%	N/A	-70 dB	Global	N/N	Yes	Rackmount kit incl.	16.62x16.5x4	$329
0.1%	N/A	-70 dB	Global	N/N	Yes	Rackmountable; built-in effects; graphic EQ	16.62x16.5x4	$419
0.1%	N/A	-70 dB	8 ch., per switch	Y/N	Yes	Dual internal effects; LPF filter on mono out for sub; light socket	33.5x21.25x5	$1,099
0.1%	N/A	-70 dB	8 ch., per switch	Y/N	Yes	Dual internal effects; LPF filter on mono out for sub; light socket	41.75x21.25x6	$1,299

same manner as the compressor. For example, if the expansion ratio is set to 1:2, for every 1 dB the signal falls below the threshold, the output will fall by 2 dB.

This produces a more progressive and more subtle muting effect than can be achieved by using gates but, because the action of a gate is smoothed considerably by its Attack and Release controls, both gates and expanders behave in a very similar way, subjectively, when used to clean up sounds. The smaller the expansion ratio, the more subtle the gain-reduction effect, while a high expansion ratio will make the expander behave in exactly the same way as a gate. Expanders are often incorporated into compressor designs because they are less critical to set up than gates and yet still provide a worthwhile reduction in noise during pauses in the signal.

Final Analysis

Gates in all their forms are useful to keep pauses silent in individual tracks. However they are of little use on mixed material as in this case there are unlikely to be many true pauses for the gate to work on. With modern 24-bit recording systems, noise in the recording chain is no longer a problem. Source noise is a different matter, though, especially with instruments like electric guitars, which have pretty poor signal-to-noise performance when used with overdrive.

The creative use of gates to modulate the envelope of one signal under the control of another is an area of control that's well worth exploring and, with a little ingenuity, it's possible to set up some very sophisticated-sounding rhythms using very simple source material. ■

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CD RECORDERS

MANUFACTURER	PRODUCT	RECORD FORMATS	ANALOG I/O	DIGITAL I/O	SAMPLING RATES	DISC AT ONCE/ TRACK AT ONCE	INDIVIDUAL TRACK RECORD STOP/START	MANUAL TRACK INCREMENT	AUTO LEVEL RECORD	RECORD MUTE
HHB	CDR 830 BurnIT	CD-R; CD-RW	RCA	S/PDIF (optical, coaxial)	44.1 kHz	Y/Y	Yes	Yes	No	Yes
HHB	CDR 830 Plus	CD-R; CD-RW	XLR; RCA	S/PDIF (XLR, optical, coaxial)	44.1 kHz	Y/Y	Yes	Yes	Yes	Yes
Superscope	PSD300	CD-R; CD-RW	XLR; 1/4"	S/PDIF; RCA	44.1 kHz	N/N	Yes	Yes	Yes	No
Tascam	CC-222	CD-RW; CD-R-DA; CD-RW-DA	RCA	S/PDIF (optical, coaxial)	44.1 kHz	Y/Y	Yes	Yes	Yes	Yes
Tascam	CD-RW 4U	CD-R; CD-RW; CD-R-DA; CD-RW-DA	RCA	S/PDIF	44.1 kHz	Y/Y	Yes	Yes	Yes	Yes
Tascam	CD-RW750	CD-R; CD-RW	RCA	S/PDIF (RCA, optical)	44.1 kHz	N/Y	Yes	Yes	Yes	Yes
Tascam	CD-RW2000	CD-R; CD-RW	XLR; RCA	S/PDIF (RCA, optical)	44.1 kHz	N/Y	Yes	Yes	Yes	Yes
Tascam	CD-RW 402	CD-R; CD-RW; CD-R-DA; CD-RW-DA; CD-DA	XLR; RCA	S/PDIF (optical, coaxial)	44.1 kHz	Y/Y	Yes	Yes	Yes	Yes

CHANNEL STRIPS

MANUFACTURER	PRODUCT	# OF CHANNELS/ STEREO LINK	MIC PRE TYPES	ANALOG I/O	DIGITAL I/O	EQ TYPE	FILTERS	COMPRESSOR TYPE
Antares	Vocal Processor	2/N	Solid state	XLR; 1/4"	N/A	2-band parametric	HP; LP	Solid state
API	API 7600	1/Y	Discrete solid state	XLR; 1/4"	N/A	3-band fixed	HP; LP	N/A
A.R.T.	Tube Channel	1/N	Tube	XLR; 1/4"	N/A	4-band parametric w/sweep mids	No	Optical tube
A.R.T.	Pro Channel	1/N	Tube	XLR; 1/4"	N/A	4-band parametric w/sweep mids	HP variable	Optical tube/variable mu
Avalon Design	VT-737SP	1/Y	Tube (Class A)	XLR; 1/4" TRS in/XLR out	N/A	4-band parametric	HP	Optical Class A tube
Behringer	Ultra-Voice Pro VX2000	1/N	Tube emulation	XLR; 1/4" TRS	N/A	3-band parametric	HP	Opto-compressor
Behringer	Ultra-Voice Digital VX2496	1/N	Tube emulation	XLR; 1/4" TRS	AES/EBU	3-band parametric	HP	Opto-compressor
dbx	286A	1/N	Solid state	XLR; 1/4" TRS	N/A	2-band enhancer	HP	Overeasy
dbx	ProVocal	1/N	Digital	XLR	AES/EBU	3-band parametric	No	Digital
dbx	376 Tube Channel Strip	2/N	Tube	XLR; 1/4"	AES/EBU	3-band parametric	HP	VCA
Drawmer	MX60 Front End One	1/N	Solid state	XLR; 1/4" TRS	N/A	3-band: high/low shelving; center parametric	HP 100 Hz	Soft knee
Drawmer	TS1/DC1	1/N	Solid state	XLR; 1/4"	AES/EBU; S/PDIF	HF	HP	N/A
Focusrite	Trak Master	1/N	Solid state (Class A)	XLR; 1/4"	Optional 24/96 A-D	3-band, switchable for voice/instrument	No	Optical
Focusrite	TwinTrak Pro	2/N	Solid state (Class A)	XLR; 1/4"	S/PDIF	Mid-scoop	No	Opto-compressor
Focusrite	VoiceMaster Pro	1/N	Solid state	XLR; 1/4"	Optional 24/96 A-D	Voice-optimized EQ	Harmonics	Optical

TRACK NUMBERING	SAMPLE RATE CONVERSION	SERIAL COPY MANAGEMENT SYSTEM	RECORDING TIME DISPLAY	ERROR REPORTING	HEADPHONE JACK	REMOTE CONTROL	SCSI	DIMENSIONS	WEIGHT (LBS.)	ADDITIONAL FEATURES	PRICE
Auto or manual	Yes	Yes	Yes	Yes	Yes	Yes	No	19x11.62x4.13	7.7	24-bit converters; CD text; digital input; gain control	$649
Auto or manual	Yes	Yes	Yes	Yes	Yes	Yes	No	19x11.62x4.13	8.1	Word clock input; parallel remote input	$829
Auto	Yes	No	Yes	No	Yes	Yes	No	11x9x4	7	Real-time recorder; key, tempo controls, voice reduction; A-G loop, dual tray: playback, record; built-in mic, speaker	$1,149
Auto or manual	Yes	Yes	Yes	Yes	Yes	Yes	No	19x5.4x11.6	17.6	RIAA inputs for recording vinyl LPs; integrated cassette deck	$875
Auto or manual	Yes	Yes	Yes	Yes	Yes	Yes	No	8.5x3.3x12.2	7.25		$479
Auto or manual	Yes	Yes	Yes	Yes	Yes	Yes	No	19x3.85x12.3	14.5	Remote; coaxial/optical digital I/O; adjustable digital gain	$679
Auto or manual	Yes	Yes	Yes	Yes	Yes	Yes	No	19x3.85x12.3	15.2	AES/EBU, coaxial, optical digital I/O; word clock	$1,125
Auto or manual	Yes	Yes	Yes	Yes	Yes	Yes	No	19x10.5x5.25	N/A	Track editing; supports CD-text; parallel controller port; duplicator up to 4x; overburning (if disc supports it)	$1,249

EXPANDER	GATE	DE-ESSER	SIDECHAIN	BYPASS	METER TYPE	FREQUENCY RESPONSE	DYNAMIC RANGE	THD	DIMENSIONS	WEIGHT (LBS.)	SPECIAL FEATURES	PRICE
Yes	Yes	Yes	No	Yes	5-seg LED	10 Hz–20 kHz	N/A	>0.005%	19x1.75x5	4.5	Stereo double-tracking; tube modeling; mic modeling	$595
No	No	No	No	Yes	LED	N/A	N/A	N/A	N/A	N/A	Includes sends, busses, solo functions; units can be linked w/API 7800 master controller	$2,995
No	No	No	No	Yes	LED; VU	20 Hz–20 kHz	>90 dB	<0.1%	19x5.25x1.75	8	Preamp/comp/EQ inserts; selectable metering	$499
No	No	No	No	Yes	LED; VU	20 Hz–20 kHz	>100 dB	<0.1%	19x6.5x3.5	12	Preamp/comp/EQ inserts; selectable metering	$799
No	No	Yes	Yes	No	VU	1 Hz–200 kHz	148 dB	0.05%	19x12x3.5	26	Fully-discrete Class A tubes; EQ switch	$2,295
Yes	Yes	Yes	No	Yes	Gain reduction and output LEDs	10 Hz–200 kHz	N/A	0.02% mic; 0.002% line	19x8.5x1.75	N/A	Enhancer; recording output; 4580 operational amplifiers	$159
Yes	Yes	Yes	No	Yes	Gain reduction/ output LED	10 Hz–200 kHz	N/A	0.001%	19x8.5x1.75	N/A	24-bit/96 kHz AES/EBU output w/selectable sampling rates or external clocking	$200
Yes	Yes	Yes	Yes	Yes	LED	20 Hz–20 kHz	105 dB	0.005%	19x7.5x1.75	5	Phantom powered	$300
No	Yes	Yes	No	Yes	LED	20 Hz–22 kHz	103 dB	0.003%	19x1.75x5.75	7.14	Delay; chorus; mic modeling; preamp modeling	$450
No	No	Yes	Yes	No	LED	20 Hz–20 kHz	>107 dB	0.003%	19x8.25x1.75	N/A		$600
Yes	Yes	Yes	No	Yes	LED	20 Hz–20 kHz	N/A	<0.01%	1U	9	Instument input with 20 dB pad	$835
No	No	No	Yes	Yes	LED	20 Hz–20 kHz	>90 dB	<0.01%	N/A	N/A	Mono DI, mic pre; stereo comp; 24/96k output	$1,250
No	No	No	No	Yes	LED	20 Hz–200 kHz	N/A	0.0003%	1U	N/A	Tube sound circuit	$450
No	No	No	No	Yes	Dual peak reading	N/A	N/A	N/A	N/A	10	Latency-free monitoring section	$700
Yes	No	Yes	No	Yes	Peak reading	10 Hz–200 kHz	110 dB	0.002%	3U	N/A	Tube emulation circuitry	$800

CHANNEL STRIPS

MANUFACTURER	PRODUCT	# OF CHANNELS / STEREO LINK	MIC PRE TYPES	ANALOG I/O	DIGITAL I/O	EQ TYPE	FILTERS	COMPRESSOR TYPE
Focusrite	ISA220 Session Pack	1/Y	Solid state	XLR; 1/4"	Optional 24/96 A-D	4-band (2 parametric)	HP; LP	Discrete (Class A)
Focusrite	ISA430 Producer Pack MKII	1/N	Solid state (Class A)	XLR	Optional 24/96 A-D	4-band parametric	HP	Class A; VCA, opto-compressor and opto-L
George Massenburg Labs	2032	1/Y	Solid state	XLR; 1/4"	N/A	4 band parametric	HP, 40 Hz/100 Hz	N/A
Joemeek	threeQ	1/Y	Current sense	XLR; 1/4" TRS	N/A	Fixed LF/HF; mid sweep	No	Optical
Joemeek	Twin Q	2/Y	Current sense	XLR	AES/EBU; optical; S/PDIF; Word	LF sweep; mid sweep; HF selectable	HP	Optical
LA Audio	MLX20	2/N	Solid state	XLR; 1/4" TRS	N/A	N/A	Sweepable HP	N/A
LA Audio	MPX10 Mono Multi-Processor	1/N	Solid state	XLR; 1/4" TRS	N/A	4-band w/sweep high/low	HP 75 Hz; LP 12 kHz	Solid state
LA Audio	PS10	1/N	Solid state	XLR; 1/4" TRS	Optional	4-band w/sweep high/low; 2 parametric mids	HP 75 Hz; LP 12 kHz	Hard or soft knee w/variable rate
LA Audio	PS10D	1/N	Solid state	XLR; 1/4" TRS	24-bit A/D	4-band w/sweep high/low; 2 parametric mids	HP 75 Hz; LP 12 kHz	Hard or soft knee w/variable rate
Langevin	Langevin Dual Vocal Combo	2/Y	All discrete	XLR; 1/4"	N/A	High/low shelving	No	Electro-optical
Manley Labs	Voxbox	1/Y	Tube	XLR; 1/4"	N/A	3-band Pultec-style	HP 80 Hz, 100 Hz	Optical
Millennia	Twin Direct TD-1	1/Y	HV-3	9 outputs	N/A	2-band parametric	No	N/A
Millennia	Origin STT-1	1/Y	Tube/solid state	XLR; 1/4"	N/A	4-band parametric	No	Optical
Oram Pro	MWS Microphone Work Station	2/N	Solid state	XLR	N/A	Series 24 console EQ	HP; LP	N/A
Pendulum	Quartet	1/Y	Tube	XLR; 1/4"	N/A	3-band modified Baxandall	HP	Optical
Pendulum	Quartet II Mercenary Edition	1/Y	Tube	XLR; 1/4"	N/A	3 band passive	Hi peak, mid dip, low	Delta-Mu
PreSonus	Eureka	1/N	Class A, discrete	XLR; 1/4"	N/A	3-band parametric	HP	Fully variable
PreSonus	VXP Dynamic Voice Processor	1/N	Class A, discrete	XLR; 1/4" TRS	N/A	4-band semi-parametric	HP	VCA; variable soft-knee to hard limit
Rane	VP12	2/N	Solid state	XLR; 1/4" TRS	N/A	2-band parametric	HP; LP	Solid state
Requisite Audio	Pal Plus MkII	1/Y	Tube; transformer	XLR; 1/4"	N/A	N/A	No	Optical
SPL Electronics	Track One	1/N	Solid state	XLR; 1/4"	AES/EBU; S/PDIF (optional)	3-band (2 parametric)	HP	SPL double VCA
SPL Electronics	Channel One	1/N	Solid state/tube hybrid	XLR; 1/4" TRS	AES/EBU; S/PDIF (optional)	3-band (2 parametric)	HP	SPL double VCA
Symetrix	528E Voice Processor	1/N	Solid state	XLR	N/A	3-band parametric	No	Analog
TC-Helicon	Gold Channel	2/Y	Digital	XLR	AES/EBU; S/PDIF; ADAT	5-band parametric	No	Digital
TL Audio	5050 Mono Valve Compressor	1/N	Tube	XLR; 1/4"	S/PDIF (optional)	N/A	HP 90 Hz	Tube
TL Audio	5051 Mono Valve Compressor	1/Y	Tube/solid state	XLR; 1/4"	N/A	4-band parametric	HP 90 Hz	Tube
TL Audio	5052 Stereo Value Processor	2/Y	Tube	XLR; 1/4" TRS	24-bit S/PDIF (optional)	2 parametric mids w/high-low sweeps	HP 90 Hz	Transconductance/tube
TL Audio	VP-1	1/Y	Tube/solid state (Class A)	XLR; 1/4"	AES/EBU or S/PDIF (optional)	4-band parametric	HP variable	Tube or optical
Toft Audio Designs	AFC-2	2/N	Solid State, Burr Brown	XLR; 1/4"	N/A	4-band; LF/HF shelved; 2 mid sweep	Sweep	N/A
Toft Audio Designs	EC-1	1/N	Solid State, Burr Brown	XLR; 1/4"	N/A	4-band; LF/HF shelved; 2 mid sweep	Sweep	FET solid state
Toft Audio Designs	ATC-2	2/N	Solid State, Burr Brown IC's	XLR; 1/4"	N/A	4-band; LF/HF shelved; 2 mid sweep	50 Hz LP	FET solid state
Trident Audio	S40	2/N	Solid state	XLR	N/A	Series 24 console EQ	HP; LP	N/A
Universal Audio	6176	1/Y	Tube	XLR; Hi-Z	N/A	HF/LF shelf w/selectable freq	No	Solid state (Class A)

EXPANDER	GATE	DEESSER	SIDECHAIN	BYPASS	METER TYPE	FREQUENCY RESPONSE	DYNAMIC RANGE	THD	DIMENSIONS	WEIGHT (LBS.)	SPECIAL FEATURES	PRICE
No	No	Yes	Yes	Yes	LED; VU	10 Hz–140 kHz	N/A	0.001%	19x1.75x6	N/A	Blend feature on compressor	$1,995
Yes	Yes	Yes	Yes	Yes	LED	20 Hz–200 kHz	>120 dB	0.002%	N/A	N/A	192 kHz A-D option available	$2,995
No	No	No	No	Yes	LED	N/A	N/A	N/A	1U	5	Insert point; +48v; switchable phase; M/I input	$3,500
No	No	No	No	Yes	LED	10 Hz–70 kHz	N/A	.001%	1/2 rack	5	Burr Brown front end; new opto head	$299
No	No	No	No	Yes	Input/gain reduction	20 Hz–20 kHz	115 dB	0.006%	2U	9	Selectable transformer in/out of mic circuit for warmth and presence	$999
No	No	No	No	No	LED	20 Hz–20 kHz	N/A	<0.05%	19x6x1.75	5	Phantom powered; -10/+4dB operation	$320
Yes	No	Yes	No	Yes	LED	20 Hz–20 kHz	N/A	<0.05%	19x6x1.75	4.8	Phantom powered; -10/+4dB operation	$400
Yes	No	Yes	No	Yes	LED	20 Hz–20 kHz	N/A	<0.05%	19x6x1.75	N/A	Phantom powered; -10/+4dB operation	$850
Yes	No	Yes	No	Yes	LED	20 Hz–20 kHz	N/A	<0.05%	19x6x1.75	N/A	Phantom powered; -10/+4dB operation	$1,150
No	No	No	No	Yes	VU	10 Hz–60 kHz	127 dB	<0.04%	19x3.5x10	12	All discrete; direct injection and limiter inputs	$2,000
No	No	Yes	Yes	Yes	VU	10 Hz–100 kHz	>117 dB	0.3%	19x5.25x10	21	All tube	$4,000
No	No	No	No	Yes	LED	5 Hz–300 kHz	>100 dB	0.0008%	8.5x12x3.5	15	Twin Topology	$1,495
No	No	Yes	No	Yes	VU	10 Hz–200 kHz	>100 dB	0.002%	19x12x3.5	27	Twin Topology	$2,995
No	No	No	No	Yes	LED	20 Hz–20 kHz	N/A	0.005%	N/A	N/A	Phantom; unity gain padless front end	$2,590
No	No	Yes	No	Yes	VU output/ compression	20 Hz–100 kHz	>90 dB	N/A	19x3.5x12	14		$3,250
No	No	No	Yes	Yes	LED; VU	20 Hz–100 kHz	>90 dB	N/A	19x3.5x11	16	Analog peak limiter; dual mic input transformers; Passive/Aggressive EQ	TBA
No	No	Yes	Yes	Yes	VU	10 Hz–50kHz	>115 dB	<0.005%	19x8x1.75	8	Optional 24bit/192k digital output card available (AD192)	$699
Yes	No	Yes	No	Yes	LED	20 Hz–40 kHz	116 dB	0.001%	19x8x1.75	8	Class A, transformer-coupled input with dual servo gain stage	$800
Yes	Yes	Yes	No	Yes	LED	20 Hz–20 kHz	N/A	0.01%	1U	N/A	Phantom powered; mic/line mix control	$599
No	No	No	No	No	VU	10 Hz–100 kHz	>115 dB	0.03%	3U	28	Linearity control; limiter response control; outboard power supply, point-to-point wiring	$3,500
No	No	Yes	Yes	Yes	Gain reduction/ output LED	10 Hz–200 kHz	115 dB	-97.5 dBu @ 20 dB	19x1.7x8.25	1.4	Optional Lundahl transformer mic input	$899
No	Yes	Yes	Yes	Yes	Gain reduction/ output LED	10 Hz–100 kHz	118 dB	-97.5 dBu @ 20 dB	19x3.5x8	1.9	Headphone monitor; phase rev; 48 V phantom power; separate mic, line, inst, inputs and gain controls	$1,599
Yes	No	Yes	Yes	Yes	Gain reduction LED	20 Hz–20 kHz	N/A	<0.08%	19x8x2	9	Voice symmetry; phantom power	$749
Yes	No	Yes	No	Yes	LED	10 Hz–20 kHz	>103 db	0.003%	1U	5.5	Digital radiance generation; time alignment	$2,495
No	No	No	No	Yes	Output/gain reduction LED	10 Hz–40 kHz	100 dB	0.05%	19x7.9x3.5	13.23	Gain control; 2 units stereo linkable; optional dig. out w/word clock in	$469
No	Yes	No	Yes	Yes	In/out gain reduction	10 Hz–40 kHz	106 dB	0.05%	19x7.9x3.5	5.5	Gain control; 2 units stereo linkable; optional dig. out w/word clock in	$749
No	No	No	Yes	Yes	Input/output/gain reduction VU	10 Hz–40 kHz	106 dB	0.5%	19x9.84x5.2	20	Optical output lim; optional S/PDIF digital output	$1,699
Yes	Yes	Yes	Yes	Yes	Input, output, or gain reduction VU	20 Hz–20 kHz	110 dB	0.015%	19x10x5.25	22	Optional digital output	$2,999
No	No	No	No	No	LED	20 Hz–20 kHz	N/A	N/A	1U	7	Musical EQ; phase reverse	$799
No	No	No	No	Yes	VU	20 Hz–20 kHz	N/A	N/A	1U	7	Musical EQ	$799
No	No	No	Yes	Yes	Twin VU	20 Hz–20 kHz	N/A	.001	2U	10	Musical EQ; stereo link	$1,299
No	No	No	No	Yes	LED	20 Hz–20 kHz	N/A	0.005%	N/A	N/A	Phantom; unity gain padless front end	$1,600
No	No	No	No	Yes	VU	20 Hz–20 kHz	N/A	N/A	2U	12	15 dB pad; 610/1176 join/split mode	$2,495

COMPUTER-BASED DAWS

MANUFACTURER	PRODUCT	ANALOG I/O	DIGITAL I/O	PLATFORM VERSION	BUS TYPE	PLUG-IN FORMAT(S) SUPPORTED	SAMPLE RATE
Aardvark	Direct Mix USB3	2 line I/O; 1 mic/guitar in; headphone out	N/A	Win; Mac	USB	USB audio standard	44.1, 48 kHz
Aardvark	Direct Pro LX6	(4/6) 1/4"	(2/2) S/PDIF (RCA)	Win	PCI	GSIF; ASIO 2; A/WDM; VST	32, 44.1, 48, 96 kHz
Aardvark	Direct Pro 24/96	(4/6), (4) XLR/mic-1/4"	(2/2) S/PDIF (RCA)	Win	PCI	GSIF; ASIO 2; A/WDM; VST	32, 44.1, 48, 96 kHz
Aardvark	Aark 24	(8/8) 1/4"	(2/2) S/PDIF (RCA optical); (8/8) ADAT (optical)	Win	PCI	GSIF; ASIO 2; A/WDM; VST	32, 44.1, 48 kHz
Aardvark	Direct Pro Q10	(8) XLR mic or 1/4"	(2/2) S/PDIF (RCA)	Win; Mac OS X	PCI	GSIF; ASIO 2; A/WDM; VST	32, 44.1, 48, 96 kHz
Alesis	ADAT/EDIT 2.0	ADAT Optical	ADAT optical	Win 95/98/NT/2000/NP; Mac	PCI	N/A	44.1, 48 kHz
Antex	SC22	2/2	N/A	Win 95/98/NT/2000/XP and WMD	PCI	DirectX	6.25-50 kHz
Antex	SC2000	(4/4) XLR	(1/1) XLR AES/EBU, S/PDIF	Win 95/98/NT/2000/XP and WMD	PCI	DirectX	6.25-50 kHz
Audiotrak	OptoPlay	(0/2) 1/8"	(0/2) optical	Win; MAC OS X	USB	N/A	96 kHz
Audiotrak	Maya EX	(2/6) RCA, 1/8"	(2/2) S/PDIF optical	Win 98SE;ME;2000; XP	USB	N/A	44.1, 48 kHz
Audiotrak	Maya EX5	(2/6) 1/8"	(2/2) S/PDIF coaxial I/O, optical out	Win 98SE;ME;2000; XP	USB	N/A	44.1, 48 kHz
Audiotrak	Maya EX7	(0/8) RCA	(0/2) out optical	Win 98SE; ME; 2000; XP	USB	N/A	44.1, 48 kHz
Audiotrak	Maya 44 mk II	(4/4) 1/4"	(0/2) S/PDIF coaxial/optical out	Win 98SE/ME/2000/XP	PCI	N/A	96 kHz
Audiotrak	Maya 44 USB	(4/4) RCA	(0/2) stereo S/PDIF optical	Win 98SE/ME/2000/XP; Mac OS10.x	USB	N/A	44.1, 48 kHz
Audiotrak	Maya 1010 (Inca88 mk II)	(8/8) 1/4"	(2/2) S/PDIF optical/coaxial	Win	PCI	N/A	96 kHz
Audiotrak	Maya 1010 XL	(8/8) 1/4", XLR for ch 1, 2	(2/2) S/PDIF optical out, coaxial in/out	Win	PCI	N/A	96 kHz
Audiotrak	Prodigy 7.1	(2/8) 1/8"	(2/2) stereo coaxial	Win 98SE;ME; 2000; XP	PCI	N/A	96 kHz in, 192 kHz out
Audiotrak	Prodigy 7.1 Express	2/8 1/8"	(2/2) optical	Win	PCI	N/A	96 kHz
Audiotrak	Prodigy192	(2/6) 1/8"	(0/2) coaxial and optical out	Win 98SE/ME/2000/XP	PCI	N/A	96 kHz in, 192 kHz out
Audiotrak	MI/ODI/O (add-on card)	N/A	(2) optical in, (2) coaxial in/out	Win; Mac	N/A	N/A	192 kHz
BIAS	Deck 3.5	64 - interface dependent	64 - interface dependent	Mac OS 8.6/ 9.x/10.x	N/A	VST	60 kHz
CM Labs	MotorMix	N/A	N/A	N/A	N/A	N/A	N/A
CM Labs	MotorMate	2 stereo monitor in/out	N/A	N/A	N/A	All	N/A
CreamWare	Scope Home	Stereo 1/4"	Coaxial	Win; Mac 9.2.2	PCI/DSP	N/A	N/A
CreamWare	Scope Project (Classic I/O)	(2) RCA	N/A	Win; Mac 9.2.2	PCI/DSP	Proprietary	32, 44.1, 48, 96 kHz
CreamWare	Scope Project (Plus I/O)	XLR in/out	AES/EBU	Win; Mac no OS X	PCI/DSP	Proprietary	32, 44.1, 48, 96 kHz
CreamWare	Scope Project (Z-Link I/O)	RCA in/out	(16) Z-Link; (8) ADAT, S/PDIF in/out	Win; Mac 9.2.2	PCI/DSP	Proprietary	32, 44.1, 48, 96 kHz
CreamWare	Scope Project (24ADAT I/O)	N/A	(24) ADAT	Win; Mac 9.2.2	PCI/DSP	Proprietary	32, 44.1, 48, 96 kHz
CreamWare	Scope Professional (24ADAT I/O)	N/A	(24) ADAT	Win; Mac 9.2.2	PCI/DSP	Proprietary	32, 44.1, 48, 96 kHz
CreamWare	Scope Professional (Plus I/O)	XLR in/out	AES/EBU	Win; Mac 9.2.2	PCI/DSP	Proprietary	32, 44.1, 48, 96 kHz
CreamWare	Scope Professional (Classic I/O)	(2) RCA	RCA unbalanced	Win; Mac 9.2.2	PCI/DSP	Proprietary	32, 44.1, 48, 96 kHz
CreamWare	Scope Professional (Z-Link)	RCA in/out	(16) Z-Link (8) ADAT, S/PDIF	Win; Mac 9.2.2	PCI/DSP	Proprietary	32, 44.1, 48, 96 kHz
Creative Labs	Sound Blaster Live	1/8" mic/line	S/PDIF	Win 95/98/NT	PCI	EAX	8-48 kHz
Creative Labs	Sound Blaster Audigy 2 Platinum eX	In: (1) MIDI, (2) 1/4", (2) RCA; out: (1) 1/4", (1) MIDI	S/PDIF (coax and optical)	Win 98SE/ME/2000/XP	PCI	DirectX; EAX; EAX advanced HD; ASIO2; VST	8-192 kHz
Creative Labs	Sound Blaster Audigy 2 ZS Platinum Pro	In: (1) MIDI, (2) 1/4", (2) RCA; out: (1) 1/4", (1) MIDI	S/PDIF (coax and optical)	Win 98SE/ME/2000/XP	PCI	DirectX; EAX; EAX advanced HD; ASIO2; VST	8-192 kHz
Digidesign	Mbox	(2) XLR, 1/4"	(2) S/PDIF	Win; Mac	USB	RTAS; AudioSuite	44.1-96 kHz
Digidesign	Digi 002	(8/8) XLR, 1/4"	(8) ADAT optical; (2) S/PDIF	Win; Mac	FireWire	RTAS; AudioSuite	44.1-96 kHz
Digidesign	Digi 002 Rack	(8/8) XLR, 1/4"	(8) ADAT optical; (2) S/PDIF	Win; Mac	FireWire	RTAS; AudioSuite	44.1-96 kHz
Digidesign	Pro Tools HD 1, 2 Accel & 3 Accel	(Up to 96 channels)	Up to 96 channels	Win; Mac	PCI	TDM; HTDM; RTAS; AudioSuite	44.1-192 kHz
Digigram	VX222v2	(2/2) XLR	(2/2) S/PDIF, AES/EBU	Win; Mac; Linux	PCI	N/A	8-48 kHz
Digigram	VXpocket 440	(4/4) XLR	(2/2) S/PDIF (coax)	Win; Mac; Linux	PC card	N/A	8-48 kHz
Digigram	VXpocket v2	(2/2) XLR	(2/2) S/PDIF (coax)	Win; Mac; Linux	PC card	N/A	8-48 kHz
Digigram	VX442	(4/4) XLR	(2/2) S/PDIF, AES/EBU	Win; Mac; Linux	PCI	N/A	8-96 kHz

A/D/A CONVERTER / BIT RATE	DIGITAL RECORDER RESOLUTIONS (MAX.)	SYNC TYPES	MIDI CONTROL	TRACKS / VIRTUAL TRACKS	# OF LOCATE POINTS	EFFECTS / DYNAMIC PROCESSING	ADDITIONAL FEATURES	PRICE
24-bit	24-bit	N/A	No	2/8	N/A	N/N	Solid steel unit; 24-bit A/D; guitar in; self-powered USB; record LEDs	$299
24-bit	24-bit	MTC; S/PDIF	Yes	4/unlimited	N/A	Y/Y	Premium A/D; DSP compressor; EQ; reverb; full duplex; shielded PCI card	$499
24-bit	24-bit	MTC; S/PDIF	Yes	4/unlimited	N/A	Y/Y	4 class A mic pres; DSP compressor; EQ; reverb; full duplex; shielded PCI card	$699
24-bit	24-bit	Word clock; S/PDIF; MTC; ADAT	Yes	10/unlimited	N/A	N/N	Low jitter clock; DSP; digital peak metering premium ND; full duplex; shielded PCI card	$899
24-bit	24-bit/96 kHz	MTC; S/PDIF; Word clock	Yes	10/unlimited	N/A	Y/Y	8 class A mic preamps; 2 EFR guitar inputs; shielded PCI card; no mixer required; easy monitoring	$1,099
N/A	24-bit	ADAT sync in/out	Yes	16/8	16 (ADAT/ connect)	Y/Y	Sample-accurate transfer; zero-latency monitoring; ASIO 2.0 support	$399
20-bit	N/A	LTC; SMPTE; Word clock	No	4 stereo	N/A	N/N	Multicard capability; Wintel & Alpha processor compatible	$595
20-bit	N/A	SMPTE read/write; video; VITC and LTC; word clock	Yes	8 stereo	N/A	N/N	Multicard capability; Wintel & Alpha processor compatible; LTC/VITC SMPTE read and generate sample	$895
24bit	N/A	N/A	No	N/A	N/A	N/A	Tiny design; mobile sound upgrade; headphone amp	$69
16-bit	16-bit	N/A	No	N/A	N/A	N/N	Mobile; headphone out; mic in/line in; headphone amp	$99
16-bit	16-bit	N/A	No	N/A	N/A	N/N	Mobile; headphone out; mic in/line in; headset	$89
16-bit, 24-bit	N/A	N/A	No	N/A	N/A	N/N	Headphone out; 24-bit 96kHz DAC quality; mobile; EAX; DirectSound 3D	$129
24-bit	24-bit	N/A	No	N/A	N/A	N/N	Mic(+12V); headphone; ASIO2.0; E-WDM; DirectWIRE; digital mixer; optional MIDI/digital I/O	$139
18-bit, 20-bit	18-bit	N/A	No	N/A	N/A	N/N	Mobile; headphone out; direct input monitoring; ASIO 2.0 support	$149
24-bit	24-bit	N/A	Yes	N/A	N/A	N/N	2 mic ins; 2 headphone outs; E-WDM; DirectWIRE; ASIO2.0; breakout box	$349
24-bit	24-bit	N/A	Yes	N/A	N/A	N/N	2 mic ins; 2 headphone outs; E-WDM; DirectWIRE; ASIO2.0; 1U rack	$449
24-bit	24-bit	N/A	No	N/A	N/A	N/N	EAX; DirectSound 3D; headphone; mic; ASIO2.0; E-WDM; directWIRE; advanced NSP	$99
24-bit	24bits	N/A	No	N/A	N/A	N/N	Headphone out; mic in/line in; headphone amp	$79
24-bit	24-bit	N/A	No	N/A	N/A	N/N	Optional MIDI/digital I/O; mic; headphone; ASIO 2.0; E-WDM; DirectWIRE; advanced NSP	$149
N/A	24-bit	N/A	Yes	N/A	N/A	N/N	Optional board for MAYA44 mkII and Prodigy 192; 16-channel MIDI I/O; digital I/O	$59
N/A	16-bit	N/A	Yes	64/999	Unlimited	N/Y	OMF import; 5.1 surround mixing; automated mixdown; QuickTime movie sync	$399
N/A	N/A	N/A	Yes	Unlimited	Unlimited	Y/Y	8 motorized faders	$1,000
N/A	N/A	N/A	Yes	Unlimited	Unlimited	N/N	8 touch-sensitive motorized faders	$1,600
24-bit	N/A	N/A	Yes	N/A	N/A	Y/Y	ASIO; ASIO 2; Wave GSIF; Direct Sound; Wave; MME	$425
24-bit	N/A	ADAT/MTC	Yes	N/A	N/A	Y/Y	ASIO; ASIO 2; GSIF; WAVE; Direct Sound; MME incl. software	$995
24-bit	N/A	ADAT/MTC	Yes	N/A	N/A	Y/Y	ASIO; ASIO 2; GSIF; WAVE; Direct Sound drivers; MME	$995
24-bit	N/A	ADAT/MTC	Yes	N/A	N/A	Y/Y	ASIO; ASIO 2; GSIF; WAVE; Direct Sound; MME incl. software	$995
24-bit	N/A	ADAT/MTC	Yes	N/A	N/A	Y/Y	ASIO; ASIO 2; GSIF; WAVE; Direct Sound drivers; MME incl. software	$995
24-bit	N/A	ADAT/MTC	Yes	N/A	N/A	Y/Y	ASIO; ASIO 2; GSIF; WAVE; Direct Sound drivers; MME incl. software	$1,995
24-bit	N/A	ADAT/MTC	Yes	N/A	N/A	Y/Y	ASIO; ASIO 2; GSIF; WAVE; Direct Sound drivers; MME	$1,995
24-bit	N/A	ADAT/MTC	Yes	N/A	N/A	Y/Y	ASIO; ASIO 2; GSIF; WAVE; Direct Sound; MME incl.software	$1,995
24-bit	N/A	ADAT/MTC	Yes	N/A	N/A	Y/Y	ASIO; ASIO 2; GSIF; WAVE; Direct Sound; MME incl. software	$1,995
16-bit	16-bit	MIDI	No	N/A	N/A	Y/Y	Includes Cakewalk, Sound Forge, Mixman software and digital I/O card	$199
24-bit	16-bit, 24-bit	MIDI	Yes	64	N/A	Y/Y	106 dB SNR	$250
24-bit	16-bit, 24-bit	MIDI	Yes	64	N/A	Y/Y	108 dB SNR	$250
24-bit	24-bit	N/A	Yes	32/128	Unlimited	Y/Y	Pro Tools LE software; Focusrite pres; 48V; headphone jacks; low-latency monitoring; plug-ins	$495
24-bit	24-bit	ADAT; S/PDIF	Yes	32/128	Unlimited	Y/Y	Pro Tools LE software; control surface; 4 mic pres; MIDI I/O; 48V; standalone mode; plug-ins	$2,495
24-bit	24-bit	ADAT; S/PDIF	Yes	32/128	Unlimited	Y/Y	Pro Tools LE software; four mic pres; MIDI I/O; 48V phantom power; plug-ins	$1,295
24-bit	24-bit	LTC; VITC; MTC; BiPhase; Pilot Tone; AES/EBU; S/PDIF; ADAT	Yes	192/256	Unlimited	Y/Y	Pro Tools TDM software; HD interfaces and peripherals; control surfaces; Digi & Dev Partner plug-ins	$7,995 and up
24-bit	24-bit	N/A	No	N/A	N/A	N/Y	Headphone output; 2 GPIOs; 3.3V-PCI bus compatible	$549
24-bit	24-bit	SMPTE; LTC	No	N/A	N/A	N/N	Headphones connector	$659
24-bit	24-bit	SMPTE; LTC	No	N/A	N/A	N/N	Headphones connector	$509
24-bit	24-bit	N/A	No	N/A	N/A	N/N	On-board routing and console; 3.3V-PCI bus compatible	$789

COMPUTER-BASED DAWS

MANUFACTURER	PRODUCT	ANALOG I/O	DIGITAL I/O	PLATFORM VERSION	BUS TYPE	PLUG-IN FORMAT(S) SUPPORTED	SAMPLE RATE
Digital Audio Labs	CardDeluxe	(2/2) 1/4" TRS	S/PDIF	Win	PCI	Active Movie DirectX	8-96 kHz
Digital Audio Labs	TDIF 2496 Pro	N/A	(16) I/O	Win	PCI	N/A	96 kHz
Digital Audio Labs	CDX-D8, 8 Channel AES/EBU IF	0/2	(8) I/O	Win	PCI	N/A	44.1-96 kHz
DigiTech	GNX4	XLR, 1/4"	N/A	Win; Mac	USB	VST	44.1 kHz
Echo Digital Audio	Indigo	(0/2) stereo 1/8"	N/A	Win ME/2000/XP; Mac OS X	Type II Cardbus	N/A	96 kHz
Echo Digital Audio	Indigo io	(2/2) stereo 1/8"	N/A	Win ME/2000/XP; Mac OS X	Type II Cardbus	N/A	96 kHz
Echo Digital Audio	Indigo dj	(0/4) stereo 1/8	N/A	Win ME/2000/XP; Mac OS X	Type II Cardbus	N/A	96 kHz
Echo Digital Audio	MiaMIDI	(2/2) balanced 1/4"	(2/2) S/PDIF (coaxial)	Win 95/98/ME/2000/XP; Mac OS 8/9/X	PCI	N/A	96 kHz
Echo Digital Audio	Gina3	(2/6): 2 mic pre in, 2 1/4" in, 6 1/4" out	(8/8) ADAT; (2/2) S/PDIF	Win ME/2000/XP; Mac OS X	PCI	N/A	96 kHz
Echo Digital Audio	Gina24	(2/8) balanced 1/4"	(8/8) ADAT; (2/2) S/ PDIF (optical & coaxial)	Win 95/98/ME/2000/XP; Mac OS 8/9/X	PCI	N/A	96 kHz
Echo Digital Audio	EchoFire 2	(2/6): 2 mic pre in, 2 1/4" in, 6 1/4" out	(0/0)	Win ME/2000/XP; Mac OS X	FireWire	N/A	96 kHz
Echo Digital Audio	EchoFire 8	(8/8): 2 mic pre in, 8 1/4" in, 8 1/4" out	(2/2) S/PDIF	Win ME/2000/XP; Mac OS X	FireWire	N/A	96 kHz
Echo Digital Audio	Layla3	(8/8): 2 mic pre in, 8 1/4" in, 8 1/4" out	(8/8) ADAT; (2/2) S/PDIF	Win ME/2000/XP; Mac OS X	PCI	N/A	96 kHz
Echo Digital Audio	Layla24	(8/8) balanced 1/4"	(8/8) ADAT; (2/2) S/PDIF (optical & coaxial)	Win 95/98/ME/2000/XP; Mac OS 8/9/X	PCI	N/A	96 kHz
Echo Digital Audio	Layla Laptop	(8/8) balanced 1/4"	(8/8) ADAT; (2/2) SPDIF (optical & coaxial)	Win 95/98/ME/2000/XP; Mac OS 8/9/X	Type II Cardbus	N/A	96 kHz
Edirol	UA-3FX USB Audio Interface	Stereo RCA I/O, 1/4" mic/guitar in, 1/8" mic in	S/PDIF (optical)	Win; Mac	USB	N/A	32, 44.1, 48 kHz
Edirol	UA-20 USB Audio Interface	(2) 1/4" in, stereo RCA out	S/PDIF (optical out)	Win; Mac	USB	N/A	44.1 kHz
Edirol	UA-5 USB Audio Interface	In: (2) XLR/TRS combo, RCA: out: RCA, 1/4"	S/PDIF (optical, coax)	Win; Mac	USB	DirectX; ASIO2	44.1, 48, 96 kHz
Edirol	UA-700 USB Audio Interface	(2) XLR/TRS, (1) 1/4"	S/PDIF (optical, coaxial)	Win; Mac	USB	N/A	32, 44.1, 48 kHz
Edirol	UA-1000 USB 2.0 10 ch. Audio Interface	(4) XLR/TRS combo in, 8 TRS balanced in, 8 TRS balanced out, headphone out	ADAT; S/PDIF	Win XP	USB	N/A	up to 96 kHz
Edirol	UA-1X USB Audio Interface	Stereo RCA I/O, headphone out	Optical S/PDIF	Win; Mac	USB	N/A	32, 44.1, 48 kHz
Edirol	PCR-1 USB MIDI Controller & Audio Interface	Stereo RCA I/O, headphone out	Optical out	Win; Mac	USB	N/A	up to 96 kHz
Edirol	PCR-A30 USB MIDI Controller & Audio Interface	(2) 1/4"	Optical out	Win; Mac	USB	N/A	96 kHz
Edirol	M-100 FX 10 ch. Mixer with USB	(10/2): (2) XLR, (4) 1/4", (4) RCA	S/PDIF out; USB out	Win; Mac	USB	DirectX; VST	44.1 kHz
Edirol	UR-80 USB Studio	XLR/TRS combo in, RCA out, headphone	S/PDIF (optical, coaxial)	Win; Mac	USB	N/A	up to 96 kHz
Edirol	FA-101 10x10 FireWire Audio Interface	(8/8): 2 XLR/TRS combo in, 6 TRS 1/4" in, 8 TRS 1/4" out	(2/2) S/PDIF (optical)	Win; Mac	FireWire	N/A	192 kHz
Emagic	A26	(2/6) RCA	(2/2) S/PDIF (coaxial)	Win; Mac	USB	DirectX; VST	44.1, 48 kHz
Emagic	A62 m	(6/2) RCA	S/PDIF	Win 98SE/ME/XP; Mac OS X	USB	DirectX; VST; AU	44.1, 48, 88.2, 96 kHz
E-MU Systems	1212M Digital Audio System	(2) 1/4" balanced inputs, (2) 1/4" balanced outputs	ADAT I/O; coaxial S/PDIF I/O; MIDI I/O; FireWire	Win 2000/XP	PCI	ASIO; WDM; DirectSound drivers	44.1-192 kHz
E-MU Systems	1820 Digital Audio System	(2) XLR/ 1/4" preamp ins, (6) 1/4" bal. ins, (8) 1/4" bal. outs, (4) stereo 1/8" outs, turntable ins	ADAT I/O; coaxial S/PDIF I/O; optical S/PDIF out; 2 MIDI I/O; FireWire	Win 2000/XP	PCI	ASIO; WDM; DirectSound drivers	44.1-192 kHz
E-MU Systems	1820M Digital Audio System	(2) XLR/ 1/4" preamp ins, (6) 1/4" bal. ins, (8) 1/4" bal. outs, (4) stereo 1/8" outs, turntable ins	ADAT I/O; coaxial S/PDIF I/O; optical S/PDIF out; 2 MIDI I/O; FireWire	Win 2000/XP	PCI	ASIO; WDM; DirectSound drivers	44.1-192 kHz
ESI	Juli@	(2/2) RCA, 1/4"	(2/2) coaxial, optical out	Win 98SE/ME/2000/XP	PCI	N/A	192 kHz
ESI	GIGAPort AG	(0/8) RCA	(0/2) optical	Win 98SE/ME/2000/XP; Mac OS 9.x/10.x	USB	N/A	16 kHz
ESI	GIGAPort DG	N/A	(8) ADAT	Win 98SE/ME/2000/XP; Mac OS 9.x/10.x	USB	N/A	44, 48 kHz
ESI	Waveterminal 192L	(2/6) 1/4"	(0/2) S/PDIF	Win 98SE/ME/2000/XP; Mac OS X	PCI	N/A	96 kHz in, 192 kHz out
ESI	Waveterminal 192M	(4/8) 1/4"	S/PDIF (optical, coaxial)	Win 98SE/ME/2000/XP; Mac OS X	PCI	N/A	96 kHz in, 192 kHz out
ESI	Waveterminal 192X	(2/6) 1/4"	(0/2) S/PDIF	Win 98SE/ME/2000/XP; Mac OS X	PCI	N/A	192 kHz

A/D/A CONVERTER/ BIT RATE	DIGITAL RECORDER RESOLUTIONS (MAX.)	SYNC TYPES	MIDI CONTROL	TRACKS/VIRTUAL TRACKS	# OF LOCATE POINTS	EFFECTS/DYNAMIC PROCESSING	ADDITIONAL FEATURES	PRICE
24-bit/128x/ 64x	24-bit	Internal; ext. digital	No	N/A	N/A	N/N	Multiple card support	$399
N/A	24-bit	Word clock; internal	No	N/A	2	Y/Y	Dual TDIF; DTRS sync port; multicard support	$699
24-bit	24-bit	Word clock; AES/EBU; internal	No	N/A	N/A	N/A		$799
24-bit	16-bit	MIDI clock	Yes	64/999	Unlimited	Y/Y	Guitar workstation; includes ProTracks Plus; BIAS Deck SE3.5; Lexicon plug-in	$800
24-bit	24-bit	N/A	No	N/A	N/A	N/N	8 virtual outputs; headphone out; low-latency; full support for OS X, WDM, ASIO, and Gigastudio	$129
24-bit	24-bit	N/A	No	N/A	N/A	N/N	9 virtual outputs; headphone out; low-latency; full support for OS X, WDM, ASIO, and Gigastudio	$179
24-bit	24-bit	N/A	No	N/A	N/A	N/N	8 virtual outputs; headphone and line out; low-latency; full support for OS X; WDM; ASIO, and Gigastudio	$179
24-bit	24-bit	S/PDIF	No	N/A	N/A	N/N	MIDI I/O; 8 virtual outputs; low-latency drivers with full support for OS X, WDM, Gigastudio	$199
24-bit	24-bit	ADAT; S/PDIF; MIDI	No	N/A	N/A	N/A	MIDI I/O; phantom power; headphone out; low-latency; full support for Mac OS X, WDM, ASIO, and GSIF	$275
24-bit	24-bit	S/PDIF; ADAT; Esync	No	N/A	N/A	N/N	Headphone output; low-latency; full support for OS X, WDM, ASIO and Gigastudio; Purewave; Superchannel	$349
24-bit	24-bit	MIDI; FireWire	No	N/A	N/A	N/A	MIDI I/O; phantom power; headphone out; low-latency; full support for OS X, WDM, ASIO, and GSIF	$349
24-bit	24-bit	S/PDIF; Word clock; MIDI; FireWire	No	N/A	N/A	N/A	MIDI I/O; headphone out; low-latency; full support for OS X, WDM, ASIO, and GSIF	$599
24-bit	24-bit	ADAT; S/PDIF; word; MIDI	Yes	N/A	N/A	N/A	MIDI I/O; phantom power; headphone out; low latency; full support for Mac OS X; WDM; ASIO & GSIF	$499
24-bit	24-bit	Word clock; MTC; S/PDIF; ADAT; Esync	Yes	N/A	N/A	N/N	Headphone output; low-latency; full support for OS X; WDM, ASIO, and Gigastudio; Purewave; Superchannel	$699
24-bit	24-bit	Word clock; MTC; S/PDIF; ADAT; Esync	Yes	N/A	N/A	N/N	Headphone output; low-latency; full support for OS X, WDM, ASIO, and Gigastudio; Purewave; Superchannel	$699
24-bit	24-bit	N/A	No	2 mono/1 stereo	N/A	Y/Y	Full set of effects	$215
24-bit	24-bit	N/A	No	2 mono/1 stereo	N/A	N/N	ASIO; WDM support; direct monitoring; MIDI I/O; FPT technology	$215
24-bit	24-bit	N/A	No	2	N/A	N/N	Phantom power; in/out gain controls; peak indicators; WDM and ASIO drivers	$355
24-bit	24-bit	N/A	Yes	2 mono/1 stereo	N/A	Y/Y	Line/mic/guitar input; COSM guitar amp and microphone modeling; phono preamp	$595
24-bit	24-bit	ADAT; word clock; MTC	Yes	10	N/A	N/N	Inserts on channels 1-4	$945
16-bit	16-bit	N/A	No	2	N/A	N/N	USB powered; gain switch; volume control	$95
24-bit	N/A	N/A	Yes	2	N/A	N/N	MIDI controller with built-in audio interface; bus powered; extremely thin	$370
24-bit	N/A	N/A	Yes	2	N/A	N/N	USB-powered MIDI controller and audio interface with built-in speakers and low-latency audio drivers	$395
24-bit	24-bit	N/A	No	N/A	N/A	Y/Y	Aux send, return	$495
24-bit	24-bit	MTC	Yes	2/dynamic	Dynamic	N/N	Includes Control Assignment software & HQ HyperCanvas Software synth	$545
24-bit	N/A	N/A	No	10	N/A	N/N	FireWire-powered	$695
24-bit	24-bit	Word clock	No	Software dependent	N/A	N/N	N/A	$399
24-bit	24-bit	Word clock	No	Software dependent	N/A	N/N	Zero-latency monitoring; integrated MIDI interface; low-latency OSX driver	$399
24-bit	Software dependent	ADAT; S/PDIF; MIDI	No	Software dependent	N/A	Y/Y	Hardware-accelerated effects and mixing; zero-latency monitoring; 120 dB SNR converters	$200
24-bit	Software dependent	ADAT; S/PDIF; MIDI	No	Software dependent	N/A	Y/Y	Hardware-accelerated effects and mixing; zero-latency monitoring; two TFPro preamps	$400
24-bit	Software dependent	SMPTE; ADAT; word clock; S/PDIF; MTC; MIDI	No	Software dependent	N/A	Y/Y	Hardware-accelerated effects and mixing; zero-latency monitoring; two TFPro preamps	$500
24-bit	24-bit	N/A	Yes	N/A	N/A	N/N	DirectWire 3.0; E-WDM driver; compatible with 5V PCI slots; MIDI I/O	$179
N/A	N/A	N/A	No	N/A	N/A	N/N	24-bit DAC; headphone out; supports ASIO 2.0 driver	$189
N/A	16-bit	N/A	No	N/A	N/A	N/N	ASIO 2.0 support	$189
24-bit	24-bit	N/A	No	N/A	N/A	N/N	24/96 digital out; optional add-on card MI/ODI/O	$189
24-bit	24-bit	N/A	No	N/A	N/A	N/N	Two mic inputs; optional add-on card MI/ODI/O	$249
24-bit	24-bit	N/A	No	N/A	N/A	N/N	24/96 kHz digital out; optional add-on card MI/ODI/O	$289

COMPUTER-BASED DAWS

MANUFACTURER	PRODUCT	ANALOG I/O	DIGITAL I/O	PLATFORM VERSION	BUS TYPE	PLUG-IN FORMAT(S) SUPPORTED	SAMPLE RATE
ESI	Waveterminal U24	(2/2) 1/4"	S/PDIF (optical, coaxial)	Win 98SE/ME/2000/XP; Mac OS 9.x/10.x	USB	N/A	32, 44.1, 48 kHz
ESI	WaMi Rack 192L	(4) XLR in/(8) 1/4" out	(2/2) S/PDIF	Win 98SE/ME/2000/XP; Mac OS X	PCI	N/A	96 kHz in, 192 kHz out
ESI	WaMi Rack 192X	(4) XLR in/(8) 1/4" out	(2/2) S/PDIF	Win 98SE/ME/2000/XP; Mac OS X	PCI	N/A	192 kHz
ESI	QuataFire 610	(4/4) RCA	(2/2) coaxial	Win XP	FireWire	N/A	192 kHz
ESI	OctaFire	(8/8) 1/4"	(2/2) coaxial	Win; Mac	FireWire	N/A	192 kHz
ESI	HexaFire	(16/16) XLR	(16/16) AES/EBU, ADAT, TDIF	Win; Mac	FireWire	N/A	192 kHz
ESI	MaXi0	(8/8) XLR	(8/8) AES/EBU	Win; Mac	PCI	N/A	192 kHz
ESI	MI/ODI/O	N/A	(2) optical in; (2/2) coaxial I/O (192kHz)	N/A	N/A	N/A	192 kHz
Frontier Design Group	WaveCenter/PCI	N/A	(8/8) ADAT; (2/2) S/PDIF (coax, optical); (2/2) MIDI	Win 95/98/ME/2000/XP; Mac	PCI	N/A	44.1, 48 kHz
Frontier Design Group	Dakota	N/A	(16/16) ADAT (expandable to 32/32); (2/2) S/PDIF (optical, coax); (2/2) MIDI I/O	Win 95/98/ME/2000/XP; Mac	PCI	N/A	44.1, 48 kHz
Hercules	Hercules 16/12 FW	12 jacks (2 Neutrik combo XLR/TRS)	(4) stereo optical/coaxial	Win; Mac	FireWire	VST	96 kHz
Lexicon Professional	Omega Studio	(2) XLR, (8) 1/4"	S/PDIF	Win; Mac	USB	VST	44.1, 48 kHz
Lynx Studio Technology	Lynx L22	(2/2) XLR	(2/2) S/PDIF, AES/EBU	Win 98/ME/NT/2000/XP; Mac OS 9/X	PCI	N/A	8-200 kHz (analog), 32-96 kHz (digital)
Lynx Studio Technology	AES16	N/A	(16/16) AES/EBU	Win 2000/XP; Mac OS 9/X	PCI	N/A	up to 192 kHz
Lynx Studio Technology	LynxONE	(2/2) XLR	(2/2) S/PDIF, AES/EBU	Win 95/98/NT/2000; Mac OS 9; Linux	PCI	N/A	8-48 kHz (analog), 32-96 kHz (digital)
Lynx Studio Technology	LynxTWO	(4/4), (2/6), (6/2) XLR	(2/2) S/PDIF, AES/EBU	Win 95/98/NT/2000; Mac OS 9; Linux	PCI	N/A	8-192 kHz (analog),32-96 kHz (digital)
Mackie	Spike Powered Recording System	2 mic/inst in	S/PDIF, MIDI	Win; Mac	USB	VST	96 kHz
Marian	Marc A	N/A	ADAT	Win; Mac	PCI	N/A	48 kHz
Marian	Marc 2	Stereo	Stereo S/PDIF	Win; Mac	PCI	N/A	96 kHz
Marian	Marc 4 Digi	(4) 1/4" TRS	Stereo S/PDIF	Win; Mac	PCI	N/A	96 kHz
Marian	Marc 4 MIDI	4/4	N/A	Win; Mac	PCI	N/A	96 kHz
Marian	Marc 8 MIDI	(8) RCA	N/A	Win; Mac	PCI	N/A	96 kHz
Marian	Marc-X	Stereo	ADAT and S/PDIF	Win; Mac	PCI	N/A	96 kHz
Marian	Marc 2 Pro	Stereo balanced XLR	AES/EBU on XLR, S/PDIF coax and Toslink	Win; Mac	PCI	N/A	96 kHz
M-Audio	Audiophile 2496	(2/2) RCA	S/PDIF (coaxial)	Win 95/98/2000; Mac; Linux	PCI	Direct X; VST	8-96 kHz
M-Audio	Delta Audiophile 2496	(2/2) RCA	(2/2) S/PDIF (coax)	Win 95/98/SE/NT/2000/ME/XP; Mac OS 8.6-X	PCI	VST; GSIF; DXi; ASIO; EASI; WDM	8-96 kHz
M-Audio	Audiophile USB	(2/2) RCA out, RCA, 1/4" in	(2/2) S/PDIF (coax)	Win 98SE/ME/2000/XP; Mac OS 9.x-X	USB	VST; Dxi; ASIO; EASI; WDM	44.1, 48, 96 kHz
M-Audio	Delta 1010	(8/8) 1/4" TRS	(2/2) S/PDIF (coax)	Win 95/98/SE/NT/2000/ME/XP; Mac OS 8.6-X	PCI	VST; GSIF; DXi; ASIO; EASI; WDM	8-96 kHz
M-Audio	Delta 1010 LT	8/8	(2) S/PDIF	Win 95/98/SE/NT/2000/ME/XP; Mac OS 8.6-X	PCI	VST; DXi; GSIF; ASIO; WDM; RA	8-96 kHz
M-Audio	FireWire 410	2/8	(2/2)	Win 2000/XP; Mac OS 9 and OS X	FireWire	ASIO; GSIF; WDM	96 kHz
M-Audio	Omni Studio	(4/4) 1/4" TRS	(2/2) S/PDIF (coaxial)	Win 95/98/2000/NT/XP; Mac; Linux	PCI	Direct X; VST	8-96 kHz
M-Audio	Omni Studio USB	(4/4) XLR, 1/4" TRS in, 1/4" TRS out	N/A	Win 98SE/ME/2000/XP; Mac OS 9.x-X	USB	VST; Dxi; ASIO; EASI; WDM	44.1, 48, 96 kHz
Merging Technologies	PyraMix Virtual Studio 4.2	Optional external daughtercard	ADAT; S/PDIF; MADI; AES/EBU; TDIF; SDIF	Win XP Pro	PCI	Native; DirectX; VST	32 kHz, DSD 384
Micro Technology	MicroSound/Krystal	2/2	AES/EBU; S/PDIF	Win	PCI	DirectX	8-48 kHz
MOTU	24I/O	(24/24) 1/4" TRS	N/A	Win ME/2000/XP; Mac OS 9/X; ASIO; GSIF	PCI	All native	96 kHz
MOTU	828mkII	(8/10) 1/4" TRS, 2 mic in, headphone out	(2/2) S/PDIF; (2/2) Toslink or (8/8) ADAT	Win ME/2000/XP; Mac OS 9/X; ASIO; GSIF	FireWire	All native	44.1-96 kHz
MOTU	2408mk3	(8/10) 1/4" TRS	S/PDIF; (3) ADAT Lightpipe; (3) TDIF	Win ME/2000/XP; Mac OS 9/X; ASIO; GSIF	PCI	All native	44.1-96 kHz
MOTU	896HD	8 mic-line in (Neutrik XLR/TRS), 8-out XLR	(2/2) AES/EBU; (8/8) ADAT	Win ME/2000/XP; Mac OS 9/X; ASIO; GSIF	FireWire	All native	44.1-192 kHz
MOTU	HD192	(12) XLR	AES/EBU	Win ME/2000/XP; Mac OS 9/X; ASIO; GSIF	PCI	All native	44.1-192 kHz

A/D/A CONVERTER/ BIT RATE	DIGITAL RECORDER RESOLUTIONS (MAX)	SYNC TYPES	MIDI CONTROL	TRACKS/VIRTUAL TRACKS	# OF LOCATE POINTS	EFFECTS/DYNAMIC PROCESSING	ADDITIONAL FEATURES	PRICE
24-bit	16-bit, 24-bit	S/PDIF	No	N/A	N/A	N/N	4-ch full duplex in and out (analog and digital); ASIO 2.0	$199
24-bit	24-bit	N/A	Yes	N/A	N/A	N/N	ADC 100dB ; DAC 104dB; 4 mic preamps with phantom power	$469
24-bit	24-bit	N/A	Yes	N/A	N/A	N/N	ADC 123dB ; DAC 106dB; 4 mic preamps with phantom power	$599
24-bit	24-bit	N/A	Yes	N/A	N/A	N/N	2 mic preamps with +48V phantom power; Hi-Z input for guitar	$499
24-bit	24-bit	N/A	Yes	N/A	N/A	N/N	4 mic preamps with +48V phantom power; 64 channels MIDI	TBA
24-bit	24-bit	SMPTE; word clock; video sync	Yes	N/A	N/A	N/N	8 mic preamps with +48V phantom power; 16 channels MIDI; headphone amp	TBA
24-bit	24-bit	Word clock; ADAT	Yes	N/A	N/A	N/N	PCI card can handle 4 expanders for 128 tracks total; 4-channel coaxial I/O; 1 port MIDI I/O	$1,999
N/A	24-bit	N/A	Yes	N/A	N/A	N/N	Optional board for WT192 series (X,L,M); 16-channel MIDI	$59
N/A	24-bit	MTC	No	N/A	N/A	N/N	2x2 MIDI I/O; ASIO 2.0 and GigaSampler drivers	$329
N/A	24-bit	9-pin ADAT sync; MTC; SoDA (SMPTE on digital audio)	No	N/A	N/A	N/N	ASIO 2.0; GigaStudio drivers; MIDI/I/O (8x8 optional); expandable to 32 ADAT channels	$449
24-bit	24-bit	Word clock	Yes	16/64	Unlimited	Y/Y	28 simultaneous I/O; Storm and Ableton Live software	$899
24-bit	16-bit, 24-bit	MIDI	Yes	64/999	Unlimited	Y/Y	dbx mic pres; Hi-Z in; monitor mix control; -20dB pad; +48V phantom pwr; software and Pantheon plug-ins	$530
24-bit	24-bit	AES/EBU; word clock; super clock	No	32/unlimited	N/A	N/N	L-Stream modules; 6 ft. XLR audio cable; 2 ft. sync cable; multichannel ADAT and AES/EBU expansion	$749
24-bit	24-bit	Word clock; multicard	No	NA	N/A	N/N	6 ft. XLR cables with AES16-XLR and -SRC models; sample rate conversion on AES16-SRC ($995 SRP)	$795
24-bit	24-bit	AES/EBU; word clock; super clock	Yes	N/A	N/A	N/N	XLR audio and MIDI/clock I/O cables included	$499
24-bit	24-bit	AES/EBU; word clock; super clock; SMPTE; composite video	No	N/A	N/A	N/N	6 ft. XLR audio cable; 2 ft. sync cable; multichannel ADAT and AES/EBU expansion cards	$995-$1,195
24-bit	24-bit	N/A	Yes	Unlimited	Unlimited	Y/Y	Compact recording system including all software necessary to track, mix, and record	$495
24-bit	N/A	N/A	No	N/A	N/A	N/N	Samplitude Bundle software	$249
24-bit	N/A	N/A	No	N/A	N/A	N/N	Samplitude Bundle software	$299
24-bit	N/A	N/A	No	N/A	N/A	N/N	Samplitude Bundle software	$369
24-bit	24-bit	MIDI	No	N/A	N/A	N/N	2 x MIDI in/out; Samplitude software	$369
24-bit	N/A	MIDI	No	N/A	N/A	N/N	3 x MIDI in/out; Samplitude software	$499
24-bit	N/A	MIDI; word clock	No	N/A	N/A	Y/Y	Full digital DSP mixer	$499
24-bit	N/A	MIDI; word clock	No	N/A	N/A	N/N	Samplitude Bundle software	$699
24-bit/128x	24-bit	Multicard sync	Yes	N/A	N/A	N/N	On-board digital mixing, routing and monitor controls; SCMS; ASIO 1/2; EASI; GSIF; DirectX	$230
24-bit	24-bit	S/PDIF; internal	Yes	N/A	N/A	N/N	MIDI	$230
24-bit	24-bit/128x	N/A	Yes	N/A	N/A	N/N	Headphone output (1/4" TRS) w/volume control	$250
24-bit	24-bit	Word clock; S/PDIF; internal	Yes	N/A	N/A	N/N	MIDI	$800
24-bit	24-bit	S/PDIF; internal	Yes	N/A	N/A	N/N	MIDI; 2 built-in mic preamps	$500
24-bit	24-bit	S/PDIF (coaxial/optical); MTC; MIDI clock	Yes	N/A	N/A	N/N		$500
24-bit/128x	24-bit	Multicard sync	No	N/A	N/A	N/N	Split console design; 2 mic pres have inserts; 2 line inputs; 4 stereo aux inputs; effects send	$600
24-bit	24-bit/128x	N/A	Yes	N/A	N/A	N/N		$599
24-bit, 1-bit	PCM 32-bit, DSD 1-bit	SMPTE; VITC; MTC; word clock; RS422; PAL; NTSC; HDV	Yes	Unlimited	Unlimited	Y/Y	Cross-fade editor; multipoint source/master editing; DSD; supports PMF, SDII, AIFF, AVI, MPS, WAV	$3,495 and up
16-bit	24-bit	Video black burst; SMPTE (all, optional)	No	Unlimited	32,767	Y/Y	Can edit and mix CD-ROM master files	$3,995
24-bit	24-bit	Internal; word clock (in/out)	No	Host dependent	Host dependent	Host dependent	114 dB S/N A-weighted; +4/-10dB switchable inputs	$1,495 core
24-bit	24-bit	ADAT (sample-accurate); SMPTE; word	Yes	Host dependent	Host dependent	Host dependent	CueMix DSP no-latency monitoring; front-panel LCD programming	$795
24-bit	24-bit	Word clock; SMPTE; ADAT; lightpipe; DTP	No	Host dependent	Host dependent	Host dependent	Works as standalone format converter; sample-accurate ADAT/Tascam transfers	$995 core
24-bit	24-bit	ADAT; word clock; optical	No	Host dependent	Host dependent	Host dependent	8 mic inputs w/preamps; CueMix DSP no-latency monitoring; programmable meters	$1,295
24-bit	24-bit	Internal; word clock; AES/EBU	No	Host dependent	Host dependent	Host dependent	120+ dB S/N A-weighted; supports 5.1 surround I/O; AES/EBU I/O rate converters	$1,895 core

COMPUTER-BASED DAWS

MANUFACTURER	PRODUCT	ANALOG I/O	DIGITAL I/O	PLATFORM VERSION	BUS TYPE	PLUG-IN FORMAT(S) SUPPORTED	SAMPLE RATE
Mytek Digital	DAW 9624	(8/8) XLR (expandable)	(4) AES/EBU, ADAT (optional TDIF)	Win 95/NT; Mac BeOS; Linux	PCI	VST; DirectX	44.1, 48, 88.2, 96 kHz
PreSonus	FirePod	(8) mic/inst/line inputs, (8) outputs	(2) S/PDIF	Win; Mac	FireWire	VST; RTAS; MAS	96 kHz
RME	Digi 96/8 Pad	(2) stereo I/O 24/96	ADAT; S/PDIF; AES/EBU	Win 98/ME/2000/XP; Mac 9.X and OS X	PCI	VST; DirectX; ASIO	32, 44.1, 48, 64, 88.2, 96 kHz
RME	Hammerfall 96/36	N/A	(2) ADAT, S/PDIF, AES/EBU	Win 98x/ME/2000/XP; Mac	PCI	VST; DirectX	32, 44.1, 48, 64, 88.2, 96 kHz
RME	Hammerfall 96/52	N/A	(3) ADAT, S/PDIF, AES/EBU	Win 98/ME/2000/XP; Mac	PCI	VST; DirectX	32, 44.1, 48, 64, 88.2, 96 kHz
RME	Hammerfall Digiface	1/4" TRS stereo line out, headphone out	(3) ADAT, S/PDIF	Win 98/ME/2000/XP; Mac	PCI/PCM CIA	VST; DirectX	32, 44.1, 48, 64, 88.2, 96 kHz
RME	Hammerfall Multiface	(8) 1/4" TRS line	ADAT; S/PDIF	Win 98/ME/2000/XP; Mac	PCI/PCM CIA	VST; DirectX	32, 44.1, 48, 64, 88.2, 96 kHz
RME	HDSP 9632	Bal stereo XLR in/headphone out	S/PDIF; AES/EBU; ADAT	Win; Mac	PCI	VST; DirectX	N/A
RME	HDSP MADI	N/A	MADI (optical, coax)	Win	PCI	VST; DirectX	96 kHz
RME	Fireface 800	(8) 24/96 TRS, (4) XLR mic in, (1) Hi-Z, (4) 1/4" insert/line in, (1) stereo headphone/line out	(2) ADAT, S/PDIF, AES/EBU, (1) MIDI	Win XP; Mac OS X	FireWire 400 and 800	VST; Direct X	192 kHz
Roland	Studio Package Pro (RPC-SI24)	(8) XLR/line in, gtr in, (6) analog out, headphone out	Coax, 8 ch 24/96	Win; Mac	PCI	VST	96 kHz
Roland	RPC-SI-24W (Sonar)	(8) XLR/TRS	(2) S/PDIF	Win	PCI	VST	96 kHz
Roland	Boss BR-1600	(8) XLR mic/line inputs/ (4) outputs	Coax digital I/O	Standalone	24-bit	No	48 kHz
Roland	VS-2000CD	(8) mic/line with XLRs; (8) outputs	Coax digital I/O	Standalone	56-bit	Roland 3rd-party format	44.1 kHz
Roland	VS-2400CD	(8) XLR/TRS	(2) coax; (2) optical; (8) R-Bus	Standalone	N/A	Roland 3rd-party format	96 kHz
Roland	VS-2480CD or DVD	(16) mic/line (8 XLR) in; (12) out	16 channels R-Bus I/O; stereo coax I/O	Standalone	56-bit	Roland 3rd-party format	96 kHz
SADiE	PCM4	4/4	4	Win XP	PCI	DirectX; proprietary Cedar Restoration	96 kHz
SADiE	PCM8	8, scalable to 32	8, scalable to 32	Win XP	Full turnkey system	DirectX; proprietary Cedar Restoration	Up to 192 kHz
SEK'D	ARC88	8/8	Toslink, S/PDIF	Win 95/98/NT; Mac	PCI	N/A	32, 44.1, 48 kHz
SEK'D	Prodif-T	N/A	(16) TDIF	Win	PCI	N/A	97 kHz
SEK'D	Prodif-88	Stereo balanced out	(8/8) AES/EBU	Win	PCI	N/A	96 kHz
Sonic Studio	Sonic Studio HD 1.9	Optional	Optional	Mac	PCI	N/A	192 kHz
Sonorus	StudI/O	Stereo monitor output	(16) via 2x8 ADAT optical interfaces	Win 98/NT/2000; Mac; BeOS; Linux	PCI	N/A	44.1, 48, 88.2, 96 kHz
Sonorus	USB Studio D	(2) mic, (2) instrument, (2) phono, (4) line in, (2) line out	(2) S/PDIF I/O	Win; Mac	USB	N/A	44.1, 48 kHz
Sound Devices	USBPre 1.5	(2) mic/line	S/PDIF	Win 98SE/ME/2000/XP; Mac OS 9/X	USB	N/A	48 kHz
ST Audio	DSP2000 C-Port	(8/8) 1/4" (2 XLR in, 2 XLR out)	(2) optical/coaxial S/PDIF, AES/EBU	Win; Mac	44 pin H-Bus	DirectX; VST	96 kHz
ST Audio	DSP3000 M-Port	(8) balanced XLR in (+ 8 TRS), (8) balanced XLR out	S/PDIF optical, AES/EBU I/O	Win; Mac	44 pin H-Bus	Direct X; VST	96 kHz
Steinberg	VSL2020 PCI Audio Card	Stereo unbal RCA	(32) ADAT, S/PDIF, AES/EBU	Win 2000/XP; Mac OS X (beta)	PCI	VST	96 kHz
Steinberg	96/52 HDSP PCI Card	N/A	(3) ADAT, S/PDIF, AES/EBU	Win 98/ME/2000/XP; Mac	PCI	VST; DirectX	32, 44.1, 48, 64, 88.2, 96 kHz
Steinberg	Audiolink 96 Digiset I/O	1/4" TRS stereo line out, headphone out	(3) ADAT, S/PDIF	Win 98/ME/2000/XP; Mac	PCI/PCM CIA	VST; DirectX	32, 44.1, 48, 64, 88.2, 96 kHz
Steinberg	Audiolink 96 Multiset I/O	(8) 1/4" TRS line	ADAT, S/PDIF	Win 98/ME/2000/XP; Mac	PCI/PCM CIA	VST; DirectX	32, 44.1, 48, 64, 88.2, 96 kHz
Steinberg	Nuendo 2.1	Open	Open	Win 2000/XP; Max OSX	Open	VST; DirectX	Up to 192 kHz (dep. on hdwre)
Tascam	US-122	(2) XLR, 1/4"/(2) 1/4"	N/A	Win; Mac	USB	N/A	44.1 kHz
Tascam	US-224	(2) XLR, 1/4"/(2) 1/4"	S/PDIF	Win; Mac	USB	N/A	44.1 kHz
Tascam	US-428	(2) XLR, (4) 1/4" out	S/PDIF	Win; Mac	USB	N/A	44.1 kHz
Tascam	FE-8	N/A	N/A	Win; Mac	FireWire	N/A	N/A
Tascam	FW-1884	(8) balanced mic/line in, (8) balanced out	(8/8) ADAT, S/PDIF	Win; Mac	FireWire	N/A	44.1-96 kHz
TC Electronic	PowerCore	N/A	N/A	Win XP; Mac 10.2 or higher	PCI X2	VST; AU	96 kHz
TC Electronic	PowerCore FireWire	N/A	N/A	Win XP; Mac 10.2 or higher	FireWire	VST; AU	96 kHz
TC Electronic	PowerCore Element	N/A	N/A	Win XP; Mac OS X	PCI	VST; AU	96 kHz

A/D/A CONVERTER/ BIT RATE	DIGITAL RECORDER RESOLUTIONS (MAX)	SYNC TYPES	MIDI CONTROL	TRACKS/VIRTUAL TRACKS	# OF LOCATE POINTS	EFFECTS/DYNAMIC PROCESSING	ADDITIONAL FEATURES	PRICE
24-bit	32-bit	Word clock; video; (SMPTE w/extra hardware)	Yes	8 (expandable)/ 64	N/A	Optional	Various format DIO cards for 8x96	$6,495
24-bit	24-bit	MIDI I/O	No	N/A	N/A	N/N	8 PreSonus mic preamps; Cubase LE Included	$799
24-bit	24-bit	N/A	No	8-channel	N/A	N/N	Digicheck software	$379
24-bit	24-bit	ADAT	No	18-channel	N/A	N/N	Digicheck software	$575
24-bit	24-bit	ADAT; word clock	No	26-channel	N/A	N/N	Digicheck software	$699
24-bit	24-bit	ADAT; word clock	Yes	26-channel	N/A	N/N	(2) MIDI I/O; Digicheck software; meter bridge	$715
24-bit	24-bit	ADAT; word clock	Yes	18-channel	N/A	N/N	MIDI I/O; Digicheck software; meter bridge	$910
24-bit	32-bit	N/A	Yes	N/A	N/A	N/N	Includes Digicheck spectrum analyzer; 16-ch. meter bridge; vectorscope-bit statistics	$799
N/A	24-bit	MIDI	Yes	N/A	N/A	N/N	Word clock I/O; 64-ch.; Digicheck analysis software	$1,749
24-bit	32-bit	Word clock I/O; optional LTC I/O and VITC in	No	N/A	N/A	N/N	Includes Digicheck analysis software	$1,799
24-bit	24-bit	MTC/MMC	Yes	24 audio/ unlimited MIDI	Unlimited	Y/Y	Also MIDI interface; motorized faders; joystick; surround; templates for Steinberg; HUI; User modes	$1,495
24-bit	24-bit	MTC; MMC	Yes	N/A	N/A	Y/Y	Comes with Sonar 2.2 Software	$1,495
24-bit	16-bit	MTC; MIDI	Yes	16/128	9	Y/Y	PCM Drums & Bass w/seq; harmony seq; pitch correction	$1,595
24-bit	24-bit	MTC; MIDI	Yes	18+2/320	999	Y/Y	VGA output option; harmony sequencer; PCM drums and seq; amp modeling	$2,395
24-bit	24-bit	MTC	Yes	24/384	1,000	Y/Y	VGA output and mouse-based editing; moving faders w/automation; vocoder; real-time analyzer	$3,295
24-bit	24-bit	SMPTE; MIDI; MTC; word clock	Yes	24/384	999	Y/Y	VGA output and mouse-based editing; moving faders; vocoder; real-time analyzer; amp mod; pad seq	$4,695/ $5,195
24-bit	32 float	SMPTE; AES reference; video ref	No	32	Unlimited	Y/Y	Complete turnkey with computer	$6,950
24-bit	32 float	AES reference; LTC; video ref	No	32	Unlimited	Y/Y	Full Redbook authoring; complete turnkey system	$9,950 for 8 I/O
16-bit	24-bit	S/PDIF (dual card)	No	8	N/A	N/N	Input gain amplifier	$499
24-bit	N/A	DTRS	No	N/A	N/A	N/N	DTRS control software	$599
24-bit	24-bit	Word clock	No	N/A	N/A	N/N	Digital Mixer	$799
N/A	24-bit	SMPTE; word clock	No	N/A	Unlimited	Y/N	Professional mastering; NoNOISE restoration system	$12,000
N/A	24-bit	MTC	No	N/A	N/A	N/N		$849
20-bit/128x	N/A	N/A	No	N/A	N/A	N/N	Stereo input VU meter; phantom powered; insert jacks	$849
24-bit	24-bit	N/A	No	2	N/A	N/N	Bus powered; portable	$695
24-bit	24-bit	ADAT option; external or internal sync supported	Yes	10/64	Unlimited	Y/Y	Up to 4 systems can be combined for up to 40 channels I/O	$699
24-bit	24-bit	ADAT option; external or internal sync supported	Yes	10/64	Unlimited	Y/Y	Up to 4 systems can be combined for up to 40 channels I/O	$1,299
24-bit	N/A	Superclock/word clock	Yes	N/A	N/A	N/N	V-stack VST shell software included	$399
24-bit	24-bit	ADAT; word clock	No	26-channel	N/A	N/N	Digicheck software	$589
24-bit	24-bit	ADAT; word clock	Yes	26-channel	N/A	N/N	(2) MIDI I/O; Digicheck software; meter bridge	$599
24-bit	24-bit	ADAT; word clock	Yes	18-channel	N/A	N/N	MIDI I/O; Digicheck software; meter bridge	$910
24-bit	32-bit	Nuendo Timebase	Yes	Unlimited	Unlimited	Y/Y	Networking capabilities; VST 3.0 audio engine; latency compensation; VST link; surround	$1,499
24-bit	24-bit	N/A	Yes	N/A	N/A	N/N	Self-powered; bundled w/Tascam's GigaStudio 24; Steinberg's Cubasis recording/ sequencing software	$269
24-bit	24-bit	N/A	Yes	N/A	N/A	N/N	Self-powered via USB cable; ships w/ Cubasis VST for Tascam US-224	$375
24-bit A/D/A	24-bit	N/A	Yes	N/A	N/A	N/N	Bundled w/Cubasis VST for the Tascam US-428	$625
N/A	N/A	N/A	No	N/A	N/A	N/N	Adds 8 channel strips with 100mm moving faders to the FW-1884	$1,249
24-bit	24-bit	Word clock; MIDI timecode	Yes	18	DAW locate controls	Y/Y	Editing and mixing controls; 4 MIDI I/O; (9) 100mm touch-sensitive faders; FE-8 fader expansion	$1,599
24-bit	24-bit	N/A	No	N/A	N/A	Y/Y	Users can continually update with new plug-ins	$1,299
24-bit	24-bit	N/A	No	N/A	N/A	Y/Y	Users can continually update with new plug-ins	$1,795
N/A	N/A	N/A	Yes	N/A	N/A	Y/Y		$645

