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MANUAL

V 1.0

INTRODUCTION

FRACTALIST is a waveform and rhythm generation machine. It brings a long-forgotten synthesis method, originally coined as "fractal interpolation," back to life.

When one of the two cores (triangle or trapezoid) is selected, it acts like a seed from which the waveform grows. With each iteration, each line of a waveform is self-replicated, growing more and more complex. Growth can further be directed with a warp control that alters the shape of replications.

This provides a rich sound source for typical synthesis, but it is only part of the story. Fractalist shines in the low-frequency range. When the frequency is set to what is usually an LFO range (and thus inaudible), you can still hear it. The reason is that, with a sufficiently high iteration number, the resulting waveforms are extremely complex. There are many hidden repeating patterns, so it is essentially a rhythm generator; by tweaking controls, one has much to search for.

On the opposite side of the frequency range, increased waveform complexity usually leads to severe aliasing. This could be used as an effect itself, though when not desired, it can be suppressed with a dedicated anti-aliasing switch.

The frequency selector enables rapid shifts between tones. Depending on one of the three available modes, one can move in octaves, semitones, or cents.

The output signal can be further saturated with a boost control, which will, at the same time, increase the amplitude.

There is an independent sine wave LFO output. Use it as a modulation source for self-patching or controlling other modules.

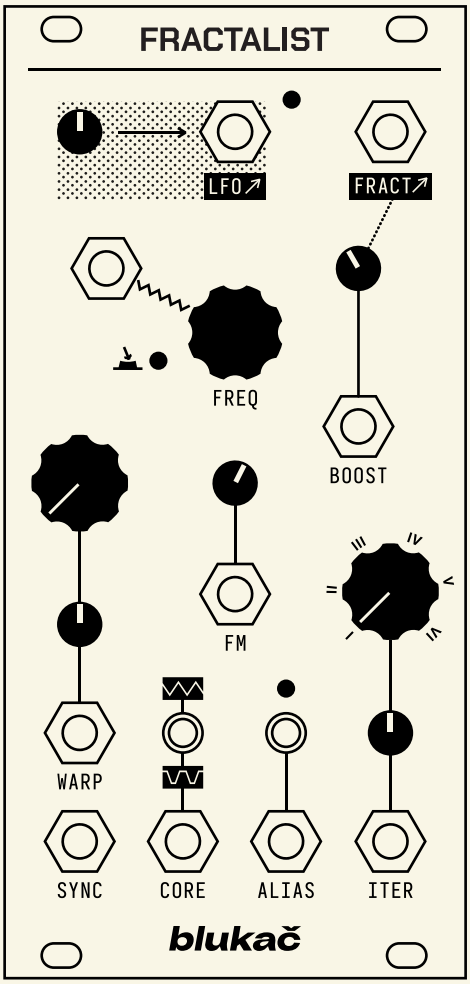
HARDWARE AND FIRMWARE ENGINEER: ANDRII SOKOLOVSKYI
VISUAL DESIGNER: JULIA SHVYRIOVA

TECHNICAL INFORMATION

Width: **12HP**

Depth: **42mm with power cable attached**

Current draw: **125mA (+12V) / 10mA (-12V)**

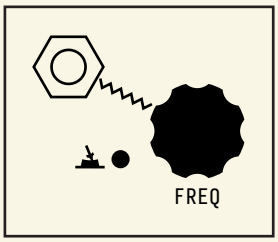


PANEL CONTROLS / INPUTS & OUTPUTS

FRACT

Main audio output.

Output range: -5V/+5V
(up to -10V/+10V with* Boost *control fully applied).



FREQ

Selects the frequency of the waveform.

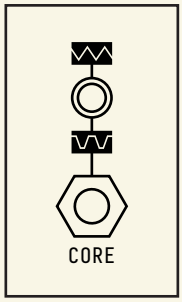
There are three modes available:
- Octave mode (LED fully lit)
- Semitone mode (LED half-lit)
- Cents mode (LED is off)

Press the selector to change the mode.

CV input responds to the 1V per octave. Selected frequency is used as a base from which the final frequency will be calculated.

Note: selected frequency is stored between power cycles.

CV input range: -5V/+5V.

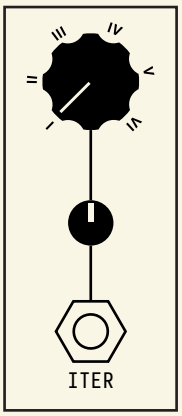


CORE

Selector switch for a basic core (seed). Could be a triangle or a trapezoid.

Features a dedicated gate input.

CV input range: 0-10V.

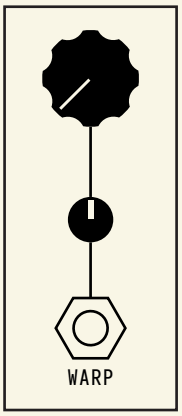


ITER

Selects the number of times the waveform will self-replicate. When 1 is selected, there is no self-replication, so the currently selected core waveform is used for the output.

Features a dedicated CV input with attenuverter.

CV input range: -5V/+5V.

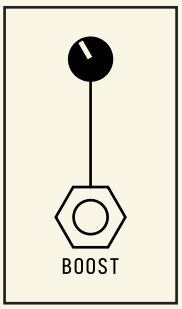


WARP

When ITER is selected to 1, it acts as a waveshaper for the core waveform. With a higher number of iterations, it alters the shape of the self-replicated parts, thus changing the result waveform.

Features a dedicated CV input with attenuverter.

CV input range: -5V/+5V.

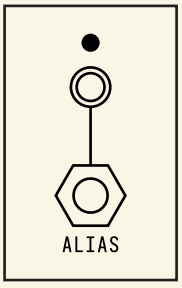


BOOST

Adds saturation to the output waveform and increases the output amplitude up to -10V/+10V.

Features a dedicated CV input.

CV input range: -5V/+5V.

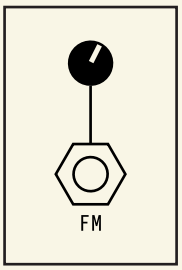


ALIAS

When enabled (the corresponding LED would be lit), aliasing will not be suppressed and will be heard in the upper frequency range. When disabled, frequency-dependent filtering is applied to achieve clean tones.

Features a dedicated gate input.

CV input range: 0-10V.



FM

When an external audio signal is provided, the frequency of the waveform is modulated by this signal. The corresponding potentiometer limits the modulation amount, so when fully CCW, no modulation is applied.

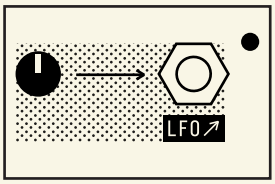
Audio signal input range: -5V/+5V.

SYNC

Hard sync input. When an external audio signal is provided (like an oscillator), the frequency of the output waveform would be locked to the frequency of this signal. Changing the frequency and modulation of the parameters will alter the harmonic content.

When operating in the low-frequency range as a rhythmic generator, this input could be used to reset the waveform by sending a trigger instead of audio, thus you can have more rhythmic effects.

Audio signal input range: -5V/+5V.



LFO

Independent low-frequency oscillator output. Intended for as a modulation source for self-patching, but could be used to control other modules as well.

The corresponding potentiometer controls its frequency. It takes 16 seconds for a full cycle at the minimum position, up to two cycles per second at the maximum.

CV output range: -5V/+5V.