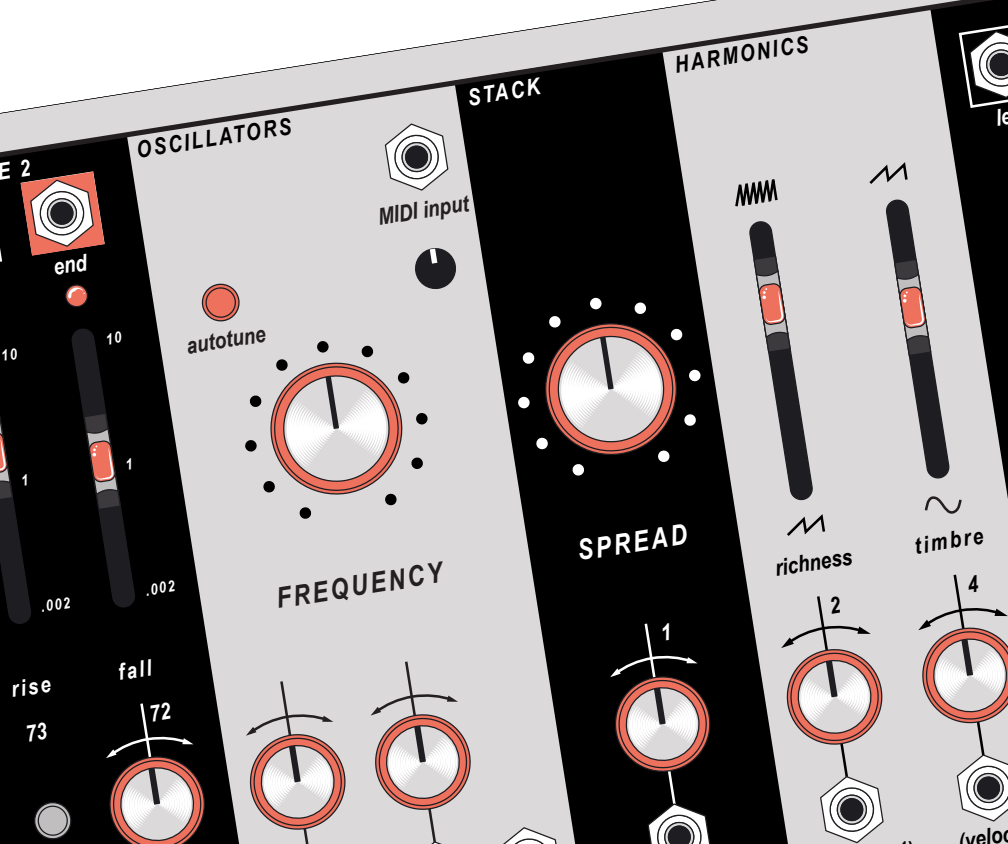


VERBOS ELECTRONICS

Sawtooth Stack



The Sawtooth Stack is a swarm of 5 triangle core discrete oscillators with the unique waveshaping from the Foundation Oscillator. The pitch Spread of the oscillators can be voltage controlled and they are stretched from left to right through a stereo VCA. Because there are two Envelope generators, the modules can be used as a stand-alone voice. The tuning and volt/octave tracking are calibrated when the autotune button is pressed. Notes can be played with MIDI via a minijack on the panel (type A as Make Noise, Korg, Squarp), plus all the main panel controls can be controlled by MIDI CC's, with their CC numbers shown on the panel below the controls. A 2 second or longer press of the autotune button allows MIDI learn of the channel being used. All presses of Autotune perform an All-Notes-Off, fixing any stuck notes or forgotten controllers. Envelope 1, MIDI Velocity and Envelope 2 are normalled to Richness, Timbre and Amplitude CV inputs respectively. Which means that if nothing is plugged into these jacks, those signals appear at the attenuverters automatically.