COMPUTER-BASED DAWS

MANUFACTURER	PRODUCT	ANALOG I/O	DIGITAL I/O	PLATFORM VERSION	BUS TYPE	PLUG-IN FORMAT(S) SUPPORTED	SAMPLE RATE
TerraTec	Aureon 5.1 USB	(2) line in, (1) mic in, (6) line out	Optical	Win; Mac	USB	N/A	96 kHz
TerraTec	Aureon 7.1 Universe	Stereo line in/out, phono in, mic in	S/PDIF (optical, coaxial)	Win; Mac	PCI	All	96 kHz
TerraTec	Aureon 7.1 FireWire	(2) line in, (8) line out, phono in	S/PDIF (optical)	Win; Mac	FireWire	All	192 kHz
TerraTec	Phono Preamp USB	Stereo line in; phono in	None	Win	USB	N/A	96 kHz
TerraTec	EWS-88D	Stereo monitor out	(8) ADAT; (2) S/PDIF coax; (2) S/PDIF optical	Win; Mac	PCI	N/A	96 kHz
TerraTec	DMX 6fire	(2) line in/out, (2) phono, (1) mic	(4/4) S/PDIF coaxial, S/PDIF optical	Win; Mac	PCI	All	96 kHz
TerraTec	Phase 22	(2) balanced TRS I/O	(2/2) S/PDIF coaxial	Win 95/98/2000/NT/XP; Linux	PCI	All	192 kHz
TerraTec	Phase 26USB	(2) line I/O, phono, mic	S/PDIF (optical, coaxial)	Win; Mac	USB	All	96 kHz
TerraTec	Phase 28	(2) balanced in, (8) balanced out (TRS)	S/PDIF	Win; Mac	PCI	All	192 kHz
TerraTec	Phase 88	(8/8) RCA, +4/-10 selectable	Stereo S/PDIF	Win; Mac	PCI	All	192 kHz
TerraTec	MIC 2	(8/8) XLR, 1/4"	ADAT; S/PDIF; AES/EBU	Win 98/2000/NT/XP; Mac	PCI/ FireWire	N/A	32-96 kHz
TerraTec	MIC 8	(8/8) XLR, 1/4"	ADAT; S/PDIF; AES/EBU	Win 98/2000/NT/XP; Mac	PCI/ FireWire	N/A	32-96 kHz
Xytar Digital Systems	IDMS232CDR Indigo Series	(2/2) TRS 3.5 mm	S/PDIF	Proprietary	PCI	DirectX; VST proprietary	11-48 kHz
Xytar Digital Systems	IDMS432CDR Indigo Series	(4/4) TRS 3.5 mm	S/PDIF	Proprietary	PCI	DirectX; VST proprietary	11-48 kHz
Xytar Digital Systems	IDMS832CDR Indigo Series	(8/8) supplied cables	S/PDIF	Proprietary	PCI	DirectX; VST proprietary	11-48 kHz
Xytar Digital Systems	IDMS1632CDR Indigo Series	(16/16) supplied cables	S/PDIF	Proprietary	PCI	DirectX; VST proprietary	11-48 kHz
Xytar Digital Systems	IDMS2432CDR Indigo Series	(24/24) supplied cables	S/PDIF	Proprietary	PCI	DirectX; VST proprietary	11-48 kHz
Xytar Digital Systems	IDMS232CDRHD Indigo Series	(2/2) 3.5 mm TRS jacks	S/PDIF	Proprietary	PCI	DirectX; VST proprietary	11-96 kHz
Xytar Digital Systems	IDMS432CDRHD Indigo Series	(4/4) 3.5 mm TRS jacks	S/PDIF	Proprietary	PCI	DirectX; VST proprietary	11-96 kHz
Xytar Digital Systems	IDMS832CDRHD Indigo Series	(8/8) supplied cables	S/PDIF	Proprietary	PCI	DirectX; VST proprietary	11-96 kHz
Xytar Digital Systems	IDMS1632CDRHD Indigo Series	(16/16) supplied cables	S/PDIF	Proprietary	PCI	DirectX; VST proprietary	11-96 kHz
Xytar Digital Systems	IDMS2432CDRHD Indigo Series	(24/24) supplied cables	S/PDIF	Proprietary	PCI	DirectX; VST proprietary	11-96 kHz
Xytar Digital Systems	TDMS232CDR Traveler Series	(2/2) 3.5 mm TRS jacks	S/PDIF; proprietary	Proprietary	Proprietary	DirectX; VST proprietary	11-48 kHz
Xytar Digital Systems	TDMS432CDR Traveler Series	(4/4) 3.5 mm TRS jacks	S/PDIF; proprietary	Proprietary	PCI	DirectX; VST proprietary	11-48 kHz
Xytar Digital Systems	TDMS832CDR Traveler Series	(8/8) supplied cables	S/PDIF; proprietary	Proprietary	Proprietary	DirectX; VST proprietary	11-48 kHz
Xytar Digital Systems	TDMS1632CDR Traveler Series	(16/16) supplied cables	S/PDIF; proprietary	Proprietary	Proprietary	DirectX; VST proprietary	11-48 kHz
Xytar Digital Systems	TDMS232CDRHD Traveler Series	(2/2) 3.5 mm TRS jacks	S/PDIF; proprietary	Proprietary	Proprietary	DirectX; VST proprietary	11-96 kHz
Xytar Digital Systems	TDMS432CDRHD Traveler Series	(4/4) 3.5 mm TRS jacks	S/PDIF; proprietary	Proprietary	Proprietary	DirectX; VST proprietary	11-96 kHz
Xytar Digital Systems	TDMS832CDRHD Traveler Series	(8/8) supplied cables	S/PDIF; proprietary	Proprietary	Propriety	DirectX; VST proprietary	11-96 kHz
Xytar Digital Systems	TDMS1632CDRHD Traveler Series	(16/16) supplied cables	S/PDIF; proprietary	Proprietary	Proprietary	DirectX; VST proprietary	11-96 kHz
Yamaha	UW10	(2/2) RCA	(1/1) optical (S/PDIF)	Win XP	USB	ASIO	48 kHz
Yamaha	i88X	(8/8) 1/4", 2 XLR	(8) ADAT; (1) stereo S/PDIF	Win XP; Mac OS 9/X	mLAN - FireWire	N/A	Up to 96 kHz
Yamaha	01X	(8/4) 1/4", 2 XLR	Coaxial	Win XP; Mac OS 9/X	mLAN	VST; AU	Up to 96 kHz
YRS MIDI Systems	Digital Audio Workstation	(8/8) RCA	2/2 S/PDIF (coaxial)	Win 98/2000/XP	PCI, USB, FireWire	VST; DirectX	8-96 kHz
Zoom	802B	(2) XLR combo; (1) 1/4"	(1) S/PDIF optical out, USB I/O	Proprietary	N/A	N/A	44.1 kHz
Zoom	802B-CD	(2) XLR combo; (1) 1/4" Hi-z, stereo RCA, 1/4 headphone	(1) S/PDIF optical out, USB I/O	Proprietary	N/A	N/A	44.1 kHz
Zoom	1608	(8) XLR combo; (2) 1/4" Hi-z, RCA in, RCA main out	S/PDIF optical out	Proprietary	N/A	N/A	44.1 kHz
Zoom	1608-CD	(8) XLR combo; (2) 1/4" Hi-z, RCA in, RCA main out	(1) S/PDIF optical out, USB I/O	Proprietary	N/A	N/A	16 kHz

A/D/A CONVERTER/ BIT RATE	DIGITAL RECORDER RESOLUTIONS (MAX)	SYNC TYPES	MIDI CONTROL	TRACKS/VIRTUAL TRACKS	# OF LOCATE POINTS	EFFECTS/DYNAMIC PROCESSING	ADDITIONAL FEATURES	PRICE
24-bit	24-bit	N/A	No	N/A	N/A	N/N	AC3/DTS playback; 5.1 outputs	$199
24-bit	24-bit	S/PDIF	Yes	N/A	N/A	N/N	Phono input; mic input	$349
24-bit	24-bit	S/PDIF	No	N/A	N/A	N/N	Phono input; mic input	$399
24-bit	24-bit	N/A	No	N/A	N/A	N/N	Comes with de-clicking/de-popping software	$199
24-bit	24-bit	MTC; ADAT; S/PDIF	Yes	N/A	N/A	N/N	32 chanells of MIDI (4 MIDI Ports)	$349
24-bit	24-bit	MTC; S/PDIF	Yes	N/A	N/A	N/N	16 channels of MIDI; front module; gain and headphone knobs; 5.1 playback	$399
24-bit	24-bit	MTC; S/PDIF	Yes	N/A	N/A	N/N	16 channels of MIDI	$199
24-bit	24-bit	S/PDIF; MTC	Yes	N/A	N/A	N/N	Digitize LP records for making CDs; headphone input; mic input	$399
24-bit	24-bit	S/PDIF; MTC	Yes	N/A	N/A	N/N	16 channels of MIDI	$399
24-bit	24-bit	S/PDIF	Yes	N/A	N/A	N/N	Includes internal/external breakout box; fully routable I/O	$599
24-bit	24-bit	LTC; MTC	Yes	N/A	N/A	N/N	32-ch MIDI	$1,099
24-bit	24-bit	LTC; MTC	Yes	N/A	N/A	N/N	32-ch MIDI	$1,349
20-bit	20-bit	SMPTE; MTC	No	32/unlimited	Unlimited	Y/Y	Removable Sound Tray (6 to 100 hours record time per tray); Redbook CD mastering; mix console; more	$2,299
20-bit	20-bit	SMPTE; MTC	Optional	32/unlimited	Unlimited	Y/Y	Unlimited record time w/ removable sound tray; ORB; mic mixing console; CD mastering	$2,999
20-bit	20-bit	SMPTE; MTC	Optional	32/unlimited	Unlimited	Y/Y	Unlimited record time w/ removable sound tray; ORB; mic mixing console; CD mastering	$6,499
20-bit	20-bit	SMPTE; MTC	Optional	32/unlimited	Unlimited	Y/Y	Unlimited record time w/ removable sound tray; ORB; mic mixing console; CD mastering	$8,499
20-bit	20-bit	SMPTE; MTC	Optional	32/unlimited	Unlimited	Y/Y	Unlimited record time w/ removable sound tray; ORB; mic mixing console; CD mastering	$10,499
24-bit	24-bit	SMPTE; MTC	Optional	32/unlimited	Unlimited	Y/Y	Unlimited record time w/ removable sound tray; ORB; mic mixing console; CD mastering	$3,499
24-bit	24-bit	SMPTE; MTC	Optional	32/unlimited	Unlimited	Y/Y	Unlimited record time w/ removable sound tray; ORB; mic mixing console; CD mastering	$3,999
24-bit	24-bit	SMPTE; MTC	Optional	32/unlimited	Unlimited	Y/Y	Unlimited record time w/ removable sound tray; ORB; mic mixing console; CD mastering	$7,999
24-bit	24-bit	SMPTE; MTC	Optional	32/unlimited	Unlimited	Y/Y	Unlimited record time w/ removable sound tray; ORB; mic mixing console; CD mastering	$9,999
24-bit	24-bit	SMPTE; MTC	Optional	32/unlimited	Unlimited	Y/Y	Unlimited record time w/sound tray; ORB; mon; 48-ch. mic mixer; FFT noise removal; 32-48 analog I/O	$12,999
20-bit	20-bit	SMPTE; MTC	Optional	32/unlimited	Unlimited	Y/Y	Line and 12 volt operation; mic mixer; 125 hours non-compressed record time; CD mastering	$1,999
20-bit	20-bit	SMPTE; MTC	Optional	32/unlimited	Unlimited	Y/Y	Line and 12 volt operation; mic mixer; 125 hours non-compressed record time; CD mastering	$2,299
20-bit	20-bit	SMPTE; MTC	Optional	32/unlimited	Unlimited	Y/Y	Line and 12 volt operation; mic mixer; 125 hours non-compressed record time; CD mastering	$3,999
20-bit	20-bit	SMPTE; MTC	Optional	32/unlimited	Unlimited	Y/Y	Line and 12 volt operation; mic mixer; 125 hours non-compressed record time; CD mastering	$4,999
24-bit	24-bit	SMPTE; MTC	Optional	32/unlimited	Unlimited	Y/Y	Line and 12 volt operation; mic mixer; 125 hours non-compressed record time; CD mastering	$2,199
24-bit	24-bit	SMPTE; MTC	Optional	32/unlimited	Unlimited	Y/Y	Line and 12 volt operation; mic mixer; 125 hours non-compressed record time; CD mastering	$2,599
24-bit	24-bit	SMPTE; MTC	Optional	Unlimited	Unlimited	Y/Y	Line and 12 volt operation; mic mixer; 125 hours non-compressed record time; CD mastering	$4,499
24-bit	24-bit	SMPTE; MTC	Optional	32/unlimited	Unlimited	Y/Y	Line and 12 volt operation; mic mixer; 125 hours non-compressed record time; CD mastering	$5,999
16-bit	N/A	N/A	No	N/A	N/A	N/N	Track-down mode allows bouncing of virtual instrument and audio tracks	$159
24-bit	N/A	mLAN (word clock); ADAT; SPDIF	No	N/A	N/A	N/N	2 DM2000 quality mic preamps with insert points; total of 18 simultaneous inputs and outputs	$1,299
24-bit	24-bit	mLAN (word clock); S/PDIF	Yes	N/A	N/A	Y/Y	Standalone digital mixer; remote control surface for DAW; motorized faders; bundled VST plug-ins	$1,699
A/D 24-bit, D/A 24-bit	24-bit	All	Yes	Unlimited	9	Y/Y	Customized to your specifications	$1,200-$2,400
24-bit	24-bit	MIDI	Yes	8/10	N/A	Y/Y	Optional CDR-RW drive	$980
24-bit	24-bit	MIDI	Yes	8/10	N/A	Y/Y	CDR-RW drive included	$1,250
24-bit	24-bit	MIDI	Yes	16/10	100	Y/Y	Optional CDR-RW drive	$1,750
24-bit	24-bit	MIDI	Yes	10/16	100	Y/Y	Built-In CDR-RW drive	$2,010

DIGITAL AUDIO CONVERTERS

MANUFACTURER	PRODUCT	CONVERTER TYPE / #	ADC RESOLUTION, OVER SAMPLING	DAC RESOLUTION	SAMPLE RATE(S)	SAMPLE RATE CONVERSION	DITHER	ANALOG I/O # / TYPE
Alesis	AI-3	A/D (8); D/A (8)	24-bit/128x	24-bit/128x	48 kHz	No	No	(8) 1/4" TRS
Alesis	AI-4	Format converter (8)	N/A	N/A	44.1, 48, 88.2, 96 kHz	No	No	N/A
Apogee Electronics	Mini-DAC	D/A (2)	N/A	24-bit	44.1, 48-88.2/96-176/192 (all ± 10%)	No	No	(2) XLR; 1/8"; 1/4" headphone
Apogee Electronics	Mini-Me	A/D (2)	24-bit/OE	N/A	44.1-96 kHz	Yes	Yes	(2) 1/4" TRS–XLR
Apogee Electronics	Rosetta 200	A/D (2); D/A (2)	24-bit/OE	24-bit/OE	44.1-192 kHz	Yes	Yes	(4) XLR
Apogee Electronics	Rosetta 800	A/D (8); D/A (8)	24-bit/OE	24-bit/OE	44.1-96 kHz (optional 192kHz)	No	Yes	(2) DB-25
Apogee Electronics	AD-16X	A/D (16)	24-bit/OE	N/A	44.1-192 kHz	No	Yes	(2) DB-25
Apogee Electronics	DA-16X	D/A (16)	N/A	24-bit/OE	44.1-192 kHz	No	Yes	(2) DB-25
Apogee Electronics	Trak2	A/D	24-bit Delta-Sigma	24-bit (optional)	44.1, 48, 88.2, 96 kHz	No	Yes	XLR
ART	ART DIO	A/D; D/A	24-bit/128x	96 kHz	44.1, 48, 88.2, 96 kHz/128x oversampling	No	No	1/4"
Behringer	Ultramatch SRC2000	Digital formant converter	N/A	N/A	N/A	Yes	No	N/A
Benchmark	DAC-1	D/A (2)	N/A	24-bit/128x	28-192 kHz	No	No	(2) XLR; (2) RCA
Benchmark	DAC-104	D/A (4)	N/A	24-bit/128x	28-108 kHz	Yes	No	(8) bal
Benchmark	ADC-104	A/D (4)	24-bit/128x	N/A	28-108 kHz	Yes	Yes	(4)
Benchmark	ADC-1 2Channel 24bit/192kHz A/D Converter	A/D (2)	24-bit/128x	N/A	44.1 kHz-192 kHz	No	Yes	(2) XLR; (2) RCA
Benchmark	AD2402-96	A/D (2)	24-bit/128x	N/A	44.1, 48, 88.2, 96 kHz	Yes	Yes	(2) XLR
Benchmark	AD2404-96	A/D (4)	24-bit/128x	N/A	44.1, 48, 88.2, 96 kHz; varispeed	No	Yes	(4) XLR
Benchmark	AD2408-96	A/D	24-bit/128x	N/A	44.1, 48, 88.2, 96 kHz; varispeed	No	Yes	(8) XLR
Crane Song	HEDD-192	A/D; D/A	24-bit 96 kHz	24-bit/96k	44.1, 48 , 96 kHz	No	Yes	XLR
CreamWare	A16 Ultra	A/D; D/A	24-bit 96 kHz	N/A	32, 44.1, 48, 88.2, 96 kHz	Yes	No	1/4"
Denecke	AD-20	A/D	20-bit/128x	N/A	44.1 kHz	No	Yes	XLR in; RCA line in (optional)
Digidesign	96 I/O	A/D (8); D/A (8)	24-bit	24-bit	44.1, 48, 88.2, 96 kHz	Yes	Yes	(8) 1/4"
Digidesign	96i I/O	A/D (16); D/A (2)	24-bit	24-bit	44.1, 48, 88.2, 96 kHz	Yes	Yes	(16) TRS in, (2) TRS out
Digidesign	192 Digital I/O	D/D	N/A	N/A	44.1, 48, 88.2, 96, 176.4, 192 kHz	Yes	No	N/A
Digidesign	192 I/O	A/D (16); D/A (16)	24-bit	24-bit	44.1, 48, 88.2, 96, 172.4, 192 kHz	Yes	Yes	(16) D-Sub
Frontier Design	Tango24	A/D (8); D/A (8)	24-bit/128x	24-bit/128x	44.1, 48 kHz; 39-51 kHz from external clock	No	No	(8) 1/4" TRS
Genex	GXD8 DAC	D/A (8)	N/A	24-bit/128x	44.1-192 kHz DSD	No	Yes	(8) XLR
Genex	GXA8 ADC	A/D (8)	24-bit	N/A	44.1-192 kHz DSD	No	Yes	(8) XLR
iZ Technology	UFC 24	N/A	N/A	N/A	48 kHz	No	No	N/A
Lucid	ADA1000	A/D; D/A	20-bit/64x	20-bit/64x	32, 44.1, 48 kHz	No	No	(4) XLR; (4) 1/4" TRS
Lucid	DA9624	D/A (2)	N/A	24-bit/128x	96, 88.2, 48, 44.1, 32 kHz	Yes	No	(2) 1/4" TRS; XLR
Lucid	AD9624	A/D (2)	24-bit/128x	N/A	96, 88.2, 48, 44.1, 32 kHz	Yes	Yes	(2) XLR
Lucid	SRC9624	Sample rate converter	N/A	N/A	32-100 kHz	Yes	Yes	N/A

DIGITAL I/O #/TYPE	WORD CLOCK I/O	VIDEO INPUT SYNC	RF FILTERING	TOTAL HARMONIC DISTORTION	DYNAMIC RANGE	SPECIAL FEATURES	PRICE
ADAT (optical)	No	No	Yes	0.0025	96 dB	Signal/clip meters; optical out source switch	$499
(4) AES/EBU; (2) ADAT	Yes	No	No	N/A	144 dB	Independent clocking on AES/EBU to ADAT and ADAT to AES/EBU	$499
(2) AES/EBU; ADAT; S/PDIF; USB	No	No	No	-107 dB	119 dBA	Analog output level control for direct connect of pwrd monitors; digital thru mode adds USB functionality to digital devices	$1,195 (w/USB); $995
AES/EBU; S/PDIF; USB	No	No	Yes	THD+N = -93 dB	>105 dB	Mic/line/instrument pre; phantom power; soft limit and 3-curve comp/lim; monitor output incl return from USB; low voltage/ current operation for battery power	$1,395
(2) XLR AES; (2) S/PDIF; (2) optical ADAT/ SMUX; (2) WC	Yes	No	Yes	-105 dB AD; -103 dB DA	114 dBA	Coda, Audio Finishing Module; X-HD expansion card; X-FireWire expansion card; X-Digi-Mix expansion card	$1,995
(1) DB-25 AES; (4) ADAT/SMUX; (2) WC	Yes	No	Yes	-105 dB AD; -103 dB DA	114 dBA	Upgradeable to 192kHz; X-HD expansion card; X-FireWire expansion card; X-Digi-Mix expansion card	$2,995 ($3,995 w/192k)
(1) DB-25 AES; (4) optical ADAT/SMUX; (2) WC	Yes	No	Yes	THD+N= -110 dB	120 dBA	Apogee's C777 clock; X-HD expansion card; X-FireWire expansion card	$3,495
(1) DB-25 AES; (4) optical ADAT/SMUX; (2) WC	Yes	No	Yes	THD+N= -107 dB	118 dBA	Apogee's C777 clock; X-HD expansion card; X-FireWire expansion card	$3,495
2-ch AES/EBU; S/PDIF; other interfaces on plug-in cards	Yes	Optional	Yes	-112 dB A-weighted (A/D)	>119 dB -60 dBA (A/D)	2-ch mic pre; phantom; line mic and inst ins; format conversion; AMBus digital I/O cards; low-jitter clock; 8-ch routing	$3,995
S/PDIF (coax)	No	No	No	0.01% (clean settings); 0.1% (warm settings)	100 dB typical	Vacuum tube	$199
AES/EBU; S/PDIF	Yes	No	No	0.001%	95 dBFS	SCMS copy-bit and emphasis-bit removal	$169
AES/EBU; S/PDIF (coax, optical)	No	No	Yes	THD+N= -104 dB (0.00067%)	117 dB	Ultralock low-jitter technology; headphone amp; direct connection to powered monitors	$975
(2) AES/EBU	No	No	Yes	0.001%	>110 dB	Card for system 1000 frame (4-48-ch./frame)	$1,295
(8) AES/EBU; (2) ADAT; AES/EBU ref. in	No	No	Yes	0.001%	>115 dB	Card for system 1000 frame (4 to 48 channels/frame)	$1,495
AES/EBU; ADAT/S/PDIF	Yes	No	Yes	N/A	>120 dB	2 channels premium A/D conversion	$1,650
(2) AES/EBU; S/PDIF (coax: 2 in, 1 out)	No	No	Yes	THD+N= -107 dB (0.00033%)	117 dB	11 word length reduction types; 38 noise-shaping curves; simultaneous 16- and 24-bit output; dig-to-dig	$1,795
(2) AES/EBU; (3) XLR; S/PDIF	No	No	Yes	0.00003% @ 1dB FSD (20 Hz-20 kHz)	117 dB (20 Hz-20 kHz)	Jitter reducing phase-locked-loop circuitry; (4) 9-segment digital monitors	$2,850
(4) AES/EBU; XLR; AES2id; BNC; S/PDIF	No	No	Yes	0.00003% @ 1 dB FSD (20 Hz-20 kHz)	117 dB (20 Hz-20 kHz)	Jitter reducing phase-locked-loop circuitry; (4) 9-segment digital monitors	$5,095
AES/EBU; S/PDIF	Yes	No	Yes	Depends on process	>117 dB	DSP generates tricode/pentode tube sound in the digital domain	$3,495
ADAT; Z-Link	Yes	No	No	N/A	110 dBA		$995
S/PDIF (optical, coax) out	No	No	Yes	0.0016%	>99 dB	Built-in mic preamp	$325
(8) ADAT optical; AES/EBU; S/PDIF	Yes	No	Yes	A/D: <0.0007%; D/A: <0.0013%	A/D: 115 dBA/112 dBu; D/A: 114 dBA/112 dBu	Expansion and Legacy Peripheral Ports	$1,995
(2) S/PDIF	No	No	Yes	AD: 0.0008% / 0.0013%	A/D 111 dBA	2U, rackmountable; software-adjustable level controls for inputs, outputs software-switchable between +4 dBu and –10 dBV	$2,195
(26) AES/EBU; (16) TDIF; (16) ADAT; (2) S/PDIF	Yes	No	Yes	N/A	N/A	Expansion port; Legacy peripheral port	$2,495
(8) AES/EBU; (8) TDIF; (16) ADAT; (2) add'l AES/EBU or S/PDIF	Yes	No	Yes	A/D: <0.00035%; D/A: <0.00056%	A/D: 120 dBA; D/A: 118 dBA	192 digital I/O - all digital version; Expansion and Legacy Peripheral ports; expansion bay; soft-clip limiter	$3,995
(8) ADAT optical in/out/thru	Yes	No	Yes	0.002% A-weighted	105 dBA	+4 dBu or -10 dBV, selectable per channel	$699
(8) AES/EBU	Yes	No	No	<-103 dB	117 dB	DSD support; bit-splitting; support for ADAT, TDIF, S/PDIF2	$3,049
(8) AES/EBU	Yes	No	No	<-103 dB	>117 dB	DSD support; bit-splitting; support for ADAT, TDIF, S/PDIF2	$3,649
TDIF; ADAT; AES/EBU; S/PDIF	Yes	yes	No	N/A	N/A	Universal digital format converter	$995
(2) AES/EBU; (2) S/PDIF	No	No	Yes	0.005%	>95 dB		$499
(2) AES/EBU; (1) S/PDIF (coax); Toslink	No	No	Yes	<0.002%	>114 dB	Separate headphone vol control; front panel out; 20-seg output level LED ladders	$749
(2) AES/EBU; (1) S/PDIF (coax); Toslink	Yes	No	Yes	<0.002%	>115 dB	User-selectable 16-bit noise shaping; 20-seg input level LED ladders w/peak, hold, clip indicator	$899
(2) XLR; AES/EBU; (2) S/PDIF coaxial; (2) Toslink	Yes	Yes	No	-117 dB max	120 dB min, 128 dB typical	Single & double wire 96 kHz I/O; 5 internal and 3 external master clock options	$1,499

DIGITAL AUDIO CONVERTERS

MANUFACTURER	PRODUCT	CONVERTER TYPE/ #	ADC RESOLUTION, OVER SAMPLING	DAC RESOLUTION	SAMPLE RATE(S)	SAMPLE RATE CONVERSION	DITHER	ANALOG I/O #/TYPE
Lucid	ADA8824 (ADAT)	A/D/A (8 ch)	24-bit/128x	24-bit/128x	44.1, 48 kHz	Yes	No	(8) XLR
Marian	Adcon	A/D (8); D/A (8)	24-bit/128x	24-bit/128x	44.1; 48 kHz	No	No	(8) 1/4" TRS
M-Audio	C03	Format converter: S/PDIF; Toslink; AES/EBU	N/A	N/A	All	Yes	No	N/A
M-Audio	Flying Cow 24-bit	A/D (2); D/A (2)	24-bit/128x	24-bit/128x	32, 44.1, 48 kHz	No	No	(2) 1/4"
Merging Technologies	Dua 11	A/D; D/A	24-bit	24-bit	32, 44.1, 48 kHz	Yes	Yes	XLR
Merging Technologies	Sphynx Modular High Resolution Audio Interface	N/A	24-bit	24-bit	32, 44.1, 48, 64, 88, 96 kHz	Yes	Yes	(8) 1/4"
Mytek Digital	Workstation 24	N/A	24-bit/64x	24-bit	44.1, 48 kHz	No	Yes	XLR
Mytek Digital	8x96 Series	A/D; D/A	24-bit/64x/128x	24-bit	44.1, 48, 88.2, 96 kHz	No	Yes	(8) XLR
Otari	FS-96	Format/sample rate converter	24-bit	24-bit	32, 44.1, 48, 88.2, 96 kHz	Yes	Yes	N/A
Precision	SRD-1	N/A	N/A	N/A	N/A	No	No	N/A
PreSonus	Central Station	N/A	N/A	24-bit	192	No	No	(2 stereo) TRS, (stereo) RCA
Radio Design Labs	RU-AEC1	N/A	24-bit	N/A	32, 44.1, 48, 88.2, 96 kHz	No	No	XLR
RME	ADI-8 DD	D/D (16)	N/A	24-bit/128x	44.1, 48, 88.2, 96 kHz	Yes	Yes	N/A
RME	ADI-8 Pro	A/D (8); D/A (8)	24-bit/128x	24-bit/128x	44.1, 48 kHz	Yes	No	(8) 1/4" TRS; 25-pin D type
RME	ADI-8 DS	A/D (8); D/A (8)	24-bit/128x	24-bit/128x	44.1, 48, 88.2, 96 kHz	Yes	Yes	(8) 1/4" TRS; 25-pin
SEK'D	2496 S	A/D; D/A	24-bit/128x	24-bit/128x	44.1, 48, 96 kHz	No	No	(2) XLR
Sonifex	RB-ADDA	A/D; D/A	N/A	24-bit	32, 44.1, 48, 64, 88.2, 96 kHz	No	No	XLR; RCA
Sonorus	AUDI/O DA/24	N/A	N/A	24-bit/128x	44.1, 48 kHz	No	No	(8) XLR
Sonorus	AUDI/O AD/24	N/A	24-bit/128x	N/A	44.1, 48 kHz	No	No	(8) XLR
Sonorus	AUDI/O AD/96	N/A	16, 18, 20, 24-bit	N/A	44.1, 48, 88.2, 96 kHz internal; 42-50, 84-100 kHz external	No	Yes	(4) XLR
Sonorus	AUDI/O DA/96	N/A	N/A	24-bit	44.1, 48, 88.2, 96 kHz internal; 42-50, 84-100 kHz external	No	Yes	(4) XLR
Sonorus	AUDI/O AD/8	N/A	24 bits or dithered to 16 or 20 bits	N/A	44.1, 48, 88.2, 96 kHz	No	Yes	(8) XLR-1/4" combo
Universal Audio	2192	A/D (2); D/A (2)	24-bit/128x	24-bit/128x	44.1, 48, 88.2, 96, 176.9, 192 kHz	No	No	(2) XLR

Planning Your Session Setup

By David Franz

The first step when preparing for a recording session is to plan how you'll use your studio space. Some questions to ask yourself include: What is the instrumentation of the session? Do I need sound separation, isolation, or baffling of some sort? Do the musicians need to see each other? Where can the musicians stand or sit comfortably? Does the studio need some special acoustical treatment for the session?

While you're considering these questions

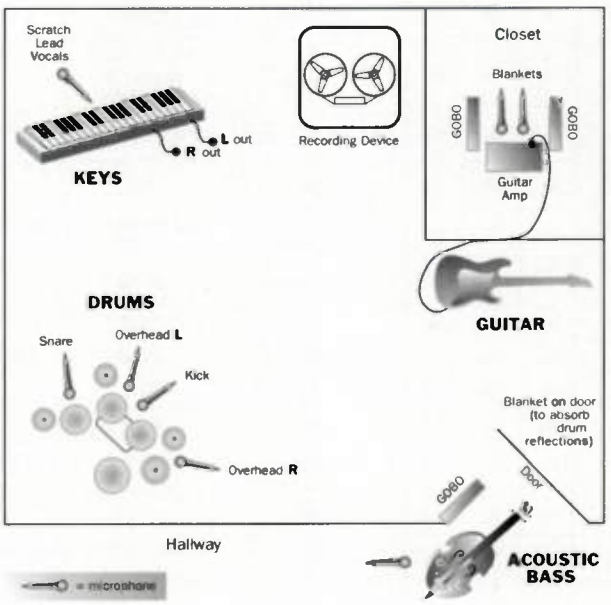

FIG. 1: A small one-room studio setup with the guitar amp in the closet, the stand-up bass in the hallway, the drums in one corner, and the keys-vocals in the adjacent corner. This setup facilitated eye contact among members of the band and provided enough sound separation to record great tracks.

DIGITAL I/O #/TYPE	WORD CLOCK I/O	VIDEO INPUT SYNC	RF FILTERING	TOTAL HARMONIC DISTORTION	DYNAMIC RANGE	SPECIAL FEATURES	PRICE
(4) AES/EBU; (1) S/PDIF; (2) ADAT sync	Yes	No	Yes	<0.005%	>113 dB A/D; >105 dB D/A	ADAT-optical (light pipe) I/O; ADAT sync I/O connectors	$2,499
ADAT	No	No	No	0.005%	104/114 dB	2 mic pre inputs XLR; gain; phantom power	$599
S/PDIF; Toslink; AES/EBU	No	No	No	N/A	N/A	SCMS bit management	$250
(2) AES/EBU; (2) S/PDIF	No	No	No	0.003%	103 dB		$400
AES/EBU ODi	Yes	No	Yes	THD+N = -98 dB	100 dB; 103 dB (A)	Ideal for surround monitoring	$1,295
Up to 8 AES/EBU; ADAT; S/PDIF	Yes	Yes	Yes	THD+N -101dB	117 dBA	Extended modularity with up to 8 ch of 24-bit/96 kHz I/O	$2,995 and up
S/PDIF; AES/EBU; Toslink	Yes	No	Yes	-103 dB THD	117 dB	Digital format conversion; signal routing	$1,995
(4) AES/EBU; (2) ADAT; ProTools; Sonic; TDIF	Yes	No	Yes	-106 dB	120 dB	S/MUX and MRX bit-splitting; digital format conversion; 96 kHz	$2,795
(24) ADAT; (24) TDIF; (24) S/PDIF; (24) AES/EBU	Yes	No	No	N/A	N/A	MADI option: TDIF to/from AES/EBU ($995); IEEE-1394 option	$3,495
N/A	Yes	No	No	N/A	N/A		$150
(1) S/PDIF; (1) Toslink	No	No	No	<.0005%	117dB	Studio control center with talkback; input source/output speaker select; dual headphone outputs	$699
N/A	No	No	Yes	<0.04%	> 90 dB	Sure-Lok auto recovery system	$443
(4) XLR; AES/EBU; ADAT optical; TDIF	Yes	No	Yes	0.00014%	-128 dB		$1,215
ADAT; TDIF	Yes	No	Yes	0.008%	-116 dB	Many DSP functions	$1,750
ADAT; TDIF	Yes	No	Yes	0.00063%	116 dB		$2,255
(2) AES/EBU; S/PDIF (coax)	No	No	No	0.002%	>115 dB	Half-rack space	$799
AES/EBU; S/PDIF	Yes	No	No	96 dB THD +N at 1 kHz	110 dB		$820
ADAT; Toslink	Yes	No	Yes	97 dB THD +N	106 dBA	Half-rack space	$599
ADAT; Toslink	Yes	No	Yes	99 dB THD +N	115 dBA SNR	Half-rack space	$749
AES/EBU; S/MUX, ADAT	Yes	No	Yes	100 dB	115 dBA	Half-rack space; high-res; multi-mode meters; bit-word-packing	$999
AES/EBU; S/MUX; Toslink	Yes	No	Yes	96 dB	110 dBA	Half-rack space; supports bit- and sample-packing	$999
(2) Toslink;(4) AES/EBU (Pro version)	Yes	No	Yes	0.007% at min gain	115 dB at min gain	Neutrik XLR/1/4" combo-inputs; phantom power; 40 dB gain	$1,499
(2) AES/EBU; ADAT; S/PDIF	Yes	No	Yes	N/A	>120 DAC; >123 ADC	Word clock I/O w/2 in/4 out	$2,495

you might try sketching diagrams of possible setups to help you visualize how the studio will look with everyone in it. I've included a sketch (see Fig. 1) of a session I engineered once in a small apartment. We recorded drums, electric guitar, acoustic bass, keyboards, and scratch vocals all at once in my home studio at the time.

You also need to consider how many mic-line cables, microphones, mic stands, headphones, and headphone extension cables you'll need for the session, because your access to these items may influence the setup. For those of us on tight budgets, creative setups are the only way to maximize our equipment while minimizing expenses. Regardless, when it comes right down to it, you may have to buy some extra equipment to make sure sessions go smoothly and sound good.

Even with planning, there are still many last-minute contingencies that will require a flexible setup. The musical lineup may change, and you'll have to record unexpected instruments. Or the band may have a particular requirement. For example, the bass player and the drummer may ask to be next to each other, even though it would work better for you if they were across the room. To help accommodate sudden changes like these, you might want to sketch several scenarios ahead of time. Because the fundamental role of the engineer is to capture a great performance, you need to do everything in your power not to impede the performance.

If you're only recording yourself, one instrument at a time, then you won't need to worry about sound separation at all. However, once you start recording multiple instruments at one time in the same room, studio setups and mic placement become important. ■

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DIGITAL MIXDOWN SYSTEMS

MANUFACTURER	MODEL	TYPE	SAMPLING FREQUENCY	PLAYBACK FREQUENCY	ADC	DAC	ANALOG I/O	DIGITAL I/O	TIME CODE	SCMS
Alesis	MasterLink ML-9600	Hard disk; CD-R	44.1, 48, 88.2, 96 kHz	44.1, 48, 88.2, 96 kHz	24-bit	24-bit	XLR; RCA	AES/EBU; S/PDIF (coax)	No	No
Denon	DN-F20R	CF I.C. recorder	24, 48 kHz	24, 48 kHz	1-bit, 64fs digital filter	1-bit, 8fs digital filter	RCA	N/A	No	No
Denon	DN-M2300R	MiniDisc	44.1 kHz	44.1 kHz	16-bit	18-bit	RCA	S/PDIF (coax)	No	Yes
Denon	DN-M1050R	MiniDisc	32, 44.1, 48 kHz	44.1 kHz	16-bit	18-bit	XLR; RCA	AES/EBU; S/PDIF (coax)	No	Yes
Denon	DN-M991R	MiniDisc	44.1 kHz	44.1 kHz	16-bit	18-bit	XLR	XLR	No	Yes
Denon	DN-M991RM	MiniDisc	44.1 kHz	44.1 kHz	16-bit	18-bit	XLR	XLR	No	Yes
ESI	M-Fire M9600	DVD-R	96 kHz	96 kHz	24-bit	24-bit	XLR	AES/EBU; S/PDIF	No	No
Fostex	D15	DAT	44.1, 48 kHz	44.1, 48 kHz	18-bit	18-bit	XLR	AES/EBU	No	No
HHB	MDP500	Portable MiniDisc	44.1 kHz	44.1 kHz	20-bit	20-bit	XLR; RCA	S/PDIF (coax, optical)	No	Yes
Tascam	MD-301 MkII	MiniDisc	32, 44.1, 48 kHz	32, 44.1, 48 kHz	20-bit	20-bit	XLR; RCA	Optical	No	No
Tascam	MD-350	MiniDisc	44.1 kHz	44.1 kHz	16-bit, linear	16-bit, linear	XLR; RCA	S/PDIF (optical)	No	Yes
Tascam	MD-801R MkII	MiniDisc	32, 44.1, 48 kHz	32, 44.1, 48 kHz	20-bit	20-bit	XLR; RCA	AES/EBU; S/PDIF	No	No
Sony	MDS-E10	MiniDisc	44.1 kHz	44.1 kHz	24-bit	20-bit	RCA	S/PDIF (optical)	No	No
Sony	MDS-E12	MiniDisc	44.1 kHz	44.1 kHz	24-bit	20-bit	RCA	S/PDIF (optical)	No	No
Sony	PCM-M1	DAT	32, 44.1, 48 kHz	Auto	16-bit	16-bit	1/8" stereo mini	7-pin w/opt. cable	No	No
Sony	PCM-R500	DAT	32, 44.1, 48 kHz	Auto	20-bit	16-bit	XLR; RCA	AES/EBU; S/PDIF (coax)	No	No
Tascam	DA-20 MkII	DAT	32, 44.1, 48 kHz	32, 44.1, 48 kHz	1-bit Delta/Sigma	1-bit Delta/Sigma	RCA	S/PDIF (optical)	No	No
Tascam	DA-40	DAT	32, 44.1, 48 kHz	32, 44.1, 48 kHz	20-bit	20-bit	XLR; RCA	AES/EBU; S/PDIF	No	Yes
Tascam	DA-302 Dual	DAT	32, 44.1, 48 kHz	32, 44.1, 48 kHz	16-bit	16-bit	RCA	S/PDIF	No	Yes
Tascam	DA-45HR	DAT	32, 44.1, 48 kHz	32, 44.1, 48 kHz	24-bit	24-bit	XLR; RCA	AES/EBU; S/PDIF	No	Yes
Tascam	DA-60 MkII Time Code DAT	DAT	44.1, 48 kHz	44.1, 48 kHz	16-bit linear	16-bit linear	XLR; RCA	AES/EBU; S/PDIF	Yes	Yes

Acoustic Instrument Miking Tips

By Paul White

Most instruments produce sound from more than one place. Take the acoustic guitar—some sound comes out of the sound hole due to air vibrating inside the body, the wooden panels making up the body resonate, the strings themselves produce sound, and the neck and headstock vibrate. What we identify as a good acoustic-guitar sound

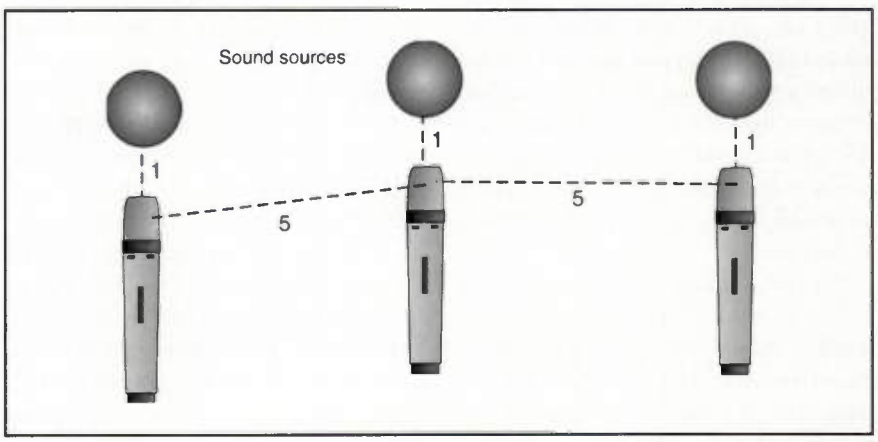

FIG. 1: [This caption is in the original graphic.] The 5:1 rule. The distance between adjacent mics should be at least five times the distance between the mics and the sound sources they are recording. This will reduce bleed and minimize tonal deterioration caused by phase cancellation.

SEPARATE MIC INPUT	WRITE/READ SPEED	SCSI CONNECTION	TRANSPORT DISC LOADING	BUNDLED SOFTWARE	DISC-AT-ONCE	FREQUENCY RESPONSE	SIGNAL-TO-NOISE RATIO	TOTAL HARMONIC DISTORTION	SPECIAL FEATURES	PRICE
No	4x/8x	No	Front-loading CD-R drive	No	Yes	20 Hz–20 kHz	113 dB	<0.002%	Playlists; editing; CD24; audio CD	$1,699
Yes	1x	No	No	No	No	20 Hz–20 kHz	>/= 80 dB	0.005%	Linear, MPEG1, MPEG2 formats; mic limiter, low filter and atten; (2) slots for extended recording; onboard editing; approx 2 lbs.	$1,299
No	1x	No	Manual	No	No	20 Hz–20 kHz	>92 dB	<0.012%	Keyboard connector; dual drives; disc copy; hot start; shock memory; disc titling	$1,499
No	1x	No	Auto-load	No	No	20 Hz–20 kHz	>92 dB	0.012%	External sync option; hot-start option; RS232/422; PC kybrd cntrl; GPI interface	$1,999
No	1x	No	Manual	No	No	20 Hz–20 kHz	>100 dB	0.02%	Hot start; shock memory; undo/redo; RS232/422; DN-M991RM; GPI interface	$2,299
No	1x	No	Manual	No	No	20 Hz–20 kHz	>100 dB	0.02%	Same as DN-M991R but with five enhanced features	$2,499
No	1x	No	Front-loading	No	Yes	20 Hz–20 kHz	113 dB	0.002%	Playlists editing; supports CD-R	$1,699
No	N/A	No	Drawer	No	No	20 Hz–20 kHz	92 dB	0.05%	Parallel port; time code w/video ref; RS422 rack optional	$3,295
Yes	1x	No	Front-loading	No	No	10 Hz–20 kHz	>89 dB	<0.02%	USB; portable; onboard editing	$1,599
No	N/A	No	No	No	No	20 Hz–20 kHz	>94 dB	<0.013%	Wireless remote	$585
No	N/A	No	No	No	No	20 Hz–20 kHz	>94 dB	<0.014%	Pitch control +/- 12%	$699
No	N/A	No	No	No	Yes	20 Hz–20 kHz	>102 dB (playback) >96 dB (playback)	<0.006%	Optional remote	$2,699
No	N/A	No	No	No	No	5 Hz–20 kHz	96 dB	N/A	Pitch control; 10 hot starts; scale factor and RAM editing	$599
No	N/A	No	No	No	No	5 Hz–20 kHz	96 dB	N/A	Serial (RS-232G) and parallel (GPE) remote interfaces; rec/play cascade link; XLR balanced analog I/O	$899
Yes	N/A	No	No	No	No	20 Hz–20 kHz	N/A	<0.008%	Adjustable level-sync; AGC/limiter circuit	$1,040
No	N/A	No	No	No	No	20 Hz–20 kHz	>90 dB	<0.06%	20-bit A/D with super bit-mapping; 4 D.D. motor transport	$1,765
No	N/A	No	No	No	No	20 Hz–20 kHz	>90 dB	<0.0045%	Wireless remote; self diagnostic	$1,060
No	N/A	No	No	No	No	20 Hz–20 kHz	>90 dB	<0.005%	Optional remote	$1,399
No	N/A	No	No	No	No	20 Hz–20 kHz	>92 dB	<0.005%	Remote; continuous recording between decks 1 & 2; simultaneous record capability	$1,899
No	N/A	No	No	No	No	20 Hz–20 kHz	>112 dB (HR recording); >105 dB	<0.002% (HR recording); <0.004%	Optional remote; word sync in/thru	$2,249
No	N/A	No	No	No	No	5 Hz–22 kHz	>94 dB emphasis off; >98 dB emphasis on	<0.004%	Time code generator; P2 protocol; confidence monitoring	$6,999

is in fact a combination of all of these separate sounds. The same is true of all acoustic instruments, and even in the case of an electric instrument, such as an amplified guitar, it could be argued that the cabinet vibrates and contributes to the sound directly produced by the loudspeaker. Unless we capture all the elements that make up the sound as perceived by a listener at a distance from the instrument, the result is likely to sound less than natural.

Mic Distance

Choosing the right miking distance can be a challenge, because if we bring the microphone too close to the instrument, we start to focus on just one part of it, which means that we are no longer capturing the composite sound of the whole instrument. It is tempting to put the microphone close to the part of the instrument that seems to be making the most sound, such as the bell of a trumpet, the sound hole of a guitar or the head of a drum (especially tempting if you are using insensitive microphones), and though it is occasionally possible to obtain usable results in this way, what we actually get is not really representative of the whole instrument.

On the other hand, placing the microphone too far away could capture the necessary components of the sound but could also pick up other unwanted sounds or room ambience. For this reason, it's always easier to record an instrument if it's played in a sympathetic acoustic environment, and most Western instruments need a little reverberation because they were designed to be played indoors. The same is not necessarily true of ethnic instruments, as many are only ever played outdoors and thus need a less reflective environment.

Universal Rule

As acoustic instruments vary enormously in loudness and frequency content, I'd normally choose a condenser microphone in order to be confident of having a high enough degree of sensitivity and the ability

—continued on page 107

DIGITAL MIXING CONSOLES

MANUFACTURER	PRODUCT	MIXER CONFIGURATION	MIC INPUTS (XLR)/ LINE INPUTS	# OF DIGITAL INPUTS/ TYPE	# OF DIGITAL OUPUTS/ TYPE	# OF OPTION CARD SLOTS	ANALOG INSERTS/ DIRECT OUTS	# OF ANALOG AUX SENDS/RETURNS	AD CONVERTERS
Behringer	DDX3216	32x16x2	12/16	S/PDIF (coax)	S/PDIF (coax)	2	(12/0) 1/4" TRS	0/0	24-bit/128x
Roland	M-1000 Digital Line Mixer	10x2	0/2	(4) stereo coax; optical option; USB 1.1 audio I/O	Coax/optical; USB audio I/O	N/A	N/A	N/A	24-bit/64x
Roland	VM-3100 V Mixing Station	12x8x2	8/10	S/PDIF (optical, coax)	(2) S/PDIF (optical, coax)	N/A	4	4	24-bit
Roland	VM-3100 Pro V Mixing Station	20x8x2	2/10	S/PDIF (optical, coax)	(2) S/PDIF (optical, coax)	1	4	4	24-bit
Roland	VM-7100/VM-C7100 V Mixing System	38x14x2	11/1	S/PDIF or AES/EBU	(2) S/PDIF; AES/EBU	7	Up to 8	Up to 10	24-bit
Roland	VM-7200/VM-C7200 V Mixing System	48x14x2	21/1	S/PDIF or AES/EBU	(2) S/PDIF; AES/EBU	8	Up to 18	Up to 10	24-bit
Roland	VM-7200 (x2)/VM-C7200 (x2) V-Mixing System	94x14/28 flex bus x 2	41/1	(2) S/PDIF or AES/EBU	(4) AES/EBU; S/PDIF	13	24/16	Up to 34	24-bit
Soundcraft	328XD	32x8x2	16/16 mono; 5 stereo	(2) ADAT; (2) TDIF; AES/EBU; S/PDIF	(2) ADAT; (2) TDIF; AES/EBU; S/PDIF	N/A	(16/0) 1/4"	(4/4) 1/4"	24-bit/128x
Tascam	DM-24	24x8x2	16/16	(24) TDIF; (8) ADAT; (2) AES/EBU	(24)TDIF; (8) ADAT; (2) AES/EBU	2	(16/16) 1/4"	(4/4) 1/4" TRS	24-bit
Yamaha	01V 96	40x8x2	12/16	S/PDIF (coax); ADAT	S/PDIF (coax); ADAT	1 (16-ch.)	(12/N/A) TRS	N/A	24-bit/96 kHz
Yamaha	02R96	56x8x2	16/8	AES/EBU; (2) S/PDIF	AES/EBU; (2) S/PDIF	4	(16/16) 1/4" TRS	(8/0) 1/4" TRS	24-bit/96 kHz

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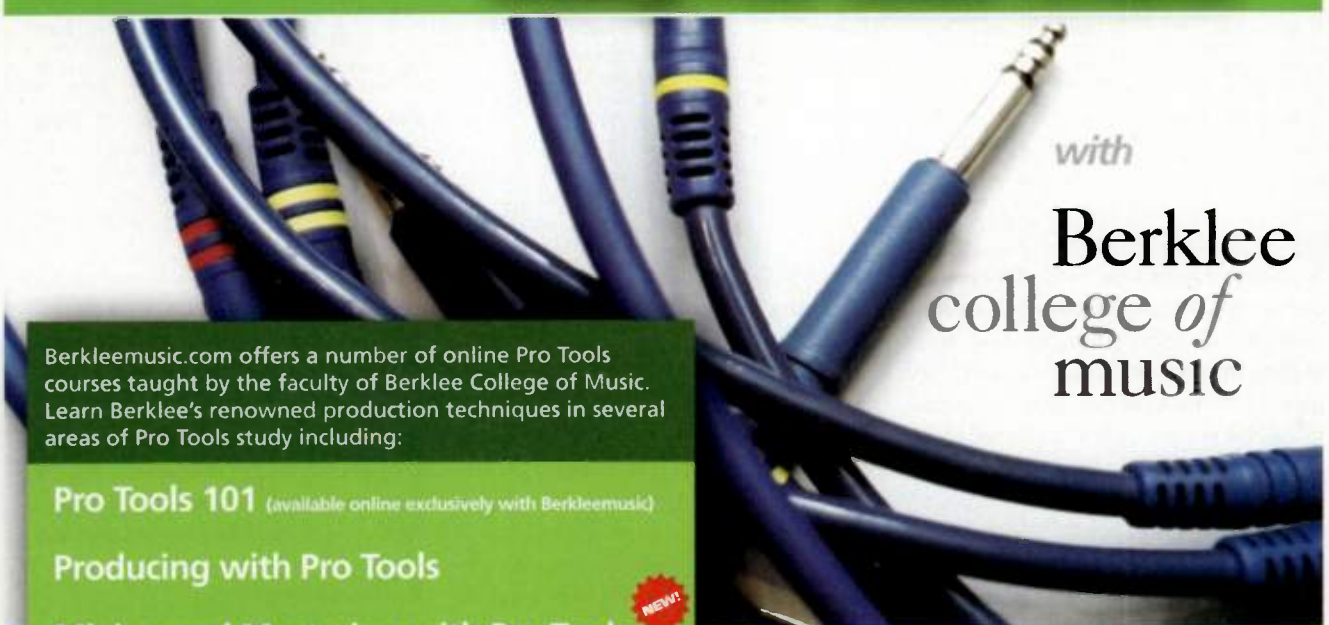

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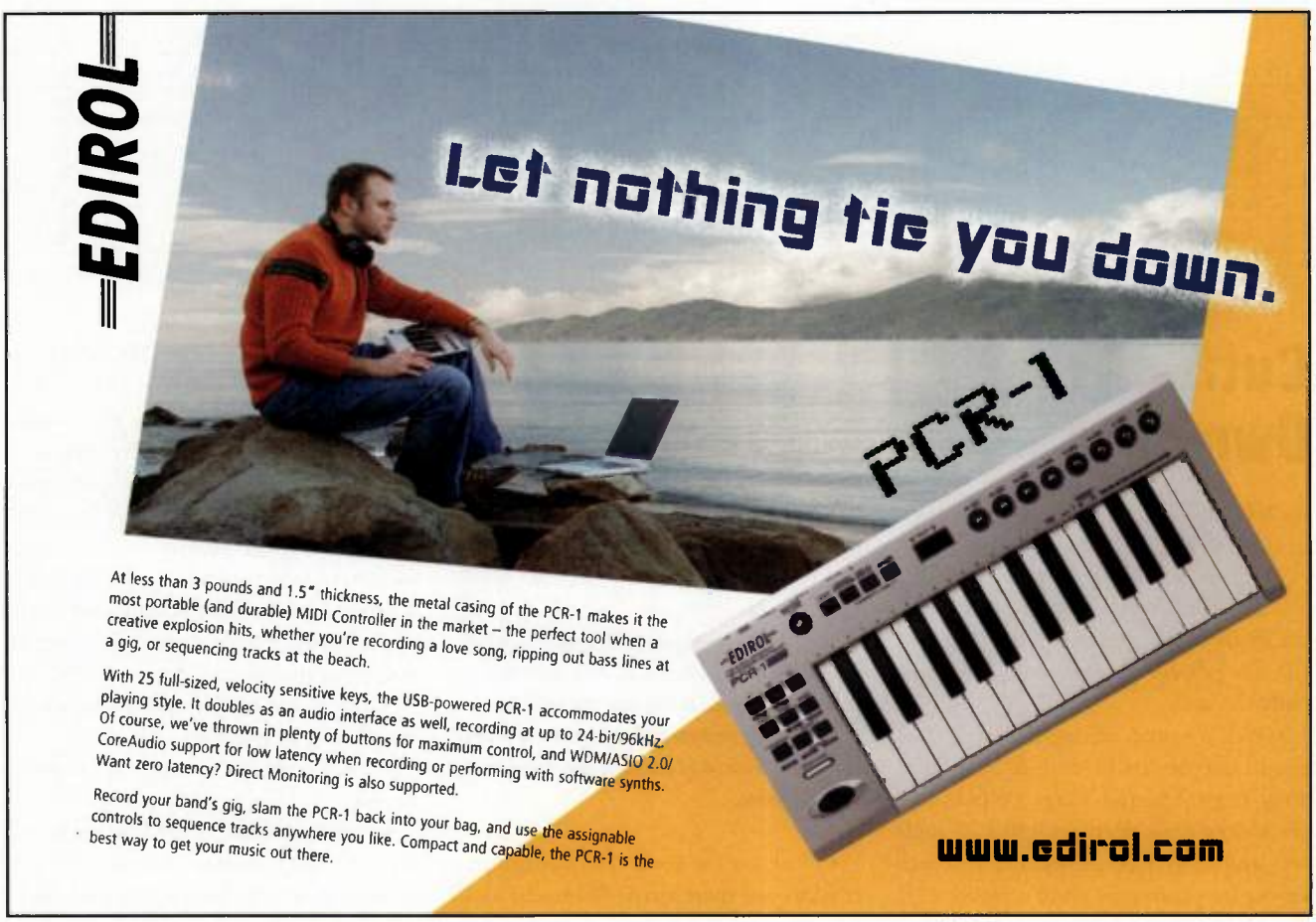
DA CONVERTERS	EQ TYPE	# OF DYNAMIC PROCESSORS	# OF EFFECTS PROCESSORES	AUTOMATION: SCENE/ MIDI/DYNAMIC	FREQUENCY RESPONSE	SIGNAL TO NOISE RATIO	TOTAL HARMONIC DISTORTION	CHANNEL CROSSTALK (@1 KHZ)	PHANTOM POWER	SPECIAL FEATURES	DIMENSIONS (INCHES)	PRICE
24-bit/128x	4-band parametric	2	4	Y/Y/Y	20 Hz–20 kHz	95 dB	0.05%	N/A	Yes	100mm ALPS; SMPTE; MTC; RS232 connector; PC card slot; free Windows software	17.25x22.5x6.5	$1,999
24-bit/128x	N/A	N/A	N/A	N/N/N	20 Hz–40 kHz (@96 kHz)	-132 dB EIN/105 dBu S/N	N/A	N/A	N/A	For digital signals from devices w/o Word Clock; sample freq rate conv on each dig in; 96 kHz op; Word clock I/O; XLR, phones outs	N/A	$695
24-bit	3-band	2	2	Y/Y/N	N/A	N/A	N/A	N/A	Yes	Dedicated Hi-Z guitar input	13.5x3.75x12	$995
24-bit	3-band	2	2	Y/Y/N	N/A	N/A	N/A	N/A	Yes	Dedicated Hi-Z guitar input; microphone modeling; speaker modeling	13.5x3.75x13.5	$1,295
24-bit	6-band	48	2 (up to 8)	Y/Y/Y	N/A	N/A	N/A	N/A	Yes	Modular; moving faders; 5.1 mixing; RTA; speaker modeling	17x5.25x16.5 (7100); 17x2.6x17 (C7100)	$1,995/$2,995
24-bit	6-band	48	2 (up to 8)	Y/Y/Y	N/A	N/A	N/A	N/A	Yes	Modular; moving faders; 5.1 mixing; RTA; speaker modeling	17x5.25x16.2 (7200); 29.5x2.75x17 (C7200)	$2,795-$3,695
24-bit	5-band	94	4 (up to 16)	Y/Y/Y	N/A	N/A	N/A	N/A	Yes	Modular; moving faders; 5.1 mixing; RTA; speaker modeling ADAT/Tascam interfaces	17x5.25x16.2 (7200); 29.5x2.75x17 (C7200)	$3,695-$6,590
24-bit/128x	3-band parametric	On all inputs, groups and main mix	2	Y/Y/Y	20 Hz–20 kHz	N/A	0.005%	>95 dB	Global		28.2x21.1x6.3	$5,500
24-bit	4-band parametric	2 each	2 each	Y/Y/Y	N/A	N/A	N/A	N/A	Yes	24-bit/96 kHz; optional IF-FW/DM FireWire interface	N/A	$2,999
24-bit/96 kHz	4-band parametric	48	4	Y/Y/N	20 Hz–40 kHz	N/A	< 0.01%	80 dB	Yes	Full operation at 96 kHz	N/A	$2,499
24-bit/96 kHz	4-band parametric	56	4	Y/Y/Y	20 Hz–40 kHz (96 kHz)	N/A	>0.01%	N/A	Yes	I/O cards: ADAT, TDIF, AES/EBU, analog in, analog out, Apogee I/O; Waves effects card; MB02R96 meter bridge	26.25x27.5x9.5	$11,397



MANUFACTURER	PRODUCT	# OF PADS / TOUCH SENSITIVE	NON-PERCUSSION SOUNDS	ONBOARD EFFECTS	# OF SOUNDS	# OF PATTERNS PRESET / USER	# OF SONGS
Akai	MPC2000XL MIDI Production Center	16/Yes	Yes	Optional 4-bus effects processor	128	0/99	20
Akai	MPC2000XL-ZP	16/Yes	Yes	Optional 4-bus effects processor	128	0/99	20 (user only)
Akai	MPC4000	16/Yes	Yes	Yes	Unlimited	0/128	128 (user only)
Alesis	SR-16	12/Yes	223	No	100	200/200	100
Boss	DR-3	13/Yes	Yes (bass)	Ambience; EQ; comp w/edit	120	100/100 x 11	100
Boss	DR-670	20/Yes	Yes (bass)	No	256	200/200	100
Boss	DR-202	8/No	Yes (bass)	Reverb; chorus	256	400/100	50
Boss	DR-770	16/Yes	Yes (bass)	16+ ambient settings; reverb; flange; EQ	255	400/400	100
Jomox	AiRBase-99	Yes	No	No	Unlimited	200	200
Jomox	XBase-09	4/Yes	Yes (white noise)	No	Unlimited	64	64
Korg	ER1mkII (Electribe R mkII)	9/No	No	Ring mod; cross mod; tempo delay	Unlimited	256/256	16
Korg	EA1mkII (Electribe A mkII)	2/No	Yes (analog modeling)	Tempo delay; chorus; flanger	Unlimited	256/256	16
Korg	ES-1mkII (Electribe S mkII)	12/No	Yes (sample-based)	11 types	Unlimited	128/128	16
Korg	EMX-1 (Electribe MX)	16/No	Yes (modeling+PCM)	3 processors/16 types	Unlimited	256/256	64
Korg	ESX-1 (Electribe SX)	16/No	Yes (sample-based)	3 processors/16 types	Unlimited	256/256	64
Roland	MC-307 Groovebox	16/Yes	64	Reverb; chorus; multi	800	710/200	N/A
Roland	MC-909	16/Yes	Yes	MFX1; MFX2; reverb; comp; MSTR	800	215/200/999 CRD	50
Roland	MV-8000 Production Studio	16/Yes	Yes	MFX; chorus; reverb; mastering	9,999	N/A	16
Vermona	DRM1 Mk II	N/A	No	Yes	8 (programmable)	0/0	0
Yamaha	RY9	12/No	50	No	128	200/50	100
Yamaha	RY20	12/Yes	6 (bass)	Reverb; delay	300	300/600	50
Zoom	MRT-3B	7/No	No	No	N/A	200/99	99

Cutting Your Own Loops

By Todd Souvignier

Whether you've recorded a special looping session, or are cutting into tracks from any multitrack recording or CD, the process of editing loops is essentially the same:

• Pick a sound editing program. Two good examples are BIAS Peak (Mac) and Sony Digital Sound Forge (Windows), since they have deep professional toolsets and large user bases. Pretty much any audio editor may do in a pinch.

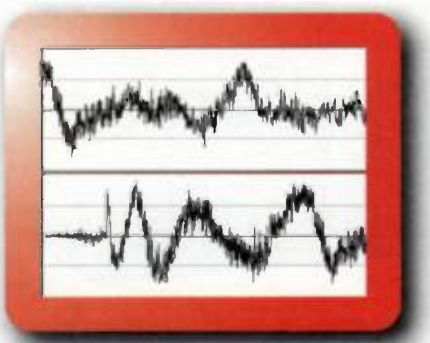


FIG. 1: Always cut loops so they start and end on zero-crossings. In the top example the start point is in the positive and will result in a click. The lower example is cut correctly, beginning at a zero-crossing.

• Next, get the audio onto the computer (if it's not there already). Ideally, you'll have the files on a CD-ROM, which can easily be copied to your hard drive. Next best would be if the files are on an audio CD, which can be digitally imported ("ripped") to your hard drive. Somewhat less ideal, but still viable, is to record the audio into your computer from some external source, such as a tape deck. Use a professional-quality sound card or the audio fidelity may be degraded during the recording process.

• Open one of the audio files in the sound editing program.

• Locate the first section of audio to be cut.

• Highlight the section where the loop is and copy the selection. This does not have to be an exact selection; a little extra audio

QUANTIZATION TYPES / PPQN	# OF OUTPUT / TYPE	PORTS MIDI IN / OUT / THRU	SPECIAL FEATURES	PRICE
1/8, 1/16, 1/32 and triplets; 96	(2) 1/4"	Y/Y/N	Reads Roland & E-mu libraries; BPM matching time stretch; SE1, SE2, SE3 special edition w/enhanced graphics; automated mixing; 64 tracks; 300K note sequencer	$1,499
Off, 1/8, 1/8(3), 1/16, 1/16(3), 1/32, 1/32(3)/96ppq	(2) 1/4" TRS (8-out optional)	Y/Y/N	100 MB ZIP drive w/ 50 MB AKAI drum sounds; graphic flip-up display; real-time control; Timestretch; resample; Beat Loop function; tap tempo	$1,649
Off, 1/8, 1/8(3), 1/16, 1/16(3), 1/32, 1/32(3), 1/64, 1/64(3)/96ppq	(2) XLR/1/4" combo (8-out optional)	Y/Y/N	60 GB HD; CD burner; sample streaming; 272 MB RAM exp to 512 MB; (6) real-time controller; word clock; SMPTE; optional ADAT I/O	$3,999
96	(4) 1/4"	Y/Y/Y	Includes start/stop; A-B fill/count footswitches	$269
96	(4) RCA; (4) 1/4" phone	Y/N/N	Arranger-style programming; TSC-total sound control; backlit display	$225
96	(2) 1/4" output; phones (stereo mini)	Y/Y/N	Direct pattern play; bass patterns w/drum patterns	$345
96	(2) RCA	Y/Y/N	Roll button	$495
96	(2) 1/4"; 1/4" phones	Y/Y/N	Direct pattern play; quick search for pattern play	$495
N/A	(10) 1/4"	Y/Y/Y	Fully-analog electronics	$995
N/A	(4) 1/4"	Y/Y/Y	Fully-analog electronics; onboard sequencer	$1,095
32nd note max; swing/8	(2) 1/4"	Y/Y/Y	Motion sequencer; audio inputs; rhythmic external audio gating; analog-modeled sounds; optional bag	$400
32nd note max; swing/8	(2) 1/4"	Y/Y/Y	Oscillator sync; ring mod, cross mod; motion sequence; audio in processing; use as analog modeling tone module	$400
32nd note max; swing/8	(2) 1/4"	Y/Y/Y	Sampling: resampling, time-slice; audio in rhythmic gating; motion sequence; SmartMedia storage	$599
32nd note max; swing/8	(4) 1/4"	Y/Y/Y	Valve Force tube circuit; performance arpeggiator; audio ins and processing; motion sequence (knob movements); SmartMedia	$850
32nd note max; swing/8	(4) 1/4"	Y/Y/Y	Valve Force tube circuit; performance arpeggiator; audio input; sampling: TimeSlice/Stretch, resampling; SmartMedia	$850
Grid; groove; shuffle/8	(2) 1/4"	Y/Y/N	Grab switch; turntable emulation	$995
480	(4) 1/4"; S/PDIF coaxial, optical	Y/Y/N	Built-in sampler; expandable with SRX Series Boards	$1,795
480	(2) 1/4"; S/PDIF coaxial, optical	Y/Y/N	Sampling; sequencing; audio recording; optional mouse and VGA output	$2,695
N/A	(10) 1/4"	N/N/N	True analog drum synthesizer	$599
16th note/24	(2) 1/4"; phones	Y/Y/N	Guitar input w/ tuner and mono pitch-to-MIDI	$300
Normal; swing; groove/96	(2) 1/4"; phones	Y/Y/N	4 tracks /patterns; programmable bass lines	$500
N/A	(2) 1/4"	Y/N/N	Realistic drum sounds	$175

before and after the loop is okay right now.

• Create a new, empty file document (Control-N or Command-N), then paste the selection into the new document.

• Locate the beginning of the "one" beat in the loop. Place a marker or loop start point there, or click-and-drag from the beginning of the "one" to make a highlight selection.

• Locate the end of the "four" beat in the loop (or the beginning of the next "one.") Extend the selection to this point by holding down the shift key and mouse clicking; or place a marker or end point.

• Audition the loop; most editors have a "loop play" option that will repeatedly play any selection or any audio between the loop start and end points.

• If the loop sounds wrong, adjust the start and end points.

• When you're in the right neighborhood, zoom in on the file and fine tune the start and end points. Ideally the loop should start immediately before the first cycle of the "one" and end right before the first cycle of the next "one." Make sure to not cut into the transient or attack portion of the sound!

• Check that loop start and end points occur on a zero-crossing, a point where the waveform is in the middle of the display at 0 dB (see Fig. 1).

• By now the loop should sound really tight and natural—one should not hear any noise or glitch when the loop repeats.

• Use the Crop command, found in the edit menu, to trim the loop, omitting sound before the start point and after the end point.

• If it was not possible to edit on zero-crossings, perform a tiny fade-in at the beginning of the loop, and a tiny fade-out at the end, to force the waveform to zero.

• Now save the loop under a new name. ■

This article was previously published in the book Loops & Grooves: Musician's Guide To Groove Machines & Loop Sequences *(ISBN 0-634-04813-9), a product of Hal Leonard Corporation (www .musicdispatch.com), and is reprinted by permission of the publisher. It has been lightly edited for content.*

DIRECT BOXES

MANUFACTURER	PRODUCT	TYPE	POWER	# OF CHANNELS	INPUTS	OUTPUTS	GROUND LIFT
A Designs	REDDI	Floor	Tube	1		1	Yes
Aguilar	DB 900 Tube Direct Box	Floor	AC 100V/120V/230V	1	1/4"	XLR bal; 1/4" unbal	Yes
Alto	DI 1	Portable	Battery	1	XLR; 1/4"	XLR	Yes
Alto	DI 4	Rackmount	110V/220V	4	(4) 1/4"; XLR	XLR	Yes
Anthony DeMaria Labs	100-G	Floor	100-VAC/120/220/240	1	1/4"	XLR; 1/4"	Yes
Anthony DeMaria Labs	300 G	Floor or rackmount	External AC	2	1/4"	(2) 1/4"; (2) XLR	Yes
Apex	ADP1	Floor	Passive	1	1/4"	XLR	Yes
Apex	ADA1	Floor	Phantom	1	Dual 1/4"	XLR	Yes
ART	PDB	Passive	Passive	1	(2) 1/4"	XLR	Yes
ART	Phantom I	Floor	Active	1	(2) 1/4"	XLR	Yes
ART	Phantom II	Floor	12VDC; 9V battery	2	(2) XLR	(2) XLR	No
ART	Phantom III	Floor	18VAC	2	XLR	XLR	Yes
ART	dPDB	Floor	Passive	2	(2) 1/4"	XLR	Yes
Avalon Design	U5	Floor or rackmount	Active AC	1	(2) 1/4"	1/4"; XLR	Yes
BBE	DI-100x	Standalone	9VDC external; battery	1	1/4"	1/4" unbal.; XLR bal.; 1/4" thru	Yes
BBE	DI-1000	Standalone	9VDC external; battery	1	1/4"	XLR bal; 1/4" thru	Yes
Behringer	Ultra-DI D120	Table; equip. mount	9V battery; 48V phantom	2	1/4"	XLR	Yes
Behringer	Ultra DI DI100	Active DI box	Phantom	1	1/4"; XLR	XLR	Yes
Behringer	Ultra DI Pro DI4000	4-ch DI box/peak converter	N/A	4	1/4"; XLR	XLR	Yes
Boss	DI-1	Floor	Battery; phantom	1	1/4"	1/4"; XLR	Yes
BSS Audio	AR133	Floor	Battery; phantom	1	1/4"; XLR	1/4"; XLR	Yes
BSS Audio	AR416	Rackmount	Internal AC	4	(4) 1/4"	(4) 1/4"; (4) XLR	Yes
Buzz Audio	MIA-1.0	Floor	Phantom	1	(3) 1/4" at differing levels	(2) 1/4"; (1) XLR	Yes
Carvin	FDR60	Floor	Passive	1	1/4"	XLR	Yes
Countryman	Type 85	Floor	Battery; phantom	1	1/4"	1/4"; XLR	Yes
D.W. Fearn	PDB	Floor	None required	1	(2) 1/4"	(1) XLR	Yes
Demeter	VTDB-2 Tube Direct Box	Floor	AC	1	1/4"	1/4"; XLR	Yes
Demeter	H DI-1 Tube Direct Box/Line Driver	Rackmount	AC	2	(2) 1/4"	(2) 1/4"; (2) XLR	Yes
Demeter	STDB-2 Stereo Direct Box	Rackmount	AC	2	(2) 1/4"	(2) 1/4"; XLR	Yes
DOD Electronics	AC260	Floor	Passive	1	(2) 1/4	(2) 1/4	No
DOD Electronics	AC265	Floor	Passive	1	(2) 1/4"; XLR	(2) 1/4"; XLR	Yes
DOD Electronics	AC275	Floor	AC; battery; phantom pwr	1	(2) 1/4"; XLR	(2) 1/4"; XLR	Yes
E.M.O.	E520	Floor	Passive	1	(5) 1/4"	XLR	Yes
E.M.O.	E525	Floor	Passive	2	(10) 1/4"	(2) XLR	Yes
E.M.O.	E535	Rackmount	Passive	1	(10) 1/4"	XLR	Yes
E.M.O.	E545	Rackmount	Passive	6	(30) 1/4"	(6) XLR	Yes
E.M.O.	E540	Floor	Passive	1	(5) 1/4"	XLR	Yes
E.M.O.	E580	Rackmount	Passive	8	(8) 1/4"	1/4"; XLR	Yes
Ebtech	HE-2	Tabletop	Passive	2	(2) 1/4" TS or TRS	(2) 1/4" TS or TRS	No
Ebtech	LLS-2 PKG	Table or equip. mount	Passive	2	(2) 1/4"	(2) 1/4"	No
Ebtech	HE-8	Rackmount	Passive	8	(8) 1/4" TS or TRS	(8) 1/4" TS or TRS	No
Ebtech	LLS-8	Rackmount	Passive	8	(8) 1/4"	(8) 1/4"	No
Fishman	Pro-EQ Platinum	Solid state preamp/DI/EQ	Battery; AC	1	1/4"	(2) 1/4"; XLR	Yes
Fishman	Pro-EQ Platinum Bass	DI/EQ/preamp	9V battery; 48V phantom; AC	1	1/4"	XLR	Yes
Groove Tubes	PDI - Passive Direct Interface	Floor	Passive	1	(2) 1/4", in/thru	(1) XLR @ 200 Ω	Yes
Groove Tubes	Speaker Emulator 2	Rackmount	AC	1	(1) 150 watt RMS	2 dry, 2 mix FX	No
Horizon Music	Straightline	Passive	Passive	1	1/4"	1/4"	Yes
Horizon Music	Speaker Line	Speaker-level direct box	Passive	1	1/4"	1/4"	Yes

SPECIAL FEATURES	PRICE
All Tube; zero feedback loop	$699
Durable steel chassis; LED; 10-year warranty	$629
Gold-plated connectors	$59
+20dB gain switch; high cut filter; gold-plated connectors	$119
All-tube design; 10-MEG input for interface with a wide variety of instruments	$599
Gain	$899
Switchable input attenuation	$36
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Input attenuation switchable	$40
Phantom power; attenuation switch	$40
12V-48V switchable	$70
Power LED	$50
Dual direct box	$60
Variable gain; hi-cut filter; optional rack kits	$595
Active; BBE Sonic Maximizer; -15dB pad switch	$249
Active/passive; BBE Sonic Maximizer; Jensen transformer; 0, -15, -30dB pad switch	$299
Converts two separate unbalanced 1/4" jack inputs into two balanced XLR outputs	$25
Direct connection of amp outs up to 3000W	$79
Direct connection of amp outs up to 3000W	$229
Auto power-off; phase inverse	$150
0/-20/-40 dB pads	$185
0/-20/-40 dB pads; LP filter; phase reverse	$899
Transformerless, 4 Hz to 200 kHz	$299
Input attenuation -0, -20, -40 dB	$25
Isolates ground even w/ phantom power	$232
Passive direct box; uses top-of-the-line Jensen transformer in die-cast aluminum box	$300
Jensen output transformers; tube-buffered output	$600
Tube-buffered 1/4" outputs	$899
All-tube construction; 27 Mohm input	$1,100
Can be used as a mic/instrument splitter; 3-position pads + 180	$65
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Speaker/instrument level switch	$95
20 Hz-40 kHz frequency response	$124
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High-isolation operation	$190
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Removes ground hum; balances audio signal	$90
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Converts between -10/+4 dBu equipment	$350
Semiparametric EQ; sweepable mid w/notch	$250
Exclusive voltage doubler circuit stands up to high output active basses	$250
Internal electro-static shield in xfmr; steel case/shield for xfmr; steel chassis w/ foam pad	$59
Reactive, load sensitive direct interface of guitar amp to mixer; 25% & 50% power reduction return to spkr cab; 16 Ω	$599
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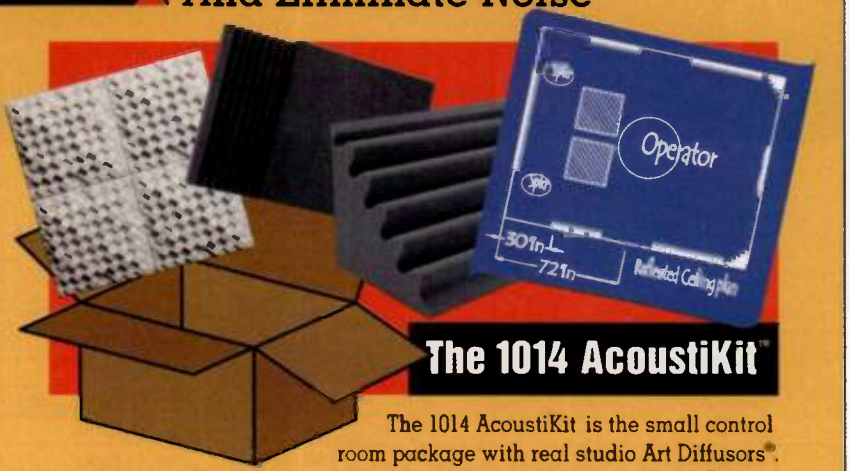

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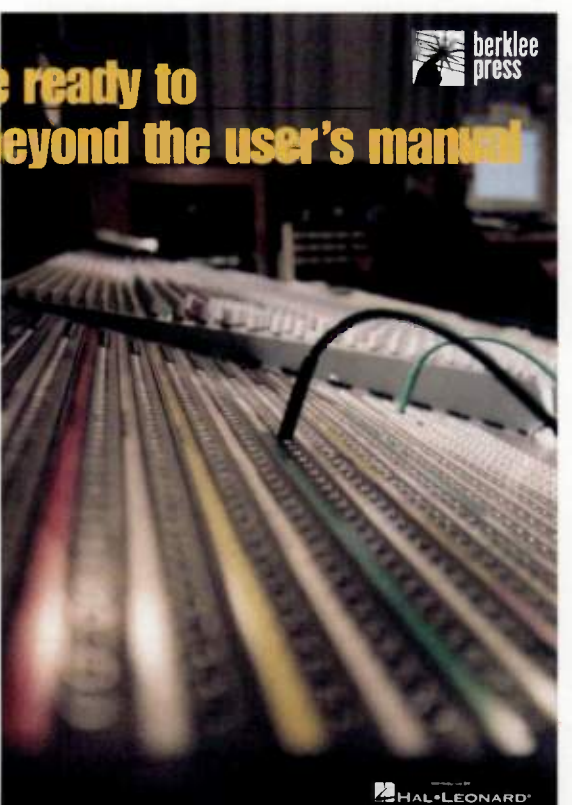

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MANUFACTURER	PRODUCT	TYPE	POWER	# OF CHANNELS	INPUTS	OUTPUTS	GROUND LIFT
Horizon Music	Stereo Line Direct Box	Multimode	Passive	2	(2) 1/4"	(2) 1/4"	Yes
Horizon Music	Active Direct Box	Active DI box	Battery	1	1/4"	1/4"	Yes
Horizon Music	SL-4	4-channel rackmount	Passive	4	1/4	XLR	Yes
Jensen Transformers	Iso-Max DB-2PX	Standalone or rackmount	Passive	2	(2) 1/4"	(2) XLR	Yes
Klark Teknik	DN100	Floor	Phantom	1	(2) 1/4"; XLR	XLR	Yes
Manley Labs	Tube Direct Interface	Tube DI box	Passive	1	1/4"	1/4"; XLR	Yes
Manley Labs	Stereo Tube Direct Interface	Tube DI box	Passive	2	1/4"	1/4"; XLR	Yes
Palmer Direct	PAN-01	Mono passive DI box	Passive	1	(1) 1/4"	XLR	Yes
Palmer Direct	PAN-02	Mono active DI box	9V battery; 48V phantom	1	(1) 1/4"	XLR	Yes
Palmer Direct	PAN-03	Rackmount	AC 110V	4	(4) 1/4"	XLR front to rear	Yes
Palmer Direct	PAN-04	Passive DI box	Passive	2	(2) 1/4"	XLR	Yes
Palmer Direct	PDI-01	Passive DI box	Passive	1	(1) 1/4"	XLR	Yes
Palmer Direct	PDI-02	Active DI box	9V battery; 48V phantom	1	(1) 1/4"	XLR	Yes
Palmer Direct	PDI-09 Direct Recording Device	Mono	Passive	1	(1) 1/4"	1/4"; XLR	Yes
Palmer Direct	PGA-03 Guitar Y Box	Guitar	Battery; external AC	1	(1) 1/4"	(2) 1/4"	No
Palmer Direct	PGA-04 (for guitar)	Rackmount	Passive	1	(1) 1/4"	1/4"; XLR	Yes
Palmer Direct	PGA-05 (for guitar)	Rackmount	Internal AC	2	(2) 1/4"	(2) 1/4"; XLR	Yes
Peavey	ID 1G	Floor	Passive	1	1/4"	(2) XLR	Yes
Peavey	1:1 Interface Plus	Floor	Passive	1	1/4"; XLR	1/4"; XLR	Yes
Peavey	EDI	Floor	Passive	1	1/4"	1/4"; XLR	No
Peavey	EDB 1	Floor	Active; phantom; battery	1	1/4"	1/4"; XLR	No
Phonic	A6200 Supreme DI	Rack	AC 110V	6	(6) 1/4	XLR	Yes
PreSonus	AcoustiQ	Floor or rackmount	IEC power connector	1	1/4	1/4"	No
Pro Co Sound	CB-1	Floor	Passive	1	1/4"	1/4"; XLR	Yes
Pro Co Sound	DB-1	Floor	Passive	1	1/4"	1/4"; XLR	Yes
Pro Co Sound	IT 1 Balancing Box	Floor	Passive	1	1/4"; XLR	1/4"; XLR	Yes
Pro Co Sound	AVP 1	Wall plate	Passive	1	1/4"; RCA; XLR	Barrier strip	Yes
Pro Co Sound	AV1A	Floor	Passive	1	1/4"; 2 RCA Mini	XLR; 1/4"	Yes
Pro Co Sound	HJ4P	Floor	Passive	1	XLR	1 XLR 4 1/4"	No
Pro Co Sound	Switch Witch	Rackmount	Passive	4	XLR	(4) XLR	No
Pro Co Sound	DB-4A	Rackmount	Passive	4	1/4"	1/4"; XLR	Yes
Pro Co Sound	MS 3/MC 2/MS2	Floor	Passive	1	XLR	(3) XLR	Yes
Pro Co Sound	MS 42A	Rackmount	Passive	4	XLR	(2) XLR	Yes
Pro Co Sound	MS 43A	Rackmount	Passive	4	XLR	(3) XLR	Yes
Pro Co Sound	MS 82	Rackmount	Passive	8	Barrier strip	Barrier strip	Yes
Pro Co Sound	MS 83	Rackmount	Passive	8	Barrier strip	Barrier strip	Yes
Radial Engineering	J-48	Floor	48V phantom	1	1/4"	XLR	Yes
Radial Engineering	JDI Mark III	Floor	Passive	1	(2) 1/4"	XLR	Yes
Radial Engineering	JDV	Floor	Active	1	(2) 1/4"	XLR	Yes
Radial Engineering	JD4	Rackmount	Passive	4	(16) 1/4"	(4) XLR	Yes
Rapco	DB-100	Floor	Passive	1	1/4"	(4) 1/4"; (4) XLR	Yes
Rapco	DB-101SL	Floor	Passive	1	1/4"	(4) 1/4"; (4) XLR	Yes
Rapco	ADB+8	Floor	Battery; phantom	1	1/4"	1/4"; XLR	Yes
Rapco	DBR400	Rackmount	Passive	4	(4) 1/4"	(4) 1/4"; (4) XLR	Yes
Raven Labs	MDB-1 Mixer/Direct Box/Buffer	Active DI/3-channel mixer	Battery; external AC	3	(5) 1/4"	XLR; 1/4"	Yes
Roland	DI-1	Floor	Battery; phantom	1	1/4"	XLR; 1/4"	Yes
Rolls	DB25	Floor	Passive	1	(2) 1/4"	XLR	Yes
Rolls	ADB2	Floor	Phantom	1	(2) 1/4"	XLR	Yes
Rolls	ADi6 dB Max	Floor	9V; phantom	1	1/4"	XLR	Yes
Rolls	RPB623 Phantom Hex	Rackmount	120 VAC	6	XLR	1/4"	No
Rolls	RDB104	Rackmount	Internal AC	4	(8) 1/4"	(4) XLR	Yes
Stewart Audio	ADB-1	Floor	Passive	1	1/4"	1/4"; XLR	Yes
Sage Electronics	D.I. JOE	Desk top/floor	Battery	1	(1) 1/4"	(2) 1/4"; XLR	Yes

SPECIAL FEATURES	PRICE
Works as stereo or 2 in/1 out mono combiner	$99
-20 dB pad switch; adjustable output gain trim	$150
	$349
Jensen JT-DB-EPC transformer	$210
Switchable I/O attenuation; iso transformer	$175
5-position EQ; console boost-unity switch	$575
5-position EQ; all-tube architecture	$875
0 dB/-30 dB switch	$60
0 dB/-30 dB switch	$75
30 dB pad/channel	$255
0 dB/-30 dB switch	$100
0/-20/-40 dB switch	$120
0/-20/-40 dB switch	$250
Variable tone and output attenuation switches	$145
Isolated transformer Y-box	$120
Integrated 8 Ω load box; filter section	$535
Filter section	$775
	$49
	$67
Includes timbre adjustment	$67
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Hi-cut filter; variable impedance/pad	$190
Dual-source tube preamp DI for acoustic guitars	$299
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Line/speaker level in; high cut filter	$110
Line level balancing and isolation	$124
Line/speaker level in	$131
AV direct box	$131
Headphone box L/R level controls loop output	$185
1-ch. line-level switching (powered monitors); stereo pair ins/outs	$300
Hi/low line level in; high-cut filter	$365
	$130/$136/$111
Microphone splitting features	$335
Microphone splitting features	$420
Phantom bus available on P model	$675-$715
Phantom bus available on P model	$885-$910
Mas merge to mix 2 inputs to mono; 80 Hz rumble filter; polarity reverse	$199
Merged inputs; -15 dB pad switch	$199
Uses NiCad rechargeable batteries	$300
Merged input pairs; ultrasonic noise filter	$900
Ground-lift jack	$50
Accepts instrument/speaker level signals	$60
Mic level/unity gain/+8 dB forward gain switch	$208
4 units housed in 1U rackspace	$249
Mute; tuner send; effects loop; inst. presets	$299
Auto power-off; phase inverse switch	$150
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3-position attenuation switch	$50
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Active discrete	$179

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MANUFACTURER	PRODUCT	TYPE	POWER	# OF CHANNELS	INPUTS	OUTPUTS	GROUND LIFT
Stewart Audio	ADB-4	Floor or rackmount	External; phantom	4	(4) XLR	1/4"; (4) XLR	Yes
Summit Audio	TD-100	Floor or rackmount	AC 110V	1	1/4"	1/4"; XLR	Yes
Tech 21	SansAmp XDI	Floor	Phantom; 9V batt; opt DC power supply	1	(2) 1/4"	1/4"; XLR	No
Tech 21	SansAmp Acoustic DI	FET solid state floor	Phantom; 9V batt; opt DC power supply	1	(2) 1/4"	1/4"; XLR	Yes
Tech 21	SansAmp Bass Driver DI	FET solid state floor	Phantom; 9V batt; opt DC power supply	1	1/4"	(2) 1/4"; XLR	Yes
The John Hardy Co.	AMB Tube Buffered Direct Injection Box	Tube buffered	AC power 110/220VAC	1	1/4"	(2) 1/4"; XLR	Yes
Whirlwind	EDB-1	Floor	Passive	1	1/4"	XLR; 1/4"	Yes
Whirlwind	IMP 2	Floor	Passive	1	1/4"	XLR; 1/4"	Yes
Whirlwind	Director	Floor	Passive	1	1/4"	XLR; 1/4"	Yes
Whirlwind	Direct 2 Dual	Dual direct box	Passive	2	(2) 1/4"	(2) 1/4"; (2) XLR	Yes
Whirlwind	PCDI	Floor	Passive	2	(2) RCA; 1/8"	(2) XLR; (2) RCA	Yes
Whirlwind	HotBox	Floor	Battery; phantom	1	1/4"	XLR; 1/4"	Yes
Whirlwind	HotBox Quad	Rackmount	Internal AC; phantom	4	(4) 1/4"	(4) 1/4"; (4) XLR	Yes
Whirlwind	Multi Director	Rackmount	Passive	4	(4) 1/4"	(4) 1/4"; (4) XLR	Yes

Guitar Effects and Recording

By Paul White

Guitar parts tend to be recorded with their basic effects, such as overdrive, spring reverb, and expressive pedal effects such as wah-wah. Some analog effects pedals produce a more musical sound than their better-specified rack-mounted counterparts, especially chorus and flange units, while stereo reverb treatments can safely be left to the final mix.

