How To Buy An E-Kit

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A DRUM! MINIBOOK

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- V-Drums Tutor
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So, you’ve thought about it and finally decided to buy an electronic drum kit.

Now you face what could be a daunting task: choosing what to buy. There are a dozen companies making electronic drums, from leading musical instrument companies to small boutique makers. Some kits are built strictly for practice and others for touring the world and excelling in the studio. There are hybrid kits that mix electronics and acoustic drums, kits with outlandish-looking control interfaces, and all kinds of Frankensteined homemade kits. While consumers should celebrate the fact that they’ve never had so many models to choose from, it also can be a challenge.

The perfect e-kit for one player might be a waste of money for another. You may want to use one in a professional recording studio, for services at your church, in your apartment, or on tour. You might be a pro who needs all available bells and whistles, or a beginner in search of the least expensive but useful machine you can find, or somewhere in between those two extremes.

This book will make buying decisions easier and give you the confidence to understand electronic drums and make the best possible choice for you and your music.

A beginner or practice kit, such as this TD-1K model, typically will offer fewer pads or cymbals, and fewer sound options than more expensive models. As a buyer you should insist on accurate triggering of sound and good playability.
How To Buy An E-Kit

**FIG. 1 Signal chain of an e-kit**

**E-Kit “Brain”**

- **INPUTS**
  - USB
  - MIDI
  - Stereo/Mono

- **OUTPUTS**
  - MIDI Out to Computer
  - Headphones
  - Speakers
  - Monitors
  - Mixers
  - Recording Devices

Electronic signal from e-drum kit or external triggers

Drum module (“Brain”)

Drum pads

Snare drum

Hi-hats

Pedal

Rack

Bass drum pad

Clamp

Cymbals

Computer
Six Reasons To Buy An E-Kit

An e-kit isn’t as noisy as an acoustic kit (a-kit). It produces less impact sound and for many players — beginners to professionals alike — the ability to practice quietly is a driving factor for the purchase of an e-kit. But there are many other crucial reasons to choose an e-kit, including price, versatility, portability, recording capability, educational features, and playability.

1. VERSATILITY If you’re recording, playing in clubs, or practicing a number of different musical styles, a single e-kit can deliver all the sounds you need. E-kits come standard with a series of drum and percussion sounds for different styles of music, such as rock, jazz, orchestral, electronic, contemporary, or old school. And with MIDI (musical instrument digital interface) or USB connectivity and your computer, you can literally have an entire sonic universe at your fingertips. In addition to playing sounds that are stored on your computer, more advanced models will let you load sounds from your computer onto your e-kit.

2. PORTABILITY If you’re in the market for a kit you can pack up and easily move, the portability of an e-kit might be a deciding factor. They are less bulky, and considerably lighter than comparable acoustic drums.

3. PRICE A low-, mid-, or high-end e-kit is often less expensive than a comparable set of acoustic drums, though this can vary with your requirements. E-kits targeted at beginners can run about $500. Intermediate-level kits often range up to $2,000. And top-of-the-line e-kits can cost around $7,000 or more.

FIG. 2 Roland’s battery-powered TM–2 Trigger Module
4. **RECORDING** If you have a home studio, getting great drum recordings into your DAW (digital audio workstation) software is ridiculously fast and easy with an e-kit. It eliminates microphones, stands, cables, preamps, and extraneous background sounds.

5. **EDUCATIONAL FEATURES** E-kits often have a strong, built-in educational focus. Metronomes, play-along songs, real-time recording, and even built-in rhythmic analysis are available features on many e-kits. And here's another reason e-kits are a good musical investment: The huge variety of sonic colors often inspires musical creativity. As an artist, colors and creativity are important.

6. **PLAYABILITY** For some, an e-kit is actually much easier to play than an a-kit. Pad position, pad response, dynamic control, output volume, and even the ability to "sculpt" your tone quality can all contribute to an improved facility, stamina, and efficiency to your playing.

Remember that e-kits are not replacements for acoustic kits. They are essentially another type of percussion instrument; one with nearly unlimited sonic potential. Think of a keyboard synth when compared to a piano, or an electric guitar's relation to an acoustic guitar. The electronic instruments may be cousins to their acoustic counterparts, but they feel different, they play different, and they sound different. And that difference is a positive thing!

Whatever your reason, the experience of choosing the right kit for your needs should be enjoyable and exciting. There are two main components to every e-kit: The physical hardware and the software that together create the magic that is the e-kit.

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**FIG. 3** E-drums can come in a variety of shapes and sizes. The shallow shells and finish on these pads evoke the beauty of an acoustic kit.
The Hardware

The basic hardware of an e-kit consists of the pads, or playing surfaces of the e-kit; a rack or other hardware used to set up the kit, including the pedals; and the brain, or drum module. Typically the brain is a box that combines all the physical connections, the human interface, the sounds, and the programming that ties it all together into a complete instrument.

