Grainshift

Grainshift is a pitch-shifting module built with granular synthesis code originally developed for our Discord 3 plug-in. Granular synthesis divides sound into small segments, or grains, and reassembles them in different ways to produce different effects. Grainshift offers a simplified set of granular synthesis parameters to bring this powerful signal-processing technique to the modular synthesizer world in an easy-to-use and economical package. From subtle chorusing to diffuse clouds of sound, Grainshift adds exotic new flavors to your modular spice rack.

Control-Voltage Jacks

Control voltages present at the jacks are added to the values set with the knobs.

Positive voltages at the **PITCH** jack increase the pitch shift; negative voltages decrease it. The CV jack adds an additional octave (up or down) of shift to the range available with the **PITCH** knob.
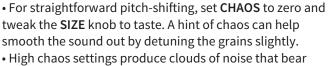
Positive voltages at the **CHAOS** jack increase the amount of chaos (pitch randomization); negative voltages decrease it.

Positive voltages at the **SIZE** jack increase the grain size; negative voltages decrease it.

The useful range of voltage for the CV jacks is ±5V.

Audio Input Jack

The audio input signal goes in here. The hardware will be happiest if the signal level is within ±7V.

Knobs

The **SHIFT** knob changes the amount that the signal's pitch is raised or lowered. Turning the knob clockwise from its center position raises the pitch; turning it anti-clockwise lowers the pitch. The shift range is up or down one octave.

The **CHAOS** knob randomizes the pitch and size of the audio grains. Turning the knob clockwise increases the amount of randomization.

The **SIZE** knob controls the size of the grains. Rotating the knob clockwise makes the grains longer. Use the **SIZE** knob to tune the module to suit your source material. Longer grains provide a smoother sound, while shorter grains preserve transients more accurately.

Audio Output Jack

All of the little sonic grains emerge from here. Help them find their way in the world of your modular system.

• For straightforward pitch-shifting, set **CHAOS** to zero and tweak the **SIZE** knob to taste. A hint of chaos can help smooth the sound out by detuning the grains slightly.
• High chaos settings produce clouds of noise that bear little resemblance to the input signal. While this can be useful in itself, try mixing a little of Grainshift's output with the original signal to add a background texture.
• Put Grainshift in the feedback path of a delay (like, say, our DubJr module) to create echoes that rise or fall in pitch as they fade. Patch an LFO to the **PITCH** jack to create echoes that rise *and* fall as they decay.