Beatsi Information Package

Omni·tone

Short Intro

Beatsi is our love letter to modular drums! Inspired by classic modular drum synthesis which uses the fundamental building blocks, Beatsi's timbres were created using the same methods, only digitally, to minimize footprint. Beatsi is not a sample player or a physical modeller, and it's meant to be that way. Beatsi's interface allows for control over individual piece Timbre, Pitch, Decay, and Level. The timbres are organized into 3 kits: an orange (acoustic) kit, a blue (low-fi) kit, and a green (alien) kit. Within these kits the timbres blend smoothly into one another allowing for seamless modulation. Beatsi has two CV modulation inputs which are assignable to any and all parameters with individual attenuversion. Beatsi may be small, but it packs a serious punch.

Deeper Technical Dive:

MODULE WALKTHROUGH:

Inputs Section:

KICK: Trigger input for the kick.

SNARE: Trigger input for the snare.

HI-HAT: Trigger/Gate input for hi-hat.

TOM: Trigger Input for the tom.

TOM CV: Pitch input for the tom (V/Oct).

CRASH: Trigger input for the crash.

Grid Section:

This is the menu of the module. Use the white cursor to navigate parameters to a specific piece and setting to adjust the sound made. The horizontal light bar below the grid (called the value bar) indicates the value of the currently selected

parameter. The color of the light bar indicates what kit is currently being played by the selected piece. There are 3 kits available, each with their own range of timbres. There is an orange (basic) kit, a blue (low-fi) kit, and a green (alien) kit. You can switch a piece's kit by scrolling past the end or the beginning of the timbre parameter where the value bar will roll over and change colors, indicating the new kit.

Control Section:

CV1 and CV2: Patch in a CV signal to control any parameter in the grid. To assign a parameter to CV1 hover over it with the cursor in the grid and short press the PARAMETER encoder. The cursor will turn green, indicating that CV1 is assigned to that parameter. To assign a parameter to CV2 hover over it with the cursor in the grid and short press the VALUE encoder. The cursor will turn orange, indicating that CV2 is assigned to that parameter. Multiple parameters can be assigned to a single CV source simultaneously. The CV source affecting a parameter can be attenuverted as well. To set the attenuverting settings for a specific parameter, hover over it with the cursor and long press the encoder below the desired CV source (parameter for CV1 and value for CV2). An attenuverting display will pop up below the selected piece in the grid where turning the associated encoder will edit the attenuverting setting. The top two squares represent attenuating without inverting while the bottom two squares represent attenuating with inverting. In other words the gain range is from 1 to -1. If a pitch parameter is assigned to a CV source, it will follow the v/oct protocol if the attenuverting settings are at gain of 1.

Parameter: Turn this encoder to scroll through the different parameters of the grid. Short press the encoder to assign the selected parameter to CV1 and long press to edit the attenuverting setting for the selected parameter.

Value: Turn this encoder to adjust the value of the parameter that is currently selected on the grid. Short press the encoder to assign the selected parameter to CV2 and long press to edit the attenuverting setting for the selected parameter.

Pressing both the value and parameter knobs simultaneously will mute the piece that the cursor is under.

Hit: Press the button to sample the sound of the piece that the cursor is under.

Out Section:

All sounds will outputted from the OUT jack.

Saving Settings:

To make sure all of your parameter, CV assignment, attenuverting, and muting settings are saved, refrain from sending it any triggers or making any edits for 5 seconds and the cursor will dim momentarily, indicating that the state of the module is recorded and is safe to power off without losing settings.

Holding down the hit, parameter, and value buttons, and powering on the module will reset the CV assignments, muting, and attenuverting settings back to their default states.

MODULE THEORY:

Beatsi does not create its sounds through the use of physical modeling synthesis or samples. Instead it simulates the modular equivalent of drum pieces.

For example, one may create a drum sound with a few different modules, such as a sine wave VCO, an envelope generator and a VCA. By giving the VCO amplitude and pitch short decay envelopes, a basic drum sound can be made, kick or tom, depending on the pitch. Some realism can be introduced by adding some audio rate AM and FM to more closely emulate the harmonics of a real drum, or adding a short noise burst at the beginning of the sound to emulate the sound of a stick or mallet hitting the drum skin. Add some noise into the signal path and you've got a snare.

The cymbals are a combination of filtered noise and multiple short delay lines to create the dissonant metallic resonance of a cymbal. The crash uses a simple decaying amplitude envelope but the hi-hat is a little different. The hi-hat is inspired by a noise source being attenuated by a VCA using a gate or trigger. A trigger (very short gate) opening and closing the VCA very quickly would emulate the sound of a closed hi-hat while a gate opening and closing the VCA would emulate the sound of an open hi-hat. The decay portion of the hi-hat only begins on the falling edge of gate/trigger.

To make the different kits and timbre, various LFOs, envelope shapes, bit crushing, down sampling, ratcheting, and trigger delays were applied to bring variety to the sounds.