

## COMPLEX OSCILLATOR

Congratulations on obtaining your Verbos Electronics Complex Oscillator. This Euro-Rack format module can act as the sound source in the sounds of classic analog synthesizers. The module contains two discrete, all analog, triangle core VCOs with facilities for voltage controlled FM, AM and complex waveshaping.

### The Modulation Oscillator

The left oscillator ranges from 1 cycle per minute to 500 Hz from the "Frequency" control. It has 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 its way to exponential modulation of pitch. A calibrated volt/octave input is also provided.

### The Master Oscillator

The right oscillator ranges from 3 Hz to 20 kHz from the panel "Frequency" control. It has outputs for triangle, square and sine waves and a "master" output, fed from a complex waveshaping circuit. 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 its way to exponential modulation of pitch. A calibrated volt/octave input is also provided.

The "HARMONICS" section allows timbre, symmetry and order parameters on the "master" output signal to be voltage controlled, each through a reversing attenuator. At the minimum timbre setting, the main output will be a sine wave. At the maximum timbre setting, with high order, the wave can sweep from square to saw to double frequency saw. At low order settings the sine wave is folded over 13 times as the timbre control rises.

### Voltage Controlled Modulation

A toggle switch in the MODULATION section selects "a.m." or "f.m." (or off in the middle position). With this toggle switch in the "f.m." position, turning up the "mod. amount" will add frequency modulation of the right side oscillator by the left side oscillator in whichever waveshape is selected with the toggle switch in this section.

With this toggle switch in the "a.m." position, turning up the "mod. amount" will add amplitude modulation of the signal on the right side oscillator's "master" output by the left side oscillator in whichever waveshape is selected with the toggle switch in this section. At the maximum "mod. amount" setting the effect is like a ring modulator and varying amounts of amplitude modulation on the way up. The "sync" toggle switch when flipped left, toward the arrow, causes the modulation oscillator to soft sync to the master oscillator. This creates useful variation in frequency and amplitude modulated tones.



# VERBOS ELECTRONICS



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