# Noise Engineering
Manis Iteritas Vereor

Six-saw additive synth
Rack Extension

Manis Iteritas Vereor Rack Extension is based on the architecture of Basimilus Iteritas, but designed to be more gritty and aggressive. It uses only sawtooth waves that are manipulated, modulated, and distorted through a rethought interface. Manis is suitable for leads, bass lines, drums, darkness, detuned madness, or pure mayhem. MIV takes the simple controls of our earlier RE and adds an envelope and VCA/LPG control.
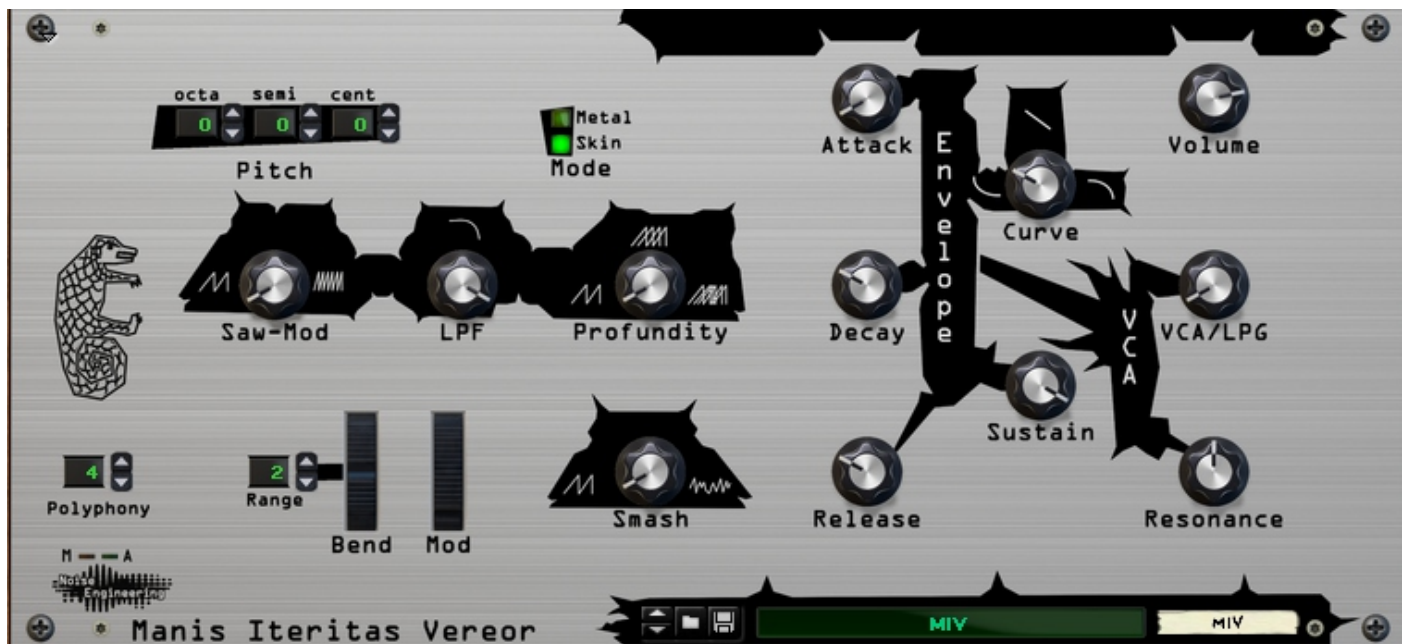
At first glance, MIV is similar to the Basimilus in tone generation. In Skin mode there are six oscillator/envelope pairs that are added together. In Metal mode there are phase modulated oscillator/envelope chains. Metal mode differs in Manis Iteritas Vereor by having two sets of three sequentially modulated oscillators rather that one set of six. Metal mode also waveshapes the output of the oscillators by summing two sawtooths of the same frequency to give a waveform somewhere between a sawtooth and a square.
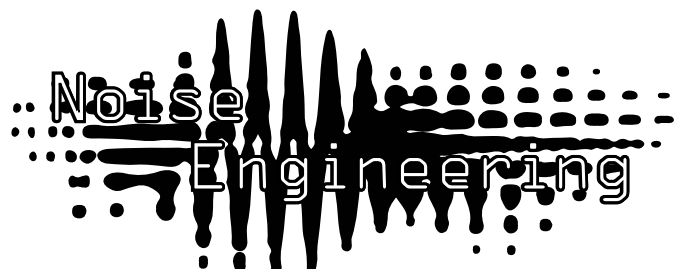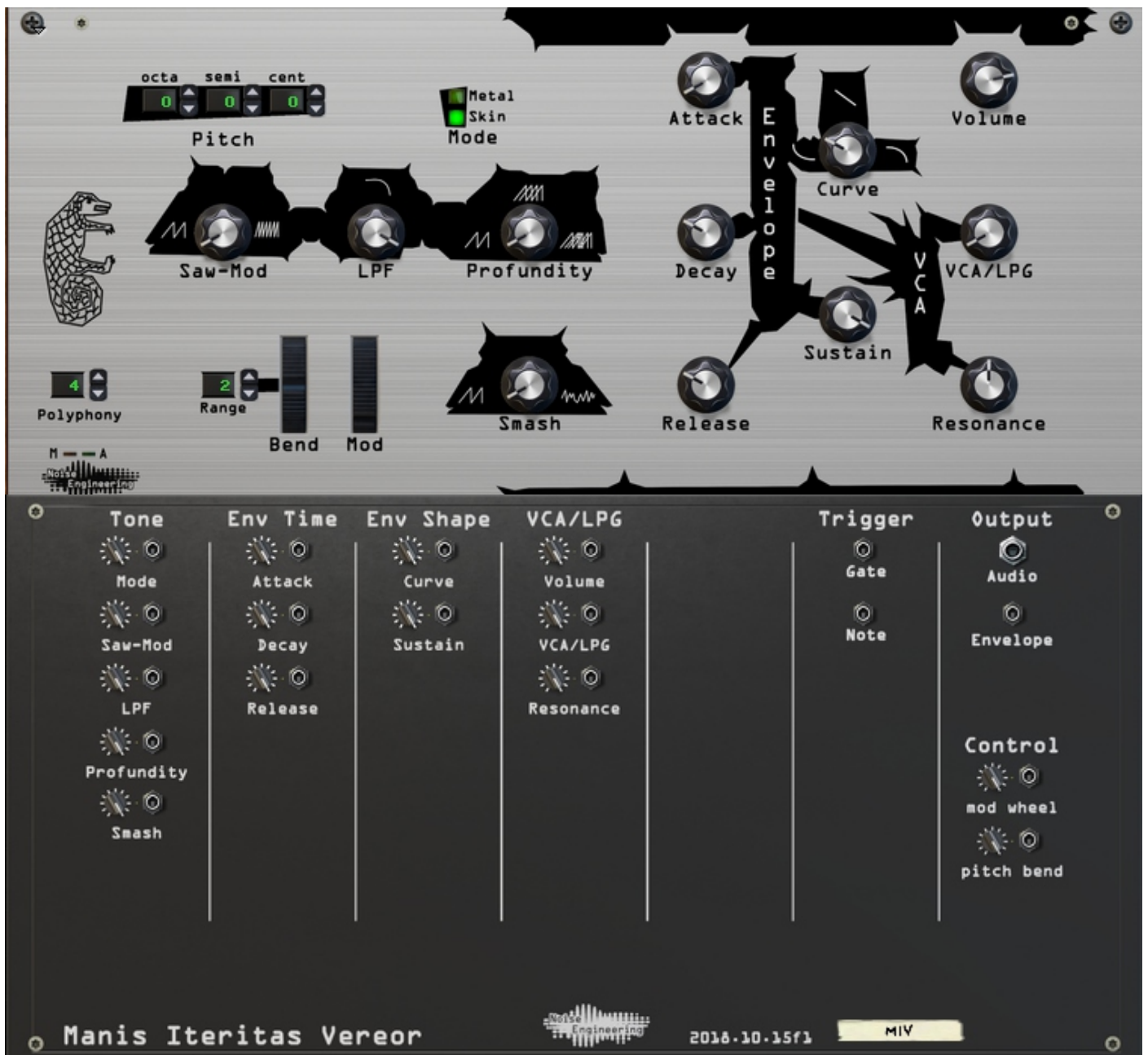
Front and Back Panel Controls

