

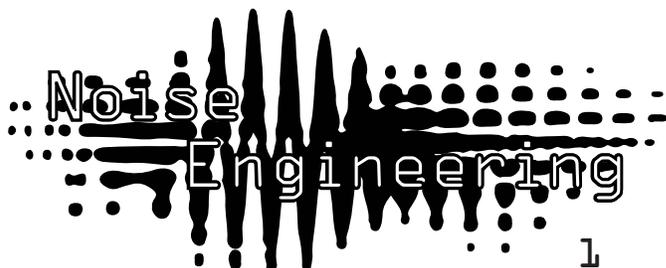
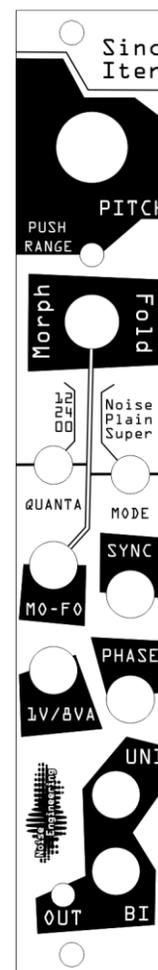
Noise Engineering Sinc Iter

Twenty-Three Octave multi-mode voltage-controlled oscillator

Overview

Type	VCO
Size	4 HP Eurorack
Depth	1.5 Inches
Power	2x8 Eurorack
+12 mA	150 / 80 mA
-12 mA	10 mA
+5 mA	0 / 90 mA (optional)

Sinc Iter is a four-HP voltage-controlled oscillator with a 23-octave range. It has three waveform modes: noise, plain, and super, each of which allow continual morphing between waveforms. Front-panel unipolar and bipolar outputs allow for easy use as a control source. Phase modulation and Sync modulation are both supported to provide maximal tonal variety. The Sinc Iter also has a built-in quantizer.

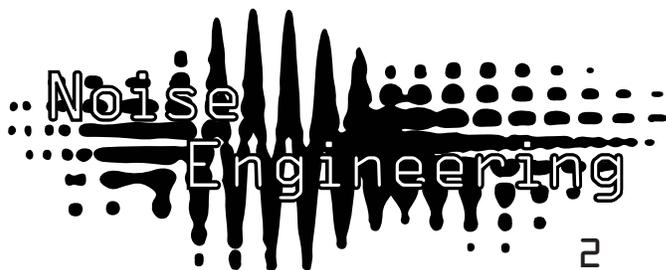
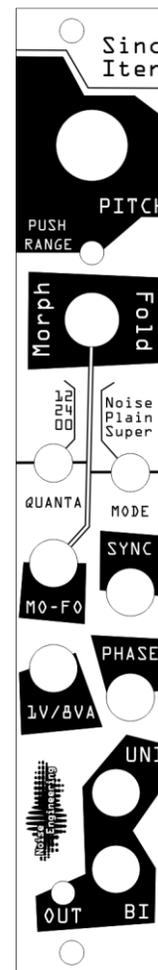


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Patch Tutorial

Sinc Iter is an oscillator. The easiest place to start is listening to the output directly. Connect the BI jack to your monitoring system. Turn the pitch knob to adjust the pitch. Tap the pitch knob to change between coarse and fine adjustment. Select between the three modes with the Noise/Plain/Super switch. Turn the Morph-Fold knob to adjust the timbre of the sound.



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Interface

PITCH

is an encoder used to select the base pitch of the oscillator. Tapping the pitch knob toggles between coarse (red LED) and fine (green LED) mode. Pressing and holding PITCH for two seconds will toggle the pitch-based amplitude compensation. All settings are stored in flash and will persist through power cycling. The base pitch can be varied across 23 octaves of range (“lower than you care about to higher than you care about”).

Mode

selects the algorithm used to produce the waveforms. Plain is a variable sample rate direct waveform synthesis. Mathematically it is equivalent to a wavetable, but the table is computed on the fly. Super mode is 6 oscillators with LFO phase modulation. Noise is a fixed sample rate Perlin noise oscillator.

MORPH/FOLD

controls the timbre of the waveform. In Plain and Super modes, it morphs through the basic waveforms (sine, square, saw, triangle, sine) then starts wavefolding the sine waveform. In noise mode, it broadens the spectrum and then begins wavefolding.

Mo-Fo

is the CV input for MORPH/FOLD. It sums with the position of the knob.

