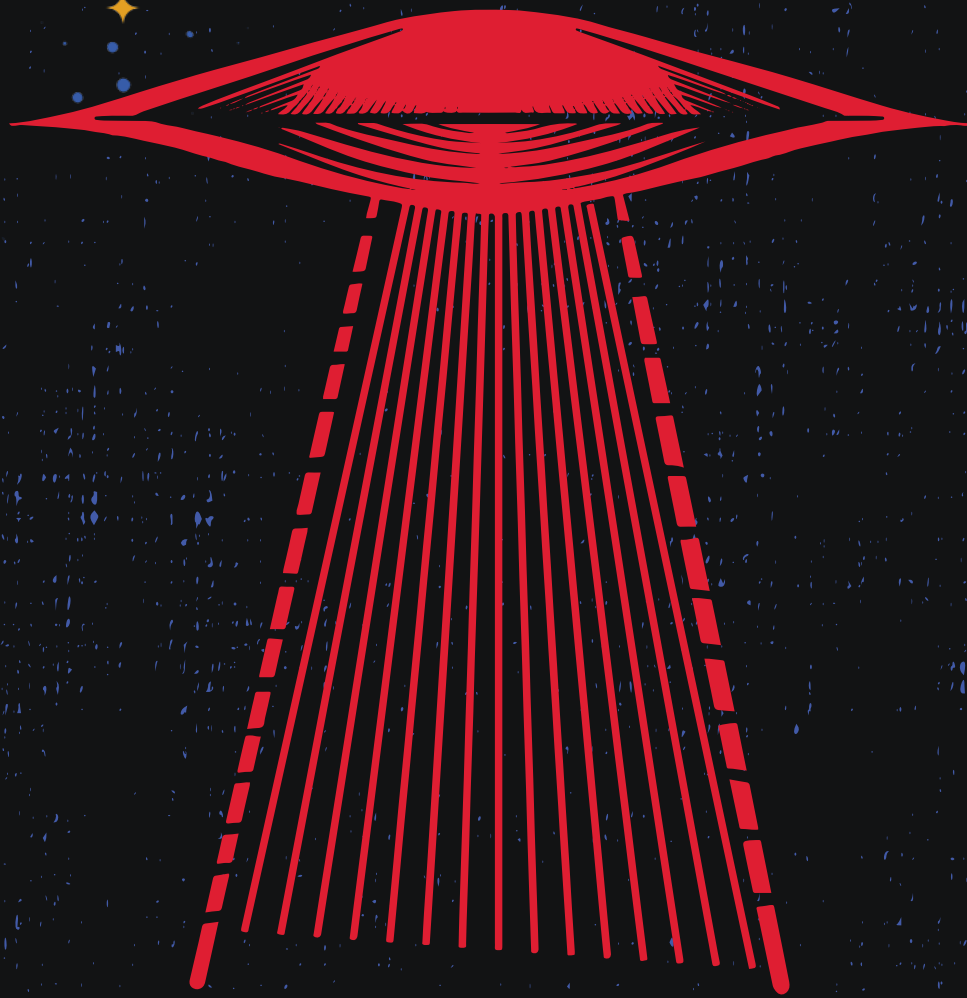# Many Worlds

MANUAL

OVERVIEW

The Many Worlds is an eight-stage phaser with eight selectable phase control parameters, six LFOs and two envelope-dependent phase shift modes.