Pitch - adjusts the pitch of the fundamental oscillator. Define octave, semitone, and cent.

Saw Mod - sounds similar to PWM or sync mod. The operation performed is frac((2*s+1)*x) where s is the knob+jack and x is the current oscillator amplitude.

LPF - a low-pass filter that tracks pitch; when the knob is fully CCW, only very low frequencies pass through. Turn fully CW to disable. MIV uses three 2-pole non-resonant filters in different parts of the signal chain.

Profundity - as the Profundity knob is turned CW, 1. MIV adds additional, out-of-phase oscillators for a chorus effect; and 2. MIV detunes the voice. This is achieved by randomly modulating the sample rate, which results in the perceived pitch becoming blurry.

Front and Back Panel Controls, Continued

Smash - a gnarly wave-folder replacement, Smash is a modulus-function wave destroyer. The knob sets the level of destruction.

Mode: Skin/Metal - selects between the three modes. Skin is a six-operator additive synth. Metal is two 3-operator phase-modulated oscillators. This setting can be controlled by back panel Mode jack.

Bend Range - adjusts the maximum pitch-bend range in semitones.

Bend - visual indicator of MIDI pitch-bend wheel.

Mod - visual indicator MIDI mod wheel. Mapped to 100% Fold and 25% Morph.

Volume - adjusts the level of the Rack Extension.

Preset Load/Save - click the folder button to open a preset. Use the arrows to toggle through presets. Use the disk button to save a preset.

Polyphony - sets the maximum number of voices. When maximum is set to 1, portamento is enabled.

