



GrainDust

Reference Manual

Welcome Note



Welcome to GrainDust!

Two years ago, we released SkyDust 3D, which was a significant mark for me. The idea of creating a 3D synthesizer, was something that I wanted to do for a long, long time. And, although subtractive synthesis and FM are very interesting synthesis techniques with good results, in some situations we need a more organic kind of sound, and that is the reason we decided to create a granular synth.

I think that granular synthesis can be great to give you those organic characteristics, but still allows you a lot of freedom to be creative (something that sampling cannot do). We added 4 granular layers per voice, which allows you to use multiple audio recordings at the same time, to achieve even more interesting results. Finally, the 3D features of SkyDust will also be present, allowing you explore space in a much more interesting way, even if you are only using “plain” stereo.

I really hope you enjoy it, and don't forget to send us your feedback (we love to hear from our users).

Nuno Fonseca, PhD

CEO

nuno.fonseca@soundparticles.com

Table of Contents

Welcome Note	2
Introduction	5
Overview	5
Top Bar	7
Settings Panel	9
Top Panel	11
Main	11
Grains	12
Filter	16
Pitch	19
Space	22
Arpeggiator	27
Effects	30
Extras	35
Matrix	39
Bottom Panel	41
Keyboard	41
Mixer	42
Macros	43
Pads	43
Space	44
Bottom bar	46
Plugin and Presets Location	47
Nuendo & Cubase Workflow	48
Pro Tools MPE workflow	53
Tips	54
Additional Notes	55
Credits	56

EULA	58
-------------	-----------

Introduction

We're excited to introduce you to **GrainDust**, a powerful and modern **Granular Synthesizer**, allowing you to obtain creative organic sounds. Unlike traditional synthesizers, GrainDust breaks sound down to its smallest elements—tiny grains of audio—and rebuilds it in limitless ways. This gives you unprecedented control over texture, motion, rhythm, and timbre. Whether you're stretching a single note into an evolving pad, transforming field recordings into alien soundscapes, or generating rhythmic glitches that pulse with organic energy, this instrument opens up a universe of creative potential. From lush ambiances to sharp stutter effects, GrainDust is perfect for musicians, producers, composers, and sound designers. We invite you to explore the manual and uncover everything this tool has to offer. Whether you're shaping cinematic atmospheres or crafting experimental textures, **GrainDust** will change the way you create sounds.

Overview



GrainDust

GrainDust is a four granular layers synthesizer, designed to be easy-to-use and straightforward, while providing all the controls you need to attain your own custom sound. When you open the plugin you will see that it is divided into two panels, a Top Panel and a Bottom Panel.

The Top Panel is divided into the following pages:

1. Main
2. Grains
3. Filter
4. Pitch
5. Space
6. Arpeggiator / Sequencer
7. Effects
8. Extras
9. Matrix

On the Bottom Panel you can choose between the following tabs:

1. Keyboard
2. Mixer
3. Macros
4. Pads
5. Space views

The Main Page offers a great selection of **presets** created by professional sound designers, and you can easily tweak them to your liking with the randomization of multiple parameters. If you want to take your sound to the next level, the other pages allows you to fine-tune or even create your sound from scratch. You also have **sub presets** for each page that will affect only the parameters on that specific page.

On the next section of this document, you'll find a detailed description of each page and its specific controls.

Top Bar

The GrainDust top bar incorporates a set of features that assist you while using the plugin, like scaling the window, randomizing parameters, managing presets and accessing the settings to help you improve the experience with the plugin.



Top Bar

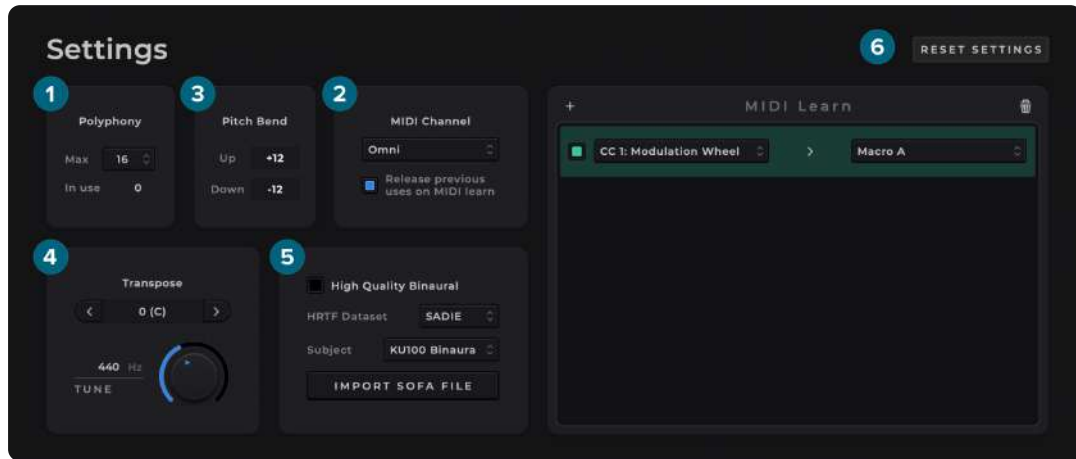
In the top bar you will see the following options:

1. **MIDI Indicator** - Flashes every time the synth receives MIDI messages.
2. **GUI Zoom** - The GrainDust GUI can be resized. The pop-up available in the upper-left part of the interface let users choose a scaling value, from 25% to 400%. This action affects only the currently selected GrainDust instance. New instances of the plugin will open with the default size factor (100%).
3. **Randomize** - This button will generate random presets, allowing you to have endless presets. If you are looking for happy accidents, this feature is for you. Sometimes you may have mad presets, other times you may have a diamond in the rough. On the right side, there is a popup menu that allows to lock some of the modules, ("I like this sound, but give me a different arpeggiator and spatial effects").
4. **Preset Navigator** - Allows users to navigate through the previous and next preset using the arrows placed on the left and right of the Preset pop-up menu. Clicking on it opens the Main Page to access the preset list.
5. **Save** - Clicking the "Save" button saves the current state of the plugin in a preset. The user can define the preset name, the author and the category of the preset. To edit this fields or delete a preset you can go to the Main Page and right-click on the preset you want to edit or delete. To see where the presets are located check the Preset Location section.
6. **Output Format** - Choose the right output format for your track, between the following options:
 - Mono
 - Stereo (several stereo options, based on different stereo mic techniques)
 - Binaural
 - LCR

- LCRS
- 4.0
- Quad
- 5.0
- 5.1
- 7.1
- 9.0
- 5.0.2
- 5.1.2
- 5.0.4
- 5.1.4
- 7.0.2
- 7.1.2
- 7.0.4
- 7.1.4
- 9.1
- 7.0.6
- 7.1.6
- 9.1.4
- 9.1.6
- 9.0.8
- 9.1.8
- 11.1.8
- 11.1
- 12.0
- 13.1
- Auro 11.1
- Auro 13.1
- IMAX 12.0
- NHK 22.2
- Sony 360
- 1st order Ambisonics
- 2nd order Ambisonics
- 3rd order Ambisonics
- 4th order Ambisonics
- 5th order Ambisonics
- 6th order Ambisonics

7. Settings - Access the settings panel.

Settings Panel



Settings Panel

On the top right of the plugin window you can access the Settings Panel by clicking on the gear icon.

In the Settings Panel you can control the following parameters:

1. **Polyphony** - Lets you choose the maximum number of notes to be playing at the same time, with a maximum of 256. When using a computer with weak performance or a very small buffer size, the synth may not be able to play all notes, resulting in a glitchy behavior. For instance, holding the sustain pedal and playing the same note multiple times, triggers several notes that can become hard for the synth to handle. Decreasing the Max Polyphony activates the note stealing, which stops the older (soft) notes that are almost inaudible, and focus on the new ones. On another hand, if you have a powerful computer, you may want to increase this value to make sure nothing is lost.
2. **MIDI Channel** - You can choose the MIDI Channel to be received by GrainDust, with Omni as the Default, or select the MIDI Polyphonic Expression (MPE) mode. For more information about this mode, check the MPE section of this manual.

a) **MPE** stands for "MIDI Polyphonic Expression." It is a specification for MIDI (Musical Instrument Digital Interface) that allows for more expressive and nuanced control of electronic musical instruments. Traditional MIDI sends a single stream of data for each note played on a keyboard, including information on pitch, velocity, and duration. This means that if a player wants to add expression, such as vibrato or pitch bends, to a single note, they must apply it to all notes at the same time. MPE, on the other hand, allows for individual control of each note played on a keyboard. With

MPE, each note is assigned its own MIDI channel, which can have its own pitch bend, modulation, and pressure data. This means that a player can apply different levels of expression to each note, creating a more dynamic and expressive performance. GrainDust is capable of recognising and responding to MPE messages.

- b)** The checkbox allows you to choose to release previous uses on MIDI Learn, when assigning a new one. For instance, If you were using the Mod Wheel to control Macro A but want to control something else, this checkbox will tell the synth to forget about the previous assignment, before doing the new one.
- c) Pitch Bend** - Allows you to define the Pitch Bend range, with a maximum of 36 semitones, with different ranges for up and down.
- d) Tune** - You can define the tune of GrainDust, with "A" going from 400 Hz to 500 Hz. You can also transpose the scale from one octave below to one octave up. This could be useful while playing or performing, if you are used to play and solo in a certain scale on the keyboard but want to sound in a different scale.
- e) HRTF Dataset** - Allows you to select one among many choices of a HRTF Datasets. Import your own Sofa File clicking on "IMPORT SOFA FILE"
- f) Reset Settings** - Resets all the Settings parameters to the default values.

Top Panel

On top of the plugin window, right below the Top Bar, you have the Page Selection where you can shift between the 9 pages. This is visible in all pages and allows the user to quickly switch between them. All the pages allows you to see the bottom panel - which will be explained in a latter section of the manual.

Main



Main Page

The Main Page allows you to use the instrument fast without needing any additional experience. In this page you will have access to the preset selection:

1. **Main presets** - Select a global preset.
2. **Arp sub-presets** - Select a sub-preset that will affect the Arpeggiator / Sequencer only.
3. **Pitch sub-presets** - Select a sub-preset that will affect the Pitch only.
4. **Space sub-presets** - Select a sub-preset that will affect the Space only.
5. **Space View** - View the position of all sound elements (particles).

Grains



Grains Page

The Grains Page gives you access to controls over the base of your sound, with parameters for each of the **4 Granular Layers**. On the left side of the page, you can switch between the **Summary** tab and each individual **Granular** tab.

In the **Summary** tab you have control over all Granulars with the following parameters:

1. **Power button** - Turn On/Off each Granular.
2. **Sample** - Choose a sample for the Granular to process.
3. **Gain** - Controls the output gain of your Granular.
4. **Rate** - Controls the rate at which each grain will be triggered.
5. **Density** - Controls the amount of grains triggered each time.
6. **Size** - Controls the size of the grains based on a percentage of the Rate time.

In the individual **Granular** tab, in addition to the above mentioned controls, you have also access to other parameters:

1. **Sync** - Syncs the trigger of new grains to the DAW tempo.
2. **Continuity** - Controls the triggering of new grains so they play sequentially from the beginning to the end of the sample.
3. **Detune** - Sets the limit for a random detune for each grain.
4. **Grains Window** - Set the shape of the grain window: Rectangle, Triangle, Hann, Tukey, Saw Up, Saw Down.