Don't be tempted to dismiss an effects pedal purely because of its technical spec; if it sounds good, use it. However, if it produces too much noise, distorts, or causes some other problem, discuss it with the player using the pedal and see if you can simulate the sound with your own equipment. Even if you decide to add the effect at the final mixing stage, you should be able to arrange things so that the player can hear his part with the required effect while playing via the headphone monitoring system. This can usually be achieved by feeding the effect to the monitor mix but without recording it to tape.

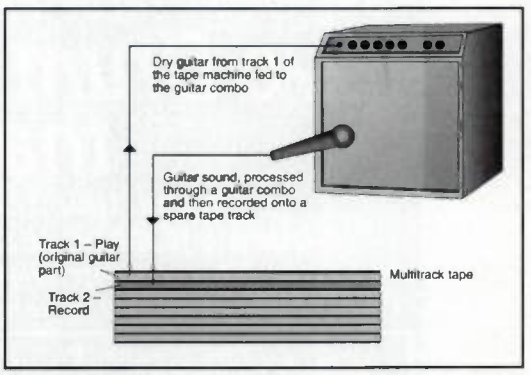

FIG. 1: Re-recording a guitar track through a combo amplifier.

If it really is necessary to leave a guitar treatment open-ended, it may help to record the sound that the player wants on one tape track and a straight, clean, DI'd output from the guitar (via a DI box) on a spare track. In this way, it's possible to feed the dry guitar track back through an amplifier or recording pre-amp or plug-in with the desired effects and overdrive settings in order to get the desired result when mixing.

In a traditional multitrack tape studio, it's not uncommon to play back the guitar track through a guitar amplifier and then mic it up in order to change the sound, and if you can arrange an interesting live acoustic space in which to place the amp and mic, it's often possible to achieve results that would be difficult or even impossible using artificial effects on their own. Fig. 1 illustrates how this is done using tape, but the technique is equally applicable to other multitrack recording systems.

Today, digital-modeling guitar preamplifiers are so good that you may not even feel the need to mic an amplifier. A typical modeling pre-amp combines amp modeling, speaker modeling, and effects all in one unit, and many purport to emulate a range of classic European and American amplifiers. As you hear exactly the sound you're recording over the monitors while you're playing, you know just how the end result will turn out. However, it's worth pointing out that some of the more unlikely combinations

SPECIAL FEATURES	PRICE
Selectable input sensitivity; ground lift on each channel	$379
Instrument preamp & DI; phase control; power headphones; variable impedance	$495
Instrument interface for computer sound cards and mixing consoles	$95
Semi-parametric EQ; tube/mic emulation	$225
Bass tube amp emulation; active bass/treble; drive, presence, blend controls	$225
Switchable 15 dB boost circuit for Jensen output	$595
0, -20, -40 dB pad switch	$30
	$60
Instrument/amplifier switch; LP switch	$110
-20 dB pad switch per channel	$199
Interfaces with computer sound cards	$199
Instrument/amplifier switch	$160
Instrument/amplifier switch	$395
Instrument/amplifier switch; LP switch	$400

of amplifier models and speaker cabinet models can produce unexpectedly interesting results, so don't just rely on the factory settings.

Some guitarists comment that the sound they hear coming back over the studio monitors isn't the same as what they hear when standing in front of their amp at a gig—which is hardly surprising, since studios seldom monitor at that kind of level. The real question is whether the sound you hear over the monitors is comparable with the guitar sound heard on similar records. If the answer is yes, then this method of recording has a lot of advantages, not least being that you can store all of the settings as a program, enabling you to recreate the sound exactly at a later date, if necessary. ■

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DYNAMICS PROCESSORS

MANUFACTURER	MODEL	TYPE	THRESHOLD	RATIO	ATTACK TIMES	RELEASE TIMES
A.R.T.	Tube Compressor	Tube compressor	-40 to +10 dB	Comp: 2.3:1; lim: 6:1	Auto/fast	Auto/fast
A.R.T.	Dual Leveler	Tube compressor	-40 to +10 dB	Comp: 2.3:1; lim: 6:1	Auto/fast	Auto/fast
A.R.T.	Pro VLA	Tube compressor	-20 to +20 dB	2:1 to ∞:1	2-15 ms	300 ms to 3 sec
Alesis	3630	Compressor/limiter/gate	-40 to +20 dB	1:1 to ∞:1	0.1 to 200 ms/prog dependent	50 ms to 3 sec
Alesis	Grip	Sub-bass management system	N/A	N/A	N/A	N/A
Alto	BK 2.0	Compressor/limiter	-20 t0 +40 dB	1:1	0.1 to 200 ms	50 ms to 4 sec
Alto	C6 2.0	Compressor/limiter	-40 to +20 dB	1:1 to 20:1	Variable	Variable
Alto	Alpha Comp	Compressor/limiter	-40 to +20 dB	1:1 to 20:1	Variable	Variable
Alto	CLE 4.0	Compressor/limiter	-40 to +20 dB	1:1 to 20:1	Variable	Variable
Alto	CLE 8.0	Compressor/limiter	-40 to +20 dB	1:1 to 20:1	Variable	Variable
Anthony DeMaria Labs	1000	Compressor/limiter	Fixed	3:1 to 12:1	Auto (10 µs)	Auto (0.07 sec)
Anthony DeMaria Labs	1500	Compressor/limiter	Fixed	3:1 to 12:1	Auto (10 µs)	Auto (0.07 sec)
Aphex Systems	108 Easyrider	2-channel compressor	Fixed	1:1 to 5:1 (prog dep)	Auto	Auto w/2 sel. ranges
Aphex Systems	105	Logic-assisted noise gate	-50 to +20 dB	∞:1	Manual (200 to 250 ms)	Manual (150 ms to 4 sec)
Aphex Systems	661 Expressor	Tube compressor	-30 to +20 dB	1.1:1 to 30:1 (manual); no-knee (auto)	Auto or manual (0.05 to 100 ms)	Auto or manual (40 ms to 4 sec)
Aphex Systems	622 Expander/Gate	Expander/gate	-50 to +20 dB	Gate: ∞:1; exp: 1.2:1–10:1	Manual (10 to 100 µs)	Manual (40 ms to 5 sec)
Aphex Systems	720 Dominator II	Peak limiter	-9 to +25 dB	∞:1	Auto	Auto and manual
Aphex Systems	320A Compellor	Compressor/leveler/limiter	Fixed	Comp: 1:1–3:1; lim: ∞:1	Auto (1 µs to 2.5 sec)	Auto w/2 sel. ranges
API	525	Single-channel compressor	Variable: ∞ to 0 VU	2:1 or 20:1	15 ms	0.1 to 2.5 sec
Ashly Audio	CLX 51	Compressor/limiter	-40 to +22 dBu	2:1 to ∞:1	Manual (200 µs to 20 ms)	Manual (100 ms to 3 sec)
Ashly Audio	CLX 52	Dual-channel compressor/limiter	-40 to +22 dBu	2:1 to ∞:1	Manual (200 µs to 20 ms)	Manual (100 ms to 3 sec)
Avalon Design	VT-747SP	Class A opto-compressor	-30 to +20 dB	1:1 to 20:1	2 to 200 ms	10 ms to 5 sec.
Avalon Design	AD2044	Compressor	-24 to +20 dB	1:1 to 20:1	0.5 ms to 150 ms	80 ms to 5 sec
BBE	362 Sonic Maximizer	Audio enhancer	N/A	N/A	N/A	N/A
BBE	362NR Sonic Maximizer	Audio enhancer	N/A	N/A	N/A	N/A
BBE	362SW Sonic Maximizer	Audio enhancer	N/A	N/A	N/A	N/A
BBE	482i Sonic Maximizer	Audio enhancer	N/A	N/A	N/A	N/A
BBE	882i Sonic Maximizer	Audio enhancer	N/A	N/A	N/A	N/A
Behringer	Autocom Pro MDX1400	2-channel compressor/limiter/expander/enhancer/gate	(Comp) -40 to +20 dB (exp/gate) off to 10 dB	(Exp./gate) 1:1 to 1:8; (comp.) 1:1 to >1:8	Compressor: auto; 15 ms; 5 ms; 3 ms	Compressor: auto; program dependent
Behringer	Autocom Pro-XL MDX1600	Compressor/expander/limiter/de-esser	-40 to +20 dB	1:1 to ∞:1	Man (0.3 to 300 ms); auto (15, 5, 3 ms)	Man (0.05 to 5 sec); auto (prog. dep.)
Behringer	Ultramizer Pro DSP1400P	2-band compressor/leveler/loudness ultramizer	-48 to 0 dB	Density 0 - 100	0 to 100 ms	Speed 0 to 100
Behringer	Super-X CX2310	Stereo/3-way mono crossover/xband limiters	-6 to +18 dBu	N/A	N/A	N/A
Behringer	Composer Pro MDX2200	2-channel compressor/limiter/expander/gate	-40 to +20 dB	1:1 to ∞:1	Variable (1 to 150 ms)	Variable (0.05 ms to 5 sec/20 dB)
Behringer	Composer Pro-XL MDX2600	Expander/gate/compressor/limiter	-40 to +20 dB	1:1 to ∞:1	Man (0.3 to 300 ms); auto (15, 5, 3 ms)	Man (0.05 to 5 sec); auto (prog. dep.)
Behringer	Multicom Pro MDX4400	4-channel compressor/limiter	-40 to +20 dB	1:1 to ∞:1	15 ms at 10 dB, 5 ms at 20 dB, 3ms at 30 dB	Program dependent, typ. 125 dB
Behringer	Multicom Pro-XL MDX4600	Expander/gate/compressor/limiter	-40 to +20 dB	1:1 to ∞:1	Man (0.3 to 300 ms); auto (15, 5, 3 ms)	Man (0.05 to 5 sec); auto (prog. dep.)
Behringer	Multigate Pro XR4400	4-channel expander/gate	Bypass to 10 dBu	1:1 to 1:4	Program dependent	Variable (50 ms to 4 sec)
Behringer	Ultra-Dyne Pro DSP9024	6-band dynamic processor	- 70 to 0 dB	1:1 to ∞ (90):1	0 to 255 ms	50–5,000 ms
Behringer	Tube Composer T1952	Expander/gate/compressor/limiter/peak limiter	-40 to +20 dB	1:1 to ∞:1	1 to 150 ms	50 ms to 5 sec

GAIN CONTROL	BYPASS SWITCH	#OF CHANNELS/ STEREO LINK	METER TYPE	MAIN I/O	SIDECHAIN I/O	DIMENSIONS	SPECIAL FEATURES	PRICE
Output	Yes	1/No	LED	XLR; 1/4"	No	5.375x2x5.25	Vactrol electro-optical tube compression	$99
Output	Yes	2/Yes	LED	XLR; 1/4"	No	19x1.75x6.5	Vactrol electro-optical tube compression	$457
Output	Yes	2/Yes	LED; VU	XLR; 1/4" TRS	No	19x3.5x6.5	Electro-optical tube compression;12AT Vacuum tube	$679
Output	Yes	2/Yes	12-seg LED	1/4"	1/4" TRS	19x1.7x4.5	Hard/soft knee; peak/RMS compression	$199
Input/output	Yes	3/No	LED	1/4" TRS	No	19x1.75x6.4	Sub-harmonic synth improves low frequencies	$249
No	Yes	2/Yes	Multi-seg LED	1/4"	1/4" TRS	1U	Gate; peak limiter	$109
Output	Yes	2/Yes	LED	1/4"	No	19x7.5x1.75	Expander; gate; peak limiter	$124
Yes	Yes	2/Yes	N/A	1/4"	No	7.8x5.9x1.75	Stereo multiband digital comp; 256 presets; editing	$179
Yes	Yes	4/Yes	LED	1/4"	No	19x7.5x1.75	IKA (Interactive Knee Adapting); peak limiter; 4-ch.	$169
Output	Yes	8/Yes	LED	1/4"	No	19x7.5x3.5	THAT 2150 VCAs	$529
Input	No	1/No	VU	XLR	No	19x3.5x8	All-tube architecture	$1,695
Input	No	2/Yes	VU	XLR	No	19x3.5x9	All-tube architecture	$2,995
Input/output	Yes	2/Yes	LED	1/4" TRS	No	19x1.75x5.2	Waveform-dependent compression	$299
No	No	4/No	LED	1/4" TRS	External key input	19x1.7x5.2	Logic assist; uses VCA 1001	$449
Input/output	Yes	1/No	LED	XLR; 1/4"	1/4"	19x1.75x10.125	Auto-compression mode; hi-freq expander	$749
No	Yes	2/Yes	LED	XLR	1/4"	19x1.75x9	Logic assist	$795
Input	Yes	2/Yes	LED	XLR	No	19x1.75x10	Brickwall limiter; 3-band auto limit threshold	$1,350
Output	Yes	2/Yes	LED	XLR	No	19x1.75x10	Frequency-dependent leveler	$1,350
Yes	Yes	1/No	VU miniature GR meter	XLR when in API frame	No	N/A	Re-issue of early 70's API compressor	$1,295
Input/output	Yes	1/No	11-seg LED	XLR; 1/4"	1/4"	19x1.75x6	Infinite soft knee and timing based on comp. ratio	$379
Input/output	Yes	2/Yes	11-seg LED	XLR; 1/4"	1/4"	19x1.75x6	Infinite soft knee and timing based on comp. ratio	$539
Make-up/output control	Yes	1/Yes	VU; (2) 20-seg LED	XLR	Yes	19x12x3.5	6-band graphic EQ; tube bypass	$2,495
Output	Yes	2/Yes	Analog VU	XLR	XLR	19x12x3.5		$3,000
No	Yes	2/Yes	1 LED clip per ch	1/4"	No	1U	Uses BBE process	$259
No	Yes	2/Yes	1 LED clip per ch	1/4"; RCA	No	1U	Uses BBE process; noise reduction	$349
No	Yes	2/Yes	5-seg LED per ch	1/4"; RCA	No	1U	Uses BBE process; subwoofer filter	$349
No	Yes	2/No	5-seg LED per ch	1/4"; RCA	No	1U	Uses BBE process; hard-wire bypass	$349
No	Yes	2/No	5-seg LED per ch	XLR; 1/4" TRS	No	1U	Uses BBE process; hard-wire bypass	$599
Yes	Yes	2/Yes	12 LED	XLR; phone	Yes	19x1.75x8.5	Link function; high-pass filter in sidechain	$99
Output	Yes	2/Yes	12-seg LED	XLR; phone	Yes	19x1.75x8.5	Adjustable IDE dynamic enhancer; new circuitry from predecessor	$110
Yes	Yes	2/Yes	8-seg LED	XLR; 1/4" TRS	No	19x1.75x7.5	Includes PC remote control software	$109
Yes	No	1/No	N/A	Servo balanced in; balanced outs	No	19x1.75x8.5	Adjustable delay for runtime/phase inversion	$125
No	Yes	2/No	12 LED	XLR; phone	Yes	19x1.75x8.5	2-ch expander/gate/compressor/limiter	$125
Output	Yes	2/No	12-seg LED	XLR; phone	Yes	19x1.75x8.5	Authentic tube emulation	$140
Yes	Yes	4/Yes	17 LED per ch	XLR; phone	No	19x1.75x8.5	High-pass filter in sidechain; auto compressor	$145
Output	Yes	4/Yes	12-seg LED	XLR; phone	No	19x1.75x8.5	Dynamic enhancer	$160
Yes	No	4/No	Traffic light display	XLR; phone	Yes	19x1.75x8.5	4 expander/gate circuits	$209
Yes	Yes	2/Yes	Digital RMS and peak	XLR; 1/4" TRS	No	19x3.5x12	MIDI-controllable; optional AES/EBU I/O	$299
Output	Yes	2/Yes	VU	XLR; 1/4" TRS	1/4"	19x8.5x3.5	Hard knee/interactive switch; 12AX7 tubes; warmth control; side chain filter	$399

DYNAMICS PROCESSORS

MANUFACTURER	MODEL	TYPE	THRESHOLD	RATIO	ATTACK TIMES	RELEASE TIMES
Bellari	RP583	Tube compressor/limiter	-20 to +20 dB	2:1 to ∞:1	Manual (0.5 to 100 ms)	Manual (1 to 2 sec)
BSS Audio	DPR402	Compressor/de-esser/limiter	-30 to +20 dBu	1:1 to ∞:1	Manual (50 µs to 80 ms)	Auto or manual (5 ms to 5 sec)
BSS Audio	DPR404	Quad compressor	-30 to +20 dBu	1:1 to ∞:1	Auto	Auto
BSS Audio	DPR422	Dual compressor/de-esser	-30 to +20 dB	1:1 to ∞:1	Auto or manual (50 µs to 400 ms)	Auto or manual (5 ms to 5 sec)
BSS Audio	DPR504	Quad gate	-50 to +20 dBu	N/A	Auto (20 µs or 40 µs to 5 ms) program dependent	Manual (1 ms to 3 sec)
BSS Audio	DPR522	Dual gate	-60 to +15 dB	N/A	Manual (20 µs to 1.5 sec)	Manual (1 ms to 3 sec)
BSS Audio	DPR901II	Dynamic equalizer	-30 to +20 dBu	N/A	Auto	Auto
BSS Audio	DPR944	Gate/compressor	Gate: -50 to +20 dB; comp: -30 to +20 dB	1:1 to ∞:1 comp. only	Auto	Auto
Buzz Audio	SOC-1.1	Optical compressor	Drive Control	2:1 to 20:1	Auto (<1 ms to 70 ms)	Auto (100 ms to 1,600 ms)
Crane Song	Trakker	Compressor	-40 to +24 dB	1.1:1 to 20:1	Manual 0.05 to 200 ms	Auto (40 ms to 10 sec)
Crate	SM4-CL	Compressor/limiter	-20 to +20 dBu	5-position switch: 2:1, 4:1, 8:1, 12:1, 20:1	20 µs to 1.1 sec, adjustable for 100% recovery	50 µs to 1.1 sec, adjustable for 63% recovery
Daking	FET Compressor/Limiter	Compressor/limiter	-10 to +10	1:1 to 20:1	250µs - 64ms	5, 1, 1.5, and 4 autos
dbx	160A	Compressor	-40 to +20 dBu	1:1 to -1:1	Auto	Auto
dbx	166XL	Compressor/limiter	Comp: -40 to +20 dBu; lim: 0 to 20 dBu	1:1 to ∞:1	Auto	Auto
dbx	266XL	Compressor/expander/gate	-40 to +20 dB; exp: -60 to +10 dB	1:1 to ∞:1	Auto or manual	Auto or manual
dbx	1046	Quad compressor/limiter	-40 to +20 dBu	1:1 to ∞:1	Auto	Auto
dbx	1066	Compressor/limiter/expander/gate	Exp gate: 0 to 15 dBu; comp: -40 to +20 dBu; lim: 0 to 24 dBu	Expander/gate: 1:1 to 30:1; compressor: 1:1 to ∞:1	Auto or man (0.05 to 100 ms)	Auto or man (0.05 ms to 5 sec)
dbx	DDP	Digital compressor	N/A	1:1 to ∞:1	Auto or manual (0.1-200 ms)	360-5 dB per sec
dbx	Drive Rack PA	Compressor/limiter/EQ/crossover/RTA	-40 to +20 dB	1:1 to ∞:1	Auto	Auto
dbx	Drive Rack 260	Zone contr; compressor/limiter; RTA; effects	-40 to +20 dB	1:1 to ∞:1	Auto or manual (0.1 to 200 ms)	Auto or manual (30 to 200 ms)
dbx	480 Drive Rack	EQ/loudspeaker mgmt	-40 to +20 dBu	1 to ∞:1	Program dep	Program dep
dbx	481 Drive Rack	EQ/loudspeaker mgmt	-40 to +20 dBu	1 to ∞:1	Program dep	Program dep
dbx	482 Drive Rack	EQ/loudspeaker mgmt	-40 to +20 dBu	1 to ∞:1	Program dep	Program dep
dbx	160SL	Compressor/limiter	-40 to +30 dBu	1:1 to ∞:1	Auto or manual (400 dB/ms to 1 dB/ms)	Auto or manual (4,000 dB/sec to 10 dB/sec)
dbx	162SL	Compressor/limiter	-40 to +30 dBu	1:1 to ∞:1	Auto or manual (400 dB/ms to 1 dB/ms)	Auto or manual (4,000 dB/sec to 10 dB/sec)
Demeter	H C-1	Mono tube optical compressor	-30 to +20 dBu	Optical/soft knee 2:1 to 30:1	1 to 200 ms	100 ms to 5 sec
Demeter	VTCL-2b	Stereo tube optical compressor/limiter	-30 to +20 dBu	Optical/soft knee 2:1 to 30:1	1 to 200 ms	100 ms to 5 sec
Drawmer	1960	Dual-channel tube compressor/tube preamp	0 to -24 dB	1.1:1 to 30:1	Auto or manual (0.5 to 20 ms)	Man or auto (400 ms to 20 sec)
Drawmer	1969	FET compressor; 2-ch.	-30 to ∞ dB	Auto	Auto or manual	Auto or manual
Drawmer	DL241/DL241XLR	Dual-gated compressor/limiter	Comp: -40 to +20 dB; exp/gate: -70 to +20 dB; lim: 0 to 18 dB	1.2:1 to ∞:1	Auto or manual (0.5 to 100 ms)	Auto or manual (0.05 to 5 sec)
Drawmer	DL251	Dual-channel spectral compressor	Comp: -40 to +20 dB; lim: 0 to 18 dB	1.2:1 to ∞:1	Auto or manual (0.5 to 100 ms)	Auto or manual (0.05 to 5 sec)
Drawmer	DL441	Quad compressor/limiter	Comp: -40 to +20 dB; lim: 0 to 18 dB	1.2:1 to ∞:1	Auto (0.5 to 100 ms)	Auto (0.05 to 4 sec)
Drawmer	DS201	Dual-frequency conscious noise gate	-54 to +20 dB	N/A	Manual (10 µs to 1 sec)	Manual (2 ms to 4 sec)
Drawmer	DS404	Quad noise gate	-70 to +20 dB	N/A	Auto	Combines hold and decay 10 ms to 5 sec
Drawmer	DS 501	Dual-channel noise gate	-72 to ∞ dB	N/A	10 ms to 1.5 sec	N/A
Drawmer	MX30	Dual gated/auto-compressor/limiter	Comp: -40 to +20 dB; exp/gate: -70 to +20 dB; lim: 0 to 18 dB	1.2:1 to ∞:1	Auto or man (0.5 to 100 ms)	Auto (0.05 to 4 sec)
Drawmer	MX40	4-channel tuneable gate with peak punch	-60 to +20 dB	N/A	10 µs	10 ms to 4 sec

GAIN CONTROL	BYPASS SWITCH	#OF CHANNELS/ STEREO LINK	METER TYPE	MAIN I/O	SIDECHAIN I/O	DIMENSIONS	SPECIAL FEATURES	PRICE
Output	Yes	2/Yes	VU	XLR; 1/4"	1/4"	19x3.5x6		$650
Output	Yes	2/Yes	5/9/12-seg LED	XLR	Barrier strip	19x1.75x9	Variable knee with comp. ratio; sidechain mon.	$1,599
No	Yes	4/Yes	15/8-seg LED	XLR	1/4"	19x1.75x11	Variable HF de-essing; progressive knee	$1,449
Output	Yes	2/Yes	5/6-seg LED	XLR	1/4"	19x1.75x8	Progressive knee; de-esser	$899
No	Yes	4/Yes	12-seg LED	XLR	1/4" TRS	19x1.75x11	External key-source facility; sidechain filter	$1,449
No	Yes	2/Yes	3/9-seg LED	XLR	1/4"	19x1.75x8	Automatic dynamics enhancement	$799
No	Yes	2/Yes	10-seg LED	XLR	No	19x1.75x9	Shelving EQ; 1 & 2 ch split; filter width control	$1,549
Output	Yes	4/Yes	12-seg LED	XLR	1/4" TRS (gate only)	19x1.75x7.1		$899
Make up gain	Yes	2/Yes	VU	XLR	No	19x3.5x10	Differential sidechain topology	$1,899
Output	Yes	1/No	23-seg LED	XLR	DB-9	N/A	Discrete Class A, single channel compressor with clean/ vintage VCA features	$2,550
Yes	Yes	2/Yes	10-seg LED	1/4" TRS	No	1.6 x5.6x 5.5	Switchable level meter displays; 1/3rd rack unit	$200
Yes	Yes	1/Yes	VU	XLR	XLR; 1/4"	1U	Discrete transformer coupled FET	$1,995
Output	Yes	1/No	LED	XLR; 1/4"	1/4" TRS	1U	Switchable hard/soft/OverEasy compression	$600
Output	Yes	2/Yes	19-seg LED	XLR; 1/4" TRS	1/4" TRS	1U	Switchable hard knee/OverEasy compression; expander	$360
Output	Yes	2/Yes	LED	XLR; 1/4" TRS	1/4" TRS	1U	Switchable hard knee/OverEasy compression	$230
Output	Yes	4/Yes	LED	XLR; 1/4" TRS	No	1U	Switchable hard knee/OverEasy compression	$750
Output	Yes	2/Yes	LED	XLR; 1/4" TRS	1/4" TRS	1U	Sidechain monitor; OverEasy compression	$600
Input/output	Yes	2/Yes	8-seg LED	1/4"; XLR; AES/EBU	No	19x1.75x5.75		$600
Input/output	Yes	6/Yes	LCD	XLR	No	19x1.75x5.75	Feedback suppression; subharmonic synth; Wizard set-up; auto EQ	$750
Auto input/ output	Yes	6/Yes	LCD	XLR	No	19x1.75x5.75	Feedback suppression; GUI interface; subharmonic synth; Wizard set-up; auto EQ	$1,000
Input/output	Yes	8/Yes	LCD; 12-seg LED; PC GUI	XLR	XLR	19x12.5x3.5	4 in/8 out; 31-band graphic/9-band para EQ per input; dual RTA; 27 crossover configs; time align delay	$3,000
Input/output	Yes	8/Yes	PC GUI; 12-seg Lightpipe LED	Euroblock	Euroblock	19x7.9x1.5	4 in/8 out; 31-band graphic/9-band para EQ per input; dual RTA; network capable w/Drive Rack	$2,400
Input/output	Yes	8/Yes	PC GUI; 12-seg Lightpipe LED	XLR	XLR	19x12.15x3.5	4 in/8 out; 31-band graphic/9-band para EQ per input; dual RTA; crossover; optional flying fader remote	$2,500
Output	Yes	2/Yes	VU meter; LED	XLR	XLR	19x3.5x9	Auto-velocity circuit; 127 dB dynamic range; hard knee-over easy switchable	$3,500
Output	Yes	2/Yes	VU/LED	XLR; 1/4"	1/4"	19x3.5x9	Auto-velocity circuit; 118 dB dynamic range; hard knee-over easy switchable	$2,500
Yes	No	1/Yes	10-seg LED VU/overload LED	XLR; 1/4" TRS	XLR; 1/4"TRS	19x1.75x13	H series tube hybrid; variable attack/release	$1,149
Yes	No	2/Yes	Overload/10-seg LED VU; 10-seg LED	XLR; TT; 1/4"	No	19x3.5x12	All tube; adjustable input sensitivity	$2,499
Input/output	Yes	2/Yes	VU meter each channel	XLR	Yes	19x3.5x7	Tube comp with tube-based VCA; instrument preamp with EQ and variable gain	$2,850
Output	Yes	2/Yes	VU	XLR	1/4"	N/A	DI and mic pres incl.; filter in stereo link; suitable as buss comp	$3,275
Input/output	Yes	2/Yes	8-seg LED	1/4"; (DL241); XLR (DL241XLR)	No	19x1.75x7	Program adaptive expander/gate; peak limiter auto/manual attack/release	$840/$915
Input/output	Yes	2/Yes	10-seg LED out; 9-seg GR LED	XLR	1/4" TRS	19x1.75x7	Variable dynamic spectral enhancement; hi-frequency dynamic expansion and compression; 0-response time peak limiter	$1,240
Input/output	Yes	4/Yes	5-seg output LED; 8-seg gain reduction LED	XLR	No	19x1.75x7	0-response time peak limiter; variable hard/soft knee	$1,365
No	Yes	2/Yes	3-seg LED	XLR	1/4" key input	19x1.75x7	Frequency-sensitive gating with high-/low-pass filters; hold and decay controls; key-listen ducker	$875
No	Yes	4/Yes	3-seg LED per channel	XLR	1/4" key input	19x1.75x7	Frequency-sensitive gating with high-/low-pass filters; hard/soft gate (downward expansion); 20/-90 range switch	$1,275
No	Yes	2/Yes	3-seg LED	XLR	No	N/A	Key filters; key input; tunable peak punch; dual ch.	$990
Output	Yes	2/Yes	8-seg LED comp out; 9-seg GR LED; 2-seg LED gate on/off	XLR; 1/4"	No	19x1.75x7	Program-adaptive expander/gate; 0-response time peak limiter	$575
No	Yes	4/Yes	3-seg LED	XLR	1/4" key input	19x1.75x7	Trigger stabilization; peak punch	$820

DYNAMICS PROCESSORS

MANUFACTURER	MODEL	TYPE	THRESHOLD	RATIO	ATTACK TIMES	RELEASE TIMES
Drawmer	MX50	Dual-channel de-esser	Auto	Auto	Auto	Auto
Drawmer	Sixpack	6-channel compressor/gate	-40 to +20 dB; lim 0 to 18 dB	1.1:1 to ∞:1	Auto or manual (0.5 to 100 ms)	Auto or manual (0.05 to 5 sec)
Drawmer	TS2	Tube compressor	Fixed	Auto	0.5 to 100 ms	0.05 to 5 sec
Drawmer	TS2/DC1	Tube compressor	Fixed	Auto	0.5 to 100 ms	0.05 to 5 sec
Empirical Labs	EL-8 Distressor	Compressor/limiter	Varies with input level	1:1 to ∞:1	Manual (<40 µs to 50 ms)	Manual (0.05 to 3.5 sec)
FMR Audio	RNC 1773	Compressor	1	1.1 to 25:1	0.2 to 200 ms	0.05 to 5 sec
Focusrite	Penta	Solid state (Class A)	Preset	Preset	Preset	Preset
Focusrite	ComPounder	Dual mono/comp/exp/noise/limit	Comp: -24 to +12 dB; lim: 12 to 26 dBu	Variable 1.3:1 to ∞; soft/hard knee switchable	Variable 100 µs to 100 ms	Variable 100 ms to 4 sec
Focusrite	MixMaster Digital	Multiband compressor/expander/limiter/equalizer/stereo imager	Comp: -20 to +10 dB	Variable 1.3:1 to 5:1	Auto	200 ms to 1.6 sec
Focusrite	Red 3	Dual compressor/limiter	Comp: -24 to +12 dB; lim: 0 to 18 dB	Variable 1.5:1 to 10:1	Variable 300 µs to 90 ms	Variable 100 ms to 4 sec
Galaxy Audio/Valley Audio	Valley 401	Microphone processor	-40 to +20 dB	Compression ratio fixed 20:1	Expander attack and gate attack 100 µs; compression attack 1-15 ms	Program dep, up to 25 sec
Groove Tubes	The Glory Comp	Tube compressor/limiter	0 dB to - 30dB: ref Input Cont.	1:1 to 10:1	1.5 ms to 100 ms	50 ms to 2.5 sec
Joemeek	SC-2	Compressor	Varies	4.5:1 to 7:1	Manual (1.5 to 10 ms)	Manual
Klark Teknik	DN500Plus	Dual compressor/limiter/expander	Comp: -30 to +20 dB; exp: -40 to +20 dB; lim: 0 to 20 dB	Comp: 1:1 to 50:1; exp: 1:1 to 25:1	Comp: auto or man (50 µs-20 ms); exp: auto or man	Comp: auto/man (60 µs to 2 sec); exp: auto/man (40 ms to 2 sec)
Klark Teknik	DN504Plus	Quad compressor/limiter	-30 to +20 dBu	1:1 to 50:1	Auto or man (50 µs to 20 ms)	Auto or man (60 ms to 2 sec)
Klark Teknik	DN514Plus	Quad auto-gate	-40 to +20 dBu	N/A	Prog dep, semi-automatic expand: auto/man (40 ms to 2 sec)	Man (40 ms to 2 sec) including hold
LA Audio	GCX20	Dual compressor/gate	-50 to +20 dB	1:1 to 20:1	Prog dep: 5 to 70 ms (fast), up to 3 sec (slow)	Prog dep: up to 1 sec (fast) and up to 3 sec (slow)
LA Audio	TCX20	Dual compressor/gate	-30 to +20 dB	1:1 to 20:1	Auto or man (0.1 to 100 ms)	Auto or man (0.04 to 4 sec)
LA Audio	FGC20	Dual split-band compressor and frequency-selective gate	-40 to +20 dB	1:1 to 20:1	Fast = 1 ms; slow = 20 ms	40 ms to 4 sec
LA Audio	BCL20	Dual compressor/limiter	-40 to +20 dB	1:1 to 20:1	Peak: (1 to 70 ms); RMS: prog dep	Peak: 100 ms to 3 sec; RMS: prog dep
Langevin	Langevin Stereo ELOP	Stereo limiter	22 dB	10:1	10 ms or 6 dB	2.5 ms or 6 dB
Manley Labs	Manley Stereo ELOP	Stereo electrical-optical limiter	22 dB	10:1	10 ms for 6 dB GR	2.5 seconds for 6 dB GR
Manley Labs	Manley Stereo Variable Mu	Compressor/limiter	Variable	Comp 1.5:1; lim 4:1 to 20:1	25 to 70 ms	0.2 to 8 sec
Millennia	Twincom TCL-2	Compressor/limiter	-20 to +20 dB	1:1 to 30:1	2 to 200 ms	10 ms to 200 ms
Oram Pro	Sonicomp 1	Solid state compressor	Yes	Yes	Yes	Yes
Oram Pro	Sonicomp 2	Solid state compressor	Yes	Yes	Yes	Yes
Pendulum	OCL-2	Compressor/limiter	Off to -20 dB	1.5:1 to 15:1	1 to 50 ms	50 ms to 20 sec
Pendulum	6386	Variable-mu tube limiter	Off to -20	1:1 to limiting	0.1 to 100 ms	50 ms to 2 sec
Pendulum	ES-8	Variable-mu tube limiter	Off to -20	1:1 to limiting	0.1 to 100 ms	50 ms to 2 sec
Phonic Hi-Tech	PCL3200	Compressor/limiter/gate	-40 to +20 dB	1:1 to 10:1	Manual (0.1 to 200 ms)	Manual (50 ms to 3 sec)
PreSonus	Blue Max	Compressor/limiter	Fixed (-10 dB) manual mode	1:1 to 20:1	Manual (0.01 to 100 ms)	Manual (10 to 500 ms)
PreSonus	CL44	Quad compressor/limiter	+15 dBu to -40 dBu	1:1 to 20:1	Auto or manual (1 ms to 500 ms)	Auto or manual (1 sec to 3 sec)
PreSonus	GTX44	Quad gate/expander	+15 to -40	1:1 to gate	1 ms to 500 ms	15 ms to 25 ms
PreSonus	ACP-88	Compressor/limiter/gate	-0 to +20 dBu	1:1 to 20:1	Auto or man (0.01 to 100 ms)	Auto or man (0.02 ms to 2 sec)
QSC Audio	DSP-3	Compressor/limiter/EQ/crossover	-81 to +15 dB	1:1 to 200:1	Manual (1 to 200 ms)	Manual (2 ms to 1 sec)
QSC Audio	DSP-4	Compressor/limiter/EQ/crossover	-81 to +15 dB	1:1 to 200:1	Manual (1 to 200 ms)	Manual (2 ms to 1 sec)
QSC Audio	DSP-30	Compressor/limiter/EQ/crossover	-81 to +15 dB	1:1 to 200:1	Manual (1 to 200 ms)	Manual (2 ms to 1 sec)

GAIN CONTROL	BYPASS SWITCH	#OF CHANNELS/ STEREO LINK	METER TYPE	MAIN I/O	SIDECHAIN I/O	DIMENSIONS	SPECIAL FEATURES	PRICE
De-ess frequency	Yes	2/Yes	9-LED each channel	XLR	No	19x1.75x8	-20 dB split/full band de-essing	$690
Input/output	Yes	6/Yes	8-seg LED; 8-seg GR LED	XLR	No	N/A	Channel 6 has sub output w/built-in LPF	$2,850
Output	Yes	2/Yes	8-seg LED	XLR; 1/4"	1/4"	N/A	Analog out; tube drive; 2-ch	$970
Output	Yes	2/Yes	8-seg LED	XLR; 1/4"	1/4"	N/A	24/96 kHz out; analog out; tube drive; 2-ch	$1,250
Input/output	Yes	2/Yes	LED	XLR; 1/4"	1/4"	19x1.75x10	Emulates classic compressors (LA2, LN1176, others)	$1,499-$3,299
Yes	Yes	2/Yes	8-seg LED	1/4" TRS	1/4" TRS	5.5x5.5x1.6	Super Nice mode	$200
Yes	Yes	2/No	LED	1/4	Yes	19x3.5x6	Warmth and image width controls; 16 presets	$495
Yes	Yes	2/Yes	LED	XLR; 1/4" TRS	1/4"	1U	Class A amplifier design; inductor-powered bass expander; switchable 4 dBu and -10 dBV operation	$735
Yes	Yes	2/Yes	LED	XLR; 1/4"; optional AES/EBU and S/PDIF digital output	No	2U	3-band stereo EQ; optional 24-bit/96K digital output	$1,690
Output	Yes	2/Yes	VU	Transformer-balanced; XLR	XLR key input	2U	Stereo switch; auto-release mode	$3,295
Output	No	1/No	LED; VU; attenuation	XLR	1/4" TRS	19x1.75x9.6	Clip indicator for preamp/EQ/VCA; phantom power	$680
30 dB range input/output	Yes	1/Yes	4" OD VU	XLR, 1/4" TRS (+4, -10)	XLR, 1/4" (+4, -10)	19x5.22x16	+35 dBm output true variable transconductance (Mu) compressor, not optical; Glory Control-low order harmonic enhancement	$2,999
Input/output	Yes	2/Yes	VU	XLR; 1/4" TRS	No	19x3.5x12.5	Vintage photo-optical compressor sound	$1,299
Yes	Yes	2/Yes	LED	XLR	1/4" TRS	19x1.75x11.5	Variable knee; VCA design; vari-ratio expander	$1,425
Yes	Yes	4/Yes	LED	XLR	1/4" TRS	19x1.75x11.5	Switchable hard or soft knee compression	$1,495
No	Yes	1/No	LED	XLR	1/4"	19x1.75x11.5	Syncs audio tracks by interlocking gate release times	$1,215
Yes	Yes	2/Yes	2x6-seg LED	XLR; 1/4" TRS	No	19x6x1.75		$300
Yes	Yes	2/Yes	2x6-seg LED	XLR; 1/4" TRS	No	19x6x1.75		$500
Yes	Yes	2/Yes	2x8-seg LED	XLR	No	19x7.5x1.75	Frequency windowing filters in gate/sidechain/audio path	$1,000
Yes	Yes	2/Yes	12-seg LED	XLR	No	19x7.5x1.75	RMS/peak detection mix feature; broadcast specs; transformer balanced outs	$1,200
Output/gain reduction	Yes	2/Yes	VU and gain reduction	XLR; 1/4" TRS	No	19x1.75x10	All discrete	$1,775
Threshold/ output	Yes	2/Yes	VU and gain reduction	XLR; 1/4" TRS	No	19x3.5x10	LA-2A style; all tube	$2,500
Yes	Yes	2/Yes	Analog	XLR	RCA (option)	19x3.5x10	All-tube fully-differential	$4,000
Output	Yes	2/Yes	Analog VU	XLR	RCA	19x12x3.5	Twin Topology	$3,200
Yes	Yes	2/Yes	LED: GR/input	XLR; 1/4"	Yes	1U	Switchable light-dependent resistor	$1,995
Yes	Yes	2/Yes	VU: GR/input	XLR; 1/4"	Yes	2U	Solid state or light-dependent resistor	$2,590
Output	Yes	2/Yes	VU	XLR; 1/4"	1/4" TRS	19x3.5x12.5	All tube gain path; transformerless design	$2,795
Yes	Yes	2/Yes	VU	XLR; 1/4"	1/4" TRS	19x3.5x12.5		$3,495
Output	Yes	2/Yes	VU	XLR; 1/4"	1/4" TRS	19x3.5x12.5		$3,995
Output	Yes	2/Yes	LED	1/4"	1/4"	19x2x4.5	Hard/soft knee; peak RMS switch	$249
Input/output	Yes	2/Yes	LED	1/4" TRS	1/4" TRS	19x1.75x8	Smart comp/lim; includes 15 inst-specific preset comp. curves	$199
Output	Yes	2/Yes	10-seg LED	XLR; 1/4" TRS	1/4" TRS	19x1.75x7	Lo filter; optical compressor emulation	$699
No	Yes	2/Yes	10-seg LED	XLR; 1/4" TRS	1/4" TRS	19x1.75x7	Frequency-controlled gating/expansion/ducking	$699
Output	Yes	8/Yes	LED	1/4" TRS	1/4" TRS	19x3.5x6	Hard/soft knee; accepts +4/-10 dBu inputs	$1,199
Input/output	Yes	2/Yes	10-seg peak or RMS	(2) 3-pin euros, RS-232, data port in/(2) 3-pin euros out	No	4.76x1.21x3.49	Computer controlled "set and forget" DSP; turns on w/same preset used last	$525
Input/output	Yes	2/Yes	10-seg peak or RMS	(2) XLR, data port, RS232 in/(2) XLR, data port out	No	3.75x1.38x3.5	Computer controlled "set and forget" DSP; turns on w/same preset used last	$685
Input/output	Yes	2/Yes	10-seg peak or RMS	Bal combo in/XLR out	No	19x14.9x1.73	Computer controlled "set and forget" DSP; turns on w/same preset used last	$525

DYNAMICS PROCESSORS

MANUFACTURER	MODEL	TYPE	THRESHOLD	RATIO	ATTACK TIMES	RELEASE TIMES
Rane	DC 22 Dynamic Controller	Compressor/gate	-40 to +20 dB	1:1 to 1	Auto	Auto
Rane	DC24	Compressor/limiter/expander/ gate 2-way crossover	-50 to +20 dB	1:1 to 20:1	Auto	Auto
Requisite Audio	PAL Plus MkII	Tube mic pre/compressor/ limiter	-30 dB	3:1; 10:1	10 µsec (instant)	0.06 for 50% release; 0.5 to 5 sec complete release
Rolls	CL 151 GLC	Comp/limiter w/mic preamp	-30 to +10 dB	1:1 to ∞:1	Auto	Auto
Rolls	RP252	Compressor/limiter/gate	-40 to +12 dB	1:1 to ∞:1	Man (0.2 to 10 ms)	Man (40 ms to 2 sec)
Samson	C-Com16	Stereo compressor	Variable	Variable	Variable	Variable
Samson	C-Comp Opti	Optical compressor	-40 to +20 dB	1:1 to ∞:1	0.3 to 300 ms	0.05 to 5 sec
Samson	S Com	Stereo compressor	-40 to +20 dB	1:1 to ∞:1	Variable (0.3 ms/20 dB to 300 ms/20 dB)	Auto or (0.5 to 3 sec)
Samson	S Com Plus	Expander/gate compressor/ limiter de-esser	-40 to +20 dB	1:1 to ∞:1	Variable (0.3 ms/20 dB to 300 ms/20 dB)	Auto or (0.5 to 3 sec)
Samson	S Com 4	4-ch compressor/gate	-40 to +20 dB	1:1 to ∞:1	Variable (0.3 ms/20 dB to 300 ms/20 dB)	Auto or (0.5 to 3 sec)
SM Pro Audio	OC8	Optical compressor/limiter	Input-dependent	1:1 to ∞:1	Fast (<.1ms) Slow (150 ms)	Fast (100ms), Slow (2 sec)
Sony	SRP-F300	Digital speaker system multi-processor	N/A	N/A	N/A	N/A
SPL	De-Esser	Phase Inversion	Auto	N/A	N/A	N/A
SPL	Dynamaxx	Compressor/limiter/gate	Variable	Variable	Auto	Auto
SPL	Kultube	Compressor/limiter	-37 dBu to +22 dBu	1:1 to ∞:1	Auto or manual (20 µs to 0.95 sec)	Auto or manual (0.3 to 2.2 sec)
SPL	Transient Designer 2	Envelope modeler	N/A	N/A	Variable	Variable
SPL	Transient Designer 4	Envelope modeler	N/A	N/A	Variable	Variable
Studio Electronics	C2s	Compressor/limiter	Set by input level control	4, 8, 12, 20:1	20 to 800 ms	50 ms to 1.1 sec
Summit Audio	TLA-50	Compressor/limiter/gate	-25 to +25 dBu	1:1 to 4:1	Sel (fast, medium, slow)	Sel (fast, medium, slow)
Summit Audio	TLA-100A Tube Leveling Amplifier	Tube compressor	-25 to +25 dBu	1:1 to 4:1	Sel (fast, medium, slow)	Sel (fast, medium, slow)
Summit Audio	DCL-200	Dual compressor/limiter	N/A	1.1:1 to 7:1	Variable; 0.1ms to 100 ms	Variable; 45 ms to 10 sec
TC Electronic	Finalizer Express	Compressor	-25 to 0 dBu	1:1 to ∞:1	0.3 to100 ms/band	20 ms to 7 sec/band
TL Audio	5021	Dual tube compressor	-20 to +20 dB	1:1.5 to 1:30	0.5 to 40 ms	40 ms to 4 sec
TL Audio	Classic C-1	Tube compressor	20 to +20 dB	Variable 1:1.5 to 1:30	Variable 0.5 to 50 ms	Variable 40 ms to 4 sec
Tube Tech	CL-1B	Tube compressor	Off to -40 dBu	2:1 to 10:1	.5 to 300 ms continuously variable	.05 sec to 10 sec continuously variable
Tube Tech	CL-2A	Tube compressor	20 to -40 dBu	2:1 to 10:1	3 ms to 60 ms continuously variable	60 ms to 2 sec. continuously variable
Tube Tech	LCA-2B	Stereo compressor/limiter	Off to -10 dBu /continuously v	1.6:1 to 20:1 /continuously variable	0.3 to 70 ms	0.07 sec to 2 sec
Tube Tech	MEC-1A	Mic preamp/EQ/compressor	Off to -20 dBu	1.5:1 to 10:1/continuously variable	1 ms to 100 ms continuously variable	60 ms to 2 sec continuously variable
Tube Tech	SMC-2B	Stereo multiband compressor	Off to -20 dBu /continuously v	1.5:1 to 10:1 /continuously variable	0.3 to 70 ms continuously variable	60 ms to 2 sec continuously variable
Universal Audio	1176	Limiting amp	Set by input level control	4:1 to 20:1	20 to 800 ms	50 ms to 1.1 sec
Universal Audio	1176LN	Limiting amp	Set by input level control	4:1 to 20:1	20 to 800 ms	50 ms to 1.1 sec
Waves	Maxxbass 101	Bass extension	N/A	N/A	N/A	N/A
Waves	Maxxbass 102	Bass extension	N/A	N/A	N/A	N/A
Waves	L2 Ultramaximizer	Limiter	0 to -30.0 dBFS	Limiter	N/A	0.1 ms to 1,000 ms
XTA	D2 Dynamic EQ	Dynamic EQ	-30 to +22 dB	1:1 to 16:1	N/A	N/A
XTA	C2 Dual Compressor	Compressor/limiter/de-esser	-30 to +22 dB	1:1 to 16:1	Auto or -60 usec to 250 ms	Auto or 25ms to 2 sec
XTA	G2 Dual Gate	Noise gate/expander	-40 to +22 dB	1:1 to 8:1	-60 us to 250 ms	25 ms to 2 sec
XTA	SiDD	Compressor/limiter/gate/ expander/delay	Variable	Variable	Auto or manual	Auto or manual

GAIN CONTROL	BYPASS SWITCH	# OF CHANNELS / STEREO LINK	METER TYPE	MAIN I/O	SIDECHAIN I/O	DIMENSIONS	SPECIAL FEATURES	PRICE
Output	Yes	2/Yes	4-seg LED	XLR; 1/4"	No	19x1.75x5.3	Adjustable gate/downward expander	$349
Output	Yes	2/Yes	LED	XLR; 1/4" TRS	1/4" TRS	19x1.75x5.3	Combine crossover mode; -10/+4 dBu inputs	$599
Mic In/Output	No	1/Yes	VU & gain reduction	XLR	No	3U	Updated design for 2004	$3,500
Input/output	No	1/No	LED	XLR; 1/4"	1/4" TRS	4.15x2.46x1.55	Mic preamp; 40 dB total gain	$120
Output	Yes	2/Yes	10-seg LED	XLR; 1/4"	1/4"	19x1.75x6		$275
Variable	No	2/Yes	6-seg LED	1/4"	1/4" TRS	N/A	"C-class" 1/2 rack desktop design w/stacking rubber feet; presets	$159
Output ±20	Yes	1/Yes	Analog	1/4" TRS	1/4" TRS	8.66x6.69x1.57	"C-class" 1/2 rack desktop design w/stacking rubber feet	$160
Output variable (-20 to 20 dB)	Yes	2/Yes	12-seg LED	XLR; 1/4" TRS	1/4"	1.75x19x7.75	Full featured, dual-channel dynamics processor incl comp/lim, expander/gate, de-esser, peak limiter	$220
Output variable (-20 to 20 dB)	Yes	2/Yes	12-seg LED	XLR; 1/4" TRS	1/4"	1.75x19x7.75	Full featured, dual-channel dynamics processor incl comp/lim, expander/gate de-esser, peak limiter	$280
Output variable (-20 to 20 dB)	Yes	4/Yes	5-seg LED	XLR; 1/4" TRS	1/4"	1.75x19x7.75	Full featured, 4-ch dynamics processor incl comp/lim and expander/gate on each channel	$290
Output	Yes	8/No	8-seg LED	1/4"	No	2U	Optical compression	$649
No	No	No	Peak-reading LED (x8)	XLR; AES/EBU	No	19 x1.75x14.5	PC-controlled multi-processing with included software	$1,875
No	Yes	2/No	LED	XLR; 1/4"	No	19x1.75x9.33	De-essing via phase cancellation (inversion); extremely narrow bandwidth	$699
Yes	Yes	2/Yes	LED	XLR; 1/4"	1/4"	19x1.75x9.33	Signal-dependent automation, SPL double-VCA circuitry, de-compression mode, soft limit switch	$799
Yes	Yes	2/Yes	VU	XLR; 1/4"	1/4"	19x1.75x8.27	Discrete gain cells, hard/soft-knee switch, signal responsive time control; tube saturation control	$1,999
No	Yes	2/Yes	N/A	1/4"	No	19x1.7x6.2	Level-independent processing	$599
No	Yes	4/Yes	N/A	XLR	No	19x1.7x6.2	Level-independent processing	$1,199
Input/output	Yes	2/Yes	20-seg LED PPM	TRS; XLR	No	19x10x1.75	Fully discrete Class A transformer coupled; classic FET compression	$1,999
Yes	Yes	1/Yes	VU	XLR; 1/4"	1/4" TRS	9.5x1.75 (1/2 rack)	Auto level switching (+4, -10) tube	$695
Output	Yes	1/Yes	VU for output/GR	XLR	1/4" TRS	19x3.5x10.5	Soft knee; Jensen 990 output; transformerless	$2,150
Yes	Yes	2/Yes	True VU for level and gain reduction	XLR	1/4" TRS	19x10.5x3.38	Vacuum tube/solid state hybrid	$3,490
Input/output	Yes	2/Yes	LED	S/PDIF; AES/EBU; Toslink	No	1U	24-bit AD/DA; soft clip; spectral balance	$1,595
In/out gain make-up	Yes	2/Yes	VU	XLR; 1/4"	1/4" TRS	19x7.9x3.5	S/PDIF digital output (optional)	$749
In/out gain make-up	Yes	2/Yes	VU	XLR; 1/4" TRS	1/4" TRS	19x3.5x10	Onboard mic preamps and direct inputs	$1,599
Yes	Yes	1/yes	VU	XLR	XLR	5.2"x19"x6.7" 3U	Gain-reduction element positioned immediately after the input transformer	$2,495
Yes	Yes	2/Yes	VU	XLR	XLR	3.5	2 channel version of CL-1B	$3,745
Yes	Yes	2/Yes	LED	XLR	XLR	3.5"x19"x8.1" 2U	Fairchild 670-like attack/release presets	$3,995
Yes	Yes	1/Yes	VU	XLR; 1/4"	No	3.5"x19"x8.1" 2U	Gold-plated switches; all tube based, except for power supply	$3,995
Yes	Yes	2/Yes	LED	XLR	XLR	5.2"x19"x8.1" 3U	Balance control for each channel; all-tube based multiband compressor design	$4,995
Output	No	1/Yes	VU	XLR; barrier strip	No	2U	Authentic replica	$1,895
Output	No	1/Yes	VU	XLR; barrier strip	No	2U	Authentic replica	$1,895
Input	Yes	2/Yes	Input LED	XLR; TRS; wire terminal	No	1U	Up to 1 1/2 octaves bass extension w/equal or less speaker power consumption	$350
Input	Yes	2/Yes	Input LED	XLR; TRS; wire terminal; RCA	No	1/2U	Up to 1 1/2 octaves bass extension w/equal or less speaker power consumption	$250
Yes	Yes	2/Yes	Peak LED ladders	(2) XLR; (2) 1/4" TRS; AES/EBU; S/PDIF	Yes	2U	24-bit AD and DA converters; x2 function for doubling sample rates (88.2/96 kHz); choice of sync to ext clock (BNC), digital input, or internal; re-quantizer output	$2,395
Output	Yes	1/Yes	LED in/out/GR	XLR	XLR	19x11.8x1.75	Freq-selectable compression; fully digital (24-bit)	$1,795
Output	Yes	2/Yes	In/out; GR	XLR	XLR	19x11.8x1.75	Soft/med/hard knee switch; de-ess/de-pop mode; sidechain EQ + listen; 24-bit digital	$1,795
No	Yes	2/Yes	LED in, threshold, shut, open	XLR	XLR	19x11.8x1.75	Sidechain EQ; look ahead feature; fully digital (24-bit)	$1,795
Input/output	Yes	2/Yes	7-seg in/out/GR	XLR	XLR	19x11.8x1.75	Computer control software; fully digital (24-bit)	$2,795

EFFECTS PROCESSORS

MANUFACTURER	PRODUCT	PRESETS (FACTORY/USER)	ANALOG EFFECTS	DIGITAL EFFECTS	SIMULTANEIOUS EFFECTS	PROGRAMMABLE WET/DRY MIX	COMPARE/BYPASS	MAXIMUM DELAY TIME	MAXIMUM PITCH SHIFT RANTE	MIDI REAL-TIME CONTROL	SIMULTANEOUS MIDI CONTROLLERS
A.R.T.	FX-1	60/0	N/A	Rvrb; chrs; dly; flng; ptch; trml; pan; gate	3	No	N/Y	420 ms	1 octave	No	No
A.R.T.	DMV-Pro	100/100	N/A	Rvrb; chrs; flng; ptch; trml; rtry; phsr; pan; dly	4	Yes	Y/Y	5 sec	>2 octaves	Yes	16
Alesis	PicoVerb	16/0	N/A	Reverb; chorus; flange; delay; vocal eliminator; rotary speaker	1	Yes	N/N	388 ms	N/A	No	No
Alesis	NanoVerb	16/0	N/A	Rvrb; chrs; dly; flng; rtry	3	Yes	N/Y	1,300 ms	N/A	No	No
Alesis	MicroVerb 4	100/100	N/A	Rvrb; chrs; dly; flng; rtry; ptch	3	Yes	N/Y	1,300 ms	±1 octave	Yes	2
Alesis	MidiVerb 4	128/128	N/A	Rvrb; chrs; dly; flng; rtry; ptch	3	Yes	Y/Y	1,300 ms	±1 octave	Yes	2
Alesis	GuitarFX	80	N/A	9 EX modules multiple effects	40	Yes	Y/Y	N/A	N/A	No	No
Alesis	AcoustiFX	40	N/A	6 EX modules	20	Yes	Y/Y	N/A	N/A	No	No
Alesis	BassFX	80	N/A	9 EX modules	20	Yes	Y/Y	N/A	N/A	No	No
Alesis	AirFX	50/0	N/A	Vocoders; flange; phase; panners	1	No	Y/Y	N/A	N/A	No	No
Analogue Solutions	Filtered Coffee	N/A	Filter	N/A	3	No	Y/Y	N/A	N/A	No	No
Antares	ATR-1A Auto-Tune	50/20	N/A	Real-time pitch correction	1	No	Y/Y	N/A	±1 octave	Yes	Yes
Antares	Vocal Producer (AVP-1)	35/35	N/A	Auto-tune pitch correct; mic modeling; tube modeling; comp; gate; de-esser; EQ; stereo dbl trk	8	No	Y/Y	N/A	N/A	Yes	Yes
Behringer	Modulizer Pro DSP1224P	N/A	N/A	24 effect types; 100 programs	1	Yes	Y/Y	N/A	N/A	Yes	13
Behringer	Virtualizer Pro DSP2024P	100/100	N/A	Rvrb; dly; pitch; lo-fi; modulation; amp sim; distortion	11	Yes	Y/Y	N/A	N/A	Yes	Yes
Boss	VT-1 Voice Transformer	20/20	N/A	Pitch/formant; robot; reverb	5	Yes	Y/Y	N/A	±1 octave	No	No
Boss	GT-6 Guitar	200/140	N/A	34	12	Yes	Y/Y	1,800 ms	±2 octaves	Yes	Yes
Boss	GT-6B Bass	40/80	N/A	COSM-modeled amps; cabs; OD/DS; comp/lim; other digital FX	11	Yes	Y/Y	1,400 ms	±2 octaves	Yes	Yes
Boss	VF-1	200/200	N/A	Multiple	9	Yes	Y/Y	2,800 ms	±2 octaves	Yes	Yes
Boss/Roland	GS-10 Guitar Effects System/ USB-Audio Interface	100/100	0	36	11	Yes	N/Y	1,800 ms	±2 octaves	Yes	4
Carvin	FX2	N/A	N/A	Chorus; flange; echo; delay	2	Yes	N/N	2 sec/eng	N/A	No	No
Crate	SM2-SRS	2/0	N/A	N/A	1	No	Y/Y	N/A	N/A	No	No
Crate	SM1-SP	32/0	N/A	Reverb; delay; flange; chorus; rotary	2	No	N/N	455 ms	N/A	No	No
DACS	FWS Series FREQue II	N/A	Ring mod; oscillator; frequency mod	N/A	3	Yes	N/N	N/A	N/A	No	No
Demeter	Real Reverb	N/A	Stereo spring reverb	N/A	3	Yes	N/Y	3.5 sec	N/A	No	No
DigiTech	RP50	40/40	N/A	Amp, cabinet, and pickup modeling; EQ; delay; reverb; chorus	8	No	Y/Y	990 ms	1	No	No
DigiTech	RP80	40/40	N/A	Amp, cabinet, and pickup modeling; EQ; delay; reverb; chorus	9	No	Y/Y	990 ms	1	No	No
DigiTech	RP100A	40/40/40A	N/A	Amp, cabinet, and pickup modeling; EQ; delay; reverb; chorus	12	No	Y/Y	2 sec	2	No	No
DigiTech	RP200A	40/40/40A	N/A	Amp, cabinet, and pickup modeling; EQ; delay; reverb; chorus	11	Yes	Y/Y	2 sec	2	No	No
DigiTech	RP300A	40/40/40A	N/A	Amp, cabinet, and pickup modeling; EQ; delay; reverb; chorus	12	Yes	Y/Y	2 sec	2 octave	No	No
DigiTech	RPx400	40/40/40A	N/A	Amp, cabinet, and pickup modeling; EQ; delay; reverb; chorus	11	Yes	Y/Y	2 sec	2	No	No
DigiTech	Studio S-100	99/99	N/A	25	2	Yes	N/Y	2 sec	-1 octave/+2 octaves	Yes	1
DigiTech	Studio S-200	99/99	N/A	25	2	Yes	N/Y	2 sec	-1 octave/+2 octaves	Yes	15
DigiTech	Studio Quad 4	100/100	N/A	57	4	Yes	N/Y	5 sec	±2 octaves	Yes	8
DigiTech	GNX1	48/48	N/A	Amp models; EQ; noise gate; reverb; chorus; delay; env filter; comp; wah	11	No	Y/Y	2,000 ms	2	Yes	No
DigiTech	GNX 2	64/64	N/A	Amp models; EQ; noise gate; reverb; chorus; delay; env filter; comp; wah	11	No	Y/Y	2,000 ms	2	Yes	No
DigiTech	GNX 3	64/64	N/A	31	13	No	Y/Y	N/A	N/A	Yes	Yes
DigiTech	Vocal 300	40/40	N/A	Mic pre/voice characters; comp; EQ; noise gate; chorus; flanger; phaser	7	Yes	Y/Y	N/A	N/A	No	No
DigiTech	Vx400	40/40	N/A	Mic modeling; mic pre/voice characters; comp; EQ; noise gate; chorus; flange	8	Yes	Y/Y	2 sec	2 octaves	No	No
Dynatron	D255	Programmable	N/A	Digital reverb EMT 250	1	No	N/N	140 ms	N/A	No	No
Eventide	Reverb 2016	99	N/A	6 reverb types	1	Yes	Y/Y	N/A	N/A	Yes	
Eventide	Eclipse	390	N/A	90 algorithms	2	Yes	Y/Y	20 sec mono/10 sec stereo	±4 oct chrom; ±2 oct dia	Yes	

DISCRETE PROCESSING CHANNELS	A/D / D/A	OVERLOAD WARNING	INPUTS	OUTPUTS	POWER SUPPLY	SPECIAL FEATURES	PRICE
2	16-bit	Clip light	(2) 1/4"	(2) 1/4"	External		$139
4	20-bit	5-seg LED	(4) 1/4"	(4) 1/4"	External	Twin LCD editing interfaces	$525
2	24-bit	Clip LED	(2) 1/4" TS	(2) 1/4" TS	9 VAC external transformer		$99
1	18-bit	Clip light	(2) 1/4"	(2) 1/4"	Alesis P3 adapter	Adjust knob; bypass footswitch	$135
2	18-bit	4-seg LED	(2) 1/4"	(2) 1/4"	Alesis P3 adapter	Bypass/tap-tempo footswitch; 2 parameter knobs	$249
2	18-bit	18-seg LED; clip light	(2) 1/4"	(2) 1/4"	Alesis P3 adapter	Auto level sensing; tap tempo footswitch	$299
1	20-bit/64x	N/A	1/4" mono	1/4" mono	9 VDC/4 AA batteries	Auto-chromatic tuner	$139
1	20-bit/64x	N/A	1/4" mono	1/4" mono	9 VDC/4 AA batteries	Auto-chromatic tuner	$149
1	20-bit/64x	N/A	1/4" mono	1/4" mono	9 VDC/4 AA batteries	Auto-chromatic tuner	$149
2	24-bit	N/A	Stereo RCA -10 dBV	Stereo RCA -10 dBV	Alesis P3	Axyz infrared controller	$249
1	N/A	N/A	(3) 1/4"	(4) 1/4"	15 VAC, 500 mA	Pure analog; based on Korg MS20 analog synth.	$325
1	20-bit/24-bit	6-seg LED	1/4" TRS; XLR	1/4"; XLR	External	Speed control; learn scale from MIDI; tracks down to 25 Hz	$549
1	20-bit	LED VU meter	1/4"	(2) 1/4"	60 Hz, 120/240V		$599
2	20-bit	N/A	1/4" TRS; XLR	1/4" TRS; XLR	Internal	Software for remote control via PC	$109
2	24-bit	Clip LED	XLR; 1/4" TRS	XLR; 1/4" TRS	60 Hz, 120 VAC	71 new algorithms; 64/128x oversampling	$160
1	N/A	Clip LED	1/4"; S/PDIF	1/4"; S/PDIF	AC adaptor	Remote jack; independent control of pitch and formants	$395
1	24-bit	LED	1/4"	(2) 1/4"; coax S/PDIF	14V, 800mA	30 COSM amp models; 15 COSM OD/DS models; 5 COSM wah models; 15 real-time control knobs	$495
1	24-bit	LED	1/4"	(2) 1/4"; (2) XLR; coax S/PDIF	14V, 800mA	Floor-unit; COSM modeled bass amps, cabs; mono bass synth; chorus; rev; sound-on-sound; 15 real-time knobs	$495
2	24-bit	LED	(2) 1/4"	(2) 1/4"	AC adaper	S/PDIF digital output	$595
2	24-bit	LCD	(1) 1/4"; (1) XLR; (2) RCA	(1) 1/4"; (1) USB; (2) RCA; (1) S/PDIF	BRC-120 AC Adapter	Built-in speakers; includes on-screen ed/lib; re-amp via USB; includes Cakewalk recording software	$595
2	24-bit	Peak LED	(2) 1/4"	(4) 1/4"	Internal 120/240 VAC	Link switch for channel 1 & 2 parallel operation	$180
2	N/A	Signal/peak LED	(2) 1/4"	(2) 1/4"	External	Creates 3D surround from 2 speakers	$130
2	1-bit/16-bit/64x	Signal/peak LED	(2) 1/4"	(2) 1/4"	External	Includes 32 presets	$180
2	N/A	LED	1/4" TRS	1/4" TRS	AC		$1,652
2	N/A	LED	1/4" TRS and 3-pin balanced inputs	1/4" TRS and 3 pin balanced outputs	Internal	Physical spring reverberation long or short decay times; low cut filter; phase switch; gain and mix controls; stereo or mono operation	$700
N/A	24-bit	N/A	(1) 1/4"	(1) 1/4" mono/stereo headphone out	Battery or 9.6V Adapter	Drum machine; expression pedal output; tuner	$100
N/A	24-bit	N/A	(1) 1/4"	(2) 1/4"; (1) 1/8" headphone out	Battery or 9.6V Adapter	Drum machine; expression pedal output; tuner	$110
N/A	24-bit	N/A	(1) 1/4"	(1) 1/4"; (1) 1/8" headphone out	Battery or 9 VAC Adapter	Artist presets; rhythm trainer/drum machine; tuner	$130
N/A	24-bit	N/A	(1) 1/4", (1) 1/8" Jam-a-Long	(1) 1/4"; (1) 1/8" headphone out	9 VAC Adapter	Artist presets; expression pedal; rhythm trainer/drum machine; tuner	$200
N/A	24-bit	N/A	(1) 1/4", (1) 1/8" Jam-a-Long	(2) 1/4"; (1) 1/8" headphone out	9 VAC Adapter	Artist presets; expression pedal; rhythm trainer/drum machine; tuner	$250
N/A	24-bit	LED	(3) 1/4"; (1) XLR; (1) 1/8" CD/Mon	(2) 1/4"; (2) XLR; (1) 1/8" headphone; USB	Adapter	Hands-free recording with PC via USB; Pro-Tracks recording software included	$400
2	20-bit	Clip LED	(2) 1/4"	(2) 1/4"	AC	User-selectable effects/signal routing configurations	$220
2	20-bit	Clip LED	(2) 1/4"	(2) 1/4"	Internal	User-selectable configurations; large display	$340
4	20-bit	Clip (each input)	(4) 1/4"	(4) 1/4"	AC	Programmable signal routing; LFOs; dynamic filters	$480
2	24-bit	N/A	1/4" guitar	(2) 1/4"; headphone; Jam-a-Long	9 VAC	Combine amp models with GeNetX hypermodeling; treadle pedal; drum machine; tuner; S/PDIF output	$375
2	24-bit	Clip LED	1/4" guitar; Jam-a-Long	1/4"; headphone; S/PDIF	9 VAC	Combine amp models with GeNetX hypermodeling; treadle pedal; drum machine; tuner; S/PDIF output	$500
2	24-bit	N/A	1/4" guitar	1/4"; headphone	9 VAC	Digital 8-track recorder; drum machine	$600
N/A	24	LED	(1) 1/4"; (1) XLR; (1) 3.5mm CD	(1) 1/4"; (1) XLR; (1) 1/8" headphone	9 VAC	Vocal effects floor processor; expression pedal	$250
N/A	24	LED	(3) 1/4"; (1) XLR; (1) 1/8" CD/Mon	(2) 1/4"; (2) XLR; (1) 1/8" headphone; USB	Adapter	Hands-free recording with PC via USB; Pro-Tracks recording software included	$400
1	24-bit/96 kHz	Clip LED	XLR	(3) XLR	50-60 Hz, 100-240 VAC	EMT 250 reverb program w/surround sound outputs	$3,995
2	24-bit	5-seg x 2 LED	(2) XLR; (2) 1/4" TRS; S/PDIF	(2) XLR; (2) 1/4" TRS; S/PDIF	50-60 Hz, 90-250 VAC	Dedicated controls for each parameter; LED status indicators	$2,245
2	24-bit	7-seg x 2 LED	1/4"; XLR; AES/EBU; S/PDIF	1/4"; XLR; AES/EBU; S/PDIF	50-60 Hz, 90-250 VAC	24-bit/96 kHz processing; word clock; ADAT Lightpipe	$2,995

EFFECTS PROCESSORS

MANUFACTURER	PRODUCT	PRESETS (FACTORY / USER)	ANALOG EFFECTS	DIGITAL EFFECTS	SIMULTANEOUS EFFECTS	PROGRAMMABLE WET / DRY MIX	COMPARE / BYPASS	MAXIMUM DELAY TIME	MAXIMUM PITCH SHIFT RANTE	MIDI REAL-TIME CONTROL	SIMULTANEOUS MIDI CONTROLLERS
Eventide	DSP 7000	746	N/A	746 algorithms	DSP-dep	Yes	Y/Y	43.5 sec	±4 oct chrom; ±3 oct dia	Yes	
Eventide	DSP4000B+	385	N/A	385 algorithms	DSP-dep	Yes	Y/Y	43.5 sec	±4 oct chrom; ±3 oct dia	Yes	
Eventide	DSP 7500	880	N/A	880 algorithms	DSP-dep	Yes	Y/Y	174 sec mono/87 sec stereo	±4 oct chrom; ±3 oct dia	Yes	
Eventide	Orville	1025	N/A	1025 algorithms	DSP-dep	Yes	Y/Y	174 sec mono/87 sec stereo	±4 oct chrom; ±3 oct dia	Yes	
Eventide	H8000	1483	N/A	1483 algorithms	DSP-dep	Yes	Y/Y	174 sec mono/87 sec stereo	±4 oct chrom; ±3 oct dia	Yes	
Fostex	DE-1	121	N/A	Yes	2	Yes	N/N	N/A	N/A	No	No
Korg/ToneWorks	Ampworks	11/2	N/A	22 amp/cab models; 9 effects; noise reduction	4	Yes	N/Y	1 sec	N/A	No	No
Korg/ToneWorks	Ampworks Bass	11/2	N/A	21 amp/cab models; 11 effects; noise reduction	4	Yes	N/Y	1 sec	N/A	No	No
Korg/ToneWorks	AX10G	40/40	N/A	3 pre; 11 amp models; 11 modulation; 11 ambience; noise reduction	5	Yes	N/Y	1 sec	2 octaves	No	No
Korg/ToneWorks	AX10A	40/40	N/A	3 pre; 11 body/mic models; 11 ambience; chorus; noise reduction	4	Yes	N/Y	1 sec	N/A	No	No
Korg/ToneWorks	PX4	50/50	N/A	124	7	Yes	Y/Y	N/A	±2 octaves	No	No
Korg/ToneWorks	PX4B	50/50	N/A	124	7	Yes	Y/Y	N/A	±2 octaves	No	No
Korg/ToneWorks	AX10B	40/40	N/A	3 pre; 11 amp models; 11 modulation; 11 ambience; noise reduction	5	Yes	N/Y	1 sec	1 octave	No	No
Korg	Kaoss Pad KP-2	100/100	N/A	26	3	Yes	N/Y	1,000 ms	± octave	Yes	2
Kurzweil	Mangler	192/64	N/A	Chrs; flng; phs; trmlo; rtry; pan; dly; fltr; hi-frq. stimulator; enh; LaserVerb; Pitcher	2	Yes	Y/Y	16 sec	N/A	Yes	Yes
Kurzweil	Rumour	192/64	N/A	Rvrb; gated, rev, rvrb/comp combos; LaserVerb; chrs/flng; dly+rvrb combos	2	Yes	Y/Y	2.5 sec	N/A	Yes	Yes
Kurzweil	KSP8	636/999	N/A	Rvrb; dly; chrs; flng; phs; enh; fltr; distrtn; comp; lim; exp; gt; rng md; cab sim; sptlzer; rtry; trmlo; EQ	16	Yes	Y/Y	21.5 sec	N/A	Yes	Yes
Lexicon	MPX 110	240/16	N/A	Reverb; delay; chorus; pitch; detune; flange; rotary; tremolo; echo	2	Yes	Y/Y	5.5 sec	+1, -2 octaves	Yes	Yes
Lexicon	MPX 550	240/30	N/A	Reverb; tremolo; rotary; chorus; flange; detune; pitch; delay; echo; dual algorithm	3	Yes	Y/Y	5.5 sec	+1, -2 octaves	Yes	24
Lexicon	MPX 1	200/50	N/A	56 pitch; chorus; EQ; modulation; delay; reverb	6	Yes	Y/Y	2 sec	2 octaves per voice	Yes	24
Lexicon	PCM 81	300/50	N/A	Reverb; delay; pitch shift; EQ; pitch correct	3	Yes	Y/Y	20 sec	±5 octaves	Yes	Yes
Lexicon	PCM 91	450/100	N/A	Reverb; delay	2	Yes	Y/Y	1,250 ms	N/A	Yes	Yes
Line 6	GuitarPort 2.0	80/unlimited	N/A	Amp; cab models; EQ; comp; distortion; wah; chrs; flngr; phsr; rtry; dly; rvrb	9	No	N/Y	2 sec	N/A	Yes	Yes
Line 6	Variax Workbench	Unlimited	N/A	Alternate Tuning Mode	1	No	Y/N	N/A	+5 steps/-1 octave	No	No
Line 6	DL4-Delay Modeler	15/3	N/A	Digital modeling of 16 vintage delay and echo	1	Yes	N/Y	2.5 sec	N/A	No	No
Line 6	DM4-Distortion Modeler	16/4	N/A	Digital modeling of 16 vintage distortion effects	1	No	N/Y	N/A	N/A	No	No
Line 6	MM4-Modulation Modeler	16/4	N/A	16 digital models: chorus; phase; flange; tremolo; rotary	1	Yes	N/Y	N/A	N/A	No	No
Line 6	AM4 Amp Modeler	16/4	N/A	16 digital models of classic amps	1	No	N/Y	N/A	N/A	No	No
Line 6	FM4-Filter Modeler	16/4	N/A	Digital modeling of new and vintage filter	1	Yes	N/Y	N/A	± 1 octaves	No	No
Line 6	POD 2.0	32/32	N/A	32 guitar amp models; 16 effects (incl. delay, chorus, reverb, flanger, tremolo, rotary)	3	Yes	Y/Y	2 sec	N/A	Yes	Yes
Line 6	PODxt	64/64	N/A	Amp, cab models; EQ; comp; distortion; wah; chrs; flngr; phsr; rtry; dly; rvrb	9	Yes	N/Y	2 sec	N/A	Yes	Yes
Line 6	PODxt Pro	64/64	N/A	37 amp, 24 cab, 4mic models; 50 effects (incl. dly, chorus, rvrb, flng, trem, rtry, EQ)	9	Yes	N/Y	2 sec	N/A	Yes	Yes
Line 6	Bass PODxt	32/32	N/A	28 bass amp models; 50+ studio and stompbox effects	8	Yes	N/Y	2 sec	2 octaves	Yes	Yes
Line 6	Bass PODxt Pro	32/32	N/A	29 bass amp models; 50+ studio and stompbox effects	8	Yes	N/Y	2 sec	2 octaves	Yes	Yes

