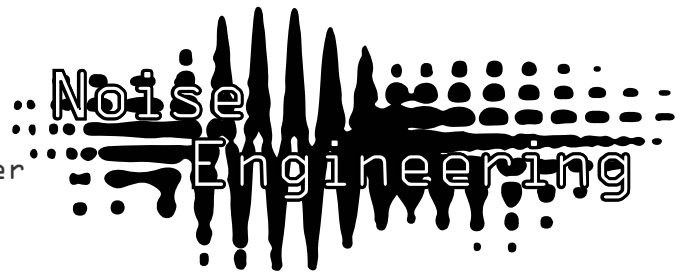


Noise Engineering Basimilus Iteritas

Analog-inspired parameterized drum synthesizer
Rack Extension



"quirky in all the right ways" - DJ Surgeon

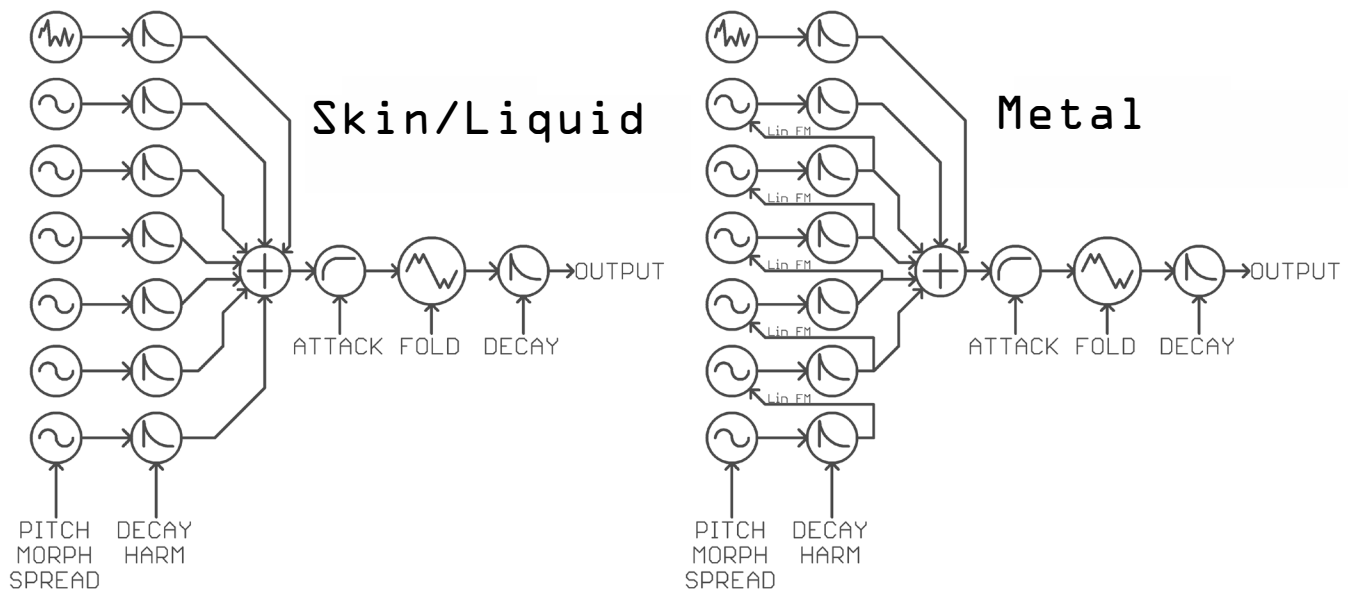
The Basimilus Iteritas Rack Extension is a parameterized digital drum synthesizer with its roots in the analog world. BI is based on the popular Eurorack module Basimilus Iteritas Alter. At its heart, it is a simple six-oscillator additive synthesizer with adjustable waveform, harmonic spread and decay. Adjustable attack including a noise oscillator is also included. These are summed and fed into an infinifolder for crunch and variety.