CONTROLS
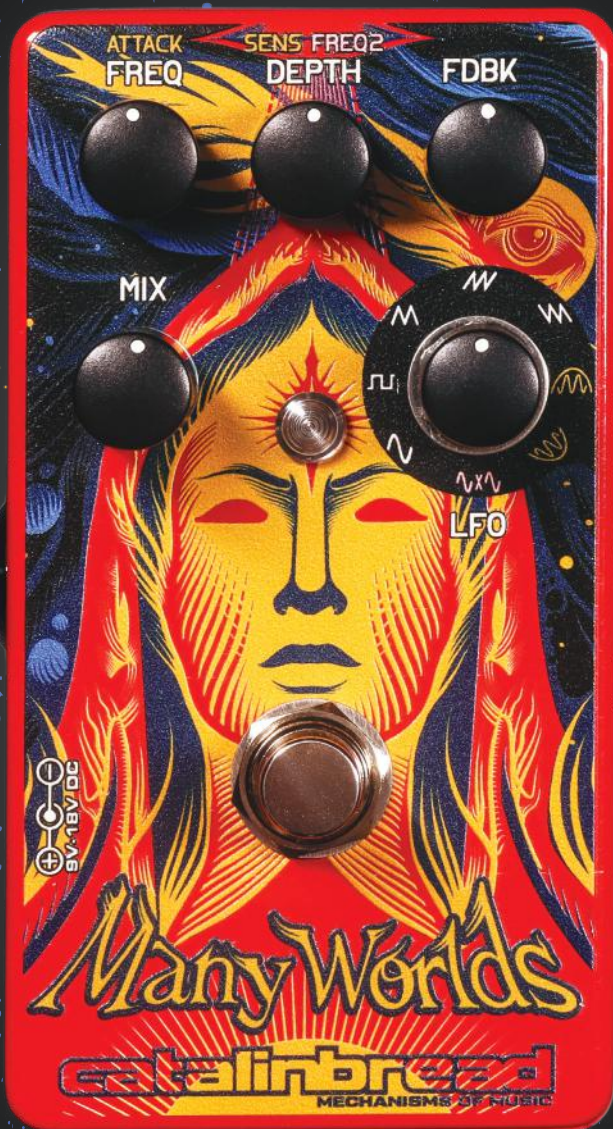
**FREQ/ATTACK** – Controls the frequency of the LFO. When in envelope control (〰 or 〰), **ATTACK** controls the low pass filter frequency in the envelope detector algorithm.

MIX – Controls the wet/dry mix.

DEPTH/FREQ2/SENS – DEPTH controls the amplitude of the LFO. When in Battle mode (〜x〜), **FREQ2** controls the frequency of the second LFO. When in Envelope Control modes (〰 or 〰), **SENS** controls the input gain into the envelope detection algorithm.

FDBK – Controls the internal feedback, turning clockwise creates a drippier, more intense phase.

LFO – Selects which LFO waveform is being used.

LFOS EXPLAINED

LFO stands for "low frequency oscillator." They are essentially rhythmic sweeps or pulses that are characterized by a waveform. In the **Many Worlds,** there are eight of these waveforms to choose from using the LFO selector knob.

SINE

The humble, classic sine wave sounds the smoothest and cleanest, occupying only one frequency. All other waveforms can be built by manipulating one or many sine waves.

SQUARE

Consisting of odd harmonics, the square wave is a discontinuous switch that rolls off higher harmonics much slower than a triangle wave. The sound is richer and grittier than a sine wave as a result.

SAW

The most harmonically rich waveform, the sawtooth wave is even grittier than the square setting, and uses both even and odd harmonics, slowly ramping upwards and then sharply dropping off.

REVERSE SAW

The same attributes of the sawtooth apply to the reverse sawtooth, except it ramps down and sharply drops off.

TRIANGLE

Sonically, the triangle wave sits between sine and square waves, giving you the smoothness of sine with the grittiness of square.

BATTLE MODE

A new challenger appears! Battle multiplies two independently controllable sine waves that compete to control the phase variable. Use FREQ2 to adjust the frequency of the second wave.

ENVELOPE DOWN

This mode relies on the input signal strength to change the phase variable in a downward sweep, much like an autowah.

ENVELOPE UP

This mode relies on the input signal strength to change the phase variable in a upward sweep, much like an autowah.

DESIGNER'S NOTES

The idea for Many Worlds began when we were experimenting with different LFO shapes for a phaser project—initially starting with the core of the classic "orange box" phaser but with a number of extra features. This LFO framework eventually led to experiments involving the modulation of one LFO by another. This is where the name Many Worlds comes from—the "Many Worlds" interpretation of quantum mechanics is a theory by Hugh Everette which states that quantum wave function collapse is actually the superposition of quantum states built by the decoherence of independent wave functions. This leads to the theory of parallel universes where quantum measurements have opposite results.

POWER SUPPLY

The Many Worlds runs from 9 to 18 volts using a standard DC center-negative power supply for pedals. Make sure you're using a supply that provides at least 100mA. Running the Many Worlds at 9V will sound great, but if you want a bit more output, a dry signal boost and increased headroom, try any voltage you like up to 18V! The Many Worlds does not run on batteries.