DISCRETE PROCESSING CHANNELS	ADC / DAC	OVERLOAD WARNING	INPUTS	OUTPUTS	POWER SUPPLY	SPECIAL FEATURES	PRICE
2	24-bit	8-seg x 2 LED	(2) XLR; (2) 1/4" TRS; AES/EBU; S/PDIF	(2) XLR analog; XLR digital	50-60 Hz, 90-250 VAC	24-bit/96 kHz processing; word clock; Ultrashifter	$3,995
2	24-bit	8-seg x 2 LED	(2) XLR; (2) 1/4" TRS; AES/EBU; S/PDIF	(2) XLR; AES/EBU; S/PDIF	50-60 Hz, 90-250 VAC	24-bit/96 kHz processing; word clock; dedicated broadcast and post-production effects processor	$3,995
2	24-bit	8-seg x 2 LED	(2) XLR; (2)1/4" TRS; AES/EBU; S/PDIF	(2) XLR; AES/EBU; S/PDIF	50-60 Hz, 90-250 VAC	24-bit/96 kHz processing; word clock; Ultrashifter, sampler and broadcast/post-effects	$4,995
4	24-bit	8-seg x 4 LED	(4) XLR; (2) 1/4" TRS; (2) AES/EBU; S/PDIF	(4) XLR; (2) AES/EBU; S/PDIF	50-60 Hz, 90-250 VAC	24-bit/96 kHz processing; word clock; Ultrashifter; 4x4 effects; sampler	$5,495
8	24-bit	8-seg x 8 LED	(2) XLR; (2) 1/4" TRS; (4) AES/EBU; S/PDIF; ADAT	(2) XLR; (4) AES/EBU; S/PDIF; ADAT	50-60 Hz, 90-250 VAC	24-bit/96 kHz processing; word clock; ADAT Lightpipe; 5.1 reverb and effects; 8X1, 4X2 effects	$5,995
2	20-bit	Peak LED	(2) 1/4"	(2) 1/4"	DC9V (exclusive AC adapter)	Half rackspace; rotary controls	$199
1	24-bit	N/A	(1) 1/4	(1) 1/4"	2	Footswitch jack; intuitive realtime knob interface; tap tempo; line or amp style signal output; guitar case size	$179
1	24-bit	N/A	(1) 1/4	(1) 1/4"	2	Footswitch jack; intuitive realtime knob interface; tap tempo; line or amp style signal output; guitar case size	$185
1	24-bit	N/A	(1) 1/4	(1) stereo 1/4" TRS	2	For guitar; 2 footswitch; 1 pedal; intuitive realtime knob interface; tap tempo; line or amp style signal output; tuner	$250
1	24-bit	N/A	(1) 1/4	(1) Stereo 1/4" TRS	2	For acoustic; 2 footswitch; 1 pedal; intuitive realtime knob interface; tap tempo; tunable notch filter; tuner; LED display	$250
1	N/A	N/A	1/4"	1/4" TRS/phone	4 AAA battery or adapter	Can work w/infrared headphones; phrase trainer	$250
1	N/A	N/A	1/4"	1/4" TRS/phone	4 AAA battery or adapter	For bass; can work w/infrared headphones; phrase trainer	$275
1	24-bit	N/A	(1) 1/4	(1) stereo 1/4" TRS	2	For bass; 2 footswitch; 1 pedal; intuitive realtime knob interface; tap tempo; line or amp style signal output; tuner	$250
2	20-bit	Clip LED	(2/2) RCA line/phone; 1/4" mic	(2) RCA line	DC 12 VAC	Backlit X-Y touchpad control; sampling; tap tempo; auto BPM; input kill (transform); onboard synth, drum+groove samples	$350
2	24-bit	Clip LED	(2) 1/4" TRS; S/PDIF	(2) 1/4" TRS; S/PDIF	External 9V 2 amp AC	Flash ROM upgradeable via MIDI	$695
2	24-bit	Clip LED	(2) 1/4" TRS; S/PDIF	(2) 1/4" TRS; S/PDIF	External 9V 2 amp AC	Flash ROM upgradeable via MIDI	$695
8	24-bit	Br grph/mlti-stg mtr; (4) clip LED	(4) 1/4" TRS; AES/EBU S/PDIF coax	(4) 1/4" TRS; AES/EBU S/PDIF coax	50-60 Hz, 100-240 VAC	Optional I/O cards 4-ch. analog; 8-ch. AES/EBU or S/PDIF w/word clock; 8-ch. ADAT/TDIF w/word clock; 8-ch. mLAN; Flash ROM; Smartmedia; 5.1	$2,995
2	24-bit	2-seg LED; clip light	(2) 1/4"	(2) 1/4"; S/PDIF (coax)	9 VAC	Dual stereo, mono split, cascade, and dual mono configurations	$299
2	24-bit	LCD display	(2) 1/4"; (2) XLR; S/PDIF	(2) 1/4"; (2) XLR; S/PDIF	Internal; switching	Tap tempo input; 16 adjustable parameters; stand-alone 24-bit A/D converter	$649
2	24-bit	N/A	(2) 1/4"; (2) XLR; S/PDIF	(2) 1/4"; (2) XLR; S/PDIF	Internal; switching	Discrete reverb processor and separate effects processor; patching and routing system	$899
2	24-bit	5-seg LED; clip light	(2) 1/4" TRS; XLR; AES/EBU; S/PDIF	(2) 1/4" TRS, XLR; AES/EBU; S/PDIF	50-60 Hz, 100-240 VAC	Unlimited user program storage via PCM CIA card slot; dynamic MIDI patching	$2,995
2	24-bit	5-seg LED; clip light	1/4" TRS; (2) XLR; AES/EBU; S/PDIF	1/4" TRS; (2) XLR; AES/EBU; S/PDIF	50-60 Hz, 100-240 VAC	Unlimited user program storage via PCM CIA card slot; dynamic MIDI patching	$2,995
1in/2out	24-bit	Tri-color clip LED	1/4"; 1/8" stereo mini	(2) RCA; 1/8" stereo mini; USB	USB-powered	32-bit processing; CD ripping; MP3 playback; real time half-speed; optional online membership (tracks, tones, tab)	$140
1	24-bit	N/A	1 RJ-45	USB	USB-powered	Create, store, and share custom Variax guitar models on Mac/PC	$140
2	24-bit	N/A	(2) 1/4"	(2) 1/4"	Battery/AC	Tap tempo; 14-second loop sampler; realtime control	$350
1	24-bit	N/A	1/4" guitar input	1/4" guitar input	Battery/AC	Bypass switching; expression pedal in; realtime control	$350
1	24-bit	N/A	(2) 1/4"	(2) 1/4"	Battery/AC	Bypass switching; expression pedal in; realtime control	$350
1	24-bit	N/A	1/4" guitar	1/4" guitar input	Battery/AC	Bypass switching; expression pedal in; realtime control	$350
1	24-bit	N/A	(2) 1/4"	(2) 1/4"	Battery/AC	Bypass switching; expression pedal in; realtime control	$350
1in/2out	20-bit	Clip light	1/4" guitar input	(2) 1/4" TRS; headphone	External	Direct (A.I.R.)/amp modes; MIDI; tap tempo; tuner; cab select; pedal jack; 2.0 upgrade available for POD owners	$360
1in/2out	24-bit	Clip light	(1) 1/4"; USB	(2)1/4" TRS; USB; headphone	External	Modeling technology; direct/live modes; MIDI; tap tempo; tuner; FBV/shortboard support; digital output via USB	$570
1in/2out	24-bit	In and out clip lights	(4) 1/4"; AES; S/PDIF; USB	(5) 1/4"; (2)XLR; S/PDIF; AES; USB	Internal	Modeling; direct/live modes; MIDI; tap tempo; tuner; FBV/shortboard support; digital output via USB	$980
1in/2out	24-bit	Clip indicator	1/4"; USB	(2) 1/4" TRS; USB; headphone	External	Semi-param EQ; full-time comp; bi-amp out mode FX x-over; MIDI; tuner; FBV pedal jack; discrete DI and model outputs	$570
1in/2out	24-bit	In and out clip lights	(4) 1/4"; AES; S/PDIF; USB	(5) 1/4"; (2) XLR; S/PDIF; AES; USB	Internal	Semi-param EQ; full-time comp; bi-amp out mode FX x-over; MIDI; tuner; FBV pedal jack; discrete DI and model outputs	$980

EFFECTS PROCESSORS

MANUFACTURER	PRODUCT	PRESETS (FACTORY/USER)	ANALOG EFFECTS	DIGITAL EFFECTS	SIMULTANEOUS EFFECTS	PROGRAMMABLE WET/DRY MIX	COMPARE/BYPASS	MAXIMUM DELAY TIME	MAXIMUM PITCH SHIFT RANGE	MIDI REAL-TIME CONTROL	SIMULTANEOUS MIDI CONTROLLERS
Line 6	Echo Pro	99	N/A	Digital modeling of 16 vintage delay and echo; loop sampler	1	Yes	Y/Y	2.576 sec	N/A	Yes	Yes
Line 6	Filter Pro	99	N/A	Digital modeling of new and vintage filter	1	Yes	Y/Y	N/A	± 2 octaves	Yes	Yes
Line 6	Mod Pro	99	N/A	16 digital models of chorus; phase; flange; tremolo; rotary	1	Yes	Y/Y	N/A	N/A	Yes	Yes
Metasonix	TM-1	N/A	Waveshaper; ring mod	N/A	1	No	Y/Y	N/A	N/A	No	No
Metasonix	TM-2	N/A	Dual BP filter/VCA	N/A	1	No	Y/Y	N/A	N/A	No	No
Metasonix	TX-1 Vacuum-Tube Agonizer	N/A	Distortion	N/A	1	No	N/Y	N/A	N/A	No	No
Miles Technology	M44 Multisonic Imager	N/A	L/C/R sweet-spot enlarger w/surround	N/A	2	No	N/N	N/A	N/A	No	No
Miles Technology	M86 Multisonic Imager	N/A	L/C/R sweet-spot enlarger w/surround	N/A	2	No	Y/Y	N/A	N/A	No	No
Moog Music	Moogerfooger MF-101 Lowpass Filter	N/A	Moog filter w/ envelope follower	N/A	1	Yes	Y/Y	N/A	N/A	No	No
Moog Music	Moogerfooger MF-102 Ring Modulator	N/A	Ring modulation	N/A	1	Yes	Y/Y	N/A	N/A	No	No
Moog Music	Moogerfooger MF-103 Twelve-Stage Phaser	N/A	Six-stage/twelve-stage phaser	N/A	1	No	Y/Y	N/A	N/A	No	No
Moog Music	MF-105 MuRF	24/0	Sequenced filter effects	N/A	1	Yes	Y/Y	N/A	N/A	No	No
Muse Research	Receptor Hardware Plug-in Player	16,384	Plug-in dependent	Plug-in dependent	57	Yes	Y/Y	Plug-in dependent	Plug-in dependent	Yes	100's
Mutronics	Mutator	N/A	Lopass filter with env follower and LFO	N/A	1	No	Y/Y	N/A	N/A	Yes	3
Peavey	DeltaFex	16/0	N/A	Reverb; delay; flange; chorus; phase shift; rotary speaker	1	Yes	Y/Y	225 ms	N/A	No	No
Peavey	CEL-2a	N/A	Comp; lim; exp	N/A	N/A	No	Y/Y	N/A	N/A	No	No
Peavey	KOSMOS PRO	N/A	Audio enhancer	N/A	N/A	No	Y/Y	N/A	N/A	No	No
Phonic Hi-Tech	Verbifex	256/0	N/A	Yes	1	Yes	Y/Y	N/A	N/A	No	No
Quantec	Yardstick 2402	Both	N/A	Room simulator	1	No	Y/Y	0.2 sec	N/A	Yes	1
Radial Engineering	2D-7 Injector	N/A	Drag control	N/A	1	Yes	Y/Y	N/A	N/A	No	No
Roger Linn Design	AdrenaLinn II	100/100	N/A	Guitar amp modeling; synched modulation effects; filter sequences; delay	3	Yes	Y/Y	2,800 ms	N/A	Yes	1
Roland	VT-1	32/4	N/A	Voice transfer	2	Yes	N/Y	N/A	±1 octave	No	4
Roland	VF-1	200/200	MFX	MFX	9	Yes	Y/Y	2,800 ms	±2 octave	Yes	Yes
Roland	GR-20 Guitar Synthesizer	469/99	0	Reverb; delay; chorus; rotary; transpose	All	Yes	Y/Y	500 ms	2	Yes	6
Roland	GR-33 Guitar Synthesizer	256/256	0	Reverb; delay arpeggiator; Harmonist; 40 multi-effects	All	Yes	N/N	500 ms	± 2 per string	Yes	6
Roland	VG-88 V-Guitar System	160/100	N/A	COSM modeling; digital effects	11	Yes	Y/Y	1,800 ms	± 2 per string	Yes	Yes
Roland	V-Bass	100/100	N/A	Modeled electric; acoustic; fretless basses; cabs; amps; effects	12	Yes	Y/Y	1,800 ms	± 2 per string	Yes	Yes
Spatializer	Retro	N/A	3-D audio	N/A	1	No	N/Y	N/A	N/A	No	No
SPL	Charisma 2	N/A	Tube saturation	N/A	1	No	N/Y	N/A	N/A	No	No
SPL	Charisma 8	N/A	Tube saturation	N/A	1	No	N/Y	N/A	N/A	No	No
TC Electronic	Stereo Chorus Flange	N/A	Chorus; flange; pitch	N/A	1	Yes	N/N	N/A	N/A	No	No
TC Electronic	M•One XL	100/100	N/A	20+ effects	2	Yes	Y/Y	4,000 ms	1,200 cents	Yes	Yes
TC Electronic	D•Two	50/100	N/A	Stereo/mono; dynamic; rhythm; reverse; chorus; filter; spatial; ping-pong	1	Yes	Y/Y	10 sec	N/A	Yes	Yes
TC Electronic	M2000	256/256	N/A	Rvrb; dly; chrs; flngr; comp; pan; trml; lmtng; de-ess; exp; str enhnc	2	Yes	Y/Y	1,200 ms	2 octaves	Yes	16
TC Electronic	M3000	250/200	N/A	Rev; dly; chr; fln; EQ; comp; pan; trml; lim; de-ess; exp; gate; str enhnc	2	Yes	N/Y	1,200 ms	2 octaves	Yes	16
TC Electronic	G-Major	100/100	N/A	Rvrb; dly; ptch; chrs; flngr; comp; gate; filter/mod	7	Yes	Y/Y	N/A	N/A	Yes	Yes
TC Electronic	G-Force	200/100	N/A	Rvrb; dly; ptch; flngr; comp; pan/trml; mod; drive; chorus; filter	8	Yes	Y/Y	1,480 ms	2 octaves	Yes	8
TC Electronic	D22	4/20	N/A	Delay	1	Yes	Y/Y	2,600 ms	N/A	Yes	Yes
TC Electronic	2290	100/100	N/A	1	2	Yes	Y/Y	8 sec	N/A	Yes	1

DISCRETE PROCESSING CHANNELS	A/D/C / D/A/C	OVERLOAD WARNING	INPUTS	OUTPUTS	POWER SUPPLY	SPECIAL FEATURES	PRICE
2	24-bit	5-segment LED; clip light	(2) 1/4" TRS; (2) XLR	(2) 1/4" TRS; (2) XLR	50-60 Hz, 100-240 VAC	Effects include tape, tube, analog echo; loop sampler, expression pedal input; MIDI clock sync	$700
1	24-bit	5-segment LED; clip light	(2) 1/4" TRS; (2) XLR	(2) 1/4" TRS; (2) XLR	50-60 Hz, 100-240 VAC	Synth & filter effects; expression pedal in; MIDI clock sync	$700
1	24-bit	5-segment LED; clip light	(2) 1/4" TRS; (2) XLR	(2) 1/4" TRS; (2) XLR	50-60 HZ, 100-240 VAC	Modeled effects; expression pedal input; MIDI clock sync	$700
1	N/A	N/A	1/4" TS aud; (3) 1/4" TS cntrl vltg	1/4" TS audio	10-12 VAC	All vacuum tube waveshaper and ring mod; AC adapter for 120V incl.	$399
1	N/A	N/A	1/4" TS aud; (2) 1/4" TRS cntrl vltg	1/4" TS audio	10-12 VAC	All vacuum tube; AC adapter for 120V incl.	$399
1	N/A	N/A	(2) 1/4" audio in, CV in	(1) 1/4" audio out	12 VAC (adapter included)	Unique distortion	$499
2	N/A	Signal/clip LED	(4) XLR; (6) RCA	(4) XLR	50-60 Hz, 120-240 VAC	Creates left, center, right, sub outputs from standard 2-ch. L/R sources	$799
2	N/A	Signal/clip LED	(4) XLR; (12) RCA	(6) XLR	50-60 Hz, 120-240 VAC	Creates left, center, right, sub, (2) surround outputs from 2-ch. L/R sources; also handles 5.1 sources	$899
1	N/A	Level LED	1/4"	1/4"	Wall transformer	(4) control inputs accept expression pedals or CVs; envelope follow CV output	$299
1	N/A	N/A	1/4"	(3) 1/4"	Wall transformer	(4) control inputs accept expression pedals or CVs; (2) CV outputs; carrier oscillator; LFO	$299
1	N/A	N/A	1/4"	(4) 1/4"	Wall transformer	(4) control inputs accept expression pedals or CVs; Aux sweep in - acpts CVs for duo FLO phasing; LF CV out	$399
1	N/A	Level LED	(1) 1/4" audio; (4) 1/4" CV	(2) 1/4" audio	Wall Transformer	Sequenced filter effects	$439
4	24-bit	LED+ peak meter w/indicator	(2) 1/4"; S/PDIF; (1) guitar	(2) 1/4"; S/PDIF; ADAT	50-60 Hz, 100-240 VAC	Runs Windows VST plug-ins; hundreds of plug-ins pre-installed; auto-signal bypass and reboot	$1,599
2	N/A	N/A	1/4"	1/4"	AC	Stereo panning	$1,120-$1,425
2	16-bit	Bi-color clip LED	1/4"	1/4"	External		$190
2	N/A	Yes	1/4" TRS; XLR	1/4" TRS; XLR	120V	Low-cut filter; de-esser; ext. sidechain	$370
2	24-bit	Clip LED	(2) 1/4" TRS; XLR	(2) 1/4" TRS; XLR	120V	Quake; Thud; Xpanse; Stratos; S/PDIF I/O; auto select for clock	$670
2	16-bit	Dual color peak LED	1/4"	1/4"	Internal		$269
2	24-bit	N/A	(2) XLR	(2) XLR	Switch mode	Digital re-incarnation of the classic Quantec Room simulator	$3,217
7	N/A	Clip LED	1/4"; XLR	XLR; (7) 1/4"	15V DC	Allows guitar to be routed to 7 amps; 2 effects loops; variable drag control	$799
1	24-bit	Clip LED	1/4" TS	(2) 1/4" TS	50-60 Hz, 70-140 VAC	Sequencer provides patterns of filtered tones, arpeggios or tremolo patterns in synch to internal drum machine or MIDI	$499
1	16-bit	Clip light	1/4"	1/4"; (2) RCA	AC	Realtime control over pitch and formant	$395
2	24-bit	3-segment LED; clip light	1/4"	1/4"	AC	S/PDIF output; all Roland effects	$495
2	24-bit	LED	(1) 13-pin GK	(2) 1/4"	14V 800mA AC Adapter	Quickly converts guitar to MIDI	$695 w/pickup
2	24-bit	LCD	(1) 13-pin GK	(2) 1/4"	14V 800mA Ac adapter	384 synth sounds; fully programmable; converts guitar to MIDI	$895 w/pickup
1	24-bit/20-bit	LED	13-pin; 1/4"	(2) 1/4"; (2) XLR; 1/4" direct guitar	100-120 VAC	Guitar modeling; amp, spkr cab, mic modeling; preset, user-definable alt tunings; icon-based display; digital effects; built-in exp/ctl pedal	$1,195 w/GK-2AH pickup
1	24-bit/20-bit	LED	13-pin; 1/4"	(2) 1/4"; (2) XLR; 1/4" direct out	100-120 VAC	COSM bass, amp, cab, effect modeling; polyphonic bass synthesis; alternate tunings; manual mode; true bypass	$1,395 w/GK-2B pickup
2	N/A	LED	1/4" TRS	1/4" TRS	Internal	3-D audio; mono compatible	$999
2	N/A	LED	(2) 1/4" TRS-XLR combo	(2) 1/4" TRS-XLR combo	100-120V/60 Hz; 220-240 V/50 Hz	Control for amount of tube saturation; charisma control	$749
8	N/A	LED	(8) 1/4" TRS	(8) 1/4" TRS	100-120V/60 Hz; 220-240V/50 H	Control for amount of tube saturation; charisma control	$1,699
1	N/A	N/A	1/4"	1/4"	Internal	Pedal	$395
2	24-bit	LED	S/PDIF; (2) XLR	(2) XLR; S/PDIF	Internal, auto-sensing	Dual engine routings; serial, parallel, stereo linked, dual mono, dual send/return	$495
2	24-bit	LED	S/PDIF; (2) XLR	(2) XLR; S/PDIF	Internal, auto-sensing	Rhythm tap; programmable number of repeats	$695
2	20-bit	LED	(2) XLR; AES/EBU; S/PDIF	(2) XLR; AES/EBU; S/PDIF	Internal	Dynamic morphing; preset glide control	$995
2	24-bit	LED	(2) XLR; AES/EBU; S/PDIF; ADAT; Toslink	(2) XLR; AES/EBU; S/PDIF; ADAT; Toslink	Internal	Dynamic morphing; preset glide control	$1,845
1	24-bit	8-seg LED	1/4"	1/4"	100V–240V, 50–60 Hz	Built-in tuner/channel switching for external amps	$695
2	24-bit	Clip light	(2) 1/4"; S/PDIF	(2) 1/4"; S/PDIF	Internal, switching	Intelligent pitch shifting; 5x14 LED display	$1,795
1	24-bit	8-seg LED	XLR; S/PDIF; AES/EBU	XLR; S/PDIF; AES/EBU	Auto sensing 100V–240V	Real-time, glitch-free delay updates	$2,195
1	1-bit	LED	XLR; 1/4"	XLR; 1/4"	AC	1 MHz sample rate	$2,195

EFFECTS PROCESSORS

MANUFACTURER	PRODUCT	PRESETS (FACTORY / USER)	ANALOG EFFECTS	DIGITAL EFFECTS	SIMULTANEIOUS EFFECTS	PROGRAMMABLE WET / DRY MIX	COMPARE / BYPASS	MAXIMUM DELAY TIME	MAXIMUM PITCH SHIFT RANTE	MIDI REAL-TIME CONTROL	SIMULTANEOUS MIDI CONTROLLERS
TC Electronic	Firework	200/100	N/A	35	DSP sp. dependent	Yes	Y/Y	3 sec	±2 octaves	Yes	Yes
TC Electronic	R4000	N/A	N/A	Reverb	1	Yes	Y/Y	>5 sec	N/A	Yes	Yes
TC Helicon	Quintet	50/50	N/A	Reverb	5	Yes	Y/Y	N/A	±2 octaves	Yes	Yes
TC Helicon	VoiceWorks	100/100	N/A	Comp/gate; EQ; rvrb; tap tempo delay; hrmny; pitch correct	8	Yes	Y/Y	1,800 ms	±2 octaves	Yes	Yes
TC Helicon	VoiceOne	100/50	N/A	Harmonization; voice modeling	6	Yes	Y/Y	N/A	0-600/infinite cents	Yes	Yes
TC-Helicon	Voice Prism Plus	128/128	N/A	Harmony; reverb; comp; EQ; delay; flange; chorus; lead voice modeling/doubling	7	Yes	Y/Y	799 ms	±2 octaves	Yes	Yes
Tech 21	SansAmp GT2	N/A	Tube amp emul./ distortion	N/A	1	No	N/Y	N/A	N/A	No	No
Tech 21	SansAmp TRI-A.C.	3	Tube amp emul./ distortion	N/A	1	No	N/Y	N/A	N/A	No	No
Tech 21	SansAmp Classic	N/A	Tube amp emul./ distortion	N/A	1	No	N/Y	N/A	N/A	No	No
Tech 21	SansAmp RPM	N/A	Tube amp emul.	N/A	1	No	N/Y	N/A	N/A	No	No
Tech 21	SansAmp RBI	N/A	Bass tube amp emulat./distort.	N/A	1	No	N/Y	N/A	N/A	No	No
Tech 21	SansAmp PSA-1	49/49	Tube amp emulation	N/A	1	No	N/Y	N/A	N/A	No	No
Technosaurus	Effexon	N/A	2-band para EQ; ring modulator; distortion	N/A	3	No	Y/Y	N/A	N/A	No	No
Vermona	Action Filter	N/A	Stereo multimode filter	N/A	1	No	Y/Y	N/A	N/A	No	No
Vermona	RM-1	N/A	Ring mod	N/A	1	No	Y/Y	N/A	N/A	No	No
Vermona	DAF1	N/A	Multimode filter	N/A	1	No	Y/Y	N/A	N/A	No	No
Vermona	Retroverb	N/A	Spring reverb	N/A	1	Yes	Y/Y	N/A	N/A	No	No
Vermona	PH16	N/A	Phaser	N/A	1	No	Y/Y	N/A	N/A	No	No
Voce	Spin II	N/A	Various	N/A	1	No	N/Y	N/A	N/A	No	No
Yamaha	REV100	99	N/A	Ster rvrb; rvrb; dly; flngr; chrs; symphnc	1	Yes	Y/Y	N/A	N/A	Yes	2
Yamaha	REV500	100	N/A	Rvrb; rm sim; ech	1	Yes	Y/Y	200 ms	N/A	Yes	4
Yamaha	SPX2000	97/99	N/A	Reverb; delay; chorus; pitch change; modulation; freeze; filter	2	Yes	Y/Y	2,730 ms	2 octaves	Yes	No
Zoom	9003	60/60	N/A	60	7	Yes	Y/Y	7 sec	N/A	No	No

EQUALIZERS

MANUFACTURER	PRODUCT	ANALOG / DIGITAL	PROGRAMMABLE	TYPE / BANDWIDTH	# OF CHANNELS / # OF BANDS	FREQUENCY RANGE (PARAMETRIC)	CONSTANT Q	FILTERS	ANALOG I/O #/TYPE
A Designs	EQ-1	Analog	No	Tube	1	parametric	No	Passive	XLR
Alesis	DEQ 224	Digital	Yes	Graphic	2/24	20 Hz–20 kHz	Yes	HP; LP	(2) 1/4"
Alesis	DEQ230	Digital	Yes	Graphic	2/30	N/A	No	No	(2) 1/4" TRS
Alesis	DEQ 230D	Digital	Yes	Graphic	2/30	20 Hz–20 kHz	Yes	HP; LP	(2) 1/4" TRS
Alesis	DEQ 830	Digital	Yes	Graphic	8/30	120 Hz–20 kHz	Yes	HP; LP	(8) 1/4" TRS
Alto	EQU 131	Analog	No	Graphic	1/31	20 Hz–50 kHz	Yes	HP; LP	XLR; 1/4"; (2) RCA
Alto	EQU 131 VU	Analog	No	Graphic (60 mm)	1/31	20 Hz–50 kHz	Yes	HP; LP	XLR; 1/4"; (2) RCA
Alto	EQU 215	Analog	No	Graphic	2/15	20 Hz–50 kHz	Yes	HP; LP	XLR; 1/4"; (2) RCA
Alto	EQU 215 Twin	Analog	No	Graphic dual	2/15	20 Hz–50 kHz	Yes	HP; LP	XLR; 1/4"; (2) RCA
Alto	EQU 231 LED	Analog	No	Graphic	2/31	20 Hz–50 kHz	Yes	HP; LP	XLR; 1/4"; (2) RCA

DISCRETE PROCESSING CHANNELS	ADC/DAC	OVERLOAD WARNING	INPUTS	OUTPUTS	POWER SUPPLY	SPECIAL FEATURES	PRICE
2	24-bit	Overload LED	XLR	XLR	AC	Includes vocoder	$2,245
2	24-bit	Clip LED	XLR; AES/EBU; ADAT/Toslink; S/PDIF	XLR; AES/EBU; ADAT/Toslink; S/PDIF	50-60 Hz, 100-240 VAC	Mac/PC icon-editor program	$2,995
1	24-bit	Clip LED	XLR; 1/4" TRS pedal in	(2) 1/4" TRS; S/PDIF	50-60 Hz, 100-240 VAC	4 harmony	$595
1	24-bit	Clip LED	XLR; S/PDIF; 1/4" TRS aux in, pedal in	(2) 1/4" TRS; S/PDIF	50-60 Hz, 100-240 VAC	4 harmony, 2 lead doublers	$795
2	24-bit	Clip LED	(2) XLR; S/PDIF pedal in	(2) XLR; S/PDIF	50-60 Hz, 100-240 VAC	Voice modeling; hybrid pitch shifting, pitch correction, phrase naturalization	$1,295
1	24-bit	Clip LED	1/4" TRS; XLR; S/PDIF; AES/EBU	XLR; 1/4" TRS; S/PDIF; AES/EBU	50-60 Hz, 100-240 VAC	Formant-corrected harmonics; human voice modeling; 4 auto harmony modes	$1,295
1	N/A	N/A	1/4"	1/4"	9V battery, opt adapter	Streamlined version of SansAmp Classic; select amp/mod/speaker cab configurations	$195
1	N/A	N/A	1/4"	1/4"	9V battery, opt adapter	Fully programmable; 3-band active EQ; 100% analog circuitry	$225
1	N/A	N/A	1/4"	1/4"	9V battery, adapter incl	Multi-preamp styles; 8-character switches; 4 contour knobs	$345
1	N/A	N/A	(2) 1/4"	(2) 1/4"; (2) XLR	Internal	100% analog; semi-parametric EQ; drive control	$395
1	N/A	N/A	(2) 1/4"	(2) 1/4"; (2) XLR	Internal	100% analog; 3-band active EQ; use as preamp in mixdown	$395
1	N/A	N/A	(2) 1/4"	(2) 1/4"; (2) XLR	Internal	Fully programmable; 100% analog circuitry	$795
1	N/A	LED for clip light	1/4"	1/4"	50-60 Hz, 100-115 VAC	True analog	$329
2	N/A	Clip LED	(2) RCA unbal.	(2) RCA unbal.	12 VAC	Turntable ground terminal	$324
1	N/A	Clip LED	(2) 1/4" unbal.	(2) 1/4" unbal.	12 VAC	Internal carrier oscillator generates sine, square shapes; LFO w/4 wave forms, envelope follower, C.V. inputs	$329
2	N/A	Clip LED	(2) 1/4" unbal.	(2) 1/4" unbal.	12 VAC	48 dB/octave slope in serial mode	$329
1	N/A	Clip LED	1/4"	1/4"	Internal	3-band EQ w/parametric mids	$329
2	N/A	N/A	1/4"	1/4"	VAC		$339
1	N/A	N/A	1/4"	(2) 1/4"	Internal	4 knobs to control speed	$525
2	16-bit	Clip light	(2) 1/4"	(2) 1/4"	External		$299
2	20-bit	Clip light	(2) 1/4"; (2) XLR	(2) 1/4"; (2) XLR	Internal	Audition switch	$499
2	24-bit	Clip LED	(2) 1/4"; (2) XLR; AES/EBU	1/4"; (2) XLR); AES/EBU	60 Hz/120V	24/96 kHz	$1,299
N/A	20-bit/8x	Yes	(1) 1/4"; (1) 1/8" line	(1) 1/4"; (1) 1/8" headphone	DC9V/300mA AD-0006D	30-second sampler	$260

DIGITAL I/O #/TYPE	INPUT/OUTPUT GAIN CONTROL	MAX BOOST/CUT	OPERATING LEVEL	HARD BYPASS	DYNAMIC RANGE	TOTAL HARMONIC DISTORTION	WEIGHT	DIMENSIONS	PRICE
N/A	N/N	N/A	N/A	Yes	N/A	N/A	14	19x3.5x10	$1,899
N/A	N/N	±12 dB	N/A	Yes	>97 dB	0.005%	N/A	N/A	$249
N/A	Y/Y	1-segment	N/A	Yes	N/A	N/A	N/A	19x3.5x4	$349
N/A	N/N	±12 dB	N/A	Yes	>97 dB	0.005%	N/A	N/A	$449
(8) ADAT optical	N/N	±12 dB	N/A	Yes	>97 dB	0.005%	N/A	N/A	$579
N/A	Y/Y	±12 dB	N/A	Yes	N/A	0.02%	N/A	19x7.4x1.75	$119
N/A	Y/Y	±12 dB	N/A	Yes	N/A	0.02%	7	19x7.4x3.5	$149
N/A	Y/Y	±12 dB	N/A	Yes	N/A	0.02%	6	19x7.5x1.75	$119
N/A	Y/Y	±12 dB	N/A	Yes	N/A	0.02%	8	19x8x3.5	$269
N/A	Y/Y	±12 dB	N/A	Yes	N/A	0.02%	11.5	19x7.4x3.5	$199

Continued on page 80

EQing Drums

By David Franz

One of the first things to do when starting a mix is to work on the drum sounds. That usually means EQing the kick and snare first.

Kick Drum

The kick drum (aka the bass drum) provides the rhythmic foundation. There are two basic parts to its sound: the *thud* and the *click*. The *thud* is the low-end beef—the part that you feel in your chest. The *click* is the sound of the beater attack on the drum's head. As with any instrument, the kick drum creates multiple frequencies when struck. In most cases, the thud lives between 40 Hz and 80 Hz, while the click lives between 1 kHz to 5 kHz. And, on a kick drum, *mud* usually lives between 220 to 340 Hz!

So, as a general technique for EQing a kick drum, try boosting between 40 and 80 Hz for more thud, cutting around 300 Hz for less mud, and boosting/cutting between 1 and 5 kHz for more or less click.

Snare Drum

Snare drums can be very tricky to EQ. Each drum sounds completely unique and thus each requires its own EQ treatment. To make it more complicated, the sound of every drum is very dependent on its tuning as well as the drummer's style and ability. Despite all these factors, most snare drums share some sonic similarities. The bottom range for a snare is around 100 to 160 Hz. The fattest part of its sound usually occurs in the 220–240 Hz range, while the crispness of the attack is found in the 4–5 kHz range. 300–700 Hz is the boxy range; cut some of this, if needed. EQing higher frequencies (around 8 kHz and above) on the snare can sometimes add a nice sizzle to the track, but if there's any leakage from the hi-hat on the snare track, the boost may significantly boost the hi-hat as well.

Toms

The primary fullness of floor toms can usually be found between 80 and 120 Hz, while the fullness of higher-pitched toms is usually found between 200 and 250 Hz. The brightness and attack for these drums, as with every drum, is in the 4–5 kHz range. And watch out for boxiness in the 300–700 Hz range.

Cymbals

Usually, cymbals don't need too much EQ help, especially if you have high-quality ones. If you find they are a little dull, try boosting a little bit at 8–10 kHz. You can also roll off the low end of your cymbal tracks. The dullness (like the "gong" part of the cymbal's frequency range) occurs around 200–240 Hz. So, if you want to add more definition to your cymbal sound, roll off some of the low frequencies (even up to 600 Hz) using a highpass filter. Additionally, if you want to take away some of the clanginess of hi-hats, cut a little bit from the 1–4 kHz range. ■

EQ Settings for Drums

Here's a chart that summarizes some common drum EQ settings. All of these suggestions depend on the individual drum sound as well as how you want it to sit in the mix. Use your ears to choose the best-specific frequency from the frequency ranges listed for each outcome

	for this outcome	adjust this frequency
Kick Drum	more bottom end	boost 60–100 Hz
	less muddiness	cut 220–350 Hz
	less boxiness	cut 500–700 Hz
	more attack	boost 1–3 kHz
	more click	boost 4–5 kHz
	high-end rolloff	roll off above 8 kHz
Snare Drum	more bottom	end boost 100 Hz
Toms	less muddiness	cut 220–350 Hz
	less boxiness	cut 500–700 Hz
	more punch	boost 5 kHz
	more brightness	boost 8 kHz
	more crispness	boost 10 kHz
Cymbals	low-end rolloff	cut 100 Hz and below
	less dullness (gong sound)	cut 200–600 Hz
	less clanginess	cut 1–4 kHz
	more punch	boost 5 kHz
	more brightness	boost 8–10 kHz
	more crispness	boost 10 kHz and above

The Dirt On Mud

The frequencies between 200 and 350 Hz are often associated with descriptions such as muddy, tubby, woody, boomy, thumpy, or even barrel-like. Some just call that frequency range *mud*, as in the gooey concoction of water and dirt. And who wants mud in their mix? By reducing the frequency content of this area in some bass instruments (like a kick drum), you can take out the mud, to clarify the sound of that instrument. However, as with all EQing suggestions, always listen to your EQ adjustments. Don't just cut these frequencies because of my recommendation. Reducing too much of this frequency range can cause your overall mix to lose power.

This article was previously published in the book Recording and Producing in the Home Studio *(ISBN 0-87639-048-3), a product of Berklee Press (www. berkleepress.com), and is reprinted by permission of the publisher.*

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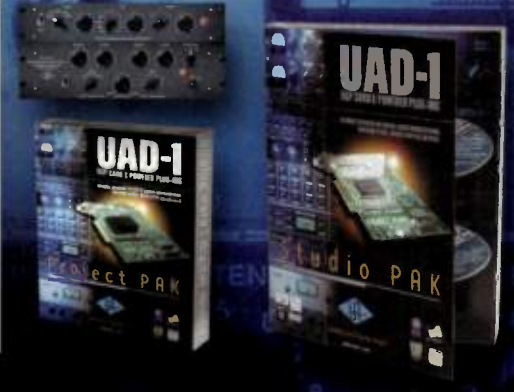
EX-1 EQ & Compressor	•	•
Nigel	•	•
RealVerb Pro	•	•
Pultec EQP-1A	•	•
1176 SE Limiting Amplifier	•	•
Preflex - Amp/Cab simulator	•	•
Gate/Comp	•	•
Phasor	•	•
Mod Filter	•	•
Tremi/Fade	•	•
Mod Delay	•	•
Effin	•	•
LA-2A Leveling Amplifier		•
1176LN Limiting Amplifier		•
Cambridge Parametric EQ		•
DreamVerb Reverb Tool		•
Fairchild 670 Compressor		•
Pultec Pro		•



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MANUFACTURER	PRODUCT	ANALOG/DIGITAL	PROGRAMMABLE	TYPE/BANDWIDTH	# OF CHANNELS/ # OF BANDS	FREQUENCY RANGE (PARAMETRIC)	CONSTANT Q	FILTERS	ANALOG I/O #/TYPE
Alto	EQU 231 VU	Analog	No	Graphic	2/31	20 Hz–50 kHz	Yes	HP; LP	XLR; 1/4"; (2) RCA
Alto	Monitor	Analog	No	Graphic	N/A	20 Hz–50 kHz	No	(2) notch/low cut	XLR; 1/4"
Alto	Control 30	Digital	Yes	Parametric; graphic	30	20 Hz–20 kHz; ± 0.02 dB	Yes	HP; LP	(2) XLR
Alto	Control 60	Digital	Yes	Parametric; graphic	60	20 Hz–20 kHz; ± 0.02 dB	Yes	HP; LP	(2) XLR
Aphex Systems	104	Analog	No	Exciter	2	N/A	No	No	1/4" TRS
Aphex Systems	109	Analog	No	Parametric variable/ 0.66–7.2 (or single 4-band)	2/2	20 Hz–2 kHz; 200 Hz–20 kHz	Yes/variable	Switchable shelving	1/4" TRS
API	API 550b	Analog	No	4-band switchable	1/4	30 Hz–20 kHz	Proportional	No	XLR
API	API 560	Analog	No	Graphic	1/10	31 Hz–6 kHz	Proportional	No	XLR
A.R.T.	ART 341	Analog	No	Graphic	2/15	20 Hz–20 kHz; ±0.5 dB	Yes, -3% center accuracy	No	(2) XLR; (2) 1/4" TRS; RCA
A.R.T.	ART 342	Analog	No	Graphic	2/15	20 Hz–20 kHz; ±0.5 dB	Yes, -3% center accuracy	No	(2) XLR; (2) 1/4" TRS; RCA
A.R.T.	ART 343	Analog	No	Graphic	2/15	20 Hz–20 kHz; ±0.5 dB	Yes	No	(2) XLR; (2) 1/4" TRS; RCA
A.R.T.	ART 351	Analog	No	Graphic	2/31	20 Hz–20 kHz; ±0.5 dB	Yes, -3% center accuracy	No	(2) XLR; (2) 1/4" TRS; RCA
A.R.T.	ART 352	Analog	No	Graphic	2/31	20 Hz–20 kHz; ±0.5 dB	Yes, -3% center accuracy	HP; LP	(2) XLR; (2) 1/4" TRS; RCA
A.R.T.	ART 353	Analog	No	Graphic	1/31	20 Hz–20 kHz; ±0.5 dB	Yes	No	(2) XLR; (2) 1/4" TRS; RCA
A.R.T.	ART 355	Analog	No	Graphic	2/31	20 Hz–20 kHz; ±0.5 dB	Yes, -3% center accuracy	HP; LP	(2) XLR; (2) 1/4" TRS; RCA
A.R.T.	ART 441	Analog	No	Graphic	2/15	20 Hz–20 kHz	Yes	HP; LP	(2) XLR; (2) 1/4"; (2) RCA
A.R.T.	ART 442	Analog	No	Graphic	2/15	20 Hz–20 kHz	Yes	N/A	(2) XLR; (2) 1/4"; (2) RCA
A.R.T.	ART 451	Analog	No	Graphic	1/31	20 Hz–20 kHz	Yes	HP; LP	(2) XLR; (2) 1/4"; (2) RCA
A.R.T.	ART 452	Analog	No	Graphic	1/31	20 Hz–20 kHz	Yes	HP; LP	(2) XLR; (2) 1/4"; (2) RCA
A.R.T.	ART 455	Analog	No	Graphic	2/31	20 Hz–20 kHz	Yes	HP; LP	(2) XLR
A.R.T.	HQ 15	Analog	No	Graphic	2/15	20 Hz–20 kHz; ±0.5 dB	Yes, -3% center accuracy	HP; LP	XLR; 1/4" TRS; RCA
A.R.T.	HQ 31	Analog	No	Graphic	1/31	20 Hz–20 kHz; ±0.5 dB	Yes, -3% center accuracy	HP; LP	XLR; 1/4" TRS; RCA
A.R.T.	HQ-231	Analog	No	Graphic	2/31	20 Hz–20 kHz	Yes	HP; LP	XLR; 1/4"; RCA
Ashly Audio	Protea System II	Digital	Yes	Parametric	4/12	20 Hz–20 kHz	No	Digital state variable 1/25–3.3 octaves	N/A
Behringer	PEQ2200	Analog	No	Parametric/5	2/5	18 Hz–30 kHz	Yes	BP	(2) XLR;
Behringer	Ultra-Q Pro	Analog	No	Parametric/3	2/5	18 Hz–30 kHz	Yes	Bandpass	(2) XLR;
Behringer	Feedback Destroyer Pro DSP1124	Digital	Yes	Parametric 1/60 to 120/60 octaves	2/24	20 Hz–20 kHz	Yes	Parametric	XLR; 1/4" TRS
Behringer	Ultra-Graph Pro GEQ3102	Analog	No	1/3 octave	2/31	10 Hz–30 kHz	Yes/12 dB/octave	No	XLR; (8) 1/4"
Behringer	Ultra-Curve Pro DSP8024	Digital	Yes	Graphic 1/3-octave; 6 parametric feedback filters	2/31	20 Hz–20 kHz	Yes	Graphic and para-metric	XLR; 1/4" TRS
BSS Audio	FCS966	Analog	No	Constant Q/Q = 4	2/30	5 Hz–45 kHz	Yes	HP	XLR; 1/4"; barrier strip
BSS Audio	FDS334	Digital	Yes	Various slopes 0.025 to 3.00 octaves	2/4	20 Hz–16 kHz	Yes	20 Hz–16 kHz	XLRF2
BSS Audio	FDS366	Digital	Yes	Various slopes 0.025 to 3.00 octaves	N/A	20 Hz–16 kHz	Yes	20 Hz–16 kHz	(3) XLR
Carvin	EQ2015	Analog	No	Graphic 2/3 octave	2/15	N/A	Yes	Low-cut sweep/high-cut sweep	(2) XLR; (2) 1/4"
Carvin	EQ2030	Analog	No	Graphic 1/3 octave	2/30	N/A	Yes	Low-cut sweep/high-cut sweep	(2) XLR; (2) 1/4"
Crate	SM3-PE	Analog	No	Parametric 0.05 to 3 octaves	1/3	15 Hz–22 kHz	No	No	1/4" TRS
Crate	LS1-131	Analog	No	Graphic	1/31	20 Hz–20 kHz	Yes	ISO	XLR; 1/4"; RCA
Crate	LS2-215	Analog	No	Graphic	2/15	20 Hz–20 kHz	Yes	Constant	1/4" TRS; XLR; RCA
Crate	LS3-231	Analog	No	Graphic	1/31	20 Hz–20 kHz	Yes	Constant	1/4" TRS; XLR; RCA
D.W. Fearn	VT-4 Vacuum Tube LC Equalizer	Analog	No	LC/5	1/5	N/A	No	HP; LP; shelf, peak	(2) XLR
dbx	131	Analog	No	Graphic	1/31	<10 Hz to >50 kHz	No	No	(2) XLR; (2) 1/4"
dbx	215	Analog	No	Graphic	2/15	<10 Hz to >50 kHz	No	No	(2) XLR; (2) 1/4"
dbx	231	Analog	No	Graphic	2/31	<10 Hz to >50 kHz	No	No	(2) XLR; (2) 1/4"
dbx	1215 Dual 15 Band	Analog	No	Graphic	2/15	N/A	No	No	1/4"; XLR
dbx	1231 Dual 31 Band	Analog	No	Graphic	2/31	20 Hz–20 kHz	No	No	1/4"; XLR

DIGITAL I/O #/TYPE	INPUT/OUTPUT GAIN CONTROL	MAX BOOST/CUT	OPERATING LEVEL	HARD BYPASS	DYNAMIC RANGE	TOTAL HARMONIC DISTORTION	WEIGHT	DIMENSIONS	PRICE
N/A	Y/Y	±12 dB	N/A	No	N/A	0.02%	11.5	19x7.4x3.5	$209
N/A	N/N	N/A	N/A	No	N/A	N/A	N/A	N/A	$131
N/A	Y/Y	±12 dB	N/A	No	N/A	0.03%	72	19.3x9.3x1.76	$179
N/A	Y/Y	±12 dB	N/A	No	N/A	0.03%	72	19.3x9.3x1.76	$279
N/A	N/N	N/A	+4/-10 dB switchable	No	108 dB	0.003%	4	N/A	$299
N/A	Y/Y	±15 dB	+4 dB	Yes	108 dB @ +4 dB	> 0.15% @ +10 dB	3	19x1.75x5.75	$449
N/A	N/N	±12 dB	+4 dB	Yes	130 dB	<-98 dBu, 20 Hz-20 kHz	25	1.5x6x5.25	$1,195
N/A	N/N	±12 dB	+4 dB	Yes	130 dB	< 0.07%	15	1.5x6x5.25	$795
N/A	N/Y	12 dB	N/A	Yes	N/A	0.01%	4.5	19x1.75x8.5	$229
N/A	N/Y	12 dB	N/A	Yes	N/A	0.01%	4.5	19x3.5x8.5	$279
N/A	N/Y	12 dB	N/A	Yes	N/A	0.01%	4.5	19x1.75x8.5	$159
N/A	N/Y	12 dB	N/A	Yes	N/A	0.01%	4.5	19x1.75x8.5	$229
N/A	N/Y	12 dB	N/A	Yes	N/A	0.01%	4.5	19x3.5x8.5	$279
N/A	N/Y	12 dB	N/A	Yes	N/A	0.01%	4.5	19x1.75x8.5	$159
N/A	N/Y	12 dB	N/A	Yes	N/A	0.01%	9	19x3.5x8.5	$389
N/A	N/Y	±12 dB	N/A	Yes	N/A	0.01%	4.5	19x8.5x1.75	$219
N/A	N/Y	±12 dB	N/A	Yes	N/A	0.01%	4.5	19x8.5x3	$259
N/A	N/Y	±12 dB	N/A	Yes	N/A	0.01%	4.5	19x8.5x1.75	$219
N/A	N/Y	±12 dB	N/A	Yes	N/A	0.01%	4.5	19x8.5x3	$259
N/A	N/Y	±12 dB	N/A	Yes	N/A	0.01%	9	19x8.5x3.5	$359
N/A	N/Y	12 dB	N/A	Yes	N/A	0.01%	4.5	19x3.5x8.5	$299
N/A	N/Y	12 dB	N/A	Yes	N/A	0.01%	4.5	19x3.5x8.5	$299
N/A	N/Y	±12 dB	N/A	Yes	N/A	0.01%	4.5	19x8.5x3.5	$349
N/A	Y/Y	+10/-20 dB	+4 dB	No	>110 dBu	< 0.01% @ 1 kHz, +20 dBu	14	19x3.5x8	$1,619
N/A	Y/Y	+1/-15 dB	+4/-10 switchable	Yes	N/A	0.002%	6.6	1.75x8.5x19	$125
N/A	Y/Y	+1/-15 dB	+4/-10 switchable	Yes	N/A	0.002%	6.6	1.75x8.5x19	$125
N/A	Y/Y	+16/-48 dB	-10 dBV/+ 4 dBu	No	104 dB	0.0075%	4.4	19x1.75x7	$159
N/A	Y/Y	Filters: ±15 dB; graphic: ±6 or ±12 dB	N/A	Yes	N/A	0.004% @ 1 kHz, +4 dBu	5.5	19x3.5x5.3	$185
AES/EBU optional	N/N	Graphic: ±16 dB; parametric: +16/-48 dB	+4 dBu	Yes	115 dB	0.004%	11	19x3.5x12	$499
N/A	N/Y	±15 dB	+4 dBu nominal	Yes	>115 dB	<0.005%	6.6	19x5.25x7.1	$1,095
N/A	N/Y	±15 dB	+4 dBu nominal	No	>106 dB	<0.005%	6.2	19x1.75x8	$1,250
(1) XLR; AES/EBU	N/Y	±15 dB	+4 dBu nominal	No	>112 dB	<0.005%	12	19x1.75x11	$3,699
N/A	Y/N	±15 dB	-10/+4 dB	Yes	104 dB	<0.01%	8	19x3.5x6	$170
N/A	Y/N	±15 dB	-10/+4 dB	Yes	104 dB	<0.01%	11	19x5.25x6	$240
N/A	Y/Y	+15 dB/ -30 dB	Variable from +4/-10 dB	Yes	N/A	N/A	1.5	5.6x1.6x5.5	$30
N/A	Y/Y	±6 dB or ±12 dB (switchable)	Variable	Yes	N/A	N/A	4.5	19x1.75x8.5	$200
N/A	Y/Y	±6 dB or ±12 dB (switchable)	Variable	Yes	N/A	N/A	4.5	19x1.75x8.5	$200
N/A	Y/Y	±6 dB or ±12 dB	Variable	Yes	N/A	N/A	9	19x3.50x8.5	$300
N/A	Y/N	±16 dB	+4 dB	No	>90 dB	<0.08%	16	19x5.25x14	$4,400
N/A	Y/N	±6, ±12 dB	+4/-10 dB	Yes	108 dB	<0.004%	4.5	19x1.75x6	$210
N/A	Y/N	±6, ±12 dB	+4/-10 dB	Yes	108 dB	<0.004%	6	19x3.5x6	$210
N/A	Y/N	±6, ±12 dB	+4/-10 dB	Yes	108 dB	<0.004%	6	19x3.5x6	$280
N/A	Y/Y	Yes	+4/-10 dB	Yes	<112 dBu	<0.02% typical @ 1 kHz, +4 dBu	8.5	19x3.5x7.9	$380
N/A	Y/N	Low cut	+4/-10 dB	Yes	115 dB	< 0.005%	10.6	199x5.25x7.9	$520

EQUALIZERS

MANUFACTURER	PRODUCT	ANALOG/DIGITAL	PROGRAMMABLE	TYPE/BANDWIDTH	# OF CHANNELS/ # OF BANDS	FREQUENCY RANGE (PARAMETRIC)	CONSTANT Q	FILTERS	ANALOG I/O #/TYPE
dbx	2031 Single 31 Band	Analog	No	Graphic	1/31	N/A	No	No	1/4"; XLR
dbx	2215 Dual 15 Band	Analog	No	Graphic	2/15	25 Hz–16 kHz	No	No	1/4"; XLR
dbx	2231 Dual 31 Band	Analog	No	Graphic	2/31	N/A	No	No	1/4"; XLR
dbx	IEQ 15	Digital	No	Graphic/15	2/15	10 Hz–22 kHz	Yes	LP; AFS feedback suppress	(2) XLR; (2) 1/4"; (2) Euroblock
dbx	IEQ 31	Digital	No	Graphic/31	2/31	10 Hz–22 kHz	Yes	LP; AFS feedback suppress	(2) XLR; (2) 1/4"; (2) Euroblock
DOD	SR 231QX	Analog	No	1/3 octave	2/31	N/A	Yes	ISO	1/4"
DOD	SR 430QX	Analog	No	2/3 octave	2/15	N/A	Yes	ISO	1/4"
DOD	SR 830QX	Analog	No	2/3 octave	2/15	N/A	Yes	ISO	1/4"
DOD	SR 831QX	Analog	No	1/3 octave	1/31	N/A	Yes	ISO	1/4"
EAR	823	Analog	No	Pultec-type	1/3	20 Hz–20 kHz	Yes/variable	HP; LP	(1) XLR
Focusrite	Red 2 Dual Channel	Analog	No	Parametric; shelving	2/4	5 Hz–200 kHz	Yes	HP; LP	(2) XLR
Great River Electronics	EQ-2NV	Analog	No	Semi-parametric	2/4	N/A	No	HP 12dB/octave	(2) XLR, (2) 1/4" per channel
Langevin	Pultec EQ	Analog	No	High/low	1/2	20 Hz–20 kHz	Yes/variable	No	XLR; 1/4"
Manley Labs	MID EQ	Analog	No	Parametric	1/3	200 Hz–5 kHz	Yes	No	XLR; 1/4"
Manley Labs	EQP1-A Enhanced Pultec EQ	Analog	No	High/low	1/2	20 Hz–20 kHz	No	No	XLR; 1/4"
Manley Labs	Stereo Pultec EQ	Analog	No	Parametric	2/3	20 Hz–20 kHz	No	No	(2) XLR; (2) 1/4"
Manley Labs	Massive Passive	Analog	No	Passive parametric/ 1.5 to 3	2/5	22 Hz–27 kHz	Yes/variable	HP; LP	(2) XLR
Millennia	NSEQ-2	Analog	No	Parametric	2/4	10 Hz–200 kHz	Yes/variable	No	(4) XLR
Nightpro	EQ3D	Analog	No	Dimensional	2/6	10 Hz–125 kHz	No	No	XLR
Peavey	Q1311	Analog	No	Graphic dual 15-band	15/2	20 Hz–20 kHz	Yes	Low-cut	(2) XLR; (2) 1/4"
Peavey	Q2151	Analog	No	Graphic dual 15-band	15/2	20 Hz–20 kHz	Yes	Low-cut	(2) XLR; (2) 1/4"
Peavey	QF131	Analog	No	Graphic 1/3 octave	1/31	N/A	Yes	No	XLR; 1/4"
Peavey	QF215	Analog	No	Graphic 2/3 octave	2/15	N/A	Yes	No	XLR; 1/4" TRS
PreSonus	DEQ 624	Digital	Yes	Graphic 1/3 octave	2/31	N/A	Yes	HP; LP	XLR; 1/4" TRS; barrier strip
Rane	PE 15	Analog	No	Parametric	1/5	20–300 Hz; 60 Hz–1 kHz; 150–2.5 kHz; 450–8 kHz; 1–20 kHz	No	Low shelf	XLR; 1/4" TRS
Rane	PE 17	Analog	No	Parametric	1/5	20 Hz–20 kHz	No	High- and low-cut	XLR; 1/4" TRS
Rane	ME 15B	Analog	No	Graphic	2/15	N/A	Yes	No	XLR; 1/4" TRS
Rane	ME 30B	Analog	No	Graphic	1/30	N/A	Yes	No	XLR; 1/4" TRS
Rane	ME 60	Analog	No	Graphic	2/30	N/A	Yes	High- and low-cut	XLR; 1/4" TRS; RCA
Rane	GE 30 1/3 oct	Analog	No	Graphic	1/30	N/A	Yes	High- and low-cut	XLR; screw term
Rane	GE 60	Analog	No	Graphic	2/30	N/A	Yes	High- and low-cut	XLR; 1/4"TRS; screw term
Rane	DEQ 60	Digital w/analog controls	No	Graphic/30	2/30	N/A	Perfect/proportional	HP; LP	XLR; TRS; Euroblock
Rane	DEQ 60L	Digital w/analog controls	No	Graphic/30	2/30	N/A	Perfect/proportional	HP; LP	XLR; TRS; Euroblock
Raven Labs	True Blue EQ	Analog	No	Semi-parametric	1/5	30 Hz–10 kHz	Yes	No	(4) 1/4" TRS
Sabine	GRAPHI-Q GRQ3101 comp/lim	Digital	Yes	Multigraphic: 1/3 oct ISO; para: 12 fltrs	1/31	20 Hz–20 kHz	Yes	HP; LP	(3) XLR; (2) 1/4"
Sabine	GRAPHI-Q GRQ3102 comp/lim	Digital	Yes	Multigraphic: 1/3 oct ISO; para: 12 fltrs	2/31	20 Hz–20 kHz	Yes	HP; LP	(4) XLR; 1/4" TRS
Sabine	Power-Q ADF4000 comp/lim RTA	Digital	Yes	Multigraphic: 1/3 oct ISO; para: 12 fltrs	1/31	20 Hz–20 kHz	Yes	HP; LP	(3) XLR; (3) 1/4" TRS
Sabine	Real-Q2 comp/lim RTA	Digital	Yes	Multigraphic: 1/3 oct ISO	1/31	20 Hz–20 kHz	Yes	HP; LP	(3) XLR; (3) 1/4" TRS
Samson	S-Curve 131	Analog	No	Graphic 1/3 octave	1/31	N/A	Yes	Parallel	XLR; 1/4"TRS
Samson	S-Curve 215	Analog	No	Graphic 2/3 octave	2/15	N/A	Yes	Parallel	XLR; 1/4"TRS
Samson	S-Curve 231	Analog	No	Graphic 1/3 octave	2/31	N/A	Yes	Parallel	XLR; 1/4"TRS
Speck Electronics	Model ASC	Analog	No	Q: 0.5–4	1/4	20 Hz–25 kHz	No	LF shelf	(2) XLR; (2) 1/4" TRS
Speck Electronics	Model ASC-T	Analog	No	Q: 0.5–4	1/4	20 Hz–25 kHz	No	LF shelf	(2) XLR; (2) 1/4" TRS
SPL	Classic Vitalizer	Analog	No	Enhancer	2/3	20 Hz–50 kHz	No	No	(4) XLR; 1/4" TRS
SPL	Stereo Vitalizer MK2	Analog	No	Enhancer	2/3	10 Hz–100 kHz	No	No	(4) XLR; (4) 1/4"
SPL	Stereo Vitalizer MK2-T	Analog	No	Tube Enhancer	2/3	20 Hz–100 kHz	No	No	(4) XLR; (4) 1/4"

DIGITAL I/O # / TYPE	INPUT / OUTPUT GAIN CONTROL	MAX BOOST / CUT	OPERATING LEVEL	HARD BYPASS	DYNAMIC RANGE	TOTAL HARMONIC DISTORTION	WEIGHT	DIMENSIONS	PRICE
N/A	Y/N	Low cut	+4/-10 dB	Yes	>108 dBu	<0.02% typical @ 1 kHz, +4 dBu	8.5	19x3.5x7.9	$550
N/A	Y/N	Low cut	+4/-10 dB	Yes	>112 dBu	< 0.02% typical @ 1 kHz, +4 dBu	8.5	19x3.5x7.9	$600
N/A	Y/N	Low cut	+4/-10 dB	Yes	>108 dBu	< 0.02% typical @ 1 kHz, +4 dBu	N/A	19x5.25x7.9	$750
N/A	Y/Y	±6, ±15 dB	+4/-10 dB	Yes	>118 dB	<0.005%	9	19x5.25x7.9	$499
N/A	Y/Y	±6, ±15 dB	+4/-10 dB	Yes	>118 dB	<0.005%	11	19x5.25x7.9	$599
N/A	Y/Y	±12 dB	+4/-10 dB	Yes	N/A	0.004%	N/A	19xx3.5x6	$300
N/A	Y/Y	±12 dB	+4/-10 dB	Yes	N/A	0.004%	N/A	19x1.75x6	$220
N/A	Y/Y	±12 dB	+4/-10 dB	Yes	N/A	0.004%	N/A	19x1.75x6	$220
N/A	Y/Y	±12 dB	+4/-10 dB	Yes	N/A	0.004%	N/A	19x3.75x6	$220
N/A	N/N	0/+18 dB	+4 dB	Yes	N/A	0.2%	22	19x3.5x8	$3,220
N/A	Y/Y	±18 dB	+4 dB	Yes	110 dB	0.002%	N/A	N/A	$3,295
N/A	Y/N	±15 dB	In -20/+4 dBm; out -10/+4 dBm	No	125 dB	.01	14	19x1.75x10	$3,595
N/A	Y/Y	±10 dB (+17 HF boost)	+4/-10 dB	Yes	127 dB	< 0.04%	11	19x1.75x10	$1,275
N/A	N/N	±10 dB	+4 dB	Yes	116 dB	<0.04%	12	19x1.75x10	$1,750
N/A	Y/Y	±10 dB to ±17 dB	+4/-10 dB	Yes	130 dB	< 0.04%	11	19x1.75x10	$2,150
N/A	N/N	±17 dB	+4 dB	Yes	116 dB	<0.04%	16	19x3.5x10	$3,300
N/A	Y/Y	±20 dB	-10 or +4 dB	Yes	120 dB	<0.06%	127	19x5.25x10	$4,800
N/A	N/N	±20 dB	+29 dBu	Yes	115 dB	0.002%	27	19x12x3.5	$3,500
N/A	N/N	N/A	N/A	No	N/A	0.005%	7	19x1.75x7.5	$1,050
N/A	N/Y	±12 dB	+4 dB	Yes	N/A	0.002%	8	1.75x19x9.25	$220
N/A	N/Y	±12 dB	+4 dB	Yes	N/A	0.002%	8	1.75x19x9.25	$220
N/A	N/Y	+12/-18 dB	+4/-10 dB	Yes	N/A	0.002%	7.8	19x7.37x3.5	$350
N/A	N/Y	+12/-18 dB	+4/-10 dB	Yes	N/A	0.002%	7.8	19x7.37x3.5	$350
N/A	N/Y	+12/-24 dB	+4 dB	Yes	N/A	0.005%	14	19x3.5x9	$799
N/A	Y/N	+15/-20 dB	+4 dB	Yes	>108 dB	0.01%	5	19x1.75x5.3	$399
N/A	Y/Y	+12 dB/-15 dB	+4 dB	Yes	>117 dB	0.001%	5	19x1.7x5.3	$549
N/A	Y/N	±12 dB	+4 dB	Yes	>107 dB	0.002%	5	19x1.75x5.25	$439
N/A	Y/N	±12 dB	+4 dB	Yes	>107 dB	0.002%	5	19x1.75x5.25	$429
N/A	Y/N	±12 dB	+4 dB	Yes	>107 dB	0.002%	9	19x3.5x8.5	$699
N/A	Y/N	±12 dB/-20 dB	+4 dB	Yes	>111 dB	0.0015%	7	19x3.5x8.5	$799
N/A	Y/N	±12 dB	+4 dB	Yes	>108 dB	0.002%	11	19x5.25x8.5	$899
N/A	Y/Y	±12 dB	+4 dB	Yes	>106 dB	0.02%	7.3	19x5.25x3.5	$999
N/A	Y/Y	+12dB	+4 dB	Yes	>106 dB	0.02%	11	19x5.25x5.25	$1,099
N/A	N/N	±15 dB	6v RMS	Yes	N/A	0.005%	3	2.25x6x6.7	$349
RS 232 serial	Y/Y	Graphic: ±6 or ±12 dB; parametric: +12/-84 dB	+29 dB	Yes	>110 dB	< 0.01% @ 1 kHz, +22 dBv	9	19x1.75x9.5	$700 and up
RS 232 serial	Y/Y	Graphic: ±6 or ±12 dB; parametric: +12/84 dB	+29 dB	Yes	>110 dB	< 0.01% @ 1 kHz	9	19x3.5x9.5	$1,099 and up
RS 232 serial	Y/Y	Graphic: ±6 or ±12 dB; parametric: +12/-84 dB	+29 dB	Yes	>110 dB	< 0.01% @ 1 kHz, +22 dBv	9	19x3.5x9.5	$1,799
RS 232 serial	Y/Y	Graphic: ±15 dB	+29 dB	Yes	>110 dB	< 0.02% @ 1 kHz, +22 dBv	9	19x3.5x9.5	$2,000
N/A	Y/Y	±12 dB	+4 dB	Yes	N/A	N/A	4.95	19x1.75x7.5	$200
N/A	Y/Y	±12 dB	+4 dB	Yes	N/A	N/A	4.95	19x1.75x7.5	$200
N/A	Y/Y	±12 dB	+4 dB	Yes	N/A	N/A	9.9	19x3.5x7.5	$290
N/A	Y/Y	±15 dB/band	4 dBu/28 dBu	Yes	>120 dB	0.0014% @ 24 dBu	5	1/2 rack	$645
N/A	Y/Y	±15 dB/band	4 dBu/28 dBu	Yes	>120 dB	0.0014% @ 24 dBu	5	1/2 rack	$749
N/A	Y/N	±20 dB	+6 dB	Yes	110 dB	0.002%	7.5	19x1.7x9.3	$799
N/A	Y/N	N/A	+6 dB	Yes	110 dB	0.002%	7.5	19x9.3x1.7	$699
N/A	Y/N	N/A	+6 dB	Yes	110 dB	0.01855%	7.5	19x9.3x1.7	$999

EQUALIZERS

MANUFACTURER	PRODUCT	ANALOG/DIGITAL	PROGRAMMABLE	TYPE/BANDWIDTH	# OF CHANNELS/ # OF BANDS	FREQUENCY RANGE (PARAMETRIC)	CONSTANT Q	FILTERS	ANALOG I/O #/TYPE
SPL	Qure	Analog	No	Parametric 3-band w/tubes and LC	2/3	10 Hz–100 kHz	No	HP; LP	(4) XLR; 1/4" TRS
SPL	Tube Vitalizer	Analog	No	Tube enhancer w/comp/lim	2/3	10 Hz–100 kHz	No	N/A	(4) XLR; (4) 1/4"
Studiomaster	SEQ 311	Analog	No	Graphic	1/31	20 Hz–20 kHz	No	Butterworth	XLR; 1/4" TRS
Studiomaster	SEQ 152	Analog	No	Graphic	2/15	20 Hz–20 kHz	Yes	Butterworth	XLR; 1/4" TRS
Summit Audio	EQP-200B	Analog	No	Program EQ	2/0	5 Hz–100 kHz	No	HP	(4) XLR
Summit Audio	EQF-100	Analog	No	4-band parametric	1/4	33 Hz–15 kHz	Yes/variable	HP; LP	XLR
Summit Audio	EQ-200	Neve Analog/ digital control	Yes	4-band parametric	2/4	30 Hz–20 kHz	Yes/variable	HP; LP	(2) XLR
Tapco	Tweeq T-231	Analog	No	Graphic 1/3 octave	2/31	20 Hz–20 kHz	Yes	HP; LP	XLR; 1/4"
TL Audio	5013	Analog	No	Parametric/Q range 0.5-5	2/4	30 Hz–20 kHz	No	No	(4) XLR; 1/4"
TL Audio	EQ-1	Analog	No	Switchable frequency/4	2/4	60 Hz–12 kHz	Yes	No	(2) XLR; 1/4"
TL Audio	EQ-2	Analog	No	Parametric	2/4	30 Hz–20 kHz	Yes/variable 0.5–5	High- and low-cut	XLR; 1/4" TRS
Tube Tech	ME-1B	Analog	No	Midrange EQ	1-ch	5 Hz–40 kHz	No	No	XLR
Tube Tech	PE-1C	Analog	No	N/A	1/3	5 Hz to 40 kHz	No	No	(2) XLR
Wunder Audio	PEQ1	Analog	No	Parametric 2/3 octave	1/3	20 Hz–20 kHz	Yes	No	18-way amphenol
Wunder Audio	PEQ1R	Analog	No	Parametric 2/3 octave	1/3	20 Hz–20 kHz	Yes	No	(3) XLR; (1) 1/4"
XTA	GQ600	Analog	No	Graphic 1/3 octave	2/30	N/A	No	No	2
XTA	E2 Digital Parametric	Digital	Yes	Parametric; variable	2/4	20 Hz–20 kHz	Yes/variable	HP; LP	XLR
XTA	DP202	Digital	Yes	Parametric: 1/32-2 octave	2/8+	20 Hz–20 kHz	Yes/variable	HP; LP	XLR
Yamaha	GQ 1031C	Analog	No	Graphic 1/3 octave	1/31	N/A	Yes	HP	XLR; 1/4"
Yamaha	GQ 2015A	Analog	No	Graphic 2/3 octave	2/15	N/A	Yes	HP	(2) XLR; (2) 1/4"
Yamaha	Q2031B	Analog	No	Graphic 1/3 octave	2/31	N/A	Yes	HP	(2) XLR; (2) 1/4"
Z-Systems	Z-Qualizer	Digital	Yes	Parametric; shelving	2/6	20 Hz–20 kHz	Yes	No	N/A

KEYBOARD SYNTHESIZERS & SAMPLERS

MANUFACTURER	MODEL	POLYPHONY/ MULTITIMBRAL PARTS	WAVEFORM MEMORY ROM/RAM	FILTER TYPES/ RESONANCE	SINGLE PROGRAMS ROM/RAM	MULTITIMBRAL PERFORMANCES ROM/RAM	PORTAMENTO	GM/GS/XG COMPATIBLE	BUILT-IN COMPUTER INTERFACE/TYPE	DISK DRIVE/TYPE	# OF KEYS	# OF KEYBOARD ZONES	LEFT HAND CONTROLLERS
Access	Virus Indigo 2	32	N/A	LP; HP; BP; BS/Y	768/256	128	Yes	N/N/N	N/A	N/A	37	16	Pitch; mod wheel
Access	Virus KC	32	N/A	LP; HP; BP; BS/Y	768/256	128	Yes	N/N/N	N/A	N/A	61	16	Pitch; mod wheel
Alesis	QS6.2	64/16	16/0 MB	LP/N	512/128	400/100	Yes	Y/N/N	N/A	N/A	61	16	Pitch; mod wheel
Alesis	QS8.2	64/16	16/0 MB	Y/N	512/128	400/100	Yes	Y/N/N	N/A	N/A	88	16	Pitch; mod wheel
Alesis	Ion	8/8	16/0 MB	16/Y	512/128	4	Yes	Y/N/N	N/A	N/A	49	16	Pitch; (2) mod
Alesis	Andromeda	16/16	N/A	4-pole/2-pole multimode/Y	256/128	128/128	Yes	N/N/N	N/A	N/A	61	16	(2) wheel; (1) ribbon

DIGITAL I/O #/TYPE	INPUT/OUTPUT GAIN CONTROL	MAX BOOST/CUT	OPERATING LEVEL	HARD BYPASS	DYNAMIC RANGE	TOTAL HARMONIC DISTORTION	WEIGHT	DIMENSIONS	PRICE
N/A	Y/Y	±15 dB; MF +15/-30 dB	+6 dB	Yes	119 dB	0.018%	10.8	19x3.5x9.7	$1,949
N/A	Y/Y	N/A	+6 dB	Yes	119 dB	0.002%	10.8	19x3.5x9.3	$2,899
N/A	Y/N	±15 dB	-10/+4 dB	Yes	110 dB	> 0.1%	10	19x3.5x10	$329
N/A	Y/N	±15 dB	-10/+4 dB	Yes	110 dB	> 0.1%	10	19x3.5x10	$349
N/A	N/N	±20 dB	+4 dB	Yes	105 dB	0.05%	19	19x3.5x10	$2,500
N/A	N/N	± 10 dB	+4 dB	Yes	N/A	0.05% @ 1 kHz	17	2U	$3,450
N/A	Y/N	± 16 dB	+4 dB	Yes	N/A	<0.003% 20 Hz-20 kHz	27	2U	$4,500
N/A	Y/Y	N/A	N/A	Yes	±6 dB or ±12 dB	0.02%	9.5	3.5x19.0x8.7	$209
S/PDIF (optional)	Y/Y	±15 dB	+4/-10 dB	Yes	106 dB	0.05%	13	19x3.5x7.9	$749
N/A	Y/N	±12 dB	+4/-10 dB	Yes	105 dB	0.02%	15.5	19x8x3.5	$1,599
N/A	Y/Y	±15 dB	-10/+4 dB	No	100 dB	0.05%	N/A	19x5.25x10	$2,499
N/A	N/N	N/A	+4	Yes	N/A	0.15%	8.4	19x3.5x6.7	$2,045
N/A	N/N	N/A	+4 dB	Yes	N/A	0.15%	8.8	5.2x19x6.7	$2,095
N/A	Y/Y	±21 dB	+4 dB	Yes	N/A	< .01%	5	8.75x1.75x12	$2,250
N/A	Y/Y	±21 dB	+4 dB	Yes	N/A	<.01%	8	19x1.75x12	$2,250
N/A	Y/Y	±10 dB	+23 dB	Yes	117 dB	0.01%	14	19x5.25x9.3	$1,650
AES/EBU (optional)	Y/Y	-25/+15 dB	+4 dB	Yes	>110 dB	0.02%	8	19x11.8x1.75	$1,795
AES/EBU	Y/Y	-25/+155 dB	+4 dB	No	105 dB	0.02%	8	19x1.75x11.8	$2,475
N/A	Y/N	±12 dB	+4 dB	Yes	94 dB	0.05%	6	19x9x1.75	$415
N/A	Y/N	±12 dB	+4 dB	Yes	96 dB	0.05%	6.5	19x9x1.75	$449
N/A	Y/N	±12 dB	+4 dB	Yes	94 dB	>0.05%	9	19x9x3.5	$769
AES/EBU	Y/Y	N/A	0 dB	Yes	>135 dB	0.00001%	N/A	N/A	$1,250

AFTERTOUCH (POLY/CHANNEL)	# AND TYPE OF CONTROLLER INPUTS	# OF SEQUENCER TRACKS/PPQN	SEQUENCER/MEMORY (NOTES)	TYPES OF QUANTIZATION	ARPEGGIATOR	# OF EFFECTS PROCESSORS/EFFECTS PROGRAMS	# OF OUTPUT/TYPE	SPECIAL FEATURES	OPTIONS	PRICE
Y/Y	(1) vol. pedal; (1) sustain pedal	N/A	N/A	N/A	Yes	98	6	Blue LEDs; aluminum side panels		$2,595
Y/Y	(1) vol. pedal; (1) sustain pedal	N/A	N/A	N/A	Yes	98	6			$2,595
Y/Y	(1) pedal; (4) slider	N/A	N/A	N/A	No	1/20	(2) 1/4"	Sound Bridge software allows user to create their own soundcards	Q Card sound ROM expansion	$899
Y/Y	(1) pedal; (4) slider	N/A	N/A	N/A	No	1/20	(2) 1/4"	Sound Bridge software allows the user to create their own soundcards	Q Card sound ROM expansion	$1,499
Y/Y	(1) pedal	N/A	N/A	N/A	Yes	512	(4) analog TRS	500 M.I.P.S. sound engine; 3 oscillators; continuously variable wave shapes		$999
Y/Y	(2) switch; 1 pedal up to 16 steps	1/16	16	N/A	Yes	2/28	(4) 1/4" bal mains + aux/ 16 indiv outs	16 voices of real analog; 72 knobs; 144 buttons	DCMCIA card slot	$3,499

KEYBOARD SYNTHESIZERS & SAMPLERS

MANUFACTURER	MODEL	POLYPHONY / MULTITIMBRAL PARTS	WAVEFORM MEMORY ROM / RAM	FILTER TYPES / RESONANCE	SINGLE PROGRAMS ROM / RAM	MULTITIMBRAL PERFORMANCES ROM / RAM	PORTAMENTO	GM / GS / XG COMPATIBLE	BUILT-IN COMPUTER INTERFACE / TYPE	DISK DRIVE / TYPE	# OF KEYS	# OF KEYBOARD ZONES	LEFT HAND CONTROLLERS
Analogue Solutions	Black Coffee Mono-Synthesizer	1/1	2/0 MB	LP/Y	N/A	N/A	Yes	N/N/N	N/A	N/A	0	0	0
Clavia DMI	Nord Lead2x	16/4	N/A	BP; HP; LP/Y	0/1,024	0/300	Yes	N/N/N	N/A	N/A	49	2	Pitch stick; mod wheel
Clavia DMI	Nord Lead3	24/4	N/A	LP; BP; HP; Notch; dual; classic/Y	0/1,024	0/128	Yes	N/N/N	N/A	N/A	49	2	Pitch stick; mod wheel
Clavia DMI	Nord Electro V.2 61 Key	146/1	0/32 MB	LP/N	0/40	N/A	No	N/N/N	Yes/USB	N/A	61	2	N/A
Clavia DMI	Nord Electro V.2 73 Key	146/1	0/32 MB	LP/N	0/40	N/A	No	N/N/N	Yes/USB	N/A	73	2	N/A
Clavia DMI	Nord Modular G2	16/4	4 MB	15/Y	0/500	200	Yes	N/N/N	Yes/USB	N/A	37	0	Pitch stick; mod wheel
Clavia DMI	Nord Modular G2X	48/4	8 MB	15+/Y	1,024	200	Yes	N/N/N	Yes/USB	N/A	61	4	(3) wheel; (1) pitch
Generalmusic	Genesys Pro	64/32	64/16 all flash	LP/HP/BP/Y	1,300/800	256/256/128 RAM	No	Y/Y/N	Yes/SCSI optional	Floppy; HD; CD-RW	61	32	Pitch/mod
Korg	Microkorg	4/4	N/A	24 dB LP; 12 dB LP, BP, HP	0/128	Layered patches	Yes	N/N/N	N/A	N/A	37	2	Pitch bend; mod wheel
Korg	MS2000B	4/1	N/A	24 dB LP; 12 dB LP; BP; HP/Y	0/128	Dual/split	Yes	N/N/N	N/A	N/A	44	2	Pitch bend; mod wheel; knobs
Korg	PA50	62/62	32/0 MB	24 dB LP/Y; 12 dB LP+HP/N	0/660	0/464	Yes	Y/N/N	N/A	3.5	61	4	Joystick; assignable slider
Korg	PA80	62/16	32/0 MB	24 dB LP/Y; 12 dB LP+HP/N	0/660	0/304	Yes	Y/N/N	Yes/serial PCI/F	3.5	61	4	Joystick; assignable slider
Korg	Karma	62/16	32 MB	24 dB LP/Y; 12 dB LP+HP/N	0/640	0/512	Yes	Y/N/N	N/A	3.5	61	16	(2) switch; X/Y joystick; (4) assignable/fixed knob
Korg	Triton LE	62/16	32/0 MB	24 dB LP/Y; 12 dB LP+HP/N	0/512	0/384	Yes	Y/N/N	Optional SCSI	SmartMedia	61	16	Joystick; (2) switches; (4) knob
Korg	Triton LE 76	62/16	32/0 MB	24 dB LP/Y; 12 dB LP+HP/N	0/512	0/384	Yes	Y/N/N	Optional SCSI	SmartMedia	76	16	Joystick; (2) switches; (4) knob
Korg	Triton LE 88	62/16	48/0 MB	24 dB LP/Y; 12 dB LP+HP/N	0/512	0/384	Yes	Y/N/N	Optional SCSI	SmartMedia	88	16	Joystick; (2) switches; (4) knob
Korg	Triton Extreme	120/16	160/16 (96) MB	24 dB LP/Y; 12 dB LP+HP/N	0/1,344 of 1,536	0/1,280 of 1,536	Yes	Y/N/N	Yes/USB-A; USB-B	CompactFlash	61	16	Joystick; (2) switches; (4) knob; ribbon; slider
Korg	Triton Extreme 76	120/16	160/16 (96) MB	24 dB LP/Y; 12 dB LP+HP/N	0/1,344 of 1,536	0/1,280 of 1,536	Yes	Y/N/N	Yes/USB master+ slave	Compact Flash	76	16	Joystick; (2) switches; (4) knob; ribbon; slider
Korg	Triton Extreme 88	120/16	160/16 (96) MB	24 dB LP/Y; 12 dB LP+HP/N	0/1,344 of 1,536	0/1,280 of 1,536	Yes	Y/N/N	Yes/USB master+ slave	CompactFlash	88	16	Joystick; (2) switches; (4) knob; ribbon; slider
Korg	Triton Studio	120/16	48 (112)/16 (96) MB	24 dB LP/Y; 12 dB LP+HP/N	0/512 of 1,536	0/512 of 1,536	Yes	Y/N/N	Yes/SCSI	HD; CD-RW; 3.5 floppy	61	16	Joystick; (2) switches; (4) knob; ribbon; slider
Korg	Triton Studio 76	120/16	48 (112)/16 (96) MB	24 dB LP/Y; 12 dB LP+HP/N	0/512 of 1,536	0/512 of 1,536	Yes	Y/N/N	Yes/SCSI	HD; CD-RW; 3.5 floppy	76	16	Joystick; (2) switches; (4) knob; ribbon; slider
Korg	Triton Studio 88	120/16	48 (112)/16 (96) MB	24 dB LP/Y; 12 dB LP+HP/N	0/512 of 1,536	0/512 of 1,536	Yes	Y/N/N	Yes/SCSI	HD; CD-RW; 3.5 floppy	88	16	Joystick; (2) switches; (4) knob; ribbon; slider
Korg	Pa1X	62/40	RAM:16, expand to 32 MB	24 dB LP/Y; 12 dB LP+HP/N	870/256	0/320	Yes	Y/N/N	Yes/USB (file sharing)	3.5 floppy; optional internal HD	61	4	Joystick; (8) assignable slider (x2); (4) switch
Korg	Pa1XPro	62/40	RAM:16, expand to 32 MB	24 dB LP/Y; 12 dB LP+HP/N	870/256	0/320	Yes	Y/N/N	Yes/USB (file sharing)	Internal HD/3.5 floppy	76	4	Joystick; (8) assignable slider (x2); (4) switch
Kurzweil	PC1x	64/16	16/0 MB	LP; HP; BP; notch/Y	400/128	64/128	Yes	Y/N/N	N/A	N/A	88	4	(2) wheel; (4) knob; (5) button
Kurzweil	PC2	64/16	16/0 MB	LP; HP; BP; notch/Y	400/128	64/128	Yes	Y/N/N	N/A	N/A	76	4	(2) wheel; (4) slider; (5) button
Kurzweil	PC2X	64/16	16/0 MB	LP; HP; BP; notch/Y	400/128	64/128	Yes	Y/N/N	N/A	N/A	88	4	(2) wheel; (4) slider; (5) button

AFTERTOUCH (POLY/CHANNEL)	# AND TYPE OF CONTROLLER INPUTS	# OF SEQUENCER TRACKS/PPQN	SEQUENCER/MEMORY (NOTES)	TYPES OF QUANTIZATION	ARPEGGIATOR	# OF EFFECTS PROCESSORS/EFFECTS PROGRAMS	# OF OUTPUT/TYPE	SPECIAL FEATURES	OPTIONS	PRICE
N/N	(1) pedal	N/A	N/A	N/A	No	N/A	(2) 1/4"	Discrete component analog monosynth; small, portable, Moog-style filter	Pedal; silver finish	$399
N/N	(1 each) switch; exp. pedal	N/A	N/A	N/A	Yes	N/A	(4) 1/4"	Analog modeling synth - no waveforms		$1,499
N/Y	(2) pedal	N/A	N/A	N/A	Yes	N/A	(4) 1/4"	Subtractive synth w/4-operator FM synth		$2,399
N/N	(3) pedal	N/A	N/A	N/A	No	1/12	(2) 1/4"	Modeled B-3; sampled elec pianos; USB port to update sounds		$1,799
N/N	(3) pedal	N/A	N/A	N/A	No	1/12	(2) 1/4"	Modeled B-3; sampled elec pianos; USB port to update sounds		$2,199
N/Y	(2) pedal	Step sequencer	N/A	N/A	Yes	4/40	(4) 1/4"	Editor for computer; 100+ synth building blocks; 4 audio ins 2/XLR; mic preamp		$2,299
Y/Y	(2) switch (1) pedal	Step sequencer/16	Patch dependent	All	Yes	4/150	(4) 1/4"	Editor for computer; 150+ synth building blocks; 4 audio ins; mic preamp; 5 LCD's	Included gooseneck microphone	$2,599
Y/Y	(4) pedal	32/192	250,000	12	No	4/57/+3	(4) 1/4"	CDR, MP3 player	SCSI	$4,497
N/N	N/A	N/A	N/A	N/A	Yes	2/6	(2) 1/4"	Live knobs; gooseneck mic; vocoder; formant freeze/shift; DW-8000 waves	microKASE: padded bag and shoulder harness	$500
N/N	Pedal; switch	3 motion sequences	16 steps	4; 4T; 8; 8T; 16; 16T/swing (Arp)	Yes	2	(2) 1/4"	Live front panel; gooseneck mic; odd/even stack mode; vocoder; motion sequencer	PS1 footswitch; EXP2 foot pedal	$1,150
N/N	(1) damper; (1) assignable pedal/switch	16/192	50,000	32; 16-4 with triplets/swing	No	4/89	(2) 1/4"	Dual sequencer with crossfader; audio ins; stereo coax speakers; 304 arranger styles	DS-1H damper/EXP2 assignable pedal/PS-1 assignable footswitch	$1,250
N/Y	Damper; assign switch/pedal; 5-switch pedal	32/192	50,000	32; 16-4 with triplets/swing	No	4/90	(4) 1/4"	Dual sequencer w/ crossfader; audio ins w/trim; biamped speaker system; sampling	Vocal/guitar effects; Video Lyric out; HD; drums PCM; Turkish PCM	$2,700
N/Y	Damper; assign switch/pedal	16/192	200,000	Hi; 32; 32T; 16; 16T; 8; 8T; 4; 4T	No	8/102	(4) 1/4"	KARMA random/interactive feature w/variable performance modeler; chord trigger pads	MOSS (6-voice physical modeling); takes 2 Korg PCM boards	$2,250
N/Y	(1) assign pedal; (1) assign FS; (1) damper	16/192	200,000	4-32 with triplets/swing	Yes	2/1 insert	(4) 1/4"	Dual arps, RPPR pattern recording/playback; audition riffs; song templates	Sampling board with 16 MB RAM and SCSI port	$1,600
N/Y	(1) assign pedal; (1) assign FS; (1) damper	16/192	200,000	4-32 with triplets/swing	Yes	2/1 insert	(4) 1/4"	Dual arps, RPPR pattern recording/playback; audition riffs; song templates	Sampling board with 16 MB RAM and SCSI port	$1,800
N/Y	(1) assign pedal; (1) assign FS; (1) damper	16/192	200,000	4-32 with triplets/swing	Yes	2/1 insert	(4) 1/4"	Dual arps, RPPR pattern recording/playback; audition riffs; song templates	Sampling board with 16 MB RAM and SCSI port	$2,399
N/Y	(1) assign pedal; (1) assign FS; (1) damper	16/192	200,000	4-32 with triplets/swing	Yes	2/5 insert	(6) 1/4"; S/PDIF optical	Valve Force tube effect; TouchView; sample-to-seq; song templates; 2 arps; CD burning	MOSS (6-voice Z1 based physical modeling synth); sample RAM	$2,800
N/Y	(1) assign pedal; (1) assign FS; (1) damper	16 /192	200,000	4-32 with triplets/swing	Yes	2/5 insert	(6) 1/4"; S/PDIF optical	Valve Force tube effect; TouchView; sample-to-seq; song templates; 2 arps; CD burning	MOSS (6-voice Z1 based physical modeling synth); sample RAM	$3,150
N/Y	(1) assign pedal; (1) assign FS; (1) damper	16/192	200,000	4-32 with triplets/swing	Yes	2/5 insert	(6) 1/4"; S/PDIF optical	Valve Force tube effect; TouchView; sample-to-seq; song templates; 2 arps; CD burning	MOSS (6-voice Z1 based physical modeling synth); sample RAM	$3,600
N/Y	(1) assign pedal; (1) assign FS; (1) damper	16 MIDI; 2 audio/192	200,000	4-32 with triplets/swing	Yes	2/5 insert	(6) 1/4"; S/PDIF optical	TouchView; sample-to-seq; 2 HD audio seq tracks; time slice; AKAI loading; RPPR	MOSS (6-voice physical modeling); takes 7 PCM expansions; ADAT out	$3,400
N/Y	(1) assign pedal; (1) assign FS; (1) damper	16 MIDI; 2 audio/192	200,000	4-32 with triplets/swing	Yes	2/5 insert	(6) 1/4"; S/PDIF optical	TouchView; sample-to-seq; 2 HD audio seq tracks; time slice; AKAI loading; RPPR	MOSS (6-voice physical modeling); takes 7 PCM expansions; ADAT out	$3,800
N/Y	(1) assign pedal; (1) assign FS; (1) damper	16 MIDI; 2 audio/192	200,000	4-32 with triplets/swing	Yes	2/5 insert	(6) 1/4"; S/PDIF optical	TouchView; sample-to-seq; 2 HD audio seq tracks; time slice; AKAI loading; RPPR	MOSS (6-voice physical modeling); takes 7 PCM expansions; ADAT out	$4,200
N/Y	Damper; assign. pedal/switch; 5-switch pedal	32/192	200,000	32; 16-4 with triplets/groove	No	5	(4)1/4"	Biamp speakers; TouchView; dual seq w/X-fader; 450+ styles; twin MIDI ports; sampling	HD; MP3; CD-RW; PCM; Video Lyric; Helicon modeling/pitch correct	$4,300
N/Y	Damper; assign. pedal/switch; 5-switch pedal	32/192	200,000	32; 16-4 with triplets/groove	No	5	(4) 1/4"	TouchView; dual seq w/X-fader; 450+ styles; songbook; RX tech; MIDI ports; sampling	MP3; CD-RW; PCM; Video Lyric out; Helicon modeling/pitch correct	$4,500
N/Y	(3) switch pedal; (2) CC pedal; breath; ribbon	N/A	N/A	N/A	Yes	2/172	(2) 1/4"	Stereo grand piano; tone wheel organ mode; Flash ROM upgradeable OS	Vintage keyboard expansion card; music rack; 3-zone ribbon	$1,495
N/Y	(3) switch pedal; (2) CC pedal; breath; ribbon	N/A	N/A	N/A	Yes	2/172	(2) 1/4" TRS; AES/EBU; S/PDIF; RCA; headphone	Stereo grand piano; tone wheel organ mode; Flash ROM upgradeable OS	Polyphony/orchestral/GM/ vintage keyboard expansion card	$2,330
N/Y	(3) switch pedal; (2) CC pedal; breath; ribbon	N/A	N/A	N/A	Yes	2/172	(2) 1/4"	Stereo grand piano; tone wheel organ mode; Flash ROM upgradeable OS	Polyphony/orchestral/GM/ vintage keyboard expansion card	$2,730

