



DOEPFER DARK ENERGY Mainstream Modular Synthesis Has Arrived

by Francis Preve

PROS

Massive sound. Audio-range LFOs. Snappiest envelopes we've ever heard. USB-to-CV conversion for controlling vintage synths via MIDI or from your DAW. Fully analog knob pots mean no encoding artifacts.

CONS

No preset memory. Configuring and using arpeggiator and advanced MIDI functions is extremely fiddly. LFO waveforms are limited to triangle and square. Mono audio output only.

INFO

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analoguehaven.com

Soft synths with great modulation

options often get compared to modular analog gear: "It's got tons of LFOs! More envelopes than you can shake a stick at!" But have you ever actually played a real modular synth? Have you experienced true voltage control with patch cables and no digital parameter encoding? Once you have, you get spoiled. If you haven't, it's probably because modulators can be esoteric and expensive: You need multiple modules to make familiar synth sounds, for one thing. So when Doepfer announced the Dark Energy — a self-contained baby modular, with real patch cables, voltage

control, USB, and MIDI — we thought it just might be the box that finally brings modular synthesis to the rest of the keyboard-playing world. In fact, it exceeded those expectations.

VOICE STRUCTURE

The Dark Energy's architecture is deceptively simple: A single VCO feeds a 24dB-per-octave lowpass filter, which in turn feeds a simple but clean VCA. Throw in one envelope and two LFOs, and to the casual observer, this seems like a very basic box. Nothing could be farther from the truth.



HANDS-ON

- 1 The oscillator blends a square wave with triangle and sawtooth options. To isolate either, turn the PW knob to a 0:100 ratio.
- 2 The 24dB-per-octave filter has a very Moog-like sound at low resonances.
- 3 Classic modular CV ins and outs, including VCO pitch, filter cutoff, pulse width, and LFO, are in this row of 1/8" mini jacks.
- 4 This 1/8" input lets you pump external audio through the filter and VCA. The mono audio output uses a 1/8" jack as well.
- 5 Dual LFOs work in low, medium, and high ranges, with maximum frequencies in kHz – well into the audio FM range.
- 6 ADSR envelope includes multiple speeds for super-snappy transients.

With a slew of control voltage and audio jacks on the front panel, a small array of MIDI-to-CV jacks on the back panel, and a real analog signal path, this synth can do tricks that even the hottest programmable analog synths can't quite touch. Why? For one thing, the LFOs and envelopes use entirely analog guts, delivering ranges and fine-tuning control that their digital counterparts simply can't. The trade-off is that you can't store presets, or sync modulation sources to the tempo of something else, but you can create sonic textures that are very unique and surprisingly organic. The Dark Energy *breathes*.

Oscillator. Octave range and tuning are both givens here, so let's delve into the VCO's niftier offerings. First up, the waveforms are a continuous blend of variable-width pulse wave combined with either sawtooth or triangle. With the saw/triangle switch in the off position, the pulse wave is soloed. But how do you hear the triangle or saw alone? Simply set the pulse to 100:0 or 0:100 by turning its width knob fully in either direction. This is a fantastic approach that should've been implemented in every synth since time immemorial, as it gives the oscillator far more tonal variety than other methods.

The pulse width can be modulated via either LFO 2 or the envelope for added animation, and with some medium-rate

NEED TO KNOW

Is it fully analog? Every component, from audio signal path to modulation, is completely analog, giving the Dark Energy a monster sound that virtual synths still can't equal.

What makes it modular? CV ins and outs let you interface it with other analog, voltage-controlled gear.

Can I play it from a MIDI keyboard? Yes. You can also sequence it from your computer via USB, and it can even act as a MIDI-to-CV interface for your other analog gear!

How does it compare to the Dave Smith Mopho? Moog Little Phatty? Unlike those, Dark Energy can't store presets, and has only one oscillator. On the other hand, its modular structure makes for utterly fresh and unique sounds.

Can it process audio? As an audio processing tool, the Dark Energy is extremely deep. In addition to CV ins and outs, an external audio input feeds the filter and VCA sections.

pulse width modulation, fat, chorus-y leads can be whipped up with a minimum of fuss. A frequency modulation knob allows either LFO 1 or the envelope to sweep the pitch for vibrato effects, dive bombs, or Kraftwerkian thwips.

Filter. The Dark Energy filter sounds really rich. It's said that the circuit is based on the Curtis chip, but there seems to be some other voodoo going on in here. With resonance at minimum, the results are creamy, with a very Moog-like low end warmth. This richness is fantastic for bass patches. Cranking the resonance all the way up gives the Dark Energy an eerily Roland TB-303-ish kind of feel: wet, squishy, and straight out of an early '90s rave.

There are two modulation knobs for the cutoff – exponential and linear – that make this VCF do far more than standard fare. Exponential modulation, which is Doepfer's term for the type of filter modulation found on most analog synths, can be applied from either LFO 2 or the envelope. This is the technique for creating

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Fig. 1. Four CV outs translate MIDI note info, pitch-bend, velocity, and one CC (assigned via the Learn button) into the analog world. That the MIDI info can come in from the USB port makes the Dark Energy a useful computer-to-analog-synth interface as well as a synth in its own right.

classic wah-wah or juicy envelope sweeps. At first, it seems a tad annoying that you can't apply both LFO and envelope modulation to the filter, then you glance at the row of jacks at the bottom, and realize that yes, you can. Remember, this is a baby modular synth!

