

KRAKEN

We're in an octopus' garden.

SHELL: Smoothly interpolate between 32 different shell models. Each shell model determines the harmonics of the sound, with interaction from OVERTONE and SNARES.

DECAY: Controls the decay parameter of the internal envelope. The envelope will remain open as long as one of the trigger inputs, HEAD or RIM, is gate HIGH.

WRECK: This switch and cv input allow you to distort the sound in various ways. When no cable is plugged into the WRECK cv jack a fixed amount of distortion will be applied. The first, fully left, position is volume with hard clipping. When no cable is plugged into the WRECK jack, this is effectively a clean setting. The middle setting enables a wavfolder, and the far right setting enables a distortion based on quantization error.

OVERTONE: Control the damping level of the clean shell harmonics. Increasing this control will decrease damping, making the drum hit more resonant as the harmonics ring louder and longer.

HEAD / RIM: The HEAD and RIM inputs trigger their own respective exciter that enters the model at different points. HEAD mimics striking a snare drum in the center, and RIM mimics striking the rim for a sidestick sound. Striking them at the same time enables a third exciter and produces a rim shot sound.

ACCENT: When this jack is gate HIGH, all hits will be slightly increased in decay, amplitude, and velocity.



LOW TUNE: Set the fundamental frequency of the snare drum. Corresponding CV is labeled LO TUNE.

PITCH: Apply an offset to some of the shell's harmonics allowing for finer control of the OVERTONE and SNARES timbre.

MODEL: Select from three models. Repeating digital noise that produces the same sound on every trigger. Analog noise, that gives a slightly different sound with each hit. And finally, a pitch shifting mode controlled by PITCH that allows you to take your sound into another dimension.

SNARES: Control the damping level of the noisy shell harmonics. Increasing this control will decrease damping, making the drum hit more noisy and making the noise tail longer.

VELOCITY: Add life to your drum hits with this control. Low velocity results in softer hits with less noise and less overtones, while high velocities punch harder and ring out longer. Velocity is fixed around 80% max when no cable is plugged into the CV jack.

INTRODUCTION

After making Crucible, WMD was fired up to make another physical modeling drum module. We heard Crucible's engine make some pretty convincing snare sounds during its development, so we knew it was possible, but tweaking that engine was out of the question. It was back to the fundamentals, starting again from scratch. Delay lines, filters, and noise. Crucible taught us physical modeling is processor intensive, so this time we began on the computer. It wasn't too long before we had a giant loop with nearly 100 filters, but it sounded like a snare. With the motivation of actually having the sound we wanted we began tearing down this massive karplus like loop structure into a more manageable algorithm that would run on a microcontroller. Slowly removing things and documenting their effect on the overall sound. Eventually we had something that ran fast enough, no extra processes, only what matters. After many months of tinkering and detailing we present to you Kraken, our physical modeling snare drum module. We hope it inspires you to make art you love!

W. Matthews

SPECS

Size: 8hp
Depth: 30mm (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:
470 ohm impedance
22Vpp range
4.0ms latency max

WMD