SURFACES Electronic drum and cymbal pads work by sensing vibrations caused by the stick striking their surface. Nearly all pads use at least one piezo-electric transducer that converts those vibrations into voltages based on the strength of the stroke. (Transducers are also called “triggers,” since they trigger a sound.) As you strike the pad harder, a higher voltage is produced. The electronic signal is sent to the kit’s brain where the software then creates and outputs a sound. That’s the simple description, at least.

RESPONSE & FEEL MATTER Today’s best e-kits incorporate sophisticated electronics, critical design elements, state-of-the-art pad materials, and clever programming to create surfaces that make the playing experience pleasurable. In the early days of electronic percussion, playing surfaces were constructed of rigid plastic over a solid surface (imagine playing on a Formica tabletop). Today’s pads are made of various types and layers of rubber or foam-like materials, or use a mesh head (a Roland patent) to provide a more natural playing surface. Some rubber pads are harder than others and can produce a stronger acoustic sound when struck with a stick. Mesh heads are adjustable to offer a more robust bounce if desired. The pad you choose will depend on the type of response and feel you desire.
CYMBALS Cymbal triggers are made with rubber, plastic, or even metal surfaces. While drum pads are nearly always round, cymbal pads typically are manufactured in round and pie-wedge shapes. As with drum pads, advances in design have resulted in cymbal pads that feel natural and respond in a realistic manner.

HOW MANY ZONES? E-drum pads can have one or more transducers under the surface, enabling them to make different sounds depending on where you hit the pad. Simple single-zone surfaces have a single piezo transducer and will sense vibration over the entire surface. For this reason, a single-zone pad can’t sense the position of your stroke. Depending on the placement of the piezo and the technology behind the pad’s construction, you may find “hot spots” and “dead zones” on an inexpensive single-trigger pad. However, single-zone pads are common for bass drums, as there is only one striking point. Well-made single-zone pads should have a pretty smooth, even response over their entire playing surface.

A pad with multiple zones can better sense your stroke’s position. Stereo two-zone surfaces and three-zone pads are common on higher-end kits. These pads often incorporate a switch that helps to avoid crosstalk (playing one surface but triggering another surface, which is a bad thing), while still offering dynamic control and sensitivity. For example, an e-drum can have a piezo transducer for the head and a switch for the hoop. If the rim switch is triggered, the software inside the brain uses the signal from the piezo to determine the strength of the rim stroke. Some three-way pads use a single piezo with two switches.

Cymbal pads are often two-zone, and will sense strokes at the bow of the cymbal and the bell. Three-zone cymbal pads can also sense the edge of the pad. One of the

FIG. 5 Triggers offer a great option for drummers who want to integrate electronics into their setups without compromising on the feel and response of acoustic drums.
zones might be used to “choke” the sound when you grab the edge of the cymbal with your hand.

Electronic hi-hats consist of two elements: the pad surface you play, and a pedal mechanism that determines if the sound is to be open or closed. The least expensive models offer only those two options, but high-end models may come with two pads that act as the top and bottom cymbals of a hi-hat pair. More sophisticated hi-hat mechanisms can sense numerous positions between the full-open and full-closed positions (as well as the amount of pressure on a closed pedal) and respond in an acoustic-like manner, even when playing foot splashes (stomping on the pedal to close the hi-hats, then lifting your foot off quickly to create a shimmering, crashy cymbal sound).

Keep in mind that any sound can be played on any part of your e-kit. You can trigger a cymbal from the drum pad, or place a timpani (or even a piano chord) on your kick pedal.

**FIG. 6** Roland TD1K cymbals feature separate zones on the pad’s bow and edge, and can be choked for quick accents.

In the acoustic world, the sound of your drums and cymbals are your personal identity as a musician. The same holds true for e-kits.

**RACKS** Racks, rather than dedicated drum and cymbal stands, are the main method of holding e-drums and e-cymbals in place while you play. Racks are made with either metal or plastic pipes and fittings. Metal pipes are stronger and metal fittings are much less likely to strip or break. The other side of the
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coin is that plastic racks can often be strong enough as well as light. The key factors are stability and the flexibility to put the instruments right where you want them, and keep them there.

Position is important. After all, a keyboard synthesizer and a piano usually have the same size keys. If you play acoustic drums, you may find it important for your e-kit’s setup (both drums and cymbals) to be configured as closely as possible to your a-kit. If you don’t have an acoustic kit, you’ll still want to make certain your instruments are in a position that provides both playing comfort and logical ergonomics.

Some kits have bass drum and hi-hat pads integrated into the rack. Others (notably more expensive kits) have freestanding hi-hats and bass drum towers. Depending on your own physical needs, being able to move pads to suit your feel can make a huge difference in your playing. While this might seem like a minor point, trying to play an uncomfortable or rickety setup will drive you crazy over the long term. It pays to take the time to test this out at your local music store.