5. Grains Trigger - Set the Trigger mode for the grains: Uniform, Random, Burst.

6. EG Mode - Activates EG mode. In EG mode the user can define which part of the sample will be played in each part of the envelope: Attack, Decay, Sustain, Release.

7. Normalize - Normalize the sample to 0 dB.

8. Pitchless - MIDI note has no impact on the pitch played by the sample.

9. Octave - Set the octaves for the grains to be triggered on.

10. Sample Handlers - Allows the user to define the part of the sample the grains will be triggered from.

a) When on EG mode, there will be 4 pairs of handlers to set 4 parts of the sample.

11. EG - The **EG** has the following parameters:



Grains Page - EG

- a) **EG Type** - Select the type of EG, from simple AR (Attack/Release) to complex DAHDSR (Delay/Attack/Hold/Decay/Sustain/Release).
- b) **Delay** - Controls the time it takes for the granular to start to play after you press a key on the controller.
- c) **Attack** - Controls the time it takes for the granular to go from 0 ($-\infty$ dB) to the maximum value.
- d) **Hold** - Controls the time it takes for the granular to hold on the maximum value before it decays.

- e) **Decay** - Controls the time it takes for the granular to go from the Peak value to the Sustain level.
- f) **Sustain** - Controls the level of the sustain. The sustain has no time value since it endures as long you keep your key pressed.
- g) **Release** - Controls the time it takes for the granular to go from the Sustain level value to 0 ($-\infty$ dB).

12. The **LFO** has the following parameters:



Grains Page - LFO

- a) **Power button** - Turn On/Off the LFO.
- b) **Waveform** - Choose between: Sine, Square, Square (Sharp), Triangle, Saw Up, Saw Up (Sharp), Saw Down, Saw Down (Sharp), Full Rectified Sine, Half Rectified Sine, Noise Steps, Noise Steps (Sharp), Noise Linear, Noise Lagrange, Noise Binary and Noise Binary (Sharp).*
- c) **Waveform Modifier** - Choose between: Silence, Amplitude Offset, Wave Folding, Wave Folding Positive, Clipping, Bit Crusher, Time Shift Up, Time Shift Down.
- d) **Modifier value** - Allows you to define the amount of the Modifier effect you want on your granular.
- e) **Sync** - If enabled, the rate of the LFO syncs with the DAW's project tempo.

f) Global - If enabled all the voices will be sync together, independently from their start times.

g) Rate/Note - Controls the rate of the LFO. If Sync is disabled ranges from 0.1 to 10 Hz, with Sync enabled you can choose between several time divisions.

h) Depth - Controls the depth of the modulation of the LFO.

i) Delay - Controls the time it takes for the LFO to reach its full rate and depth.

j) Phase - Allows you to offset the initial phase of the LFO wave.

*Sharp waveforms create instant gain changes that creates clicks, but you may want exactly that.

Filter



Filter Page

The Filter Page allows you to apply and control the filters. On the left menu, you can switch between **Off** (disables all filters), **Global** (controls a single global filter applied to all Granulars) or **Granular** (opens 4 tabs that have one filter for each Granular). Each filter also has its own EG and LFO available, which controls the filter's frequency.

Each **Filter** has the following parameters:

1. **Power button** - Enable the filter on the correspondent Granular.
2. **Filter Type** - Choose between: Low Pass, High Pass, Band Pass, Band (Semi Parametric), Band (Parametric), Low Shelf, High Shelf. Each type opens the respective parameters on the right side of the Filter.
3. **Slope** - Select the slope (filter order) of your filter, which means the attenuation per octave.
4. **Keyboard Mapping** - When enabled, the filter frequency will shift depending on the keyboard note pressed. The goal of this feature is to maintain the same timbre on the entire note range. This change will be made in relation to the middle C note (MIDI note 60). For instance, if the user presses the middle C, the filter will use the frequency defined on the frequency knob, playing above middle C will shift the frequency up and playing under the middle C shifts it down. The slider controls the exact amount of frequency shift. For example, playing a note 4 octaves above middle C, but with a knob at 50%, means that the filter frequency should be changed only 2 octave (50% of 4 octaves).

- 5. Velocity Mapping** - When enabled, the filter frequency will shift depending on the velocity of the note you are playing. The goal of this feature is to have brighter notes when the MIDI velocity is higher. If the slider is at 100%, the current frequency of the filter will be ignored and its frequency will range from 20 Hz (velocity = 1) to 20 kHz (velocity = 127), with a log scale. If is at 0% (or velocity mapping is disable), the filter will use its settings. If the knob is at 50%, the filter will be a weighted sum, considering 50% of the frequency of the filter + 50% of the velocity mapping frequency.
- 6. Parameters** - Depending on the filter you have access to different parameters:
- a) Low/High Pass: Frequency (defines the cutoff frequency of the filter) and Resonance (increase or decrease the resonance of the filter's cutoff frequency).
 - b) Band Pass: Frequency (defines the center frequency of the filter) and Q (defines the quality/slope of the filter).
 - c) Peak: Frequency (defines the center frequency of the filter), Q (defines the quality/slope of the filter) and Gain (define the amount of boost or reduction of the center frequency).
 - d) Low/High Shelf: Frequency (defines the frequency of the filter) and Gain (define the amount of boost or reduction of the filter).

The **EG** has the following parameters:



Filters Page - EG

- 1. **Power button** - Enable the EG to control the filter.
- 2. **EG Type** - Select the type of EG, from simple AR (Attack/Release) to complex DAHDSR (Delay/Attack/Hold/Decay/Sustain/Release).
- 3. **Start (Frequency)** - Controls the octave offset in relation to the filter's frequency, when the EG starts.
- 4. **Delay (Time)** - Controls the time it takes for the EG to start after you press a key on the controller.
- 5. **Attack (Frequency)** - Controls the octave offset in relation to the filter's frequency, on the end of attack.
- 6. **Attack (Time)** - Controls the time it takes for the filter to go from the start value to the attack value.

7. **Hold (Time)** - Controls the time it takes for the filter to hold on the attack position before it "decays".
8. **Decay (Time)** - Controls the time it takes for the filter to go from the attack value to the sustain value.
9. **Sustain (Frequency)** - Controls the octave offset in relation to the filter's frequency, during the sustain.
10. **Release (Frequency)** - Controls the octave offset in relation to the filter's frequency, on the end of the release.
11. **Release (Time)** - Controls the time it takes for the granular to go from the sustain value to the release value.

The **LFO** has the following parameters:



Filters Page - LFO

1. **Power button** - Enable the LFO to control the filter.
2. **Waveform** - Choose between: Sine, Square, Square (Sharp), Triangle, Saw Up, Saw Up (Sharp), Saw Down, Saw Down (Sharp), Full Rectified Sine, Half Rectified Sine, Noise Steps, Noise Steps (Sharp), Noise Linear, Noise Lagrange, Noise Binary and Noise Binary (Sharp).*
3. **Waveform Modifier** - Choose between: Silence, Amplitude Offset, Wave Folding, Wave Folding Positive, Clipping, Bit Crusher, Time Shift Up, Time Shift Down.
4. **Modifier value** - Allows you to define the amount of the Waveform Modifier effect you want on your granular.
5. **Sync** - If enabled, the rate of the LFO syncs with the DAW's project tempo.
6. **Global** - If enabled all the voices will be sync together, independently from their start times.
7. **Rate/Note** - Controls the rate of the LFO. If Sync is disabled ranges from 0.1 to 10 Hz, with Sync enabled you can choose between several time divisions.
8. **Depth** - Controls the depth of the modulation of the LFO.
9. **Delay** - Controls the time it takes for the LFO to reach its full rate and depth.
10. **Phase** - Allows you to offset the initial phase of the LFO wave.

*Sharp waveforms create instant gain changes that creates clicks, but you may want exactly that.

Pitch



Pitch Page

The Pitch Page allows you to manage all aspects related to pitch, like for example using an LFO to create a vibrato, or assigning an EG to each granular layer. On the left side of the page, you can choose between three modes: **Off** (turns off all pitch effects), **Global** (applies a single pitch effects to all granular layers using an EG and LFO), or **Granular** (provides different pitch settings for each of the four granular layers individually with their own EG and LFO).

In Granular mode, each granular layers tab displays the **Octave**, **Transpose**, and **Detune** parameters, which are also found on the Granular Page.

To adjust the EG and LFO settings of any tab, you can use the following parameters:

The **EG** has the following parameters:



Pitch Page - EG

1. **Power button** - Enables the EG to control the pitch.
2. **EG Type** - Select the type of EG, from simple AR (Attack/Release) to complex DAHDSR (Delay/Attack/Hold/Decay/Sustain/Release).
3. **Start (Pitch)** - Controls the initial pitch for the start of the EG, from -24 to +24 steps (semitones).
4. **Delay (Time)** - Controls the time it takes for the EG to start after you press a key on the controller.
5. **Attack (Pitch)** - Controls the pitch offset of the attack, from -24 to +24 steps (semitones).
6. **Attack (Time)** - Controls the time it takes for the pitch to go from the start value to the attack value.
7. **Hold (Time)** - Controls the time it takes for the pitch to hold on the attack value before it "decays".
8. **Decay (Time)** - Controls the time it takes for the pitch to go from the attack value to the sustain value.
9. **Sustain (Pitch)** - Controls the pitch offset during the sustain, from -24 to +24 steps (semitones).
10. **Release (Pitch)** - Controls the pitch offset on the end of the EG, from -24 to +24 steps (semitones).
11. **Release (Time)** - Controls the time it takes for the granular layer to go from the sustain value to the release value.
12. **Rand** - This checkbox enables the Random mode for the parameter above. The effect of this can be defined on the Random Behavior menu.
13. **Random Behavior** - Defines the range of values that are possible for the parameters that have Random enabled, between the options:
 - a) **Zero to Value** - Each note gets a random value from 0 to the value defined on the knob.
 - b) **-Value to Value** - Each note gets a random value from the symmetrical value of the knob to that same value. For instance, a value of 12 steps will range between -12 and 12 steps (semitones).
 - c) **Detune +/-10 cents** - Each note gets a random value between +/- 10.

- d) Detune +/- 50 cents - Each note gets a random value between +/- 50 cents.
- e) +/- 2 Octaves - Each note gets a random value between +/- 2 octave.

The **LFO** has the following parameters:



Pitch Page - LFO

1. **Power button** - Enable the LFO to control the filter.
2. **Waveform** - Choose between: Sine, Square, Square (Sharp), Triangle, Saw Up, Saw Up (Sharp), Saw Down, Saw Down (Sharp), Full Rectified Sine, Half Rectified Sine, Noise Steps, Noise Steps (Sharp), Noise Linear, Noise Lagrange, Noise Binary and Noise Binary (Sharp).*
3. **Waveform Modifier** - Choose between: Silence, Amplitude Offset, Wave Folding, Wave Folding Positive, Clipping, Bit Crusher, Time Shift Up, Time Shift Down.
4. **Modifier value** - Allows you to define the amount of the Waveform Modifier effect you want on your granular layer.
5. **Sync** - If enabled, the rate of the LFO syncs with the DAW's project tempo.
6. **Global** - If enabled all the voices will be sync together, independently from their start times.
7. **Rate/Note** - Controls the rate of the LFO. If Sync is disabled ranges from 0.1 to 10 Hz, with Sync enabled you can choose between several time divisions.
8. **Depth** - Controls the depth of the modulation of the LFO.
9. **Delay** - Controls the time it takes for the LFO to reach its full rate and depth.
10. **Phase** - Allows you to offset the initial phase of the LFO wave.

