

# Grain Stream

User Manual



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# Overview

Grain Stream is a versatile grain delay plugin with a unique timeline editor to allow for fine control over a variety of grain parameters. It features 2 LFOs, a randomiser, and automatable offset sliders to modulate the grain parameters in realtime.

The granulator can play up to 100 grains simultaneously from 10 to 500ms in length, with 5 different grain window shapes, and grains can be fed back to create even denser granular textures.

Grain Stream is available as a 64-bit VST and VST3 for Windows, and 64-bit VST, VST3 and AudioUnit for macOS.

# Installation

## Windows

VST – Copy 'Grain Stream.dll' to C:\Program Files\Steinberg\VSTPlugins

VST3 – Copy 'Grain Stream.vst3' to C:\Program Files\Common Files\VST3

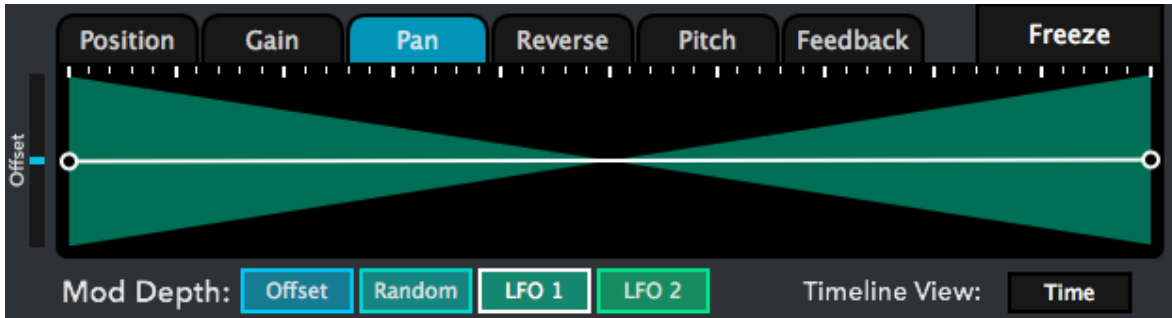
## macOS

AudioUnit – Copy 'Grain Stream.component' to /Library/Audio/Plug-Ins/Components

VST – Copy 'Grain Stream.vst' to /Library/Audio/Plug-Ins/VST

VST3 – Copy 'Grain Stream.vst3' to /Library/Audio/Plug-Ins/VST3

# The Timeline



## Parameters

Grain Stream's timeline displays the last 10 seconds of incoming audio, and allows users to finely control the values of its various parameters over this time, these parameters are:

**Position** – This controls the relative probability of grains being created from audio at a certain point in the timeline.

**Gain** – This sets the volume of each grain depending on its position in the timeline.

**Pan** - This pans each grain from left to right depending on its position in the timeline.

**Reverse** – This sets the probability of a grain being reversed depending on its position in the timeline.

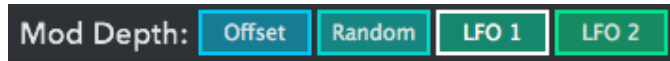
**Pitch** – This pitch shifts grains depending on their position in the timeline. Pitch points are locked to semitones by default but can move by cents by holding ctrl.

**Feedback** – This sets the feedback level of each grain depending on its position in the timeline. Grains are fed back to the start of the timeline, and the total feedback is scaled by the grain density and then limited to prevent the feedback loop from becoming unstable.

The value of each parameter is determined by the height of the line at that point in the timeline. The line can be dragged up and down, and users can add and remove points from the line by double clicking to change its shape.

## Modulation

To allow users to dynamically change parameter values, several modulation sources are available:



**Offset** – Each parameter has an offset slider to the left of the timeline when that parameter is selected, this slider allows the use of automation to change the parameter values over time.



**Random** – Parameters can be randomised on a per-grain basis to create more chaotic sounds. This is the only modulation source that is not available for all parameters; Position and Reverse cannot be randomised, as due to how they work, this would be redundant.

