



## Two voices

The Noisy Oscillator has two full-blown voices, each with their own set of CV and output connectors. This can be used to play in a full 2-voice polyphony, or in a 2-voice unison.

The outputs can be separate, using both output connectors, or mixed, using only the connector of the second voice. Use only the output connector of the first voice to play monophonically.

The CV signals of the second voice (upper row of connectors) are always normalised to the signal of the first voice (lower row), so you can use a single LFO for some FM vibrato or tremolo on both voices, for example.

Only the V/oct connector of the second voice is normalised to the first voice with an extra addition of a fixed voltage that can be set using a trimmer at the backside of the module. This way you can use the 2 voices to play in unison with a fixed pitch separation you can set on the backside of the module.

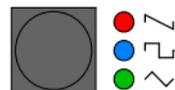
## Some sweet spots...



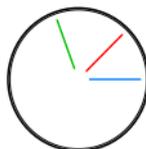
NOISE TUNE



NOISE SEL



WAVEFORM



MOD



The "broken" sawtooth:  
As if some rattling plate is  
standing against your  
speakers...



Airy Square: A melodic  
square wave with a  
serious air leak...



Modular Panflute: bring  
the oldschool panflute to  
new modular heights!



# NOISY OSCILLATOR



## A noisy Oscillator?

This Noisy Oscillator module is an oscillator that mixes two signals: a 'regular' wave (sawtooth/square/triangle) and a 'tonal noisy' wave.

This adds a special noisy layer over the sound of a regular waveform, that adds 'air', grit or dirt, depending on the combinations you make. The MOD parameter acts on the noisy waveforms.

\* Sonar Noise: a white noise filtered by a resonant bandpass filter, with 1V/oct tracking of the filter frequency. The MOD parameter controls the resonance.

\* Wind Noise: white noise filtered by a comb filter, with 1V/oct tracking of the base frequency (delay). The MOD parameter controls a 6dB/oct hipass filter.

\* Arcade Noise: LFSR noise source as can be found on the SID soundchips (Commodore) or Sega Arcade games. The MOD parameter controls again a 6dB/oct hipass filter.

The noisy wave can be tuned equal, one octave or two octaves above the regular wave.

## CV Inputs

Next to the 1V/oct pitch CV, the module offers CV control over pitch (FM), the MOD parameter and the sound level.

FM and MOD CV are normalised to 0V, and attenuated by the FM and CV AMT knobs. The LEVEL CV is normalised to 7.5V. You can omit a VCA by using the LEVEL CV if you want.

## Oscillator calibration

The module gets finely calibrated to a 1V/oct scale during production, but recalibration to your system might be necessary. Therefore you need to feed the module with 2 stable voltages, corresponding to 2 notes that are 3 octaves apart, for example C0 and C3.

- \* Press all 3 buttons together to start, 3 lower leds blink. Bring the lower note's voltage to voice 1's V/Oct input
- \* Press the 3 buttons again, 3 upper leds blink. Now bring the higher note's voltage to voice 1's V/Oct input
- \* Press the 3 buttons again, 3 lower leds blink. Bring the lower voltage to voice 2's V/Oct input
- \* Press the 3 buttons again, 3 upper leds blink. Bring the higher voltage to voice 2's V/Oct input
- \* Press the 3 buttons again, the calibration is now calculated and stored, all leds blink together

