Therevox ET-5 Analogue Synthesizer

The ET-5 may have it roots deep in electronic musical history, but it's very much a modern instrument.

ROBIN BIGWOOD

Continuous-pitch electronic instruments like the Theremin and Ondes Martenot have traditionally been horribly difficult to master, repellently expensive, or both. And yet they have a certain exotic appeal, and an evocative musical quality that's hard to recreate by other means. Not to mention a huge potential for experimental use, and a formidable cultural provenance inextricably tied up with sci-fi soundtracks and psychedelia.

The ET series of instruments by Canadian company Therevox might be less well known, but they offer a distinctive take in this field. In a nutshell, a Therevox combines aspects of the Theremin (analogue tone production, continuous pitch) and the Ondes Martenot (pitch control via a mechanical finger ring, pressure-sensitive buttons), and adds additional, interesting features all of its own.

Phone Home

The ET-5 may be an unusual, mould-breaking instrument, but essentially it's not hard to describe. The synth signal path, which is fully analogue, is quite conventional: two oscillators into a single low-pass filter. The oscillators have minor differences in footage ranges, and osc 2 has a white-noise option in lieu of osc 1's narrow pulse, but otherwise can sound identical. Osc 2 can be offset by ±7 semitones, the square and pulse wave widths of both can be adjusted via patching (of which much more in just a moment), and there's a switch to sync osc 2 to 1.

Next in the signal path is a mono send-return loop intended for effects pedals, with quarter-inch sockets on the rear panel. A nice touch is that standard 9V pedals can also be powered by the ET-5, as long as they don't exceed 200mA current draw, and conveniently placed on the nearby blank area of the control panel. A front-panel knob applies gain to the return, and with no pedal connected it behaves as an overdrive/saturation stage, rather fine-sounding it turns out, with a red LED showing the intensity of the effect.

The ET-5's filter is an 18dB/octave low-pass with resonance, and as you might expect its character is mid way between squelchy 24dB and silky 12dB. The output feeds a vintage-character internal spring reverb (with maximum decay an opulent 10 seconds or so) that gets its own Blend/mix knob. Finally there's a volume knob for the single line-level 6.35mm TRS/TS output socket. The power supply, incidentally, is a substantial in-line brick with a 16V 2A AC output, and available in 110V and 230V versions.

From here on, things are much less conventional. Let's start with everything happening on and around what looks like a keyboard, but is what Therevox call a fingerboard.

To the left of it, two large wooden blocks are 'intensity keys', controlling the amplitude of oscillators 1 and 2 respectively, and essentially acting as real-time, manual envelope generators. The equivalent of what on an Ondes Martenot is called a 'touche d'intensité' or a 'lozenge', they're spring-loaded vertically and can be depressed into the casework about 10mm. Initial resistance is light, increasing with depth, and the action is both smooth and quick: they allow for long swells, but striking or tapping gives very fast, almost instantaneous, attacks and decays.

Visually a blend of unusual and familiar synth elements, with some decidedly retro styling, the ET-5 measures 812 x 266 x 88mm and weighs about 5.5kg. Using it in icy wastelands is not compulsory, nor recommended in fact.

The 30mm faders either side of the keys are 'holds'. They're not sprung, will stay put where you leave them, and have no predetermined function of their own. They're variable voltage sources, and do various things when you patch them in the ET-5's patchbay. With a standard 3.5mm TS Eurorack patch lead patched from Hold 1 to Vol 1, for example, the left hold will take over the role of its adjacent intensity key, breaking an internal normalled connection. Great for setting up drones, but you could just as easily patch the hold to PWM for static control of pulse width, or FX Mix to create a variable send level for the effects loop, which otherwise has no physical control of its own.

More about the fingerboard itself now. Conspicuously, it's marked with a black and white semitone layout reminiscent of a normal keyboard, spanning nearly four octaves. But these aren't keys, and instead a rigid transparent plastic strip forms the surface, into which evenly spaced dimples have been drilled. So there's both a visual and tactile guide to where in-tune semitone centres lie. About 2cm above runs a wire, emerging from the casework each side, supporting a metal ring with a rubber tensioner. The idea then is that you play the Therevox with a right hand finger inserted into the ring, moving left and right across the pitch range to define pitch, and your left hand operating oscillator intensity and the holds. It's quite like a Theremin in this respect, with the hands performing essentially the same roles, but with the addition of tactile feedback for both aspects of control.

Finally, the patchbay, which operates on a 0-5 V standard and with 3.5mm sockets typical of Eurorack. Five short patch cables are included with the ET-5 and they'll get you quite a long way. I've mentioned a few internal patching examples already, but many more are possible. A further infinity of possibility awaits if you have outboard modular gear of course.