Quanta

controls the built in quantizer on the 1v/8va input. 00 is disabled, 24 is quarter tone (24-tet) and 12 is semitone (12-tet).

Sync

is a hard sync input for LFO sync and sync modulation. This is a rising-edge triggered input.

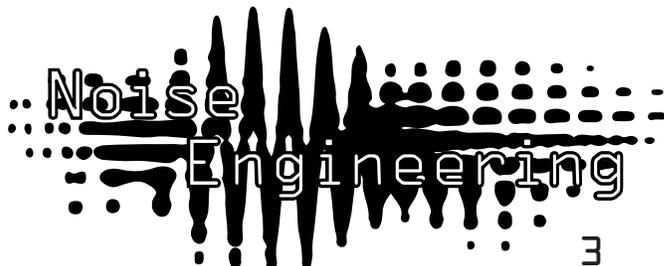
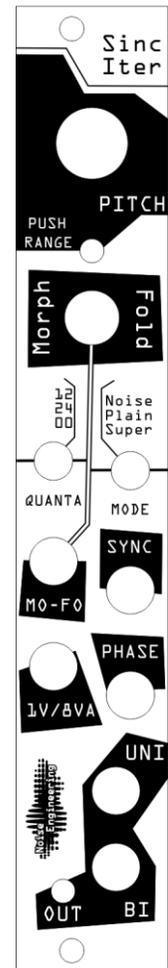
1V/8VA

is a standard one volt per octave pitch input. It has eight octaves of range.

Phase is a DC-coupled bipolar phase-modulation input.

Uni is a DC-coupled unipolar output 0v to 5v

Bi is a DC-coupled bipolar output -5v to 5v.



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Voltage Select

Sinc Iter can run the digital core on either the 5v or 12v rail. The switch near the top on the back panel selects which rail is used.

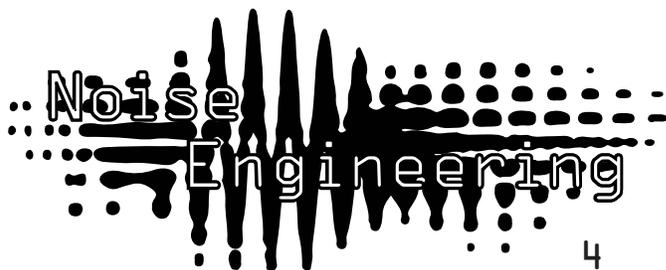
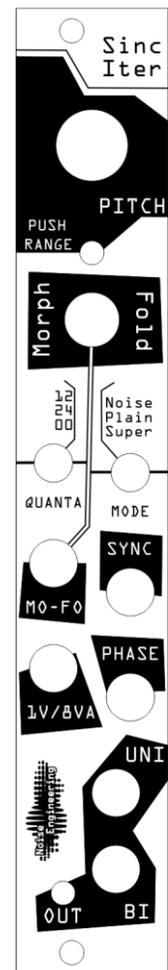


Calibration

The SI comes calibrated but over long periods of time may need re-adjustment. There is a single linearity adjustment on the back.

Pitch calibration is controlled by a linear resistor-divider network. To calibrate the tuning, attach a volt meter (preferably 4+ digit) to the test points TPCV and TPGND on the rear panel and adjust the trim pot.

The voltage measured should be $5/16$ (.3125) times the input voltage applied to the CV input. A reasonable way to tune the scale is to use an adjustable voltage source to generate 4 volts then adjust the tuning trim until the test points read 1.2500V. Sinc Iter can also be tuned using a reference supply capable of generating a 1 volt difference and using a stroboscope such as the Peterson 490 to tune to an octave interval. This method is preferred to the meter-only method.

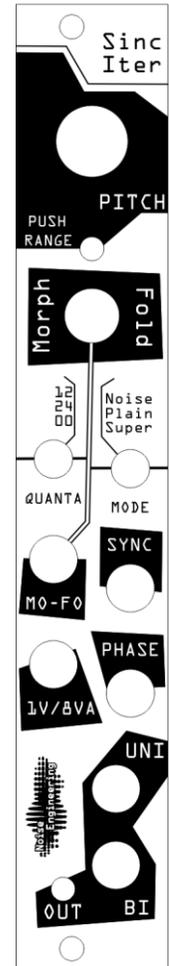


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Design Notes

Sinc Iter came from a simple desire to have a stable wide-range oscillator in 4HP. As many features as possible were crammed into the space to try to maximize utility.



Special Thanks

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