KEYBOARD SYNTHESIZERS & SAMPLERS

MANUFACTURER	MODEL	POLYPHONY / MULTITIMBRAL PARTS	WAVEFORM MEMORY ROM / RAM	FILTER TYPES / RESONANCE	SINGLE PROGRAMS ROM / RAM	MULTITIMBRAL PERFORMANCES ROM / RAM	PORTAMENTO	GM / GS / XG COMPATIBLE	BUILT-IN COMPUTER INTERFACE / TYPE	DISK DRIVE / TYPE	# OF KEYS	# OF KEYBOARD ZONES	LEFT HAND CONTROLLERS
Kurzweil	K2661	48/16	8/64 MB	P; HP; BP; notch; AP/Y	231/1,000	100/1,000	Yes	Y/N/N	Yes/SCSI	3.5" HD/DD	61	8	Pitch/mod wheel; (2) ribbon; (10) button; (8) slider
Kurzweil	K2600	48/16	8/64 MB	LP; HP; BP; notch; AP/Y	231/1,000	100/1,000	Yes	Y/N/N	Yes/SCSI	3.5" HD/DD	76	8	Pitch/mod wheel; (2) ribbon; (10) button; (8) slider
Kurzweil	K2600X	48/16	8/64 MB	LP; HP; BP; notch; AP/Y	231/1,000	100/1,000	Yes	Y/N/N	Yes/SCSI	3.5" HD/DD	88	8	Pitch/mod wheel; (2) ribbon; (10) button; (8) slider
Kurzweil	K2600S	48/16	8/64 MB	LP; HP; BP; notch; AP/Y	231/1,000	100/1,000	Yes	Y/N/N	Yes/SCSI	3.5" HD/DD	76	8	Pitch/mod wheel; (2) ribbon; (10) button; (8) slider
Kurzweil	K2600XS	48/16	8/64 MB	LP; HP; BP; notch; AP/Y	231/1,000	100/1,000	Yes	Y/N/N	Yes/SCSI	3.5" HD/DD	88	8	Pitch/mod wheel; (2) ribbon; (10) button; (8) slider
Moog Music	Minimoog Voyager	1/1	N/A	Dual LP; HP/Y	0/128	N/A	Yes	N/N/N	MIDI	N/A	44	0	Pitch; mod wheel; release; glide
Oberheim	OB12	12/4	N/A	LP; BP; HP/Y	256/256	256/256	Yes	N/N/N	N/A	N/A	49	4	Ribbon controller; pitch wheel; mod wheel
Quasimidi	Sirius	28/7	192/0 MB	LB; HP/Y	672/480	N/A	Yes	N/N/N	N/A	N/A	49	0	2
Roland	RS-50	64/16	32/0 MB	LP/Y	532/144	N/A	Yes	Y/Y/N	N/A	N/A	61	2	Bender/mod lever; D Beam
Roland	RS-70	64/16	64/0 MB	LP/Y	798/144	N/A	Yes	Y/Y/N	Yes/USB	3.5" HD/DD	61	2	Bender/mod lever; D Beam
Roland	RS-9	64/16	32 MB	LP/Y	512/128	128/128	Yes	Y/N/N	N/A	N/A	88	2	Mod/pitch lever; (6) knob
Roland	Discover-5	64/16	N/A	LP/Y	1,466/N/A	0/128	Yes	Y/Y/N	N/A	3.5	61	2	Bender/mod lever; D Beams; balance knob
Roland	VR-760	128/4	96/0 MB	LP/Y	0/64	0/64	No	N/N/N	N/A	Compact Flash	76	2	Bender/mod; (9) drawbar; D Beam
Roland	V-Synth	24/16	128 MB	17/Y	512/256	1/1	Yes	N/N/N	Yes/USB	PC card	61	16	Bender/mod; (3) knob; D Beam; TimeTrip pad
Roland	VA-76	128/32	48/8 MB	LP/Y	3,762/N/A	N/A	Yes	Y/Y/N	N/A	Zip; 3.5" HD/DD	76	3	Bender/mod lever; ribbon; D Beam; (2) knob
Roland	Fantom-X6	128/16	128/400 MB	6/Y	1,280/128	64/64	Yes	Y/N/N	Yes/USB	PC card	61	16	Bender/mod lever; (4) knob; D Beam
Roland	Fantom-X7	128/16	1,480 MB	6/Y	128/400	64/64	Yes	Y/N/N	Yes/USB	PC card	76	16	Bender/mod lever; (4) knob ; D Beam
Roland	Fantom-X8	128/16	1,480 MB	6/Y	128/400	64/64	Yes	Y/N/N	Yes/USB	PC card	88	16	Bender/mod lever; (4) knob; D Beam
Roland	Fantom-S	64/16	64-320/32-288 MB	LP; BP; HP; peak/Y	937/288 + card	64/64 + card	Yes	Y/Y/N	Yes/USB	SmartMedia	61	16	Bender/mod lever; D Beam; (4) knob
Roland	Fantom-S88	64/16	64-320/32-288 MB	LP; BP; HP; peak/Y	937/288 + card	64/64 + card	Yes	Y/Y/N	Yes/USB	SmartMedia	88	16	Bender/mod lever; D Beam; (4) knob
Voce	Key5	147/147	N/A	N/A	2/manual	3	No	N/N/N	Yes/MIDI	N/A	122	2	(38) draw bar; pitch/mod
Waldorf	Q	16/16	N/A	LB; BP; HP; comb/Y	0/300	0/100	Yes	N/N/N	N/A	Smartcard	61	16	(2) wheel; (2) button
Yamaha	S03	64/16	25/0 MB	LP/Y	608/128	0/32	Yes	Y/Y/Y	Yes/serial	N/A	61	16	PB/MV
Yamaha	S08	64/16	25.2/0 MB	LP/4	621/128	0/32	Yes	Y/N/Y	Yes/USB	SmartMedia	88	16	PB/mod wheel
Yamaha	S90	64/16	110 MB	21 (LP, HP, BP, N)/Y	384/128	0/128	Yes	Y/N/N	Yes/USB	SmartMedia	88	4	PB/mod wheel
Yamaha	Motif 6	64/16 (32 option)	85/4 MB (64 max)	21 (LP, HP, BP, N)/Y	384/128	0/128	Yes	Y/N/N	Yes/USB	SmartMedia	61	4	PB/mod wheel
Yamaha	Motif ES 6	128/16 (+PLG boards)	175/1,024 MB max	21 (LP, HP, BP, N)/Y	960/256	0/128	Yes	Y/N/N	Yes/USB (optional mLAN)	SmartMedia - USB storage	61	16	(1) ribbon; (2) wheel; (4) slider; 4 knob
Yamaha	Motif ES 7	128/16 (+PLG boards)	175/1,024 MB max	21 (LP, HP, BP, N)/Y	960/256	0/128	Yes	Y/N/N	Yes/USB (optional mLAN)	SmartMedia - USB storage	76	16	(1) ribbon; (2) wheel; (4) slider; 4 knob
Yamaha	Motif ES 8	128/16 (+PLG boards)	175/1,024 MB max	21 (LP, HP, BP, N)/Y	960/256	0/128	Yes	Y/N/N	Yes/USB (optional mLAN)	SmartMedia - USB storage	88	16	(1) ribbon; (2) wheel; (4) slider; 4 knob

AFTERTOUCH (POLY/CHANNEL)	# AND TYPE OF CONTROLLER INPUTS	# OF SEQUENCER TRACKS/PPQN	SEQUENCER/MEMORY (NOTES)	TYPES OF QUANTIZATION	ARPEGGIATOR	# OF EFFECTS PROCESSORS/EFFECTS PROGRAMS	# OF OUTPUT/TYPE	SPECIAL FEATURES	OPTIONS	PRICE
Y/Y	(4) switch pedal; (2) CC pedal; breath; ribbon	32/768	60,000-180,000	N/A	Yes	5/480	(10) 1/4"	ADAT I/O; SmartMedia; reads Akai, Roland, Ensoniq, AIFF, Wave; Flash ROM	Various instrument ROM; sampling	$2,995
Y/Y	(4) switch pedal; (2) CC pedal; breath	32/768	60,000-180,000	N/A	Yes	5/480	(10) 1/4" TRS; AES/EBU; S/PDIF; XLR; KDS	Reads Akai, Roland, Ensoniq, AIFF, Wave samples; Flash ROM; RAM-Tracks	128 MB sample RAM; 1.5 MB P/RAM; various instrument ROM	$4,230
Y/Y	(4) switch pedal; (2) CC pedal; breath	32/768	60,000-180,000	N/A	Yes	5/480	(10) 1/4" TRS; AES/EBU; S/PDIF; XLR; KDS	Reads Akai, Roland, Ensoniq, AIFF, Wave samples; Flash ROM; RAM-Tracks	128 MB sample RAM; 1.5 MB P/RAM; various instrument ROM	$4,595
Y/Y	(4) switch pedal; (2) CC pedal; breath	32/768	60,000-180,000	N/A	Yes	5/480	(10) 1/4" TRS; AES/EBU; S/PDIF; XLR; KDS	Reads Akai, Roland, Ensoniq, AIFF, Wave samples; Flash ROM; RAM-Tracks	128 MB sample RAM; 1.5 MB P/RAM; various instrument ROM	$4,815
Y/Y	(4) switch pedal; (2) CC pedal; breath	32/768	60,000-180,000	N/A	Yes	5/480	(10) 1/4" TRS; AES/EBU; S/PDIF; XLR; KDS	Reads Akai, Roland, Ensoniq, AIFF, Wave samples; Flash ROM; RAM-Tracks	128 MB sample RAM; 1.5 MB P/RAM; various instrument ROM	$5,190
N/Y	(10) pedal/CV; (4) footswitch/gate	N/A	N/A	N/A	No	N/A	(2) 1/4"	Real analog synth w/ext audio input; pre-filter effects loop; 3D touch surface controller	Blue blacklit pitch and mod wheels ($149); VX-351 Voyager CV expander ($240)	$3,195
N/Y	(2 each) pedals; exp pedals	1/96	30,000	N/A	Yes	1/4	(4) 1/4"	Screen draws out edited parameters		$1,999
N/N	(1) FS	7/24	N/A	N/A	Yes	2	(2) RCA	Built-in vocoder		$1,299
N/N	(2) pedal	N/A	N/A	N/A	Yes	3/63	(2) 1/4"	Chord memory	DP-2/DP-8	$895
N/N	(2) pedal	N/A	N/A	N/A	Yes	3/63	(2) 1/4"	EZ tracks; chord memory	DP-2/DP-8	$1,295
Y/Y	Assign; sustain	N/A	N/A	N/A	Yes	3/51	(2) 1/4"	Dedicated piano button; XV waveforms; category search; favorite bank	DP-2/6 damper pedal; EV-5 exp pedal	$1,295
N/N	(3) pedal	N/A	99,999 songs on card	N/A	No	4/94	(4) 1/4"	Real-time SWF arranging; vocal harmonizer; lyric display; vocoder; vocal EFX; touch LCD	SmartMedia; DP-2/DP-8	$2,195
N/Y	(3) pedal	N/A	N/A	N/A	No	4/46	(2) XLR; (2) 1/4"	VK-organ; master EQ; waterfall keybd; V link; (2) SRX slots	SRX series expansion compact Flash DP-2/DP-8	$2,495
N/Y	(2) 1/4" control; 1/4" hold; MIDI	N/A	N/A	N/A	Yes	4/60	(4) 1/4"; S/PDIF coaxial, optical	Independently manipulate pitch, time, formant of sampled waveforms w/VariPhrase	VC-1 D-50 Card	$2,695
N/Y	(3) pedal; FC-7 input	16/N/A	N/A	1/64	No	5/116	(4) 1/4"	Variphrase sampling; style orchestrator; 500 styles on Zip; style morphing; touch screen	FC-7 foot controller; DP-2/DP-8	$2,995
N/Y	(1) control pedal; (1) hold pedal; MIDI	16/480	400,000	Grid; shuffle; template	Yes	6/86	(4) 1/4"; S/PDIF coaxial	"Giga-Workstation" keyboards, giving musicians nearly 1GB of wave memory	SRX Series expansion boards	$2,395
N/Y	(1) control pedal; (1) hold pedal	16/480	400,000	Grid; shuffle; template	Yes	6/86	(4) 1/4"; S/PDIF coaxial	"Giga-Workstation" keyboards, giving musicians nearly 1GB of wave memory	SRX Series expansion boards	$2,895
N/Y	1/4"	16/480	400,000	Grid; shuffle; template	Yes	6/86	(4) 1/4"; S/PDIF coaxial	"Giga-Workstation" keyboards, giving musicians nearly 1GB of wave memory	SRX Series expansion boards	$3,395
Y/Y	(2) pedal	16/480	400,000	32 swing	Yes	6/86	(4) 1/4"; S/PDIF coaxial, optical	16 dynamic pad bank; skipback sampling; realtime time stretching	SRX series; 256 MB DIMM; SmartMedia; DP-2/DP-8	$2,495
Y/Y	(2) pedal	16/480	400,000	32 swing	Yes	6/87	(4) 1/4"; S/PDIF coaxial, optical	16 dynamic pad bank; skipback sampling; realtime time stretching	SRX series; 256 MB DIMM; SmartMedia; DP-2/DP-8	$3,495
N/N	(1) sustain; (1) expression	N/A	N/A	N/A	No	2	(1) out	Double manual organ w/2 sets drawbars; manual w/2 pedal drawbars	Expression pedal; stand; 3 different bass pedal options	$4,999
Y/Y	(2) switch; (2) CV	Step sequencer	100 patterns	N/A	Yes	2	(3) 1/4"; S/PDIF	Stereo analog in; software updates via MIDI	32-voice upgrade; RAM-cards	$3,495
N/N	(2/1) switch; (1) pedal	N/A	N/A	N/A	No	3/64	N/A	S03 voice editor; XGworks Lite; TWE wave editor		$630
N/N	(1) switch; (1) control	16/480	Direct from SmartMedia	N/A	No	3/64	(2) 1/4"	Voice editor; sequencing software		$1,495
N/Y	(2) FS; (2) foot; (1) breath	16/480	SmartMedia	N/A	Yes	5/108	(4) 1/4"	A/D input; MIDI master keyboard functions w/128 setups	3 slots for modular synthesis plug-in board	$2,500
N/Y	(2) switch; control; breath	16/480	111,000 notes	32	Yes	5/108	(4) 1/4"	Integrated sampling sequencer; modular synthesis; plug-in system	Real-time ext control surface; AIEB2 output exp; mLAN8E; SIMMs	$2,250
N/Y	(2) switch; (1) control; (1) breath	16/480	226,000	32	Yes	19/193	(4) 1/4"	Integrated sampling sequencer; Mega voices; Phrase Factory; control DAW surface	3 slots for modular synthesis plug-in board; mLAN I/O; AIEB2	$2,399
N/Y	(2) switch; (1) control; (1) breath	16/480	226,000	32	Yes	19/193	(4) 1/4"	Integrated sampling sequencer; Real Time Loop Remix; integrated DAW control surface	3 slots for modular synthesis plug-in board; mLAN I/O; AIEB2	$2,999
N/Y	(2) switch; (1) control; (1) breath	16/480	226,000	32	Yes	19/193	(4) 1/4"	Sampling sequencer; Mega Voices; Phrase Factory with Real Time Loop Remix	3 slots for modular synthesis plug-in board; mLAN I/O; AIEB2	$3,499

MICROPHONE & INSTRUMENT PREAMPS

MANUFACTURER	PRODUCT	TYPE	CHANNELS	EQ	OUTPUT LEVEL CONTROL	INSTRUMENT/LINE INPUT	OVERLOAD WARNING	FREQUENCY RESPONSE
A Designs Audio	MP1	Tube	1	No	Yes	XLR; 1/4"	VU	20 Hz–60 kHz
A Designs Audio	MP2	Tube	2	No	Yes	XLR; 1/4"	VU	20 Hz–60 kHz
Aguilar	DB 680 Tube Bass Preamp	Tube	1	Dual fully-parametric	Yes	Yes	No	20 Hz–20 kHz
Alto	Alpha	Tube	2	No	Yes	Yes	(2) 8-seg LED	20 Hz–20 kHz
Amek	DMA	TLA (Transformer Like Amplifier)	2	HP filter	No	Yes	2x8-seg LED	10 Hz–110 kHz
Amek	9098 EQ	TLA (Transformer Like Amplifier)	1	4-band para; vari HP/LP	No	Yes	No	10 Hz–110 kHz, –1.5 dB
Aphex Systems	1100	Tube	2	Low-cut filter	Yes	No	No	N/A
API	212L	Discrete solid state	1	No	Yes	No	5-seg LED	30 Hz–20 kHz
API	512C	Discrete solid state	1	No	Yes	Yes	7-seg LED VU	30 Hz–20 kHz
Apogee Electronics	Mini-MP	Solid state	2	HP filter	Yes	(2) hi-Z	Clip LED	2.5–>200 kHz (-.5 dB) @ 0 dB
Apogee Electronics	Mini-Me	Solid state	2	No	Yes	(2) hi-Z	Clip LED	10 Hz–40 kHz @ 96 kHz
A.R.T.	Artcessories Dee Jay Pre	Phono	1	RIAA	No	RCA	N/A	N/A
A.R.T.	Artcessories Micro Mix	Solid state	1	No	Yes	Yes	Clip LED	20 Hz–20 kHz
A.R.T.	Tube MP	Tube	1	No	Yes	Yes	LED	10 Hz–20 kHz
A.R.T.	Tube MP OPL	Tube	1	No	Yes	Yes	LED	10 Hz–20 kHz
A.R.T.	Tube MP Studio	Tube	1	No	Yes	Yes	LED	10 Hz–20 kHz
A.R.T.	Tube MP Studio V3	Tube	1	No	Yes	Yes	LED	10 Hz–20 kHz
A.R.T.	TPS (Tube Preamp System)	Tube	2	No	Yes	Yes	Yes	5 Hz–50 kHz
A.R.T.	TPS2 Tube Preamp System	Tube	2	No	No	Yes	Analog meter	20Hz–20 kHz
A.R.T.	DPS (DIO Preamp System)	Tube	2	No	Yes	Yes	LED	5 Hz–50 kHz
A.R.T.	Dual MP	Tube	2	No	Yes	Yes	LED	10 Hz–20 kHz
A.R.T.	Pro MPA	Tube	2	No	Yes	Yes	Bar meter	20 Hz–40 kHz
A.R.T.	ART Tube Channel	Tube	1	4-band	Yes	XLR; 1/4"	Yes	10 Hz–20 kHz, ± 0.5 dB
A.R.T.	Digital MPA	Tube	2	No	Yes	Yes	LED	15 Hz–80 kHz
A.R.T.	ART Pro Channel	Tube	1	4-band	Yes	XLR; 1/4"	Yes	10 Hz–20 kHz, ± 0.5 dB
ATI	8MX2	Solid state	8	No	Yes	Yes	2x10-seg LED	20 Hz–20 kHz
Avalon Design	M5	Discrete (Class A)	1	HP filter	Yes	Yes	Analog VU; (2) signal peak LEDs	5 Hz–120 kHz
BBE	BMAX	Solid state bass	1	3-band passive, quasi-parametric mid	Yes	(2) 1/4"	No	10 Hz–30 kHz
BBE	BMAX-t	Tube bass	1	3-band passive, quasi-parametric mid	Yes	(2) 1/4"	No	10 Hz–30 kHz
Behringer	UltragainPro MIC2200	Tube	2	Parametric; low-cut	Yes	Yes	Yes	10 Hz–200 kHz, ±3 dB
Behringer	Tube Ultragain T1953	Tube	2	Tunable HP filter	Yes	Yes	Clip LED	18 Hz–30 kHz
Bellari	RP220	Tube	2	No	Yes	Yes	5-seg LED	20 Hz–40 kHz
Bellari	RP520	Tube	2	No	Yes	Yes	LED	20 Hz–40 kHz
Benchmark	Mic-Man Jr.	Solid state	2	No	No	No	No	1 Hz–300 kHz
Benchmark	MPS-400/2000	Solid state	4	No	No	Yes	No	0.2 Hz–500 kHz
beyerdynamic	MV100	Solid state	2	HP filter	No	No	Clip LED	18 Hz–22 kHz
BLUE	Robbie	Tube/Solid State	1	HP filter	No	1/4", XLR	No	10 Hz–100 kHz
Buzz Audio	MA-2.2	Discrete solid state	2	No	Yes	No	Clip LED	4 Hz to 250 kHz
Buzz Audio	SSA-1.1	Combo discrete/IC	2	HP filter	Yes	Yes	Clip LED	4 Hz to 200 kHz
Buzz Audio	A-RACK 8+1	Discrete solid state	up to 9	No	Yes	No	20-seg meter	4 Hz to 250 kHz
Crane Song	Flamingo	Discrete (Class A)	2	No	No	XLR	Clip LED	N/A
Curtis Technology	Opre2	Solid state	2	No	Yes	No	No	10 Hz–0 kHz
DACS	MicAmp	Solid state	2	Low-cut filters	Yes	Yes	LED	<20 Hz–55 kHz
Daking	Mic PreEQ	Solid state	1	4-band "A" range	Yes	Yes	Yes	20 Hz–20 kHz
Daking	Mic Pre IV	Solid State	4	No	Yes	XLR; 1/4"	20-seg LED	20Hz–20 kHz
dbx	dbx386	Tube	2	No	Yes	Yes	12-seg LED	<10 Hz–75 kHz
Demeter	VTBP-201 S Tube Bass Preamp	Tube	1	Treble; mid; bass (w/sel freq); presence	No	Yes	No	N/A
Demeter	HBP-1	Solid state-tube hybrid	1	3-band passive/ 2-band parametric	Yes	1/4"	No	10 Hz–20 kHz
Demeter	Hxm-1	Tube	2	Low-cut filter	Yes	Yes	10-seg LED	10 Hz–80 kHz

NOISE	TOTAL HARMONIC DISTORTION	SPECIAL FEATURES	PRICE
-120 dBu EIN	>.08% @ 1 kHz	Polarity, output and phantom switches;	$1,400
-120 dBu EIN	>.08% @ 1 kHz	Jensen input transformers; custom wound output transformers; phase, +48v, and output level switches	$1,900
-80 dB	0.4%	Selectable inputs; passive/active inputs; tuner out	$1,995
N/A	<.5%	Dual serve phase; phatom; pad switch	$114
-104 dBu S/N	<0.01%	Phantom; MS surround	$1,710
-100 dBu	<0.01%	Phantom; notch filters; Neve glow and sheen	$1,995
-135 dBu EIN	@ +15 dBu 0.12% @ +4 dBu 0.05%	Mic limiter; 24-bit/96 kHz digital out	$2,495
-125 dBu	0.02% (+4 dB @ 2 kHz)	Phantom; 20dB pad; transformer-coupled in/out	$695
-129 dB	@ +4 dBu <0.05%	Mic/hi 2 in phantom; phase, 7-seg LED	$795
<124 (22-22 kHz) 150Ω	-105 dB @ 0 dB gain	Low-distortion pre-amps; MS recording mode	$995
<124 (22-22 kHz) 150Ω	-94 dB	A/D converter; 3-stage compressor limiter; optional USB	$1,295
N/A	N/A	RIAA EQ	$50
<0.01%	N/A	Phantom switch; power switch	$70
-129 dBu EIN	0.1%	Phase; phantom power	$99
-129 dBu EIN	0.1%	Output protection limiter phase; phantom power	$114
-129 dBu EIN	0.1%	Protection limiter; VU meter; phase; phantom power	$129
-129 dBu EIN	0.1%	VU meter; variable valve voicing; phase; phantom power	$149
-129 dBu EIN	<0.01%	Limiter; VU meters; variable valve voicing; phase; phantom	$219
N/A	N/A	V3 variable valve voicing; phantom; 20 dB phase switch	$219
-129 dBu EIN	0.01%	ADAT, Toslink, and S/PDIF outputs; phase; phantom	$319
-129 dBu EIN	<0.1%	Phase; phantom; +20 dB gain switch	$349
-132 dBu EIN	<0.1%	VU meters; HFP (7 Hz-150 Hz)	$457
-129 dBu (XLR to XLR, A weighted)	<0.01%	Tube parametric EQ; optical comp	$525
-134 dB (A weighted)	0.005%	AES/EBU; S/PDIF; ADAT; selectable plate voltage	$749
-130 dBu (XLR to XLR)	0.01%	Tube parametric EQ	$799
-129 dBm EIN	0.006%	Limiter (8); phase; phant and grnd lift; 8x2 mixer	$1,899
-126 dB EIN	0.05%	Ext power supply (100/240V); polarity; 20 dB pad; DI in	$1,600
N/A	N/A	BBE Sonic Maximizer; opt. comp; transformerless bal. output	$499
N/A	N/A	BBE Sonic Maximizer; Groove Tubes 12AX7; opt. comp; Jensen transformer bal. output	$999
N/A	0.011%	12AX7 vacuum tube; phantom power; phase reverse	$199
>108 dB S/N	N/A	Phantom power; line driver; phase; balanced I/O	$399
107 dB S/N	0.1%	Transformer-balanced inputs; phase; pad	$500
107 dB S/N	0.1%	Analog VU meters; transformer inputs; phase; pad	$600
1 dB noise figure	0.001%	Portable AC/DC operation; gain range: +26 to +76 dB	$435
-130 dB EIN	0.0009%	48V phantom power; 500 kHz bandwidth at all settings; +28 dBu max output	$1,395
-128 dB EIN	0.03%	Headphone monitoring	$799
-131 dB EIN	0.006% @ 60 dB	Solid state input stage/tube gain stage	$1,299
133.5 EIN A wtg	<.008%, 100 Hz to 10 kHz	Very high speed circuitry	$1,899
132.5 EIN A wtg	<.01%, 100 Hz to 10 kHz	Transformer output option	$1,299
133.5 EIN A wtg	<.008%, 100 Hz to 10 kHz	Eight MA-1.5 modules; entire unit $7,899	$987/module
N/A	N/A		$3,125
-129 dB	0.03%	Lundahl input transformer	$1,495
-133 dB	0.0002%	Phantom power	$2,459
-128 dB EIN	<0.01%	Class A; HP & LP filters; 48V; 20 dB pad; mute & bypass	$1,995
-128 db EIN	<.01%	Class A; stainless steel construction; 20db pad; +48V	$2,895
-120 dBu @ 150Ω	0.35% @ 1kHz, 40dB gain	A/D conversion; selectable 96, 88.2, 48, 44.1 kHz samp. rate	$600
N/A	N/A	Jensen DBE mic level output transformer; effects loop; balanced out	$799
-95 dB	<1%	Classic tube front end; active effects loop	$899
-124 dB EIN	0.012%	Jensen transformer; phase; LC; pad; variable tube gain	$1,399

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MICROPHONE & INSTRUMENT PREAMPS

MANUFACTURER	PRODUCT	TYPE	CHANNELS	EQ	OUTPUT LEVEL CONTROL	INSTRUMENT/LINE INPUT	OVERLOAD WARNING	FREQUENCY RESPONSE
Demeter	VTMP-2c Stereo	Tube	2	Low-cut filter	Yes	Yes	LED meter/clip LED	10 Hz–40 kHz
Denecke	AD20	Solid state	2	No	Yes	Optional	No	10 Hz–20 kHz
Denecke	Zefiro In Box Preamp	Solid state	2	No	Yes	Optional	No	10 Hz–21 kHz
Digidesign	PRE	Solid state	8	Highpass filter	Yes	Yes	Peak meter	10 Hz–100 kHz, –3 dB
Drawmer	TS1	Tube	1	Variable HP filter; hi-freq. contour	Yes	Yes	Clip LED (8-seg)	20 Hz–20 kHz
Drawmer	TS1/DC1	Tube	1	Variable HP filter; hi-freq. contour	Yes	Yes	Clip LED (8-seg)	20 Hz–20 kHz
Earthworks	1021/1022/1024	Solid state	4/1	No	Yes	No	Clip LED	2 Hz–100 kHz, ± 0.1 dB
Fishman	B II Acoustic Bass Preamp	Solid state	1	Treble; bass	Yes	Yes	No	N/A
Fishman	G-II Acoustic Guitar/Instrument Preamp	Solid state	1	Treble; bass	Yes	Yes	No	N/A
Fishman	Pro-EQ II	Solid state	1	4-band graphic	Yes	Yes	No	N/A
Fishman	Pro EQ Platinum Bass	Solid state	1	5-band; low-cut filter	Yes	Yes	Clip LED	20 Hz–20 kHz
Fishman	Pocket Blender	Solid state	2	Active shelving style	Yes	Yes	No	20 Hz–20 kHz
Fishman	Acoustic Blender/Acoustic Bass Blender	Solid state	2	Active shelving style; bass; treble; low-cut filter	Yes	Yes	No	20 Hz–20 kHz
FMR Audio	RNP8380	Solid state-tube hybrid	2	No	No	Yes	Signal; clip	10 Hz–100 kHz ±1 dB
Focusrite	ISA428 PrePack	Solid state (Class A)	4	No	No	Yes	Yes/8	20 Hz–200 kHz
Focusrite	OctoPre	Discrete (Class A)	8	No	Yes	Yes	Clip LED	10 Hz–200 kHz
Focusrite	Red 8 Dual	Solid state	2	No	No	No	VU	10 Hz–140 kHz
Focusrite	Red 1 Quad	Solid state	4	No	No	No	VU	10 Hz–140 kHz
George Massenburg Labs	8302	Solid state	2	No	No	No	Clip LED	1 Hz–200 kHz
George Massenburg Labs	8304	Solid state	4	No	No	No	Clip LED	1 Hz–200 kHz
Grace Design	Lunatec V3	Solid state/AD	2	2-position HP filter	Yes	No	(2) 8-seg dot mode LED	6 Hz–250 kHz -3 dB
Grace Design	Model 101	Solid state	1	Low-cut filter	Yes	Yes	(2) VU	4.5 Hz–400 kHz, ±3 dB
Grace Design	Model 201	Solid state	2	No	Yes	No	Yes	4.5 Hz–1.0 MHz, ±3 dB
Great River Electronics	ME-INV	Solid state	1	No	Yes	Yes	LED	10 Hz–40 kHz ± 1 dB @ 40 dB gain
Great River Electronics	MP-2	Solid state	2	No	No	Yes	Overload LED	10 Hz–60 kHz ± 0.5 dB
Groove Tubes	DITTO	Tube (Class A)	1	No	Yes	Yes	No	6 Hz–200 kHz
Groove Tubes	The Brick	3 tube (Class A)	1	No	Yes	XLR; 1/4"	No	6 Hz–200 kHz
Groove Tubes	MC4 4-Mic Comparator	Solid state (Class A FET)	4	No	Yes	Mic only	2-stage clip LED	4 Hz–100 kHz
HDB Audio	TMA 2	Tube	2	No	Yes	No	Tube plasma display	20 Hz–20 kHz
K & K	Powerpack Preamp	Solid state	1	Treble; bass; gain	Yes	Yes	No	20 Hz–20 kHz
K & K	PreAmp '97	Solid state	1	Bass; treble; gain	Yes	Yes	No	20 Hz–20 kHz
K & K	Pure Guitar Preamp	Solid state	1	Bass; mid; hi range; gain	Yes	Yes	No	10 Hz–30 kHz
K & K	Dual-Channel Preamp	Solid state	2	Bass; treble; gain	Yes	Yes	No	10 Hz–30 kHz
K & K	Trinity Preamp	Solid state	2	Treble; bass; gain	Yes	Yes	No	20 Hz–20 kHz
K & K	Quantum Blender	Solid state	2	Bass; mid; treble	Yes	Yes	No	10 Hz–35 kHz
Langevin	Dual Mono	Solid state	2	High and low shelving	No	Yes	No	10 Hz–20 kHz
Mackie	Onyx 800R	Solid state	8	No	Yes	XLR; 1/4"	LED	N/A
Manley Labs	Mono Mic Pre	Tube	1	No	No	Yes	No	10Hz–20 kHz
Manley Labs	Dual Mono MicPre	Tube	2	No	No	Yes	No	10 Hz–60 kHz
Martinsound	Martech MSS-10	Solid state	1	No	Yes	Yes	VU	10 Hz–20 kHz
M-Audio	Audio Buddy	Solid state	2	No	No	Yes	Yes	5 Hz–50 kHz
M-Audio	MobilePre USB	Solid state	2	No	Yes	Yes	Clip LED	20 Hz–20 kHz ± 1.2 dB
M-Audio	DMP3	Solid state	2	No	Yes	Yes	(2) VU meters; clip light	20 Hz–100 kHz
M-Audio	Tampa	Solid state	1	Low-cut	Yes	Yes	VU meter; clip light	20 Hz–20 kHz
Metasonix	TM-5 Instrument Preamp	Tube	1	Treble boost/cut	Yes	1/4"	No	10 Hz–40 kHz
Millennia	HV-3B	Solid state	2	No	Yes	No	LED	2 Hz–300 kHz
Millennia	HV-3C	Solid state	2	No	Yes	No	LED	2 Hz–300 kHz
Millennia	MSD-2	Solid state	2	No	Yes	Yes	LED	10 Hz–200 kHz

NOISE	TOTAL HARMONIC DISTORTION	SPECIAL FEATURES	PRICE
-124 dB EIN	0.016%	Jensen transformers; phase; 2-stage low-cut; pad	$1,899
125.4 dBm EIN	0.0016%	20-bit A/D; S/PDIF optical/coax out	$325
99 dB S/N; -125.4 dB EIN	0.008%	20-bit A/D; S/PDIF optical/coax out	$395
-128 dB @ 66 dB	0.0005 % THD+N @ 1 kHz, 0 dB gain	Remote controllable; soft-clip limiter	$2,495
-130 dB EIN	<0.03%	48V; phase rev.; stereo comp; tube drive; analog	$970
-130 dB EIN	<0.03%	48V; phase rev.; stereo comp; tube drive; 24/96k output; digital	$1,250
-125 dBv @ 20 dB	0.0001%	Multiple outs per channel; phase; phantom; standby	$1,200-$3,500
N/A	N/A	Input trim; injection molded case; suitable as floor unit	$110
N/A	N/A	Input trim; injection molded case; suitable as floor unit	$110
N/A	N/A	Sub bass trim; input trim; injection molded case	$160
89 dBu (91 dBv)	105%	Phantom; comp; phase; tuner out; XLR; 1/4" out	$250
87 dB	0.7%	Mic/piezo transducer channels with effects loop	$420
81 dB (A-weighted, ref to nom -20 dBV input)	0.2%	Separate mic/piezo transducer channels with dedicated effects loops/phase reverse; phantom	$500
-120 dB EIN	0.001%	+48V slow ramp w/outp mute during phantom; 0-66dB gain switch	$499
96 dB	0.003%	Variable impedance optional 192 kHz A-D	$1,999
-128 dB @ 60 dB gain	0.002%	Digital options	$1,200
-128 dB EIN	0.003%	Phantom power; phase on each channel; stepped gain	$1,895
-128 dB EIN	0.003%	Phantom power; phase on each channel; stepped gain	$2,795
-127 dBu EIN	0.0008%	Phantom; class-A; upgradeable to 4 channels	$2,100
-127 dBu EIN	0.0008%	Phantom; class-A	$2,900
<-130 dB @ 6dB gain	0.0011% @ 40dB gain	48V phantom; A/D conversion @ 44.1-192 kHz	$1,695
<-130 dB @ 60 dB gain	0.001%	Phantom power; XLR and 1/4" outputs	$695
<-130 dB @ 60 dB gain	0.0015%	24-position gold contact rotary gain controls	$1,995
-125 dB EIN 150 source @ 40 dB	<0.02%	Phantom; polarity; IA port impedance; 5 dB stepped input gain	$1,395
-125 dB EIN 150 source @ 40 dB	<0.007%	Phantom; polarity; pad; 2 dB stepped gain	$2,080
-90 dBu EIN (A weighted)	0.013%	±30dB all-tube preamp avail.; gain signal ground lift; custom output transformer output	$399
-90 dBu EIN (A weighted)	0.013%	Custom-wound input and output transformers; +55 dB (mics), +30 dB (inst.); +48V	$499
n/a	N/A	Switching system for rapid mic comparison; +48V off on ch-4 for ribbon mics; 4-ch headphone amp	$799
>80 dB S/N	0.2%		$599
Low noise	N/A	For acoustic instruments; ± 20dB filters; belt clip	$99
Low noise	N/A	9V battery, DC power supply; +- 20 dB	$109
Low noise	N/A	9V battery for acoustic guitar	$109
Low noise	N/A	± 20dB filters	$149
Low noise	N/A	Provides power for condenser mic; 9V battery	$167
S/N -85 dB	<0.005%	Mic power 9 V; power: DC 12V auto polarization	$399
80 dB S/N	0.05%	All discrete; two channels	$1,475
N/A	N/A		$1,279
80 dB S/N	0.05%	High headroom	$1,600
80 dB S/N	0.05%	High headroom	$2,400
-129.5 dBu	<-0.0015%		$1,995
-122 dBu	0.1%		$120
101 dB	0.00199%	Phantom power; USB powered	$180
>110 dB	0.002%	Phase reverse option	$250
>110 dB	N/A	Digital converters with sample rates to 96 kHz	$800
Depends on settings	from <1% to over 25%	Tube preamp for interfacing gtr/mic to synths	$399
-131 dB EIN	0.0005%	Phantom power	$1,995
-131 dB EIN	0.0005%	24-bit A/D converter	$2,495
-130 dB EIN	0.002%	MS encoding/decoding	$3,995

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MICROPHONE & INSTRUMENT PREAMPS

MANUFACTURER	PRODUCT	TYPE	CHANNELS	EQ	OUTPUT LEVEL CONTROL	INSTRUMENT/LINE INPUT	OVERLOAD WARNING	FREQUENCY RESPONSE
Millennia	HV-3D	Solid state	8	No	Yes	No	LED	2 Hz–300 kHz
Nightpro	PreQ3	Solid state	2 or 4	1-band (sel freq); broad-band shelving; LF rolloff	No	Yes	Peak LED 3 db before clip	15 Hz–40 kHz
Oram Pro	Octasonic	Solid state	8	No	No	Yes	Preclip LED	20 Hz–40 kHz
Pendulum	SPS-1 Preamp for Acoustic Instruments	Solid state (Class A)	2	3-band parametric ch.	Yes	Yes	Signal, peak LEDs	20 Hz–100 kHz
Pendulum	MDP-1	Tube (Class A)	2	10-position low-cut	Yes	Yes	VU	5 Hz–300 kHz
Phonic	T8100 VocalMax	Tube	2	3-band; low-cut filter	Yes	Yes	VU	20 Hz–20 kHz
PreSonus	Blue Tube	Solid state-tube hybrid	2	No	Yes	Yes	Clip LED	20 Hz–40 kHz
PreSonus	Acoustic-Q	Tube	2	1-band parametric	Yes	Yes	15-seg LED	10 Hz–50 kHz
PreSonus	Digitube	Tube	1	3-band low-cut	No	Yes	8-seg LED	10 Hz–50 kHz
PreSonus	MP20	Discrete (Class A)	2	Low cut filter	Yes	XLR; 1/4"	Clip LED	10 Hz–60 kHz
PreSonus	DigiMax 96K	Discrete (Class A) with digital outs	8	Yes	Yes	Yes	Clip LED	20 Hz–40 kHz
PreSonus	DigiMax LT	Solid state	8	No	Yes	Yes	(8) 3-seg LED	20 Hz–50 kHz
PreSonus	M80	Discrete (Class A)	8	Low-cut filter	Yes	Yes	Clip LED	10 Hz–30 kHz
Radio Design Labs	STM-1	Solid state	1	No	No	No	No	50 Hz–30 kHz
Radio Design Labs	STM-2	Solid state	1	No	Yes	No	No	50 Hz–25 kHz
Radio Design Labs	STM-2X	Solid state	1	No	Yes	No	No	50 Hz–25 kHz
Radio Design Labs	STM-3	Solid state	1	No	Yes	No	No	50 Hz–25 kHz
Radio Design Labs	ST-VCA1	Solid state	1	No	Yes	Yes	No	20 Hz–22 kHz
Radio Design Labs	ST-MMX3	Solid state	3	No	Yes	No	No	10 Hz–18 kHz
Radio Design Labs	RU-MX5	Solid state	5	No	Yes	No	3-seg LED	70 Hz–30 kHz
Rane	MS1b	Solid state	1	No	Yes	No	Clip LED	20 Hz–20 kHz
Rane	DMS22	Solid state	2	3-band w/sweepable mid	Yes	No	Clip LED	20 Hz–200 kHz
Rane	AP 13 Acoustic Instrument Preamp	Solid state	2	(2) low cut; 7-band graphic	Yes	Yes	No	20 Hz–20 kHz
Raven Labs	PMB-II Master Blender	Solid state	2	Bass; mid; treble	Yes	Yes	No	30 Hz–30 kHz
Raven Labs	Universal Stereo Instument Preamp	Solid state	2	Semi-parametric	Yes	XLR; 1/4"	Clip LED	10Hz–30KHz -3dB
RME	QuadMic	Discrete (Class A)	4	Low cut	Yes	(4) XLR	LED	5 Hz–200 kHz
RME	OctaMic	Discrete (Class A)	8	Low cut	Yes	(8) XLR; 1/4"	LED	5 Hz–200 kHz
Roland	MMP-2 Mic Modeling Preamp	Solid state	2	4-band para; lo-cut filter	Yes	Yes	2-line LCD	20 Hz–40 kHz (96 kHz)
Sage Electronics	SE-Pre 1	Solid state	1	No	No	XLR	N/A	20 Hz–20 kHz ± 0.5 dB
Samson	C-Valve	Tube	1	Enh/lim switch	Yes	Yes	LED	N/A
SM Pro Audio	PR8	Solid state	8	None	No	XLR	Peak light	10 Hz–38 kHz
SM Pro Audio	TB 101	Tube	1	3-band EQ	Yes	XLR, 1/4"	8-stage LED	10 Hz–37 kHz
SM Pro Audio	PR8 MIKE	Solid state	8	No	No	XLR combo	Peak light	10 Hz–40 kHz
SM Pro Audio	TB 202	Tube	2	3-band EQ	Yes	XLR, 1/4"	8-stage LED	10 Hz–38 kHz
Speck Electronics	MicPre 5.0	Discrete transistor	1	Variable HP filter	Yes	Yes	10-seg LED	10 Hz–200 kHz ±3 dB
SPL	Gold Mike	Tube	2	Low-cut filter &	Yes	Yes	VU	10 Hz– 100 kHz
SPL	GainStation1	Solid state-tube hybrid	1	HP filter	No	1/4"	Clip LED	1Hz–310 kHz
Studio Projects	VTB-1	Tube	1	Yes	Yes	Yes	5-segment LED	20 Hz–20 kHz
Studio Projects	SP-828	Solid state	8	No	Yes	XLR, 1/4"	Peak, signal	20Hz–20 kHz
Summit Audio	2BA-221	Solid state-tube hybrid	1	HPF; sweepable	Yes	Yes	2 LED	10 Hz–50 kHz
Summit Audio	MPC-100A	Solid state-tube hybrid	1	No	Yes	Yes	Clip LED; VU meter	5 Hz–65 kHz
Summit Audio	TPA-200B	Tube	2	No	Yes	XLR; 1/4"	OD and OL LEDs	N/A
Summit Audio	MPE-200	Solid state	2	4-band para +HP/LP	Yes	XLR line	Preamp and EQ input OL	10 Hz–200 kHz -0.5dB
Symetrix	302 Dual	Solid state	2	No	Yes	No	Clip LED	20 Hz–20 kHz
Sytek	MPT-1B	Tube	1	No	No	No	No	20 Hz–22 kHz
Sytek	MPX-4A ii	Solid state	4	No	Yes	No	Peak LED	10 Hz–85 kHz
Sytek	MPX-4Aiii	Solid state	4	No	No	No	No	2 Hz–85 kHz
Sytek	EQ4B-1M	Solid state	1	4-band parametric	No	Yes	Peak LED	10 Hz–85 kHz
The John Hardy Co.	Jensen Twin Servo 990	Solid state (Class A)	1-4 (expand-able)	No	No	No	20-seg LED; clip LED	N/A
The John Hardy Co.	M-1	Solid state (Class A)	1-4 (expand-able)	No	No	No	20-seg LED; clip LED	N/A
The John Hardy Co.	M-2	Solid state (Class A)	1	No	No	No	No	N/A

	NOISE	TOTAL HARMONIC DISTORTION	SPECIAL FEATURES	PRICE
	-131 dB EIN	0.0005%	Phantom power	$4,195
	-126 dBu EIN	0.003%	Vari air-band EQ	$1,675-$2,675
	-127.5 dB EIN	0.005%	Phase; phantom per ch; 2 high-level inputs	$2,118
	116 dB EIN	<0.01%	Phantom power	$1,395
	-125 dBu EIN	0.03%	All-tube signal path; transformerless out; -20 dB pad	$2,495
	>90 dB S/N; -122 dB EIN	0.0005%	Relay-controlled auto bypass; adjustable tube warmth	$270
	-94 dB	<0.05%	Phase reverse; 1/4" and XLR I/O; 20 dB pad	$200
	>90 dB	0.005%	Phantom power; insert; optional footswitch	$299
	>90 dB	0.05%	Drive knob; S/PDIF out; BNC in; insert; 20 dB pad	$299
	-96.4	<0.001%	Transformer-coupled input; mix bus assign; IDSS control	$699
	-94 dB	<0.009%	Dual domain limiters on each channel; analog and digital	$1,699
	>98 dB	<0.009%	(8) inserts; BNC I/O; ADAT output; (8) pads	$999
	127.5 dB	<0.001%	Transformer-coupled input; dual-servo gain stage	$2,295
	70 dB S/N	0.05%	Phantom; fixed gain of 50 dB	$99
	75 dB S/N	0.05%	Phantom; adjustable gain	$136
	75 dB S/N	0.05%	Gating via external control; phantom	$153
	70 dB S/N	0.05%	Phantom; small (approx. 0.5"x1.5"x3"); adjustable gain	$156
	80 dB S/N	0.05%	Control via external potentiometer	$116
	70 dB S/N	0.2%	Small size (about 0.5"x1.5"x3"); indiv gain adjustment	$130
	70 dB S/N	0.030%	5-channel active line mixer/mic pre with phantom	$255
	102 dB S/N	0.007%	Phantom	$199
	97 dB S/N	0.009%	Stereo with pan; phantom	$549
	81 dB S/N	0.001%	Separate EQ and FX BU for each pickup; dual-mono signal path	$569
	-85 dBu	0.005%	Record all electric/acoustic instruments direct to tape	$399
	-94.5 dBu	N/A	XLR outs, level controls; mute; headphone amp; 9V phantom	$949
	129 dB EIN @ 150	0.006%	100% hum free; phase reversal; phantom power	$699
	129 dB EIN @ 150	0.006%	100% hum free; phase reversal; phantom power	$1,099
	-132 dB EIN/105 dBu S/N	N/A	Dyn proc; mic mdlng algorithms; 9 preamp models; USB	$695
	-127 dB EIN	N/A	Discrete class A transistor circuitry; hand-selected, precision-matched components; unclip-able input	$469
	N/A	N/A	48V phantom power; phase control; analog VU meters	$160
	< -100dB	<.05%	Gain per channel; phantom on/off per channel	$149
	<-100 dB	<.01%	Optical compressor; phantom; phase reverse; PAD	$199
	<-110 dBA	<.006%	Optional ADAT output; 8 XLR in/out balanced; (8) 1/4"	$299
	<-100 dBA	<.01%	Optical compressors; phantom; phase reverse	$319
	-126 dBu	0.002%	Transformer; active output select; expandable mix section	$998
	85.6 dBu, A-weighted	0.175%	Phase rev.; phantom power; tube warm-up; 30 dB pad	$999
	-95.4 dBu	0.0005% w/o tube	Separate solid state and tube preamps	$1,149
	-121 dBu	0.0001%	Phantom and tube drive	$179
	N/A	.001%	8x2 mixer w/ direct outs; Burr Brown IC's	$799
	98 S/N; -94 dB EIN	0.08%	Sweepable input impedance; stackable design	$695
	-84 dBu, 108 dB S/N	0.05%	Clean to saturated valve sounds; Jensen transformer	$2,290
	-126dB @ 50dB gain	N/A	Tube overdriveable	$2,790
	<-105 dBu	<0.0025% 20Hz–20kHz	Neve designed; digital controls, MIDI control	$5,000
	95 dB S/N; -128 dB EIN	0.007%	L/R mix output	$299
	-90 dB	0.015%		$1,540
	96 dB S/N; -134 dBu EIN	0.0015%	Class A hybrid	$1,680
	-129 dB EIN	0.0015%	48V phantom each channel	$1,685
	96 dB S/N; -129 dBu EIN	0.0015%	Class A hybrid	$1,860
	N/A	N/A	(2) discrete op amps per ch (990C); Jensen transformers	$1,550-$4,250
	N/A	N/A	990 discrete op amp; Jensen input transformer	$875-$2,905
	N/A	N/A	990 discrete op amp; Jensen input transformer	$920-$3,085

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MICROPHONE & INSTRUMENT PREAMPS

MANUFACTURER	PRODUCT	TYPE	CHANNELS	EQ	OUTPUT LEVEL CONTROL	INSTRUMENT / LINE INPUT	OVERLOAD WARNING	FREQUENCY RESPONSE
TL Audio	5001	Tube	4	HP filter; low-cut	Yes	Yes	Drive/signal LEDs	10 Hz–40 kHz
TL Audio	Classic PA1 Pentode Preamp	Tube	2	Low- and high-cut filters	Yes	Yes	Drive and peak LED; VU	30 Hz–40 kHz
Trident Audio Ltd	S20 Dual Mic Pre	Solid state	8	No	No	Yes	Preclip LED	20 Hz–40 kHz
True Systems	P2 Analog	Solid state	2	HPs filters at 40, 80 Hz	Yes	Yes (2)	No	1.5 Hz–500 kHz
True Systems	Precision 8	Solid state	8	No	No	1/4"	Peak indicator	1.5 Hz–500 kHz
Universal Audio	M-610	Tube	1	Boost/low-cut filter	Yes	Yes	No	20 Hz–20 kHz
Universal Audio	2108	Solid state (Class A)	2	No	Yes	Yes	3-stage variable LED	20 Hz–20 kHz
Universal Audio	2-610	Tube	2	HF, LF shelf; corner freq.	Yes	Yes	No	20 Hz–20 kHz
Vintech Audio	X73i	Discrete (Class A)	1	3-band	Yes	1/4"	No	N/A
Vintech Audio	Dual 72	Discrete (Class A)	2	No	Yes	1/4"	No	N/A
Vintech Audio	X73	Solid state	1	3-band	Yes	1/4"	Output strength LED	N/A

MICROPHONES

MANUFACTURER	PRODUCT	TYPE	POLAR PATTERNS	INTERNAL ROLL-OFF	INTERNAL PAD	MAX. SPL	FREQUENCY RESPONSE
ADK	A-48	Tube condenser	9 polar pattern	N/A	N/A	130 dB	20 Hz–20 kHz
ADK	Model "A" (A-51)	Condenser	Cardioid	Yes	N/A	130 dB	20 Hz–20 kHz
ADK	Model "S" (A-51s)	Condenser	Cardioid	Yes	Yes	140 dB	20 Hz–20 kHz
ADK	Area 51 Commemorative Edition	Tube condenser	9 polar pattern	N/A	N/A	125 dB	20 Hz–20 kHz
ADK	Model SC-T (A-51SC)	Condenser	Cardioid; omni	100 Hz	-10 dB	144 dB	20 Hz–20 kHz
ADK	Model	Transformerless condenser	Cardioid	N/A	N/A	130 dB	20 Hz–20 kHz
ADK	Model "TC" (A-51TC)	Tube condenser	Cardioid	N/A	N/A	125 dB	20 Hz–20 kHz
ADK	Model "TL" (A-51TL)	Transformerless condenser	Cardioid; hypercard; omni; fig-8	N/A	N/A	135 dB	20 Hz–20 kHz
ADK	A-51TT	Tube condenser	9 polar pattern	N/A	N/A	125 dB	20 Hz–20 kHz
ADK	Vienna Edition	Condenser	Cardioid	100 Hz	-18 dB	140 dB	20 Hz–20 kHz
ADK	Hamburg Edition	Condenser	Cardioid	100 Hz	-18 dB	140 dB	20 Hz–20 kHz
ADK	Model "ST" (A-51ST)	Condenser	Cardioid; omni; figure-8	100 Hz	-10 dB	140 dB	20 Hz–20 kHz
AKG	C 411/C 411 B/C 411 L	Condenser	Figure-8 (vibration pickup)	N/A	N/A	100 dB	10 Hz–18 kHz
AKG	C 414B/XLII	Condenser	Cardioid; hypercardioid; omni; figure-8; wide card	40/80/160 Hz	-6/-12/-18 dB	158 dB	20 Hz–20 kHz
AKG	C 414B/XLS	Condenser	Cardioid; hypercardioid; omni; fig-8; wide card	40/80/160 Hz	-6/-12/-18 dB	158 dB	20 Hz–20 kHz
AKG	C 416/C416 B	Condenser	Hypercardioid	N/A	N/A	130 dB	20 Hz–20 kHz
AKG	C 418/C 418 B	Condenser	Hypercardioid	N/A	N/A	140 dB	50 Hz–20 kHz
AKG	C 419 / C 419 L	Condenser	Hypercardioid	N/A	N/A	130 dB	20 Hz–20 kHz
AKG	C 430	Condenser	Cardioid	N/A	N/A	130 dB	20 Hz–20 kHz
AKG	C 451 B	Condenser	Cardioid	75/150 Hz	-10/0/-20 dB	155 dB	20 Hz–20 kHz
AKG	C 480B-CK 61	Condenser	Cardioid	70/150 Hz	6/0/-10 dB	144 dB	20 Hz–20 kHz
AKG	C 535EB	Condenser	Cardioid	100 Hz	-14 dB	130 dB	20 Hz–20 kHz
AKG	C 900m	Condenser	Cardioid	N/A	N/A	142 dB	20 Hz–20 kHz
AKG	C 1000S	Condenser	Cardioid; hypercardioid	N/A	-10 dB	137 dB	50 Hz–20 kHz
AKG	C 2000B	Condenser	Cardioid	500 Hz	-10 dB	140-150 dB	30 Hz–20 kHz
AKG	C 3000 B	Condenser	Cardioid	500 Hz	-10 dB	150 dB	20 Hz–20 kHz

	NOISE	TOTAL HARMONIC DISTORTION	SPECIAL FEATURES	PRICE
	-127 dB EIN	N/A	48V phantom; phase; 30 dB pad; optional 24-bit S/PDIF	$749
	-122 dBu	0.05%	Phantom power; phase reverse	$1,499
	-127.5 dB EIN	0.005%	Phase; phantom per ch; 2 high-level inputs	$1,250
	-132 dB EIN	0.0008%	MIs decoding; two DIs	$1,750
	-132 dB EIN	.0008%	Offers MS Decoding, 2 DI's, continuous gain control	$3,250
	-84 dBu, -145 dB EIN	0.03%	Phantom power; variable mic/hi-Z impedance	$1,295
	-165 dB EIN @ 65dB gain	N/A	Phantom power	$1,695
	-84 dBu, -145 dB EIN	0.03%	Phantom power; variable mic/hi-Z impedance	$2,295
	N/A	N/A		$1,595
	N/A	N/A		$1,595
	N/A	N/A		$1,995

SUGGESTED APPLICATIONS	SPECIAL FEATURES	PRICE
Vocals; sax; guitar	Flight case; power supply; heavy duty ring/shockmount	$1,299
Vocals; guitar; reeds; strings	Vintage curve	$399
Vocals; horns; all guitars; drums; high SPL sources	Vintage curve	$499
All vintage mic applications	Special grille; remote polar pattern controller	$1,895
Guitars; strings; hi-hat; drum overheads	Two swappable capsules	$495
Grand piano; trumpet; timpani	Orchestral mic with linear, slightly rising response curve	$695
Acoustic instruments; vocals; broadcast	Blended curve that utilizes vintage German and Austrian curves	$995
Orchestral instruments; strings; choir	Four distinct vintage curves in each of the polar patterns	$795
Lead vocals; acoustic instruments	Multi-color tonality from Clear to Mellow (omni to figure-8)	$1,595
Vocals; guitars; drums	Vintage Austrian tonality	$695
Vocals; guitar; sax; drums	Mellowness of vintage German tonality	$695
Vocals; instruments; broadcast	Flight case; shockmount; new 1.1" capsule	$699
Stringed instruments		$254/$155/$155
Multipurpose; esp. vocals; strings	Incl. shockmount; pop filter; windscreen	$1,049
Multipurpose studio	Incl. shockmount; pop filter; windscreen	$999
Instrument; amplifier	Perm or temp mount	$370 - $281
Percussion	Clip-on mount	$370/$281
Horn; brass	Clip-on mount	$370/$281
Instrument; percussion	Low profile	$260
Studio	Comes with individual frequency plot	$593
Premium recording		$1,099
Premium hand-held vocal		$399
Vocals	Can be converted to wireless	$249
Personal studio; field recording; stage	Battery-powered option	$322
Personal studio	H100 shockmount	$344
Studio; stage	H100 shockmount	$536

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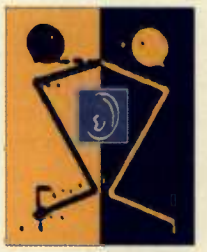

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MICROPHONES

MANUFACTURER	PRODUCT	TYPE	POLAR PATTERNS	INTERNAL ROLL-OFF	INTERNAL PAD	MAX. SPL	FREQUENCY RESPONSE
AKG	C 4000 B	Condenser	Omni; cardioid; hypercardioid	100 Hz	-10 dB	155 dB	20 Hz–20 kHz
AKG	C 4500 B-BC	Condenser	Cardioid	120 Hz	-20 dB	165 dB	30 Hz–20 kHz
AKG	CK77 WR	Condenser	Omnidirectional	N/A	N/A	133 dB	20 Hz–20 kHz
AKG	C 391B	Condenser	Cardioid	75 Hz	-10 dB	142 dB	20 Hz–20 kHz
AKG	D 112	Dynamic	Cardioid	N/A	N/A	N/A	20 Hz–17 kHz
AKG	D 409	Dynamic	Hypercardioid	N/A	N/A	128 dB	50 Hz–17 kHz
AKG	D 440	Dynamic	Cardioid	N/A	N/A	156 dB	60 Hz–20 kHz
AKG	D 550	Dynamic	Cardioid	N/A	N/A	156 dB	20 Hz–20 kHz
AKG	D 660S	Dynamic	Hypercardioid	N/A	N/A	150 dB	70 Hz–20 kHz
AKG	D 770	Dynamic	Cardioid	N/A	N/A	156 dB	60 Hz–18 kHz; 20 Hz–20 kHz
AKG	D 880m /D 880Sm	Dynamic	Supercardioid	N/A	N/A	147/156 dB	60 Hz–18 kHz; 20 Hz–20 kHz
AKG	D 3700m /D 3700S m	Dynamic	Hypercardioid	N/A	N/A	156 dB	60 Hz–18 kHz; 20 Hz–18 kHz
AKG	D 3800m	Dynamic	Hypercardioid	N/A	N/A	156 dB	60 Hz–18 kHz; 20 Hz–18 kHz
AKG	Solid Tube	Condenser	Cardioid	100 Hz	-20 dB	130/145 dB	20 Hz–20 kHz
Apex	110	Condenser	Hypercardioid	N/A	N/A	140 dB	70 Hz–18 kHz
Apex	120	High SPL instrument	Hypercardioid	N/A	N/A	130 dB	50 Hz–18 kHz
Apex	125	High SPL instrument	Hypercardioid	N/A	N/A	165 dB	50 Hz–16 kHz
Apex	126	High SPL instrument	Cardioid	N/A	N/A	145 dB	50 Hz–18 kHz
Apex	130	Condenser	Semi-cardioid	N/A	N/A	130 dB	50 Hz–18 kHz
Apex	140	Condenser	Cardioid	N/A	N/A	131 dB	80 Hz–16 kHz
Apex	145	Condenser	Cardioid	N/A	N/A	130 dB	100 Hz–12 kHz
Apex	150	Condenser	Cardioid	N/A	N/A	130 dB	30 Hz–18 kHz
Apex	160	Condenser	Omni	N/A	N/A	131 dB	20 Hz–20 kHz
Apex	165	Condenser	Cardioid	N/A	N/A	135 dB	30 Hz–18 kHz
Apex	170	Electret condenser	Cardioid	N/A	N/A	115 dB	80 Hz–15 kHz
Apex	175	Condenser	Supercardioid	N/A	N/A	120 dB	80 Hz–15 kHz
Apex	190	Pencil condenser	Cardioid	N/A	N/A	135 dB	70 Hz–17 kHz
Apex	191	Pencil condenser	Cardioid	N/A	N/A	135 dB	70 Hz–18 kHz
Apex	351	Dynamic	Cardioid	N/A	N/A	N/A	50 Hz–15 kHz
Apex	381	Dynamic	Cardioid	N/A	N/A	N/A	50 Hz–18 kHz
Apex	410	Condenser	Cardioid	N/A	N/A	135 dB	40 Hz–19 kHz
Apex	420	Condenser	Cardioid; omni	N/A	N/A	130 dB	20 Hz–20 kHz
Apex	435	Condenser	Cardioid	N/A	N/A	130 dB	20 Hz–20 kHz
Apex	460	Tube Condenser	Omni; cardioid; fig-8; 6 intermed.	N/A	N/A	125 dB	20 Hz–20 kHz
Apex	750	Dynamic	Cardioid	N/A	N/A	N/A	50 Hz–15 kHz
Apex	770	Dynamic	Cardioid	N/A	N/A	N/A	50 Hz–15 kHz
Apex	850	Dynamic	Cardioid	N/A	N/A	N/A	80 Hz–12 kHz
Apex	880	Dynamic	Hypercardioid	N/A	N/A	130 dB	80 Hz–12 kHz
Apex	950	Dynamic	Cardioid	N/A	N/A	N/A	80 Hz–12 kHz
Audio Engineering Associates	R84	Ribbon	Figure-8	N/A	N/A	168 dB	20 Hz–20 kHz
Audio Engineering Associates	R88 Stereo Ribbon Microphone	Ribbon	Blumlein stereo (crossed figure-8)	N/A	N/A	160 dB @ 1 kHz	20 Hz–20 kHz
Audio-Technica	AE2500	Condenser/dynamic	Cardioid	80 Hz	-10 dB	148 dB	20 Hz–17 kHz
Audio-Technica	AE3000	Condenser	Cardioid	80 Hz	-10 dB	148 dB	20 Hz–20 kHz
Audio-Technica	AT3060	Tube condenser	Cardioid	N/A	N/A	134 dB	50 Hz–16 kHz
Audio-Technica	AE3300	Condenser	Cardioid	80 Hz	-10 dB	147 dB	30 Hz–18 kHz
Audio-Technica	AE5100	Condenser	Cardioid	80 Hz	-10 dB	148 dB	20 Hz–20 kHz
Audio-Technica	AE5400	Condenser	Cardioid	80 Hz	-10 dB	147 dB	20 Hz–20 kHz
Audio-Technica	AT815ST	Condenser	Line-cardioid; figure-8	80 Hz	N/A	127 dB	30 Hz–20 kHz
Audio-Technica	AT822	Condenser	Cardioid stereo	150 Hz	N/A	125 dB	30 Hz–20 kHz
Audio-Technica	AT825	Condenser	Cardioid stereo	150 Hz	N/A	126 dB	30 Hz–20 kHz
Audio-Technica	AT835ST	Condenser	Line-cardioid; figure-8	80 Hz	N/A	127 dB	40 Hz–20 kHz
Audio-Technica	AT3031	Condenser	Cardioid	80 Hz	-10 dB	148 dB	30 Hz–20 kHz
Audio-Technica	AT3032	Condenser	Omnidirectional	80 Hz	-10 dB	148 dB	30 Hz–20 kHz

SUGGESTED APPLICATIONS	SPECIAL FEATURES	PRICE
Studio	H100 shockmount	$719
Bass drum; studio vocals; horns	H100 shockmount	$719
Church; theater; broadcast	Water-resistant	$335
General purpose		$516
Bass drums; bass instruments		$299
Instrument	Clip-on	$216
Instrument	Clamp for drums	$210
Bass instrument		$251
Vocal	On/off switch	$108
Vocal; instrument		$139
Vocal	Can be converted to wireless; "S" has silent on-off switch	$147/$159
Vocal; instrument	Can be converted to wireless; "S" has silent on-off switch	$195/$210
Vocal; instrument	Can be converted to wireless	$249
Vocal; acoustic guitar	Carrying case; shockmount	$1,054
Live vocals	Hand held	$169
Drums; instrument amps	Mic clip	$109
Kick drum	Mic clip	$129
Snare; toms; percussion	Detachable rubberized drum rim mount; clip	$79
Orchestral; operatic; live sound	Surface mount	$209
Speech; lecterns; podium	Shockmount	$99
Speech	Desktop mic	$129
Overhead	Hanger guide	$189
Broadcast; mobile recording	Sub-miniature lavaliere mic	$299
Brass; wind; acoustic guitar; drum	Gooseneck/shockmount clip; windsock	$169
Acoustic guitar; strings; drums overhead	Mic clip	$109
Stage; broadcast; electronic news gathering	Shotgun type; mic clip; windsock	$139
Choirs; strings; brass; drum overhead	Stubby pencil condenser; mic clip; windsock	$129
Multi-use	Mic clip; windsock; phantom/battery	$125
Instruments; vocals	Neodymium Cartridge; low handling noise	$99
Vocals; instruments	Neodymium Cartridge; Ultra low handling noise	$119
Vocals; instruments	Suspension mount	$249
Vocals; instruments	Suspension mount	$319
Vocals; instruments	Suspension mount	$79
Vocals; instruments	Shockmount clip; cable; windsock; pwr supply	$349
Vocals		$65
Instruments		$49
Vocals		$39
Vocals		$39
Vocals		$26
Vocals/voiceover; brass; percussion; wind/strings	Cushion mount; Starquad cable; padded soft case	$1,100
Ensemble; overheads	Precise stereo imaging; extended bass response; clean transient response	$1,895
Kick drum; bass guitar; toms	Cable; isolation clamp	$699
Guitar amp; percussion; overheads	Isolation clamp	$379
Vocals; acoustic instruments; guitar cabs; overheads	48V phantom-powered tube mic; included AT8458 shock-mount	$599
Vocals; general purpose	Features AT4033 element	$439
Instruments; acoustic guitar; strings	Isolation clamp	$379
Vocals; general purpose	Features AT4050 element	$579
Studio audio acquisition	Carrying case	$999
Stereo recording		$399
Stereo recording	Battery or phantom power	$525
Studio audio acquisition	Carrying case	$899
General purpose		$259
Group vocals; instruments		$259

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MICROPHONES

MANUFACTURER	PRODUCT	TYPE	POLAR PATTERNS	INTERNAL ROLL-OFF	INTERNAL PAD	MAX. SPL	FREQUENCY RESPONSE
Audio-Technica	AT3035	Condenser	Cardioid	80 Hz	-10 dB	148 dB	20 Hz–20 kHz
Audio-Technica	AT4041	Condenser	Cardioid	80 Hz	N/A	145 dB	20 Hz–20 kHz
Audio-Technica	AT4047/SV	Condenser	Cardioid	80 Hz	-10 dB	149 dB	20 Hz–18 kHz
Audio-Technica	AT4050	Condenser	Cardioid; omni; figure-8	80 Hz	-10 dB	149 dB	20 Hz–18 kHz
Audio-Technica	AT4051a	Condenser	Cardioid	80 Hz	N/A	146 dB	20 Hz–20 kHz
Audio-Technica	AT4060	Tube condenser	Cardioid	N/A	N/A	150 dB	20 Hz–20 kHz
Audio-Technica	ATM10a	Condenser	Omnidirectional	N/A	N/A	137 dB	20 Hz–18 kHz
Audio-Technica	ATM23HE	Dynamic	Hypercardioid	N/A	N/A	N/A	70 Hz–16 kHz
Audio-Technica	ATM25	Dynamic	Hypercardioid	N/A	N/A	N/A	30 Hz–15 kHz
Audio-Technica	ATM31a	Condenser	Cardioid	N/A	N/A	137 dB	30 Hz–20 kHz
Audio-Technica	ATM33a	Condenser	Cardioid	N/A	N/A	137 dB	30 Hz–20 kHz
Audio-Technica	ATM35	Condenser	Cardioid	150 Hz	N/A	145 dB	30 Hz–20 kHz
Audio-Technica	PRO 37R	Condenser	Cardioid	N/A	N/A	141 dB	30 Hz–15 kHz
Audio-Technica	MB4k	Dynamic	Cardioid	N/A	N/A	137 dB	80 Hz– 20 kHz
Audix	ADX-20-i	Condenser	Cardioid	N/A	N/A	140 dB	40 Hz–20 kHz
Audix	ADX-51	Condenser	Cardioid	150 Hz	10 dB	132/142 dB	40 Hz–18 kHz
Audix	CX111	Condenser	Cardioid	N/A	-10 dB	145 dB	20 Hz–20 kHz
Audix	D1	Dynamic	Hypercardioid	N/A	N/A	144 dB	46 Hz–18 kHz
Audix	D2	Dynamic	Hypercardioid	N/A	N/A	144 dB	44 Hz–18 kHz
Audix	D3	Dynamic	Hypercardioid	N/A	N/A	144 dB	50 Hz–19 kHz
Audix	D4	Dynamic	Hypercardioid	N/A	N/A	144 dB	38 Hz–19 kHz
Audix	D6	Dynamic	Cardioid	N/A	N/A	144 dB	30 Hz–15 kHz
Audix	M1245	Condenser	Cardioid	N/A	N/A	140 dB	80 Hz–20 kHz
Audix	M1290	Condenser	Cardioid	N/A	N/A	140 dB	40 Hz–20 kHz
Audix	Micro-D	Condenser	Hypercardioid	N/A	N/A	140 dB	40 Hz–20 kHz
Audix	OM2	Dynamic	Hypercardioid	N/A	N/A	140 dB	50 Hz–16 kHz
Audix	OM3	Dynamic	Hypercardioid	N/A	N/A	144 dB	50 Hz–18 kHz
Audix	OM5	Dynamic	Hypercardioid	N/A	N/A	144 dB	48 Hz–19 kHz
Audix	OM6	Dynamic	Hypercardioid	N/A	N/A	144 dB	40 Hz–19 kHz
Audix	OM7	Dynamic	Hypercardioid	N/A	N/A	144 dB	45 Hz–19 kHz
Audix	SCX-25	Condenser	Cardioid	N/A	N/A	135 dB	20 Hz–20 kHz
Audix	SCXI-0	Condenser	Omni	N/A	N/A	132dB	20 Hz–20 kHz
Audix	SCXI-HC	Condenser	Hypercardioid	N/A	N/A	130 dB	40 Hz–20 kHz
Audix	SCXI-C	Condenser	Cardioid	N/A	N/A	130 dB	40 Hz–20 kHz
Audix	TR40	Condenser	Omni	N/A	N/A	128 dB	20 Hz–20 kHz
Audix	VX10	Condenser	Cardioid	N/A	N/A	140 dB	40 Hz–20 kHz
Behringer	B-1	Condenser	Cardioid	75 Hz	-10 dB	138 dB	20 Hz–20 kHz
Behringer	B-2 Pro	Condenser	Cardioid; omni; figure-8	N/A	N/A	137-149 dB	20 Hz–20 kHz
Behringer	ECM8000	N/A	Omnidirectional	N/A	N/A	N/A	15 Hz–20 kHz
Behringer	Ultravoice XM8500	Dynamic	Cardioid	N/A	N/A	N/A	5 Hz–200 kHz
Behringer	XM1800S	Dynamic	Supercardioid	N/A	N/A	N/A	80 Hz–15 kHz
Behringer	XM2000S	Dynamic	Supercardioid	N/A	N/A	N/A	50 Hz–15 kHz
Benson Audio	B2	Condenser PZM	Cardioid	N/A	N/A	141 dB	30 Hz–20 kHz
Benson Audio	BA 30	Dynamic	Cardioid	N/A	N/A	145 dB	50 Hz–15 kHz
Benson Audio	ND 90	Dynamic	Hypercardioid	N/A	N/A	145 dB	50 Hz–18 kHz
beyerdynamic	M-88TG	Dynamic	Hypercardioid	N/A	N/A	120 dB	30 Hz–20 kHz
beyerdynamic	M-130	Dynamic ribbon	Figure-8	N/A	N/A	116 dB	40 Hz–18 kHz
beyerdynamic	M-160	Dynamic ribbon	Hypercardioid	N/A	N/A	116 dB	40 Hz–18 kHz
beyerdynamic	M-201TG	Dynamic	Hypercardioid	N/A	N/A	120 dB	40 Hz–18 kHz
beyerdynamic	MC-740	Condenser	Wide cardioid; cardioid; hyper-cardioid; omni; fig-8	N/A	-10 dB	134/144 dB	20 Hz–20 kHz
beyerdynamic	MC-834	Condenser	Cardioid	80/160 Hz	-10 dB	130/140/150 dB	20 Hz–20 kHz
beyerdynamic	MCD 100	Digital condenser	Cardioid	Yes	Yes	150 dB	20 Hz–20 kHz
beyerdynamic	MCE-82	Electret condenser	Dual cardioid	120 Hz	N/A	120 dB	50 Hz–20 kHz
beyerdynamic	MCE-83	Electret condenser	Cardioid	N/A	N/A	138 dB	50 Hz–18 kHz

SUGGESTED APPLICATIONS	SPECIAL FEATURES	PRICE
Vocals; instruments; general purpose	AT 8458 shockmount	$349
Instruments; acoustic guitar		$395
Vocals; instruments; general purpose	AT8449/SV shockmount	$745
Vocals; instruments; general purpose	AT8449 shockmount	$895
Instruments		$595
Vocals; general purpose	AT8560 power supply; AT8447 shockmount	$1,495
Group vocals; instruments	Battery or phantom power	$210
Snare; toms; instruments		$235
Kick drum; toms		$275
Vocals; general purpose	Battery or phantom power	$250
Instruments; general purpose	Battery or phantom power	$290
Horns; drums; instruments	Battery or phantom power; clip-on mount	$350
Instrument; general purpose		$175
Acoustic instruments; group vocals; overheads/hi-hat	On/off switch; soft-touch finish; 48V/BATT operation	$129
Instrument	High-tension spring clamp; flexible gooseneck	$199
Group vocals; overheads; perc; acoustic instr	Brass housing; 9-52V phantom	$299
Vocals; drum overheads; acoustic instr; room	Shockmount; flight case	$499
Snare; percussion		$219
Toms; congas; percussion		$219
Snare; timbale; trumpet; electric guitar		$219
Kick drum; acoustic bass; piano; sax		$299
Kick drum; bass cabs	1-piece machined aluminum; pre-emphszd bass	$349
Percussion; choir; vocals; acoustic inst	Tiny condenser mic; preamp; detachable cable	$379
Percussion; overheads; field recording	Tiny condenser mic; preamp; detachable cable	$399
Toms; snare; congas	Rim mount clip w/shockmount suspension	$259
All-purpose vocals	Spring steel grill ball; gain before feedback	$149
General purpose		$199
Vocals		$265
Vocals		$329
Vocals		$349
Vocals; instrument	Suspension mounting system	$799
Acoustic instruments	Wide dyn range; low noise; matched pairs avail	$479
Hi-hat; acoustic instruments	Wide dyn range; low noise; matched pairs avail	$629
Acoustic instruments	Wide dyn range; low noise; matched pairs avail	$599
Room analysis	Works w/RTA systems, room analysis software	$249
Vocals	Vocal sound for both live and studio	$599
Vocal and general use	1" gold-sputtered diaphragm	$129
Instruments; vocals	A switchable figure-8 pattern	$190
	+15V/+48V phant pwr; clip/stand adapter	$43
General purpose	Pop filter; hard case with clip/adapter	$49
General purpose	Bundled in 3 w/mic clips; carrying case	$40
Vocals	Pop filter; hard case with clip/adapter	$49
Piano; acoustic instruments; group vocals	Battery or phantom power	$260
Drums; guitar amps; female vocals	Windscreen	$170
Vocals		$350
General purpose		$399
Digital recording; ambient; piano; strings		$750
Stringed instruments; strings		$750
Percussion; drums		$300
Vocals; piano; perc; overhead		$1,899
Vocal; piano; strings; brass; perc; sampling; voice-overs		$999
Studio recording	AES/EBU out (requires MPD 200 power supply)	$2,500
Drum overhead; piano; vocals		$800
Brass; percussion		$300

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A marriage of technical precision and artistic inspiration, the AT**4040** features an advanced large diaphragm tensioned specifically to provide smooth, natural sonic characteristics. Designed as a multi-purpose performer, this true condenser microphone offers exceptionally low noise, wide dynamic range and high-SPL capability for greatest versatility.