FIG. 7 Racks come in all shapes and sizes and can be made of metal or hard plastics. They enable you to configure your e-kit for maximum play-ability and comfort.
The Software

The brain (aka “sound module” or “drum module”) is the control box of your e-drum setup. The internal instruction set of the brain controls everything, which is why it’s called the brain. It includes inputs for the cables connecting your drum pads; adjustments to the input parameters of each trigger; audio inputs for external sound sources like an iPod; libraries of drum, percussion, and other sounds in software; effects such as reverb and

FIG. 8 TD-25 sound module. Drum “brains” such as this come preloaded with a number of kits that are high-quality samples recorded on great acoustic drums. The drum module has inputs for the triggers on the pads and outputs to send the sounds to speakers, headphones, computers, or other devices.
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delay that you can apply to the sounds; kit presets (with sounds by genre such as rock, jazz, and blues); programming capability; and audio outputs and other connections such as MIDI and USB.

How do you know which of these features are most important? Depending on your needs, some will be vitally important to you while others won’t.

Are you going to use your e-kit for recording or performing in a large venue? Then you simply must have the ability to send the board signals from individual audio outputs. If your recording is fully in the digital domain, MIDI and/or USB connections are a must. Are you a newbie just dipping your toes into the electronic waters? Then ease of use and a limited feature set will likely be your best route. Are you a control freak who needs to tweak every possible aspect of your sound? Then a comprehensive set of editing features will be required.

If you want to use your own samples for practice or gigging, you’ll need a brain that supports this, either by creating samples from scratch or more likely by loading samples from a computer or USB stick drive. If you need custom samples, make sure available memory and the maximum sample time on the brain is enough to cover your needs, now and possibly in the future.

**KITS & SOUNDS**

Electronic drum sounds are created by sampling (literally recording) acoustic drum, cymbal, and hand percussion sounds. The samples in your drum brain are typically stored in “kits.” When you scroll through the kits available in your e-drum brain, you’ll notice kits named for genres such as rock, jazz, or funk, or with names such as “Classic Maple Kit.” In that case there’s a very good chance that the sounds you will be playing are the exact sounds of a maple kit recorded in a studio environment. They may even be sounds from a kit that was used on dozens of hit records. Likewise, when you program that 18” crash cymbal, you’ll be playing a high-quality recording of that particular cymbal.

Depending on which model e-kit you purchase, it may come with a number of kits, ranging from ten up to hundreds. The number of kits you might have access to is limited only by the kit memory in the drum brain. If you’re going to use your e-kit to play gigs or for recording, having a large number of user kits (kits you can personally program and store) can be very important. On the other hand, if you’re primarily using your e-kit for your own individual technical practice, a single beautiful sounding kit may be all you need (though that’s unlikely).

While the number of onboard kits is important, nothing is more critical than great onboard sounds. You’ll want killer drum, cymbal, percussion, effect, and even synth sounds. The number and quality of the sounds you have will determine the versatility of your e-kit. More sophisticated users often store and play drum sounds from their computer or other dedicated hardware.

In the acoustic world, the sound of your drums and cymbals are your personal identity as a musician. The same holds true for e-kits. On any e-kit, however, it’s likely that you’ll find some sounds that you relate to and some you don’t. One snare drum might take your breath away while another leaves you totally cold. It’s worth taking the time to listen to a brain’s complete sound set.

All modules let the user balance the volume of individual sounds within the kit, as well as the kit as a whole. Some make this easy by having mixer-like faders (sliders) or knobs right on the front panel, while others might make you dive deep into the operating system to make changes. The more options the brain offers for fine control of your sound, the longer it will take to learn how to use it.

All brains also have the ability to place each sound somewhere within the stereo field. Better instruments may offer more than 100 positions between hard left and hard right, giving you great control. Less expensive kits may only offer a dozen or so. Maybe this matters to you, maybe it doesn’t. But it’s a
fast and simple way to see how much control the machine’s designers have tried to give to the artist.

Every e-kit offers some sort of drum tuning. By adjusting this control, you’ll raise or lower the pitch of that particular instrument. Full-featured brains offer a huge tuning range that can turn a single crash cymbal into a huge gong or a cricket chirp. Other brains offer a smaller tuning range — sometimes even less than an octave. It’s up to you to determine if tuning extremes are important.

Better e-kit brains create drum sounds by combining or “multisampling” instruments. For example, a basic snare sound could comprise two, eight, or more samples that were created by recording a drum at a number of different dynamic levels. The brain will fire different samples based on the strength of the trigger signal. Soft playing will fire samples that were recorded by hitting a drum softly, while louder strokes call up more aggressively recorded drums. Sometimes these transitions between samples are smooth and organic. Other times, they are stair-stepped and sound false.