CV outputs include the intensity keys, holds, ring position (tracking at 1V/octave), the position of a connected expression pedal, and the audio output of oscillator 2 (5V bipolar). There are also 'gate' outputs that send a full voltage signal any time an intensity key is operated: they're ideal for firing external envelope generators.

As for CV inputs, most aspects of the architecture can be modulated, and the ET-5 oscillators track at a standard 1V/octave, so can be controlled by other gear. Patching pitch or volume breaks internal connections from the ring and intensity keys, but most other inputs behave in a cumulative way. So if you have the ET-5's filter cutoff knob set half open, say, and patch a hold to it, the hold only opens the filter further rather than taking it over completely. Very sensible.

There is also some interesting quirkiness. Filter resonance can be increased beyond what its front panel knob can achieve by applying a voltage to its CV in as well, for an excitingly unstable and ringing character. Also, while oscillator Vol and FM inputs allow for intriguing AM and gravelly analogue FM tones, the latter has a DC blocking design that distorts the effect of incoming waveshapes. For example, when using osc 2 as a modulator, in its low frequency mode, with its output patched to FM1, you can achieve sine wave vibrato as expected, but a triangle wave produces a two-note trill effect, and sawtooth and square waves only momentary blips.

Nestling between the ins and the outs are two four-way passive mults, for splitting or summing signals. There's also a voltage inverter, which can reverse the polarity of a hold fader, for example. With only a single patch lead inserted the inverter becomes a 5V voltage source, which can be useful for some things.

Meanwhile, several 3.5mm CV sockets are duplicated on the side of the ET-5 in quarter-inch guise, which could prove handy for some jobs and modular formats other than Eurorack. Especially nifty is an expression pedal (or CV) input that by itself can be switched to control either filter frequency or oscillator 2 pitch. It gets an output socket in the patchbay as well, so pedal movements can be directed to many other parameters.

Slope-style

So that's the way the Therevox is made. What's it actually like to play and listen to? In short, it's quite weird, often wonderful, and surprisingly versatile.

As with any novel instrument which hasn't (yet) attracted an established, broadly agreed playing technique, individual players find their own way. With the ET-5 there aren't that many options, but it's still open to some variation. For me, I naturally gravitated towards using my left hand middle and index fingers to operate intensity keys, and the right hand index for the ring. At times though I ended up just holding the ring, especially when wanting to do lots of parameter tweaking. »

Therevox ET-5
$2950

PROS
- Playable and approachable from day one, and full of potential for the longer term.
- Synth signal path, overdrive stage and spring reverb all sound superb.
- Eurorack-style patchbay vastly increases the ET-5's own tonal breadth while allowing it to be a potent partner for other modular gear.
- Many concessions towards practical, serious use on stage or in the studio.
- Super hand-built quality, with a solid walnut case.

CONS
- Currently a 24-month waiting list for delivery.

SUMMARY
A unique, highly characterful analogue synth that reimagines the spirit and sound world of the Theremin in a more approachable and controllable form. Modular interfacing and MIDI broaden the scope considerably.

» As some who tried and failed to make headway with the Theremin (and I suspect I'm not alone in that) I found the ET-5 a vastly fairer fight, and more rewarding, from word go. Pitch accuracy and tracking across the nearly four-octave fingerboard is spot on, and it's a lovely thing to generate vibrato with a finger rocking on a fingerboard dimple, or with a wider wrist wiggle for a more operatic effect. If it is precisely the 'decoupled' aspect of the Theremin that appeals to you, with pitch a more intuitive thing that is not bound to an equal-tempered semitone scale, the ET-5 can be played like that too. Indeed, pretty much anything you can do with a Theremin, in terms of sound and gesture, can be done on the Therevox.

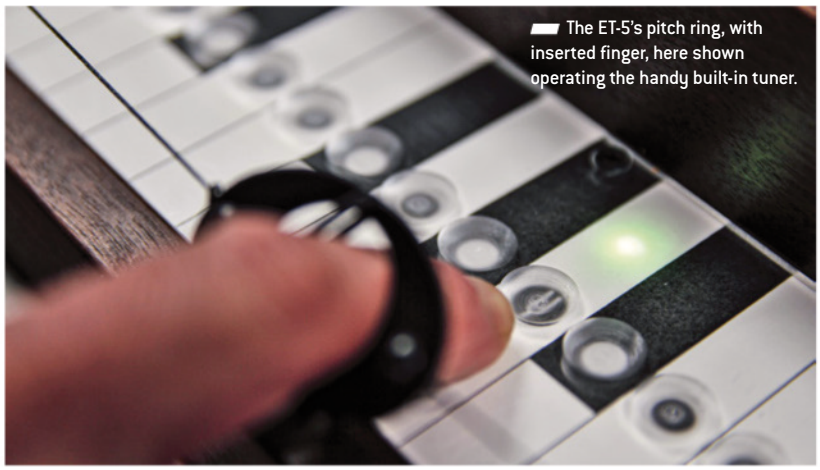
Unexpectedly perhaps, it's the intensity keys that might need more practice. Slow swells are all very well, but it takes more concentration and co-ordination to produce percussive-like, decaying envelope note shapes, or to play a smooth legato line whilst ducking level for fractions of a second to cut out right-hand glissandos between notes. As for incorporating fingerboard pressure, and possibly locking off oscillator 2 pitch while exploring an independent volume profile for it: well, that's yet more coordination, and it improves with practice, but for most people I think it should feel largely intuitive.