*Sharp waveforms create instant gain changes that creates clicks, but you may want exactly that.

Space

The Space Page allows you to manage all aspects related to the position of the sounds in the 3D space.

On the left side of the screen, you can choose between different modes:

- **Off** - This mode turns off all movement and each granular layer can be independently placed on a static position.
- **EG** - This mode uses an EG and LFO to control the position and movement of the sounds.
- **Movement Modifiers** - This mode applies some movement patterns.

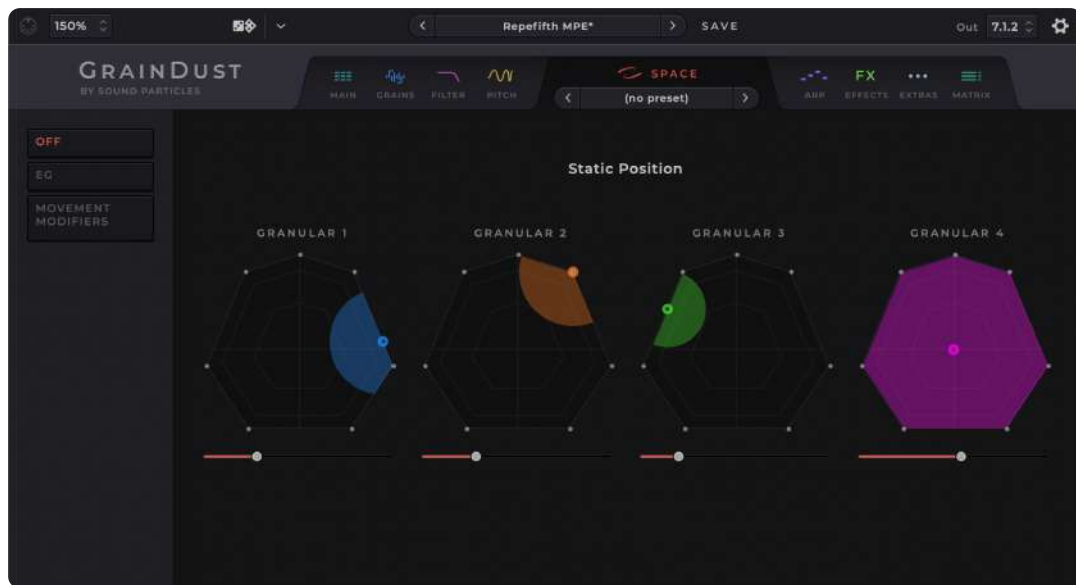


Space Page

Like the other pages, you can also choose to use it in **Global** (applies the same movement to all the granular layers simultaneously), or **Granular** (provides position settings for each of the four granular layer individually).

OFF MODE (STATIC):

The static mode has controls for the position of each granular layer. There is a polygon view where you can adjust the Azimuth and Elevation of each granular layer and there is also a slider the bottom of each polygon view that allows to adjust the divergence of the sound which adds some randomness at each note. Minimum (fully left) keeps the sound at the selected position while Increasing it (moving right) adds randomness and distance from the selected position.



Space Off Mode

EG MODE:



Space Page - EG

The **EG** has the following parameters:

- 1. Power button** - Enable the EG to control the movement.
- 2. EG Type** - Select the type of EG, from simple AR (Attack/Release) to complex DAHDSR (Delay/Attack/Hold/Decay/Sustain/Release).
- 3. Start (Position)** - Set the initial position by moving the white dot. Use the divergence slider too add some randomness at each note. Minimum (fully left) keeps the sound at the start position while Increasing it (moving right) adds randomness and distance from the start.
- 4. Delay (Time)** - Set the time before the movement begins.

5. **Attack (Position)** - Set the position on the end of the "attack" by moving the white dot. Use the divergence slider too add some randomness at each note. Minimum (fully left) keeps the sound at the selected position while Increasing it (moving right) adds randomness and distance from the selected position.
6. **Attack (Time)** - Set the time it takes to go from start to attack position.
7. **Hold (Time)** - Set the time to hold the "attack" position before the "decay".
8. **Decay (Time)** - Set the time it takes to go from "attack" to "sustain" position.
9. **Sustain (Position)** - Set the "sustain" position by moving the white dot. Use the divergence slider too add some randomness at each note. Minimum (fully left) keeps the sound at the selected position while Increasing it (moving right) adds randomness and distance from the selected position.
10. **Release (Position)** - Set the ending position by moving the white dot. Use the divergence slider too add some randomness at each note. Minimum (fully left) keeps the sound at the selected position while Increasing it (moving right) adds randomness and distance from the selected position.
11. **Release (Time)** - Set the time it takes to go from sustain to release position.

The **LFO** has the following parameters:



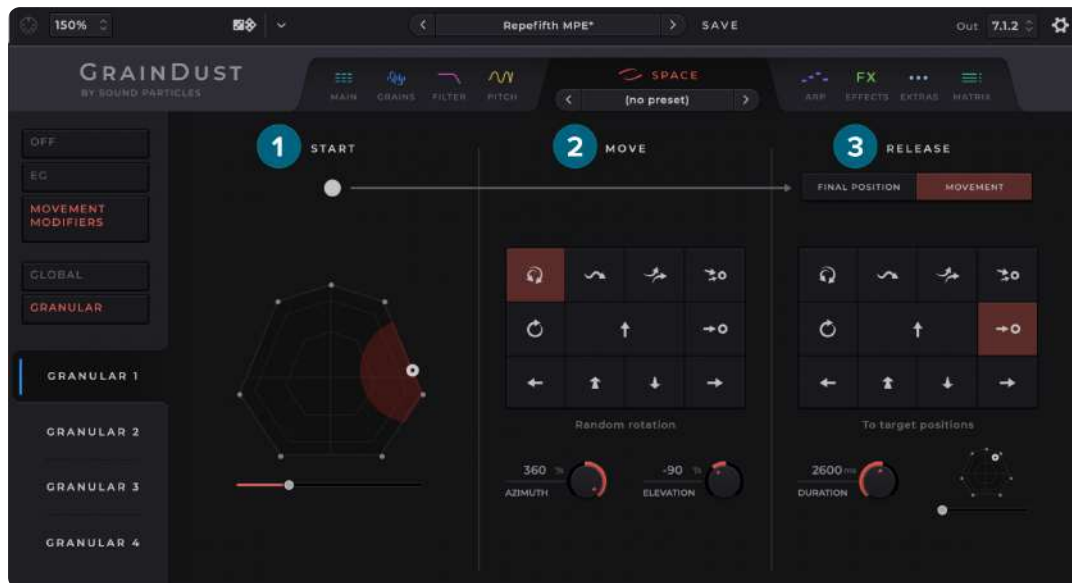
Space Page - LFO

1. **Power button** - Enable the LFO to control the movement.
2. **Waveform** - Choose between: Sine, Square, Square (Sharp), Triangle, Saw Up, Saw Up (Sharp), Saw Down, Saw Down (Sharp), Full Rectified Sine, Half Rectified Sine, Noise Steps, Noise Steps (Sharp), Noise Linear, Noise Lagrange, Noise Binary and Noise Binary (Sharp).*
3. **Waveform Modifier** - Choose between: Silence, Amplitude Offset, Wave Folding, Wave Folding Positive, Clipping, Bit Crusher, Time Shift Up, Time Shift Down.
4. **Modifier value** - Allows you to define the amount of the Modifier effect you want on your granular layer.
5. **Sync** - If enabled, the rate of the LFO syncs with the DAW's project tempo.

- 6. Global** - If enabled all the voices will be sync together, independently from their start times.
- 7. Rate/Note** - Controls the rate of the LFO. If Sync is disabled ranges from 0.1 to 10 Hz, with Sync enabled you can choose between several time divisions.
- 8. Depth** - The LFO can affect movement in terms of Azimuth, Elevation and Distance.
- a)** Azimuth Depth - This knob changes the Azimuth of the sound (moving left/right in the horizontal plane).
 - b)** Elevation Depth - This knob changes the Elevation of the sound (moving Up/Down on the vertical plane).
 - c)** Distance Depth - This knob changes the Distance of the sound, making it closer or far. When it is closed to the listener position, creates a big mono sound (all speakers playing the same).
- 9. Delay** - Controls the time it takes for the LFO to reach its full rate and depth.
- 10. Phase** - Allows you to offset the initial phase of the LFO wave.

*Sharp waveforms create instant gain changes that creates clicks, but you may want exactly that.

MOVEMENT MODIFIERS:



Space Page - Movement Modifiers

In the Movement Modifiers mode you can choose the position of the sounds in three separated moments:

1. **Start** - Define the initial position (and divergence) of the voices when the keys are pressed.
2. **Move** - Choose a movement pattern while the note is pressed. You can select one of the following patterns: Random Rotation, Oscillate, Floating, Random to Target, Rotation, Moving Up, Moving to a Position, Moving Left, Moving Front, Moving Rear and Moving Right.
3. **Release** - On the release of the note you can choose between moving the sound in two different ways:
 - a) **Final position** - where you can define a specific final position and divergence.
 - b) **Movement** - where you can define a different movement pattern for the release.

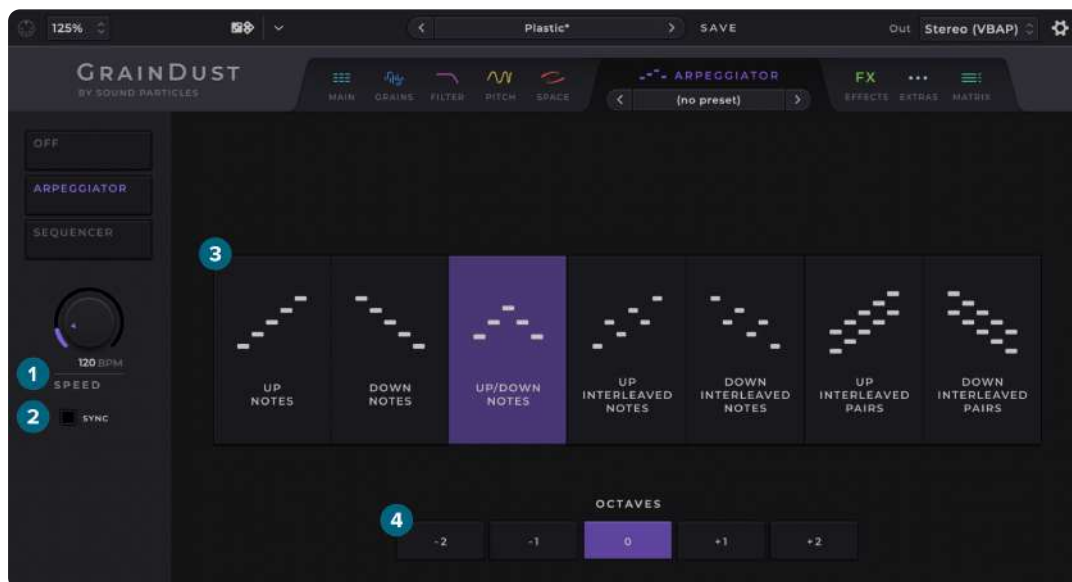
Note: The symbols of the movement patterns are a visual representation of each movement but you can see the descriptions by placing the mouse over the different pattern button.

