sprongle

Firmware 1.1

About the module

This idea came from the classic detuned saw wave synths. This oscillator combines 7 digital oscillators, all slightly detuned and spread across the stereo field. All of the waveforms in this synth are made up of a combination of saw waves and square waves. The digital aspect of this synth is housed on an Electrosmith Daisy Submodule. The remainder of the hardware is designed by ExistentialElectronics, and the software is written in C++ by ExistentialElectronics as well.

Wave

Press the wave button to move between waveforms. The left LED will blink a number of times to indicate which waveform you are currently on, and then return to displaying the audio output.
Waveform 1: Detuned square waves. The phasing of the waves together gives the sound a softer sine like sound.
Waveform 2: Detuned saw waves. Great for the classic rave detuned saw bass sound.
Waveform 3: A mix of saw waves and square waves with a bit of overdrive.
Waveform 4: A different mix of saw waves and square waves with more overdrive.
Waveform 5: All saw waves with a lot of overdrive.

Mode

4 octave modes, changing the octave of 4 of the oscillators. The right LED will blink to indicate the mode.
Mode 1: Unison.
Mode 2: Outer oscillators pitched up an octave.
Mode 2: Outer oscillators pitched down an octave.
Mode 4: Outer oscillators pitched up a fifth.

Decay:

A one stage envelope, dictating the length of the decay of the oscillators after you release the gate. If no gate is plugged into the gate jack, the oscillators will function in continuous mode. The decay jack controls the same analog to digital converter (ADC) as the knob, so you will have more range to the jack if the knob is turned all the way down. The jack accepts control voltage of 0-5v.

Detune:

Turning up the detune knob microtunes the six outer oscillators differently from the primary central oscillator. Turned all the way down, the oscillators still phase slightly but are essentially in tune with each other. The detune jack controls the same analog to digital converter (ADC) as the knob, so you will have more range to the jack if the knob is turned all the way down. The jack accepts control voltage of 0-5v.

Spread:

Turning the spread knob up pushes the outer oscillators further left and right, giving it a wider sound. The spread jack controls the same analog to digital converter (ADC) as the knob, so you will have more range to the jack if the knob is turned all the way down. The jack accepts control voltage of 0-5v.

Pitch CV:

Can be used to externally change the tuning of the oscillators. The Pitch CV jack controls the same analog to digital converter (ADC) as the knob, so you will have more range to the jack if the knob is turned all the way down. The jack accepts control voltage of 0-5v.

Tuning:

The fine tune, 1v/octave, and coarse tune are independent ADCs so they do not affect each other, however the pitch CV jack is linked with the fine tune jack, so pitch CV and fine tune will interact if the fine tune knob is not turned all the way down. Pitch CV could be used for small variations in pitch with a LFO for example, but will change the pitch as soon as patched if it is at a different CV from the fine tune knob. 1v/oct range is 0-10v.

Output:

The two LEDs usually display a visualization of the left and right output waves respectively. The output wave can swing from +-5 to a maximum of about +-10v. Before sending to external equipment, be sure to use an output module, mixer, or attenuator to reduce the volume to a range that typical audio equipment can handle.

Calibration

On the back of the module there is a small trim potentiometer that calibrates the modules tuning. This knob comes calibrated, but if it were to go out of calibration for any reason, it can be calibrated by the user. As you turn the calibration knob clockwise, the notes become more spaced out, so if you notice higher notes are too high, you can turn this knob counterclockwise, and vice versa.