Envelope/VCA Controls (Front and Back)

Envelope/VCA

VCAs and LPGs are devices common in the hardware world but aren't presented in the same way in software. A VCA (voltage-controlled amplifier) controls the amplitude of a signal. Most often, they are used in conjunction with envelopes to control the volume of a sound. In this synth, it is controlled by the ADSR envelope; when a note is triggered, the envelope rises through the Attack stage, opening the VCA and letting the sound generated by the oscillators through. As the note is held down, the envelope then cycles through the Decay stage down to the level set by the Sustain, holding the oscillator at a specific amplitude. When the note is let go, the envelope closes at a speed set by the Release, closing the VCA and silencing the oscillators.

A LPG (Low Pass Gate) is a combination of a VCA and a low pass filter. Combined, they control both the amplitude and harmonic content of a sound. The filter behaves similarly to the VCA and follows the envelope, opening and closing as the envelope cycles.

Attack - adjusts the envelope rise time.

Decay - adjusts the envelope decay.

Sustain - sets the level decay falls to.

**Release -** sets the latency before the envelope falls when a note is released.

Curve - adjusts the curve of the envelope stages from exponential to linear to logarithmic.

VCA/LPG - mixes between a clean VCA and low pass gate. While useful at the two extremes, delicate harmonic shaping can be achieved with the right mix of VCA and LPG.

Resonance - adjusts the resonance of the LPG. This parameter will not affect the sound of the synth if the VCA/LPG mix knob is set fully to VCA.All front-panel knobs act as offsets that sum with CV inputs.

All front-panel knobs act as offsets that sum with CV inputs.
All rear-panel inputs act as attenuators.
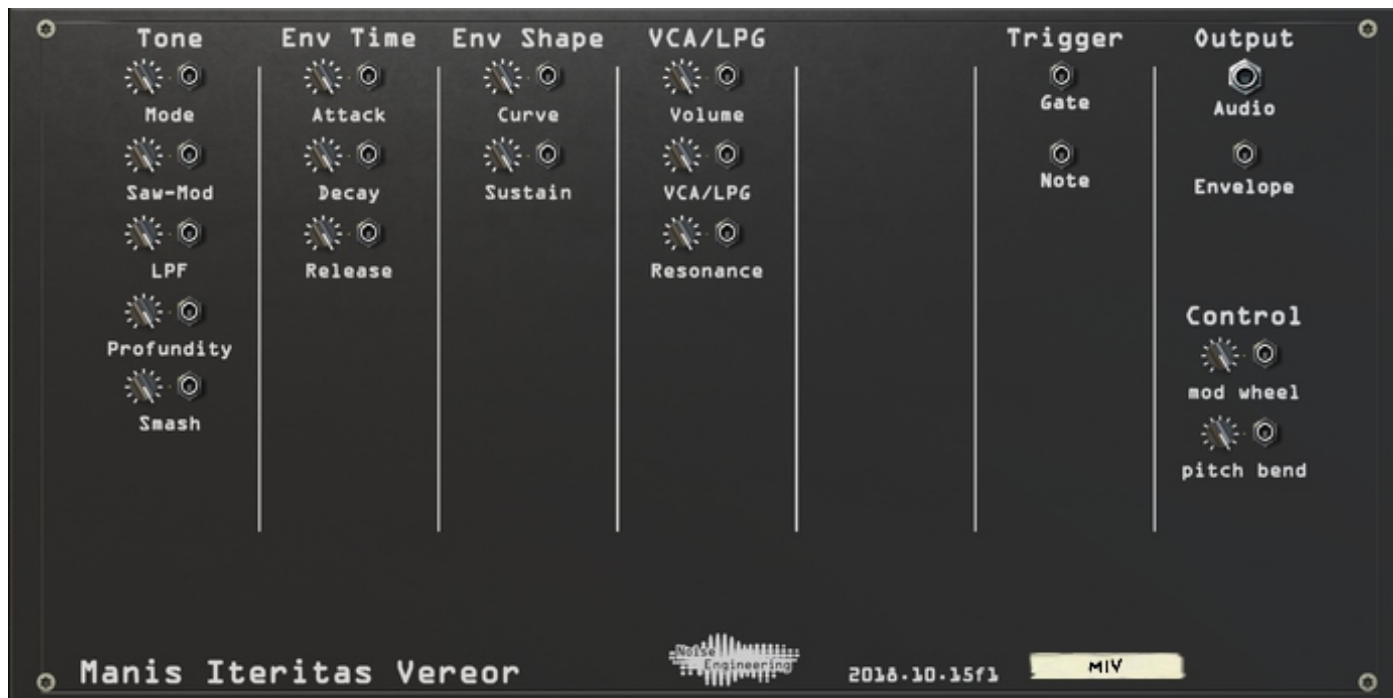
Back Panel Only:
Trigger: Gate - input to trigger the module.

Trigger: Note - CV input to specify note.

Output: Envelope - a CV output that tracks the current envelope level.

Output: Audio - monophonic output.

Back-panel knobs act as attenuators for all inputs.

Special Thanks

Our Beta testers improved the look, feel, and function immensely and we are in their debt.

Beta testers for Synth Bundle 2 include
Markus Cancilla
Mattias Haggstrom
Alan Strahsburg
Paul Rostill
Navi Retlav
Akos Botos
Craig Stanton
Nils-Erik Johansson
Michael Gorman
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