Arpeggiator

In the Arpeggiator Page you can generate arpeggios and sequences. On the left side of the screen, you can choose between three modes: **Off** (turns off all sequences), **Arpeggiator** (applies an arpeggiator to the MIDI input), or **Sequencer** (applies a custom sequence of notes to the MIDI input).

With the Arpeggiator you can play multiple notes at once (for example a chord) and the synth will play those notes in sequence, creating an arpeggio. With a Sequencer you can play a single note and define a sequence of notes with multiple pitch changes, based on the note played. In GrainDust you can also sequence lots of additional parameters besides the notes pitch, like for example the position of the sounds.

In the **Arpeggiator** mode, you'll see the following parameters:

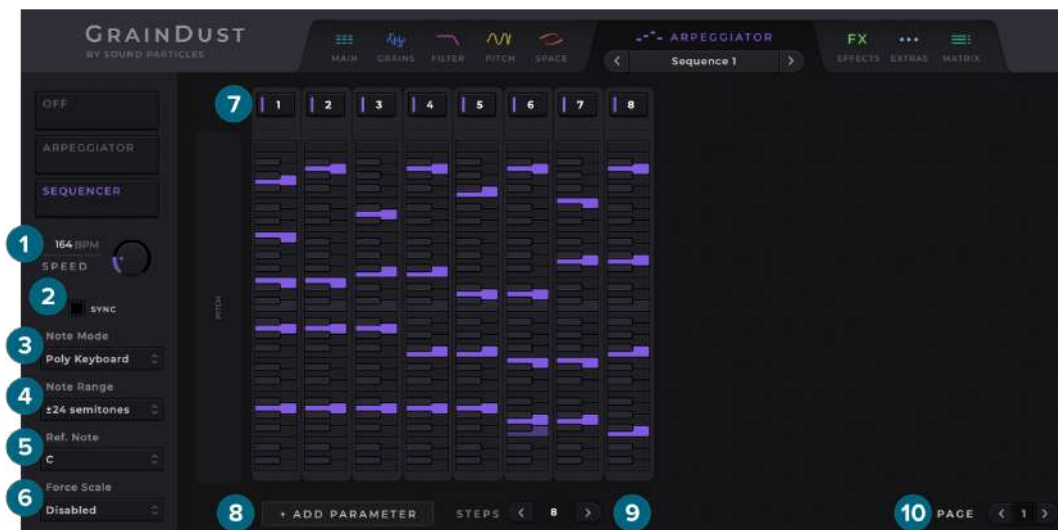


Arpeggiator

1. **Speed** - Set the tempo of the arpeggiator in beats per minute (bpm) or set the subdivision if sync is enabled.
2. **Sync** - Sync the arpeggiator with the project's tempo on the host DAW.
3. **Arpeggio type** - Set the type of arpeggio pattern by selecting one of the following options:
 - a) **Up Notes** - Play notes from the lowest to the highest in pitch.
 - b) **Down Notes** - Play notes from the highest to the lowest in pitch.
 - c) **Up/Down Notes** - Play notes from the lowest to the highest returning to the lowest.

- d) **Up Interleaved Notes** - Start from the lowest note and play each note followed by its second highest note, such that on a 4-note chord, the 1st note is followed by the 3rd, and the 2nd note is followed by the 4th.
 - e) **Down Interleaved Notes** - Start from the highest note and play each note followed by its second lowest note, such that on a 4-note chord, the 4th note is followed by the 2nd and the 3rd is followed by the 1st.
 - f) **Up Interleaved Pairs** - Start from the lowest note and play every note paired with the second highest note, such that on a 4-note chord, the 1st note pairs with the 3rd, and the 2nd pairs with the 4th.
 - g) **Down Interleaved Pairs** - Start from the highest note and play every note paired with the second lowest note, such that on a 4-note chord, the 4th note pairs with the 2nd, and the 3rd pairs with the 1st.
4. **Octaves** - Defines the octave range of the arpeggios. This will add additional notes that are octave variations of the notes that are being played.

In the **Sequencer** mode, you'll see the following parameters:



Sequencer

- 1. **Speed** - Set the tempo of the arpeggiator in beats per minute (bpm) or set the subdivision if sync is enabled.
- 2. **Sync** - Sync the arpeggiator with the project's tempo on the host DAW.
- 3. **Note Mode** - Select the mode for viewing and setting the values of the parameters on the steps:
 - a) **Pitch Bar** - Select a single note to play in each step using a vertical bar.
 - b) **Mono Notes** - Select a single keys to play in each step using a keyboard.
 - c) **Poly Notes** - Select multiple keys from to play in each step using a keyboard.
- 4. **Note Range** - Select the note range from 1 octave to 3 octaves of the sequencer.

- 5. Ref. Note** - Select the reference note. It will appear on the center of the keyboard, and represents the note that is pressed.
- 6. Force Scale** - Forces the notes that are played to be accordant to the selected key. This allows the sequencer to adapt the arpeggios to the right notes. For instance, If you specify a sequence with C Major arpeggio (C, E, G, C) and play the note C on your keyboard it will play a C Major arpeggio. If now you play a different note, without Force Scale it would play the same intervals starting on the new note, for example playing an A would play the A Major arpeggio (A, C#, E, A), but with Force Scale enabled to force the C Major scale, when you press an A it will adapt the intervals to be on the C Major scale, so it would play the A Minor arpeggio (A, C, E, A). Note that with Force Scale on, playing a note outside of the defined scale will be ignored by the synth.
- 7. Steps** - On the top of each step you can enable or disable that step. Depending on the Note Mode you choose, you'll see either a keyboard view or a pitch bar to set the parameters being sequenced.
- 8. Add Parameter** - Select a new parameter to sequence. Besides pitch, you can also add 3D pan or nay other synth parameter, allowing you to define specific values of it for each step.
- 9. Steps** - Chose the number of steps to be played on the sequence.
- 10. Page** - Change pages to see other steps when using more than 16 steps.

Effects



Effects Page

On the Effects Page, you'll have 4 slots to fill with the desired Effects in the order you want. All effects are applied after the 3D render and in series (3D render > FX1 > FX2 > FX3 > FX4 > Out). On the right side of the page you have the Dry/Wet knobs for each effect slot and meters to check the levels on the output of each effect.

When adding an effect you will have the following options:

1. **Bit Crush** - Reduces the resolution of digital audio signals by quantizing them to a lower bit depth. This effect creates a distortion that is often described as sounding "digital" or "80's". On this effect you have the following parameters:
 - a) **Pre-Gain** - Controls the input level of the audio signal before it is processed by the bit crusher. When reducing the Bits the signal may not have enough level to create sound in the soft passages. The Pre Gain helps you prevent this problems.
 - b) **Bits** - Controls the bit depth (resolution) of the audio signal after it has been processed by the bit crusher. Turning the knob clockwise reduces the bit depth which means that there are fewer possible amplitude values that each sample can use, which results in a more distorted and "squared" sound. It ranges from 16 to 1 bit.



Bit Crush Effect

2. Delay - Creates the illusion of an echo or repetition of a sound source by adjusting the following parameters:

- a) Feedback** - Controls the amount of the delayed signal that is fed back into the delay effect. Increasing the feedback level will create multiple repeats of the delayed sound, creating a more pronounced echo effect. High feedback values can quickly lead to a buildup of sound, so it's important to use this parameter with care.
- b) Gain** - Controls the level of the delayed signal relative to the original signal. Increasing the gain can make the echo effect more prominent, while decreasing it can make the delayed signal blend more smoothly with the original signal.
- c) Time** - Controls the time between the original sound and each repetition. Longer delay times will create a more pronounced echo effect, while shorter delay times can create a slap-back doubling effect or make the sound seem thicker.



Delay Effect

3. Distortion - Alters the waveform of an audio signal, creating a more "dirty" sound by turning the wave more squared. In this effect you can choose between the Clipping (that generates a more aggressive and "hard" distortion sound) and Overdrive (that creates a "soft" distortion that adds warmth and sustain to the original sound). You can adjust it using the following parameters:

- a) Pre Gain** - Controls the input level of the audio signal before it enters the distortion effect. Increasing the pre-gain will increase the amount of distortion applied to the signal, resulting in a more intense and "gritty" sound.
- b) Out Gain** - Controls the level of the distorted signal after it has been processed by the distortion effect. Increasing the out gain will increase the volume of the distorted signal, allowing it to stand out more prominently in a mix, without increasing the amount of distortion.



Distortion Effect

4. Equalizer - Adjust the level of specific frequency bands, by selecting between the two modes:

- a) **3 Bands** - Allows you to boost or cut three fixed frequency bands (Low, Mid, High) using the three knobs.
- b) **Parametric** - Allows to adjust the parameters of one frequency band, using the Frequency, Q factor and Gain.



Equalizer Effect

5. Reverb - Create the illusion of a room and space by adjusting the following parameters:

- a) **Width** - Increasing the width will spread the reverb across the 3D sound field, making it sound wider and more spacious. Decreasing the width will make the reverb sound more focused and centered.
- b) **Damp** - Controls the amount of high-frequency damping in the reverb effect. Increasing the damp will reduce the amount of high frequencies in the reverb tail, resulting in a darker and more mellow sound. Decreasing the damp will allow more high frequencies to ring out, resulting in a brighter and more open sound.
- c) **Room Size** - Controls the perceived size of the virtual space in which the reverb effect is taking place. Increasing the room size will make the reverb sound like it's in a larger space, with a longer decay time and more pronounced reflections. Decreasing the room size will make the reverb sound like it's in a smaller space, with a shorter decay time and less pronounced reflections.



Reverb Effect

6. Flanger - Creates a sweeping, whooshing sound by mixing a delayed version of the signal with the original, where the delay time is modulated by an LFO.

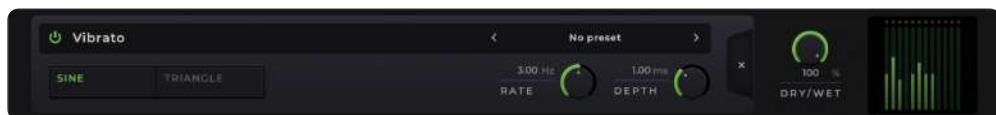
- a) **Sine/Triangle** - Selects the shape of the LFO waveform.
- b) **Rate** - Controls the speed of the LFO modulation.
- c) **Depth** - Determines how much the delay time is modulated. Higher values create more dramatic flanging.
- d) **Feedback** - Feeds a portion of the output back into the input, intensifying the effect and adding resonance.



Flanger

7. **Vibrato** - Modulates pitch by periodically varying the delay time of the signal, creating a sense of wavering or pitch oscillation without mixing the dry signal.

- a) **Sine/Triangle** - Selects the shape of the LFO waveform.
- b) **Rate** - Adjusts how fast the pitch oscillates.
- c) **Depth** - Controls how far the pitch deviates from the original note.