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MICROPHONES

MANUFACTURER	PRODUCT	TYPE	POLAR PATTERNS	INTERNAL ROLL-OFF	INTERNAL PAD	MAX. SPL	FREQUENCY RESPONSE
beyerdynamic	MCE-90	Condenser	Cardioid	100 Hz	-15 dB	154 dB	30 Hz–20 kHz
BLUE	Baby Bottle	Condenser	Cardioid	N/A	N/A	133 dB	20 Hz–20 kHz
BLUE	Ball	Dynamic	Cardioid	N/A	N/A	162 dB	35 Hz–16 kHz
BLUE	Blueberry	Condenser	Cardioid	N/A	N/A	133 dB	20 Hz–20 kHz
BLUE	Dragonfly	Condenser	Cardioid	N/A	N/A	132 dB	20 Hz–20 kHz
BLUE	Dragonfly Deluxe	Condenser	Cardioid	N/A	N/A	133 dB	20 Hz–20 kHz
BLUE	Mouse	Condenser	Cardioid	N/A	N/A	134 dB	20 Hz–20 kHz
BLUE	8 Ball	Condenser	Cardioid	N/A	N/A	150 dB	20 Hz–20 kHz
Brauner	Phantom C-US	Condenser (FET)	Cardioid	N/A	N/A	140 dB	20 Hz–20 kHz
CAD	22A	Dynamic	Cardioid	N/A	N/A	N/A	60 Hz–15 kHz
CAD	25A	Dynamic	Supercardioid	N/A	N/A	N/A	50 Hz–16 kHz
CAD	C195	Condenser	Cardioid	N/A	N/A	132 dB	50 Hz–18 kHz
CAD	D189	Dynamic	Supercardioid	N/A	N/A	N/A	50 Hz–16 kHz
CAD	KBM412	Dynamic	Cardioid	N/A	N/A	N/A	30 Hz–15 kHz
CAD	M177	Condenser	Cardioid	80 Hz	-20 dB	148 dB	10 Hz–20 kHz
CAD	M179	Condenser	Variable	80 Hz	20 dB	143 dB	10 Hz–20 kHz
CAD	M9EH	Condenser	Cardioid	N/A	N/A	154.5 dB	10 Hz–20 kHz
CAD	TSM411	Dynamic	Cardioid	N/A	N/A	N/A	50 Hz–15 kHz
CAD	VSM1	Single-valve condenser	Cardioid	80 Hz	-8/-16 dB	149 dB	10 Hz–20 kHz
CAD	VX2	Dual-valve condenser	Cardioid; figure-8; omni	80 Hz	-8/-16 dB	145 dB	10 Hz–20 kHz
CAD	GXL 1200	Condenser	Cardioid	N/A	N/A	N/A	30 Hz–20 kHz
CAD	GXL 2200	Condenser	Cardioid	80 Hz	N/A	N/A	30 Hz–20 kHz
CAD	GXL 2400	Condenser	Cardioid	80 Hz	N/A	N/A	30 Hz–20 kHz
CAD	Equitek e100	Electret Condenser	Supercardioid	80 Hz	20 dB	148	10Hz–18 kHz
CAD	Equitek e300	Condenser	Supercardioid; omni figure-8	80 Hz	20 dB	148 dB	10 Hz–20 kHz
CAD	Equitek e60	Condenser	Cardioid	40/85/120 Hz	20 dB	138 dB	30 Hz–20 kHz
Carvin	D42	Dynamics x 3	Cardioid	75 Hz	N/A	130 dB	80 Hz–13 kHz
Carvin	CM50	Dynamic	Cardioid	N/A	N/A	N/A	50 Hz–14 kHz
Carvin	CM68	Dynamic	Cardioid	N/A	N/A	N/A	45 Hz–15 kHz
Carvin	CM87S	Condenser	Cardioid	40/80 Hz	-6 dB/-10 dB	145 dB	30 Hz–20 kHz
Carvin	CM90E	Condenser	Cardioid	N/A	N/A	132 dB	30 Hz–20 kHz
Carvin	D44	Dynamic	Cardioid	N/A	N/A	140 dB	20 Hz–10 kHz
Coles	4038	Ribbon	Figure-8	N/A	N/A	125/150 dB	30 Hz–15 kHz
Coles	4104	Ribbon	Figure-8	50 Hz	N/A	120 dB	60 Hz–12 kHz
Coles	4040	Ribbon	Figure-8	N/A	N/A	125/150 dB	20 Hz–20 kHz
Countryman	Isomax Headset Microphone	Condenser	Hypercardioid; cardioid	N/A	N/A	150 dB	20 Hz–20 kHz
Countryman	Isomax II	Condenser	Hyper; cardioid; omni	N/A	N/A	150 dB	50 Hz–20 kHz
Crown	CM-150	Condenser	Omnidirectional	N/A	N/A	130 dB	20 Hz–20 kHz
Crown	CM 200A	Condenser	Cardioid	N/A	N/A	151 dB	80 Hz–15 kHz
Crown	CM-700	Condenser	Cardioid	80/150 Hz	N/A	151 dB	30 Hz–20 kHz
Crown	GLM 100	Condenser	Omni	N/A	N/A	150 dB	20 Hz–20 kHz
Crown	GLM 200	Condenser	Hypercardioid	N/A	N/A	131 dB	60 Hz–20 kHz
Crown	PZM 6D	PZM	Hemispherical	N/A	N/A	150 dB	20 Hz–20 kHz
Crown	SASS-PMKII	Condenser	Stereo PZM	100 Hz	N/A	150 dB	20 Hz–20 kHz
DPA	4006	Condenser	Omni	N/A	N/A	154 dB	10 Hz–20 kHz
DPA	4007	Pre-polarized condenser	Omnidirectional	N/A	N/A	155 dB	20 Hz–40 kHz
DPA	4011	Condenser	Cardioid	N/A	N/A	158 dB	40 Hz–20 kHz
DPA	4060	Pre-polarized condenser	Omnidirectional	N/A	N/A	134 dB	20 Hz–20 kHz
DPA	4065	Pre-polarized condenser	Omnidirectional	N/A	N/A	144 dB	20 Hz–20 kHz
Earthworks	Flex Series	Condenser	Cardioid	N/A	N/A	145 dB	50 Hz–20 kHz
Earthworks	M30BX	Condenser	Omni	N/A	N/A	132 dB	9 Hz–25 kHz
Earthworks	QTC1	Condenser	Omnidirectional	N/A	N/A	142 dB	4 Hz–40 kHz
Earthworks	SR69	Condenser	Cardioid	N/A	N/A	145 dB	50 Hz–20 kHz
Earthworks	SR77	Condenser	Cardioid	N/A	N/A	145 dB	30 Hz–30 kHz

SUGGESTED APPLICATIONS	SPECIAL FEATURES	PRICE
General purpose		$700
Voice; instrument; general applications	Cherrywood box; blue velvet bag; mic clip	$649
Studio, live applications	Phantom powered dynamic mic	$199
Voice; acoustic guitars; piano	Cherrywood box	$1,299
Voice; guitar amps; drum overheads	Shock-mount; rotating capsule grill	$1,099
Voice; guitar amps; drum overheads	Cherry wood box; lim prod of 275 units; shockmount	$1,699
Voice; bass amp; kick drum	Rotating capsule grill; cherrywood box	$1,699
Voice; acoustic guitar; drums; woodwinds; strings	Spherical body; Class A discrete	$279
Vocals; guitars	Studio grade shockmount; hand made	$1,750
Vocals	On/off switch; recorded or live vocals	$69
Vocals	On/off switch; recorded or live vocals	$89
Vocals	Multi-stage pop filter; recorded or live vocals	$199
Vocals	Internal multi-stage pop filter	$169
Bass drum; other low frequency sources		$129
Vocals; acoustic and amplified instruments; overhead	High-speed; low noise; discrete power supply circuit	$249
Vocals; acoustic instruments; overheads	Adj polar pattern; 24k gold sputtered 1.1	$399
Vocals; instruments	Shock/swivel mounts; 30' cable; single tube	$599
Snare; toms; percussion instruments; amp miking		$89
Vocals; strings; guitar	Suspension mount	$999
All recording applications	Interchangeable capsule/head screen assembly	$1,999
Overhead; hi-hats; cymbals; wind; strings		$99
Recording; broadcast; vocal; instrument	1	$119
Recording; broadcast; vocal; instrument	1	$129
Vocals; instruments; kick drum; overhead		$399
Vocals; instruments		$599
Instruments		$349
Drums-snare/tom	Built-in mic stand threads; available in 3 & 7 mic package	$50
Vocals	On/off switch	$50
Vocals		$90
Instrument; amp; vocal	Adjustable shockmount	$220
General purpose	Battery or phantom power	$115
Drums-bass drum	Built in mic stand threads; available in drum mic kit	$60
Drum overheads; sax; string instruments; brass; voice; elect	Custom rigid mic mount	$1,424
On-location; high noise environment	Lip bar for flat voice response	$808
Vocal; brass; guitar amp; drum overhead	Internal shockmount; supplied with rigid case; stand adapters	$1,541
Vocals	Phantom version has pop-free switch	$308
General instrument/SR and exotic (acoustical measurements)	Miniature size; opt 18V battery power module	$279
General purpose; acoustical measurement applications		$899
Instruments; vocals		$269
Drums; brass; strings; guitar		$299
Instruments	Universal mount	$219
Instruments	Universal mount	$249
Piano; overhead; conference table		$349
Orchestra; church ensemble; marching band		$995
General recording	Low noise	$1,650
Close-miking drums; percussion; brass		$1,650
Live; general recording	Low distortion	$1,850
General purpose	5.4 mm size	$400
Theater; stage; broadcast	5.4 mm size	$475
Podium; general purpose	Flexible performance lengths: 360, 500, 720mm	$450
Field recording; sound effects; measurement	14 dB gain switch; matched pair ($1,500)	$695
acoustic instruments; location recording	Time-coherent sound; matched pair ($2,500)	$1,200
Vocals; instruments	Black	$595
Voice; guitar; drums; concert tapers	Excellent rejection; matched pair ($2100)	$995

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MICROPHONES

MANUFACTURER	PRODUCT	TYPE	POLAR PATTERNS	INTERNAL ROLL-OFF	INTERNAL PAD	MAX. SPL	FREQUENCY RESPONSE
Earthworks	SR78	Condenser	Hypercardioid	N/A	N/A	145 dB	30 Hz–30 kHz
Earthworks	SR0	Condenser	Omni	N/A	N/A	150 dB	10 Hz–20 kHz
Earthworks	TC-30K	Condenser	Omni	N/A	N/A	150 dB	9 Hz–30 kHz
Earthworks	QTC30	Condenser	Omni	N/A	N/A	145 dB	6 Hz–30 kHz
Earthworks	SR0	Condenser	Omni	N/A	N/A	150 dB	10 Hz–>20 kHz
Earthworks	SR77	Condenser	Cardioid	N/A	N/A	145 dB	30 Hz– 30kHz ±1.5 dB @15cm
Earthworks	QTC1	Condenser	Omni	N/A	N/A	142 dB	4 Hz– 40 kHz ±1 dB
Earthworks	M30	Condenser	Omni	N/A	N/A	150 dB	5Hz–30 kHz +1/-3 dB
Electro-Voice	N/D167	Dynamic	Cardioid	N/A	N/A	145 dB	50 Hz–12 kHz
Electro-Voice	N/D267a; N/D267as	Dynamic	Cardioid	N/A	N/A	154 dB	45 Hz–15 kHz
Electro-Voice	N/D468	Dynamic	Supercardioid	N/A	N/A	158 dB	30 Hz–22 kHz
Electro-Voice	N/D478	Dynamic	Cardioid	N/A	N/A	154 dB	45 Hz–15 kHz
Electro-Voice	N/D767a	Dynamic	Supercardioid	Yes	N/A	158 dB	35 Hz–22 kHz
Electro-Voice	N/D868	Dynamic	Cardioid	N/A	N/A	157 dB	20 Hz –10 kHz
Electro-Voice	RE20	Dynamic	Cardioid	80 Hz	N/A	148 dB	45 Hz–18 kHz
Electro-Voice	RE200	Condenser	Cardioid	N/A	N/A	130 dB	50 Hz–18 kHz
Electro-Voice	RE1000	Condenser	Supercardioid	N/A	N/A	130 dB	70 Hz–18 kHz
Fostex	321	Dynamic	Cardioid	N/A	N/A	N/A	90 Hz–16 kHz
Fostex	521	Dynamic	Cardioid	N/A	N/A	N/A	60 Hz–16 kHz
Generis	GC-1	Condenser	Cardioid	N/A	Yes	130 dB	20 Hz–20 kHz
Generis	GC-2	Condenser	Cardioid	N/A	N/A	140 dB	20 Hz–20 kHz
Generis	GC-2 Dual	Condenser	9 pattern	N/A	N/A	125 dB	20 Hz–20 kHz
Generis	GS-1	Condenser	Cardioid	N/A	N/A	130 dB	30 Hz–20 kHz
Generis	GT-2	Tube condenser	9 polar pattern	N/A	N/A	130 dB	20 Hz–20 kHz
Generis	GT-2 MkII	Tube condenser	9 polar pattern	100 Hz	-10 dB	140 dB	20 Hz–20 kHz
Groove Tubes	GT 33	Class A FET condenser	Cardioid	75 Hz	-15 dB	150 dB	20 Hz–18 kHz
Groove Tubes	GT 44	Class A tube condenser	Cardioid	75 Hz	-15 dB	145 dB	20 Hz–20 kHz
Groove Tubes	GT 57	Class A FET condenser	Omni; figure-8; cardioid	75 Hz	-10 dB	148 dB	20 Hz–20 kHz
Groove Tubes	GT 66	Tube condenser	Cardioid	75 Hz	-10/-20 dB	140 dB	20 Hz–20 kHz
Groove Tubes	GT 67	Class A tube condenser	Cardioid; hypercard; omni; fig.-8	75 Hz	-10 dB	140 dB (w/ pad)	20 Hz–20 kHz
Groove Tubes	MD1b - TUBE	Class A tube condenser	Cardioid	N/A	N/A	140 dB	20 Hz–18 kHz
Groove Tubes	MD1b - FET	Class A FET condenser	Cardioid	N/A	N/A	140 dB	20 Hz–18 kHz
Groove Tubes	GT55	Class A FET condenser	Cardioid	-75 Hz	-10 dB	148 dB	20 Hz–20 kHz
joemeek	JM47	Large diaphragm condenser	Cardioid	N/A	N/A	130 dB	20 Hz–20 kHz
joemeek	JM27	Small diaphragm condenser	Cardioid	N/A	N/A	130 dB	30 Hz–20 kHz
K&K Sound	CXM 5 Saxophone Mic	Condenser (clip-on)	Cardioid (soft)	N/A	N/A	140 dB	20 Hz–20 kHz
K&K Sound	Golden Bullet	Condenser (clip-on)	Hyperunidirectional	N/A	N/A	140 dB	20 Hz–18 kHz
K&K Sound	Silver Bullet	Condenser (clip-on)	Cardioid (soft)	N/A	N/A	135 dB	20 Hz–20 kHz
Langevin	CR-2001	FET condenser	Cardioid	100 Hz	-10 dB	132 dB	40 Hz–16 kHz
Lawson	L47 FET	Condenser	Cardioid	100 Hz	-10/-20 dB	165 dB	20 Hz–20 kHz
Lawson	L47MP MKII	Tube condenser	Infinitely variable	100 Hz	-10 dB	138 dB	20 Hz–20 kHz
Lawson	L251	Tube condenser	Infinitely variable	100 Hz	-10 dB	144 dB	20 Hz–20 kHz
Lawson	L251 FET	Condenser	Cardioid	100 Hz	-10/-20 dB	165 dB	20 Hz–20 kHz
Manley Labs	Reference Cardioid	Condenser	Cardioid	N/A	10	135 dB	20 Hz–20 kHz
MBHO	KA-100 DK	Capsule	Omni	N/A	N/A	132 dB	10 Hz–20 kHz
MBHO	KA-100 LK	Capsule	Linear omni	N/A	N/A	132 dB	10 Hz–20 kHz
MBHO	KA-200 N	Capsule	Cardioid	N/A	N/A	130 dB	40 Hz–20 kHz
MBHO	KA-300 NB	Capsule	Cardioid	N/A	N/A	130 dB	20 Hz–20 kHz
MBHO	KA-400 N	Capsule	Cardioid	N/A	N/A	131 dB	50 Hz–20 kHz
MBHO	KA-500 HN	Capsule	Hypercardioid	N/A	N/A	130 dB	40 Hz–20 kHz
MBHO	KA-800 A	Capsule	Figure-8	N/A	N/A	132 dB	40 Hz–16 kHz
MBHO	KA-1000 N	Diaphragm capsule	Cardioid	N/A	N/A	132 dB	10 Hz–20 kHz
MBHO	KA-1100 K	Diaphragm capsule	Omni	N/A	N/A	132 dB	5 Hz–20 kHz
MBHO	MBNM-410	Condenser	Omni	N/A	N/A	126 dB	15 Hz–20 kHz

SUGGESTED APPLICATIONS	SPECIAL FEATURES	PRICE
Snare spot; location film; Foley	Optional windscreen; matched pair ($1,735)	$995
Vocals; instruments; drums	Matched pair ($995)	$450
Drums; guitar; bass; room; location recording of loud source	Matched pair ($1,400)	$650
Vocal; instruments	Matched pair ($1,700)	$800
Instruments; ambient miking	Flat freq response; time coherent; no handling noise	$450
Instruments; live sound; "tapers"	Open pick up pattern extremely forgiving and accurate	$995
Instruments; ambient miking	Quiet time coherent; available in stereo pairs	$1,200
Measurement/recording instruments	Ruler flat, time coherent mic	$650
Vocals	Warm grip handle	$132
Vocals	Stand clamp; gig bag; warm grip handle; vocal optimized bass response	$180/$190
Instruments	Flex pivoting yoke; gig bag	$334
Vocals; instruments	Warm grip handle; vocal optimized bass response	$180
Lead vocals	Shockmount; gig bag; vocal optimized bass response	$252
Kick drum		$372
Bass; drum; vocal; upright bass; toms; electric guitars	Variable-D design	$798
Percussion; strings; brass; choir	Small; stand clamp; windscreen	$314
General recording	Phantom power; 2-stage pop filter	$698
Vocals		$59
Vocals		$79
Vocals; guitar; sax		$99
High SPL instruments		$149
Vocals; acoustic instruments		$599
Instruments		$89
Vocals; instruments	Flight case; shockmount; power supply	$599
Vocals; instruments	Flight case; shockmount; power supply	$699
Choir; vocals; Instruments; drums; guitar amps	Omni and hypercardioid capsules optional @ $99 each	$699
Vocals; choir; acoustic instrument; electric guitar amps	Omni and hypercardioid capsules optional @ $99 each	$999
Vocals; choir; acoustic instrument; electric guitar amps	Thin, 3 micron diaphragm; 1.1 capsule w/ disk resonator	$699
Vocals; choir; acoustic instrument; electric guitar amps	Thin, 3 micron diaphragm; 1.1 capsule w/ disk resonator;	$999
Vocals; choir; acoustic instrument; electric guitar amps	Thin, 3 micron diaphragm; 1.1 capsule w/ disk resonator;	$1,299
Vocals; choir; acoustic instrument; electric guitar amps	Thin, 3 micron diaphragm; 1.1" brass capsule; shock mnt.	$699
Vocals; choir; acoustic instrument; electric guitar amps	Thin, 3 micron diaphragm; 1.1" brass capsule; shk/hrd mount;	$399
Vocals; choir; acoustic instrument; electric guitar amps	Thin, 3 micron diaphragm; 1.1 capsule w/ disk resonator;	$499
Vocal; instrument; spot	HD mount included; shockmount optional	$299
Piano; guitar; drum overheads; strings	Clip included; shockmount optional	$129
Saxophone; trumpet; trombone	Beltclamp preamp with active XLR output	$235
Hand drums; acoustic bass	Beltclamp preamp with active XLR output	$181
Flute; mandolin; Udu drums	Special flute clip; beltclamp preamp with active XLR output	$149
General purpose	Shockmount; hard mount; wind screen; case	$800
Vocals; ac gtr; bass drm; drm overhead; brass	Case; swivel holder; modular changeable capsule	$995
Vocals; acoustic guitar; strings; piano; choir; orchestra	Internally shockmounted Quick Change capsule	$1,995
Vocals; ac gtr; strings; piano; choir; orch; winds	Quick Change capsule; 3 dB hotter cardioid switch; case	$2,495
Vocals; acoustic guitar; instruments	Internal shockmounted Quick Change capsule; case;	$1,495
Vocals; instruments	Large diaphragm tube mic	$3,000
Outdoor; inst; acoustic guitar; overhead	6 dB peak @ 8-9 kHz for more distant pick-up	$249
Instrument; location	Extremely flat frequency response	$249
General; X/Y recordings; mid-size config	Neutral record space ± 135°	$249
Strings; acoustic bass; piano; location	Wide cardioid w/ increase in low freq reproduction	$249
Speech; vocals	12 dB low-cut @ 50 Hz	$249
General	High directivity	$295
Stereo	Directional pickup largely indep. of frequency	$612
Vocal; choir; piano; sax; acoustic bass; guitar	1" vintg capsule; brass plate; gold sputtrd membrane	$764
Piano; choir; acoustic bass; sax; ac guitar	1" vintg capsule; brass plate; gold sputtrd membrane	$764
Overhead; drums; choir; acoustic guitar; percussion	Short external routings with MBHO's SMD technology	$369

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"The Vienna is an absolutely beautiful sounding microphone! It has all the warmth of a rare vintage mic, but adds a slight presence boost in the high end that just screams 'expensive'!"

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FACSIMILE: 1-360-566-1282
WEBSITE: www.ADKMIC.com
EMAIL: Info@ADKMIC.com

MICROPHONES

MANUFACTURER	PRODUCT	TYPE	POLAR PATTERNS	INTERNAL ROLL-OFF	INTERNAL PAD	MAX. SPL	FREQUENCY RESPONSE
MBHO	MBNM-440	Condenser	Cardioid	N/A	N/A	126 dB	40 Hz–20 kHz
MBHO	MBNM-540 EL	Measurement	Omni	N/A	N/A	128 dB	20 Hz–20 kHz
MBHO	MBNM-550 EL	Condenser	Omni	N/A	N/A	128 dB	10 Hz–20 kHz
MBHO	MBNM-608	Condenser	Omni; cardioid; figure-8	N/A	N/A	133 dB	5 Hz–20 kHz
MBHO	MBNM-622	Electret condenser	Omni	N/A	N/A	130 dB	10 Hz–26 kHz
MBHO	MBNM-630	Condenser PZM	Half cardioid/axial	N/A	N/A	130 dB	20 Hz–20 kHz
MBHO	MBP-603 Mic Body	Condenser	Separate capsules	N/A	N/A	Various	Various
MBHO	MBP-648	Condenser	Cardioid; omni (dep. on capsule)	N/A	N/A	Various	Various
MBHO	MBP-648A	Condenser	Various	N/A	N/A	N/A	N/A
MBHO	MBP-680	Condenser	N/A	N/A	N/A	N/A	N/A
MBHO	MBNM-440 CLS	Condenser	Cardioid	N/A	-10 dB	126 dB	40 Hz–20 kHz
MBHO	MBP-603-A	Condenser	Capsule dependent	N/A	N/A	N/A	N/A
MBHO	Jecklin Disc	Disc for OSS	Various	N/A	N/A	N/A	N/A
MicroTech Gefell	M300	Condenser	Cardioid	N/A	N/A	135 dB	40 Hz–18 kHz
MicroTech Gefell	M930	Condenser	Cardioid	N/A	N/A	N/A	N/A
MicroTech Gefell	MT 711S	Condenser	Cardioid	90 Hz	-10 dB	144 dB	40 Hz–18 kHz
MicroTech Gefell	UMT 70S	Condenser	Cardioid; omni; figure-8	90 Hz	-10 dB	149 dB	40 Hz–18 kHz
MXL	MXL 600	Condenser	Cardioid	N/A	N/A	134 dB	30 Hz–20 kHz
MXL	MXL 603s	Condenser	Cardioid	N/A	N/A	130 dB	30 Hz–20 kHz
MXL	MXL 1006	Condenser	Cardioid	N/A	N/A	130 dB	30 Hz–20 kHz
MXL	MXL 2003	Condenser	Cardioid	150 Hz	-10 dB	140 dB	20 Hz–23 kHz
MXL	MXL V67 Gold	Condenser	Cardioid	N/A	N/A	130 dB	30 Hz–20 kHz
MXL	MXL V77S Tube	Tube condenser	Cardioid	N/A	N/A	122 dB	20 Hz–20 kHz
MXL	V69M-Edt	Tube	Cardioid	N/A	N/A	140 dB	20 Hz–20 kHz
Neumann	KM 120	Condenser	Figure-8	N/A	-10 dB	138 dB	20 Hz–20 kHz
Neumann	KM 130	Condenser	Omni	N/A	-10 dB	140 dB	20 Hz–20 kHz
Neumann	KM 140	Condenser	Cardioid	N/A	-10 dB	138 dB	20 Hz–20 kHz
Neumann	KM 150	Condenser	Hyper-cardioid	Omni	+10 dB	152 dB	20 Hz–20 kHz
Neumann	KM 183	Condenser	Omni	N/A	N/A	140 dB	20 Hz–20 kHz
Neumann	KM 184	Condenser	Cardioid	N/A	N/A	138 dB	20 Hz–20 kHz
Neumann	KM 185	Condenser	Hypercardioid	N/A	N/A	142 dB	20 Hz–20 kHz
Neumann	KMS 105	Condenser	Supercardioid	120 Hz	N/A	150 dB	20 Hz–20 kHz
Neumann	TLM 103	Condenser	Cardioid	N/A	N/A	138 dB	20 Hz–20 kHz
Neumann	TLM 193	Condenser	Cardioid	N/A	N/A	140 dB	20 Hz–20 kHz
Neumann	BCM 104	Condenser	Cardioid	100 Hz	14 dB	138 dB	20 Hz–20 kHz
Pearl Labs	CC22	Condenser	Cardioid	N/A	N/A	126 dB	20 Hz–25 kHz
Pearl Labs	C022	Condenser	Omni	N/A	N/A	126 dB	20 Hz–25 kHz
Pearl Labs	TL66	Condenser	Cardioid; omni	N/A	N/A	132 dB	20 Hz–20 kHz
Pearl Labs	TLC 90	Condenser	Cardioid	N/A	N/A	144 dB	20 Hz–20 kHz
Pearl Labs	ELM-C	Condenser	Cardioid	N/A	N/A	126 dB	20 Hz–20 kHz
Peavey	PVM 22	Dynamic	Cardioid	N/A	N/A	140 dB	50 Hz–16 kHz
Peavey	PVM 46	Dynamic	Hypercardioid	N/A	N/A	140 dB	45 Hz–16 kHz
Peavey	PVM 480	Condenser	Supercardioid	N/A	N/A	128 dB	40 Hz–20 kHz
Peavey	Studio Pro M1	Condenser	Cardioid	150 Hz	-10 dB	140 dB	30 Hz–20 kHz
Peavey	Studio Pro M2	Condenser	Cardioid; figure-8; omni	150 Hz	-10 dB	145 dB	30 Hz–20 kHz
Røde	S1	Condenser	Supercardioid	N/A	N/A	151 dB	20Hz–20 kHz
Røde	NT2000	Condenser	Fully variable cardioid, omni/ figure-8	150 Hz fully variable	-10 dB	157 dB	20Hz–20 kHz
Røde	K2	Tube condenser	Fully variable cardioid, omni/ figure-8	N/A	N/A	162 dB	20Hz–20 kHz
Røde	Classic II	Condenser	Switchable in nine steps	Dual	-10/-20 dB	131 dB	20 Hz–20 kHz
Røde	NT1-A	Condenser	Cardioid	N/A	N/A	137 dB	20 Hz–20 kHz
Røde	NT3	Condenser	Hypercardioid	N/A	N/A	140 dB	20 Hz–20 kHz
Røde	NT4	Condenser	Cardioid per capsule	N/A	N/A	143 dB	20 Hz–20 kHz
Røde	NT5	Condenser	Cardioid	N/A	N/A	143 dB	20 Hz–20 kHz

SUGGESTED APPLICATIONS	SPECIAL FEATURES	PRICE
Overhead; choir; acoustic guitar; percussion		$439
Drum overhead; measurement; percussion; guitar	Clean impulse response; low handling noise	$299
Measurements; percussion; overhead; acoustic guitar	Neutral frequency response	$510
Voice recording; piano; acoustic bass; acoustic guitar	Vintage design with double diaphragm	$1,355
Stereo recordings; ambience; drums	Pressure zone; 2 condenser cartridges	$572
Bass drum; as a directed pressure zone mic; broadcast	Nextel finish	$792
	Uses capsules: KA-100 ($249), KA-200 ($249), KA-1000 ($764)	$390
General studio; broadcast	Low-cut filter; low consumption; DIN-approved	$277
General	Identical to MBP-648; 10" capsule-to-mic cable	$399
General studio; broadcast	Volt converter best at 12-48 volts, low consumption	$355
Overhead; acoustic guitar; small condenser	Switchable HP filters; -10dB pad	$439
Remote; hidden placement	Bal out prevents audio signal loss; 36" cable ext	$565
Orchestral; chamber; church	Provides stereo picture of OSS recordings	$229
Drums; guitar; chorus	Small capsule	$495
Vocal; drums; acoustic instruments		$795
Vocals	Cable; windscreen; stand-mount	$795
General purpose	Cable; windscreen; stand-mount	$1,100
Instrument; acoustic; overhead; percussion	Mic stand adapter	$199
Vocal; overheads; drums; amplifier	Mic stand adapter	$155
Vocal; overheads; drums; amplifier	Mic stand adapter	$99
Vocals; piano; acoustic; high spl; strings	3-micron diaphragm; shockmount	$149
Vocals; brass; overheads; percussion	Mic stand adapter	$99
Vocals; strings; piano; orchestra; acoustic	3-micron diaphragm; shockmount; wind screen	$349
Vocals	Large diaph; Mogami cable; shck mnt; screen; pwr	$299
One of stereo pair for midside/Blumlein recording		$1,545
Room; strings; piano; choir		$1,260
Acoustic guitar; overheads; piano; hi-hat; percussion		$1,260
XY stereo pair; instrument; speech	Standmount SG21/17	$1,275
Room; piano; overheads; sampling; strings	16 dB (A) self noise	$975
Acoustic guitar; overheads; hi-hat; strings; perc; piano	16 dB (A) self noise; available in stereo pairs	$935
Hi-hat; acoustic guitar; drums; percussion	18 dB (A) self noise	$935
Vocals; broadcast; home studio		$780
Vocals; acoustic guitar; strings; Foley; acoustic bass; piano	7 dB (A) self noise; available in stereo pairs	$1,299
Vocals; drum overheads; acoustic guitar; strings; sax; percussion; piano	Available in stereo pairs	$1,550
Broadcast; project studio	Removable basket; internal pop screen	$1,000
Vocals; instruments	Dual membrane	$1,400
Instruments; vocals	Dual membrane	$1,550
Percussion		$700
Vocal		$675
Stereo instrument recording	Elongated rectangular capsule reduces resonance	$2,000
Vocals; instruments		$200
Vocals; instruments	Diamond-coated diaphragm	$200
Vocals; acoustic instruments; hi-hats; overhead cymbals		$330
Vocals; instruments	Optional shockmount	$350
Vocals; instruments	Optional shockmount	$500
Live/studio vocal performance	Rugged all metal construction; low handling noise	$599
Studio/live vocals; guitars	Fully variable control microphone; new HF-1 capsule	$899
Vocals; guitars; piano; overheads	10dB self noise; fully variable polar pattern; HF-1 capsule	$999
Vocals; instruments; general purpose	6072 twin triode; Jensen transformer; shockmount	$1,999
General purpose; vocals; guitar	5 dBA self noise shockmount	$349
Vocal; instruments; drums	Internal shockmount; transformerless output	$199
Drum overheads; inst; room; studio; location	Custom case; windscreen; stand mnt; stereo XY	$899
Acoustic gtr; drum overheads; hat; ride; perc	Matched pair	$599

From page 51, Acoustic Instrument Miking Tips

to capture the full audio spectrum. Most instruments sound reasonably accurate to the person playing them, which gives us one fallback position straight away: if all else fails, put a mic close to the player's ears. I've used this technique to good effect when working with acoustic guitars, where a cardioid mic "looking" over the player's right shoulder will often produce a natural and well-balanced sound when other positions have failed.

The other method I've developed is based on rules normally applied to the stereo miking of ensembles. When working with stereo, it's common practice to create an approximately equilateral triangle, with the musicians forming one side of the triangle and the stereo-mic array occupying the point opposite. This ensures that all the instruments in the ensemble are roughly the same distance from the mics, yet the mics are close enough to the performers to exclude external sounds to a useful degree. But what happens if we apply this rule to a single microphone?

Single Instruments

A typical drum kit is around five feet in width, so a single mic placed five feet in front of the kit should give a usable result without favoring one drum above the others. Of course, few people would record the drum kit with a single mic these days, but this arrangement serves to illustrate the principle.

This rule may be extrapolated to accommodate single instruments by considering the various parts of each instrument to be a kind of mini-ensemble. It's necessary to estimate only the longest dimension of the instrument and then place a cardioid-pattern mic at that distance from the instrument, pointing towards its center. For example, a drum kit is normally miked from between four and five feet, while a piano might be miked at between five and eight feet. This is only a rule of thumb, however, and if it's desirable to capture a little more of the room ambience, the mic can be moved a little further away until the desired balance is achieved. Even so, if you check the mic position calculated via this method against the standard mic positions for known instruments, you'll be surprised

MICROPHONES

MANUFACTURER	PRODUCT	TYPE	POLAR PATTERNS	INTERNAL ROLL-OFF	INTERNAL PAD	MAX. SPL	FREQUENCY RESPONSE
Røde	NT1000	Valve condenser	Cardioid	N/A	N/A	140 dB	20 Hz–20 kHz
Røde	NTK	Valve condenser	Cardioid	N/A	N/A	158 dB	20 Hz–20 kHz
Roland	DR-10	Dynamic	Hypercardioid	N/A	N/A	130 dB	60 Hz–15 kHz
Roland	DR-20	Dynamic	Hypercardioid	N/A	N/A	130 dB	60 Hz–15 kHz
Royer Labs	R-121	Ribbon	Figure-8	N/A	N/A	>135 dB	30 Hz–15 kHz
Royer Labs	R-122	Active ribbon	Figure-8	N/A	N/A	>135 dB	30 Hz–15 kHz
Royer Labs	SF-1	Ribbon	Figure-8	N/A	N/A	130 dB	30 Hz–15 kHz
Royer Labs	SF-12 Stereo	Ribbon	Figure-8	N/A	N/A	130 dB	30 Hz–15 kHz
Royer Labs	SF-24	Active stereo ribbon	Dual figure-8 Blumlein	N/A	N/A	>135 dB	30 Hz–15 kHz
Sage Electronics	SE-BB1 Bova Ball	Condenser	Semi omni	N/A	N/A	140 dB	20 Hz–20 kHz
Samson	C01	Studio condenser	Cardioid	N/A	N/A	N/A	N/A
Samson	C02	Pencil condenser	Focused cardioid	N/A	N/A	N/A	N/A
Samson	C03	Condenser	Cardioid; omni; figure-8	N/A	N/A	N/A	N/A
Samson	C05	Condenser	Cardioid	N/A	N/A	N/A	N/A
Samson	HM40P	Condenser	Cardioid	N/A	N/A	N/A	N/A
Samson	Q1	Condenser	Cardioid	N/A	N/A	134 dB	50 Hz–20 kHz
Samson	Q2	Dynamic	Cardioid	Switchable	Switchable	137 dB	50 Hz–15 kHz
Samson	Q3	Dynamic	Hypercardioid	Switchable	Switchable	137 dB	50 Hz–15 kHz
Samson	Q7	Dynamic	Cardioid	N/A	N/A	N/A	N/A
Samson	Q Kick	Dynamic	Cardioid	N/A	N/A	N/A	N/A
Samson	Q Mic	Dynamic	Hypercardioid	N/A	N/A	137 dB	20 Hz–18.5 kHz
Samson	Q Snare	Dynamic	Cardioid	N/A	N/A	N/A	N/A
Samson	Q Tom	Dynamic	Cardioid	N/A	N/A	N/A	N/A
Samson	S11	Dynamic	Cardioid	N/A	N/A	130 dB	60 Hz–18 kHz
Samson	S12	Dynamic	Hypercardioid	N/A	N/A	130 dB	60 Hz–18 kHz
Sanken	CMS-2	Condenser	MS stereo	N/A	N/A	145 dB	21 Hz–18 kHz
Sanken	COS-11s	Condenser	Pure omni	N/A	N/A	127 dB	20 Hz–20 kHz
Sanken	COZ	Condenser	Omni	N/A	N/A	137 dB	20 Hz–20 kHz
Sanken	CS-3e	Condenser	Supercardioid	N/A	N/A	120 dB	60 Hz–20 kHz
Sanken	CU-31	Condenser	Cardioid	N/A	N/A	148 dB	20 Hz–18 kHz
Schoeps	CCM4V Lg	Condenser	Cardioid; lateral pickup	N/A	N/A	132 dB	40 Hz–20 kHz
Schoeps	CMB-I	Condenser	All available Colette capsules	N/A	-15 dB	132 dB	18 Hz22 kHz
Schoeps	CMC64 (U.S. Set)	Condenser	Cardioid (others available)	N/A	N/A	132 dB	40 Hz–20 kHz
Schoeps	M222 Tube Body	Tube	All available Colette capsules	150 Hz	10 dB	Capsule specific	Capsule specific
Schoeps	MSTC 64	Condenser	(2) cardioid	N/A	N/A	132 dB	40 Hz–20 kHz
Sennheiser	E 835	Dynamic	Cardioid	N/A	N/A	150 dB	10 Hz–16 kHz
Sennheiser	E 845	Dynamic	Supercardioid	N/A	N/A	150 dB	40 Hz–16 kHz
Sennheiser	E 855	Dynamic	Supercardioid	N/A	N/A	150 dB	40 Hz–18 kHz
Sennheiser	E 865	Electret condenser	Supercardioid	N/A	N/A	150 dB	40 Hz–20 kHz
Sennheiser	E 602	Dynamic	Cardioid	N/A	N/A	160 dB	20 Hz–16 kHz
Sennheiser	E 604	Dynamic	Cardioid	N/A	N/A	160 dB	40 Hz–18 kHz
Sennheiser	E 609 Silver	Dynamic	Cardioid	N/A	N/A	150 dB	40 Hz–18 kHz
Sennheiser	MD 441	Dynamic	Supercardioid	N/A	N/A	150 dB	30 Hz–20 kHz
Sennheiser	MD 421 II	Dynamic	Cardioid	N/A	N/A	160 dB	30 Hz–17 kHz
Sennheiser	MD431 II	Dynamic	Supercardioid	N/A	N/A	150 dB	40 Hz–16 kHz
Sennheiser	ME 64/K 6	Electret condenser	Cardioid	120 Hz	N/A	130 dB	40 Hz–20 kHz
Sennheiser	e903	Dynamic	Cardioid	N/A	N/A	N/A	40 Hz–16 kHz
Sennheiser	e935	Dynamic	Cardioid	N/A	N/A	N/A	40 Hz–16 kHz
Sennheiser	e945	Dynamic	Supercardioid	N/A	N/A	N/A	40 Hz–16 kHz
Sennheiser	e614	Condenser	Supercardioid	N/A	N/A	N/A	40 Hz–20 kHz
Shure	Beta 52A	Dynamic	Supercardioid	N/A	N/A	174 dB	20 Hz–10 kHz
Shure	Beta 87A	Condenser	Supercardioid	N/A	N/A	142 dB	50 Hz–18 kHz
Shure	Beta 87C	Condenser	Cardioid	N/A	N/A	142 dB	50 Hz–20 kHz

SUGGESTED APPLICATIONS	SPECIAL FEATURES	PRICE
Vocal; instruments	Transformerless circuitry	$599
Vocal; instruments	Hand selected; graded twin triode valve	$999
General purpose	On/off switch; wind screen; case	$95
General purpose	On/off switch; wind screen; case	$150
General purpose	High SPL handling; lifetime warranty; natural tone and feel; low self noise	$1,195
General purpose studio recording	Phantom powered active electronics	$1,695
Strings; piano; woodwinds; flute; vocals	Lifetime warranty; extremely low self noise; high SPL	$1,395
Single-point stereo recordings	X-Y and M-S recording; high SPL; low self noise	$2,495
Stereophonic rec; distance rec; overheads; choir	Active stereo ribbon; shock; cable set	$3,795
Sources requiring extreme transient detail	Spherically-mounted high-intensity/balanced class A output/phantom powered	$289
Acoustic instruments; vocals	Suspension mount available	$175
Overhead; cymbals; acoustic guitar; piano	Shockmount; sold as stereo pair	$299
Room; vocals; instruments	Switchable pickup pattern; 10dB pad; HP filters	$250
Stage vocals; amps; handheld	S+N265hockmounted element	$175
Horns; woodwinds	Micro-condenser element; clip-on w/gooseneck	$550
Project studio vocals		$400
Vocal; instruments	Gold-plated XLR; case; clip; Eurometric adapter	$150
Drums; instruments	Gold-plated XLR; case; clip; Eurometric adapter	$225
Instruments; vocals; handheld	All-purpose dynamic for stage or studio	$200
Kick drum	High SPL; large diaphragm; shockmounted	$200
Vocals		$200
Snare drum	Rim clip for drum-mounting; voiced for snare	$150
Tom-tom drums	Rim clip; voiced for toms	$150
Vocals	Case; clip	$100
Vocals	Case; clip	$150
Critical stereo recording	Titanium diaphragm	$2,595
Speech; vocal; instrument	Back-electret lav; clips; rubber mnts; outdoor screens	$399
Critical recording; orchestral	"Perfect-Omni": omni pattern at high frequencies	$1,599
Location/sound recording	High directivity	$1,350
High-pressure sources; brass; drums; critical recording	Right-angle version available	$899
All critical recording	Miniature	$1,810
Portable recording	Internal battery; 15' cable	$536
All critical recording	Includes CMC64 microphone; SG20 mount; B5 popscreen	$1,192
All critical recording	Choice of 20 MK capsules must be ordered separately	$1,975
ORTF stereo recording	Designed for ORTF stereo technique	$2,665
Vocal; general	Comes with mic clip and pouch	$159
Vocals	Comes with mic clip and pouch	$229
Vocals	Comes with mic clip and pouch	$299
Vocals	Phantom 48V powered	$399
Bass drums; bass guitar cabs; tuba	Glass-composite housing	$319
Drums-toms and snares	Glass-composite housing	$249
Guitar amp	Flat profile design	$199
Vocals; piano; guitar	Comes with case/clip	$895
Drums; vocals; guitar; amps	5-position low-frequency rolloff switch	$485
Lead vocals	Comes with case	$495
Acoustic guitar; drum overhead	Interchangeable capsules	$515
Drums; guitar amps; vocals	Low-mass diaphragm	$289
Vocals; stage instruments	Low mass diaphragm	$279
Lead vocals	Low-mass diaphragm	$299
Drum overheads; hi-hat; percussion		$399
Kick drum; bass amp; acoustic bass	Bass instruments	$337
Vocals; live; studio	High gain before feedback	$463
Vocal		$463

at how closely they correlate. Virtually all of the wind-instrument mic positions can be worked out in this way.

Likewise, the acoustic guitar can be recorded using a single mic at a distance of around three feet. As before, avoid the temptation to point the mic at the loudest part of the instrument and experiment with both the angle of the mic and the distance once you've heard the initial results. Also, monitoring the results on enclosed headphones as you move the mic can speed up the process considerably.

The 5:1 Rule

A further consideration arises when several instruments are being recorded together, as it may be necessary to compromise the individual microphone positions in order to minimize leakage or bleed between the instruments. Using cardioid-pattern mics, it's best if the mics are separated by a distance of at least three and, ideally, five times the distance between the microphones and the instruments upon which they're trained (see Fig. 1). A slight improvement in preventing unwanted leakage can be achieved by using a tighter microphone pattern, such as a hypercardioid or supercardioid, but it could also be argued that omnis will produce just as good a result. Omnis may pick up more bleed, potentially causing phase problems, but because of their improved off-axis response, this bleed will at least be recorded faithfully.

Cardioids, on the other hand, will produce slightly better separation (and consequently fewer phase problems), but because of their inferior off-axis response, what bleed is picked up may be tonally inaccurate, leading to a less accurate representation of the performance when the outputs from all the of mics are mixed. Of course, there are cardioids on the market with excellent off-axis responses, but these tend to be rather specialized and very expensive. ■

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MICROPHONES

MANUFACTURER	PRODUCT	TYPE	POLAR PATTERNS	INTERNAL ROLL-OFF	INTERNAL PAD	MAX. SPL	FREQUENCY RESPONSE
Shure	PG81	Condenser	Cardioid	N/A	N/A	131 dB	40 Hz–18 kHz
Shure	KSM27/SL	Condenser	Cardioid	Switchable	-15 dB	138 dB	20 Hz–20 kHz
Shure	KSM32/SL	Condenser	Cardioid	Switchable	-15 dB	139 dB	20 Hz–20 kHz
Shure	KSM44/SL	Condenser	Cardioid; omni; bidirectional	115 Hz	15 dB	156 dB	20 Hz–20 kHz
Shure	KSM109	Condenser	Cardioid	N/A	0/15 dB	165 dB	20 Hz–20 kHz
Shure	KSM 137	Condenser	Cardioid	80/115 Hz	0/15/25 dB	164 dB	20 Hz–20 kHz
Shure	KSM 141	Condenser	Cardioid; omni	18/115 Hz	0/15/25 dB	N/A	20 Hz–20 kHz
Shure	SM7B	Dynamic	Cardioid	N/A	N/A	N/A	50 Hz–20 kHz
Shure	SM57	Dynamic	Cardioid	N/A	N/A	N/A	40 Hz–15 kHz
Shure	SM58	Dynamic	Cardioid	N/A	N/A	N/A	50 Hz–15 kHz
Shure	SM81	Condenser	Cardioid	80/100 Hz	-10 dB	146/136 dB	20 Hz–20 kHz
Shure	SM86	Condenser	Cardioid	N/A	N/A	147 dB	50 Hz–18 kHz
Shure	SM94	Condenser	Cardioid	N/A	N/A	141 dB	40 Hz–16 kHz
Shure	VP88	Stereo condenser	Mid: cardioid; side: bidirectional	80 Hz	N/A	129 dB	40 Hz–20 kHz
SM Pro Audio	MC03	Valve condenser	Cardioid; omni; figure-8	N/A	N/A	130 dB	10 Hz–38 kHz
SM Pro Audio	KIK-ME2	Dynamic	Fixed cardioid	N/A	Low sensitivity	145 dB	15 Hz–16 kHz
Sony	C48	Condenser	Unidirectional; omni; bidirectional	Yes	-10 dB	128 dB	30 Hz–16 kHz
Sony	ECM-MS5	Electret condenser	Variable (stereo)	Yes	N/A	130 dB	70 Hz–20 kHz
Sony	F740/9X	Dynamic	Unidirectional	N/A	N/A	N/A	50 Hz–15 kHz
Sony	F780/9X	Dynamic	Unidirectional	N/A	N/A	N/A	50 Hz–18 kHz
Soundelux	U195	Condenser (FET)	Cardioid	80 Hz	10 dB	125 dB	20 Hz–20 kHz
Soundman/OKM	CX	Condenser	Omni	N/A	N/A	125 dB	20 Hz–20 kHz
Stedman	C15	Condenser	Cardioid	N/A	N/A	132 dB	25 Hz–19 kHz
Studio Projects	B1	Condenser	Cardioid	N/A	N/A	136 dB	20 Hz–20 kHz
Studio Projects	B3	Condenser	Cardioid; omni; figure-8	150 Hz	-10 dB	136 dB	20 Hz–20 kHz
Studio Projects	C1	Condenser	Cardioid	150 Hz	10 dB	131 dB	20 Hz–20 kHz
Studio Projects	C3	Condenser	Cardioid; omni; figure-8	150 Hz	-10 dB	142 dB	20 Hz–20 kHz
Studio Projects	C4	Condenser (pair)	Cardioid; omni	150 Hz	-10 dB	148 dB	20 Hz–20 kHz
Studio Projects	LSD-2	Stereo condenser	(2) cardioid; omni; figure-8	150 Hz	-10 dB	142 dB	20 Hz–20 kHz
Studio Projects	T3	6072 dual triode	Cardioid; omni; figure-8	N/A	N/A	125 dB	20 Hz–20 kHz
Studio Projects	TB1	Tube	Cardioid	N/A	N/A	136 dB	20 Hz–20 kHz
Studiomaster	KM-81	Dynamic	Cardioid	N/A	N/A	119 dB	50 Hz–15 kHz
Wunder Audio	CM7	Tube Condenser	Cardioid; omni	N/A	N/A	N/A	20 Hz– 20 kHz
Wunder Audio	CM12	Tube Condenser	Cardioid; omni; figure-8	N/A	N/A	N/A	20 Hz–20 kHz

How to Handle a Stubborn Mix

By Paul White

Occasionally, you'll find a mix that defies all of your attempts to balance it satisfactorily, perhaps because the song hasn't been arranged in a way that leaves space for all of the important parts. If you find yourself in this situation, here are a few tricks you can try. Work through the following points and you should end up with something usable.

Set up a rough mix, in mono, with no EQ or effects, and see how it sounds.

If the mix seems too busy, ask yourself if all of the parts are really necessary, or if you can lose something. What matters most in the majority of pop songs is the rhythm and the vocals—the rest is decoration. If you can't lose something completely, try mixing it so low that you only notice it if you turn it off, or "squeeze" it with EQ so that it occupies a narrower part of the audio spectrum. Double-checking on headphones can also help you sort out what's clashing with what.

If the midrange sounds are fighting with the bass sounds, try using EQ to thin out some of them by taking some bottom end out of the pad synth, the backing vocal, or the acoustic guitar parts.

Still no luck? In that case, go back to the basic rhythm section plus vocals and see if that's working. If not, is it too late to try a different drum or bass sound? Similarly, if you're working with a sequencer, you could try picking thinner pad keyboard sounds or brighter bass sounds.

Don't overdo effects—reverb creates the illusion of distance and space, yet often you want something to stand out in front. Try using less reverb on up-front sounds to make them drier.

If things are improving, try panning the

SUGGESTED APPLICATIONS	SPECIAL FEATURES	PRICE
Guitar; cymbals; strings; vocals; piano	Battery or phantom power	$260
Vocal; instrument; amp	Includes shockmount	$575
Vocal; instrument	Shockmount; case	$1,070
Vocals	Shurelock swivel mount or elastic shockmount	$1,394
Instruments		$305
Instruments	Available in stereo pairs	$575
Instruments	Switchable dual-pattern; avail. in stereo pairs	$770
Vocals; bass amp		$620
Guitar amp; drums; guitar; vocals		$158
General purpose		$188
Guitar; cymbals; strings; vocals; piano		$591
Vocals		$300
Guitar; cymbals; strings; vocals; piano	Battery or phantom power	$297
Single-point stereo	Internal matrix or MS out	$1,267
Vocals; guitar and other instruments.	Dedicated AC power supply; aluminum road case	$549
Kick drum only	Specially-designed EQ curve and sensitivity for kick drums	$219
Vocals; guitar	48V phantom or 9V internal battery	$1,550
Live stereo; ambient sounds	Phantom power	$1,550
Vocals; guitar		$234
Vocals; guitar	Enhanced isolation and feedback rejection	$375
Close mic situations	1" capsule; "fat" bass switch	$1,350
Binaural; environmental/sample collecting; live	Discrete; ear-bud; A3 adapter w/pad, low freq. roll off	$247
Vocal; instrument	Buffered output; optional Proscreens	$599
Vocal; instrument	Shockmount included	$119
Vocal; instrument	Shockmount included	$219
Vocals; overhead; broadcast; instruments; production	FET 1" 6 µm capsule	$299
Vocals; overhead; broadcast; instruments	FET 1" 6 µm capsule	$499
Stereo X-Y; instruments; vocals	Road case; shockmount	$519
Coincident stereo recording; X-Y	Suspension mount; road case; dedicated cable	$999
Vocals; overhead; broadcast; instruments	1" 6 µm capsule	$699
Vocal; instrument	Shockmount included	$389
Personal studio; live performance	20' cable; adapter; case	$60
Vocals; guitars; drums; piano; bass	A re-creation of the U47	$4,995
Vocals; drums; piano; strings	A re-creation of the C12	$4,995

instruments and effects to their desired positions, as this will further improve the separation between sounds.

Although exciters shouldn't be thought of as a means of salvaging poor recordings, the extra separation that they create can make the difference between an okay mix and a good one. Use only when you've got everything as good as it can be without it.

Perhaps the mix sounds fine but just lacks cohesion or punch. In this case, try a little overall compression. A soft-knee compressor will usually provide the most transparent results, but try whatever you have and let your ears be the judge. Start out with a low ratio of around 2:1 and lower the threshold until you get between 5 dB and 10 dB of gain reduction. Use a 20 ms attack time and around a 200 ms release time to start with, and then adjust by ear, making sure that you don't squeeze the life out of the track. ■

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MIDI INTERFACES, PATCH BAYS & PROCESSORS

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Audiotrak	MIDIMate	USB	1/1	No	No	No	No	No	N/A	N/A	Win; Mac OS 10.x; tiny cable type	$49
DACS	MIDI Patch Bay	N/A	10/10	No	No	No	No	No	N/A	N/A	Uses 1/4" patch cords; operates like audio patchbay	$316
Digidesign	MIDI I/O	USB	10/10	No	Yes	Yes	No	No	N/A	N/A	USB-powered; full OMS/WDM compatibility; hardware thru; MIDI time stamping	$595
Doepfer	Pocket Electronic	MIDI	1/1	No	No	No	No	No	N/A	N/A	16 controls (potentiometers; faders; buttons; switches) can be connected; transmit 16 MIDI CC	$100
Doepfer	MSYII	MIDI	1/2	No	No	No	No	No	N/A	MIDI; Sync24; clock out	MIDI to Sync24; clock output	$110
Doepfer	CTM64	MIDI	1/1	No	No	No	No	No	N/A	N/A	Contact-to-MIDI interface for up to 64 contacts for DIY switchboards; keyboards; prg-change boards	$125
Doepfer	MTC64	MIDI	1/1	No	No	No	No	No	N/A	N/A	Interface with 0/5V outputs to control up to 64 relays; lamps; motors; magnets via MIDI note on/off	$125
Doepfer	MCV4	MIDI	1/1	No	No	No	No	No	N/A	Cntrl voltg/gate-analog synths	Two MIDI-assignable CV outputs	$138
Doepfer	MCV24	MIDI	1/2	No	No	No	No	No	N/A	MIDI; cntrl voltg; gate	Four high res. CV outs for pitch and 20 outs for gate or cv	$595
Edirol	UM-1SX 1x1 USB MIDI Interface	Win; Mac	1/1	No	No	No	No	No	N/A	MTC	MIDI indicators; OS driver switch	$45
Edirol	UM-1X 1x1 Cable-style USB MIDI Interface	USB	1/1	No	No	No	No	No	N/A	MTC	Complete connection between computer and MIDI device; MIDI indicators; OS driver switchable	$50
Edirol	UM-2C 2x2 USB MIDI Interface	USB	2/2	No	No	No	No	No	N/A	MTC	Power supplied by USB	$75
Edirol	UM-550 5x5 USB MIDI Interface	USB; Win; Mac	5/5	Yes	Yes	No	No	No	N/A	MTC	Fast Processing Technology provides low-latency, low-jitter MIDI transmission	$240
Edirol	UM-880 8x8 USB MIDI Interface	USB; Win; Mac	8/8	Yes	Yes	No	No	No	N/A	MTC	FPT and HDMR for low-latency, low-jitter MIDI transmission	$375
Emagic	MT4	USB	2/4	Yes	Yes	No	No	No	N/A	N/A	Software included for patch-bay programming; Mac/PC	$199
Emagic	AMT 8	USB; Serial	8/8	Yes	Yes	No	No	No	N/A	N/A	Expandable to 192 MIDI I/O; Mac/PC	$499
Emagic	Unitor 8 MkII	USB; Serial	8/8	Yes	Yes	No	No	No	N/A	SMPTE; VITC	VTC burn-in; click in; OMS; Mac/PC	$799
Encore Electronics	Expressionist 2 MIDI/CV interface	Win; Mac	1/1	Yes	Yes	No	No	Yes/6	N/A	MIDI clock	16-bit D/A all channels	$499
ESI	RoMI/O	USB	1/2	No	No	No	No	No	N/A	N/A	Connects via USB; Win XP/2000/ME; Mac OS X	$49
ESI	Miditerminal M4U	USB	4/4	No	No	No	No	No	N/A	N/A	Connects via USB; Win XP/2000/ME; Mac OS X	$99
ESI	Miditerminal M8U	USB	8/8	No	No	No	No	No	N/A	N/A	Various MIDI Thru functions; connects via USB; Win XP/2000/ME; Mac OS X	$249
Friend Chip	DMX 12/12	Win; Mac	1/1	No	No	No	No	No	N/A	N/A	6 optical in/out; 6 coaxial in/out; S/PDIF; and ADAT	$749
Friend Chip	DMX 16	MIDI	1/1	No	No	No	No	No	50	N/A	16 stereo channel digital patch bay for AES/EBU, S/PDIF, 16xADAT	$798-$1,545
Friend Chip	DMX 32	MIDI	1/1	No	No	No	No	No	50	N/A	32 stereo channel digital patch bay for AES/EBU, S/PDIF, 32xADAT	$1,048-$2,791
Frontier Design Group	Sierra MIDI/SMPTE	PCI	8/8	No	No	No	No	No	N/A	MTC; SMPTE (LTC)	Dedicated SMPTE I/O	$299
JL Cooper Electronics	PPS-2	Win; Mac; MIDI	1/1	Yes	No	No	No	No	N/A	SMPTE; MTC; MIDI clock; Smart FSK	Allows MIDI clock sequencers/workstations like Triton and Kurzweil to sync to recorders/tape/HD	$170
JL Cooper Electronics	MLA-XLR	N/A	1/1	No	No	No	No	No	N/A	N/A	Extends the range of MIDI cables to over 1,000'	$199
JL Cooper Electronics	MLA-1/MLA-10	N/A	4/4	No	No	No	No	No	N/A	N/A	Extends the range of MIDI cables to over 1,000'	$499
JL Cooper Electronics	9 Pin/MMC	Win; Mac	1/1	No	No	No	No	No	N/A	GVG; ESAM2; MIDI; MMC	Control MMC via VTR 9-pin control	$499
JL Cooper Electronics	MMC/9 Pin +	Win; Mac	1/1	No	No	No	No	No	N/A	Video; SMPTE	VTR 9-pin RS-422 control from MMC	$499
M-Audio	Macman	Mac	1/3	No	No	No	No	No	N/A	N/A	Passive thru; serial thru (geo port)	$60
M-Audio	Thru 1x4	N/A	1/4	No	No	No	No	No	N/A	N/A		$60

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M-Audio	Thru 3x8	N/A	3/8	No	No	No	No	No	N/A	N/A		$100
M-Audio	Merge 2x2	N/A	2/2	Yes	No	No	No	No	N/A	N/A		$100
M-Audio	USB MidiSport 1x1	USB	1/1	No	No	No	No	No	N/A	N/A	USB cable included; Mac/PC	$70
M-Audio	USB MidiSport 2x2	USB	2/2	No	No	No	No	No	N/A	N/A	USB cable included; Mac/PC	$90
M-Audio	USB MidiSport 4x4	USB	4/4	No	No	No	No	No	N/A	N/A	USB cable included; Mac/PC	$200
M-Audio	USB Midisport 8x8	USB	8/8	Yes	No	No	No	No	N/A	SMPTE; MTC	USB and serial cable included; Mac/PC	$399
MIDI Solutions	Thru/Quadra Thru/T8	N/A	1/2; 1/4; 1/8	No	No	No	No	No	N/A	N/A	Provides additional MIDI outputs from a single MIDI input	$49/ $59/ $199
MIDI Solutions	Merger/Quadra Merge/M8	N/A	2/1; 4/1; 8/1	Yes	No	No	No	No	N/A	N/A	Merges all messages received at the MIDI inputs to the MIDI output	$79/ $129/ $279
MIDI Solutions	Mapper	N/A	1/1	No	No	No	Yes	No	N/A	N/A	Maps MIDI messages (ex. Control Change) from one type to another	$149
MIDI Solutions	Router	N/A	1/2	No	Yes	Yes	No	Yes/10	N/A	N/A	Routes/filters/rechannelizes MIDI data to either of two MIDI outputs	$149
MIDI Solutions	Velocity Converter	N/A	1/1	No	No	No	No	No	N/A	N/A	Applies velocity curves to MIDI data	$149
MIDI Solutions	Pedal Controller	N/A	1/1	Yes	No	No	No	No	N/A	N/A	Generates MIDI messages from an external expression pedal	$149
MIDI Solutions	Footswitch Controller/F8	N/A	1/1; 1/1	No	No	Yes	No	No	N/A	N/A	Contact closure to MIDI products	$149/ $329
MIDI Solutions	Breath Controller	N/A	1/1	Yes	No	No	No	No	N/A	N/A	Generates MIDI messages from the Yamaha BC3A	$199
MIDI Solutions	Relay/R8	N/A	1/1; 1/1	No	No	No	No	No	N/A	N/A	MIDI to contact closure products	$149/ $479
MIDIator	LD1	N/A	1/1	No	No	No	No	No	N/A	N/A	MIDI long cable driver; up to 1,000 ft.	$82
MIDIator	MP-128EP	Parallel	1/2	No	No	No	No	No	N/A	N/A		$80
MIDIator	MP-128NP	Parallel	2/4	No	No	No	No	No	N/A	N/A		$110
MIDIator	MP-128SP	Parallel	2/8	No	No	No	No	No	N/A	SMPTE	SMPTE in and out	$180
MIDIator	MS-101	Serial	1/1	No	No	No	No	No	N/A	N/A		$70
MIDIator	MS-124	Serial	1/4	No	No	No	No	No	N/A	N/A		$100
MIDIator	MS-124W	UNIX; serial	1/4	No	No	No	No	No	N/A	N/A		$160
MIDIator	UM0	N/A	1/1	No	No	No	No	No	N/A	N/A	Solenoid low-side driver; up to 128 lines; no case	$177
MIDIator	UM1	N/A	1/1	No	No	No	No	No	N/A	N/A	Keyboard encoder; solenoid low-side driver up to 128 lines	$215-$345
MIDIator	UM2	N/A	1/1	No	No	No	No	No	N/A	N/A	Solenoid high-side driver up to 128 lines.	$195-$330
MIDItemp	Multiplayer MP88-CDW 4.30	SCSI	8/8	Yes	Yes	Yes	Yes	Yes/16	N/A	MIDI clock	MIDI file player; wave player; CD-ROM; hard disk; remote controller	$1,500
MIDItemp	Multistation 2.0	USB	8/8	Yes	Yes	Yes	Yes	Yes/16	N/A	MIDI clock; MTC	MIDI file player; MP3 player; 8 tracks Wave player; remote controller with touch	$2,600
MOTU	FastLane Serial	Mac serial	1/3	No	No	No	No	No	N/A	N/A	Powers off computer; bypass for use when computer is off	$59
MOTU	FastLane USB	USB	2/2	No	No	No	No	No	N/A	N/A	5 colors and charcoal; Thru button passes MIDI in to out w/computer off	$79
MOTU	PC MIDI Flyer	Parallel	2/2	No	No	No	No	No	N/A	N/A	Powers off computer; bypass for use when computer is off	$89
MOTU	micro lite	USB	5/5	No	No	No	No	No	N/A	N/A	Compatible w/all Windows and Mac MIDI software	$149
MOTU	MIDI Express 128	USB	8/8	No	No	No	No	No	N/A	N/A	Compatible w/all Windows and Mac MIDI software	$249
MOTU	Pocket Express	Serial; Parallel	2/4	No	No	No	No	No	N/A	SMPTE; MTC	Operates w/o computer; SMPTE free-wheeling over drop-outs	$165
MOTU	Micro Express-USB	USB	4/6	Yes	Yes	Yes	No	No	16	SMPTE; MTC; MIDI clock	Operates w/o computer; supps MMC; converts click to MIDI; 2 pedal ins	$295

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MOTU	MIDI Express XT-USB	USB	8/9	Yes	Yes	Yes	No	No	16	SMPTE; MTC; MIDI clock	Operates w/o computer; supps MMC; converts click to MIDI; 2 pedal ins	$395
MOTU	MIDI Timepiece AV-USB	USB; serial	8/8	Yes	Yes	Yes	No	No	N/A	SMPTE; MTC; video; word clock	Operates w/o computer; MIDI time stamping; many A/V sync features	$595
Roland	GI-20 USB	USB Win; Mac	1/1	Yes	Yes	Yes	Yes	Yes/6	N/A	MIDI	Guitar-MIDI; 13-pin div pickup; USB; tuner; transposer; direct guitar out; 1/2 U	$395
Rolls	RFX MP1288 MIDI Wizard	N/A	1/1	Yes	No	No	Yes	No	N/A	N/A	MIDI song select and strt/stp; up to 8 program changes on 8 MIDI ch w/1 switch; 8 CCs	$200
Rolls	RP93s Patchwork	MIDI	1/1	No	No	No	No	No	128	MIDI	MIDI-controlled audio switcher and effects loop	$200
Steinberg	Midex 3	Win; Mac	1/3	Yes	Yes	No	No	No	N/A	LTB linear	Time-base technology	$150
Steinberg	Midex 8	Win; Mac	8/8	Yes	Yes	No	No	No	N/A	LTB	USB; cable checker; MIDI Thru	$499
Yamaha	UX 16	Win; Mac	1/1	No	No	No	No	No	N/A	N/A	(2) status LED	$50
Yamaha	UX 96	Win; Mac	1/1	No	No	No	No	No	N/A	MIDI	USB powered, to host serial port	$90
Yamaha	UW 500	Win; Mac	1/1	No	No	No	No	No	N/A	MIDI	20-bit A/D stereo record and playback; optical I/O; software suite	$400

The Yamaha AW16G allows you to record 16 tracks of audio to the internal hard drive, then burn it to CD using the built-in CD-RW drive. Importantly, it is magnetically shielded, so you can use it alongside your regular computer system without a danger of electromagnetic interference from computer monitors or speakers.

What to Look for in a Personal Digital Studio

By Chris Middleton

Whether you are using a personal digital studio in place of a computer, or alongside your desktop or laptop in a home-studio setup, select from features such as these:

• 24-bit, 96 kHz recording. Many machines give you the option to record either eight tracks to 24-bit, or 16 tracks to 44.1 or 48 kHz 16-bit to economize on processing and storage.

• At least one built-in effects board. You may find your model is expandable to up to four effects boards.

• Input compression and limiting as standard—allowing you to record vocals professionally, without using up effects from the main board.

• Virtual tracks—allowing you to store alternative takes of each track.

• COSM mic modeling (a proprietary feature available only on Roland products), a filtering system that emulates the dynamic signature of a range of top-quality professional microphones.

• Three-or four-band parametric EQ—explore all those frequencies in the mix.

• A range of digital and analog outputs—e.g., S/PDIF.

• A number of effects Sends and Returns—these are your routes to and from external signal processors.

• "Flying"(motorized) faders—they're far from essential, but having flying faders means that your mixer will set itself up automatically for each song, moving each fader to its correct position in the mix.

• At least 10 GB of onboard storage—go for 20, 40, or more if you can afford it.

• An integral CD-R/CD-RW drive. ■

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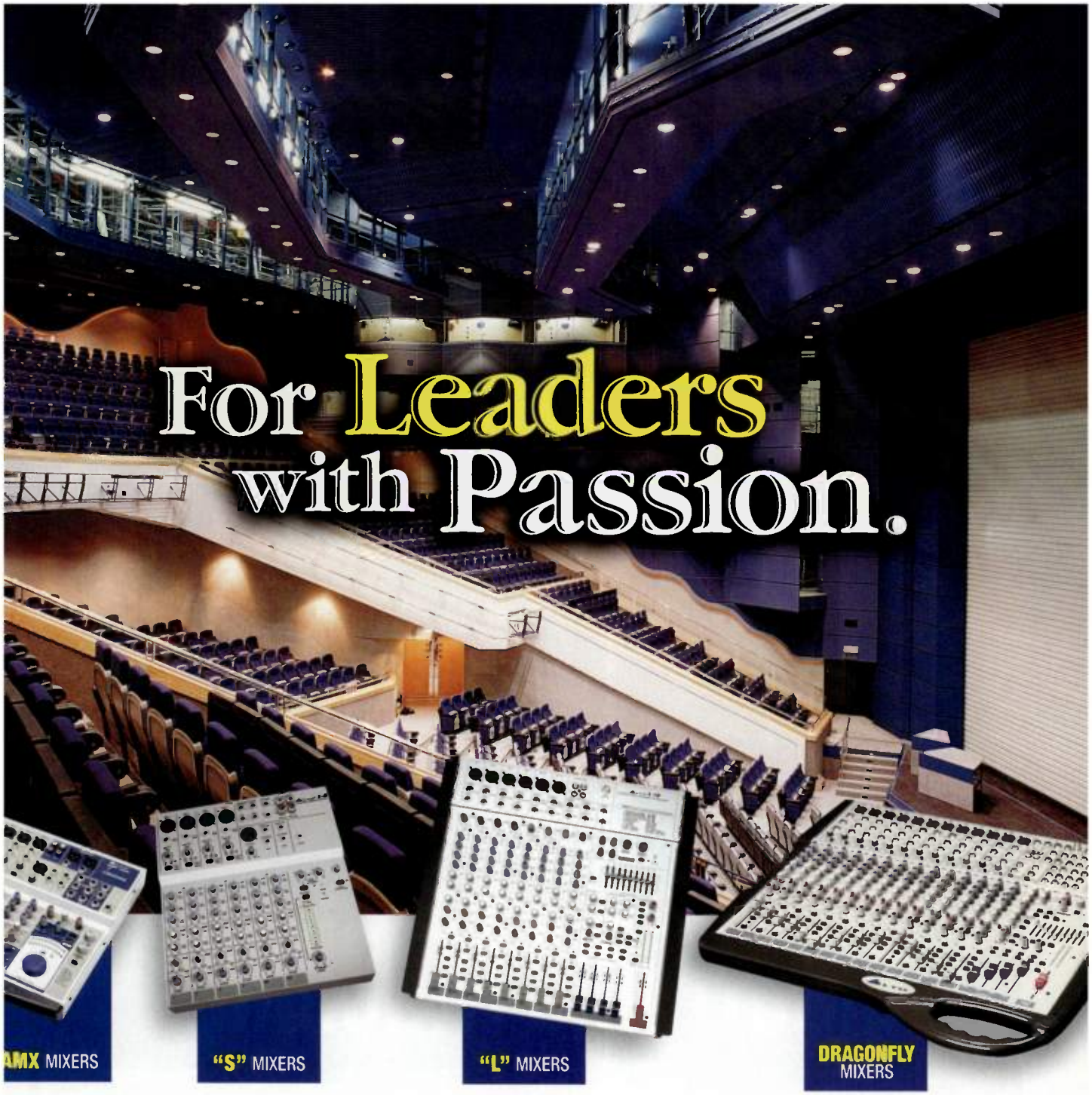

Whether you're presenting for ten people or ten thousand, with the powerful features of ALTO mixing consoles you'll have the tools you need to command attention from your audience. ALTO mixing consoles range in size and configurations to suit any application from large to small venues for whatever you're mixing – voice, music, multi-media presentations – at ALTO, we make audio products that are portable and easy to use. Take these portable mixers with you to your rehearsal facility or recording studio. Every mixer gives you what you need make your presence known.

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MODULAR HARD-DISK RECORDERS

MANUFACTURER	MODEL	# OF TRACKS	# OF VIRTUAL TRACKS	LEVELS OF UNDO	# OF LOCATE POINTS	ANALOG INPUTS	ANALOG OUTPUTS	DIGITAL I/O	BACKUP OPTIONS	JOG/SHUFFLE CONTROL	CHANNEL EQ
Fostex	D2424LV	24	32	99	99+6	(24) 1/4" TRS	(24) 1/4" TRS	ADAT; S/PDIF	ADAT; DAT; SCSI; DVD RAM	Yes	No
Genex Audio	GX9000	8	8	99	100	(8) XLR	(8) XLR	SDIF3; AES3; AES 3id	SCSI; Firewire	Yes	No
Genex Audio	GX9048	48	48	99	100	(48) XLR	(48) XLR	SDIF3; AES3; AES 3id	SCSI; Firewire	Yes	No
iZ Technology	RADAR 24:ProjectD	24	0	99	99, RTZ	24-ch. optional	24-ch. optional	AES/S/PDIF; ADAT/TDIF	Int IDE; Ethernet; ext SCSI; DVD Combo	Yes	No
iZ Technology	RADAR 24:Project	24	0	99	99, RTZ	(24) bal In lvl 25-p D-sub	(24) bal In lvl 25-p D-sub	AES/S/PDIF	Int IDE; Ethernet; ext SCSI; DVD Combo	Yes	No
Mackie	HDR 24/96	24	192	999	2 front panel; 49 on-screen	(3) DSNB-25 (24 total)	(3) DSNB-25 (24 total)	AES/EBU; TDIF; Light-pipe w/option card	UDMA IDE HD; orb drive; FTP via Ethernet	Yes	No
Tascam	MX-2424	24	999	100	100	Optional: 24 ch of I/O D-sub	Optional: 24 ch of I/O D-sub, AES/EBU; ADAT, TDIF	TDIF; ADAT optical; AES/EBU	Travan tape drive; DVD-RAM; SCSI	Yes	No
Tascam	MX-2424SE	24	999	100	100	Optional: 24 channels of I/O (IF-AN24 24)	Optional: 24 channels of I/O (IF-AN24 24)	AES/EBU; S/PDIF; ADAT	SCSI; DVD; Travan tape	Yes	No

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SYNCHRONIZATION	TIME-CODE RATES	# OF EXPANSION PORTS	ADC	DAC	SAMPLE RATES	SCSI	MAXIMUM ADDRESSABLE HARD DRIVE SIZE	OPTIONS	PRICE
MIDI clock with SPP, MTC, SMPTE	24, 25, 29.97, 29.97d, 30, 30d	3	24-bit/128x	24-bit/128x	32, 44.1, 44.066, 48, 88, 96 kHz	Yes	137 GB	DVD RAM; Ethernet; time code	$2,495
SMPTE	24, 25, 29.97, 29.97d, 30	2	24-bit/192; DSD	24-bit/192; DSD	44.1-192 kHz; DSD	Yes	182 GB	MADI; Super Mac; mLAN	$4,400 and up
SMPTE	24, 25, 29.97, 29.97D, 30	2	24-bit/192; DSD	24-bit/192; DSD	44.1-192 kHz; DSD	Yes	182 GB	MADI; Super Mac; mLAN	$4,400 and up
Word; video; SMPTE; MTC; AES; TDIF; ADAT	All	2	N/A	N/A	32-192 kHz	Yes	120 GB	KC-24 remote/controller, meter bridge opt.; opt. 24-ch. analog I/O 48-192 kHz; opt. AES	$4,995
Word; video; SMPTE; MTC; AES	All	2	24-bit/128x	24-bit/128x	32-48 kHz an; 32-192 kHz dig	Yes	120 GB	KC-24 remote; opt. session controller, meter bridge; opt. 24-ch. digital I/Os	$6,995
SMPTE; MTC	24, 25, 29.97, 29.97 D, 30, 30 D	N/A	24-bit with card option	24-bit with AID 8 card option	44.1, 48, 96 kHz	No	32 GB	M90 removable 20 GB HD Mackie media project orb drive; remote 48; remote 24	$4,999
SMPTE; word clock; video sync; MIDI; TL-Bus	30 (NDF)/30, (DF)/30, 25, 29, 97	3 (for I/O)	24-bit	24-bit	44.1, 48, 88.2, 96 kHz	Yes	36 GB	Audio I/O; back-up media; remote	$3,999
SMPTE; word clock; MTC; video sync; MMC	30 (NDF)/30, (DF)/30, 25, 29, 97	3 (for I/O)	24-bit	24-bit	44.1, 48, 88.2, 96 kHz	Yes	36 GB	Audio I/O; back-up media; remote	$4,499

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PORTABLE DIGITAL STUDIOS

MANUFACTURER	PRODUCT	# OF PHYSICAL/VIRTUAL TRACKS	# OF SIMULTANEIOUS RECORD TRACKS	DATA COMPRESSION	BUILT-IN STORAGE	RECORD/BACKUP TO	EXTERNAL DEVICE	MARKERS/LOCATERS	UNDO LEVELS	CD-R/RW SUPPORT
Akai	DPS24	24/250	60	No	30 GB HD	HD/HD	CD-RW; DAT; MO	2/100	250	Yes
Boss	BR-532	4/32	2	Yes	No	SmartMedia	N/A	0/1	1	No
Boss	BR-864	8/64	2	Yes	No	Compact flash	CD-W; DAT	1	1	Yes
Boss	BR-1180/BR-1180CD	10/80	2	Yes	60 GB HD	HD/int CD-RW	N/A	100/999	20	No (Yes BR-1180CD)
Fostex	MR-8	8/0	2	No	128 MB flash	USB port	USB	2/2	N/A	Yes
Fostex	VF-160	16/8	16	No	137 GB HD	HD/int CD-RW; SCSI; DAT; MO	DAT	N/A	1	Internal
Fostex	VF-80	8/16	2	No	20 GB HD	HD/(optional) CD-RW	DAT	0/16	1	Internal
Korg/ToneWorks	PXR4	4/8	2	Yes	No	SmartMedia	USB	99/0	1	No
Korg	D1200mkII	12/96	4	No	40 GB HD/CD-RW	HD/CD-RW	Computer via USB	100/4	99	Built-in
Korg	D1600mkII	16/128	8	No	40 GB HD	HD/CD-RW	Computer via USB	100/4	99	Internal
Korg	D16XD	16/144	16	No	40 GB HD	HD/CD-RW	Computer via USB	100/6	16	Built-in
Korg	D32XD	32/272	16	No	80 GB HD	HD/CD-RW	Computer via USB	100/6	16	Internal
Roland	VS-1824CD	18/288	8	No	10 GB HD	Internal CD-RW	N/A	N/A	N/A	Internal
Roland	VS-24000CD	24/384	16	Yes	40 GB HD	HD/CD-RW	N/A	1,000/100	999	Yes
Roland	VS-2480/VS-2480CD	24/384	16	No	80 GB HD (expandable to 128 GB)	Internal CD-RW	N/A	1,000/100	999	No (Yes VS-2480CD)
Tascam	Pocketstudio 5	4/0	1	Yes	32 MB flash	Compact flash	USB	8/0	1	No
Tascam	788	8/250	6	No	10 GB HD	HD/HD; SCSI; CD-RW	CD-RW; MO	0/999	999	Yes
Tascam	2488	24/250	8	No	40 GB HD	CD-RW	N/A	999/2	999	Built-in
Xytar Digital Systems	Traveler 232	32/unlimited	2	No	40 GB HD	HD/HD; ORB; CD-RW; Xytar ntwk	ORB; Xytar ntwk	Unlimited	Unlimited	Yes
Xytar Digital Systems	Traveler 432	32/unlimited	4	No	80 GB HD	HD/HD; ORB; CD-RW; Xytar ntwk	ORB; Xytar ntwk	Unlimited	Unlimited	Yes
Xytar Digital Systems	Traveler 832	32/unlimited	8	No	160 GB HD	HD/HD; ORB; CD-RW; Xytar ntwk	ORB; Xytar ntwk	Unlimited	Unlimited	Yes
Yamaha	AW16G	16/194	8	No	20 GB HD	CD-RW	N/A	99/5	N/A	Yes
Yamaha	AW4416	18/128	16	No	12 GB HD	N/HD; CD-RW	DAT; MO	98/8	16	Yes
Zoom	PS04	4/10	2	Yes	N/A	SmartMedia	N/A	N/A	N/A	No

Audio Archiving Strategies

By Chris Middleton

The following article is a conversation with Geoff Pryce (technical manager) and Owen Leech (studio manager) of Peter Gabriel's Real World Studios in box, England.

GP: Damp and humidity are the enemies of audio. Most big studios who still use tape bake their tapes in an oven to keep out the moisture. But when it comes to digital, you really need an archiving strategy. Archiving is big business, but it no longer means consigning data to one format and just leaving it there—you need a re-archiving strategy to migrate your data onto each new technology as it comes along. We're aiming for a 100-year timeframe to preserve all our recordings for. As long as all the ones and zeros remain intact, the archive will survive. But that means ensuring that audio is archived with incredibly accurate clocking today—more accurate than the atomic clocks that keep world time.

OL: You'd think that record companies

MIXER CHANNELS	XLR MICROPHONE INPUTS	FADERS	DYNAMIC AUTOMATION ONBOARD/MIDI	SCENES	EFFECTS PROCESSORS	MTC SEND/RECEIVE	MMC SEND/RECEIVE	WAVEFORM DISPLAY	OPTIONS	PRICE
44	12	12; 1 stereo master	Y/Y	24	4	Y/Y	Y/Y	Yes	IB24-LTC; SMPTE read/gen; IB24 ADT; 16 ch ADAT I/O; IB24 SCSI; wide SCSI	$4,199
6	1	5; 1 stereo master	N/Y	N/A	2	Y/N	Y/N	No	FS-5U footswitch	$495
10	1	6; 1 stereo master	N/Y	N/A	2	Y/N	Y/N	No	EV-5 expression; FS-5U punch-in; extra compact Flash; AC adapter	$595
46	2	8; 1 stereo master	N/N	99	3	Y/Y	Y/N	No	BR-1180CD features built-in CD-RW drive. FS-5U footswitch; EV-5 expression pedal	$845/$1,245
8	2	7; 1 stereo master	N/Y	N/A	6	Y/Y	Y/Y	Yes	Foot control	$429; MAD $299
16	2	16; 1 stereo master	N/N	99	2	Y/Y	N/N	Yes		$1,399
10	2	7; 1 stereo master	N/N	99	1	Y/Y	N/N	Yes	CD-1A CD-R/RW burner; 8340 SCSI card	$699
4	0	5; 1 stereo master	N/N	N/A	1	N/N	N/N	No	Soft bag (PXPACK)	$500
16	2	9; 1 stereo master	N/Y	100	11	Y/Y	Y/Y	Yes	Includes phantom power and S/PDIF; options: PS-1 punch-in footswitch; EXP2 effects controller pedal	$1,250
24	4	16; 1 stereo master	N/Y	100 per song	11	Y/Y	Y/Y	Yes	Includes phantom power; S/PDIF; swap-able hard drive; options: PS-1 punch-in footswitch; EXP2 effects controller pedal	$2,000
40	8	16; 1 stereo master	Y/Y	100 per song	8 insert/2 master/1final	Y/Y	Y/Y	Yes	AIB8 (8 additional ¼" inputs); ACB8 (8 additional analog compressors); DIB8 (ADAT lightpipe interface); user-installable	$2,600
56	8	Motorized; 16; 1 stereo master	Y/Y	100	24 insert/2 master/1 final	Y/Y	Y/Y	Yes	AIB8 (8 additional ¼" inputs); ACB8 (8 additional analog compressors); DIB8 (ADAT lightpipe interface) user-installable	$3,750
28	2	12; 1 stereo master	N/N	N/A	1 (2 optional)	N/N	N/N	No	VS8F-2 effects card	$2,495
48	8	12; 1 stereo master	Y/Y	100	9	Y/Y	Y/Y	Yes	VS8F-2 board: mastering FX, COSM modeling; control surfaces	$3,295
64	8	16; 1 stereo master (motorized)	Y/Y	100 per project	2 (expandable to 8)	Y/Y	Y/Y	Yes	R-BUS 16-channel A/D or D/A I/O	$3,995/$4,695
4	0	4; 1 master	N/Y	N/A	1	N/N	N/N	No	PS-P55	$499
8	0	6 mono; 1 stereo; 1 stereo master	N/Y	10	2	Y/Y	Y/Y	Yes	CD-RW788	$1,149
36	4	19; 1 stereo master	N/Y	3	2	N/Y	Y/Y	Yes	Built-in general MIDI tone generator; 24-bit recording on all 24 tracks; 3-band EQ; 9 compressors	$1,499
32	2	5; 1 stereo master	Y/N	Unlimited	2	Y/Y	N/N	Yes	Incl. 15" LCD, 125 hrs, CDR-W mic mxr; Opt: ORB; Xytar ntwk; 17" LCD mon	$1,799
32	4	7; 1 stereo master	Y/N	Unlimited	4	Y/Y	N/N	Yes	Incl. 15" LCD, 125 hrs, CDR-W mic mxr; Opt: ORB; Xytar ntwk; 17" LCD mon	$1,999
32	8	13; 1 stereo master	Y/N	Unlimited	8	Y/Y	N/N	Yes	Incl. 15" LCD, 125 hrs, CDR-W mic mxr; Opt: ORB; Xytar ntwk; 17" LCD mon	$2,299
36	2	12; 1 stereo master	N/Y	96	2	Y/Y	Y/Y	Yes	FC-5 footswitch	$1,299
44	2	16; 1 stereo master	Y/N	96	2	Y/Y	Y/Y	Yes	Mini-YGDAI I/O exp cards	$3,799
4	0	4	N/N	N/A	87	N/N	N/N	No		$360

would be good stewards of their own material, especially given that backlist is so important to them. But so many big companies throw out their master tapes. Or they just lose them. A few years ago there was a skip [dumpster] outside Olympic Studios in London that was full of master tapes—they belonged to record companies, but they never bothered to ask for them back! Maybe they had nowhere to store them.