**AUDIO TRICKS** Besides having multisamples for individual instruments, many brains are capable of a large number of audio tricks that can be used to customize your sounds and your playing. Layering or stacking is a popular feature that fires multiple instruments with a single stroke. Do you like the idea of having your snare drum layered with a clap, cowbell, and/or tambourine? Then the layering feature is a must. Another popular capability is alternating instruments. When pads are programmed to alternate sounds, each successive stroke fires a predetermined ordering of instruments. It’s not uncommon to have a brain alternate among four or more different sounds. You can often program the brain so that totally different sounds come in and out of the mix depending of the strength of your stroke. For example, a ride cymbal becomes a crash cymbal when played at the top end of your dynamic spectrum.

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**EFFECTS** Artists don’t survive on raw sounds alone. All e-kits have the ability to add various types of sonic shape shifting. Maybe it’s nothing more than a basic treble and bass control. Or maybe it’s a multiband parametric EQ (equalizer) that lets you zoom into your sound with microscopic, surgical precision.

Effect sections include everything from a simple reverb to scores of different transformations such as an LFO (low-frequency oscillator), delays, flangers, echoes, ping-pong, or chorus effects. It’s not uncommon for more expensive brains to offer what is essentially a very sophisticated mixing console complete with multiple sends and returns, individual as well as master effects, and a versatile user-controlled signal path.

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The Gestalt

The hardware and software form a symbiotic relationship that should come together to give you the playing experience you’re looking for. However, the perfect pairing for you likely won’t come right out of the box. Be prepared
to take some time getting to know the kit and letting the kit get to know you.

Each e-kit has a number of adjustments designed to help manipulate the relationship between you and your instrument. You want a kit that allows you to adjust the pad type, threshold, crosstalk, mask time, trigger gain, and sensitivity, as well as ever-important velocity curves. Better kits will have more of these features and ultimately do a better job of allowing the kit to adjust to you rather than you having to adjust to the kit.

5. Play at your loudest normal dynamic to see if the pads max out before you do. Does strong playing cause false triggering or crosstalk? Does the rack give you a sense of solidity and security?

6. Play both open and closed rolls to see how all the pads track them.

7. Play slow crescendos and diminuendos to see how the instruments respond to your dynamic sensitivity and to hear how dynamics change the tonal characteristics of the sound. Are you hearing the same sound just getting louder and softer or does the quality change? Are changes smooth or “lumpy”?

8. Pay particular attention to the playability of the hi-hat system and cymbals. For many players, cymbals define their voice. Hi-hats can be very expressive so you should be happy with the tracking, sound, and how they “play.”

9. Take the time to go through the sound set and determine if there is a slant towards a particular style (such as urban, jazz, and rock) or a particular classification of sounds (like percussion, symphonic, and special effects).

10. Enjoy the experience and the adventure!

Extra Considerations

Support Depending on your level of expertise, you may find a group of likeminded musicians a huge help from time to time. Several folks have posted instructional videos for name-brand kits on YouTube. There are also websites devoted to certain brands of e-kits. Yamaha has a website dedicated to its electronic drums (yamahadt.com) and Roland has three high-quality apps: V-Drums Friend Jam for
If you plan to play gigs with your e-kit, you’ll need amplification. A few e-drum companies manufacture amps or speaker systems specifically designed for use with e-kits.

Some are designed as monitors, while others are meant to be the main source in a small- to medium-size club. What you’re looking for is an amp/speaker combination that will sound great through the entire frequency spectrum — from chest-thumping kick drum samples to the transparent shimmer of cymbals. An amp designed for bass or guitar just can’t offer the full spectrum of natural sounds without coloring them for its own purposes. Instead, try a keyboard-specific amp with at least a 12” to 15” woofer and a separate high-frequency driver.

As you play, listen, and compare, realize that better e-kits are going to cost more. This really is a “get-what-you-pay-for” sort of endeavor. Maybe you can afford that Ferrari or Maserati, or maybe a machine like that would be overkill for your needs. Using this guide should help you get the best machine for you and your music.
Dynamic, Expressive Playability and Quick Customization

TD-25KV / TD25K

With the TD-25KV & TD-25K, serious drummers can tap into high-end V-Drums playability in a mid-level kit for home and studio. Equipped with a sound engine derived from the flagship TD-30, the TD-25KV & TD-25K deliver all the acclaimed expressiveness that makes Roland's top-line V-Drums the undisputed choice of pro players everywhere. A streamlined interface makes it easy to create personalized kits, while the built-in audio recording function lets you capture drum performances for evaluation and sharing. Other premium features include mesh-head pads for a natural feel, positional snare sensing for enhanced expression, and the VH-11 V-Hi-Hat for playing with authentic hi-hat techniques.

RolandUS.com/TD-25KV

Kick pedal & hi-hat stand not included.