Vibrato

8. **Chorus** - Simulates the sound of multiple voices or instruments playing in unison by mixing the original signal with modulated, delayed copies.

- a) **Delay L** - Sets the base delay time for the left channel (in milliseconds), affecting stereo width and detuning.
- b) **Delay R** - Sets the base delay time for the right channel (in milliseconds), affecting stereo width and detuning.
- c) **Rate** - Controls the speed of the LFO that modulates the delay times.
- d) **Depth** - Adjusts how much the delay times are modulated.
- e) **Feedback** - Sends part of the effected signal back into the delay line to enhance complexity or resonance.



Chorus

9. **Phaser** - Shifts the phase of the signal and blends it back with the original, causing notches in the frequency spectrum to move over time, producing a swirling sound.

- a) **Rate** - Sets the speed of the LFO that controls the movement of the phase-shifted notches.
- b) **Depth** - Controls how wide the phase shift range is.
- c) **Feedback** - Reinserts part of the output into the effect input to enhance the phasing peaks and notches.



Phaser

10. Filter - Shapes the frequency content of the signal by removing certain frequency ranges.

- a) **Low Cut** - Sets the cutoff frequency for the high-pass filter, removing low-end content below this point.
- b) **Low Q** - Adjusts the resonance (peak) around the Low Cut frequency. Higher values boost frequencies near the cutoff.
- c) **High Cut** - Sets the cutoff frequency for the low-pass filter, removing high-end content above this point.
- d) **High Q** - Adjusts the resonance (peak) around the High Cut frequency. Higher values boost frequencies near the cutoff.



Filter

Extras



Extras Page

On the Extras Page, you'll get access to 8 extra Envelope Generators (EG) and 8 extra Low Frequency Oscillators (LFO) that can be assigned to any parameter on the GrainDust.

On the left panel you have the selected EG or LFO (Source) and on the right panel you have a drop down menu to select the parameter and the curve editor to shape how the parameter (Destination) is modified (by the EG/LFO).

Each **EG** has the following parameters:



Extras Page - EG

1. **EG Power button** - Enables the Envelope Generator.
2. **EG Type** - Selects the type of EG, from simple AR (Attack/Release) to complex DAHDSR (Delay/Attack/Hold/Decay/Sustain/Release).
3. **Delay** - Controls the time it takes to start the EG after you press a key on the controller.
4. **Attack** - Controls the time it takes to go from the star value to the attack value.
5. **Hold** - Controls the time it holds on the attack value before it decays.
6. **Decay** - Controls the time it takes to go from the attack value to the sustain value.
7. **Sustain** - Controls the value of the sustain.
8. **Release** - Controls the time it takes for the EG to go from the sustain value to the release value.

Each **LFO** has the following parameters:



Extras Page - LFO

1. **LFO Power button** - Enables the LFO.
2. **Waveform** - Choose between: Sine, Square, Square (Sharp), Triangle, Saw Up, Saw Up (Sharp), Saw Down, Saw Down (Sharp), Full Rectified Sine, Half Rectified Sine, Noise Steps, Noise Steps (Sharp), Noise Linear, Noise Lagrange, Noise Binary and Noise Binary (Sharp).*
3. **Waveform Modifier** - Choose between: Silence, Amplitude Offset, Wave Folding, Wave Folding Positive, Clipping, Bit Crusher, Time Shift Up, Time Shift Down.
4. **Modifier value** - Allows you to define the amount of the Modifier effect you want on your LFO.
5. **Sync** - If enabled, the rate of the LFO syncs with the DAW's project tempo.
6. **Global** - If enabled all the voices will be sync together, independently from their start times.
7. **Rate/Note** - Controls the rate of the LFO. If Sync is disabled ranges from 0.1 to 10 Hz, with Sync enabled you can choose between several time divisions.
8. **Depth** - Controls the depth of the modulation of the LFO.
9. **Delay** - Controls the time it takes for the LFO to reach its full rate and depth.
10. **Phase** - Allows you to offset the initial phase of the LFO wave.

*Sharp waveforms create instant gain changes that creates clicks, but you may want exactly that.

Both EGs and LFOs have a **Curve Editor** where you can better define how a certain source (in this case, the extra EG or LFO) controls a certain parameter. Sometimes you may want an inverted behavior (as the source value increases, you want the

destination value to decrease), other times you want to obtain a more logarithmic or exponential curve instead of a linear or you simply want to create a custom curve.

On the Curve Editor you have the following parameters:



Extras Page - Curve Editor

1. **Curve Editor** - Edit the curve by dragging the existing points on the limits of the curve (to define the minimum and maximum values), by dragging the line between the points (to create logarithmic and exponential curves), by adding new editing points (by double clicking the line) or deleting them (by dragging it to outside of the curve editor).
2. **Invert** - Inverts the curve.
3. **Reset** - Resets the curve to the default value.
4. **Depth** - Controls how much the Source will modulate the Destination by reducing or increasing the range between the minimum and maximum value.
5. **Min** - Defines the minimum value to which the Source will modulate the Destination.
6. **Mid** - Moves the entire curve up and down.
7. **Max** - Defines the maximum value to which the Source will modulate the Destination.

Matrix



Matrix Page

The Matrix Page is where you can define a source parameter to control other parameter and the specific curve. For instance, you can use a Macro to control the gain of a granular layer, or use the Modulation Wheel to control the elevation of a granular layer.

On the left panel you can see "All" the controls or filter by **Source** or **Destination**, to find what you are looking for when there are lots of entries in the Matrix.

On the rest of the page you can add entries where you can define a Source and a Destination and use the curve editor on the right to shape how the parameter (Destination) is modified (by the Source).

On top of the page you will have access to the following parameters:

1. **Add** - Adds a new entry for Source/Destination connection.
2. **Delete Entry** - Removes the selected entry

Each Entry as the following parameters:

3. **Enable/Disable** - When green, it enables the connection between the Source and Destination and when black, it disables it.
4. **Set/Offset** - Defines how the source changes the destination parameter. If in Set, the destination will have full and exclusive control over the destination parameter, and the UI knob will be ignored. If in Offset, the source will make changes on the destination parameter, by increasing it or decreasing in relation

to the original defined parameter value, but allowing multiple sources to control and affect it.

- 5. Source** - Select the control source you want to add, between: 4 Macros, 8 Extra LFOs, 8 Extra EGs and MIDI messages.
- 6. Destination** - Select the parameter you want to control. You can choose any parameter of the synth.

On the right you also have a curve editor with the following parameters:

- 7. Curve Editor** - Edit the curve by dragging the existing points on the limits of the curve (to define the minimum and maximum values), by dragging the line between the points (to create logarithmic and exponential curves), by adding new editing points (by double clicking the line) or deleting them (by dragging it to outside of the curve editor).
- 8. Invert** - Inverts the curve.
- 9. Reset** - Resets the curve to the default value.
- 10. Depth** - Controls how much the Source will modulate the Destination by reducing or increasing the range between the minimum and maximum value.
- 11. Min** - Defines the minimum value to which the Source will modulate the Destination.
- 12. Mid** - Moves the entire curve up and down.
- 13. Max** - Defines the maximum value to which the Source will modulate the Destination.

Bottom Panel

As you navigate through the pages to adjust all the parameters, there is also a bottom panel available with multiple tabs for you to view and control various options.

By default, the bottom panel displays the classic keyboard. However, in , you have the option to select four additional tabs: **Mixer**, **Macros**, **Pads**, and **Space**.

Keyboard



Keys Tab

On this tab you have control over the basic features of a keyboard, as well as other quick access parameters:

1. **Keyboard** - Monitor the MIDI notes received by GrainDust or click on the keys to play and generate sound. Right-clicking allows you to define the keyboard range that you want to display.
2. **Sustain** - A blue line appears on the top of the keys when the sustain pedal is enabled.
3. **PitchBend** - Shifts the pitch of the played notes. In the Settings panel you can define the Up and Down range values of the wheel.
4. **ModWheel** - Controls the modulation value that is sent to any assigned expression parameters.
5. **Octave Offset** - Offsets the octave of the original MIDI input.
6. **Space** - Turns On/Off all the space movement settings. When Off it will use the space settings defined in the Off mode on the Space Page.
7. **Pitch** - Turns On/Off any existent pitch effects.
8. **Arp** - Turns On/Off the arpeggiator or sequencer.
9. **Legato/Mono** - The synth becomes monophonic (plays only one note at once). In Mono mode, when a new note is played, the synthesizer creates a new envelope for that note, even if the previous note is still being held down. This

means that each note played will have its own distinct attack, decay, sustain, and release envelope. In contrast, in Legato mode, the synthesizer shares the same envelope for the new note as the previous note that is being held down.

10. **Glide** - Defines the time it takes to go from the pitch of the previous note to the new note.
11. **Macro** - This knob controls the Macro A. On the Macros tab or in the Matrix Page you can define the parameters controlled by the macro.
12. **Space view** - This view lets you monitor the movement and position of the generated voices from a top "perspective".
13. **Master Fader** - This fader controls the output level of the synth.
14. **Master VU meter** - This VU meter lets you monitor the output level of all the channels on the output.

Mixer



Mixer Tab

On this tab you have a mixer to control the levels of all the granular layers, the master output and the Dry/Wet knobs for all the four effects.

1. **Fader** - Controls the level of the granular layer.
2. **Granular Layer meter** - Monitors the audio level of each granular layer.
3. **Granular Layer Mute** - Mutes a particular granular layer.
4. **Granular Layer Solo** - Solos the granular layer (mutes all the others).
5. **FX Dry/Wet** - Controls the Dry/Wet relation to the respective effect.
6. **Master Mute** - Mutes the master output of the synth.
7. **Master Fader** - Controls the output level of the synth.
8. **Master meter** - Monitors the output level of all the channels on the output.

Macros



Macros Tab

The Macro tab is a section where you can assign multiple parameters to each of the four Macro knobs available. By doing this, you can control several parameters at once using a single Macro knob.

This can be a useful feature in situations where you need to make quick changes to multiple parameters during a performance. For example, you might assign the four Macro knobs to control the filter cutoff, resonance, envelope attack, and decay time. Then, during a performance, you could turn a single Macro knob to adjust all four of these parameters simultaneously.

On this tab you have the following parameters:

1. **Macro Knob** - Set the value of the Macro. You can write click and use MIDI learn to assign a MIDI controller knob to this.
2. **Page** - Use the arrows to navigate between the pages when you have more than 4 parameters.
3. **Add** - Add a parameter to be controlled by the Macro.
4. **Parameter Slot** - Click on the parameter slot to open the Matrix Page and edit the curve used to control the parameter.
5. **Delete** - Select the "-" button to delete the parameter from the Macro.

Pads



Pads Tab

On this tab you have access to two XY pads. With this pads, you can manipulate the position of a virtual dot moving it in two axis, to adjust two assigned parameters at the same time. For example, the X-axis could be assigned to control filter cutoff frequency, while the Y-axis controls resonance. By moving the dot around the XY pad, the player can simultaneously adjust both the filter cutoff and resonance, creating complex filter sweeps and other effects.

