

**therevox**

**ET-5**

**user manual**

Therevox builds and designs musical instruments in Quebec's Eastern Townships near the banks of the Tomifobia River.

The ET-5 was designed by Mike Beauchamp with guidance from Melissa Damphouse and with heaps of support from friends, family and strangers on the internet.

Thank you to every customer that has supported Therevox since 2004.

therevox.com  
info@therevox.com

Made in Canada

therevox

# contents

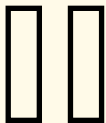
|                          |    |
|--------------------------|----|
| Playing                  | 1  |
| Tuning                   | 4  |
| Switches                 | 5  |
| Oscillators              | 6  |
| Filter and Ring Tracking | 8  |
| Effects Loop and Reverb  | 9  |
| Power and Outputs        | 10 |
| EXP and CV jacks         | 11 |
| Patch Panel              | 12 |
| Example Patches          | 13 |
| MIDI and USB             | 14 |
| Care                     | 15 |
| Technical Info           | 16 |

# playing

The ET-5 is a continuous pitch analog instrument. Sounds are produced by two oscillators, each producing six different waveforms. A variable saturation circuit, low-pass filter and spring reverb allow for further sonic goodness.

The pitch of the instrument is controlled by the ring and the amplitude of each oscillator is controlled by the pressure sensitive intensity keys.

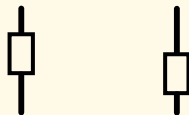
### The Keys



By varying the pressure on each of the intensity keys, you create amplitude envelopes for each of the oscillators.

Use these separately to switch between different voices, or mix the oscillators together creating unique sounds.

### The Holds



Adjust and hold parameters at desired settings easily with these sliders.

These controls are not connected to anything by default. Use the Patch Panel to assign functions to these convenient controls.

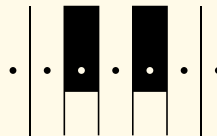
### The Ring



The ring controls the pitch of the oscillators. Weave, glide, play notes and everything in between.

The ring can be adjusted to fit comfortably between the first and second knuckle by moving the rubber retainer to a different notch.

### The Fingerboard

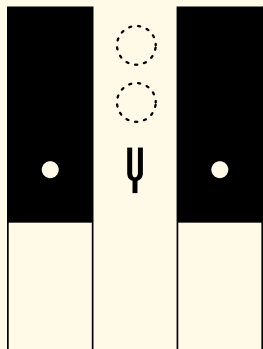


Indentations on the fingerboard allow you to feel for the accurate location notes, if you choose.

The entire fingerboard is also pressure sensitive and you can assign this performance control to any parameter using the Patch Panel.

# tuning

4



There is a hidden tuner underneath the fingerboard. Hold your ring finger over the tuning fork for 3 seconds and the tuner will activate.

The tuner starts with the first oscillator and is tuned using the tune knob.

After tuning the first oscillator, the lower light will show the second oscillator which can then be tuned using the osc 2 tune knob.

Be sure to keep your ring finger steady. This tuning is done without sound and can be cancelled by touching an intensity key.

# switches

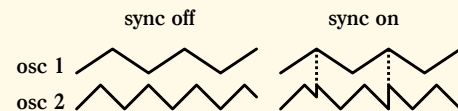
cutoff   bend 2  
exp function

off   on  
sync osc 2

ring   press  
osc 2 pitch

If an expression pedal is connected to the ET-5, its function can be switched between filter cutoff and bending the pitch of oscillator 2.

Syncing oscillator 2 will force the waveform to reset at the same pitch as oscillator 1.



The pitch of oscillator 2 can be set to always follow the ring, or it can be set to a single note. In press mode, move the ring to the desired note and press down on the fingerboard to select the note to be held.

5

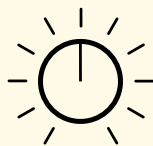
# oscillators

Master tuning for both oscillators is controlled by the tune knob. The pitch of oscillator 2 can be offset independently using the osc 2 tune control to any harmonic interval of oscillator 1.

