



# VERBOS ELECTRONICS

## HARMONIC OSCILLATOR

Congratulations on obtaining your Verbos Electronics Harmonic Oscillator. This Euro-Rack format module creates sounds unlike any other sound source on the market. The module contains a discrete, all analog, triangle core VCOs with outputs for saw, square, triangle and each of the first 8 harmonics.

It also contains a voltage controlled mixer with multiple facilities for mixing the harmonics to create evolving timbres unique to this module.

### The Oscillator Core

The oscillator is set to range from 3 Hz to 20 kHz from the panel "Frequency" control. It has dedicated outputs for triangle, square and saw waves. The "f.m. input" goes through an attenuator on the way to linear modulation of the frequency. The "c.v. input" goes through a reversing attenuator on it's way to exponential modulation of pitch. A calibrated volt/octave input is also provided..

### The Harmonic Mixer

The section at the right side provides outputs for the first 8 harmonics. Each harmonic has a slider and c.v. input for control of it's level in the master output, indicated by an arrow from the mixer.

The "width" and "center" controls allow the harmonics to be swept across like a bandpass filter. Reversing attenuators are available on both inputs.

The "tilt" control as turned up will favor the higher harmonics and reduce the lower harmonics. Turning the control down will favor the low harmonics and reduce the higher ones. With this control centered, it has no effect on the harmonic mix.

LEDs indicate the state of each channel in the voltage controlled mixer section.



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