1. **Y-axis Parameter** - Define the parameter you want to control on the Y-axis.
2. **X-axis Parameter** - Define the parameter you want to control on the X-axis.
3. **Snap** - When enabled the dot will return to the previous position when you release the mouse button.
4. **Snap Time** - When Snap is enabled this knob sets the time it takes for the dot to return to the previous position.
5. **Master Fader** - Controls the output level of the synth.
6. **Master meter** - Monitors the output level of all the channels on the output.

Space



Space Tab

In the Space tab you can see different types of space views so you can monitor the movement the voices in the format that is more convenient to you.

1. Space Views

- a) **360 View** - Displays a complete 360° view of the voices, having the azimuth angles on the horizontal axis and the elevation angles on the vertical axis, like on a world map.
- b) **Rear View (Cube)** - Displays the voices from the rear perspective, in a squared room.
- c) **Top View (Cube)** - Displays the voices from the top perspective, in a squared room.
- d) **Top View (Sphere)** - Displays the voices from the top perspective, in a circular room.

- e) Polygon View** - Displays the voices from the top perspective, in a squared room.
- 2. Master Fader** - Controls the output level of the synth.
- 3. Master meter** - Monitors the output level of all the channels on the output.

Bottom bar

On the bottom of the window you also have access to a bottom bar with useful features:



Bottom Bar

1. **Tooltips' section** - Every time you move the mouse cursor over a knob or any control, you will see a short description of that parameter.
2. **Update** - If the plug-in is running on a computer with Internet access, it can detect if a newer update is available, informing the user of the existence of a new update, by showing a blinking phrase on the top of the display.
3. **Help button** - Opens the Help Panel, which shoes additional information and useful links.
 - a) **Visit our Website** – Link to soundparticles.com
 - b) **Watch Tutorials** – Link to GrainDust [tutorials](#)
 - c) **Read Manual** – Web version of this Manual.
 - d) **Request Support** – This button will redirect users to the requested support page. This will automatically retrieve some data about your setup (OS, CPU, RAM, plugin version and host).
 - e) **Forum** – Link to our user Facebook group, [Sound Particles Forum](#).
 - f) **Check for Updates** - Pressing this button will access soundparticles.com to check if there are available updates. Normally when a new update comes out the plugin automatically shows it but you can use this to be sure your version is up to date.
 - g) **Resize button** - Users are allowed to use a custom scaling factor by dragging the cursor in the bottom-right of the plugin's interface. Performing this makes the zoom pop-up display the custom value of the scaling. **Bare in mind that hosts may deal differently with plugin resizes.*

Plugin and Presets Location

Installing GrainDust copies the plugin into appropriate plugin folders, and the hosts will automatically recognize them. It also allows GrainDust users to choose a custom folder for the installation, in both operating systems — MacOS and Windows.

On MacOS, the default paths for GrainDust plugin architectures are the following:

- VST3: /Library/Audio/Plug-Ins/VST3
- AU: /Library/Audio/Plug-Ins/Components
- AAX: /Library/Application Support/Avid/Audio/Plug-Ins

On Windows, the default paths for GrainDust plugin architectures are the following:

- VST3: C:\Program Files\Common Files\VST3
- AAX: C:\Program Files\Common Files\Avid\Audio\Plug-Ins

PRESETS LOCATIONS

User presets will be stored in a .spp file in the following locations:

On MacOS, the path for GrainDust User presets is the following:

- /Users/USERNAME*/Library/Application Support/Sound Particles/GrainDust/Presets

On Windows, the path for GrainDust User presets is the following:

- C:\Users\USERNAME**\AppData\Roaming\Sound Particles\GrainDust\Presets

*USERNAME is your login name. Your user Library folder may be hidden, in which case you can select the “Go To Folder” option in the Go menu of the Finder, enter “~/Library”, and click OK.

**USERNAME is your login name. AppData may be hidden; use the explorer view options to show system files.

Nuendo & Cubase Workflow

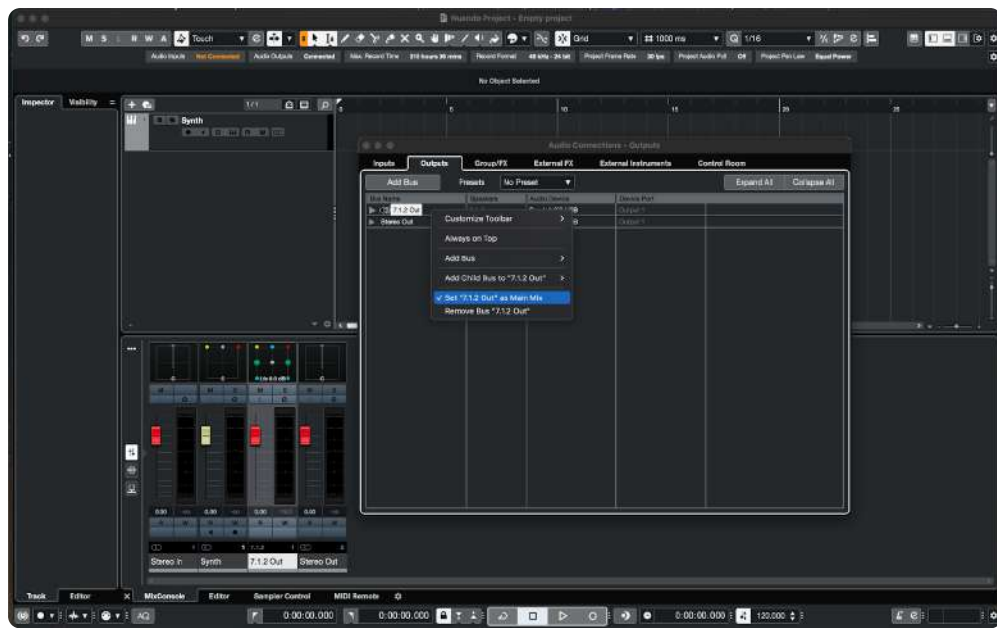
When working in stereo or binaural, Cubase and Nuendo work in a straight forward manner. But, if you want to use a multichannel, you need to follow some additional steps, as a way to overcome some issues (Nuendo and Cubase never considered a 3D synth like GrainDust). But don't worry, if you follow these steps, you would be able to take full advantage of GrainDust with multichannel.