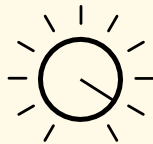
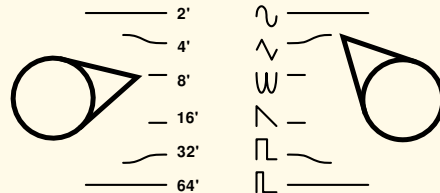
6

For each oscillator there are six octave positions and six waveform options.

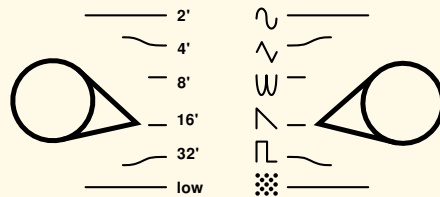
By setting oscillator 2 to low, it becomes an LFO that can be used as a modulation source at the Patch Panel. The rate can be adjusted using osc 2 tune.










tune



osc 2 tune



-  Sine Wave
-  Triangle Wave
-  Rectified Sine
-  Saw Tooth
-  Square Wave
-  20% Pulse
-  White Noise

7

# filter and ring tracking



filter cutoff

The filter cutoff alters the timbre of the oscillators. Turning the knob clockwise on this low-pass filter allows increasingly higher frequencies to be heard. This can also be controlled with an expression pedal or external control voltage plugged into the exp jack.



resonance

The filter resonance controls the amount of emphasis at the filter cutoff frequency.



ring tracking

The ring tracking allows the filter cutoff to change with the location of the ring. Ring tracking turned to the left produces brighter sounds as you play lower pitches. Higher pitched notes will have a brighter timbre with ring tracking turned to the right.

8

# effects loop and reverb



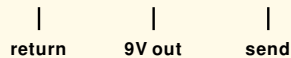
gain / return



reverb blend



output volume



The send and return jacks allow external effects to be inserted before the internal filter and reverb. Guitar pedals can be powered directly from the isolated 9V out.

The output level of the effect is managed by the gain / return knob. This control also includes a tube-style saturation circuit that can be used without any effects connected.

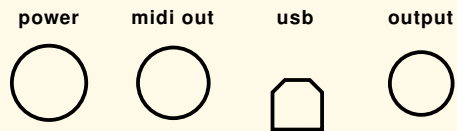
Reverberation is generated by sending the sound through a series of springs inside the ET-5. The reverb blend controls the amount of reverberated sound.

The amplitude of the output signal is controlled by the output volume knob.

9



## power and outputs



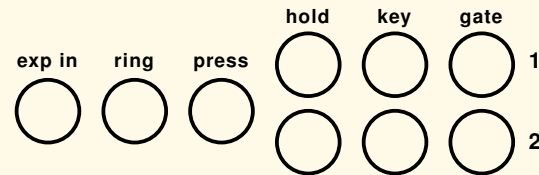
10

The ET-5 is powered by a 16VAC 2000mA adapter.

Midi is transmitted through a 5-pin DIN interface and the USB port. The USB port is also used to listen for sysex configuration messages. For more details see the Midi and USB section.

The output is a line-level signal, appropriate for most recording equipment, amplifiers and effects. Lower the output volume if you experience unwanted distortion. This output accepts a balanced TRS cable for lower noise or standard 1/4" TS cables.

## exp and cv jacks

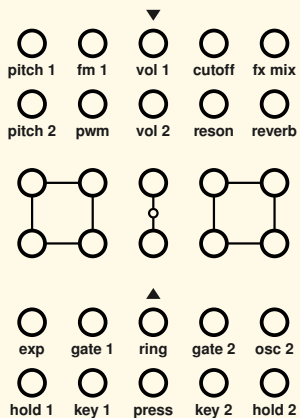


11

An expression pedal can be plugged into the exp in jack of the ET-5. Use a 1/4" TRS plug with an appropriate pedal, such as the Therevox EXP (See Technical Info on Page 16). A CV can also be inserted here.

