

Exhaustive research into how flamingos stand on one leg has led us to develop a very serious new form of analog wave shaping!

Expanding on a concept discussed but never implemented by Don Buchla, the Flamingo introduces Center Clipping and Harmonic Interpolation to analog synthesis.

Center Clipping is a method of shaping a waveform from the inside out. Independently pulling the top half or bottom half of a waveform toward the middle. The process looks like the waveform is sinking into the center of the wave, while the rest of the wave remains unchanged finally resulting in a half wave rectified or dual half wave rectified waveform. This process allows independent control over even and odd harmonics.

Taking it a step further, Overtone adds another dimension to the analog waveform gymnastics by sliding and inverting the top and/or bottom of the waveform back on itself creating new types of wave shapes and shifting the fundamental in and out of the waveform. This creates dynamic chorus or pulse width style effects that play with perceived pitch without changing the frequency of the waveform.

The complex wave shaping capabilities of Center Clipping come at a cost. Center Clipping is a destructive process that can dramatically reduce the amplitude of waveforms. Harmonic Interpolation is the process of attempting to restore the center clipped waveform by allowing the analog circuitry to guess what the waveform should look like. A specialized form of automatic gain control. Results will vary.

Center Clipping and Harmonic Interpolation output a complex set of voltage controllable waveforms perfect for further processing with a wave folder and/or filter.

Flamingo

pgh



The following information describes new concepts in analog synthesis. It is meant to offer some insight into how Center Clipping and Harmonic Interpolation work but this manual is probably very confusing. My apologies in advance.

-Richard

Sliders, Knobs, and Jacks

Input Jack Audio signal input.

Input Knob Audio signal input jack attenuator control. Used to avoid unwanted signal clipping.

Crest Slider Manually adjust the amount of Center Clipping on the top half of the waveform (crest). Moving the slider up results in the top half of the wave disappearing into the center of the waveform. When using external CV, set the slider around half way for full range bipolar CV modulation.

Trough Slider Manually adjust the amount of Center Clipping on the bottom half of the waveform (trough). Moving the slider up results in the bottom half of the wave disappearing into the center of the waveform. When using external CV, set the slider around half way for full range bipolar CV modulation.

Trough CV Button Enable (on) or disable (off) CV control of the Trough using the Crest (Tr) CV Input Jack.

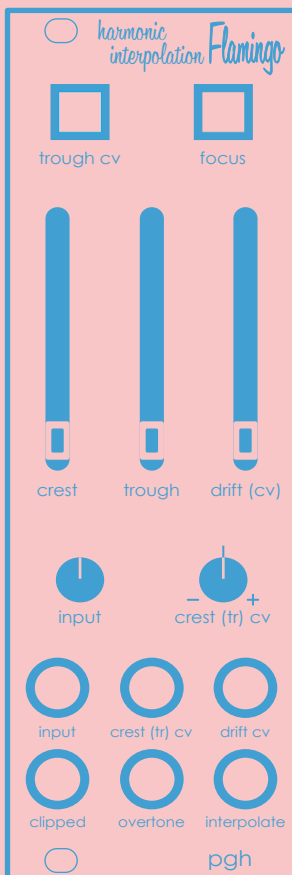
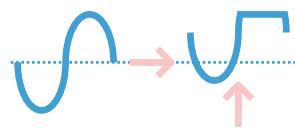
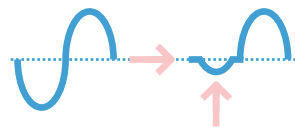
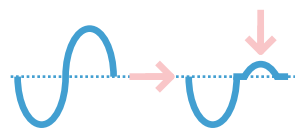
Crest (Tr) CV Knob External CV input attenuverter control.

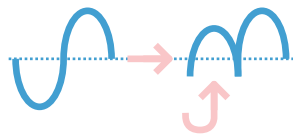
Crest (Tr) CV Input Jack External +/- 5 volts CV input used to modify the crest (and trough) controls. Positive CV pushes the waveform outward and negative CV pulls the waveform toward the center.

Drift Slider Manually set the amount of positive offset added to the Center Clipping circuit. If the Drift CV Input Jack is used, the Drift Slider becomes an attenuator for the incoming CV signal.

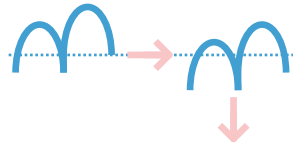
Drift CV Input Jack External CV input used to set the amount of Drift in the Center Clipping circuit.

Clipped Output Jack Audio output of Center Clipped waveform.

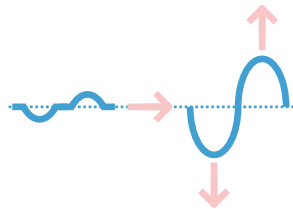




Overtone Output Jack Audio output of Modified Center Clipped waveform. This output explores removing the fundamental harmonic frequency by folding the top and/or bottom of the waveform in on itself. Also a nice way to turn a sine wave into the batman symbol. Overtone output is out of phase with Clipped Output Jack.



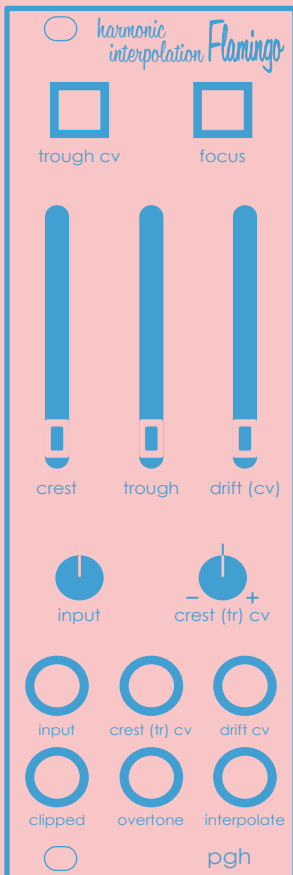
Focus Button Enable (on) or disable (off) determines if the DC offset is removed from the Center Clipped Overtone waveform before it passes through the Harmonic Interpolation circuit. The effect this has on the output strongly depends on the condition of the waveform passing through.



Interpolation Output Jack Audio output of Harmonically Interpolated waveform. This output is the final stage of the Flamingo module. Please read the first page for a description of what is happening behind the scenes.

Signal Flow

Incoming audio is combined with Drift and passed through the Center Clipper where Crest and Trough are used to modify the waveform. The output of the Center Clipper is passed to the Clipped Output and the Overtone circuit where it is processed and output to the Overtone Output Jack. The Overtone output is passed through the Focus button and finally into the Harmonic Interpolation circuit.



Specs

Size 8hp

Depth 24mm

Power +12v 55 mA / -12v 50 mA