**LFOs** – There are 2 LFOs available to modulate parameters with a regular, recurring pattern. The rates of the LFOs can be set in Hz or syned to the project tempo, and phase shifted.



In order to apply modulation to a parameter, the modulation depth must be set by selecting a modulation source from the 4 buttons below the timeline, and then shift clicking on a point or line and dragging up or down. Dragging down allows the modulation to be scaled negatively, except for Random, for which this is unnecessary.

## Freeze

The Freeze button saves the current audio stored in the timeline and stops new audio from entering, allowing the user to manipulate the grain parameters freely with a static audio source.

## Controlling the Timeline

It is very important to fully understand how the timeline works to get the most out of Grain Stream, so here is a full explanation of the timeline controls, some of which have been mentioned above already:

**Points** – Points on the timeline can be clicked and dragged to move them around and change the shape of the line. Points cannot be dragged horizontally past an adjacent point, and the two end points can only be dragged vertically.

**Creating/deleting Points** – Double clicking on a line or empty part of the timeline will create a new point, double clicking an existing point on the timeline will delete that point, unless it is one of the end points. When a point is created, its modulation depth for each source is set relative to the modulation depth of its adjacent points, unless shift is being held, in which case modulation depth is set to 0.

**Modulation Depth** – Holding shift while clicking and dragging a point will stop the point from moving, and instead set the modulation depth for the currently selected source for that point. Dragging up will scale the modulation depth positively, and down will scale it negatively, except for Random, which cannot be scaled negatively. Double clicking on a point or line while holding shift will reset the currently selected modulation depth to 0.

**Lines** – Clicking and dragging on lines allows two adjacent points to be moved together. This also extends to controlling modulation depth when holding shift. When moving a line, the distance between the points at each end will not be able to change.

**Precision Control** – Holding ctrl allows more precise control over parameter values by greatly reducing the mouse sensitivity. For the Pitch parameter, this allows values to be moved by cents, instead of being locked to semitones.

## Timeline View

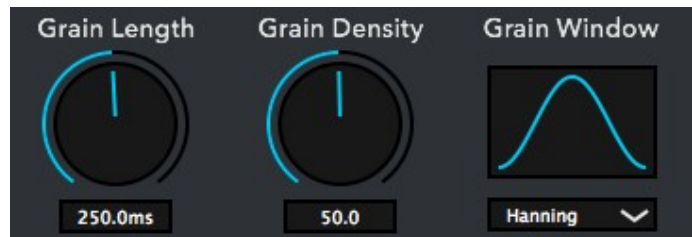
The timeline has a ruler along the top to display time. The timeline view button below the timeline toggles these markings to display either seconds or bars and beats. When moving a point or line, the data label by each point will display the corresponding time or bars/beats depending on which mode is selected.

# Granulator Settings

In addition to the parameters on the timeline, there are five additional parameters in the bottom row of Grain Stream's interface:

**Grain Length** – This sets the length of each grain created by the granulator between 10 and 500ms.

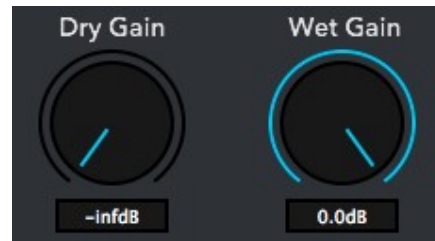
**Grain Density** – This sets the total number of simultaneous grains being played by the granulator, the interval between grains being created is calculated by dividing Grain Length by Grain Density.



**Grain Window** – This is the shape of the volume envelope applied to each grain, there are five window shapes available: Hanning, Triangle, Ramp Up, Ramp Down, and Square.

**Dry Gain** – This sets the level of unprocessed signal to be mixed into the output.

**Wet Gain** – This sets the level of the granulated signal to be mixed into the output.



# Support

If you experience any issues using Grain Stream, please don't hesitate to get in touch by email at [contact@willsavin.com](mailto:contact@willsavin.com) or using the contact form at <https://willsavin.com/contact>