In sonic terms, the ET-5's analogue oscillators are as rich and fruity as you'd hope. Sawtooths are Minimoog fat and have harmonic content stretching way above the audible range. The rectified sine waveform, in practice, sounds an octave higher than all others, but it's a beguiling tone, and perhaps the closest thing to some original Ondes timbres. The pulse waves can't quite be narrowed to a zero point through patching the 'pwm' CV input, but they're still a mine of really piquant tones, ranging from flutey to raspy. Playing both oscillators in octaves, fifths, or as a detuned unison, makes for a vintage-hued experience, and adding even a dab of the internal spring reverb is then instant Delia Derbyshire or *Forbidden Planet*. This spring is thick-sounding and jangly, the very opposite of a clean, airy digital reverb sound, but oozes character. Similarly, the built-in overdrive is a desirable thing, adding both compression and considerable thickness and weight to even single-oscillator sounds, and conjuring wailing guitar amp-like distortion with oscillators detuned by a fifth or fourth.

Considerable extra timbral range comes from oscillator sync, and the patchbay. Patching oscillator 2 noise to oscillator 1 FM/AM or filter cutoff makes for various scratchy, dirty and cloudy tones. I often found myself splitting (via one of the mults) an intensity key to both oscillator volume and filter cutoff, for brightness that increased in volume. The desire to nuance that parallel response was one of the very few things that, for me, couldn't be satisfied by the ET-5 alone. However, it's easy to remedy if you have an external attenuator/attenuverter module, and can also be fixed with an in-line attenuator (like the small, affordable Boredbrain Splix). Apparently some additional CV facilities like attenuators were considered for the ET-5 design but were felt to add too much complexity. Certainly, the ET-5 is not lacking in creative sound-design potential, even as it stands.

A vital aspect in all of this, through a combination of the playing interface and the immediate and unashamedly synthetic analogue signal path, is that the ET-5 has a unique character, sounding like very little else. It does indeed channel musical explorations, strongly. Which is to say that demisemiquaver-dense prog rock solos are not its thing; nor is anything that sounds like an arpeggiator. You wouldn't do these on a Theremin either of course. But for meandering drones, for melodies that can sound spookily vocal in their inflections, and for all sorts of pulsing cinematic, dark electronica textures, the ET-5 consistently generated things I would or could not achieve with my conventional synths or a MacBook full

Finger Food



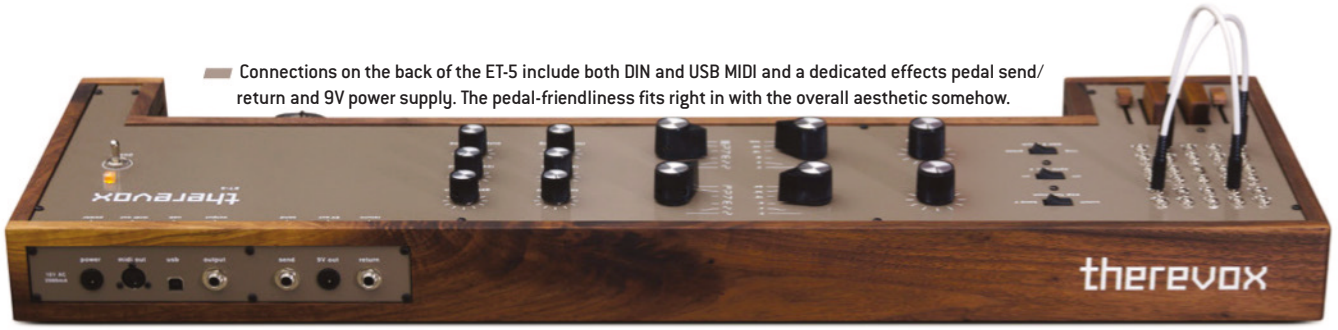
The ET-5's pitch ring, with inserted finger, here shown operating the handy built-in tuner.

Three further aspects of the Therevox's fingerboard are much less obvious until you've spent some time with it.

First, the way the ring and wire translates pitch to the oscillators isn't affected by where, front to back, on the pitch surface you play. So you can engage with the dimples if you want some assistance to play in tune, but equally glide your fingertip on the smooth perspex behind or in front of it for the full fretless experience. Pitch control, like almost every other aspect of the ET-5's core response and sound production, is fully analogue, so it's an exquisitely sensitive thing, capable of lunatic sweeps and the most the most subtle vibrato alike.