We hosted a big event recently, in honor of Band Aid's "Do They Know It's Christmas?" The BBC were here, and the record company sent the master tape of this huge worldwide hit that spawned the whole Live Aid thing. There was a big fanfare, and the tape machine was switched on. It was the wrong song! They'd lost the master tape! God knows what some of these companies do now that stuff is mastered on Pro Tools or Logic Audio. Just leave a box of CDs in the corner? ■

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REFERENCE MONITORS

MANUFACTURER	PRODUCT	ENCLOSURE TYPE	POWERED/UNPOWERED	FREQUENCY RESPONSE	SENSITIVITY	CROSSOVER FREQUENCY	WOOFER SIZE AND TYPE
ADAM	The Apple	Ported	Powered	52 Hz–35 kHz	N/A	2.2 kHz	5.5" foam sandwich
ADAM	P11-A	Ported	Powered	48 Hz–35 kHz	10 dB	2 kHz	7" Nomexcone
ADAM	P22-A	Ported	Powered	35 Hz–35 kHz	10 dB	1.8 kHz	9" Nomexcone coated paper
ADAM	P33-A	Ported	Powered	34 Hz–35 kHz	N/A	150 Hz/1.8 kHz	7" foam sandwich
Alesis	Monitor One Mk2	Superport vented	Unpowered	45 Hz–18 kHz	88 dB	2.5 kHz	6.5" polypropylene cone
Alesis	M1 Active Mk2	Ported	Powered	45 Hz–22 kHz	N/A	2 kHz	6.5" non-woven carbon fiber
Alesis	ProLinear 720	Ported	Powered	50 Hz–20 kHz	120 dB SPL	1.9 kHz	7" woven Kevlar
Alesis	ProLinear 720 DSP	Ported	Powered	49 Hz–20 kHz	120 dB	1.9 kHz	7" woven Kevlar
Alesis	ProLinear 820	Ported	Powered	39 Hz–20 kHz	123 dB SPL	1.5 kHz	8" woven Kevlar
Alesis	ProLinear 820 DSP	Ported	Powered	39Hz–20 kHz	123 dB	1.5 kHz	8" woven Kevlar
Ambiance Acoustics	California Cube Loudspeaker System	Vented	Passive enclosure; outboard processor	45 Hz–16.5 kHz (-5 dB)	90 dB	N/A	N/A
Ambiance Acoustics	Super Cube Loudspeaker System	Vented	Passive enclosure; outboard processor	45 Hz–16.5 kHz (-5 dB)	90 dB	N/A	N/A
Ambiance Acoustics	Hyper Cube Loudspeaker System	Vented	Passive enclosure; outboard processor	45 Hz–16.5 kHz (-5 dB)	90 dB	N/A	N/A
ART	SLM-1	Ported	Passive	40 Hz–20 kHz	90 dB	2.5 kHz	6.5" foam surround
ATC	Active 10 Pro	Sealed	Powered	65 Hz–20 kHz (-6 dB)	80 dB	2.8 kHz	5"
ATC	T16	Ported	Biamped	70 Hz–17 kHz (±2 dB)	N/A	2.8 kHz	6.5"
Audix	PH3-s	Ported 2-way	Powered	100 Hz–20 kHz	87 dB	3 kHz	3.5"
Audix	PH5-vs	Ported 2-way	Powered	75Hz–20kHz	90 dB	3 kHz	5.25" poly
Audix	Studio 1A	Bass reflex	Unpowered	50 Hz–18 kHz	87 dB	3 kHz	6.5" poly
Audix	N-5	Bass reflex	Unpowered	40 Hz–20 kHz	87 dB	2.2 kHz	7" Kevlar
Audix	N-10	Bass reflex	Unpowered	40 Hz–20 kHz	89 dB	2.2 kHz	2x7" Kevlar
Bag End	M6 Near Field	Sealed	Powered	60 Hz–20 kHz (±3 dB)	87 dB SPL (@ 1W)	N/A	6"
Bag End	D10E-I Subwoofer	Sealed	Unpowered	8–95 Hz (±3dB w/ELF processor)	92 dB	N/A	2x10" EL-10 woofers
Bag End	Infrasub-12 Pro Subwoofer	Sealed	Powered	8–95 Hz	N/A	N/A	12" ELF
Bag End	Infrasub-18 Pro Subwoofer	Sealed	Powered	8–95 Hz (±3 dB)	N/A	N/A	18" EL-18P woofer
Bag End	MM-8H	Ported	Unpowered	95 Hz–20 kHz (±3 dB)	93 dB	2.9 kHz	8" LF
Bag End	MM-8 Nearfield Monitor	Ported	Unpowered	95 Hz–20 kHz (±3 dB)	93 dB	2.9 kHz	8" LF
Barbetta	Diva Omni 7	Ported reflex	Powered	40 Hz–20 kHz	N/A	2.33 kHz	7" treated paper
Behringer	Truth B2031	N/A	Powered	50 Hz–20 kHz	116 dB	2 kHz	8.75" polycarbonate diaphragm
Blue Sky	Media Desk 2.1 System	Sealed	Powered	35 Hz–20 kHz	N/A	N/A	8" forward firing
Blue Sky	Media Desk 5.1 System	Sealed	Powered	35Hz–20 kHz	N/A	N/A	8" forward firing
Blue Sky	SUB 12	Sealed	Powered	30–200 Hz	100 mV = 90 dB SPL 1M	80 Hz (bass mgmt section)	12" long excursion
Blue Sky	SAT 6.5	Sealed	Powered	80 Hz–20 kHz	200 mV = 90 dB SPL 1M	1.5 kHz	6.5" long excursion (midbass)
Blue Sky	ProDesk 2.1 System	Sealed	Powered	30 Hz–20 kHz	N/A	N/A	8" high excursion
Blue Sky	ProDesk 5.1 System	Sealed	Powered	30 Hz–20 kHz	N/A	N/A	8" high excursion
Carvin	SRS 6.5	Ported reflex	Unpowered	50 Hz–20 kHz	92.5 dB	4.5 kHz	6.5 coated paper
Carvin	SRS6.5 A	Ported reflex	Powered	50 Hz–20 kHz	92.5 dB	4.5 kHz	6.5" coated paper
DAS Audio	Monitor 6	Ported reflex	Unpowered	40 Hz–40 kHz	85 dB	N/A	6.5 polypropylene
DAS Audio	Monitor 8	Ported reflex	Unpowered	38 Hz–33 kHz	89 dB	N/A	8" polypropylene
Dynaudio Acoustics	Air 6	Bass reflex	Powered	40 Hz–22 kHz	N/A	2.15 kHz	6.5"
Dynaudio Acoustics	Air 15	Bass reflex	Powered	33 Hz–22 kHz	N/A	2.15 kHz	10"
Dynaudio Acoustics	BM5	Composite	Unpowered	55 Hz–29 kHz	87 dB	2.5 kHz	6.5"
Dynaudio Acoustics	BM6A/BM6	Composite	Powered	42 Hz–21 kHz	86 dB	2.2 kHz	6.5"
Dynaudio Acoustics	BM15A/BM15P	Composite	Powered	40 Hz–21 kHz	88 dB	2.2 kHz	10"
Dynaudio Acoustics	M1	Composite	Unpowered	50 Hz–20 kHz	88 dB	2 kHz	2x5.5"
Earthworks	Sigma 6.2	Bass reflex	Unpowered	40 Hz–40 kHz	87 dB	N/A	6.5" long excursion

MIDRANGE SIZE AND TYPE	TWEETER SIZE AND TYPE	MAGNETIC SHIELDING	CABINET DIMENSIONS (HxWxD)	WEIGHT (LBS.)	NOTES	PRICE (PER PAIR)
N/A	A.R.T folded ribbon	Yes	7.75x10x9	13.25		$1,450
N/A	Folded ribbon	Yes	11.03x12.99x8.27	22		$1,700
N/A	Folded ribbon	Yes	17x13.39x10.25	28.7		$2,350
7" foam sandwich	A.R.T folded ribbon	Yes	9x20x11	33		$2,950
N/A	1" silk dome	Yes	15x8.5x10	15	5-way binding posts	$299
N/A	1" silk dome	Yes	8.5x15x9.25	21	Biamplified; shielded; new HF/LF transducers	$649
N/A	1" silk dome	Yes	15x9x12	25.5		$698
N/A	1" silk dome	Yes	15x9x12	25.5	4-band parametric EQ	$900
N/A	1" silk dome	Yes	17.5x11x13.5	32.5		$998
N/A	1" silk dome	Yes	15x9x12	32.5	4-band parametric EQ	$1,098
(4) 4.5" full-range drivers	N/A	No	13.6x13.6x13.6	Enclosure: 27; EQ: 3	System includes two speakers and one processor	$1,395
(9) 4.5" full-range drivers	N/A	No	13.6x13.6x13.6	Enclosure: 32; EQ: 3	System includes two speakers and one processor	$1,695
(16) 4.5" full-range drivers	N/A	No	13.6x13.6x13.6	Enclosure: 40; EQ: 3	System includes two speakers and one processor	$2,095
N/A	1" soft (ferrofluid) dome	Yes	16x10x9	18		$299
N/A	1" soft dome	Optional	15x7.1x10	34		$3,125
N/A	1" dome	Yes	17.6x10.6x12.2	38		$3,165
N/A	0.75" dome	Yes	7.5x4.75x4.75	10		$199
N/A	0.75" dome	Yes	N/A	16		$299
N/A	1" cloth dome	Optional	13x9x10	18		$599
N/A	1" cloth dome	No	15x9.55x11	24		$1,495
N/A	1" cloth dome	No	22x10x13.5	45		$1,995
N/A	1" soft dome neodymium	Yes	15.5x9.5x9.5	20	Time-aligned clarity w/flat response	$1,196
N/A	N/A	No	13x22x13	44	Studio subwoofer for use w/ELF processor	$1,592
N/A	N/A	Yes	15x18x16	57	Time-align subwoofer w/8 Hz response; 400W power amp	$3,380
N/A	N/A	No	23.5x21.25x18.25	88	Time-align subwoofer w/8 Hz response; 400W power amp	$3,540
N/A	1.75" aluminum compression HF	No	16.5x12.5x8.5	29	Includes cloth grille (no switches); Time-Align EQ filter	$2,560
N/A	1.75" aluminum compression HF	No	16.5x12.5x8.5	28	For use w/ELF subwoofer; EQ; polarity switch	$2,760
N/A	1" soft dome	Optional	13x16x11	N/A	Biamplified	$2,399
N/A	25 mm ferrofluid-cooled dome	No	15.75x9.84x11.41	30.8	2-way active; well-balanced vertical and horizontal dispersion; 2 amplifiers; XLR & phone	$490
4" hemispherical	1"	Yes	9.5x6.5x5.75 sat; 15x14x15 sub	7/35	2 satellites and 1 sub and includes all bass management.	$599
4" hemispherical	1"	Yes	9.5x6.5x5.75 sat; 15x14x15 sub	7/35	5 satellites, 1 sub; all Bass Management Control is in the Sub	$1,198
N/A	N/A	Yes	18x16x22.07	N/A	THX pm3 certified; designed to be used with the SAT 6.5	$645
N/A	1" dual-concentric diaphragm	Yes	12x8x11.88	27	THX pm3 certified; designed to be used with the SUB 12	$1,150
5.25" hemispherical	.75" dual concentric	Yes	10.88x6.662x11.46 sat; 15.72x13.72x15.64 sub	24/48	ProDesk is available as a 2.1 0r 5.1 System	$1,195
5.25" hemispherical	.75" dual concentric	Yes	10.88x6.62x11.46 sat; 15.72x13.72x15.64 sub	24/48	5 Sat 5.25/ 1 Sub 8 and a BMC Bass Mgmt Controller	$3,045
N/A	1" soft dome Neo Magnet	Yes	9.25x9x14.75	21	Contour switch	$280
N/A	1" soft dome Neo Magnet	Yes	9.25x14.75x11.75	23	Biamped; shielded	$450
N/A	0.75 aluminum dome ferrofluid cooled	No	13.5x6.5x10.5	15.2		$798
N/A	1" ferrofluid cooled aluminum dome	No	16.5x11x11.5	28		$918
N/A	1.10"	Yes	13.3x8.5x13.58	21.6	Digital & analog inputs; intelligent networking; bass mgmt	$2,995
N/A	1.10"	Yes	16.73x10.82x15.55	34.17	Digital & analog inputs; intelligent networking; bass mgmt	$3,895
N/A	1.1"	Yes	12x8x10	15.2		$595
N/A	1.1"	No	15x9x12; 13x8x10	26.4/15.2		$2,095/$995
N/A	1.1"	No	18x11x5; 17x10x13	41.8/27.1		$3,145/$1,345
N/A	1.1"	No	8x18x12	31		$3,245
N/A	1.25" XJ25 UIFA	Yes	16.75x9.5x15.5	32	Time-coherent response matched pair	$3,500

REFERENCE MONITORS

MANUFACTURER	PRODUCT	ENCLOSURE TYPE	POWERED/UNPOWERED	FREQUENCY RESPONSE	SENSITIVITY	CROSSOVER FREQUENCY	WOOFER SIZE AND TYPE
Edirol	MA-10ABK	Bass reflex	Powered	45 Hz–35 kHz	-10 dub	N/A	3.62"
Edirol	MA-10A	Bass reflex	Powered	45 Hz–35 kHz	-10 dBu	N/A	3.62"
Edirol	MA-10D	Bass reflex	Powered	45 Hz–35 kHz	-10 dBu	N/A	3.62"
Edirol	MA-10DBK	Bass reflex	Powered	45 Hz–35 kHz	-10 dub	N/A	3.62"
Edirol	MA-20D	Bass reflex	Powered	35 Hz–35 kHz	-10 dub	N/A	4.75"
Electro-Voice	EVID Premium 4.2	Dual-ported reflex	Unpowered	42 Hz–20 kHz	89 dB	2.2 kHz	Dual 4"
Electro-Voice	EVID Premium 6.2	Dual-ported reflex	Unpowered	6.2 Hz–20 kHz	94 dB	1.6 kHz	Dual 6"
Electro-Voice	S-40	Vented	Unpowered	85 Hz–20 kHz	85 dB	3.5 kHz	5.25"
EMES	Amber Active	N/A	Powered	38 Hz–2 kHz (±2 dB)	91 dB 1W/1m @ 0.5% THD	N/A	10" dual coil, long excursion
EMES	Amber HR Active	N/A	Powered	32 Hz–2 kHz (±2 dB)	91 dB 1W/1m @ 0.5% THD	N/A	10" dual coil, long excursion
EMES	Black HR Active	N/A	Powered	43 Hz–20 kHz (±2.5 dB)	89 dB 1W/1m @ 0.35% THD	N/A	6.75" polypropylene
EMES	Blue HR Active	N/A	Powered	37 Hz–20 kHz (±2.0 dB)	90 dB 1W/1m @ 0.3% THD	N/A	(2) 7" carbon
EMES	Cyan HR	N/A	Powered	36 Hz–20 kHz (±2.5 dB)	91 dB 1W/1m @ 0.3% THD	N/A	(4) 7" carbon
EMES	Orange HR	N/A	Powered	38 Hz–20 kHz (±2.5 dB)	90 dB 1W/1m @ 0.32% THD	N/A	(2) 7" carbon
EMES	Owl System	N/A	Powered	42 Hz–20 kHz (±1.5 dB)	90 dB 1W/1m @ 0.3% THD	N/A	(2) 7" carbon
EMES	Pink TV Active	N/A	Powered	58 Hz–19 kHz (±2.5 dB)	89 dB 1W/1m @ 0.4% THD	N/A	5.5" paper carbon
EMES	Violett HR Active	N/A	Powered	48 Hz–20 kHz (±2.5 dB)	89 dB 1W/1m @ 31% THD	1.2 kHz	7" carbon
EMES	Yellow HR	N/A	Powered	38 Hz–1 kHz (±2 dB)	93 dB 1W/1m @ 0.5% THD	N/A	(2) 15" paper membrane
ESI	nEar 05	Ported reflex	Powered	60 Hz–20 kHz	200mV	2.7 kHz	5.25" polypropylene cone
ESI	nEar 06	Ported reflex	Powered	55 Hz–20 kHz	270mV	2.7 kHz	6" polypropylene
ESI	SW8000	Ported reflex	Powered	30 Hz–180 Hz	89 dB	50–180 kHz	8" polypropylene
Event Electronics	Tuned Reference 5	Ported	Powered	53 Hz–19 kHz (±3 dB)	N/A	2.6 kHz	5.25" mineral-filled polypropylene
Event Electronics	Tuned Reference 6	Ported	Powered	45 Hz–20 kHz (±3 dB)	N/A	2.6 kHz	6.5" mineral-filled polypropylene cone
Event Electronics	Tuned Reference 8	Ported	Powered	35 Hz–20 kHz (±3 dB)	N/A	2.6 kHz	8" mineral-filled polypropylene cone
Event Electronics	Tuned Reference 8XL	Ported	Powered	35 Hz–20 kHz (±3 dB)	N/A	2.6 kHz	8" mineral-filled polypropylene cone
Event Electronics	20/20 V2 Direct Field Monitor	Ported	Unpowered	50 Hz–20 kHz (±2 dB)	88 dB	2.2 kHz, 2nd-order	8" mineral-filled polypropylene cone
Event Electronics	20/20 S250 Subwoofer	Ported	Powered	28 Hz–120 Hz (-3 dB)	N/A	-3 dB (@120 Hz)	15" coated paper cone
Event Electronics	20/20bas V2 System	Ported	Powered	35 Hz–20 kHz (±3 dB)	N/A	2.6 kHz, active 4th-order	8" polypropylene cone
Event Electronics	Studio Precision 6 Passive	Ported	Unpowered	50 Hz–20 kHz (±3 dB)	86 dB @ 1W	2.2 kHz	6.5" polypropylene cone
Event Electronics	Studio Precision 6 Active	Ported	Powered	40 Hz–20 kHz (±3 dB)	N/A	2.6 kHz	8" polypropylene cone
Event Electronics	Studio Precision 8 Passive	Ported	Unpowered	40 Hz–20 kHz (±3 dB)	88 dB @ 1W	2.2 kHz	8" polypropylene cone
Event Electronics	Studio Precision 8 Active	Ported	Powered	32 Hz–20 kHz (±3 dB)	N/A	2.6 kHz	8" polypropylene cone
FBT	Jolly 3	Ported	Unpowered	80 Hz–20 kHz	93 dB	3.5 kHz	5" polypropylene-coated paper cone
FBT	FBT Jolly 5b	Ported reflex	Unpowered	80 Hz–20 kHz	93 dB	3.5 kHz	5.25"
FBT	FBT Jolly 5ba	Ported	Powered	80 Hz–19 kHz	93 dB	2.7 kHz	5.25" paper cone
FBT	FBT Jolly 5 ra	Ported reflex	Powered	80 Hz–20 kHz	89 dB	3.5 kHz	5.25"
FBT	FBT Jolly 8b	Ported reflex	Unpowered	70 Hz–20 kHz	96 dB	3 kHz	8"
FBT	FBT Jolly 8 ra	Ported reflex	Powered	70 Hz–20 kHz	95 dB	2.5 kHz	8"
FBT	FBT Jolly 8ba	Ported	Powered	60 Hz–20 kHz	96 dB	2 kHz	8" paper cone
FBT	FBT Jolly Sub 10a	Vented bandpass	Powered	45 Hz–120 Hz	98 dB	Active 120 Hz	10" dual coil
FBT	FBT Jolly Sub 12a	Vented bandpass	Powered	40 Hz–120 Hz	101 dB	120 Hz	12" dual coil paper cone
Fostex	PM-1	Dual ported	Powered	50 Hz–20 kHz (±2 dB)	Max >118 dB ELM	3 kHz	6.5"
Fostex	PM-2	Ported reflex	Powered	50 Hz–20 kHz	Max >118 dB ELM	N/A	8"
Fostex	PM0.5	Dual ported	Powered	50 Hz–20 kHz	90 dB	N/A	5" cone

MIDRANGE SIZE AND TYPE	TWEETER SIZE AND TYPE	MAGNETIC SHIELDING	CABINET DIMENSIONS (H×W×D)	WEIGHT (LBS.)	NOTES	PRICE (PER PAIR)
N/A	2"	Yes	6.19x7.81x9.37	7.9/5.2	Front headphone output; bass, treble controls; second line in level control; stereo 1/8	$130
N/A	2"	Yes	6.19x7.81x9.37	R 7.9; L 5.2	Front: headphone out; rear: stereo 1/8	$135
N/A	2"	Yes	6.19x7.81x9.37	R 7.9; L 5.2	S/PDIF (coax, optical) I/O; headphone out; rear: stereo 1/8	$165
N/A	2"	Yes	6.19x7.81x9.37	7.9/5.2	Digital inputs up to 24/96; coax and optical, headphone out; bass, treble controls, 2nd line level control; stereo 1/8	$165
N/A	1" dome	Yes	6.75x9.06x11.06	9	2 independent inputs w/front-accessible volume control; headphone output; dual ported	$295
N/A	1" titanium dome tweeter	Yes	12.2x6.9x8.5	8.5	Shielded; dual woofer	$340
N/A	1" titanium dome	Yes	16.5x9x11.75	12	Shielded; dual woofer	$580
N/A	1"	Yes	9.8x7.0x5.9	5.7		$418
N/A	N/A	No	11.5x16.5x12	52	Sub	$1,199 each
N/A	N/A	No	15x19x13.75	63	Sub	$1,399 each
N/A	1" textile dome	Yes	15x8.25x10	18	Biamped; shielded	$1,730
N/A	1.1" silk dome	No	19x10x12	40	Biamped	$3,598
(2) 5.5" polypropylene	1.1"	No	26.75x22x15.75	85	Triamped	$6,798
(2) 3.12" paper	1.1"	No	20.5x13x13.75	50	Triamped	$3,578
N/A	(2) 1.1" silk dome	No	15x15x12	45	Biamped	$3,449
N/A	1" textile neodymium	Yes	11.5x6.75x7.75	11	Biamped; shielded	$1,198
N/A	1.1" silk dome	No	15x8.5x9.75	21	Biamped	$2,650
N/A	N/A	No	26.75x31.5x15.75	85	Sub	$1,599 each
N/A	1" silk dome	Yes	10x6.5x7.9	11		$299
N/A	1" silk dome	Yes	11x8.7x8.77	14		$399
N/A	N/A	Yes	16x11x12	36.3		$339
N/A	1" silk dome	Yes	7.5x10.5x9	32	RF interference; output current limiting; subsonic filter; internal fuse; combination power on/clip LED	$399
N/A	1" silk dome	Yes	8.25x12.5x10.25	54	RF interference; output current limiting; over temperature; turn on/off transient; subsonic filter; internal fuse	$499
N/A	2.5mm soft dome neodymium	Yes	10.25x14.75x11.75	61	RF interference; output current limiting; over temperature; turn on/off transient; subsonic filter; internal fuse	$599
N/A	1" silk dome	Yes	10.25x14.75x11.75	61	RF interference; output current limiting; over temperature; turn on/off transient; subsonic filter; internal fuse	$699
N/A	1" ferrofluid-cooled silk dome	Yes	14.75x10.25x11.75	21	Front-mounted lrg-diam port; 5-wy binding posts	$399
N/A	N/A	Yes	20.25x17.5x17	64	LFE input sensitivity; polarity invert; phase delay	$599
N/A	1" ferrofluid-cooled silk dome	Yes	14.75x10.25x11.75	29	200W per side; low/high freq & trim controls; subsonic filter; RF ; gold 1/4"/XLR combo	$1,099
N/A	1" soft dome	Yes	13.63x10.75x10	46	Dual large-diameter linear-flow bass ports	$599
N/A	1" soft dome	Yes	16x12.5x11.88	50	Continuously variable input sensitivity/high-freq. trim/low-freq. trim; switchable 80 Hz second-order highpass filter	$1,299
N/A	1" soft dome neodymium	Yes	16x12.5x11.88	58	Dual large-diameter linear-flow bass ports	$799
N/A	1" soft dome neodymium	Yes	16x12.5x11.88	66	Continuously variable input sensitivity/high-freq. trim/low-freq. trim; switchable 80 Hz second-order highpass filter	$1,499
N/A	.75" Mylar cone	Yes	10.1x6.4x6.2	7	Available in 4 Ω or 16 Ω models; white or dark grey finish; wall-/mic stand-mountable w/opt mounts	$399
N/A	0.75" Mylar dome	Yes	10.50x6.75x7.25	6	Can be mounted on mic stand; optional wall mount	$340
N/A	.75" Mylar cone w/aluminum flat wound voice coil	Yes	10.75x6.75x6.75	8	Biamped; XLR and 1/4" input jack; 2-band EQ; ground lift switch; limiter; link output jack	$679
N/A	0.75" Mylar dome	Yes	9.75x6.75x7.25	7.5	60W RMS amp, volume control; bal. XLR, 1/4	$499
N/A	1.25"	Yes	16.60x10.25x9.80	13	Biamped 80W RMS LF and 20w RMS HF amps	$520
N/A	1.25" Mylar dome	No	16.60x10.25x9.80	13	Biamped volume control; ground lift switch	$739
N/A	1.25" Mylar w/aluminum flat wound voice coil	No	16.5x10.25x9.75	18	Biamped 150W RMS LF, 50W RMS HF; 2-band EQ; XLR link output jack; ground lift switch; limiter	$999
N/A	N/A	No	19.25x14.75x20.75	62	250W RMS stereo amp; 123 dB SPL; stereo ins/outs; active filter 24 db, 12dB filter out to satellite speakers	$899
N/A	N/A	No	22x16.5x24.5	77	Built stereo power amp: 300W RMS, 126 dB SPL; ADAP protection circuitry; active 24dB filter; balanced stereo ins/outs	$1,099 each
N/A	1" soft dome	Yes	15x8.5x10	24	75-45W biamplified; shielded	$499
N/A	1" dome	Yes	10x16.25x11.8	32.4	120W x 120W biamplified; shielded	$599
N/A	0.75" soft dome	No	7x11x10	14.3		$349

REFERENCE MONITORS

MANUFACTURER	PRODUCT	ENCLOSURE TYPE	POWERED/UNPOWERED	FREQUENCY RESPONSE	SENSITIVITY	CROSSOVER FREQUENCY	WOOFER SIZE AND TYPE
Fostex	6301BEA	Sealed	Powered	80 Hz–13 kHz	84 dB	N/A	N/A
Fostex	SPA-11	Sealed; dual cone	Powered	60 Hz–18 kHz	92 dB/1W	N/A	N/A
Fostex	NF-1	Ported bass reflex	Unpowered	50 Hz–40 kHz	89 dB	10 kHz	6.5" cone
Fostex	NF-1A	Ported bass reflex	Powered	50 Hz–40 kHz	89 dB	10 kHz	6.5" cone
Genelec	1029AP	Ported	Powered	68 Hz–18 kHz (±2.5 dB)	110 dB peak/pair	3.3 kHz electronic	5" coated cone
Genelec	1030AP	Ported	Powered	52 Hz–18 kHz (±2.5 dB)	115 dB peak/pair	3.5 kHz electronic	6.5" polymer composite
Genelec	2029A Digital Monitor System	Ported	Powered	68 Hz–18 kHz (±2.5 dB)	110 dB	3.3 kHz electronic	5" coated cones
Genelec	2029B Digital Monitor System	Ported	Powered	68 Hz–20 kHz	110 dB peak/pair	3.3 kHz	5" coated paper
Genelec	7050A Subwoofer	Laminar spiral	Powered	38–85 Hz	N/A	85 Hz	8"
Genelec	7060A Subwoofer	Laminar spiral	Powered	28–85 Hz	N/A	85 Hz	10"
Groove Tubes	SFX Spacestation	Front sealed; side dipole (open)	Powered	40 Hz–20 kHz	N/A	Front coax 1.6 kHz	Front-8"; side 6.5"
Hafler	M5	MDF cabinet	Unpowered	N/A	N/A	3.2 kHz	5.25" polypropylene cone
Hafler	TRM6.1	Bass reflex	Powered	55 Hz–21 kHz (±2 dB)	N/A	3.2 kHz	6" polypropylene cone
Hafler	TRM8.1	Bass reflex	Powered	45 Hz–21 kHz (±2 dB)	N/A	2.5 kHz	8" polypropylene cone
Hafler	TRM10.1	Bass reflex	Powered	30–110 Hz (±2 dB)	N/A	Variable 40–110 Hz	10" cellulose fiber cone
Hafler	TRM12.1	Bass reflex	Powered	25–110 Hz (±2 dB)	N/A	Variable 40–110 Hz	12" cellulose fiber cone
Hot House	PRM 165	Reflex, rear ported	Unpowered	49 Hz–20 kHz (±1.75 dB)	91 dB	2.4 kHz	6.5" long throw
Hot House	ASB 310	Multiple passive radiator	Powered	20–80 Hz (±1 dB)	N/A	80 Hz	10" high excursion w/2x10" passive radiators
JBL Professional	Control 1	Bass reflex	Unpowered	70 Hz–20 kHz (-10 dB)	87 dB	6 kHz	5.25"
JBL Professional	4408A	Bass reflex	Unpowered	50 Hz–20 kHz (±2 dB)	89 dB	2.5 kHz	8" cast frame
JBL Professional	4410A	Bass reflex	Unpowered	45 Hz–20 kHz (±2 dB)	90 dB	900 Hz, 4 kHz	10" cast frame
JBL Professional	4412A	Bass reflex	Unpowered	45 Hz–20 kHz (±2 dB)	89 dB	850 Hz, 4 kHz	12" cast frame
JBL Professional	LSR25P	Die-cast aluminum	Powered	70 Hz–20 kHz (+1, -2dB)	96 dB @ +4 dBu-10 dBv	2.3 kHz	5.25 SFG
JBL Professional	LSR6328P	Bass reflex	Powered	50 Hz–20 kHz (+1, -1.5 dB)	96 dB SPL/1m	1.7 kHz	8" differential drive
JBL Professional	LSR6332 (L,R)	Bass reflex	Unpowered	60 Hz–22 kHz (+1, -1.5 dB)	93 dB/2.83 V/1m	250 Hz, 2.2 kHz	12" neodym. differential
Klein + Hummel	O110	Ported	Powered	57 Hz–24 kHz	+6 dB	2.5 kHz	5.5" sandwich-membrane
Klein + Hummel	O110D	Ported	Powered	57 Hz – 24 kHz	+6 dB	2.5 kHz	5.5" sandwich-membrane
Klein + Hummel	P110	Ported	Unpowered	72 Hz–24 kHz	87 dB/SPL @ 1m	3 kHz	5.5" sandwich-membrane
Klein + Hummel	M50	Sealed	Powered	90 Hz–20 kHz	+6 dB	N/A	4" high-performance broadband driver
Klein + Hummel	M50D	Sealed	Powered	90 Hz–20 kHz	+6 dB	N/A	4" high-performance broadband driver
Klein + Hummel	O200	Ported	Powered	50 Hz–24 kHz	+6 dB	2.5 kHz	6.7" polypropylene
Klein + Hummel	O300D	Sealed enclosure	Powered	35 Hz–24 kHz	+6 dB	650 Hz, 3.3 kHz	8" polypropylene
Klein + Hummel	O400	Ported	Powered	42 Hz–24 kHz	+6 dB	450 Hz, 3.5 kHz	8½" polypropylene cone
Klein + Hummel	O800	Ported	Powered	27 Hz–100 Hz	-6 dB	90 Hz	10" Nomex/Kevlar composite cone
KRK	ST 6	Tuned port	Unpowered	62 Hz–20 kHz	89 dB	2.5 kHz	8" DLDA aluminum
KRK	ST 8	Tuned port	Unpowered	52 Hz–20 kHz	90 dB	2.5 kHz	8" DLDA aluminum
KRK	S8	Slotted port	Powered	N/A	N/A	N/A	8" coated paper
KRK	S10	Tuned port	Powered	30 Hz–50 kHz (variable) (±2 dB)	+6 to -30 dB	80 kHz fixed	10" woven Kevlar
KRK	S12	Slotted port	Powered	31 Hz–50 kHz (variable) (±2 dB)	N/A	N/A	12" woven Kevlar
KRK	V4	Slotted port	Powered	N/A	N/A	N/A	4" coated
KRK	V6	Tuned port	Powered	30 Hz–50 kHz (variable) (±2 dB)	+6 to -30 dB	80 Hz fixed	10" woven Kevlar
KRK	V8	Tuned port	Powered	47 Hz–23 kHz (±2 dB)	+6 to -30 dB	1.66 kHz	8" woven Kevlar
KRK	V88	Tuned port	Powered	35 Hz–2 kHz (±2 dB)	+6 to -30 dB	1.83 kHz	8" woven Kevlar
KRK	M6000/S	Tuned port	Unpowered	62 Hz–20 kHz	89 dB	2.4 kHz	6" polyglass

MIDRANGE SIZE AND TYPE	TWEETER SIZE AND TYPE	MAGNETIC SHIELDING	CABINET DIMENSIONS (HxWxD)	WEIGHT (LBS.)	NOTES	PRICE (PER PAIR)
4" full-range	N/A	Yes	6.5x4x5	7	Amplifier may be used independently	$189 each
(2) 4" full-range cones	N/A	No	7x12x7	16.75	100W internal amplifier; mic and line inputs; level control	$499 each
N/A	1" soft dome	Yes	13.4 x10.8x10.8	20	"Hyperbolic parabolic" diaphragm for woofer; URD tangential diaphragm edge; push-pull damper; time-aligned encl	$1,198
N/A	1" soft dome	Yes	13.4x.5x12.6	24	Biamped w/2 60W amps; adj. boost/cut @ 60 Hz & 10 kHz; 3 dB attenuator at 3 kHz; tweeter level adj. +/- 3dB	$1,998
N/A	0.75" metal dome	Yes	10x6x7.25	12.5	XLR ins; power indicator; input-sens controls; amp/driver-prot; x-overs; EQ	$1,080
N/A	0.75" metal dome	Yes	12.5x8x9.5	15	XLR ins; power indicator; input-sens controls; amp/driver-prot; x-overs; EQ	$2,098
N/A	0.75" metal dome	Yes	10x6x7.25	12.5	S/PDIF and XLR ins; all features of 1029A	$1,325
N/A	0.75" metal dome	Yes	9.75x6x7.25	12.5	24-bit/96 kHz digital interface	$1,375
N/A	N/A	Yes	16.13x13.75x12.38	33	For use with 1029A/2029A	$750 each
N/A	N/A	Yes	20.75x18.19x14.19	57	Integrated 6.1 bass manager	$1,650 each
Front coax 2" compression driver	N/A	No	17x10x10	25	SFX-Stereo Field Expansion	$695
N/A	Proprietary 25mm silk dome	Yes	12.25x6.75x7	10	4th order Butterworth vented 2-way	$249
N/A	1" soft dome	Yes	13.25x8.875x11.5	25	150W + 33W trans*ana amps	$998
N/A	1" soft dome	Yes	15 7/16x10.25x13	35	150W + 75W trans nova amps	$1,498
N/A	N/A	No	14.75x16x16	60	200W class G trans*ana ampl; XLR, RCA ins	$599 each
N/A	N/A	No	18x19.5x19.25	96	200W class G trans*ana ampl; XLR, RCA ins	$699 each
N/A	1" recessed soft dome	Yes	12.5x8.5x13	25	Req 100-300W amplification	$1,299
N/A	N/A	No	15x15x16	58	Stereo x-over w/ XLR & RCA I/O; HP outs; sens/lvl mtchng; pk SPL 118 dB	$2,499
N/A	0.75" polycarbonate	Yes	9.25x6.25x5.625	4	Multimedia brackets and adapters available	$338
N/A	1" titanium dome	No	17.25x11.625x12	26	Mirror image pairs	$798
5" cast frame	1" titanium dome	No	23.5x14.25x11.25	43	Mirror image pairs	$1,098
5" cast frame	1" titanium dome	No	14.25x23.5x11.25	47	Mirror image pairs in horizontal configuration	$1,658
N/A	1" titanium composite	Yes	10.6x6.8x9.5	17		$798
N/A	1" titanium composite	Yes	13x16x12.75	39	Biamplified w/ RMC EQ; XLR/1/4"	$2,678
5" neodymium w/2" voicecoil	1" titanium composite	Yes	15.5x25x11.5	45	Three-way mid-field; 200W RMS and 800W peak	$2,798
N/A	1" titanium/fabric dome	Yes	11x6.5x8	12	Two-way biamplified studio monitor with active crossovers for professional nearfield monitoring	$1,200
N/A	1" titanium/fabric dome	Yes	11x6.5x8	12	Two-way biamplified studio monitor with analog and digital inputs and active crossovers	$1,500
N/A	1" titanium/fabric dome	Yes	11x6.5x8	11	Two-way passive studio monitor for professional nearfield monitoring	$700
N/A	N/A	Yes	6.8x4.7x6.3	6	Active nearfield studio reference monitor for small studios, broadcast facilities, desktops	$760
N/A	N/A	Yes	6.8x4.7x6.3	6	Digital active nearfield studio reference monitor	$1,000
N/A	1" titanium/fabric dome	Yes	12.8x8x10	22	High-performance studio reference monitor	$1,800
3" fabric dome radiator	1" titanium/fabric dome	Yes	10x15x11	34	Active three-way tri-amplified; analog/digital inputs	$3,200
3" fabric dome radiator	1" titanium fabric dome	Yes	19.7x11.6x10.2	40	Active three-way tri-amplified studio monitor for mid-sized recording studios	$4,200
N/A	N/A	Yes	13x14x20	55	Active studio subwoofer with integrated management for monitoring and 5.1 surround applications	$2,550
N/A	1" silk dome	Yes	13x8.75x9.75	21	Max SPL 104 dB	$400
N/A	1" silk dome	Yes	15.25x9.75x10.5	26	Max SPL 110 dB	$500
N/A	N/A	No	N/A	N/A		$850
N/A	N/A	No	13x18.75x17	53 (pair)		$1,200
N/A	N/A	No	15x22x20	72		$1,499
N/A	1" titanium dome	Yes	N/A	N/A		$1,000
N/A	N/A	No	13.017x18.75x17	53 (pair)		$1,200
N/A	1" silk dome	Yes	N/A	38 (pair)		$1,800
N/A	1.25" silk dome	Yes	N/A	50 (pair)		$2,400
N/A	1" Kevlar	Optional	13x9x10	36		$1,050 ($1,200 shielded)

REFERENCE MONITORS

MANUFACTURER	PRODUCT	ENCLOSURE TYPE	POWERED/UNPOWERED	FREQUENCY RESPONSE	SENSITIVITY	CROSSOVER FREQUENCY	WOOFER SIZE AND TYPE
KRK	M7000B/BS	Tuned port	Unpowered	50 Hz–20 kHz	91 dB	3 kHz	7" Kevlar
M&K	MPS-300 In-Wall	In-wall	Unpowered	80 Hz–22 kHz (±2 dB)	N/A	1.2 kHz	(2) 5.25" polyprop. mids
M&K	MPS-1525 Tripole Surround	Sealed	Unpowered	80 Hz–20 kHz	90 dB	1.8 kHz	(2) 5.25"
M&K	MPS-2525 Tripole Surround	Sealed	Unpowered	80 Hz–20 kHz	90 dB	1.8 kHz	(2) 5.25"
M&K	MPS-1625 Tripole Surround	Sealed	Unpowered	80 Hz–20 kHz	90 dB	1.8 kHz	6.5"
M&K	MPS-2575 Tripole Surround	Sealed	Unpowered	80 Hz–20 kHz	90 dB	1.8 kHz	(2) 6.5"
M&K	MPS-1625P Powered Tripole	Sealed	Powered	77 Hz–20 kHz	90 dB	1.8 kHz	6.5"
M&K	MPS-2525P Powered Tripole	Sealed	Powered	77 Hz–20 kHz	90 dB	1.8 kHz	(2) 5.25"
M&K	MPS-1510	Sealed	Unpowered	80 Hz–20 kHz	90 dB	1.8 kHz	5.25"
M&K	MPS-1520 Center Channel	Sealed	Unpowered	80 Hz–20 kHz	90 dB	1.8 kHz	(2) 5.25"
M&K	MPS-1610	Sealed	Unpowered	80 Hz–20 kHz	90 dB	1.8 kHz	6.5"
M&K	MPS-2510	Sealed	Unpowered	77 Hz–20 kHz (±2 dB)	90 dB	1.5 kHz	(2) 5.25"
M&K	MPS-2550	Sealed	Unpowered	77 Hz–20 kHz (±2 dB)	90 dB	200 Hz, 1.5 kHz	(2) 6.5"
M&K	MPS-2810 200W dual 8" Subwoofer	Sealed	Powered	20–125 Hz	N/A	N/A	(2) 8"
Mackie	HR624	Bass reflex/passive	Powered	52 Hz–20 kHz	N/A	3 kHz	6.7"
Mackie	HR626	Sealed/passive	Powered	40 Hz–20 kHz	89 dB	3 kHz	(2) 6.7"
Mackie	HR824	Sealed	Powered	39 Hz–20 kHz (±1.5 dB)	>120 dB 1W/1m	2 kHz	8.75" polypropylene cone
Mackie	HRS120 Subwoofer	N/A	Powered	21–150 Hz ±1.5 dB	N/A	55–110 Hz (@ 24 dB)	12" RCF w/ 4" voice coil
Mackie	HRS150 Subwoofer	Sealed/passive radiator	Powered	20 Hz–500 Hz	96 dB	55 Hz–110 Hz (@ 24 dB)	15" RCF precision
M-Audio	BX5	Ported reflex	Powered	56 Hz–20 kHz	200 mV	3 kHz	5.25" polypropylene
M-Audio	BX8	Ported reflex	Powered	37 Hz–20 kHz	200 mV	1.25 kHz	8" mineral-filled polypropylene cones
New Audio	Spatial One Near-field	Ported reflex	Unpowered	50 Hz–20 kHz	88 dB@1 W, 1m	N/A	6.5 " polypropylene
NHT Pro	S-00	Acoustic suspension	Powered	39 Hz–90 Hz	N/A	Variable 50–90 Hz	8" long throw; treated
NHT Pro	C-20	Acoustic suspension	Powered	48 Hz–20 kHz	N/A	N/A	6.5" treated paper
NHT Pro	A-20	Sealed	Dedicated outboard	40 Hz–20 kHz	117 dB	2 kHz	6.5" paper cone
NHT Pro	B-20	Air suspension	Powered	29–100 Hz	N/A	5-position variable 70, 85, 95, 105, bypass (230 Hz)	(2) 10" ultra long throw (1" linear peak-peak)
NHT Pro	M-00	Sealed; cast alum.	Powered	80 Hz–20 kHz	111 dB	N/A	4.5" paper cone
Paradigm	Mini Monitor	Bass reflex	Unpowered	40 Hz–20 kHz (±2 dB)	90 dB	2 kHz	6.5" copolymer polyprop.
Paradigm	Studio/20	Bass reflex	Unpowered	36 Hz–22 kHz (±2 dB)	90 dB	2.0 kHz	6.5" mica-polymer cone
Paradigm	Signature S2	Bass reflex	Unpowered	38 Hz–22 kHz (±2 dB)	91 dB	1.8 kHz	7" mica-loaded-polymer
Phonic	P8A	Ported front-load	Powered	45 Hz–22 kHz	88 dB/SPL	N/A	8.75" polypropylene
PMC	DB-1S+	Transmission line	Unpowered	50 Hz–25 kHz	87 dB	3 kHz	5 " cast alloy chassis
PMC	TB-2S+	Transmission line	Unpowered	35 Hz–25 kHz	90 dB	3 kHz	6.5" domed-cast Mg
PMC	DB-1A	Transmission line	Powered	50 Hz–25 kHz	N/A	3 kHz	5 " cast alloy chassis
PMC	TB-2A	Transmission line	Powered	35 Hz–25 kHz	N/A	3 kHz	6.5" domed-cast Mg
Quested	F5	Infinite baffle	Powered	75 Hz–20 kHz (±3 dB)	N/A	N/A	5" high excursion cast chassis
Quested	H108	Bass reflex	Unpowered	55 Hz–18 kHz	90.5 dB	N/A	8" custom
Quested	F 11A	Bass reflex	Powered	65 Hz–20 kHz (±2 dB)	N/A	N/A	6.5" custom
Quested	F19 Subwoofer	Bass reflex	Powered	29 Hz–120 Hz (±3 dB)	N/A	N/A	10"
Roland	DS-30A 24-bit Digital	Ported bass reflex	Powered	78 Hz–20 kHz (±3 dB)	N/A	2.3 kHz active 3rd order	5" foamed polyprop. cone
Roland	DS-50A 24-bit Digital	Ported bass reflex	Powered	68 Hz–22 kHz (±3 dB)	N/A	2.3 kHz active 3rd order	5" foamed polyprop. cone
Roland	DS-90 24-bit Digital	Bass reflex	Powered	Flat, user-adjustable settings	0 dBm (0.775 Vrms)	2.6 kHz active 4th order	6.5" polypropylene cone
Samson	Resolv 65	Tuned, slotted port	Unpowered	45 Hz–30 kHz (±5 dB)	87 dBc	2.5 kHz	6.5" polypropylene
Samson	Resolv 120a	Ported reflex	Powered	24 Hz–200 kHz (±5 dB)	N/A	40 Hz–180 Hz	10" treated paper
Samson	Resolv 50a	Tuned, slotted port	Powered	60 Hz–30 kHz (±5 dB)	N/A	2.1 kHz	5" polypropylene
Samson	Resolv 65a	Tuned, slotted port	Powered	54 Hz–30 kHz (±5 dB)	N/A	2.1 kHz	6.5" polypropylene
Samson	Resolv 80a	Tuned, slotted port	Powered	50 Hz–26 kHz (±5 dB)	N/A	2 kHz	8" polypropylene
Sound Control Room	Spatial One	Diffuse tweeter, rear vent	Unpowered	50Hz–20kHz	88db @ 1 watt 1 mete	N/A	6.5" polypropylene
Studer	A1	Ported	Powered	58 Hz–22 kHz	0.775V for 100 dB SPL @1m	3.5 kHz	5.6"
Studer	A3	Ported	Powered	43 Hz–23 kHz	0.775V for 100 dB SPL @1m	2.2 kHz	8.5"

MIDRANGE SIZE AND TYPE	TWEETER SIZE AND TYPE	MAGNETIC SHIELDING	CABINET DIMENSIONS (HxWxD)	WEIGHT (LBS.)	NOTES	PRICE (PER PAIR)
N/A	1" Kevlar	Optional	14.25x11x□1	50		$1,500 ($1,800 shielded)
N/A	(2) 1" soft dome	No	12.1x10.5x3.1	N/A	In-wall studio monitor with white metal grill	$999 each
(2) 3.5"	1" soft dome	Yes	10.5x8.5x6	11	Switchable power response	$1,399
(4) 3.5"	(3) 1" soft dome	Yes	12.5x10.5x12	26	Tripole surround monitor; switchable power response	$1,399
(4) 3.5"	1" soft dome	Yes	12.6x10.5x8	14	Switchable power response	$1,998
(2) 5.25"; (2) 3.5"	(5) 1" soft dome	Yes	12.375x10.5x14	36	Tripole surround monitor; switchable power response	$1,799 each
(4) 3.5"	1"	Yes	12.6x10x9	18	Switchable power response	$2,499
(4) 3.5"	(3) 1"	Yes	12.5x10.5x14	26	Switchable power response	$2,999
N/A	1" soft dome	Yes	10.5x6.25x7.4	9		$499 each
N/A	1" soft dome	Yes	5.6x6.18.5x8.25	17	Horizontal center channel monitor	$699 each
N/A	1" soft dome	Yes	12.6x18.4x7.5	12		$650 each
N/A	(3) 1" soft dome	Yes	12.5x10.5x12	24	THX PM3 appr; user selectable wide/narrow vertical directivity	$899 each
(2) 5.25"	(3) 1"	Yes	12.5x10.5x14	32	User selectable vertical directivity	$1,399 each
N/A	N/A	Yes	14.5x17.5x12.125	41	Dual driver push-pull; headroom maximizer; backfire design	$1,499 each
N/A	1" viscous edge-damped alum. dome	Yes	13x8.25x10.3	51	Biamplified	$1,198
N/A	1" aluminum dome	Yes	8.8x19.6x12.4	31	Tweeter viscous edge damped aluminum dome	$1,798
N/A	1" alumin-alloy	Yes	15.75x10x10.5	32	Rear mass-loaded passive radiator	$1,698
N/A	N/A	No	21x18x21.3	94	Biamplified	$1,499 each
N/A	N/A	No	24x23.7x23.6	117		$2,499 each
N/A	1" natural silk	Yes	9.85x6.54x7.88	11		$400
N/A	1" natural silk	Yes	14.97x9.85x11.82	20.32		$599
N/A	Inverted cone Kevlar	No	16x12x7.5	27		$1,200
N/A	N/A	No	13.25x10.25x13	30	Optional footswitch bypass	$700
N/A	1" aluminum dome; .fluid cooled	Partial	14x8x9.375	19	Shielded center channel complement for A-20 system	$1,000
N/A	1" ferro fluid cooled; metal dome	Partial	3.5x19x12.75 (2U)	17	XLR/TRS in; LED readout-SPL; VAC; heat sink temp.	$1,700
N/A	N/A	No	(2) 14x14x16 (inc. grill)	38	Includes 250W/ch control amplifier	$1,800
N/A	1" ferrofluid cooled; soft dome	Yes	9x5.7x7.3	14	Inputs: XLR, TRS, RCA; controls-NF/MF, +4/-10 dBu	$350 each
N/A	1" pure titanium dome	Optional	13.25x8x11.25	15.5	Black ash, light cherry, and dark cherry laminates	$399
N/A	1" pure aluminum dome	Optional	15x8.25x12.75	43	Black ash, light cherry, and rosenut laminate and wood veneer	$800
N/A	1" gold-anodized pure-alum. dome	Yes	15x8.25x14	56	Cherry, Sycamore, Piano Black, Rosewood	$1,900/$2,200
N/A	1" silk dome	Yes	16.9x10.6.12.6	33		$600
N/A	1" fabric soft dome	Optional	11x6x9	10	Small transmission line	$945
N/A	1" fabric soft dome	Optional	8x16x12	19		$1,295
N/A	1" fabric soft dome	Optional	11x6x9	10	Digitally-powered monitors	$2,150
N/A	1" fabric soft dome	Optional	8x16x12	19	Digitally-powered monitors	$2,950
N/A	0.75" soft dome	Yes	6.75x11x7.75	13	80W biamp; level and EQ	$1,590
N/A	1.125" high-frequency soft dome	Optional	15x9x9	26	Requires 60-200W	$2,300
N/A	1.10" soft dome	Yes	12.5x8.5x11.25	24.5	110W/40W biamp; bass/treble boost/cut; level control	$2,590
N/A	N/A	No	18.5x11.5x14.25	42	200W; bass control, roll-off, sensitivity, polarity, phase	$1,695 each
N/A	1" soft dome	Yes	6.93x9.88x11.06	13.5	Up to 24/96; coax, optical plus analog XLR, TRS	$490
N/A	0.75" soft dome	Yes	7.75x10.5x12.25	17.75	Up to 24/96; coax, optical plus analog XLR, TRS	$698
N/A	1" soft dome	Yes	19.6x9x12.7	24	24-bit digital ins (S/PDIF) on each speaker	$1,190
N/A	1" titanium dome	Yes	13.75x9.25x10	12		$279
N/A	N/A	Yes	15x14.75x18.5	32	Active, passive inputs; variable crossover; auto on	$279
N/A	1" titanium dome	Yes	12x8x9.5	14	-10 dBv unbal. input; RCA +4 dBu bal. input; 1/4"	$280
N/A	1" titanium dome	Yes	13.75x9.25x10.75	17	Mid presence switch	$399
N/A	1" titanium dome	Yes	16x11.25x13	21	Mid presence switch	$539
N/A	1x inverted cone Kevlar	No	16x12x7.5	27	Patented diffuse tweeter system creates a large, even sweet spot with accuracy	$1,200
N/A	2.75"	Yes	9x6x7	11	Negative impedance and group delay compensation	$1,590
N/A	4"	Yes	16x10x12	28	Negative impedance and group delay compensation	$3,790

REFERENCE MONITORS

MANUFACTURER	PRODUCT	ENCLOSURE TYPE	POWERED/UNPOWERED	FREQUENCY RESPONSE	SENSITIVITY	CROSSOVER FREQUENCY	WOOFER SIZE AND TYPE
Studer	A5	Ported	Powered	38 Hz–23 kHz	0.775V for 100dB SPL	3 kHz	9.9"
Sundholm	SL 5.0	Ported reflex	Unpowered	56 Hz–20 kHz (±3 dB)	87 dB	3.2 kHz	5.25" coated paper cone
Sundholm	SL 6.5	Ported reflex	Unpowered	45 Hz–20 kHz (±2 dB)	88 dB	2.5 kHz	6.5" polycone
Sundholm	SL 8.0	Ported reflex	Unpowered	40 Hz–20 kHz (±3 dB)	88 dB	2.2 kHz	8" polycone
Sundholm	PS/8 Sub	Ported reflex	Powered	24–100 Hz (±3 dB)	N/A	50–100 Hz variable	8" treated paper cone
Sundholm	PS/10T Powered Sub	Ported reflex	Powered	34 Hz–100 kHz (±3 dB)	N/A	50–100 Hz variable	10" polycone
Tannoy	Proto-J	Ported reflex	Unpowered	60 Hz–20 kHz	87 dB	3 kHz	6.5" pulp
Tannoy	Reveal	Ported reflex	Unpowered	65 Hz–20 kHz	87 dB	3 kHz	6.5" plastic
Tannoy	Reveal Active	Ported reflex	Powered	62 Hz–20 kHz	N/A	3 kHz	6.5" plastic
Tannoy	System 600	Ported reflex	Unpowered	52 Hz–20 kHz	90 dB	1.8 kHz	6.5" molded plastic
Tannoy	System 600A	Ported reflex	Powered	44 Hz–20 kHz	N/A	1.6 kHz	6.5" molded plastic
Tannoy	System 800	Ported reflex	Unpowered	47 Hz–20 kHz	92 dB	1.8 kHz	8" molded plastic
Tannoy	System 800A	Ported reflex	Powered	44 Hz–20 kHz	N/A	1.6 kHz	8" molded plastic
Tannoy	System 1000	Ported reflex	Unpowered	45 Hz–20 kHz	94 dB	1.5 kHz	10" molded plastic
Tannoy	System 1200	Ported reflex	Unpowered	40 Hz–20 kHz	95 dB	1.3 kHz	12" molded plastic
Tannoy	TS8 Subwoofer	Sealed	Powered	Low Frequency resp. 32 Hz	N/A	N/A	8" bass driver
Tannoy	TS10	Sealed	Powered	Low Frequency resp. 29 Hz	N/A	N/A	10" bass
Tannoy	PS110B	Ported reflex	Powered	31–150 Hz	N/A	Variable	10" pulp
Tannoy	PS350B	Ported reflex	Powered	29–300 Hz	N/A	Variable	15" treated pulp
Tannoy	Ellipse 8	Ported	Powered	40 Hz–50 kHz	+4 dBu/-10 dBu	1.7 kHz–14 kHz	N/A
Tapco	S·5	16mm-thick MDF	Powered	64 Hz–20 kHz	4 dBu @ 300 Hz	4 kHz	5.25" polypropylene cone
Tapco	S·8	MDF	Powered	40 Hz–20 kHz	4 dBu @ 300 Hz	3 kHz	8" polypropylene cone
Triple P	Pyramid	Reflex	Unpowered	80 Hz–18 kHz	N/A	N/A	Elliptical
Truth Audio	TA-1P	Ported reflex	Unpowered	48 HZ–24 kHz	88 dB	2 kHz	(2) 5" mineral-filled poly cone
Truth Audio	TA-1A	Ported reflex	Powered	48 HZ–24 kHz	88 dB	2 kHz	(2) 5" mineral-filled poly cone
Westlake Audio	Lc 4.75	Bass reflex	Unpowered	60 Hz–20 kHz	85 dB	4.5 kHz	4" polypropylene
Westlake Audio	Lc 5.75	Bass reflex	Unpowered	60 Hz–20 kHz	86 dB	4.5 kHz	5" polyglass
Westlake Audio	Lc6.75	Bass reflex	Unpowered	60 Hz–18 kHz	87.5 dB	4 kHz	6.5" polypropylene
Westlake Audio	Lc265.1	Bass reflex	Unpowered	48 Hz–18 kHz	91 dB	180 Hz, 4 kHz	6.5" polypropylene
Westlake Audio	Lc8.1	Bass reflex	Unpowered	55 Hz–18 kHz	90.5 dB	3.6 kHz	8" polypropylene
Westlake Audio	Lc24.75	Ported	Unpowered	65 Hz–20 kHz	89 dB	5.5 kHz	4" treated paper
Westlake Audio	BBSM-4	Bass reflex	Unpowered	65 Hz–20 kHz	89 dB	1.5 kHz	4" polypropylene
Westlake Audio	BBSM-5	Bass reflex	Unpowered	55 Hz–20 kHz (±3 dB)	90 dB	1.2 kHz	5" polyglass
Yamaha	MSP5A	Bass reflex	Powered	50 Hz–40 kHz	101 dB	2.5 kHz	5" paper w/rubber surround
Yamaha	MSP10 Studio	Bass reflex	Powered	40 Hz–40 kHz	-6 dB to +4 dB	2.0 kHz	8" poly w/rubber surround
Yorkville Sound	YSM1i	Ported	Unpowered	40 Hz–20 kHz	90 dB	2.5 kHz	6.5" foam surround
Yorkville Sound	YSM1p	Ported	Powered	40 Hz–20 kHz	90 dB	2.5 kHz	6.5" foam surround
Yorkville Sound	YSS1	Studio subwoofer	Powered	35 Hz–150 Hz	N/A	N/A	12" single long excursion

Proper Monitor Placement

By David Franz

When listening to two speakers, your goal is to hear the optimal stereo image. Also called the phantom image, it occurs in the middle of two speakers placed at equal height from the floor. It creates the illusion that sound is emanating from a third speaker between them. To hear the phantom image, your head should be on the median plane, an imaginary line equidistant from each speaker (see Fig. 1).

Ideally your head and the two speakers should form an equilateral triangle—the distance between you and each speaker is the same, and equal to the distance between the two speakers. This ensures that you're hearing the most accurate stereo image from your speakers. In this setup, you'll perceive the sound coming from the area directly between the two

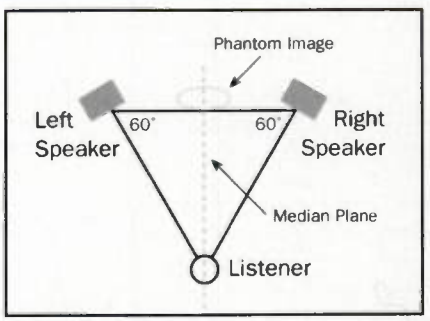

FIG. 1 (called Fig. 2.20 in the book): Properly placed stereo monitors should form an equilateral triangle with the listener.

MIDRANGE SIZE AND TYPE	TWEETER SIZE AND TYPE	MAGNETIC SHIELDING	CABINET DIMENSIONS (HxWxD)	WEIGHT (LBS.)	NOTES	PRICE (PER PAIR)
5.6"	3.9"	Yes	23.2x12.6x15	64	Negative impedance and group delay compensation	TBA
N/A	1" aluminum dome; fully shielded	Yes	15x7.75x8	2	5.1 mixing system with PS/8 powered sub	$795
N/A	1" silk dome	No	15.5x10.6x11.6	25	Bi-wire connector; time offset correc. plate; assym technology	$795
N/A	1" aluminum dome	No	15.5x12x14.25	35	Bi-wire connector; time offset correc. plate; assym technology	$995
N/A	N/A	No	15.25x15.25x15.25	50	Phase reversal switch; stacking outputs; level control	$750 each
N/A	N/A	No	29x12x15.25	55	Pair serve as speaker stand for full-range monitors	$899 each
N/A	0.75" soft dome	No	14x9x9	12		$279
N/A	1" soft dome	Yes	14x9x11	15.4		$399
N/A	1" soft dome	Yes	14x9x11	19	50W + 50W	$899
N/A	1" aluminum dome	Optional	9x15x11	17	Dual concentric	$695
N/A	1" aluminum dome	Optional	9x15x12	23	Dual concentric 70W + 70W	$1,395
N/A	1" aluminum dome	Optional	11x18x11	51	Dual concentric	$995
N/A	1" aluminum dome	Optional	11x18x12	22	Dual concentric 90W + 90W	$1,895
N/A	1" aluminum dome	Optional	13x22x12	37	Dual concentric	$1,795
N/A	1" aluminum dome	Optional	16x26x16	60	Dual concentric	$2,495
N/A	N/A	No	11.5x11.5x10	15.4		$399
N/A	N/A	No	12.7x11.3x11.3	21		$549
N/A	N/A	Optional	18x12x16	33	110W subwoofer	$499 each
N/A	N/A	Optional	20x19x20	61	170W subwoofer	$999 each
8" dual-concentric	1" wideband	Yes	14.6x18.13x13.75	33	Midrange point source driver; super tweeter	$3,595
N/A	1" silk dome	Yes	11.3x7.6x9.1	17		$499
N/A	1" silk dome	Yes	16.2x11.6x13.8	35.2		$749
N/A	N/A	No	6x6x6 triangle	6	Designed to emulate the effects of consumer systems	$300
N/A	1" tuned chamber cloth dome	Yes	10x14x10	21		$998
N/A	1" tuned chamber cloth dome	Yes	10x14x10	26		$1,798
N/A	0.75" soft dome	Optional	12x5.5x7.25	12		$999
N/A	0.75" soft dome	Optional	14x6.5x9	18		$1,398
N/A	0.75" soft dome	Optional	16x8x10.37	21.5	Electro/mech/acoustical dampening; align signal path	$1,498
5"	1" dome	No	8.5x22x11	42	Electro/mech/acoustical dampening	$1,899
N/A	1" dome	Optional	18x10x11.62	31	Electro/mech/acoustical dampening; align signal path	$1,948
N/A	0.75" fabric dome	Yes	6.25x16.5x7.13	18	Electro/mech/acoustical dampening	$2,250
N/A	0.75" dome	No	8x15x10	31	Electro/mech/acoustical dampening	$2,995
N/A	1" soft dome	No	10x18x11.75	42	Electro/mech/acoustical dampening	$3,495
N/A	1" titanium dome	Yes	11x6.62x8.75	16.5		$598
N/A	1" titanium dome	Yes	16.5x10.5x13	44		$1,998
N/A	1" soft dome (ferrofluid)	Yes	16x10x9	8	Ship in mirrored pairs	$320
N/A	1" soft dome (ferrofluid)	Yes	11x10x16	25	Environmental processor w/switching optimization	$640
N/A	N/A	Yes	16.75x13.75x20.5	20	Subwoofer; low pass filter; phase switch	$459

speakers. (The way I have my studio set up, it often seems like the sound from my speakers is actually coming from my computer monitor, which is placed directly between them.)

When you are equidistant from the speakers, the sounds from each speaker reach your ears at exactly the same time. Otherwise, you may experience the precedence effect. The precedence effect (or Haas effect) occurs when the listener is off the median plane (by as little as six inches). It shifts the phantom image toward the speaker closest to the listener. As a result, the sound from the closer speaker arrives at the listener's ear first, which may fool them into thinking it's louder. If you're basing a mix on this kind of false imaging, you may have to redo the entire thing!

To create the proper listening setup, I recommend using a tape measure to accurately position your speakers. First, sit down where you'll normally be listening in your studio, then use the tape measure to approximate an equal distance from your head or chest to a spot on your left and right sides where your speakers could be placed. A good distance is 3 to 4 feet, which is the same distance the speakers should be apart from each other.

In fact, the closer you are to your speakers, the less the room acoustics will color the sound. (This is called close-field monitoring, and is the most common approach for mixing.) Additionally, if at all possible, try to keep your speakers away

—continued on page 148

SEQUENCERS (MIDI AND DIGITAL AUDIO)

MANUFACTURER	PROGRAM	PLATFORM	SIMULTANEOUS MIDI TRACKS	MAXIMUM CLOCK RESOLUTION (PPQN)	QUANTIZATION TYPES	SEQUENCING METHOD	EDITING VIEWS	GRAPHIC FADERS	SYSEX EDITING	LOOPING
Analogue Solutions	Oberkorn mkii	Hardware	8	N/A	N/A	Step	Real	No	No	Yes
Cakewalk	Home Studio	Win 98/SE/ME/2000/XP	Unlimited	960	Groove; swing by %; tick offset	Linear; pattern	Piano roll; SysEx; event; notation; console; studioware; tempo; markers	Unlimited	Yes	Yes
Cakewalk	Home Studio XL	Win 98/SE/ME/2000/XP	Unlimited	960	Groove; swing by %; tick offset	Linear; pattern	Piano roll; SysEx; event; notation; console; studioware; tempo; markers	Unlimited	Yes	Yes
Cakewalk	Guitar Tracks Pro version 3	Win 98/SE/ME/2000/XP	N/A	N/A	N/A	Linear audio recording	Audio edit; mixer	Up to 42	No	Yes
Cakewalk	Sonar 3 version 1.5 Studio Edition	Win 2000/XP	Unlimited	960	Groove; swing by %; offset; randomize	Linear	Piano roll; event list; staff; drum editor; controller; console loop construction; loop explore	Unlimited	No	Yes
Cakewalk	Sonar version 1.5 Producer Edition	Win 2000/XP	Unlimited	960	Groove; swing by %; offset; randomize	Linear	Piano roll; event list; staff; drum editor; controller; console loop construction; loop explore	Unlimited	Yes	Yes
Emagic	Logic Express 6	Mac OS 9; OS X	Unlimited	960	Swing by %	Linear	Event list; matrix; hyper; score	Unlimited	No	Yes
Emagic	Logic Pro 6	Mac OS 9; OS X	Unlimited	960	Groove templates; swing by %; extended quantize parameters	Linear	Event list; score; matrix; hyper; transform	Unlimited	Yes	Yes
FASoft	n-Track Studio 3.3	Win 95/98/NT/ME/ 2000/XP	Unlimited	1,920	Grid; swing; randomize	Linear	Timeline; piano roll; events list	Yes	Yes	Yes
Future Retro	Mobius	Hardware	1	24	Up to 16th note	Loop-based step sequencer	Drum machine-style step editing	No	Yes	Yes
Howling Dog Systems	Power Chords Pro	Win 3.1/9x/NT/2000/XP	N/A	96	Strum; humanize; roll/pick; quantize	Pattern; loop	Piano roll	No	No	Yes
Image-Line Software	FL Studio 4.5.2	Windows 95/98/ME/ 2000/XP	Unlimited	768	All + custom	Linear; step; pattern	Piano roll; track; event	Unlimited	No	Yes
Innovative Music Systems	intelliScore Polyphonic	Win 95/98/NT/ME/ 2000/XP	16	N/A	N/A	N/A	N/A	No	No	No
Midisoft	Studio Recording Session	Win 95-XP	Unlimited	1,000	Percentage	Linear	Notation; MIDI list	Yes	Yes	No
Mil Productions	Modularing	Mac OS X	Unlimited	999	Real-time steps shifting	All	Analog; matrix; pad; controllers	Unlimited	Yes	Yes
miniMusic	BeatPad	Palm OS 3.0 and higher	12	24	N/A	Pattern	Melodic; drum	No	No	Yes
miniMusic	NotePad 1.2	PalmOS 3.0 and higher	4	24	N/A	Notation	Score; piano roll	No	No	Yes
MOTU	FreeStyle 2.3	Mac, Win	Trackless	960	Straight; offset	Linear; loop	Piano roll; notation; event list	No	Yes	Yes
MOTU	Digital Performer 4.12	Mac OS X	Unlimited	Configurable	Input; output; swing; groove; humanize	Linear; step; pattern; loop	Track overview; graphic; drum editor; event list; notation	Unlimited	Yes	Yes
Musicator	Musicator Win 4.0	Win 95/98/ME/NT/2000/ 2002/XP	255	480	Swing; percentage	Linear	Track/passage/bar; roll view; notation; audio; effects	Yes	Yes	Yes
Personal Composer	Personal Composer	Win	8; 16; 44	1,024	Note-on; note-off	Linear	Page; scroll; split-screen	Yes	No	No
PG Music	PowerTracks Pro Audio	Win 9x/NT/2000/ 2002/XP	48	960	Swing; percentage; randomize	Linear; step	Tracks; audio; mixer; events; bars; roll notation; SysEx editor	Yes	Yes	Yes
Roland	MC-50mkII	Roland S-MRC	8 (32 ch)	96	Grid	Linear; step	Track; event	No	Yes	Yes
Roland	MV-8000 Production Studio	1.20	128	480	Shuffle; grid; template	Linear; step	Piano Roll; event; track; sample	24	Yes	Yes
Steinberg	Cubase SL	Win 2000/XP; Mac OS X	Unlimited	Sample-level	N/A	Linear; loop	Key; drum; list; SysEx; score; logical; loop	Unlimited	Yes	Yes
Steinberg	Cubase SX 2.0	Win 2000/XP; Mac OS X	Unlimited	Sample-level	Auto; custom; swing; groove	Linear; loop	Key; piano roll; list; drum; logical; sample; part; loop; score	Unlimited	Yes	Yes
Steinberg	Cubase SE (Studio Case)	Win 2000; XP; Mac OS X 10.2	Unlimited	Sub-sample	Groove; soft	Linear; loop; overdub; step; punch	Key; list; drum; score	Unlimited	No	Yes

# OF AUDIO TRACKS	INTEGRATED MIDI / AUDIO EDIT SCREEN	AUDIO EFFECTS	DYNAMICS PROCESSING	TIME COMPRESSION AND EXPANSION	PITCH-SHIFT TYPE	SAMPLE-RATE CONVERSION	DSP PLUG-IN FORMATS	AUDIO-TO-MIDI CONVERSION	EXTRACT TIMING FROM AUDIO	SPECIAL FEATURES	GENERATES TIME CODE	SYNCS TO INCOMING TIME CODE	PRICE
0	No	N/A	No	No	N/A		N/A	No	No	True analog-style step sequencer for modulars	No	No	$399
Unlimited	Yes	Reverb; chorus; flange; delay; parametric EQ	Yes	Yes	Formant preserving; traditional	No	DirectX; DXi 2.0	No	No	24-bit/ 96 kHz support; ReWire 2.0; ASIO hardware support; multiport drum grid editing	No	No	$129
Unlimited	Yes	Reverb; chorus; flange; delay	Yes	Yes	Formant preserving; traditional	Yes	DirectX; DXi 2.0	No	No	Home Studio plus add'l audio FX; DXi sampler; CD of ACID-format Cakewalk loops	No	No	$219
32	Yes	Amp sim; chorus; delay; flanger; dyn proc; lim; EQ; pitch shifter; reverb	Yes	No	Formant preserving	Yes	DirectX	No	No	Amplitube LE; GT:FX multi-effects suite; support for VST and DirectX effects	No	No	$209
Unlimited	Yes	EQ; amp sim; chorus; delay; flanger; tape sim; EQ; reverb; parametric EQ; pitch shifter; time	Yes	Yes	Formant preserving; traditional	Yes	DirectX; DXi; VST; VSTi; MFX	No	Yes	Universal Bus Architecture; support for VST effects and instruments; MIDI Groove Clips	Yes	Yes	$479
Unlimited	Yes	EQ; amp sim; chorus; delay; flanger; tape sim; EQ; reverb; parametric EQ; pitch shifter; time	Yes	Yes	Formant preserving; traditional	Yes	DirectX; DXi; VST; VSTi; MFX	No	Yes	Integrated channel EQ; Universal Bus Architecture; Lexicon Pantheon reverb; Sonitus fx suite	Yes	Yes	$719
48 stereo	Yes	28 real-time effects	Yes	Yes	Traditional	Yes	VST (OS 9); AU (OS X)	No	No	3-step undo/redo; track-based automation; 8 stereo busses; integrated stereo sample editor	Yes	Yes	$299
255 stereo	Yes	Virtual instruments; 50+ real-time effects	Yes	Yes	Formant preserving; traditional	Yes	TDM; VST (OS 9); AU (OS X)	Yes	Yes	Unlimited undo/redo; freeze tracks; advanced automation; open TL; OMF support	Yes	Yes	$999
Unlimited	Yes	Reverb; echo; pitch shift; chorus; EQ	No	Yes	Formant preserving	Yes	DirectX; VST; DXi; VSTi	No	No	Works with WDM and ASIO drivers; spectrum analyzer	Yes	Yes	$45
0	No	N/A	No	No	N/A	No	N/A	No	No	Controls all MIDI, CV/Gate, Din Sync devices; realtime pattern editing; MIDI to CV conversion	No	No	$325
20	No	N/A	No	No	N/A	No	N/A	No	No	Configurable stringed instrument interface; chord+plucking/strumming pattern	No	No	$60
Unlimited	Yes	30+ effects	Yes	No	Linear; sync 64-256	Yes	VSTi; Dxi; Buzz	No	Yes	Internal controllers; integrated speech and guitar synth	No	No	$49-149
0	No	N/A	No	No	N/A	No	N/A	Yes	No	Converts polyphonic MP3, WAV, and CD files to MIDI	No	No	$79
8	No	Delay; echo; chorus; flanger; EQ	Yes	No	Traditional	Yes	N/A	No	No	Multisequence playback; articulation marks	Yes	Yes	$60
2	No	Reverb; delay; echo; chorus; saturator	No	No	N/A	No	Standalone software	No	No	Integrated synthesizers	Yes	Yes	$99
0	No	MIDI only	No	No	N/A	No	N/A	No	No	Pen-based editing	Yes	No	$30
0	No	N/A	No	No	N.A.	No	N.A.	No	No	Built-in soft synth for Palm OS 5.0 and higher	No	No	$30
0	No	N/A	No	No	N/A	No	N/A	No	No	Sense tempo; note-spelling algorithms; step sequencing	No	No	$195
Unlimited	Yes	50+ incl. plug-ins, EQ, dynamics, filters, reverbs, etc.; MasterWorks 64-bit premium series	Yes	Yes	Formant preserving; traditional	Yes	TDM; MAS; Premiere	No	No	Supports Pro Tools|HD as DAE host; supports 3rd-party AU/MAS plug-ins; virtual inst.	Yes	Yes	$795
32	Yes	N/A	No	No	N/A	Yes	N/A	No	No	Notation; front-panel controls for GS; XG; SC-88 Pro FX	No	No	$299
0	No	N/A	No	No	N/A	No	N/A	No	No	Transpose; copy to WP and DTP apps	No	No	$70-200
Up to 48	Yes	Comp; gate; dist; reverb; echo; chorus; flanger; ring mod; trem; tone; EQ; exciter	Yes	No	Traditional	Yes	Proprietary; DirectX	No	No	Detect chords from MIDI file; export to WMA and MP3; CD-RW software; guitar tuner	No	No	$49
0	No	N/A	No	No	N/A	No	N/A	No	No	2 MIDI outs; 1.4 MB floppy drive; read/write; mid	Yes	Yes	$795
8 stereo	Yes	MFX (24); reverb (2); chorus (4); mastering	Yes	Yes	Realtime	No	N/A	No	No	VGA/Mouse expansion; sampler; CD-R	Yes	Yes	$2,695
Unlimited	Yes	Many	Yes	Yes	Traditional	Yes	VST; DXi	No	Yes	VST system link; video track; Rewire 2; CD grabbing; video track; unlimited undo/redo	Yes	Yes	$499
200+	Yes	Delays; dynamics; de-esser; overdrive; quadra fuzz; flange; phase; rotary; chorus; symphonic; reverb	No	Yes	Yes	Yes	VST; DirectX	No	Yes	Surround sound; unlimited undo/redo; VST system link technology; video track with thumbnail	Yes	Yes	$799
48	Yes	Reverbs; delays; chorus; flange; more	Yes	Yes	Traditional	Yes	VST; DirectX	No	No	Special bundle includes Virtual Guitarist SE, The Grand SE, Groove Agent SE, D'Cota SE, HALion SE	No	Yes	$299

SEQUENCERS (MIDI AND DIGITAL AUDIO)

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Synapse Audio	Orion Platinum	Win 98/ME/2000/XP	128	768	Shuffle; groove; humanize	Pattern; step	Piano roll; song arrangement; pattern events; song events	128	No	Yes
Technosaurus	Cyclodon	Hardware 16 step sequencer	N/A	N/A	N/A	16-step	N/A	No	No	Yes
WinJammer	WinJammer Pro 5.0	Win 3.1/95/NT	256	960	Swing; groove; input; variable strength	Linear	Piano roll; event list; score; drum view	Yes	Yes	Yes
Yamaha	XGworks 3.0	Win	100	480	Strength; sensitivity; swing; gate; velocity	Step; real; pattern; linear	Track view; piano roll; staff; drum; event list	Yes	Yes	Yes
Yamaha	QY 100	Hardware	24	480	Percentage; swing	Linear; pattern	Event list	16	Yes	Yes
Yamaha	QY 700	Hardware	48	480	Percentage; swing; groove templates	Linear; pattern	Piano roll; event list	48	Yes	Yes
Yamaha	RM1x	Hardware	16	480	Grid; percentage; groove templates	Step; real; pattern; linear	Event; track; pattern chain	Yes	Yes	Yes

SONIC TREATMENT

MANUFACTURER	MODEL	TYPE	FIRE RATING	DIMENSIONS	SPECIAL FEATURES	PRICE
Acoustical Solutions	AAP Alpha Pyramid	Sound-absorbing foam	Class 2	2'x2' sheets; 2, 3, 4" thick	Matching pattern; variety of colors; NRC 0.70-1.05	$180-$215/box
Acoustical Solutions	AB10-NR Audio-Seal Sound Barrier	Sound-transmission blocker; high temperature–fused vinyl	N/A	54"x60'x1/8" roll	Stops noise from transmitting through walls, floors and ceilings	$1.75-$2.25/sq ft
Acoustical Solutions	AS1, AS2 AlphaSorb Panels	Fabric-wrapped wall panels and hanging baffles	Class 1	Any size up to 4'x10'; 1" or 2" thick	NRC 0.80–1.05; 48 colors; custom shapes and cut-outs	$39-$280
Acoustical Solutions	Sonex Acoustical Foam UNX	Polyurethane	Class 2	2'x4' or 4'x4'; 2, 3, or 4" thick	Charcoal, beige, and brown	$179 (3"); $181 (2")
Acoustical Solutions	Sonex Acoustical Foam SOC-2	Melamine	Class 1/Class A	2'x4'x2"	White or colortec charcoal	$213-$251
Acoustical Solutions	Sonex Contour Ceiling Tiles	Drop in T-grid or surface mount	Class 1/Class A	2'x2'	White, gray, almond, or black hypalon finish	$315/$374
Acoustical Solutions	Crosspoint Acoustical Wall Fabric	Fabric wall covering	Class 1	Bolt: 54"x50 yards; 54"x36"	45 colors; NRC 0.25; easy to install	$825/bolt; $50/yard
Acoustical Solutions	SS1 / SS2	SoundSuede Wall Panels	Class 1/Class A	Up to 4'x10'/1		$59/$345
Acoustical Solutions	ARIC	AlphaResiliant Isolation Clip	N/A	N/A	Clips for floating walls	$5 each
Acoustical Solutions	Door Seal Kits	Acoustical door seal kits	Class A	Sold by the ft.	Seal leaks around doors	$175 and up
Acoustical Solutions	RPG Skyline	Diffusor	Class A	2'x 2'x 8" deep	(2) per box (white)	$298 per box
Acoustics First	1014 AcoustiKit	Acoustical room treatment	Class 3	Various	(24) 1'x1' and (6) 2'x2' sections of cutting wedge foam; (2) 2'x2' Art Diffusor Model F; (2) 2' Traps	$398
Acoustics First	Art Diffusor Model C-ADCS	Styrene	N/A	24"x24"x4.5"	Custom colors	$108
Acoustics First	Art Diffusor Model C-ADCT	Thermoplastic	Yes	24"x24"x4.5"	Custom colors	$166
Acoustics First	Art Diffusor Model E	EPS plastic	N/A	15"x15"x9"	Custom colors	$88
Acoustics First	Art Diffusor Model F-ADFS	Styrene	N/A	24"x24"x2"	Custom colors	$108
Acoustics First	Art Diffusor Model F-ADFT	Thermoplastic	Yes	24"x24"x2"	Custom colors	$166
Acoustics First	Art Diffusor Model W	Wood	N/A	15"x15"x9.5"	7 finish choices	$170-$260

# OF AUDIO TRACKS	INTEGRATED MIDI/ AUDIO EDIT SCREEN	AUDIO EFFECTS	DYNAMICS PROCESSING	TIME COMPRESSION AND EXPANSION	PITCH-SHIFT TYPE	SAMPLE-RATE CONVERSION	DSP PLUG-IN FORMATS	AUDIO-TO-MIDI CONVERSION	EXTRACT TIMING FROM AUDIO	SPECIAL FEATURES	GENERATES TIME CODE	SYNCS TO INCOMING TIME CODE	PRICE
128	Yes	Delay; reverb; dynamics; EQ; distortion; chorus; flanger; phaser; more	Yes	Yes	Traditional	Yes	DirectX; VST	No	Yes	Groove slicer; genetics; chord and groove templates; event editing tools; multiFX control	No	No	$298
0	No	N/A	No	No	Knobs	No	N/A	No	No	Analog 16-step sequencer	No	No	$329
0	No	N/A	No	No	N/A	No	N/A	No	No		Yes	Yes	$200
6 stereo	Yes	Hardware dependent	Yes	Yes	Normal	Yes	Proprietary (hardware)	Yes	Yes	Guitar arranger; auto arranger; XG editor; voice to score; multiple notation formats	No	No	$100
0	No	Hardware; reverb; chorus; variations	No	No	N/A	No	N/A	No	No	A/D input with effects for guitar and microphone	No	No	$630
0	No	Processors; effects	No	No	N/A	No	N/A	No	No	XG tone generator; phrase database; FDD 2 MIDI outs; pitch and modulation	Yes	Yes	$1,495
0	No	Reverb; chorus; variations	Yes	Yes	Normal	No	N/A	No	No	654 normal voices; 46 drum kits; 3.5 FDD; SMF compatible; 8 real-time control knobs with 16 parameters	No	No	$900