1. First go to **Audio Connections > Outputs**;



Nuendo Workflow - Step 1

2. Set the surround output bus you want to use as **Main Mix** bus (not required but recommended for a quicker setup);



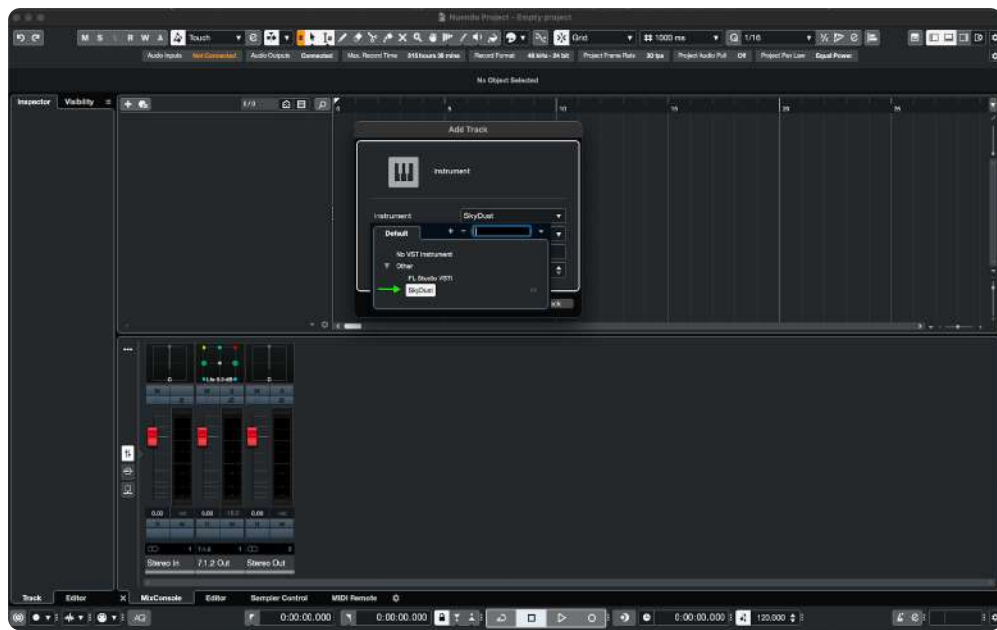
Nuendo Workflow - Step 2

3. Create an **Instrument** track;



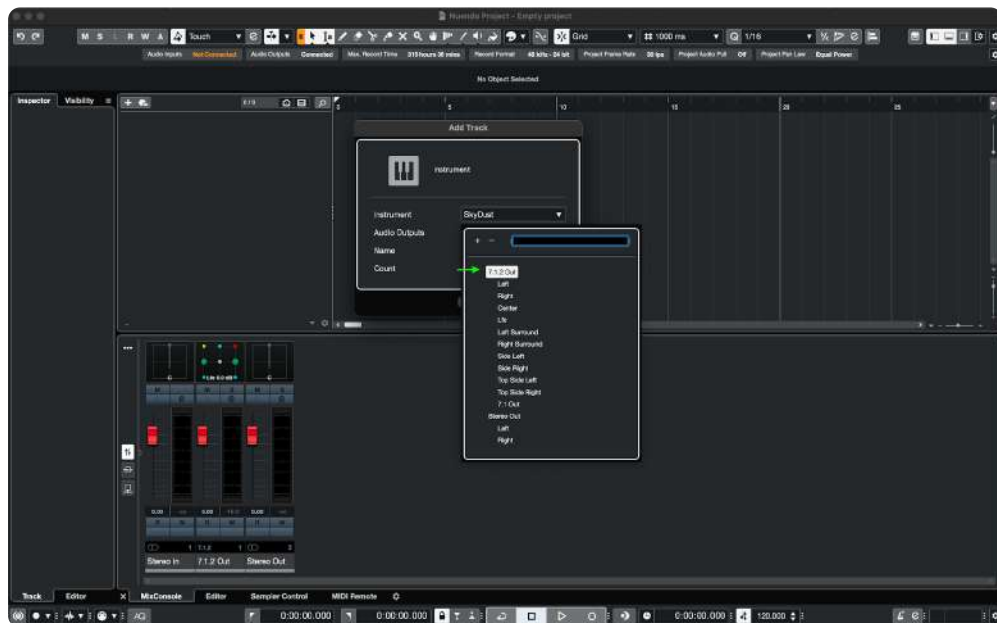
Nuendo Workflow - Step 3

4. Select **GrainDust** as instrument;



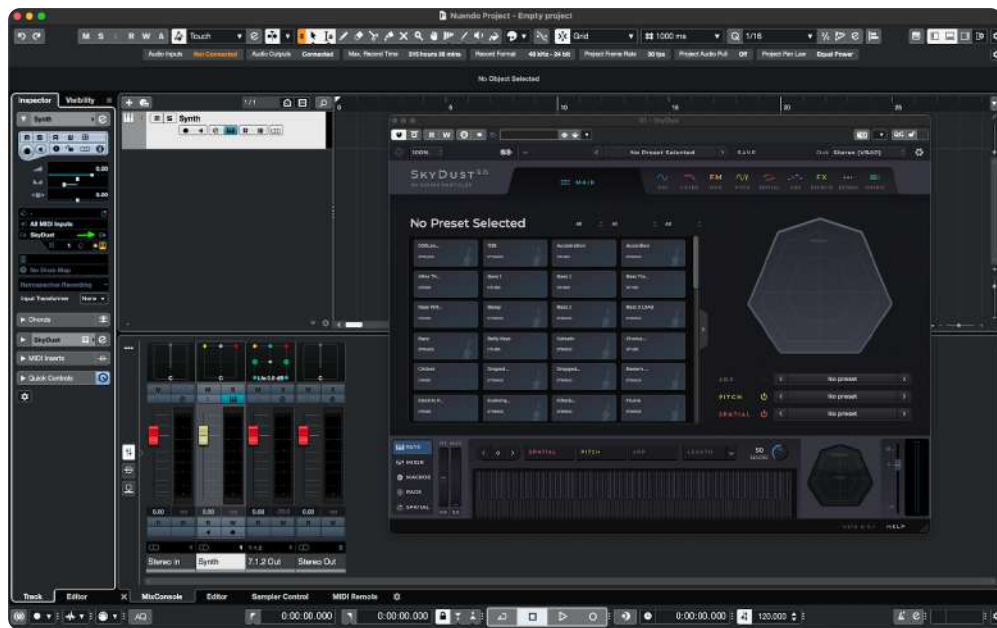
Nuendo Workflow - Step 4

5. Select the **Main surround output bus**;



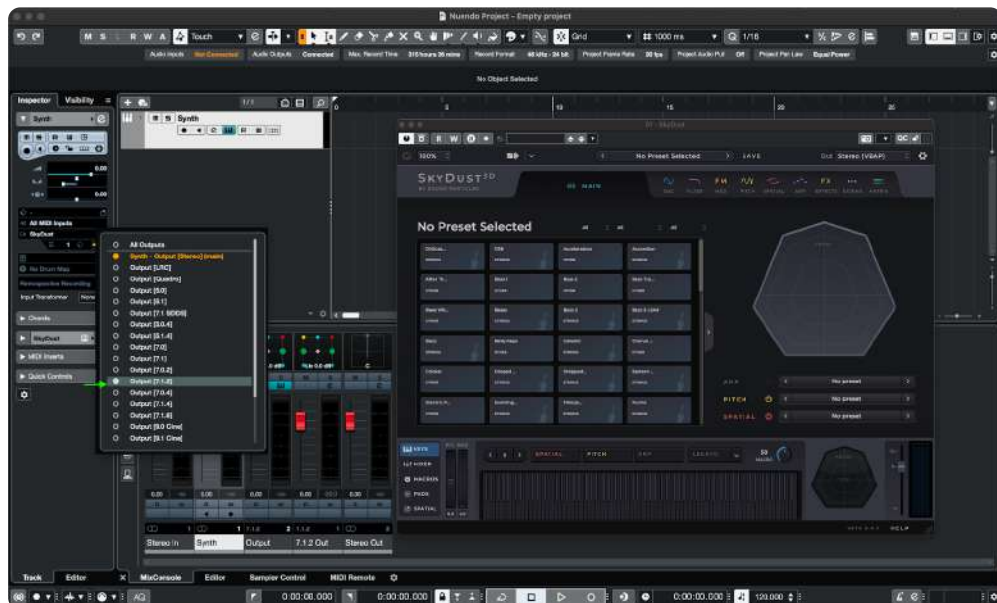
Nuendo Workflow - Step 5

6. On the track Inspector, click on the **Activate Outputs** icon;



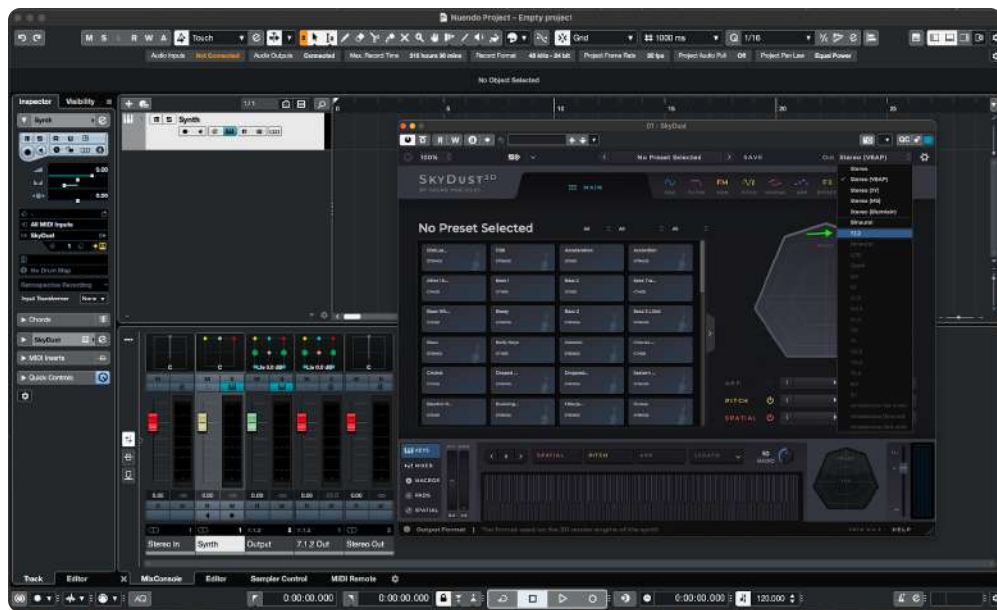
Nuendo Workflow - Step 6

7. Activate the output of the same surround format on the previous step;



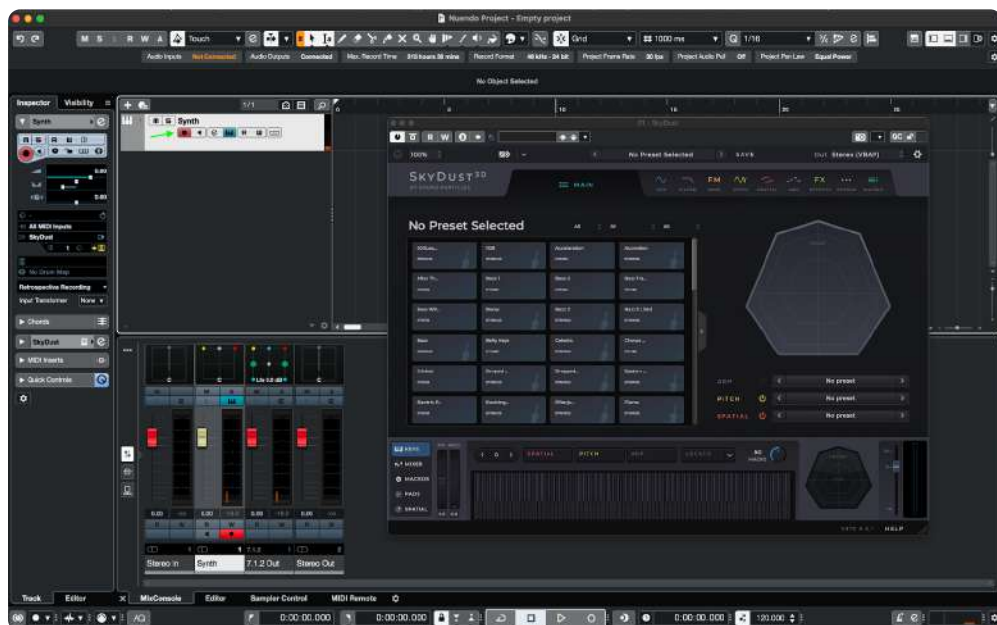
Nuendo Workflow - Step 7

8. Go to **GrainDust Out** format popup, on the top right corner of the plugin, and select the corresponding surround format;



Nuendo Workflow - Step 8

9. Enable **Record** in the Instrument track and it will be ready to use;



Nuendo Workflow - Step 9

Pro Tools MPE workflow

To use MPE on Pro Tools you'll need some additional steps.

1. Create an Instrument track and load GrainDust on it
2. On the Instrument track MIDI input select "All"
3. Create 16 MIDI tracks
4. To each MIDI track input, select one MIDI channel from your MPE Controller (in this example you can see the Seaboard Rise)
5. To each MIDI track output, select a MIDI channel from GrainDust
6. Record enable each MIDI track
7. Play

Other DAW's might have their own additional steps to enable MPE. If help is needed, please contact support

Tips

Right-click:

- Right-clicking on a parameter lets you assign the following control options.

Knobs:

- Double click or Option/Alt-click resets to the default value;
- Shift while dragging enables fine-tune.

VU Meter:

- Click on any channel clears all clipping LEDs;
- Left click on any channel and select “reset” clears all clipping LEDs;
- In multichannel scenarios it is possible to choose the VU's channel order (SMPTE/Film) with a mouse right-click inside the VU's area.



Control options

Randomize:

- This button will set new random values to the parameters and the plugin effect mode buttons/pop-ups.

Tooltip's bar:

- This version of GrainDust has a bar at the bottom of the interface that shows short definitions for each element of the plugin.

Additional Notes

CHECK FOR UPDATES

If the plug-in is running on a computer with internet access, it is able to detect if a newer update is available, informing the user of the existence of a new update, by showing a blinking phrase on the bottom bar of the synth.

To achieve that, Sound Particles GrainDust plugin tries to access a simple XML file located at <https://www.soundparticles.com>.

SOUND PARTICLES GRAINDUST DOES NOT SEND ANY INFORMATION FROM THE USER OVER THE INTERNET.

SUPPORT

If you detect a bug, if you got a crash, if you believe something is not perfect, or even if you have ideas for future versions, don't hesitate, and email us at support@soundparticles.com. We REALLY want to hear from you. Sometimes a bug lives on for too much time, simply because we haven't detected ourselves and we didn't receive any feedback from the affected users. Besides that, your feedback is very important for us.

Help us help you!

Credits

Created by:

Nuno Fonseca, PhD

Lead Developer:

João Carreira, PhD

UI Designers:

- Ricardo Monteiro
- Marco Afonso

Developers:

- Davide Gioiosa
- Luís Guimarães
- Diogo Cardoso
- Ricardo Maltez
- Vitor Carreira

Project Manager:

Rui Rijo, PhD

Lead QA:

João Franco

QA:

- Eduardo Mota
- Salvador Miranda
- João Dionisio

Sound Designers:

João Franco

Sample Recording:

Sound Particles:

- João Franco
- Nuno Fonseca
- Ricardo Monteiro
- Salvador Miranda

ESMAE:

Coordination:

- Marco Conceição
- Rui Penha

Recording:

- David Silva
- Gonçalo Feijão
- Hugo Rafael
- Ana Rita Costa
- Rúben Dias
- Sann Gusmão

EULA

END USER LICENSE AGREEMENT OF SOUND PARTICLES – JANUARY 2020

I. GENERAL

The following End User License Agreement ("EULA") represents an agreement between you ("Licensee") and "Sound Particles, S.A.", with head office at IDD, Rua da Carvalha, 570, 2400-441 Leiria, Portugal (hereinafter "Sound Particles") for the use of software including related media documentation (for example, program descriptions and manuals) and other documents and materials manufactured by Sound Particles (the "Product(s)").

By installing the software on your computer, you declare yourself in agreement with these conditions. If you do not agree with these conditions, you must not install the software or use it.

