

DUUUUUUUUUURRRM

Drum Machine Alternate Instrument
For QuBit Nebulae v.2 - By Eli Pechman



Durm is a four voice drum machine where all of the voices share the same parameters as set by the front panel controls. There are two ways around this: drum settings are only updated for each voice when a trigger for that voice is received, meaning that with fast enough modulation each voice will have settings that differ from the other voices. The other possibility is to "lock" the parameters for the given voice, causing the front panel controls and relevant modulation to no longer have an effect on that particular drum voice. This enables the user to tweak the settings for each drum voice to their liking and then have the option to only modulate the 'unlocked' voices. The "speed" knob controls an effect that is shared over all of the voices with one of four effects being selected by an alternate control. All parameters (except for window, pitch and speed) can be randomized per step with a set randomness amount. Audio inputs are routed through the main effect and also through a side chain compression sort of effect controlled by the internal synthesizer envelopes. Bass drum is always routed to the left channel and all other drums are routed to the right. Controls for each voice are as follows.

Bass Drum Settings

Triggered by "Record" Input



The bassdrum consists of 3 sine wave oscillators that are all ring-modulated and then sent through a low-pass filter. "Nonlinearity" controls a sort of detune for each of the oscillators as well as an overdrive of the filter.

Snare Drum Settings

Triggered by "Next" Input



The snare drum is a clocked noise source being fed into a filter. The feedback knob sends the output of the noise sample and hold into the clock frequency over the first half of the knob and into the filter cutoff frequency over the second half. Pure white noise can be fed in with the window knob.

High Hat Settings

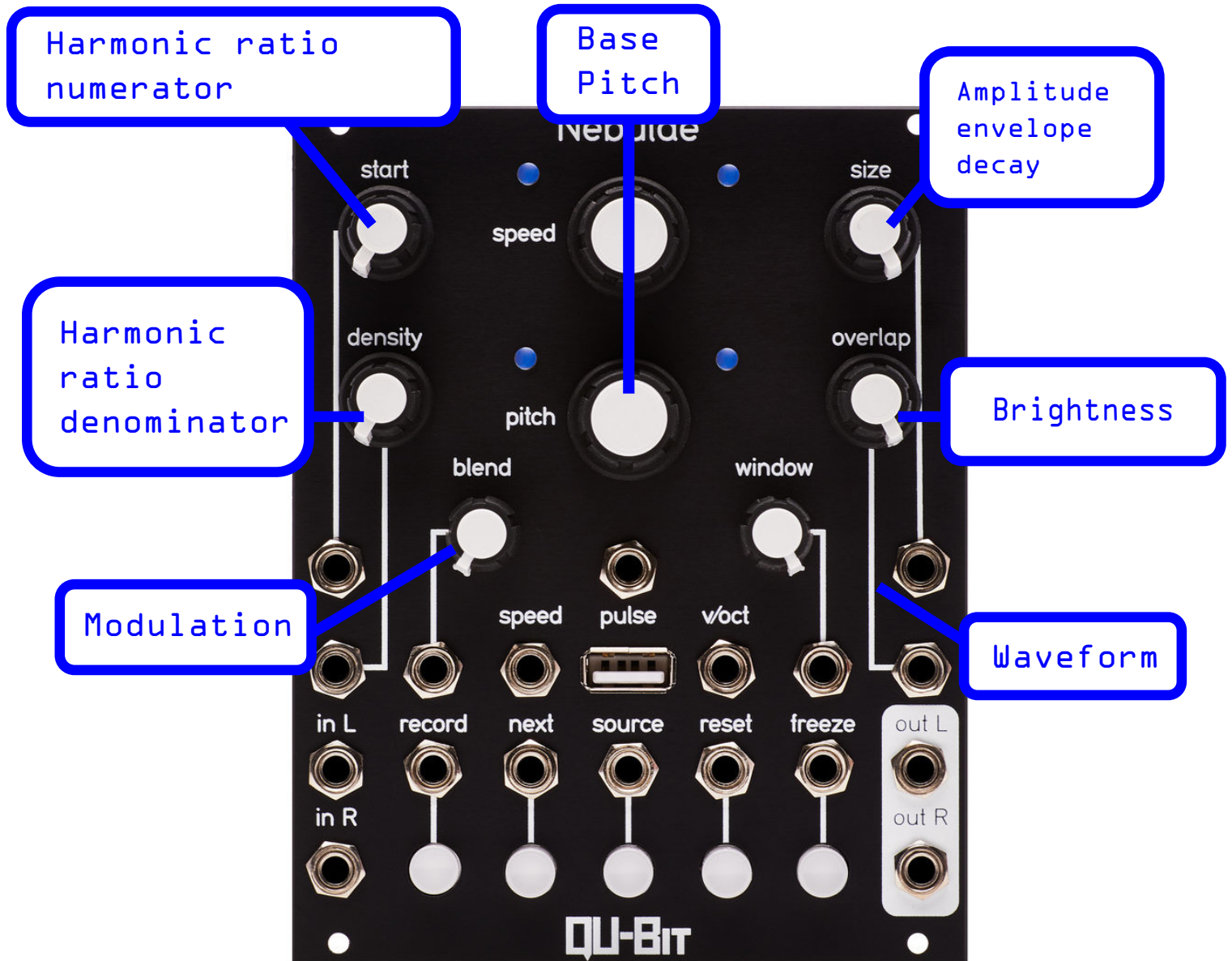
Closed High hat triggered by "Source" Input
Open High hat triggered by "Reset" Input