Second, the entire fingerboard is, in fact, pressure sensitive. Press down on it anywhere across its width, most likely with the finger inserted in the ring, and you generate a voltage (max 5V, like all other ET-5 patchbay modulation-type outputs) at the 'press' socket, which can be patched to filter cutoff or anything else you like. However, pressure supports another very different playing technique as well. Via a dedicated switch, oscillator 2's pitch can be made to hold at the current position of the ring in response to a momentary fingerboard press. This allows for a kind of duophony, with a ring-driven osc 1 melody over a fixed-pitch osc 2 bass drone for example, and it expands the ET-5's musical scope considerably.

Finally, the fingerboard incorporates a tuner function, which you'll need, as the ET-5 oscillators can and do drift in pitch with temperature changes. Hover the ring over what we might call middle A (which has a little tuning fork icon printed in its dimple) for a moment and hidden LEDs shine through just above, pulsing in different colours. The first guides the tuning of oscillator 1, with its main tune knob. After that's done, the same happens for oscillator 2.



Connections on the back of the ET-5 include both DIN and USB MIDI and a dedicated effects pedal send/return and 9V power supply. The pedal-friendliness fits right in with the overall aesthetic somehow.

of virtual instruments, without a lot of painstaking work. Use the ET-5 as a CV controller for a well-stocked modular rig, or just run its output through a suitable pedal (I had brilliant results with an EHX Grand Canyon and Hologram Chroma Console), and whole other universes of possibilities opens up.

Extra Time

As an enthusiast of many out-there instruments, electronic and acoustic, I instantly hit it off with the ET-5. It's a refined, sophisticated instrument, and it drew me into interesting places musically, and continued to do so months down the line, when any initial novelty had worn off. I appreciated the quirky 'boutique' feel of it, but even more so the super build quality, with deep-grained walnut panels and big, firmly-anchored retro knobs and switches.

The ET-5 is unlikely, I think, to be anyone's only synth or controller. It's a thing that arguably works best as a leftfield complement to other gear in a studio, encouraging ways of playing and facilitating musical outcomes that probably wouldn't have happened otherwise. It is undoubtedly a niche product, but its strength is that it adapts to many different niches: as a standalone instrument that can be played live; as an interesting, versatile and individual analogue synth for the studio; as a potent multi-functional addition to a modular rig; and even as a MIDI controller. It might not get much use in a wedding band line up (although, who knows...) but if your tastes lean towards the experimental, towards analogue synths and particularly modular, and you enjoy interaction with gear in and of itself, you might find this rare gem of a synth irresistible.

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Après MIDI

For what is a *bona fide* analogue synth, the ET-5 actually has a digital side lurking within, dedicated to MIDI control. There's both a 5-pin DIN MIDI out socket for directly driving other hardware synths, and class-compliant USB MIDI for a computer hook-up. That's also used to configure the ET-5's MIDI settings via a WebMIDI-compliant browser like Google Chrome.

The way MIDI works is that when you operate an intensity key the ET-5 sends a maximum-velocity Note On message for a single note, D (which represents the centre of the fingerboard), at an octave corresponding to the position of the osc 1 octave knob. Manipulation of the key is then represented by a stream of MIDI CC messages, and pitch ring movements transmitted as pitch-bend messages. Some other MIDI CCs can be sourced from the holds, fingerboard pressure, and the expression pedal input, and everything can be set up for two independent MIDI channels if need be.

It's a flexible, ingenious scheme, but because it's non-standard — we can be sure no-one had a Therevox in mind when the original MIDI spec was laid down in the early 1980s — it's dependent on external gear playing ball. I had really good results with direct MIDI connections to some hardware synths (Arturia's Minifreak has notably good potential) and a few iPad apps (including Moog's Model 15 and Animoog). In other cases things were off, as with a number of Nord synths (which don't have linear pitch-bend response) and a Moog Sub 37 (whose-pitch bend response kept nodding off). Lots of DAW-based soft synths work well too, and can easily dial in the requisite ±12 or ±24 semitone pitch-bend range. Just occasionally a tiny amount of pitch-bend jitter was audible, equal to about 1-2 cents in pitch. It affected some synths and not others, so it might say more about their processing of the data than anything else.

So it's a slightly mixed picture, but MIDI on the ET-5 is a nice bonus and very valuable, unlocking a world beyond the purely analogue. It's better to explore it with an experimental mind-set, though, to establish what works and what doesn't. In this light, using the ET-5 as a CV controller, with a modular or semi-modular synth, felt much more predictable and robust.

MIDI on the ET-5 is configured using a WebMIDI browser, via USB, and settings are retained thereafter. There's enough flexibility here to adapt to lots of different types of uses.