II. SCOPE OF USE

The Products are intellectual property of Sound Particles and are protected by law. Licensee, as purchaser of the Products, acquires only a limited, non-exclusive and non-transferable license to use, personally or professionally, the Products. Any other use or exploitation not explicitly granted to Licensee in this EULA shall not be allowed without prior written consent from Sound Particles. Specifically, Licensee is not entitled to copy, decompile, reverse engineer the Product or parts thereof, create derivative works from the Products or sublicense or provide the Products as "software as a service".

Licensee must ensure by appropriate and reasonable steps that third parties, including its own employees, cannot make unauthorized use of the Product. Licensee shall be liable to Sound Particles for any loss or damage in this context.

The Software is being licensed to you and you hereby acknowledge that no title or ownership in the Software is being transferred or assigned and this EULA is not to be construed as a sale of any rights in the Software. Sound Particles retains all right, title and interest in the Products, including, but not limited to, all copyrights, trademarks, trade secrets, trade names, proprietary rights, patents, titles, computer codes, audiovisual effects, themes, settings, artwork, sound effects, musical works, and moral rights whether registered or not and all applications thereof.

- 1.** Sound Particles grants Licensee the non-exclusive right without restrictions in time or place to use the Products. Sound Particles is not obliged to disclose the Products' software underlying source code, including the associated development documentation.
- 2.** Licensee may either:
 - a)** Install and use the licensed Products' software on several devices (e.g. one laptop, one desktop), provided that the said software is used only by the same single person - Per user licensing. Simultaneous use on more than one hardware device is not permitted.
 - b)** Install the licensed Products' software on a single device, allowing its use by several users on the device (e.g. studio computer) - Per seat licensing.
- 3.** Licensee may copy the licensed Products' software, only if such reproduction is necessary for the contractually agreed use. Licensee is authorized to create a backup, only if this is necessary to secure the future use.
- 4.** Licensee is not authorized to modify the Products' software.
- 5.** Licensee shall not attempt to develop any software that contains the "look and feel" of any of the Products' or is otherwise derivative of its software.
- 6.** Third Parties
 - a)** Renting or lending the licensed Products' software to a third party is expressly forbidden. Apart from that and if not provided otherwise within this EULA, Licensee may leave the software to a third party for a certain amount of time, if the third party agrees to the terms of this EULA and Licensee does not use the software during this period.
 - b)** Except if otherwise stated within this EULA, Licensee may resell the software to a third party or transfer the software permanently free of charge, provided the third party agrees in writing with this EULA and Licensee ceases all use of the software, completely removes all installed copies of the software from its computer and – if the software was not purchased via download – deletes or transfers the original data storage to the third party (if Licensee is not obliged to a longer storage by law). In addition, Licensee is required to de-register the purchased software with Sound Particles. Following respective request from Licensee via its email address registered with Sound Particles, the serial number of the Product will be transferred by Sound Particles to the third party, and at the same time the registration of Licensee for the Product purchased will be deleted.

- 7.** Licensee may not (i) distribute, lease, license, sell, rent, lend, convey or otherwise transfer or assign the Products or any copies thereof, (ii) make publicly available or available on a network for use or download by multiple users, (iii) remove, obscure or modify any copyright, trademark or other proprietary rights notices, marks or labels contained on or within the Products, falsify or delete any author attributions, legal notices or other labels of the origin or source of the material
- 8.** In addition, for certain Products from Sound Particles the following shall apply:

 - a)** Bundles (product bundles consisting of hardware and software or software-only bundles) can only be resold / transferred as a whole. The individual components of a bundle must not be resold / transferred separately.
 - b)** Any Products from Sound Particles labeled or otherwise provided to you as "NFR" (Not For Resale) shall only be used for demonstration, testing and evaluation purposes. NFR Products must not be used for commercial purposes, and must not be resold or transferred. NFR Products are exempt from update, upgrade or crossgrade offers and cannot be purchased with or exchanged for vouchers or coupons.
 - c)** Any Products from Sound Particles labeled or otherwise provided to you as an EDU (Educational) version shall only be used by students or those working in educational institutions. This definition includes students, faculty, staff and administration attending and / or working at an educational institutional facility: private / public schools, training facilities, colleges, universities and similar. EDU Products must not be used for commercial purposes, and must not be resold or transferred. EDU Products are exempt from update, upgrade or crossgrade offers, and cannot be purchased with or exchanged for vouchers or coupons.
 - d)** Any Products from Sound Particles labeled or otherwise provided to you as "Demo Versions" or similar, shall only be used for demonstration, testing and evaluation purposes. Demo Versions must not be used for commercial or public purposes, and must not be resold or transferred.

If you are not sure which license type you own – (FULL / NFR / EDU) – please contact our Support Team.

III. THIRD PARTY RIGHTS

Some content included in Sound Particles software Products, as well as any associated intellectual property rights and titles, belongs to third parties. This content may be protected by copyright or other intellectual property laws and treaties and

may be subject to terms and conditions from the third party providing the content.

FFmpeg Notice - The Software utilizes the FFmpeg video application and its included libraries. FFmpeg is a trademark of Fabrice Bellard (originator of the FFmpeg project - FFmpeg project, <http://www.ffmpeg.org>) licensed under the [GNU Lesser General Public License 3.0](#) and its source can be downloaded [here](#).

IV. DUTIES TO PROTECT

Copyright notices, serial numbers and other identification features of the program may not be removed from the software or altered in any way.

V. WARRANTY, LEGAL LIABILITY, DAMAGES

DISCLAIMER OF WARRANTIES: YOU EXPRESSLY ACKNOWLEDGE AND AGREE THAT USE OF THE SOFTWARE IS AT YOUR SOLE RISK AND THAT THE ENTIRE RISK AS TO SATISFACTORY QUALITY, PERFORMANCE, AND ACCURACY IS WITH YOU. TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, THE SOFTWARE IS PROVIDED "AS IS," WITH ALL FAULTS AND WITHOUT WARRANTY OF ANY KIND, AND SOUND PARTICLES HEREBY DISCLAIMS ALL WARRANTIES AND CONDITIONS WITH RESPECT TO THE SOFTWARE PRODUCT, EITHER EXPRESS, IMPLIED OR STATUTORY, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES AND/OR CONDITIONS OF MERCHANTABILITY, OF SATISFACTORY QUALITY, OF FITNESS FOR A PARTICULAR PURPOSE, OF ACCURACY, OF QUIET ENJOYMENT, AND NON-INFRINGEMENT OF THIRD PARTY RIGHTS. SOUND PARTICLES DOES NOT WARRANT AGAINST INTERFERENCE WITH YOUR ENJOYMENT OF THE SOFTWARE, THAT THE FUNCTIONS CONTAINED IN THE SOFTWARE WILL MEET YOUR REQUIREMENTS, THAT THE OPERATION OF THE SOFTWARE WILL BE UNINTERRUPTED OR ERROR-FREE, OR THAT DEFECTS IN THE SOFTWARE WILL BE CORRECTED. NO ORAL OR WRITTEN INFORMATION OR ADVICE GIVEN BY SOUND PARTICLES OR A SOUND PARTICLES AUTHORIZED REPRESENTATIVE SHALL CREATE A WARRANTY. SHOULD THE SOFTWARE PROVE DEFECTIVE, SOUND PARTICLES MAY CHOOSE TO REPLACE THE LICENSEE'S COPY OF THE SOFTWARE. SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OF IMPLIED WARRANTIES OR LIMITATION ON APPLICABLE STATUTORY RIGHTS OF A CONSUMER, SO THE ABOVE EXCLUSION AND LIMITATIONS MAY NOT APPLY TO YOU. THIS LIMITATION OF WARRANTY SHALL NOT BE APPLICABLE SOLELY TO THE EXTENT THAT ANY SPECIFIC PROVISION OF THIS LIMITATION OF LIABILITY IS PROHIBITED BY ANY LAW, WHICH CANNOT BE PRE-EMPTED.

LIMITATION OF LIABILITY: TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, IN NO EVENT SHALL SOUND PARTICLES OR ITS AFFILIATES BE LIABLE FOR ANY SPECIAL, INCIDENTAL, INDIRECT OR CONSEQUENTIAL DAMAGES WHATSOEVER (INCLUDING, WITHOUT LIMITATION, DAMAGES FOR LOSS OF BUSINESS PROFITS, BUSINESS INTERRUPTION, LOSS OF BUSINESS INFORMATION,

OR ANY OTHER PECUNIARY LOSS) ARISING OUT OF THE USE OF OR INABILITY TO USE THE SOFTWARE OR DEFECT IN OR CAUSED BY THE SOFTWARE, INCLUDING BUT NOT LIMITED TO COMPROMISING THE SECURITY OF YOUR COMPUTER, OPERATING SYSTEM OR FILES, OR THE PROVISION OF OR FAILURE TO PROVIDE SUPPORT SERVICES, EVEN IF SOUND PARTICLES HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. IN ANY CASE, SOUND PARTICLES ENTIRE LIABILITY UNDER ANY PROVISION OF THIS EULA SHALL BE LIMITED TO THE AMOUNT ACTUALLY PAID BY YOU FOR THE SOFTWARE OR REPLACEMENT OF THE SOFTWARE WITH PRODUCT OF COMPARABLE RETAIL VALUE, AS SOUND PARTICLES MAY ELECT IN ITS SOLE DISCRETION. IF SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF LIABILITY, THE ABOVE LIMITATION MAY NOT APPLY TO YOU IN PART OR WHOLE. THIS LIMITATION OF LIABILITY SHALL NOT BE APPLICABLE SOLELY TO THE EXTENT THAT ANY SPECIFIC PROVISION OF THIS LIMITATION OF LIABILITY IS PROHIBITED BY ANY LAW, WHICH CANNOT BE PRE-EMPTED.

Licensee agrees to indemnify, defend and hold harmless Sound Particles and its affiliates and their respective officers, employees, directors, agents, licensees (excluding you), sublicensees (excluding you), successors and assigns from and against any and all liability, costs, losses, damages, and expenses (including reasonable attorneys' fees and expenses) arising out of any claim, suit, or cause of action relating to and/or arising from (a) your breach of any term of this EULA; (b) your violation of any rights of any third party; or (c) your use or misuse of the Software. Your indemnification obligations set forth in the immediately preceding sentence shall survive the termination of this EULA.

VI. CLOSING PROVISIONS

1. If any stipulation of this EULA should be or become invalid, either completely or in part, this shall not affect the validity of the remaining stipulations. The parties undertake instead to replace the invalid stipulation with a valid regulation which comes as close as possible to the purpose originally intended.
2. **TERMINATION:** This EULA will terminate automatically if you fail to comply with its terms and conditions. In such event, you must destroy all copies of the Product and all of its component parts (including the software) and cease and desist from accessing any Products.
3. This Agreement shall be governed and construed by the laws of Portugal. The United Nations Convention for the International Sale of Goods shall not apply.

The exclusive place of jurisdiction with respect to all disputes based on or in connection with this Agreement shall be Leiria, Portugal. However, Sound Particles reserves the right to sue Licensee at Licensee's place of residence or place of business.

Should you have any queries concerning this EULA, please write to this address:

Sound Particles S.A.
Rua da Carvalha, 570,
2400-441 Leiria
Portugal



www.soundparticles.com