

# FRACTURE

## MULTI-PARTICLE PERCUSSION SYNTHESIZER

**SURFACE:** The Fracture features 23 particle types we call surfaces. The SURFACE control covers a broad range of sonic territory by including surfaces like drum sticks, ping pong balls, toggle switches, claps, snaps, and other ear tickling transient microsamples.

**DECAY:** Controls the length of the particle burst produced when Fracture is triggered. Combine the DECAY knob with the TAIL switch to dial in bursts ranging from dense crescendos to loose applause from the sloppiest crowds.

**TAIL:** The TAIL control works alongside DECAY by routing the decay envelope to different parameters of FRACTURE's internal engine. The first TAIL mode (N) modulates the amplitude of the burst particles. Particles are produced at a constant rate and the decay envelope reduces their individual volumes one by one. The second TAIL mode (M) modulates amplitude like the previous mode while additionally modulating the likelihood that a particle will be produced. Particles are less likely to sound as the envelope decays with time. This mode results in particle bursts that are tight and punchy like the previous mode while also including gently decaying tail particles. The final TAIL mode (O) modulates the particle probability exclusively. Particles have a semi-random amplitude and are less likely to be produced as the envelope decays with time.

**DENSITY:** Increases the rate of the particle production oscillator. More particles will attempt to be produced as the density is increased.



**SPREAD:** As SPREAD is increased the particles are assigned pitches and panning with greater variance from the center.

**FREQ:** Dependent on the setting of the PUNCH switch, FREQ changes the overall spectrum and/or frequency of the produced particle burst.

**PUNCH:** The first mode (L) places a fixed resonance bandpass filter after the particle engine. FREQ controls the center frequency of the bandpass filter. The next mode (M) adds simultaneous pitch control to the FREQ knob. Changing FREQ will move the center frequency of the bandpass filter and the center pitch of the particle burst. The final PUNCH setting (H) simultaneously modulates the filter and pitch, but changes the filter to a parallel bandpass. This setting is great for adding some more punch to your particle burst.

**TRIG-[ACC]-TICK:** Trigger, Accent, Tick. Sending a trigger into TRIG starts a particle burst. A louder, longer, accented particle burst is played if tick is high when the TRIG event occurs. Send a trigger into TICK to play a single particle sample on the rising edge.

**INF (Infinite):** Disable the decay envelope and freely produce particles. DECAY directly controls the parameter the envelope would have controlled as set by the TAIL switch. No particles are produced when DECAY is at its minimum. Triggering or pressing the button modulates density giving the impression of a particle burst within an infinite particle cloud.

**REVERB:** Add Room or Hall reverb! Modulate after triggering for late reverb tails.

**PITCH:** Use this jack to take control of the center pitch of the particle burst while disabling any control the FREQ knob has over the pitch.

**OUT L & OUT R:** The FRACTURE is true stereo! Don't have a stereo output? No problem. Just use OUT L for mono operation.

# INTRODUCTION

Originally inspired by audience applause, Fracture is a multi-particle percussion synthesizer that applies concepts from traditional analog clap circuits to granular synthesis methods.

We distilled our favorite clap circuits down to the basic concept of repeating noise impulses. Pushing this idea into the realm of granular sampling synthesis resulted in an engine based on a pseudorandom particle oscillator that triggers the most available voice of a 22 voice sample player. The frequency of the particle oscillator and its likelihood that it will trigger a sample is modulated to create bursts of micro samples in which the parameters for each voice, sample, pitch, amplitude, and pan are assigned by pseudorandom generators seeded by the CV inputs.

Our goal was to design a clap percussion module covering the range from classic drum machine claps all the way to full audience applause. We ended up with a module that encompasses a huge range of timbres beyond claps. We hope this engine provides you with the tools to intuitively create wild percussion sounds that bring your system to life in a new way.

*W. Mathewson*

# SPECS

Size: 8hp  
Depth: 38mm (with cables)  
Power: +61mA, -17mA

All CV Inputs:  
100k ohm impedance  
CV inputs sum with knobs. Full sweep is 5V

Gate Inputs:  
100k ohm impedance  
2V threshold Schmitt Trigger

Audio Output:  
220 ohm impedance  
20Vpp range  
1.0ms latency max

**WMD**