The linear modulation knob controls the amount of FM applied from the VCO. I've always loved the warm complexity of analog FM, and this implementation doesn't disappoint. "Wait a minute," you ask, "doesn't FM mean you modulate one waveform with another? How can the Dark energy do it with only one oscillator?" Easy. If you set the filter's resonance to maximum, it self-oscillates, generating a sine wave – set the filter cutoff to track the keyboard, and you have an ideal carrier signal for FM. From there, you can use the VCO as the modulator, adjusting its frequency and waveform to generate everything from bells and chimes to ear-shearing nastiness.

Modulation. The modulation options really bring the Dark Energy to life. The two LFOs generate either a square or triangle wave, and affect specific components by default: LFO 1 modulates the oscillator and the amplifier, whereas LFO 2 controls pulse width and filter modulation. Here's where the modularity of this box comes into play. If you want to use LFO 1 to control the filter cutoff or pulse width, just grab a cable and patch it in. Unfortunately, there's not a similar option for LFO 2, but that's not a dealbreaker by a long shot.

The LFOs get a *lot* more interesting when you tinker with the range switch.

Each LFO has three modes: low, medium, and high. Low mode is standard synth fare, and great for sweeps, PWM, and vibrato. Medium mode takes the LFO rate into the lower audio range for FM and ring mod type effects. High mode is where the Dark Energy ratchets up its sonic palette beyond other analog synths we've heard. In high mode, the LFO rates can reach well into the kilohertz range, which means they're not just modulation sources, but oscillators in their own right! Don't believe me? Patch the output of LFO 1 into the external audio in and *listen* to it. We're a tad bummed that there's no way to have the LFO rate track the keyboard like a conventional oscillator, but I digress.

Applying multiple audio-rate LFOs to destinations like pulse width and filter cutoff results in patches that only a full-on modular (or a *really* sophisticated soft synth) can touch. In fact, while [renowned electronic music producer] Wolfgang Gartner and I were putting the Dark Energy through its paces at his studio, we came up with incredible talkbox vocal effects that Daft Punk would have been proud of!

Envelope. This is a standard attack-decay-sustain-release affair, with one crucial distinction: another low/medium/high switch. In low mode, the rates are slow enough to create long, evolving drones. In medium mode, it operates at speeds similar to most classic synths. But in high mode, the envelope is capable of absurdly tight transients that make percussive sounds, such as basses or things you'd use in a tech or electro arpeggio,

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truly pop. This makes the Dark Energy well-suited to analog drums and percolating bass.

INTERFACING

For slotting this synth into your rig, there are three options: USB, regular MIDI input, and of course, control voltage (CV). When driving the Dark Energy via USB, it will even convert MIDI information from your DAW to control voltages. Four CV outs replicate the information for note, pitchbend, velocity, and a single continuous controller that defaults to the mod wheel, but can be reassigned to any other CC via the Learn button (see Figure 1 on page 57). Using the included patch cables, you can easily plug the velocity CV out into the VCA in for velocity control of volume, then plug the mod wheel into the filter cutoff's CV in for performance control of sweeps and swells.

Since the note CV out adheres to the classic one-volt-per-octave standard, you can also use the Dark Energy to control vintage gear. I tested this with my beloved Roland SH-101 synth without a hitch, sending MIDI data from Ableton Live to the Dark Energy, then using its CV outputs to drive the SH-101. From there, I ran the SH-101 back into the Dark Energy's audio input, processing it through the Doepfer filters and envelopes, thus creating a hybrid modular synth from the two. True confession: This gave me goosebumps.

If you want to try this, note that some vintage synths, such as the Korg MS-20, don't use the volt-per-octave standard. You can still use the Dark Energy to control parameter changes, but full-on musical sequencing is just out of reach. So if you're planning to use the Dark Energy as the nerve center for a vintage rig, a little homework could save you a lot of headaches down the road.

IN USE

I spent a solid month living with the Dark Energy and never got bored with its sound. More importantly, this box was a source of inspiration every time I turned it on. The external audio inputs let me process and beef up the sound of other

vintage gear, like my Sequential Circuits Prelude and even my Yamaha TX81Z module, running them through the filters and using gratuitous amounts of audio-rate modulation with amazing results.

Until now, I'd been using my SH-101's internal sequencer for cycling riffs, but to be candid, slicing or looping the results was pretty darned tedious. Being able to directly sequence my 25-year-old piece of history from Ableton Live has added a slew of new colors to my studio palette. We'd known that the Dark Energy had this feature, but in practice, the results were nothing short of inspirational — a bit like running into a long-lost high school crush and discovering that you have even *more* in common now.

I was so jazzed about the box that I started calling my analog-addicted producer buddies and raving about its features and sound. After a day in the studio with the Dark Energy, Wolfgang Gartner said, "I got completely lost in this box and generated some of the coolest sounds and patterns I've ever heard. I *have* to get one!"

There's even an arpeggiator lurking within the Dark Energy, but to be candid, it's quite fiddly to configure, and with USB and MIDI control letting you play notes from a sequencer or keyboard, its inclusion isn't all that enticing. Still, it's nice to know it's there.

CONCLUSIONS

We're completely sold on the Doepfer Dark Energy. It's a perfect first synth for producers looking to get more deeply into analog. It's also an indispensable addition to studios that already have a few vintage or current analog synths laying around. If you're used to modern keyboards, the only thing you might miss is stereo output; more likely, you'll be having so much fun creating sounds that you won't care. The Dark Energy is utterly unique, completely useful, and so full of inspiration that I simply can't bear to part with it, so I'm purchasing my review unit. Doepfer has a Key Buy-winning hit on their hands, and considering how back-ordered this box is right now, you might want to get in line. You won't be disappointed. 

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