

Vulpus Labs

Cumulonimbus

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Introduction

Cumulonimbus is a granular delay effect which works by emitting short (10ms - 1s) segments, called “grains”, from a chosen position in a recording buffer when triggered. The position offset, replay speed and length of the grains are controllable, as is the shape of the amplitude envelope applied to them, and up to 64 grains may be playing at any one time. This enables a range of effects from pitch-shifting and texture generation to diffused and glitchy delays.



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The recording buffer can be frozen, either manually or via a gate signal, enabling the audio captured in the current buffer to be used as a static source for granular audio generation.

A feedback circuit is included, with controllable feedback amount. Both the contents of the recording buffer and the positions of active grains are shown in a helpful visual display.

Usage



The top row of inputs, from left to right, are the **FREEZE GATE** controls, the stereo audio **INPUT**s, and the **TRIGGER** which starts a new grain playing from the recording buffer. The freeze gate can be engaged by pressing the toggle button, or sending a positive voltage greater than 0v to the input jack.

Grains can similarly be triggered by manually pressing the trigger button, or by a signal sent to the input jack crossing over from negative or 0 voltage to a positive voltage. Connect a sine wave LFO to the trigger input jack to generate grains at a constant rate; or try a sample-and-hold input for more randomised generation.

The freeze gate LED is lit if the recording buffer is frozen. The trigger LED starts to glow red as the number of active grains approaches the maximum.

The six large colour-coded knobs control the **POSITION**, **LENGTH**, **PITCH**, **FADE**, and **PAN** characteristics of the generated grains, and the amount of **FEEDBACK** from the grain playback into the recording buffer. The corresponding colour-coded input jacks and smaller knobs allow the values set by the large knobs to be modulated by an input signal, with the smaller knob controlling the amount of modulation. All grains are faded in and out, to avoid clicks; **FADE** sets the percentage of the grain's total playback time that is spent fading in and out.

The visual display shows audio passing through the recording buffer in green, and the positions of currently active grains as yellow stripes.

The **LEVEL** control on the bottom row sets the level of the input signal, which you may want to drop if generating large numbers of grains to keep the overall volume in check. The **MIX** control sets the mix of dry input signal to generated grain output, and the **OUTPUT** jacks carry the resulting stereo signal.

Credits and Acknowledgements

Cumulonimbus was written by Dominic Fox in May 2023.

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