To interface with external synthesizer gear, control voltage outputs are available on the side panel. A 1V/oct CV for the ring is provided, as well as 0-5V control voltages for fingerboard pressure, hold sliders and intensity keys. While the intensity keys are pressed, the corresponding gate output is 5V.

# patch panel



Assign any performance control to any parameter with the patch panel. Built-in utilities enable complex patching and everything is eurorack compatible.

The top two rows are inputs that accept 0-5V control voltages. Changes to pwm are only heard when oscillators are set to square waves.

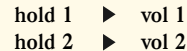
The passive 4-way mults allow combining and splitting CV signals. Patching through the inverter in the middle reverses the response of a control.

Outputs on the bottom two rows are 0-5V control voltages for each performance control. Osc 2 output is a 5Vpp max bipolar signal and can be used for audio-rate modulation or an LFO when set to low.

# example patches

Assigning a performance control to a parameter is done by plugging a patch cable between the corresponding CV output and input. An example would be to make the fingerboard pressure control the filter cutoff by patching **press** ► **cutoff**.

Hands-Free Drones



Percussive Notes



Pressure Modulation



Proportionate Timbre



# midi and usb

The ET-5 transmits MIDI messages over USB and standard 5-pin DIN serial connection. Messages are sent across two separate MIDI channels, one for each intensity key. Pressing the intensity key triggers a Note On message and the position of the ring is sent as a 14-bit pitch bend covering +/-24 semitones by default.

## Channel A

Channel #: 1  
Hold 1 CC#: 1  
Intensity Key 1 CC#: 11  
Intensity Key 2 CC#: Disabled  
Hold 2 CC#: Disabled  
EXP CC#: 4  
Pressure: Channel Pressure

## Channel B

Channel #: 2  
Hold 1 CC#: Disabled  
Intensity Key 1 CC#: Disabled  
Intensity Key 2 CC#: 11  
Hold 2 CC#: 1  
EXP CC#: 4  
Pressure: Channel Pressure

For maximum compatibility, all midi settings can be reconfigured at:  
**[therevox.com/config](http://therevox.com/config)**

Restore default settings by powering on with intensity keys down and hold sliders up.

# care

This instrument is handcrafted out of North American black walnut and is protected with a hand rubbed tung oil finish. Panels and wood can be cleaned with a slightly damp rag.

Move ring to end of fingerboard when not in use. Because of the internal spring reverb, take care when handling and moving.

When transporting instrument within a case, secure ring assembly by placing power adapter inside bubble bag and positioning on left fingerboard above string. Patch cables should be placed inside bubble bag and positioned on right fingerboard below ring.

Avoid water and extreme temperatures. In case of emergency, do not use instrument as a flotation device.

Your instrument has been calibrated and tested by Therevox. Please contact us if you have any questions or comments.

# technical info

|                                |   |
|--------------------------------|---|
| Power:                         | 16V AC 2000mA (Not DC!). 2.1mm barrel connector.  |
| 9V Out:                        | 9V DC 200mA max. 2.1mm barrel connector, centre negative.   |
| Audio Output:                  | 3.2Vpp. 110 ohms impedance. 1/4" TRS balanced, TS unbalanced.   |
| Expression Pedal:              | 1/4" TRS. Tip - CV, Ring - Reference, Sleeve - Ground.  |
| Digital Board:<br>programming: | MKL26Z64VFT4 Cortex-M0+ @ 48 MHz (Teensy LC)<br>Arduino compatible. Teensyduino w/ halfkay bootloader |
| MIDI configuration:            | <a href="http://therevox.com/config">therevox.com/config</a>  |
| MIDI sysex spec:               | <a href="http://therevox.com/et-5-sysex.pdf">therevox.com/et-5-sysex.pdf</a>                          |