The high hat is a set of ring-modulated oscillators and white noise with both high pass and low pass controls. The closed high hat decay is a preset fraction of the length of the open high hat decay (roughly 1/10th). Window works in the opposite direction of how a high pass filter is normally configured to work nicely with the window knob response on other drums.

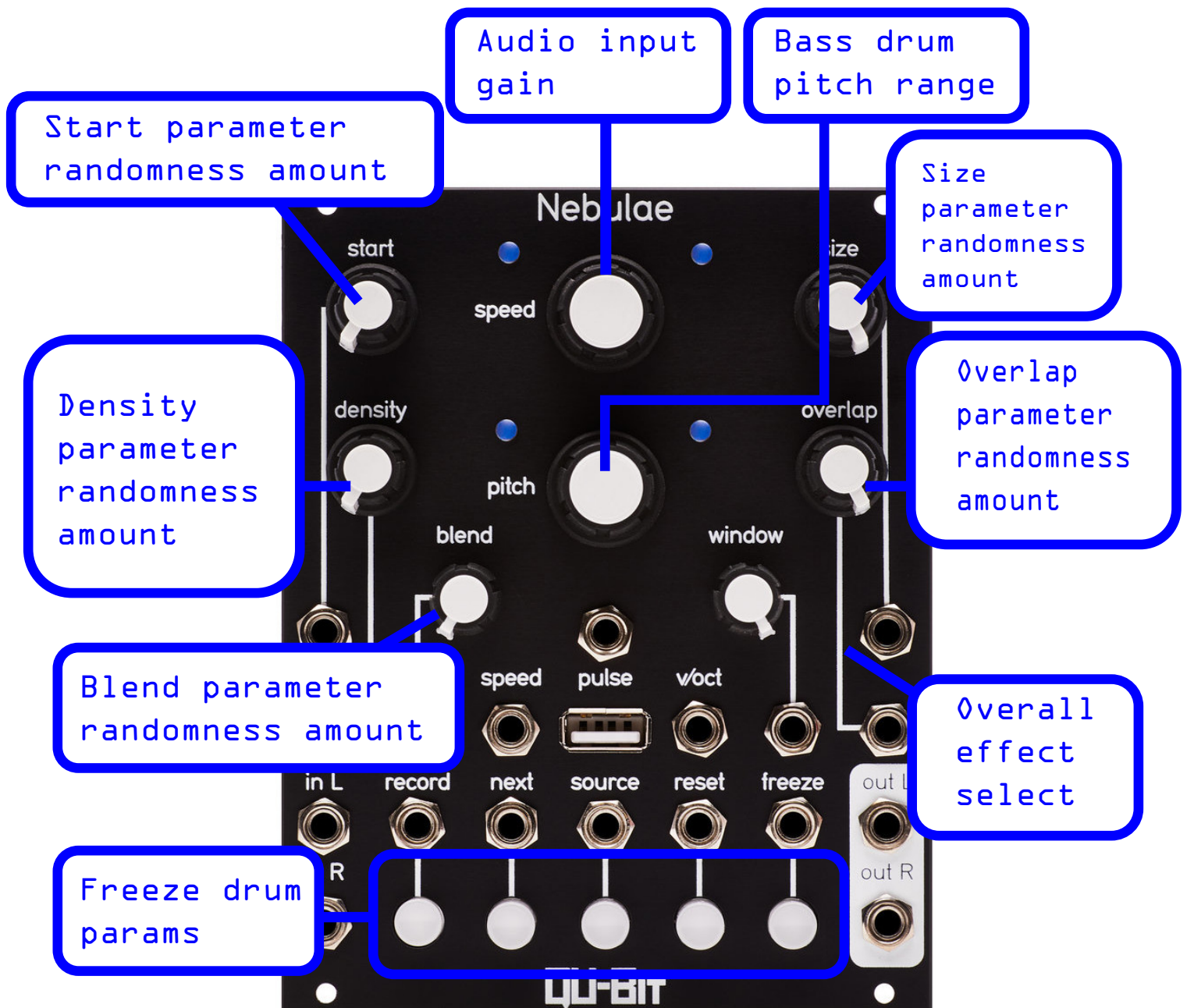
Percussion Drum

Triggered by the "Freeze" input



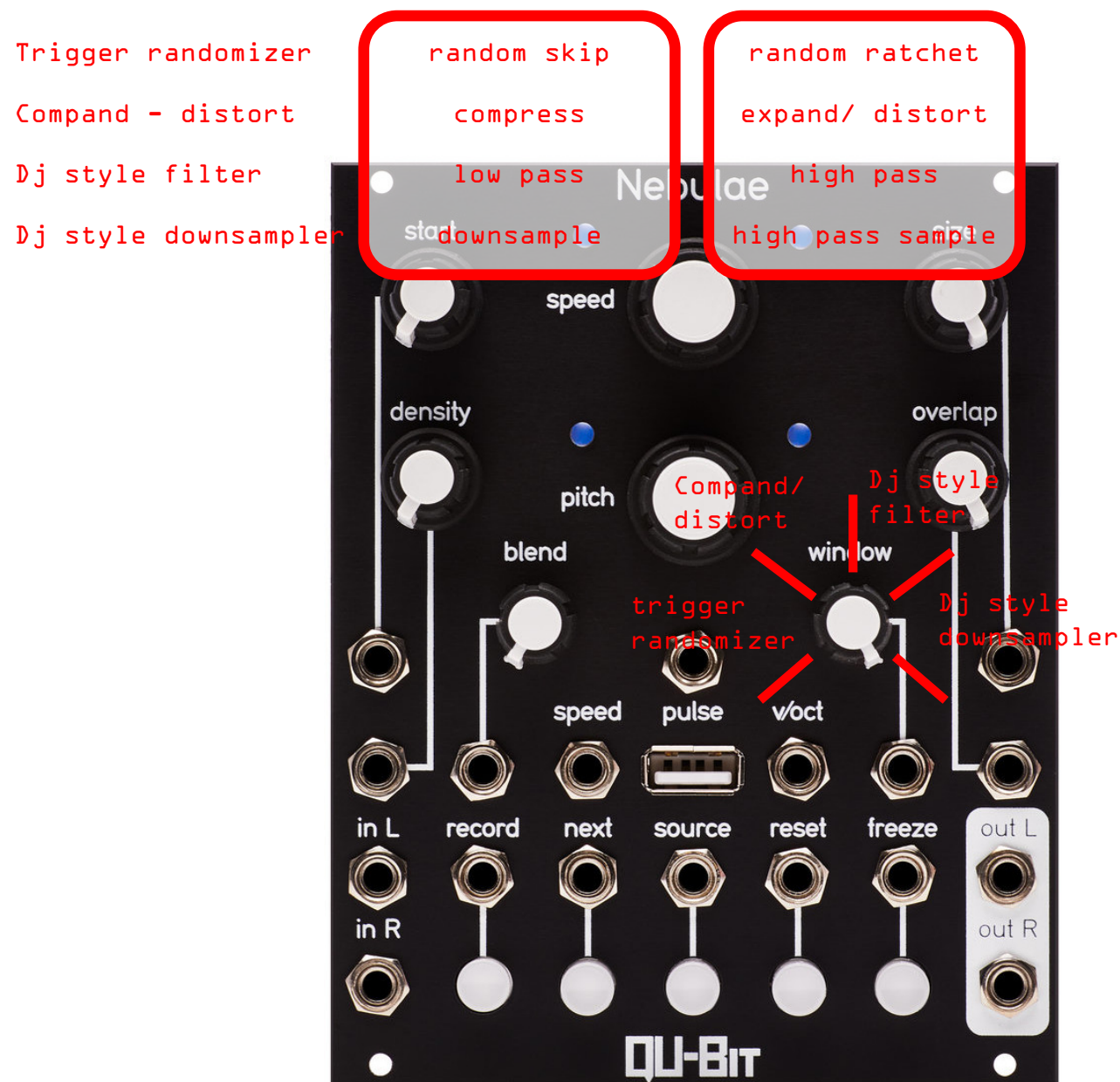
The percussion drum is a four operator phase modulation voice with operator frequencies set by an integer numerator/ denominator ratio. The 'blend' knob will increase phase modulation amount from each operator to the next, waveform crossfades between a sine wave and a tangent (similar sound to a saw tooth). Brightness controls cutoff frequency of a low pass filter.

Alternate Settings



In this page we get the "hidden" drum settings accessed by holding the source button. All drums can have their settings frozen by pressing the button associated with the desired drum (reset for both highhats). 'Next' and 'reset' buttons do not display the freeze state of the drums due to the nature of the nebulae so a few attempts may need to be made to correctly freeze these drums. The alt-pitch knob controls the range of the bass drum to keep it in a lower register than the other drums. All of the other parameters (except window and speed) can have a per-step randomness amount set by turning their knobs with source held. The randomness is added to the base parameter value across all unfrozen drums. Alt-window changes the shared effect for the drums.

Effects overview



All of the drums have one global effect that is controlled by the 'speed' knob. There are four effects which can be selected between by pressing the source button and turning the window knob. All four effects do something different when the speed knob is left of center versus right of center, indicated by the two LEDs next to the speed knob. The drum program boots with the trigger randomizer by default.