SONIC TREATMENT

MANUFACTURER	MODEL	TYPE	FIRE RATING	DIMENSIONS	SPECIAL FEATURES	PRICE
Acoustics First	Art Transfusor	2-Dimensional binary array diffusor	N/A	2'x2' ceiling grid	Translucent light and sound diffusion	$166/unit
Acoustics First	Bermuda Broadband Triangle Trap	Corner absorber	Class 1/3	1'x1'x4'	Also avail as bermuda shorts (24") and stand-alone sound cylinder	$42
Acoustics First	Cutting Wedge	Acoustic foam	Class 3	1'x1', 2'x4', 2'x8' sheets; 2", 3", 4" or 6" thickness	Pattern creates extra surface area; available in charcoal, brown, beige, blue, burgundy, and hunter green	$3-$11/sq ft
Acoustics First	Double Duty Diffusor	Polycylindrical diffusor/bass trap	Class A	2'x2'–4'x8'	Uniform high-frequency dispersion; increases the acoustic size of a mixing room	$200
Acoustics First	Geometrix	Broadband	Class A	8" diam; up to 10' high	Formed fiberglass covered with 1.00 above Guilford FR701 fabrics; 84 absorption at 125 Hz	$157
ASC	Acoustical Soffit System	Absorptive/diffusive soffit	Class 1	Custom	Broadband control	$89/ln ft
ASC	Attack Wall	Acoustic subspace	Class 1	Customized for console and room	Studio traps/monitor stands	$4,000 and up
ASC	Mix Station	Room acoustic control package	Class 1	5'x5' arrays; 6"x60" panels	Low-frequency and reflection control	$1,728
ASC	Monitor Stand/Acoustic Control Product	Reference monitor stand	Class 1	11, 13, 16, 20" diameters; height varies	Low-frequency control; reduces vertical mode problems	$378-778
ASC	Quick Sound Field System	Sub-space	Class 1	(8) studio traps	Increase/decrease ambience via placement; adjustable for bright or dead recording	$2,898 and up
ASC	Studio Trap	Adjustable/tunable floor-standing acoustic control device	Class 1	9" diameter, 4' tall; adjustable height	Diffusive side and absorptive side; adjustable	$368
ASC	Tube Trap	Bass trap resonance	Class 1	9", 11", 13", 16", 20" diameters; 4' tall	Bass absorption down to 30 Hz with built-in diffusion above 400 Hz	$288-928
ASC	Tube Trap Fractionals	Bass trap/diffusor	Class 1	9", 11", 13", 16", 20" diameters	Bass absorption down to 30 Hz w/built-in diffusion above 400 Hz	$218-578
ASC	Sound Panel	Acoustic wall panel	Meets code	2"x8"x48"	Controls flutter echo, excess reverb and brightness while maintaining ambiance and presence	$458 (set of 8)
ASC	Sub-Stand Cube	Bass trap/resonant control	N/A	Standard 17"x17"x9", 24"x24"x9"; custom sizes available	Decouples sub; controls vertical resonant mode; improves bass articulation	$379-539
ASC	WallDamp IsoWall System	Soundproof wall and ceiling construction kit	Meets fire codes	N/A	Room soundproofing/isolation construction kit for new construction or remodeling	$3-5/sq ft
ASC	P.C.A.D.	Poly-Cylindrical Absorber/Diffuser	Class 1	2'x4', 3'x5', 4'x8'; custom available	Affords broadband absorption to out perform flat panes; housed in wood frame	$350-$550
Auralex Acoustics	ATOM-12 Corner Treatment Kit	Bass traps	Class B	12"x12"x17" LENRDs; 12"x12"x12" cubes	Contains 12 LENRD bass traps and 4 corner fill cubes	$399/kit
Auralex Acoustics	D36 Roominator DST	Absorptive foam	Class B	1'x1'x2"	18 DST112s in charcoal; 18 DST114s (choice of 4 colors); 2 tubes Tubetak Pro liquid adhesive	$119/kit
Auralex Acoustics	D108L Roominator DST	Absorptive foam	Class B	1'x1'x2"; DST-LENRDS: 12x12x17" triangle; 24" long	54 DST112s in charcoal; 54 DST114s (choice of 4 colors); 8 DST-LENRDS in charcoal; 6 tubes Tubetak Pro	$599/kit
Auralex Acoustics	D160HT Roominator DST	Absorptive foam	Class B	Various: DST, LENRDs	32 DST112s; 32 DST114s (4 colors); 12 DST422s; 8 DST-LENRDs (4 colors); 24 DST-Rs; 8 tubes adhesive	$799/kit
Auralex Acoustics	D240Xi Roominator DST	Absorptive foam	Class B	Various DST, LENRDS, T'Fusor	48 DST112s in charcoal; 96 DST114s (choice of 4 colors); 12 DST422s; 16 DSTLENRDs; 12 T'Fusors; 16 tubes Tubetak Pro; 1 GRAMMA	$1,599/kit
Auralex Acoustics	GRAMMA (Gig & Recording Amplifier & Monitor)	Amp and monitor riser	N/A	Decking: 15"x23"x2.5"	Lightweight; portable; standard size fits most amps	$60
Auralex Acoustics	MAX-Wall 211	Absorptive foam	Class B	20"x48" panels; 4.37" thick	Portable; expandable; adaptable; interlocking panels; 3 colors; 2 panels, MAX stand, MAX-Wall window kit & clamps	$249/kit
Auralex Acoustics	MAX-Wall 420	Absorptive foam	Class B	20"x48" panels; 4.37" thick	Portable, expandable, adaptable; interlocking panels; available in 3 colors; includes 4 panels 2 MAX stands & clamps	$349/kit
Auralex Acoustics	MAX-Wall 831	Absorptive foam	Class B	20"x48" panels; 4.37" thick	Portable, expandable, adaptable; interlocking panels; available in 3 colors; incl. 8 panels, 3 MAX stands, 1 MAX-Wall Window kit & clamps	$749/kit
Auralex Acoustics	MAX-Wall 1141VB	Absorptive foam	Class B	20"x48" panels; 4.37" thick	Portable, expandable, adaptable; interlocking panels; available in 3 colors; incl. 11 panels, 4 MAX stands, 1 MAX-Wall Window kit & clamps	$999/kit
Auralex Acoustics	Mineral Fiber Insulation	Construction material	Class A	2x4' panels; 2, 4" thick	More dense than standard insulation; designed for acoustical usage; 2" has 6 pcs/box; 4" has 3 pcs/box	$80/box
Auralex Acoustics	MoPADs	Monitor isolation pads	N/A	12x4x2 w/wedge adjuster	Charcoal; set of 4 monitor pads and 4 wedge adjusters	$30/set
Auralex Acoustics	Platfoam	Isolation device	N/A	2x4x48	24 pieces per box; includes 3 tubes Tubetak Pro liquid adhesive; charcoal gray only	$199/box
Auralex Acoustics	RC8-Resilient Channel	Construction materials	N/A	2.375"Wx8'Lx0.5" thick	Metal used to hang drywall; improves sound-transmission characteristics of wall or ceiling system; 24 pcs/tube	$140/tube
Auralex Acoustics	Roominators Alpha-DST Kit	Absorptive foam	Class B	DST panels: 1'x1'x2"; DST LENRDS: 12x12x17" triangle; 24" long	32 DST-112s in charcoal; 32 DST-114s (choice of 4 colors); 4 DST-LENRDs in charcoal; 3 tubes Tubetak Pro liquid adhesive	$319/kit
Auralex Acoustics	Roominators Project 2 Kit	Absorptive foam	Class B	Wedge panels: 1'x1'x2" LENRD: 12"X12"X17" triangle; 24" long	24 Studiofoam wedge panels; 8 LENRD bass traps and 5 tubes of Tubetak Pro liquid adhesive	$429/kit
Auralex Acoustics	Roominators Deluxe Plus Kit	Absorptive foam	Class B	Wedge panels: 2'x2'x2"; LENRD: 12"X12"X17" triangle; T-Fusors: 23.75"x23.75"x5.5"	24 Studiofoam wedge panels; 8 LENRD bass traps and 6 T-Fusor 3D sound diffusors; 2 cans Foamtak spray adhesive; charcoal gray only	$699/kit

MANUFACTURER	MODEL	TYPE	FIRE RATING	DIMENSIONS	OPTIONS SPECIAL FEATURES	PRICE PRICE
Auralex Acoustics	Roominators Pro Plus Kit	Absorptive foam	Class B	Wedge panels: 2'x2'x2" LENRD: 12"X12"X17" triangle; T-Fusors: 24"x24"x5.5"	36 Studiofoam wedge panels;12 LENRD bass traps and 8 T-Fusor 3D sound diffusors; 3 cans Foamtak spray adhesive; charcoal gray only	$999/kit
Auralex Acoustics	Sheet Blok	Sound barrier	N/A	0.125" thick; 4'x10', 4'x30' rolls	Limp-mass vinyl material; approx. 6 dB more effective than lead at stopping transmission of sound	$140 (4x10 roll); $360 (4x30 roll)
Auralex Acoustics	Sheet Blok-Plus	Sound barrier	N/A	0.125" thick; 4'x30' rolls	Limp-mass vinyl material; incl. pressure sensitive adhesive on back; available in black	$460/roll
Auralex Acoustics	Studiofoam	Absorptive foam	Class B	2'x4' panels; 1", 2", 3", 4" thick	10 colors; wedge cut; seamless installations; 6-12 pieces per box; overall NRC 0.50-1.10	$239/box
Auralex Acoustics	Studiofoam-DST-112	Absorptive foam	Class B	1'x1' panels; 2" thick	Charcoal; designer cut; seamless installations; 24 or 96 pieces per box	$79 (24); $299 (96)
Auralex Acoustics	Studiofoam-DST-114	Absorptive foam	Class B	1'x1' panels; 2" thick	4 colors; designer cut; seamless installations; 24 or 96 pieces per box	$79 (24); $299 (96)
Auralex Acoustics	Studiofoam-DST-244	Absorptive foam	Class B	2'x4' panels; 2" thick	4 colors; designer cut; seamless installations; 12 pcs/box	$299/box
Auralex Acoustics	Studiofoam-DST-422	Absorptive foam	Class B	2'x4' panels; 2" thick	4 colors; designer cut; seamless installations; 6 or 12 pcs/box	$139 (6); $229 (12)
Auralex Acoustics	Studiofoam Metro	Absorptive foam	Class B	2'x4' panels; 2", 4" thick	12 colors; unique "cityscape" profile; seamless installations; 6-12 pieces per box	$239/box
Auralex Acoustics	Sunburst Broadband Absorbers	Broadband absorbers	Class B	Male: 12"x48"x7.5"; female: 12"x48"x5/16"	12 colors; wedge cut; 8 pcs/box; 32 linear ft/box	$259/box
Auralex Acoustics	Sunburst 360	Stand-mounted absorber	Class B	Male: 12"x48"x15.5"; female: 12"x48"x7"	Available in charcoal, purple, burgundy; 2 MAX stands w/18" extensions per box, allowing height of 4"6" to 9'	$289/box
Auralex Acoustics	T'Fusor	For floated drum risers	N/A	23.75" x23.75" square; 5.5" thick	Wall mountable; fits drop ceilings; easily painted; 4 pieces/box	$280/box
Auralex Acoustics	Stand-Mounted LENRD Bass Traps	Bass traps	Class B	12"x12"x17" triangular; 48" long	12 colors; 4 pieces/box; 4 tripod-style mic stands included; overall NRC 1.35	$319/box
Auralex Acoustics	Studiofoam Pyramids	Absorptive foam	Class B	2'x4' panels; 2", 4" thick	10 colors; pyramid cut; seamless installations; 6–12 pcs per box; overall NRC 0.70 to 0.95	$289/box
Auralex Acoustics	U-Boats	Floor beam float channels	N/A	2.125"Wx1.5"Hx2"L	Made of EPDM rubber; U-shaped channels used to support and float framing members of surrounding structure; avail. In lots of 50 or more; black only	$2 each
Auralex Acoustics	VersaTile	Broadband absorber	Class B	16"x24"x2"	12 colors; 3 different installation options; 6 or 24 pieces per box; overall NRC 0.80 to 1.05	$99 (6); $329 (24)
Auralex Acoustics	Aural-Xpanders	Microphone baffles	Class B	Various	Kit consists of 13 pads and baffles	$50
Auralex Acoustics	HoverDeck HD-88 Concert	Portable drum riser	N/A	96"x96"	Low-profile, portable drum isolation riser	$999
Auralex Acoustics	HoverDeck HD-64 Gig	Drum riser	N/A	72"x48"	Low-profile, portable drum isolation riser	$399
Auralex Acoustics	ISO Producer Pack	Recording engineer toolkit	Class B	N/A	Kit consisting of 1 GRAMMA, 1 set MoPADs, and 1 set Aural-Xpanders	$119
Auralex Acoustics	SonoFlat System SFS-112	Complete room system	Class B	Covers 112 square ft.	Absorption and bass trapping	$699
Auralex Acoustics	SonoFlat System SFS-184	Complete room system	Class B	Covers 184 square ft.	Absorption, diffusion, bass trapping components	$1,499
Auralex Acoustics	ELiTE Pro Systems EPS-112	Complete room system	Class A	Covers 112 square ft.	Class A, fabric-covered absorption and bass trapping	$2,499
Auralex Acoustics	ELiTE Pro Systems EPS-160	Complete room system	Class A	Kit covers 160 square ft.	Class A, fabric-covered absorption, diffusion and bass trapping	$4,495
Auralex Acoustics	ProPanels B22	Absorptive panel	Class A	2' x2' x1"	Beveled edge, cloth-covered absorptive panels	$999/12 panels
Auralex Acoustics	ProPanels B24	Absorptive panel	Class A	2'x4'x1"	Beveled edge, cloth-covered absorptive panels	$149 per panel
Clear Sonic	Flector	Acrylic personal monitor disc	N/A	8" and 12"	Reflects, diffuses sound associated with brass instruments; reduces potential for feedback	$12/$15
Clear Sonic	Sorber	Absorbing panels	Class A	22"x24"x1.5"; 48"x44"x1.5"; 48"x66"x1.5"	Portable; free standing; use with ClearSonic Panels and lid to create portable isobooth; 2 colors	$30/$120/$180
Clear Sonic	Sorber Lid	Absorbing lid for use w/Clear Sonic panels	Class A	6' Wx66"	Portable; reduces sound that normally escapes upward; 2 colors: dark gray, light gray	$270
Clear Sonic	Clear Sonic Panels	Acrylic drum shield	N/A	2', 4', 5.5' H; up to 14' W; 0.25	Portable, durable; free standing; full-length transparent hinge; use with SORBER and Lid to create isobooth	$320 and up
Hill Acoustic Design	Insta-Trap	Bass absorber	Ul/ulc-listed 25 flamespread	12", 24" models	Corner-mounted bass absorbers that can be digitally printed with any image; ship flat	$499 (12"); $799 (24")
HSF Acoustics	Studio Pack - Songwriter	Acoustic treatment room kit	UL94-HF1/ MVSS307	Partially treats 9'x12' room	Includes 2 BassWave bass traps, 24 WedgeSonic tiles, and mounting adhesive	$110
HSF Acoustics	Studio Pack - Control Room	Acoustic treatment room kit	UL94-HF1/ MVSS306	Treats a 9'x12' room	Includes 4 BassWave bass traps, 42 WedgeSonic tiles, and mounting adhesive	$200
HSF Acoustics	Studio Pack - Engineer	Acoustic treatment room kit	UL94-HF1/ MVSS302	Treats 10'x14' room	Includes 4 BassWave bass traps, 60 WedgeSonic tiles, 12 WaveFuser tiles, and mounting adhesive	$295
HSF Acoustics	Studio Pack - Producer	Acoustic treatment room kit	UL94-HF1/ MVSS303	Treats 10'x14' room	Includes 8 BassWave bass traps, 68 WedgeSonic tiles, and mounting adhesive	$370
HSF Acoustics	WedgeSonic	Absorption tiles	UL94-HF1/ MVSS304	2x12x12	Each pack includes 44 tiles (44 square feet)	$100
HSF Acoustics	WaveFuser	Absorption/diffusion tile	UL94-HF1/ MVSS305	3x12x12	Each pack includes 32 tiles (32 square feet)	$100
HSF Acoustics	AcoustiKick	Kick drum resonance controller	UL94-HF1/ MVSS308	2.75x16x47	Provides tight kick drum sound for live performances and/or recording	$40
HSF Acoustics	BassWave	Acoustic absorption bass trap	UL94-HF1/ MVSS309	12x12x24	Includes 4 bass traps	$100
illbruck/SONEX	FABRITEC	Fabric-wrapped acoustical wall panels	Class 1/Class A	24x48x1, 1.5" thick	Hundreds of fabrics to match any décor; box contains 4 sheets or 32 sq. ft.; install with illbruck adhesive	$264/$312 per box
illbruck/SONEX	FABRITEC	Fabric-wrapped acoustical panels	Class1/Class A	24x24x1, 1.5" thick	Hundreds of fabrics to match any décor; box contains 4 sheets or 64 sq. ft.; install with illbruck adhesive	$140/$160 per box

SONIC TREATMENT

MANUFACTURER	MODEL	TYPE	FIRE RATING	DIMENSIONS	SPECIAL FEATURES	PRICE
illbruck/SONEX	SONEXjuniors	Acoustical and sound absorptive foam	Class1/Class A	24x24x2" thick	For very small installations; each box contains 16 sq. ft.; available in natural willtec (white)	$ox
illbruck/SONEX	SONEXjuniors	Painted willtec acoustical panels	Class 1/Class A	24x24x2" thick	For very small installations; each box contains 16 sq. ft.; available painted 5 colors	$80/box
illbruck/SONEX	SONEXjuniors colortec	Dyed willtec acoustical foam	Class 1/Class A	24x24x2" thick	Specially-dyed foam with charcoal color thru entire panel; box has 4 sheets/box; for small applications	$67/box
illbruck/SONEX	SONEXone Panels	Natural willtec acoustical panels	Class1/Class A	24x48x2,3" thick	Soft convoluted surface pattern with beveled edge; NRC of .85 or 1.05.; box has 8 sheets (2") or 4 sheets (3")	$299/$226 per box
illbruck/SONEX	SONEXpyramid 2	Willtec acoustical panels	Class1/Class A	24x24x2" thick	Available in natural (white) or painted 5 color options; 14 sheets/box	$260/$325 per box
illbruck/SONEX	SONEXclassic	Natural willtec acoustical panels	Class 1/Class A	24x48x2" thick	SONEX pattern; box has 8 sheets covering 64 square ft.; natural color is white; NRC of 0.80	$216/$233 per box
illbruck/SONEX	SONEX Corner Trap	Corner or bass trap	N/A	12x12x24 H	Made with charcoal polyurethane foam; 2 pcs/box	$62/box
illbruck/SONEX	PROSPEC Barrier	Non-reinforced vinyl-loaded barrier	N/A	54x20', 30', 60' length	This 1/8" thick barrier has an STC of 26 and is suitable for staggered stud wall construction	$175/$120/$335
illbruck/SONEX	SONEXone Panels	Painted willtec acoustical panels	Class1/Class A	24x48x2", 3" thick	Painted convoluted surface; 5 color options; NRC of .85 or 1.05.; box has 8 sheets (2") or 4 sheets (3")	$374/$282 per box
illbruck/SONEX	SONEXone Panels	Hypalon-coated willtec acoustical panels	Class1/Class A	24x48x2", 3" thick	Hypalon-coated convoluted surface; 4 color options; NRC of .95 or 1.1.; box has 8 sheets (2") or 4 sheets (3")	$374/$282 per box
illbruck/SONEX	SONEXclassic Panels	Painted willtec acoustical panels	Class1/Class A	24x48x2" thick	SONEX pattern with surface paint option in 5 colors; box has 8 sheets or 64 sq. ft.; NRC of 0.80	$266/box
illbruck/SONEX	SONEXclassic colortec	Dyed acoustical wall panels	Class 1/Class A	24x48x2" thick	SONEX pattern in willtec foam specially-dyed charcoal; color through entire thickness; 8 sheets/ box; NRC 0.75	$251/box
illbruck/SONEX	SONEXpyramids 3	Willtec acoustical panels	Class1/Class A	24x24x3" thick	Seamless install; available in natural (white) or painted 5 color options; 10 sheets/box	$232/$290 per box
illbruck/SONEX	SONEXpyramids 4	Willtec acoustical foam	Class1/Class A	24x24x4" thick	Seamless install; available in natural (white) or painted 5 color options; 8 sheets/box	$234/$293 per box
Netwell Noise Control	Pyramids	Acoustic foam	Class 1/2	2'x2'x3"	Absorbs 90% of reflected sound	$2-$4/sq ft
Noren	AcoustiLock	Noise reduction cabinets	Class 1	PC, 14, 24 space racks	Dbl-pane glass; heavy duty casters; temp meter	$1,500-$3,800
RealTraps	MicroTraps	Acoustic panel	Class A	24x48x1	Acoustic panels that mount like a picture, with no permanent wall damage	$120
RealTraps	MiniTraps	Bass trap/acoustic panel	Class A	24x48x3	Suitable as bass traps; absorb less at high frequencies	$180
RPG Diffusor Systems	Room Optimizer	Software tool	N/A	N/A	Optimizes speaker and listener location in rectangular rooms for modal and SBIR correction	$100
RPG Diffusor Systems	Room Sizer	Software tool	N/A	N/A	Optimizes room dimensions for rectangular rooms	$100
RPG Diffusor Systems	Flatffusor	Combination tool	Class A	23.625x23.625x1	Omnidirectional high frequency diffusion/mid frequency absorption	$139/box of 2
RPG Diffusor Systems	Hemiffusor	Spatial tool	N/A	23.625x23.625x4	Patented 2-dimensional quadratic residue reflection phase grating; broadband omnidirectional diffusion; white	$200/box of 2
RPG Diffusor Systems	Skyline LP	Spatial tool	N/A	23.625x23.625x4	Patented primitive root reflection phase grating; broadband omnidirectional diffusion; white	$200/box of 2
RPG Diffusor Systems	Skyline	Spatial tool	N/A	23.375x23.375x8"	Patented primitive root reflection phase grating; omnidirectional diffusion; 400-4,000 Hz+	$298/box of 2
RPG Diffusor Systems	QRDPA	Spatial tool	N/A	47.25x23.625	1-dimensional quadratic residue diffusor; arrayable for increased performance	$250
RPG Diffusor Systems	ProCorner Polyflex	Bass management tool	Class B	48x12	Optimized corner profile; integration w/ ProFoam; NRC=1.0; gray or purple	$294/box of 4
RPG Diffusor Systems	ProCorner Melaflex	Imaging tool	Class A	48x12	Optimized corner profile; integration w/ ProFoam; NRC=1.0; white or white fleck	$430/box of 4
RPG Diffusor Systems	ProFoam Polyflex	Imaging tool	Class B	48x24x2/24x24x2/12x12x2	Nestable to any depth; Variable Depth Air Cavity (VDAC); gray or purple	$282/$148/$41/box of 12
RPG Diffusor Systems	ProFoam Melaflex	Imaging tool	Class A	48x24x2/24x24x2/12x12x2	Nestable to any depth; Variable Depth Air Cavity (VDAC); white	$461/$242/$67
RPG Diffusor Systems	Studio in a Box Silver Polyflex	Total room solution	Class B	14'x10'x8' room (customizable)	Comprehensive room treatment, incl. reflection, reverberation control, diffusion, bass mgmt; Polyflex	$590
RPG Diffusor Systems	Studio In A Box Gold Polyflex	Total room solution	Class B	14'x10'x8' (customizable)	Comprehensive room treatment, incl. reflection, reverb control, broadband diffusion, bass mgmt; Polyflex	$950
RPG Diffusor Systems	Studio In A Box Silver Melaflex	Total room solution	Class A	14'x10'x8' (customizable)	Comprehensive room treatment, incl. reflection, reverberation control, diffusion, bass mgmt; white (Melaflex)	$1,029
RPG Diffusor Systems	Studio In A Box Gold Melaflex	Total room solution	Class A	14'x10'x8' (customizable)	Comprehensive room treatment, incl. reflection, reverb control, broadband diffusion, bass mgmt; white	$1,389
RPG Diffusor Systems	Abflector	Imaging tool	Class A	47.25x19x6	High and mid w/ extended low-mid frequency absorption	$626/box of 4
RPG Diffusor Systems	Modex Corner	Bass management tool	Class A	23.625x23.625	Corner wall mount or freestanding; controls room modes; stackable; light	$677/box of 2
Silent Source	SoundSucker	Corner bass traps	Class A/CC	12"x24"; 12"x48"	Available in charcoal, beige, brown, blue, hunter green, burgundy; 8 and 4 units/box	$200
Silent Source	Whisper Wedge	Absorptive foam	Class A/C	24"x48"x2", 3", 4", 6" thick	Many colors to choose from; 2–12 sheets/box (16–96 sq ft); class 1 available	$160-$250/box
Steven Klein Sound Control Room	Saturn Diffusor	Polycylindrical diffusor	Class A	24.75"x23.75"x5"	Reradiates sound energy through an angle of 120 degrees	$50

MANUFACTURER	MODEL	TYPE	FIRE RATING	DIMENSIONS	OPTIONS SPECIAL FEATURES	PRICE PRICE
Steven Klein Sound Control Room	SCR 2" Acoustic Foam	2" convoluted 10/box	Class B	2'x4'x2"	2 lb.-density acoustic foam	$190/box of 10
Steven Klein Sound Control Room	SCR 3" Acoustic Foam	3" convoluted	Class B	2'x4'x3"	2 lb.-density SCR acoustic foam	$175/box of 6
Steven Klein Sound Control Room	SCR 4" Acoustic Foam	4" convoluted foam 5/box	Class B	2'x4'x4"	2 lb.-density SCR acoustic foam	$190/box of 5
Steven Klein Sound Control Room	Rubber Decoupler	Medium density floor	Class A	N/A	Designed to grip any 2x lumber; helps user achieve a floated floor system	$1.75 each
Steven Klein Sound Control Room	TF Block Vinyl Barrier Sound Proofing Material	1lb/ sq. ft. mass loaded vinyl	Class A	4.5'x30' rolls	Limp mass vinyl used in wall systems for sound attenuation; low frequency rejection properties	$195/roll
Soundsuckers	Acoustic Foam	Foam panels	Class 2	2'x4' to 4'x8'	Custom sizes, densities, thickness available; various colors; polyurethane and melamine foam	$38 and up
Soundsuckers	Standard Barrier Panels	Soundproofing panels	Fire retardant	2'x4', 4'x4', 4'x8'	High-density panel with 2" acoustic foam fabric and foam color choices	$55/110/220
Soundsuckers	Premium Barrier Panels	Soundproofing panels	Fire retardant	2'x4', 4'x4', 4'x8'	High-density panel with 2" acoustic foam fabric and foam color choices	$69/$138/$276
Systems Development Group	Cutting Wedge 2000	Absorptive foam	Upon request	Various	Sawtooth pattern across face and back for easy stacking	$3/sq ft and up
Systems Development Group	Cutting Wedge Classic	Absorptive foam	Fire/smoke analysis available	Various	Sawtooth pattern for greatest absorption per sq ft; tear-resistant; shape memory	$3/sq ft and up
Systems Development Group	Model E	Diffusor	Available	15"x15"x9"	Small footprint; light weight; simple install	$88
Systems Development Group	Model C	Diffusor	Full Class A	24"x24"x4.5"	Install on wall or drop into 24"x24" opening of a T-Bar grid; available with center cutout	$97-166
Systems Development Group	Model F	Acoustic diffusor	Full Class A	2"x24"x1.75"	Specialized high-frequency diffusion on wall or ceiling	$97-166
Systems Development Group	Reflektors	Absorptive face/reflective panel	N/A	24"x48"x8"	Creates reflection-free listening space	$166
Systems Development Group	Sonora Panels	Absorptive fiberglass panel	Class A	Up to 48"x120"x2"	Molded fiberglass board non-resin chemically hardened edges; wrapped in Guilford fabrics	$8-$10/sq ft
Systems Development Group	Bass Eraser	Broadband bass trap	Class A	24"x48"x10"	Mounts horizontally or vertically	$360-$450
Taytrix	Absorptive Panels	Absorptive panels	Class 1	2'x2', 2'x4', 2'x6'	Fiberglass absorption panels trimmed w/decorator fabrics	$129 and up
Taytrix	Stack It Gobo System	Gobo	Class 1	15"x8"x48", 30"x8"x48"	Stackable, lightweight, modular, interlocking acoustical control panels	$300-$445
Vibrant Technologies	DF-24	Diffusor panel	N/A	23.75x23.75x6.25	Available in white, black or custom finishes	$79
Vibrant Technologies	Wave-Forms CX-24	Diffusor panel	94-VO	23.75"x23.75"x4.25"	Available in white, black or 48 different fabric colors	$69
Vibrant Technologies	Wave-Forms DA-44	Diffusor/absorber	94-VO	24x48x6	Avail.. in 48 fabric colors; designer and custom finishes	$249
Vocalbooth.com	4'x4' Silver Series	Vocal booth	N/A	4'x4'x7.1'	High-performance, portable sound room with simple assembly	$1,699
Vocalbooth.com	4'x4' Gold Series	Vocal booth	N/A	4'x4'x7.1'	Upgradeable, scalable, modular sound reduction room	$2,395
Vocalbooth.com	4'x6' Gold Series	Vocal booth	N/A	4'x6'x7.1'	Upgradeable, scalable, modular sound reduction room	$2,895
Vocalbooth.com	4'x8' Gold Series	Vocal booth	N/A	4'x8'x7.1'	Upgradeable, scalable, modular sound reduction room	$3,299
Vocalbooth.com	6'x6' Gold Series	Vocal booth	N/A	6'x6'x7.1'	Upgradeable, scalable, modular sound reduction room	$4,399
Vocalbooth.com	8'x8' Gold Series	Vocal booth	N/A	8'x8'x7.1'	Upgradeable, scalable, modular sound reduction room	$5,895
Vocalbooth.com	4'x4' Platinum Series	Vocal booth	N/A	4'x4'x7.3'	Modular, scalable sound isolation room w/double-wall design	$3,995
Vocalbooth.com	4'x6' Platinum Series	Vocal booth	N/A	4'x6'x7.3'	Modular, scalable sound isolation room w/double-wall design	$5,350
Vocalbooth.com	6'x6' Platinum Series	Vocal booth	N/A	6'x6'x7.3'	Modular, scalable sound isolation room w/double-wall design	$6,995
Vocalbooth.com	4'x8' Platinum Series	Vocal booth	N/A	4'x8'x7.3'	Modular, scalable sound isolation room w/double-wall design	$5,899
Vocalbooth.com	3 Carat Diamond Series	Vocal booth	N/A	66x56x89	Five-sided sound reduction room available in a single or double wall design; non-parallel walls	$3,190
Vocalbooth.com	5 Carat Diamond Series	Vocal booth	N/A	N/A	Five-sided sound reduction room available in a single or double wall design; non-parallel	$3,995
Vocalbooth.com	10 Carat Diamond Series	Vocal booth	N/A	N/A	Five-sided sound reduction room available in a single or double wall design; non-parallel	$5,095
Wenger	Pyramidal Diffusor	Acoustical panels	Class A	2'x2'; 4'x4'	Offset pyramid shape; impact-resistant PVC/acrylic plastic	$57-$156
Wenger	Ceiling Diffusor	Acoustical panels	Class A	2'x2'; 4'x4'; 4'x2'	Convex shape; impact-resistant PVC/acrylic plastic	$90-$135
Wenger	Trapezoidal Diffusor	Acoustical panels	Class A	2'x2'; 4'x4'	Offset trapezoid shape; fiberglass resin with white gel-coat finish	$101/$153
Wenger	Wall Diffusor	Acoustical panels	Class A	4'x4'; 4'x8'; other sizes available	Convex shape; PVC/acrylic plastic with reinforced corners and fabric covering	$276/$550
Wenger	Quadratic Diffusor	Acoustical panels	Class A	4'x4'	Based on quadratic theory; effective over freq range of 750 Hz to 3.3 kHz	$452
Wenger	V-Room Sound-Isolating Room	Modular studio with optional active LARES-based acoustics	N/A	From 5'8"x5'8" to 10'8"x13'2"	Provides acoustical simulations of 10 different environments	$9,000 and up
Whisper Room	SE Series	Sound-isolation enclosures	N/A	Various sizes available	Portable; modular; easy assem; cable passage; ventilation sys; door window	$2,185 and up

STUDIO FURNITURE

MANUFACTURER	PRODUCT	TYPE	DIMENSIONS (INCHES)	SPECIAL FEATURES	PRICE
Anthro	Console	Workstation for non-linear video editing, mixing, and post prod	72x31x38.75	Holds (3) 21" monitors; keyboard area adj for sitting/standing; shelves adj in 1" incr; lifetime warranty	$1,099
Anthro	AnthroBench	Studio furniture	48x60x72	Modular, open design; lifetime warranty; holds 600 lb.	$399 and up
Anthro	Rack System	Rack cart	12U; 16U; 24U; 36U	Rack mounting on tapped mounting rails front/back; accommodates different depths of rack; rack accessories available	$800 and up
Argosy Console	90 Series Studio Furnishings	Specialized enclosures for popular mixers	Starts at 89.5 wide; custom	Expandable enclosure w/padded armrest; removable back panel; modular design; heavy gauge steel legs; casters and mahogany	$1,571 and up
Argosy Console	90 Series for Digidesign ProControl	Specialized furnishings for Digidesign ProControl	Starts at 89.5 wide; custom	Houses Procontrol and rack gear; multiple configurations available	$1,580 and up
Argosy Console	90 Series for Digidesign Control 24	Specialized furnishings for Digidesign Control 24	Starts at 89.5 wide; custom	Houses Control 24, monitor, and rack gear; multiple configurations available	$1,860 and up
Argosy Console	90 Series for Mackie 8 Bus	Specialized furnishings for Mackie 8 Bus	Starts at 89.5 wide; custom	Houses Mackie 8 Bus, monitors and rack gear; multiple configurations available	$1,476 and up
Argosy Console	90 Series for Mackie Digital 8 Bus	Specialized furnishings for Mackie Digital 8 Bus	Starts at 89.5 wide; custom	Houses Mackie Digital 8 Bus, monitors and rack gear; multiple configurations available	$1,596 and up
Argosy Console	90 Series for Sony DMX-R100	Specialized furnishings for Sony DMX-R100	Starts at 89.5 wide; custom	Houses Sony DMX-R100, monitors and rack gear; multiple configurations available	$2,030 and up
Argosy Console	90 Series for Yamaha DM2000	Specialized furnishings for Yamaha DM2000	Starts at 89.5 wide; custom	Houses Yamaha DM2000, monitors and rack gear; multiple configurations available	$1,800 and up
Argosy Console	90 Series for Yamaha 02R	Specialized furnishings for Yamaha 02R	Starts at 89.5 wide; custom	Houses Yamaha 02R, monitors and rack gear; multiple configurations available	$1,842 and up
Argosy Console	90 Series for Yamaha 02R96	Specialized furnishings for Yamaha 02R96	Starts at 89.5	Houses Yamaha 02R96, monitors and rack gear; multiple configurations available	$1,770 and up
Argosy Console	90V Series Universal System	Universal workstation	Starts at 89.5	Choose from rack units, monitor inserts, desk area to customize workstation; full padded armrest; casters; mahogany end panels available	$1,800 and up
Argosy Console	Nevis 70 Series Studio Furnishings	Specialized enclosures for popular mixers	68.2Wx45x30	Full padded armrest; multi-access bridge lids; steel legs; oak end panels and casters available	$800 and up
Argosy Console	70 Series for Digidesign Procontrol	Specialized furnishings for Digidesign ProControl	68.2Wx44.5Dx37H	Houses up to 24 channels of ProControl; 10 rack spaces available	$880 and up
Argosy Console	70 Series for Digidesign Control 24	Specialized furnishings for Digidesign Control 24	68.2Wx42Dx40.1H	Houses Digidesign Control 24 and 12 rack spaces	$900 and up
Argosy Console	70 Series for Mackie Digital 8-bus	Specialized furnishings for Mackie digital 8-bus	68.2Wx42Dx37H	Houses Mackie digital 8-bus with optional 8 or 21rack spaces	$900 and up
Argosy Console	70 Series for Sony DMX-R100	Specialized furnishings for Sony DMX-R100	68.2Wx42Dx38H	Houses Sony DMX-R100 and 9 rack spaces	$1,150 and up
Argosy Console	70 Series for Mackie 8-bus	Specialized furnishings for Mackie 8-bus	68.2Wx44.5Dx37H	Houses Mackie 8-bus and 11 rack spaces	$800 and up
Argosy Console	70 Series for Yamaha 02R	Specialized furnishings for Yamaha 02R	68.2Wx44.5Dx40.1H	Houses Yamaha 02R and 13 rack spaces	$986 and up
Argosy Console	70 Series for Yamaha 02R96	Specialized furnishings for Yamaha 02R96	68.2	Houses Yamaha 02R96 and 14 rack spaces	$950
Argosy Console	70V Series Universal System	Universal workstation	68.2	Choose from rack units and desk inserts to customize workstation; full padded armrest; casters; oak end panels available	$1,080 and up
Argosy Console	Dual 15	Workstation for computer-based systems	94Wx50Dx43H	Holds two 21" monitors and up to 24 spaces rack gear	$1,200 and up
Argosy Console	Dual 15-K	Workstation for keyboard-based systems	94Wx50Dx43H	Holds two 21" monitors and up to 58" full size keyboard; houses 24 rack spaces; alternative rack modules, avail.	$1,193 and up
Argosy Console	90 Series Spire Rack Enclosures	Single, double, triple and quad rack bays; 14 or 28 spaces high	22.5–83.25Wx33Hx22.5D	Laminate and hardwood finishes avail., producers desk attachments; removable access doors; optional shelves	$500 and up
Argosy Console	Spire Speaker Stands	42" speaker stand	Base: 16x16; top: 12x12		$99 per pair
Argosy Console	Spire V Series Rack Enclosures	Rack bays for video based systems	22.6–82.25x41.5–86.5x30	Optional finishes; removable access doors; optional front doors available	$1,120 and up
Argosy Console	70 Series Spire Rack Enclosures	14 Space rack units	21.1–41Wx33.1Hx22.5D	Available in 1 and 2 bay configurations; available in black melamine finish	$200-$390
Argosy Console	Rack 'n Roll	Rack Unit	23.1Wx23.25Hx23.5D	10 space rolling rack, tucks under any 90 series, 70 series or Dual 15. Optional base finishes avail.	$260 and up
biomorph interactive	flexo desk	Ergonomic, height-adjustable desk	50 footprint	Sit-to-stand, crank or electrically adjusted, dual level midi computer desk. Part of a line of ergonomic furniture.	$1,795
Boutique Audio	Rack	Racks for vintage modules	5.25x19x14	Steel enclosure; internal shielded power supplies; 1/4" instrument input on front panel; XLRs on rear panel	$995
Bryco Products	CD60, CDB60	Solid oak CD racks	21.63x11.25x4.88	Table or wall mount; holds 60 CDs	$59
Bryco Products	CDP-60	Thick plastic CD rack	15.75x13.88x4.25	Wall or table mount; holds 60 CDs	$25
Bryco Products	CP-48	Cassette tape storage racks	18.5x11.5x2	Wall or table mount; holds 48 cassettes	$22
Bryco Products	DLT-18	DLT storage rack	14x8.5x2.5	Holds 18 DLT tapes	$20
Bryco Products	DR-60 DATRAX, DRB-60 DATRAX	DAT tape holder--solid oak (natural or black)	21.25x9.5x2	Wall or table mount; holds 60 DATs	$55
Bryco Products	DRP-40	DAT tape holder	17.38x7.38x2	Wall or table mount; holds 40 DATs	$22
Bryco Products	DSD-320/DSD 320L	DAT tape storage cabinet	19.5x21.75x15.5	Stores 320 DATs; 320L is locking unit	$349/$399
Bryco Products	MD-80	Minidisc holder	17.38x7.38x2	Wall or table mount; holds 80 Minidiscs	$22
Bryco Products	MDV-24	Mini DV tape rack	9.5x7.38x1.75	Wall or table mount; holds 24 mini DV tapes	$14
Bryco Products	MDV-50	Mini DV tape rack	15.88x8.88x1.75	Holds 50 tapes; wall or table mount	$21
Bryco Products	PDVL-18	DV tape storage rack	17x6.25x2.38	Holds 18 tapes; holds DV cam, full size DV and DVC pro, disks and cases; wall or table mount	$19

MANUFACTURER	PRODUCT	TYPE	DIMENSIONS (INCHES)	OPTIONS SPECIAL FEATURES	PRICE PRICE
Bryco Products	V8-36 & V8-36 Pro	8 mm tape storage racks	Reg: 17.5x10.25x2.38 Pro: 18.25x9.63x2.19	Wall or table mount; holds 36 8mm tapes; Pro holds 8mm and DV cam	$22
HSA	Oak Rolltop Desks and Racks	Oak rolltop desks and racks	Variable	Locking tambour doors, cover racks, and worksurface	$1,995 and up
Littlite	LED Lite	Gooseneck task lamp w/LED illumination	12, 18 length	New LED technology	$77-$116
Littlite	Task Lamp	Task lamp	6, 12, or 18 goosenecks	Flexible task lamp avail in 5W or 2.5W	$25-$160
Middle Atlantic Products	MultiDesk Video Modular Furniture System	Recording/mixing workstation	Custom	Choice of four desks, side racks, and connecting wedge	$488-$840
Middle Atlantic Products	OBRK Series Racks	Oak laminate rack	Various H, 18 D	Deep; concealed fasteners	$169-$238
Middle Atlantic Products	RK/BRK Series Racks	Black laminate rack	Various H, 18 D	Deep; concealed fasteners	$108-$184
Omnirax	C2	Keyboard/composing/mixing workstation	45.75x43.4x107.25	Holds up to 88-note keyboards, two computer monitors, near fields, computer keyboard and 58 rack spaces	$2,200-$2,500
Omnirax	CMDR	Commander keyboard/composing/mixing workstation	48x44.5x88	Holds up to 88-note keyboards; room for computer/near field monitors; computer keyboard; 60 rack spaces	$1,810-$2,110
Omnirax	CODA	Compact mixing/digital editing workstation	38.75x38.5x67.9	Workstation for computer/peripherals; fits Mackie Control, HUI other mixers/controllers; 8 rack spaces	$1,045-$1,285
Omnirax	CODA2480	Mixing/digital editing workstation desk for Roland VS-2480	38.3x37.4x47.8	Compact workstation for Roland 2480 and peripherals; wrist pad; computer keybd. shelf; 10 rack spaces	$790-$890
Omnirax	CODAD8	Mixing/digital editing workstation desk for Mackie d8b	38.5x36.6x71.38	Compact workstation for Digidesign d8b and peripherals; computer keyboard shelf plus 18 rack spaces	$1,120-$1,420
Omnirax	F2	Keyboard composing/mixing workstation	42.1x52.8x104.3	Two sliding work surfaces for mixers, controllers and video mon.; 54 rack spaces	$3,320-$3,920
Omnirax	FORTE	Keyboard composing/mixing workstation	42x52.25x101.25	Sliding work surface for placing mixers, controllers and video monitors; includes 64 rack spaces	$2,705-$3,300
Omnirax	FRC12	Force 12 mixing/digital editing/audio video workstation	36x52.3x86	Room for controllers, full keyboard and video/near field monitors; 12 rack spaces; computer keyboard	$1,650-$1,945
Omnirax	FRC24	Force 24 mixing/digital editing/audio video workstation	39.7x39x94	Room for controllers or full keyboard and video/near field monitors; 24 rack spaces; computer keyboard	$1,650-$1,945
Omnirax	FRC36	Force 36 mixing/digital editing/audio video workstation	39.5x40.31x91.94	Room for controllers or full keyboard and video/near field monitors; 12 spaces above, 24 below, 16 in back	$2,065-$2,575
Omnirax	FRC40	Force 40 mixing/digital editing/audio video workstation	39.5x40.31x91.94	Room for controllers or full keyboard and video/near field monitors; 16 spaces above, 24 below, 16 in back	$2,265-$2,775
Omnirax	FUSION	Keyboard composing/mixing workstation	38.6x53.9x93.8	Hold up to 88-note keyboards and up to 63 rack spaces in a variety of configurations	$1,735-$2,035
Omnirax	KMS...	Adjustable computer keyboard/mouse shelf	0.75x11x28.5	Two styles, with a variety of shapes to accessorize	$95-$195
Omnirax	MIXRAX	Compact console housing w/upper and lower rack bays	40.2x35x51	Fits Tascam DM24 and a variety of similar small format mixers; 22 rack spaces; space for CPU	$749-$870
Omnirax	MXC24	MixStation for Digidesign Control 24 mixer	40x46.2x89	Ergonomic multi-level workstation with a total of 56 rack spaces	$1,875-$2,070
Omnirax	MXDM24	MixStation for Tascam DM24 mixer	43x37.9x81.6	Ergonomic multi-level workstation with a total of 42 rack spaces	$1,875-$2,070
Omnirax	MXO2R	MixStation for Yamaha O2R	43.4x39x70.75	Ergonomic multi-level workstation with a total of 42 rack spaces	$1,675-$1,850
Omnirax	MXO2R96	MixStation for Yamaha O2R96	42.25x40.78x70.75	Ergonomic multi-level workstation with a total of 42 rack spaces	$1,875-$2,070
Omnirax	MXM24	MixStation for Mackie 24 8-bus mixer	43x37.9x81.6	Ergonomic multi-level workstation with a total of 42 rack spaces	$1,675-$1,850
Omnirax	MXM32	MixStation for Mackie 32 8-bus mixer	43x37.9x90.5	Ergonomic multi-level workstation with a total of 42 rack spaces	$1,730-$1,910
Omnirax	NOVA	Compact audio video desk with riser	32.37x29x52.56	Compact computer desk with monitor bridge and 4 rack spaces	$580-780
Omnirax	NT	Keyboard composing/mixing workstation	42.12x54.34x83.65	Fits any keyboard controller; sliding main surface sized for controllers or keyboards; 26 rack spaces	$2,360-$3,635
Omnirax	NT2	Keyboard composing/mixing workstation	42.12x54.34x83.65	Fits any keyboard controller; sliding main surface sized for controllers or keyboards; 26 rack spaces	$3,025-$3,830
Omnirax	OMNI	OmniDesk audio/video editing desk	35.5x34.6x77.6	Curved work surface with 1-piece monitor bridge; total of 29 spaces or space for CPU	$1,180-$1,480
Omnirax	OM13	13 space rack cabinet	29.4x24x31.6	Companion piece to OmniDesk; ordered left or right	$345-475
Omnirax	OM13D	13 space rack cabinet with CPU cubby	29.4x24x42.3	Companion piece to OmniDesk; ordered left or right; includes door covering rack and CPU cubby	$565-695
Omnirax	PRO316	48 space producer's rack	34.56x27.6x62	On casters with generous work surface; 3 rack bays of 16 spaces each	$825-$1,000
Omnirax	PS	ProStation audio/video editing workstation	44x36x72.25	Keyboard composing or mixing consoles; holds computer and near field monitors; 26 rack spaces	$1,475-$1,775
Omnirax	PSJRM/C	ProStation Junior mixing/composing workstation	43x29.5x60.4	For keyboard composing; holds computer and near field monitors; 14 rack spaces	$1,000-$1,340
Omnirax	PSM/C	ProStation mixing/composing workstation	45.5x36x72.25	Digital audio workstation; holds computer and near field monitors; 30 rack spaces	$1,440-$1,735
Omnirax	SONIX	Sonix for Digidesign Control 24	40x45.13x88.25	All HD system hardware with a sound insulated cabinet	$3,495-$3,795
Omnirax	S600	Synergy 600 mixing console housing	41.12x41.7x83.5	Adaptable console housing for most mixers; padded wrist rest; 12 space rack bay; requires additional kit	$1,440-$1,740

STUDIO FURNITURE

MANUFACTURER	PRODUCT	TYPE	DIMENSIONS (INCHES)	SPECIAL FEATURES	PRICE
Omnirax	S800	Synergy 800 mixing console housing	41.37x41.7x101.1	Adaptable console housing for most mixers; padded wrist rest; 12 space rack bay; requires additional kit	$1,790-$2,090
Omnirax	S1000	Synergy 1000 mixing console housing	41.37x41.7x121.5	Adaptable console housing for most mixers; padded wrist rest; 12 space rack bay; requires additional kit	$2,210-$2,510
Omnirax	Synergy Kits	Add-on kits for Synergy series console housings	Varies according to mixer	Mixer specific kits including additional rack bays, writing surfaces and filler panels for S600, 800 & 1000	$120-400
Omnirax	S62480	Dedicated console housing for Roland VS-2480	41.12x41.7x83.5	Kit included with 2 rack bays, filler panels and hinged wrist pad	$1,810-$2,100
Omnirax	S6C24	Dedicated console housing for Digidesign Control 24	40x42.7x87.5	Kit included with 2 rack bays	$1,575-$1,875
Omnirax	S6D8	Dedicated console housing for Mackie d8b	41.12x41.7x83.5	Complete: kit included with 2 rack bays	$1,700-$2,000
Omnirax	S6DM2000	Dedicated console housing for Yamaha DM2000	41.7x47.2x86.7	Complete: kit included with 24 rack spaces	$2,060-$2,360
Omnirax	S8R100	Dedicated console housing for Sony R-100	38.2x41.6x91.1	Complete: kit included with 2 rack bays	$2,060-$2,360
Omnirax	PSJR	ProStation Junior	42.50x29.50x60.40	Audio/video editing workstation	$1,040-$1380
Omnirax	PRESTO	A/V and composing workstation	37.10x31.40x55.88	Audio/video composing workstation	$530-$730
Omnirax	S6DXB	Synergy 600 for Mackie DXB	37.30x38.82x89	Synergy 600 console for Mackie DXB; complete with 8 rack spaces and writing surface	$1,720-$2,020
Omnirax	S600XL	Synergy 600 XL console series	41.12x41.70x83.50	Synergy 600 on heavy-duty powder coated steel legs	$2,140-$2,440
Omnirax	S800XL	Synergy XL console series	41.37x41.70x101.10	Synergy 800 on heavy-duty powder coated steel legs	$2,540-$2,840
Omnirax	S1000 XL Series	Synergy 1000 XL	41.37x41.70x121.50	Synergy 1000 on heavy-duty powder coated steel legs	$2,960-$3,260
Omnirax	S6C24XL	S6C24 on steel legs	40x42.70x87.50	Kit included with 2 rack bays	$2,320-$2,620
Omnirax	S62480XL	S62480 on steel legs	41.12x41.70x83.50	Kit included with 2 rack bays, filler panels and hinged wrist pad on steel legs	$2,565-$2,865
Omnirax	S6D8XL	S6D8 on steel legs	41.12x41.70x83.50	Complete: kit included with 2 rack bays on steel legs	$2,450-$2,750
Omnirax	S6DM2000XL	SDM2000 on steel legs	41.70x47.20x86.70	Complete: kit included with 24 rack spaces on steel legs	$2,810-$3,110
Omnirax	S6DXBXL	S6DXB on steel legs	37.30x38.82x89	Synergy 600 console for Mackie DXB; complete with 8 rack spaces and writing surface on steel legs	$2,460-$2,760
Per Madsen Design	RACKIT System 19 Base 19	Foundation for System 19 units	20.75x16x1.5	Provides a foundation for stacking System 19 units	$40
Per Madsen Design	RACKIT System 19 Cassette 19	Media storage drawers (3 drawers)	15x20.75x16	Modular, stackable oak or birch drawer units hold DAT, 8 mm, and most other tape cassette formats	$275-$295
Per Madsen Design	RACKIT System 19 Cassette 19-10	Media storage cabinet (2 drawers)	20.75x16x10	Modular, stackable oak or birch drawer units store DAT 8mm, and most other cassette tape formats	$225-$245
Per Madsen Design	RACKIT System 19 CD 19 unit	Media storage drawers	15x20.75x16	Modular, stackable oak or birch drawer units hold CDs and other	$245-$265
Per Madsen Design	RACKIT System 19 Component Rack	Equipment rack with shelves	5, 7.5, 10, 15x20.75x16	Modular, stackable oak equipment racks available in 4 sizes	$90/$95/$105/$110
Per Madsen Design	RACKIT System 19 Component Rack with Rails	Equipment racks with mounting rails	10, 15, 30x20.75x16 EIA standard 5, 8, 16 unit sizes	Modular, stackable oak equipment racks available in 3 sizes	$110/$125/$185
Per Madsen Design	RACKIT System 19 Disc Cabinet 19/glass door	Media storage cabinet glass door	15x20.75x16	Stores LPs, laser discs, books	$185
Per Madsen Design	RACKIT System 19 Disc Cabinet 19	Media storage cabinet open front	15x20.75x16	Stores LPs, laser discs, books	$135
Per Madsen Design	RACKIT System 19 DVD/VHS 19 unit	Media storage drawers	15x20.75x16	Modular, stackable oak or birch drawer units hold DVD, and VHS	$245-$265
Per Madsen Design	RACKIT System 19 Dolly 19	Dolly for all RACKIT System 19 units	4x20.75x16	4 twin-wheel casters; 300 pounds rolling load	$55
Per Madsen Design	RACKIT System 19 Dolly 19 PC Tower	Dolly for RACKIT System 19 units	4x30x16	Holds RACKIT 19 units and PC tower on its own shelf	$110
Per Madsen Design	RACKIT System 19 File 19-25	Storage drawers for hanging files (2 drawers)	25x20.75x16	Stores letter or legal hanging file folders	$330-$365
Per Madsen Design	RACKIT System 19 File 19-25	Storage drawers for hanging files (3 drawers)	25x20.75x16	Stores letter or legal hanging folders, cassettes, DATs and CDs	$360-395
Per Madsen Design	RACKIT System 19 Tabletop 19	Tabletop for all System 19 units	20.75x16x0.75	Tabletop for System 19 units	$40
Quik-Lok	A-50	Tripod studio boom stand	H: 53.5–91.5; Boom : 46.5–87	Tripod leg design with solid steel legs; holds mics; locking casters; 7' boom; mic cable clips	$180
Quik-Lok	BS-300	Height adjustable near field	Shelf: 9 square; H: 31.5–48; base 17.7 each side	All-steel, arc-welded construction; cable management; triangle base with adj leveling floor spikes	$180/pair

MANUFACTURER	PRODUCT	TYPE	DIMENSIONS (INCHES)	OPTIONS SPECIAL FEATURES	PRICE PRICE
Quik-Lok	BS-336	36" fixed height near field studio monitor stand	Shelf: 11 square; H 36; base 17.7	All-steel, arc-welded construction; cable management; triangle base with adj leveling floor spikes	$150/pair
Quik-Lok	BS-342	42" fixed-height near field studio monitor stand	Shelf: 11 square; H 42; base 17.7	All-steel, arc-welded construction; cable management; triangle base with adj leveling floor spikes	$160
Quik-Lok	Z-250	Triple-shelf computer workstation	33.6x29.8x22.3	Main shelf with pull-out and peripheral shelves; holds computer equip/access	$320
Quik-Lok	RSW-503	Workstation with 14-space rack stand	65.85x28x23.66	Users can build a modular solution by integrating RS-400 / 500 series rack units; black w/ cherry laminate top	$500
Quik-Lok	Z-555	Z-500 Series expandable music project station (55"w)	55–75.6x28.75x35.4	Expandable; shelves and crossbars; computer-welded steel frame	$300
Quik-Lok	Z-260 BK/CY	Computer workstation	51.4x35.3x19.6	Dual level workstation with pull-out QWERTY keyboard shelf; black frame with laminate cherry wood tops	$380
Quik-Lok	Z-260 TI/BK	Computer workstation	51.4x35.3x19.6	Dual level workstation with pull-out QWERTY keyboard shelf; titanium metal frame with laminate black wood tops	$379
SoundAnchors	ADMID	Adjustable studio monitor stand	Custom	Adjustable platform heights; variable speaker tilt	$425
SoundAnchors	Digital Audio Workstation	Workstation for digital-based recording, mixing, post-production	Custom	Adjustable platform heights; built-in cable management; can be configured for multiple monitors	$450 and up
SoundAnchors	Mixer Table	Custom mixing table	Custom	Adjustable platform heights; can be configured for multiple monitors	$750 and up
SoundAnchors	PROJ	Studio monitor stand	Custom	Spikes at floor; sorbathane pads	$235
SoundAnchors	PROVID	Adjustable studio video monitor stand	Custom	Adjustable platform heights; spikes at floor; variable tilt platform	$275 and up
SoundAnchors	STUDADJ	Adjustable studio monitor stand	Custom	Adjustable platform heights; prefilled and damped; variable speaker tilt	$335
SoundAnchors	STUDADJR	Adjustable studio monitor stand	Custom	Adjustable platform heights; prefilled and damped; variable speaker tilt; heavy duty platforms	$375
Soundsuckers	Sound Isolation Booth	Isolation booth	Custom	Compression door sealing; cam door closure; optional low-profile ventilation ($355); easy assembly	$1,499 and up
Standtastic	100KS Single Tier Keyboard Stand Frame	Keyboard stand	48 H; variable W; folds to 6x48	Fully adjustable	$149
Standtastic	100TK Tier kits	Accessory for stands and wall mount kits	12–24 D; 3 angle adjustments	Fully adjustable	$68/pair
Standtastic	102KS 2 Tier Keyboard Stand 60" Frame	2-tier keyboard stand	60 H; adjustable W; holds 2 keyboards	Fully adjustable; folds to compact size	$209
Standtastic	103KS 3 Tier Keyboard Stand 60" Frame	3-tier keyboard stand	60 H frame; adjustable W	Fully adjustable	$259
Standtastic	122KS Double Tier Keyboard Stand Frame	For live or studio performance	48 H; variable W; folds to 6x48		$199
Standtastic	P3 Wood Adjustable Stand	Home or studio	36–54 W	Adjustable width	$200
Standtastic	UB-1 U Bolts	Wall-mount kit accessory	N/A	Adjusts 100TK's to 90° when used with VF-1s on the wall	$10
Standtastic	VF-1 Vertical Frames	Wall-mount kit accessory	36 H	Attaches to wall so 100TKs can be attached for wall mounting keyboards	$53/pair
Taytrix	Counter tops	Counter tops	Varies	Straight; angle wing; corner units	$35/sq ft. and up
Taytrix	Rack Units	12, 14 and 16 rackspace units	29.5–32x16.5–23	Available in square or unique front-angle design; maple or cherry furniture-grade plywood	$117-$300
Taytrix	Workstations	Workstation	6.5' and 5' mini ovals	Adjustable meter bridge shelf; 180° swivel speaker wings; rack packages available	$2,875 and up
Ultimate Support	HS26BP	Studio organizer stand	27.5–32H; surface: 16x35.5	Large work surface; center tier and side arms support gear; many accessories available	$250
Ultimate Support	MS36	Studio monitor stand	H: 36, top plate 9x9; triangle base diameter: 14	Cable management; triangle cast zinc base; available in black and pewter	$210/pair
Ultimate Support	MS45	Studio monitor stand	H: 45, top plate 9x9; triangle base diameter: 14	Cable management; triangle cast zinc base; available in black and pewter	$230/pair
Vocalbooth.com	Small Amp Box	Amplifier enclosure	30x36x26	Designed for amplifiers up to 24"x28"x13"	$695
Vocalbooth.com	Medium Amp Box	Amplifier enclosure	36x36x30	Designed for amps up to 30"x30"x17"	$765
Vocalbooth.com	Med-Lg Amp Box	Amplifier enclosure	36x36x36	Designed for amps up to 30"x30"x23"	$835
Vocalbooth.com	Large Amp Box	Amplifier enclosure	48x48x48	Designed for amps up to 40"x40"x32"	$895
Wenger	Workstation	Computer/synthesizer workstation	48x37x32	Cockpit-like design; steel and wood frame; cord-management system	$1,143

SYNTHESIZER & SAMPLER MODULES

MANUFACTURER	MODEL	POLYPHONY / MULTITIMBRAL PARTS	WAVEFORM MEMROY ROM / RAM	FILTER TYPES / RESONANCE	SINGLE PROGRAMS ROM / RAM	MULTITIMBRAL PERFORMANCES ROM / RAM	PORTAMENTO	GM / GS / XG COMPATIBLE	BUILT-IN COMPUTER INTERFACE / TYPE	DISK DRIVE TYPE
Access Music	Virus C	32/16	N/A	LP; HP; BP; BS/Y	768/256	16	Yes	N/N/N	No	N/A
Akai	Z4	64/32	0/272 (exp to 512)	35/Y	0/unlimited	0/unlimited	Yes	N/N/N	Yes/USB	60 GB internal IDE
Akai	Z8	64/32	0/272 (exp to 512)	35/Y	0/unlimited	0/unlimited	Yes	N/N/N	Yes/USB	60 GB internal IDE
Alesis	DM5 Drum Module	16/1	4/4	LP/N	0/20	0/0	No	Y/N/N	No	N/A
Analogue Solutions	Semblance	1/1	2	4/Y	1	9	No	N/N/N	Yes/MIDI	N/A
Analogue Solutions	Red Square	1/1	3	1	1	0	No	N/N/N	Yes/MIDI	N/A
Analogue Solutions	Vostok Suitcase	1/1	256/0	LP; HP; BP/Y	N/A	0	Yes	N/N/N	No	N/A
Clavia DMI	Nord Modular G2 Engine	16/4	4/4	15/Y	0/500	200	Yes	N/N/N	Yes/USB	N/A
Clavia DMI	Nord Rack 2x	16/4	N/A	BP; HP; LP/Y	0/1,024	0/300	Yes	N/N/N	No	N/A
Clavia DMI	Nord Electro Rack	146/1	0/6	LP/N	0/6	0/1	No	N/N/N	No	N/A
Clavia DMI	Nord Rack 3	24/4	N/A	LP; BP; HP; notch, dual/Y	0/1,024	0/128	Yes	N/N/N	No	N/A
Dave Smith Instruments	Evolver	1/1	4 oscillators	Analog LP/Y; digital HP/N	0/512	1	Yes	N/N/N	Yes/MIDI	N/A
Dave Smith Instruments	Poly Evolver	4/4	96/32	3/Y	0/512	0/384	Yes	N/N/N	Yes/MIDI	N/A
Doepfer	A-100 Modular Analog Synthesizer	Depends on configuration	N/A	Depends on configuration	0	0	Yes	N/N/N	Depends on configuration	N/A
Edirol	Studio Canvas SD-20	64/32	N/A	LP/Y	660/23 Drums sets	N/A	Yes	Y/Y/Y	Yes/USB; serial	N/A
Edirol	Studio Canvas SD-80	128/32	N/A	LP/Y	1,050/30 Drums sets	N/A	Yes	Y/Y/Y	Yes/USB	N/A
Edirol	Studio Canvas SD-90	128/32	N/A	LP/Y	1,050/30 Drums sets	N/A	Yes	Y/Y/Y	Yes/USB	N/A
Future Retro	Revolution	1/1	2	1/Y	0	0	Yes	N/N/N	Yes/MIDI/Din Sync	N/A
Korg	MS2000BR	4/1	Analog modeling/ vocoder	24dB LP; 12dB LP; BP; HP/Y	0/128	Dual/Split	Yes	N/N/N	No	N/A
Korg	Triton-Rack	60/16	32-160/16-96	24dB LP/Y; 12dB LP+HP/N	0/1,792 (512 preload)	0/1,664 (512 preload)	Yes	Y/N/N	No	3.5" HD/DD
Kurzweil	Micro Ensemble	32/16	16/0	LP; HP; BP; notch	256/0	N/A	Yes	N/N/N	No	N/A
Kurzweil	PC2R	64/16	16/0	LP; HP; BP; notch	400/128	64/128	Yes	Y/N/N	No	N/A
Kurzweil	K2600R/K2600RS	48/16	8/64	LP; HP; BP; notch; AP/Y	231/1,000	100/1,000	Yes	Y/N/N	Yes/SCSI	Floppy
Metasonix	TM Modules	Depends on configuration	N/A	BP/Y	0	N/A	No	N/N/N	Optional/MIDI	N/A
Quasimidi	QM-309 Rave-O-Lution	17/5	N/A	24 dB/12 dB LP	0/384	N/A	Yes	N/N/N	No	N/A

# AND TYPE OF CONTROLLER INPUTS	# OF SEQUENCER TRACKS/PPQN	SEQUENCER MEMORY	TYPES OF QUANTIZATION	ARPEGGIATOR	# OF EFFECTS PROCESSORS/EFFECTS	# OF AUDIO OUTPUTS/TYPE	SPECIAL FEATURES	OPTIONS	PRICE
0	N/A	N/A	N/A	Yes	1/98	6		Rack mounting kit	$1,995
4 knobs	N/A	N/A	N/A	No	4/52	(2) 1/4" TRS	24-bit/96 kHz support; PC/Mac cntrl/ntwrkng software; write CD-RW; auto program creation; auto normalize	4-buss FX; 8-out analog expander; stereo dig I/O (S/PDIF); 8-ch ADAT dig. I/O	$1,799
8 knobs	N/A	N/A	N/A	No	4/52	(2) 1/4" TRS	24-bit/96 kHz support; removable front panels; PC/Mac cntrl/ntwrkng software; write CD-RW	IB48P 8-ch. analog output expander; IB4ADT 8-ch ADAT dig. I/O	$2,299
12 trigger	N/A	N/A	N/A	No	N/A	(4) 1/4"			$449
0	N/A	N/A	N/A	No	N/A	1	True analog		$399
Many	N/A	N/A	N/A	No	N/A	Many	Patchable modular analog		$599
Joystick	1/4	8	9ths	No	8	N/A	Full patchable discrete component analog modular synth; pin matrix board patch panel; portable modular in suitcase		$2,595
(2) pedal	Step	N/A	N/A	Yes	4/40	(4) 1/4"	Free editor for computer; 100+ synth building blocks; 4 audio ins w/XLR; mic preamp		$1,199
(1) pedal switch; (1) exp pedal	N/A	N/A	N/A	Yes	N/A	(4) 1/4"	Analog modeling synth: no waveforms		$1,199
(2) pedal	N/A	N/A	N/A	No	1/6	(2) 1/4"		Modeled B-3/sampled elec. pianos; USB port to update	$1,699
(2) pedal	N/A	N/A	N/A	Yes	N/A	(4) 1/4"	Subtractive synth with 4 operator FM synth		$2,199
0	16x4 step	64	Up to 64T	No	2/5	(2) 1/4"	Real analog filters; feedback; delay; stereo signal processing		$499
0	16x4	64	1/2 to 64T	No	2/6	(10) 1/4"	Real analog electronics; effects and sequencer on each voice; tuned feedback		$1,395
Depends on configuration	N/A	N/A	N/A	No	Depends on configuration	Depends on configuration	True analog modular synth system; 70 different modules available		$1,895
0	N/A	N/A	N/A	Yes	1/2	1/8" line I/O; headphone; S/PDIF (optical)	24-bit, 44.1kHz and 48 kHz sampling rates; USB powered		$375
0	N/A	N/A	N/A	Yes	3/3	1/4" line I/O; headphone; S/PDIF (coax, optical)	24-bit, 44.1kHz and 48 kHz sampling rates		$850
0	N/A	N/A	N/A	Yes	3/90	RCA line I/O; headphone; S/PDIF (coax, optical)	Audio Capture: 2-channel, 24-bit A/D/A; 44.1 and 48 kHz sampling rates; (2) MIDI I/O		$1,050
Filter CV input	256/24	900,000	16/16 swing	No	2/17	(2) 1/4"	True analog synthesis; 256 remixes of each pattern; realtime editing while playing; CV/Gate outputs; ext audio input		TBA
(2) assignable pedal and switches	3 motion sequences	16 steps	4; 4T; 8; 8T; 16; 16T/swing (Arp)	Yes	2/7	(2) 1/4"	Many knobs; mic input; 16-band vocoder; 3-part motion sequencer; DW-8000 (DWGS) waveforms		$750
0	N/A	N/A	N/A	Yes	8/102 inserts; 89 master; 3-band stereo EQ	(6) 1/4" outs; S/PDIF optical out	Riff Audition (play a sound from the panel); RPPR (Pattern recording & playback); 2 RU size	MOSS (6-voice physical modeling); SCSI; ADAT output	$2,500
0	N/A	N/A	N/A	No	1/8	(2) 1/4" stereo; headphone	Contains same basic factory presets as the PC2 series		$449
(4) knobs	N/A	N/A	N/A	Yes	2/172	(2) 1/4" TRS; AES/EBU/S/PDIF; RCA; headphones	Triple strike stereo grand piano; KB-3 tone wheel modeled organ mode; Flash ROM upgradeable OS	Polyphony/orchestral/GM/vintage keyboard expansion cards	$1,415
(4) switch pedal; (2) cc pedal; breath controller	32/768	60,000-180,000 notes	Groove; reference; swing; shift	Yes	5/480	(10) 1/4" TRS; AES/EBU; S/PDIF XLR; KDS	Reads samples from Akai, Roland Ensoniq, AIFF, Wave; Flash ROM upgradeable OS RAM-Tracks	128 MB sample RAM; ROM for various instruments	$3,490/$4,000
Config-dependent	N/A	N/A	N/A	No	Depends on configuration	Depends on configuration	All-vacuum-tube synthesizer modules; 100% analog; 6 different modules avail.		$399 and up
(1) footswitch	5/24	20,000 events	N/A	No	3/17	(4) RCA	Full synth features on drum sounds; 2 audio inputs	Sound expansions for drums and synth sounds	$899

SYNTHESIZER & SAMPLER MODULES

MANUFACTURER	MODEL	POLYPHONY / MULTITIMBRAL PARTS	WAVEFORM MEMROY ROM / RAM	FILTER TYPES / RESONANCE	SINGLE PROGRAMS ROM / RAM	MULTITIMBRAL PERFORMANCES ROM / RAM	PORTAMENTO	GM / GS / XG COMPATIBLE	BUILT-IN COMPUTER INTERFACE / TYPE	DISK DRIVE TYPE
Quasimidi	Polymorph	16/4	N/A	24 dB LP; +12 dB HP	0/128	0/64	Yes	N/N/N	No	N/A
Red Sound Systems	Dark Star XP2	8/5	N/A	LP; HP; BP; notch/Y	0/200	5/5	Yes	N/N/N	No	N/A
Red Sound Systems	eleVAta	16/8	N/A	LP; HP; BP; notch/Y	0/200	8/8	Yes	N/N/N	No	N/A
Roland	SH-32	32/4	N/A	LP; BP; HP; Peak/Y	128/128	0/64	Yes	N/N/N	No	N/A
Roland	SP-505 Groove Sampling Workstation	8/4	4/4 expandable	LP/Y to 128 MC2	250/256	100	No	N/N/N	No	Smart Media
Roland	SP-808 Exemix-studio	4/0	250 RAM cached from disk	HP; LP; BP	0/1,024	N/A	No	N/N/N	No	ZIP 250 MB (2x)
Roland	VK-8M	Full/3	Tonewheel mod x3	N/A	0/36	0/36	No	N/N/N	No	N/A
Roland	VP-9000	6/6	8 (exp to 136)	LP/Y	0/1,024	0/1	Yes	N/N/N	No	ZIP 250 MB
Roland	XV-2020	64/16	64/0	6/Y	768/128	64/64	Yes	Y/N/N	Yes/USB	N/A
Roland	XV-5050	64/16	64/0	6/Y	1,024/128	64/64	Yes	Y/N/N	Yes/USB	N/A
Roland	XV-5080	128/32	64 (exp to 512)/0	LP; BP; HP; peaking/Y	1,152/128	64/64	Yes	Y/N/N	No	128 MB SmartMedia; SCSI
Roland	VariOS	14/6	0/46	N/A	1/1	N/A	Yes	N/N/N	Yes/USB	PC card
Roland	Fantom-XR	128/16	1,480/128	6/Y	1,280/256	64/64	Yes	Y/N/N	Yes/USB	PC card
Roland	DC-5M DisCover-5 Module	64/19	N/A	LP/Y	1,422	0/128	Yes	Y/Y/N	N	3.5"FDD; SmartMedia
Studio Electronics	ATC-1	Monophonic	N/A	Moog 24 dB	0/512	0	Yes	N/N/N	No	N/A
Studio Electronics	ATCX-QFS	Monophonic	N/A	4 classic/Y	0/512	N/A	Yes	N/N/N	No	N/A
Studio Electronics	SE-1	Monophonic	N/A	12 dB LP; BP Moog 24 dB	0/198	0	Yes	N/N/N	No	N/A
Studio Electronics	SE-1X	Monophonic	N/A	SEM 12 dB; Moog 24 dB/Y	396/396	N/A	Yes	N/N/N	No	N/A
Studio Electronics	Omega 2	2/2	N/A	12 dB LP, BP, HP, BR; Moog 24 dB/Y	256/256	0/128	Yes	N/N/N	No	N/A
Studio Electronics	Omega 8	8/8	N/A	12 dB LP, BP, HP, BR; Moog 24 dB/Y	256/256	0/128	Yes	N/N/N	No	N/A
Studiologic/Fatar	Blue Chip Baby B Virtual Tonewheel Drawbar Module	24/3	N/A	N/A	99/99	N/A	No	N/N/N	No	N/A
Studiologic/Fatar	Blue Chip OX-7 Virtual Tonewheel Drawbar Module	24/3	N/A	N/A	99/99	N/A	No	N/N/N	No	N/A
Synthesis Technology	MOTM Analog Modular Synthesizer	1-4	N/A	LP; HP; BP/Y	N/A	N/A	Yes	N/N/N	No	N/A
Vermona	Mars	1/1	N/A	LP/Y	128	0	Yes	N/N/N	No	N/A
Vermona	Perfourmer	4	N/A	LP/Y	0	N/A	Yes	N/N/N	No	N/A
Voce	Electric Piano	32/3	N/A	BP/Y	32/0	3/0	No	N/N/N	No	N/A
Voce	Micro B II	32/3	N/A	HP; LP/Y	36/0	3/0	No	N/N/N	No	N/A
Voce	V5+	Full/3	N/A	N/A	0/7	0/3	No	N/N/N	No	N/A
Wiard Synthesizer	Wiard Modular System	1/1	N/A	Multiple/Y	0	N/A	No	N/N/N	No	N/A
Yamaha	Motif Rack	128	85/0	(21) LP; HP; BP; N/Y	640/256	N/A	Yes	Y/N/N	Yes/USB	N/A

# AND TYPE OF CONTROLLER INPUTS	# OF SEQUENCER TRACKS/PPQN	SEQUENCER MEMORY	TYPES OF QUANTIZATION	ARPEGGIATOR	# OF EFFECTS PROCESSORS/EFFECTS	# OF AUDIO OUTPUTS/TYPE	SPECIAL FEATURES	OPTIONS	PRICE
0	1/4	N/A	N/A	No	1/16	4	Analog-style sequencer; AES synthesis; 2 audio inputs		$1,199
2	N/A	N/A	N/A	Yes	N/A	(4) 1/4"	Joystick controller; virtual analog	Vocoder EPROM	$399
2	N/A	N/A	N/A	Yes	1/4	(6) 1/4"	Joystick control; analog modeling synth	Vocoder EPROM	$699
(1) foot switch	N/A	N/A	16T (Arp)	Yes	2/45	(2) 1/4"	Sub osc; ring mod; osc sync; chord memory		$595
(1) pedal	1/4	15,000 events	8; 4 w/swing	No	1/26	(2) RCA	S/PDIF input; chop function; pitch	BPM adjust	$395
(6) assign knobs; D-Beam	1/8	N/A	Grid	No	1/149	(4) RCA	D-beam; COSM effects (incl. guitar amps, microphone modeling)	SP-808-OP1; SP-808-OP2 expansion boards	$1,695
(1) pedal	N/A	N/A	N/A	No	3/6	(2) 1/4"	D-beam; (2) 1/4" audio inputs; active expression	BKT-8 mounting bracket	$995
0	N/A	N/A	N/A	No	3/40	(6) 1/4"	Variphrase processsing	DR-10/ DR-20	$3,295
MIDI	N/A	N/A	N/A	No	3/50	(2) 1/4"; (2) RCA; 1/4" phones	Compact, expandable MIDI sound module with professional sounds	SRX Series expansion boards	$695
MIDI	N/A	N/A	N/A	No	6/99	(4) 1/4"; S/PDIF coaxial; optical	(4) 1/4"; (2) S/PDIF; (2) SRX Slotz Editor software; (2) 24-bit S/PDIF outs	SRX Series expansion boards	$995
0	N/A	N/A	N/A	No	5/96	(4) 1/4"	Word clock; R-BUS; supports Akai, Roland, AIFF, WAV libraries	SmartMedia; SCSI CD-R; SCSI HD or removable media	$2,495
MIDI	N/A	N/A	N/A	No	3/50	(4)1/4"; S/PDIF coaxial	Realtime manipulation of audio, MIDI, software instruments		$1,495
MIDI	N/A	N/A	N/A	Yes	6/86	(4)1/4"; S/PDIF coaxial	"Giga-Module"; sampling and synthesis in a 1U rack	SRX Series expansion boards	$1,595
MIDI; footswitch; footpedal	N/A	99,999 songs on card	N/A	No	4/94	(4)1/4"; (2) phones	Real-time SMF manipulation; vocoder; vocal harmonist	SmartMedia; DP-2/DP-8; EV-5	$1,695
CV/gate I/O	N/A	N/A	N/A	No	N/A	(1) 1/4"	2 LFOs; 3 envelopes; ext in; plug in filters ; 2 VCOs per voice	Additional filter cartridges: SEM,303,2600	$1,099
External audio; ring mod	N/A	N/A	N/A	No	N/A	1/4"	Quad filter system-mini, SEM, 303, 2600; 2 VCOs; 2 LFOs; 3 envelopes; AFM; ring mod; distortion	Available w/mini filter only ($1,195)	$1,595
0	N/A	N/A	N/A	No	N/A	(1) 1/4"	3 LFOs, 4 envelopes; ring mod;osc sync; 3 VCOs per voice	External input	$1,699
External audio	N/A	N/A	N/A	No	N/A	1/4"	3 VCOs; 3 LFOs; 4 envelopes; ring mod; OSC sync; noise generator	Upgrade SE-1 to SE1x ($379)	$1,799
(1) env following audio in per voice	N/A	N/A	N/A	Yes	N/A	(2) 1/4" TRS; (3) 1/4"	2 VCOs; 3 LFOs; 3 multi stage env.; sub OSC; OSC sync; AFM; noise generator per stereo voice	2 additional filter slots per voice currently available: 303, 2600	$2,295
External audio	N/A	N/A	N/A	Yes	N/A	(8) 1/4" TRS; (3) 1/4"	2 VCOs; sub OSC; 3 LFOs; 3 multi stage envelopes; OSC sync; AFM; noise generator per stereo voice	2 additional filter slots per voice currently available: 303, 2600	$5,295
0	N/A	N/A	N/A	No	1/6	(2) 1/4"	Drawbars; rotorsound simulator	VP-26 pedal $39.95; PS-10 footswitch $18	$895
0	N/A	N/A	N/A	No	1/6	(2) 1/4"	Drawbars; rotorsound simulator	VP-26 pedal $39;PS-10 footswitch $18	$1,595
(2) CV; pedal	N/A	N/A	N/A	No	2/4	Multiple 1/4"	5U tall; fits standard studio racks; 18 different module types (VCO, VCF, etc.)		$89-$499
(1) pedal	N/A	N/A	N/A	No	N/A	(1) 1/4"		Mars DAF1 rack controller for multi-mode filter	$595
N/A	N/A	N/A	N/A	No	N/A	(6) 1/4"	Real analog synth; individual outs, stereo outs; FM synthesis; external inputs		$995
0	N/A	N/A	N/A	No	1/4	(2) 1/4"	Digital model-based with analog effects		$579
0	N/A	N/A	N/A	No	1/4	(2) 1/4"	Half-rack organ simulator	Spin II rotary speaker simulator	$579
0	N/A	N/A	N/A	No	1/4	(1) 1/4"	Drawbar organ synthesizer	Spin II rotary speaker simulator	$1,195
0	N/A	N/A	N/A	No	N/A	N/A	Complete modular system	Built-to-order; several modules available.	$2,999 and up
N/A	N/A	N/A	N/A	Yes	10/123	(4) 1/4"	Modular synthesis plug-in system	2 PLG series expansions	$1,295

SYNCHRONIZERS

MANUFACTURER	PRODUCT	SMPTE	JAM SYNC	FREEWHEELING	MTC/MMC	SPECIAL FEATURES	PRICE
Aardvark	AardSync II	No	No	No	N/N	Ultra low-jitter master clock, 96 kHz, 4 WC, 2x WC, 256 ; AES/EBU; video blackburst lock	$1,795
Aardvark	Sync DA-Word Clock Distribution Amp	No	No	No	N/N	Generates word clock from AES/EBU; 6 word clock outputs; supports Digidesign 256 superclock	$845
Apogee Electronics	Big Ben	No	No	No	N/N	Apogee's C777 clock technology; format conversion; X-FireWire expansion card; X-Video expansion card; termination sensing	$1,495
Brainstorm	SA-1	Yes	No	No	N/N	Displays time code format, position; prints error list	$949
Brainstorm	SR-1	Yes	Yes	Yes	Y/Y	Recovers, reshapes time code; level control	$239
Brainstorm	SR 3	Yes	Yes	Yes	N/N	Repairs and generates time code, video reference, or internal	$699
Brainstorm	SR-15 Distripalyzer	Yes	Yes	Yes	N/N	SMPTE analyzer, distributor, reshaper, error printer; video reference	$1,599
Brainstorm	SR-26	Yes	Yes	Yes	Y/Y	Distributes 2 inputs to 6 outputs; refresh, reshape, amplify time code	$549
Brainstorm	SR-8000	Yes	Yes	Yes	N/Y	Remote control for up to 8 machines; MIDI, 9-pin 100 locators; shuttle; track arming	$1,999
Digidesign	SYNC I/O	Yes	Yes	Yes	Chases LTC directly	Low-jitter clock design; word clock I/O up to 192 kHz accurate; supports industry-standard pull-up/pull-down rates for film/video; 9-pin dual device control	$2,095
JL Cooper	Datasync 2	Yes	Yes	Yes	Y/Y	ADAT sync to MIDI time code or MIDI clock	$300
JL Cooper	PPS-2	Yes	Yes	Yes	Y/N	Allows MIDI clock sequencers like Triton Kurzweil to sync to recorders/tape HD; software, firmware options (available)	$170
Lucid	GENx6	No	No	No	N/N	Sample clock source that also functions as a 1x6 clock distribution amplifier	$499
Lucid	GENx6-96	No	No	No	N/N	Sample clock source that also functions as a 1x6 clock distribution amplifier	$699
Lucid	LTC; VITC; MTC; 24, 25, 29.97, 29.97d, 30, 30d	Yes	Yes	No	Y/Y	Converts Song Pointer sync (Smart FSK) to MIDI clock	$135
MOTU	Digital Timepiece	Yes	Yes	Yes	Y/Y	Universal synchronizer; MTC; Sony 9-pin; video, ADAT, DA-88, S/PDIF sync; 0.1% pull-up/down sample rates (44.1/48 kHz)	$995
Rosendahl	BIF	Yes	Yes	Yes	Y/Y	Positional LTC and MTC full/MMC locate in jog/shuttle; LTC and MTC gen from bi-phase signals	$799
Rosendahl	LIF	Yes	Yes	Yes	Y/Y	Generates LTC, MTC from LANC-embedded code; positional LTC and MTC full/MMC locate in jog/shuttle	$749
Rosendahl	MIF3	Yes	Yes	Yes	Y/N	Reclocks LTC for stable output from MTC input; LTC stationary frame output for MTC full frame	$549
Rosendahl	Nanoclocks	No	No	No	N/N	Master word clock generator/distributor w/12 word clock outputs, 2 transformer-isolated inputs; 44.1-192 kHz and super clock	$1,299
Rosendahl	Nanosync V3	Yes	No	No	N/N	Low-jitter master clock generator; S/PDIF, AES, (6) word/super clock outputs; (4) video outputs; video sync generator	$1,599
Rosendahl	WIF2	Yes	Yes	Yes	Y/N	Word clock/superclock out from LTC or video input; film/video pull up/down; MTC out for VITC jog/shuttle	$799
Steinberg	Steinberg Time Lock Pro	Yes	Yes	Yes	Y/Y	Word clock or Digidesign superclock lockup less than 0.4 seconds	$999

From page 131, Proper Monitor Placement

from walls, which (along with the floor and ceiling) have a tendency to magnify bass frequencies. Next, place your speakers at equal height from the floor in your approximated positions. If possible, the speaker height should correspond to your sitting height (or at least be pointed to that height).

Angle the speakers at approximately 60 degrees toward the median plane. Finally, sit down again, use the tape measure, and precisely position the speakers to achieve the equilateral triangle setup. Now listen to some music and find out if you hear the phantom image. Try moving back and forth along the median plane and moving your head side-to-side. Can you hear the difference? If you think you've placed your speakers correctly but still don't hear the phantom image, first make sure the balance control on your output device is centered.

If the sound is "hollow" or strange when you're in the listening position, your speakers may be out of phase. Fortunately, this is an easy fix. If you're running speakers through an amplifier with positive (+) and negative (–) connections, make sure your speaker wire is attached correctly; that is, negative connector on the amp to negative connector on the speaker, and positive to positive. If this doesn't fix the problem, your speaker cables could be wired out of phase, so try different wires. Correctly connecting your speakers with properly wired cables should eliminate speaker phase problems.

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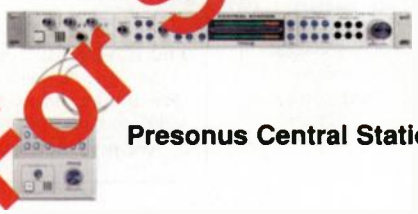
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Editorial, Advertising, and Business Offices: 6400 Hollis St., Suite 12, Emeryville, CA 94608, USA. 510-653-3307.

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