Tone Generation

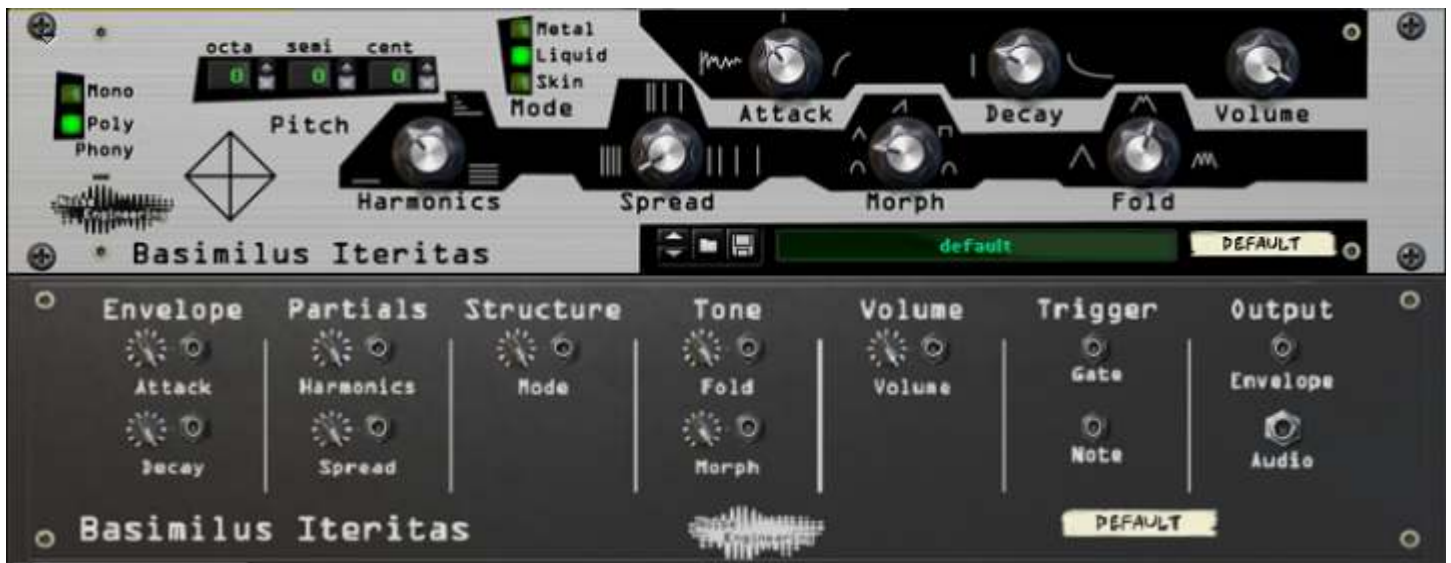
Basimilus Iteritas uses six tonal and one noise oscillator in three configurations to generate sound. The SKIN setting is a basic additive synthesizer meant to simulate instruments that have modes that do not interact. LIQUID is the same as skin but with a pitch envelope for all oscillators. The first oscillator frequency is determined by the pitch input. The METAL setting modulates the oscillators by each other to simulate instruments that have a lot of modal interaction. The SPREAD control adjust the pitch (relative to the base pitch) of the other five oscillators.

Each oscillator has an individual envelope that is controlled by the ATTACK, DECAY and HARM controls. The noise envelope is also affected by the ATTACK knob. The oscillators are summed and then the ATTACK envelope is applied to the sum. This then feeds into a threshold-reflection folder with amplitude compensation and the ability to dynamically add more fold stages. At very high settings the fold will add in an exponentially decaying pulse at the local minima and maxima of the signal to add a gnarly buzz.

The final step is another envelope. This envelope is derived from the overall shape of the six oscillator envelopes. It adds back in the dynamics lost by folding so the output is remains punchy under the most extreme folding.



Simplified Synthesis Diagram



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

Decay - The decay knob and back input adjust the decay for all oscillators. The knob offsets the input.

Attack - The attack knob and back input adjust the attack for all oscillators. When left of center, noise is added. When dead center, a classic analog-style pop is produced. When right of center, the knob slows the attack. The knob offsets the input.

Morph - The morph knob and back input control the waveform of all oscillators. This blends through sine, triangle, saw, and square continuously. The knob offsets the back input.

Fold - The fold knob and back input control the infinifold section. For the first 3/4 of the range, this sets the threshold of the folder, dynamically adding multiple fold stages to maximize the amount of folding based on threshold and signal amplitude. In the top quarter of the range, a pulse train based on the signal is mixed in to give even more harmonic content.

Harmonic - The harmonic knob and back input control the harmonic decay of the oscillators. When fully CCW, only one oscillator is audible, producing a single harmonic. This simulates many simple analog bass drums. As the knob is turned CW, more, longer lasting harmonics are blended in.

Spread - The spread knob and back input control the frequency spacing of the oscillators. This allows the overtone series to vary from a purely harmonic sound to more dissonant, inharmonic sound.

Mode: Skin/Liquid/Metal - The mode switch selects between the three modes. Skin is a six-operator additive synth for tonal sounds. Liquid is a six-operator additive synth with a pitch envelope to add extra kick. Metal is a six operator FM synth for producing noisy and alien sounds. This setting can be controlled by back panel input into the Mode jack.

Volume - knob and back panel input adjust 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.

Phony - select monophonic or polyphonic sound.



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.