In the waveshaper section, Timbre crossfades from a sine wave to a saw wave, Richness multiplies the saw wave, mimicking the effect of a hardsynced VCO when additional voltage is applied. With the Spread all the way down, the 5 oscillators are in unison. As the control is turned up, 2 oscillators tune down and 2 oscillators tune up, stretching their pitches accross several octaves.

The Envelopes are Rise-Fall type, with a range of 2ms-10sec per stage. The linear ramps span 0-10v. End pulse outputs allow looping and chaining. There is a CV input with attenuverter for the Fall segment, and the length of both segments can be controlled from MIDI CC's. The gate from the MIDI notes is normalled to the gate inputs, and can be removed by patching into the jack.

The Output control is a master output level. When it is turned all the way up, the output is synth level 10v peak to peak and can be brought lower for use with line level inputs. The output is stereo, but if only one jack is used, all 5 oscillators are included. The Sawtooth Stack is 42HP and 16mm deep, allowing it to be used in a Black Box as a stand alone synthesizer.

42HP • 380g • +12v 320mA • -12v 250mA

envelope CV outs

autotune button

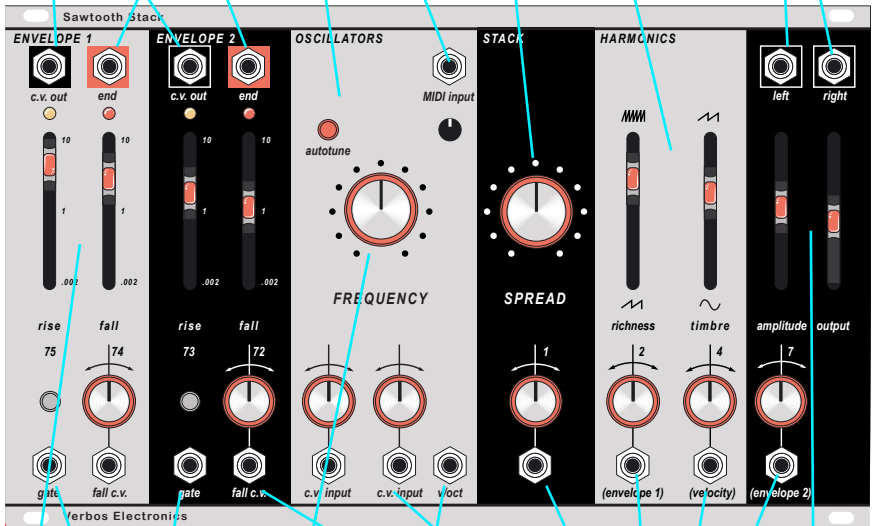
Spread control

outputs

envelope end outs

MIDI input

waveshaper controls



gate inputs

voltage/octave input

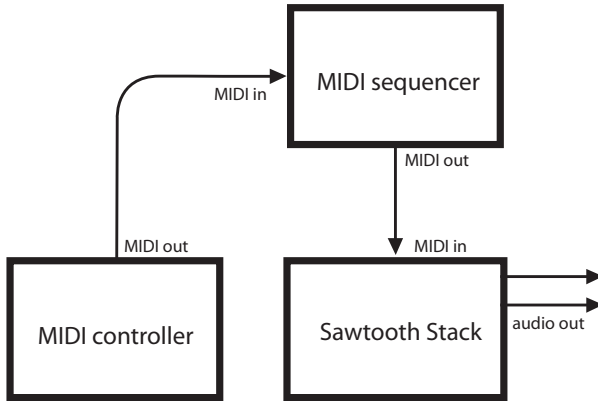
CV inputs

envelope time controls

Frequency control

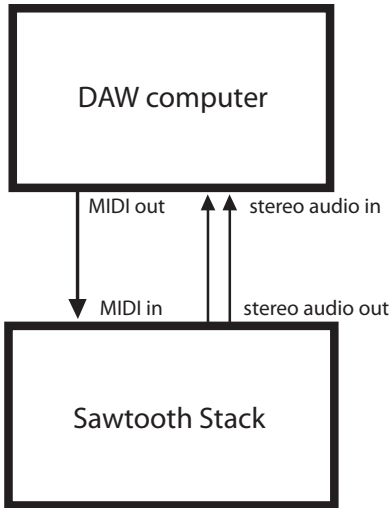
amplitude controls

Use with a hardware MIDI setup



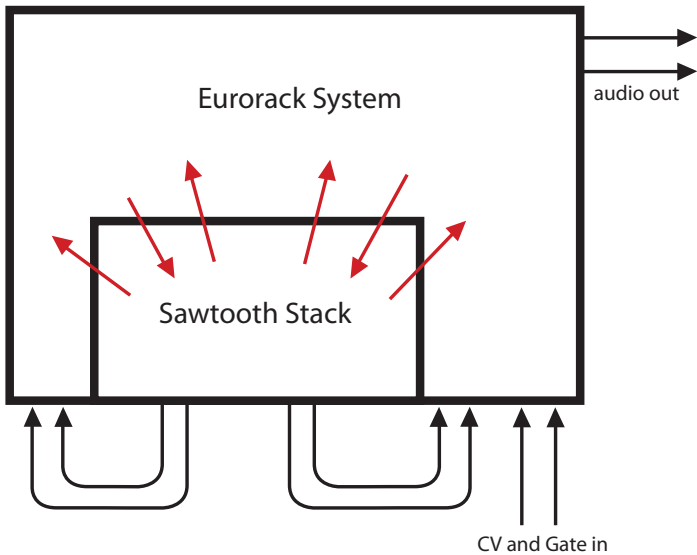
mounted in a Black Box for stand alone use

Use with a computer based setup



mounted in a Black Box for stand alone use

Use as a Eurorack module

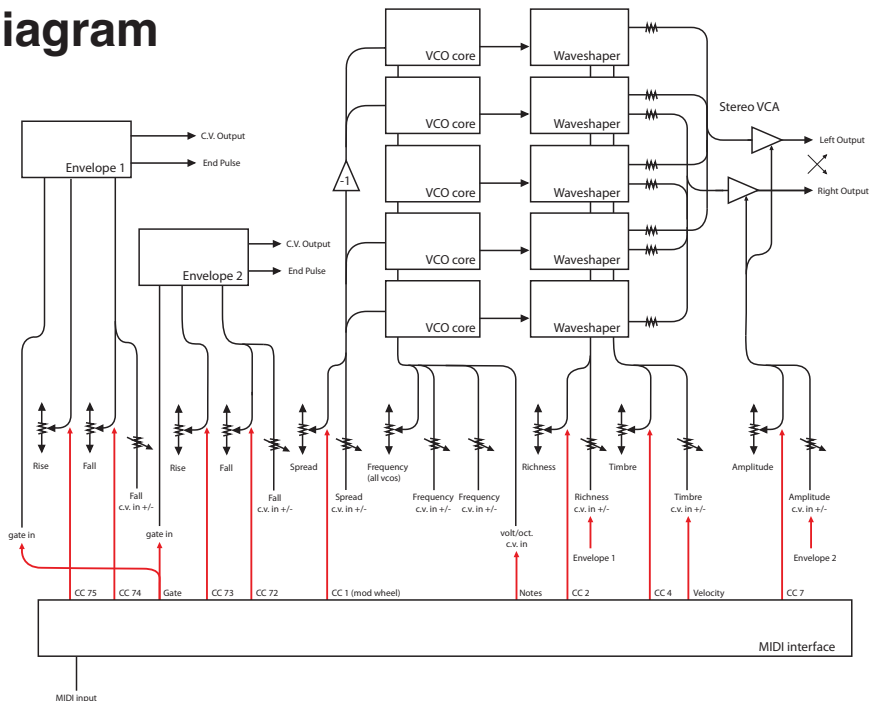




VERBOS ELECTRONICS

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Block Diagram



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