



SkyDust 3D

Reference Manual

Sept 2023
v. 1.5.0

Welcome Note



Welcome to the new world of spatial synthesizers! SkyDust 3D is my vision on what a synthesizer should be, taking advantage of well-known synth techniques, with nowadays CPU power, and with a built-in spatial engine completely integrated with the rest of the synthesizer.

I always had a passion for 3D audio, and I always thought that the combination of music and 3D sound would be a fantastic one. Unfortunately, during most of my life, the only musicians who cared about using 3D sound were composers working in contemporary music. I have a big respect for people creating contemporary music, but... (how can I say this?)... is probably too advanced for my music taste (sorry, I tend to prefer soundtracks and epic music). With the entire entertainment industry moving to spatial audio, the conditions for the use of 3D sound in the mainstream music industry are set. Many people think that spatial music (or spatial audio in general) is all about using a 3D panner. For me, that is a very limited vision of it. Yes, you need a panner to do certain things, but artists should also have much more creative tools to take advantage of 3D sound. For instance, SkyDust 3D can do things that a regular stereo synthesizer and a 3D panner will never be able to achieve.

Being able to create my own musical instrument is a privilege. This was only possible with the help of a fantastic team of software developers, designers, testers, and sound artists. And also, due to the work of others that came before me: from synth pioneers who created some of the techniques that everyone takes for granted, to engineers who spent some of their time writing books and sharing their knowledge, without forgetting the musicians who create fantastic music that inspired us all to continue to use this technology.

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

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Introduction

Welcome to the future of sound and music! We are thrilled to have you on board with SkyDust 3D Virtual Instrument plugin from Sound Particles.

This groundbreaking synthesizer is designed to revolutionize the way you approach synthesis. With its 3D capabilities, SkyDust 3D opens up a whole new world of possibilities for designing the perfect sound, placing and moving all the voices around the listener. Designed to satisfy the needs of the future, its engine is packed with endless possibilities, making it the perfect tool for artists who are diving into the world of 3D sound formats. Whether it's stereo, surround 5.1 and 7.1, Dolby Atmos 7.1.2, Ambisonics up to 6th order, binaural, or anything in between, SkyDust 3D has got you covered.

We encourage you to dive into the manual and explore all that SkyDust 3D has to offer. With this innovative tool at your fingertips, the sky is the limit!

Overview



Figure 1. Overview

SkyDust 3D is an eight oscillators 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. Oscillator
3. Filter
4. Frequency Modulation (FM)
5. Pitch
6. Spatial
7. Arpeggiator / Sequencer
8. Effects
9. Extras
10. Matrix

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

- 1.1 Keyboard
- 1.2 Mixer

1.3 Macros

1.4 Pads

1.5 Spatial 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 randomisation of multiple parameters. If you want to take your sound to the next level, the other pages allow 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.

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

Top Bar

The SkyDust 3D 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.

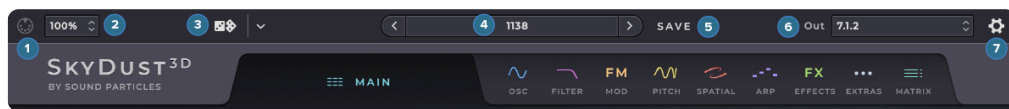


Figure 2. Top Bar

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 SkyDust 3D GUI can be resized. The pop-up available in the upper-left part of the interface allows users to choose a scaling value, from 25% to 400%. This action affects only the currently selected SkyDust 3D 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 pop-up menu that allows you to lock some of the modules, ("I like this sound, but give me a different arpeggiator and spatial effects").
4. **Preset Navigator** - It 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 these 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:
 - o Mono
 - o Stereo (several stereo options, based on different stereo mic techniques)
 - o Binaural
 - o LCR
 - o LCRS
 - o 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
- 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

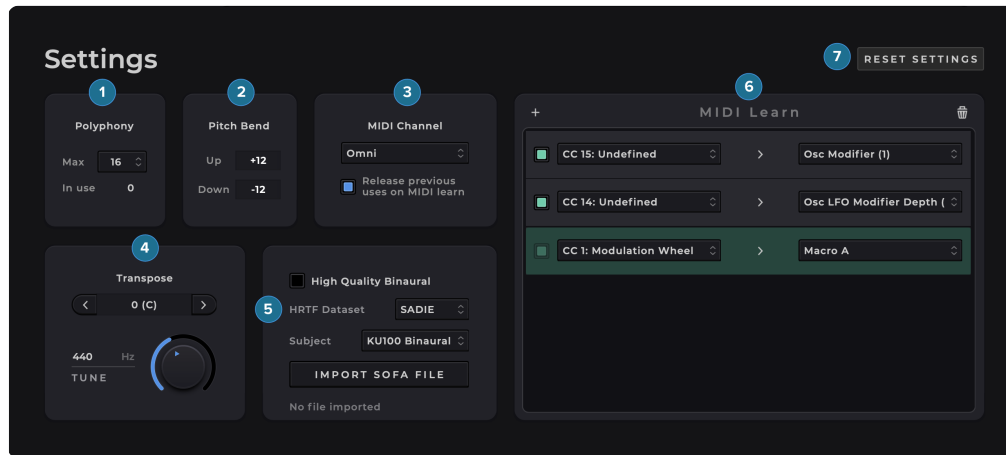


Figure 3. Settings Panel

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** - This allows you to 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 focuses on the new ones. Nevertheless, if you have a powerful computer, you may want to increase this value to make sure nothing is lost.
2. **Pitch Bend** - This allows you to define the Pitch Bend range, with a maximum of 36 semitones, with different ranges for up and down.
3. **MIDI Channel** - You can choose the MIDI Channel to be received by SkyDust 3D, 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 a 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 individual control of each note played on a keyboard. With MPE, each note is assigned to 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. SkyDust 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 now you want to control something else, this checkbox will tell the synth to forget about the previous assignment before doing the new one.

4. Transpose - You can define the tune of SkyDust 3D, with "A" going from 400 Hz to 500 Hz. You can also transpose the scale from one octave down to one octave up. This could be useful while playing or performing, if you are used to playing and soloing in a certain scale on the keyboard but want to sound in a different scale.

5. HRTF Dataset - It allows you to select one among many choices of a HRTF Datasets. Import your own Sofa File by clicking on "IMPORT SOFA FILE".

6. MIDI Learn - It allows you to see all the active MIDI Learn; it also allows you to add new MIDI Learn entries and enable/disable the active ones as well as changing sources and destinations.

7. Reset Settings - Resets all the Settings parameters to the default values.

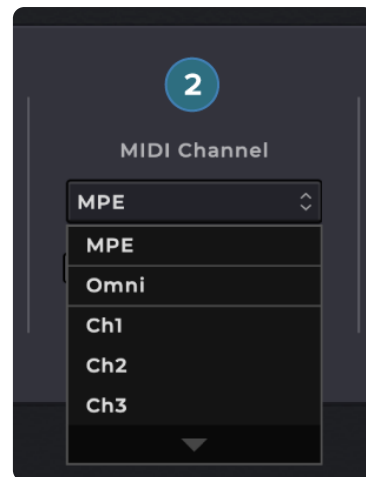


Figure 4. MIDI Channel - MPE

Top Panel

On the top of the plugin window, right below the Top Bar, you have the Page Selection where you can shift between the 10 pages. This is visible on all pages and it allows the user to quickly switch between them. All the pages allow you to see the bottom panel - which will be explained in a latter section of the manual.

Main

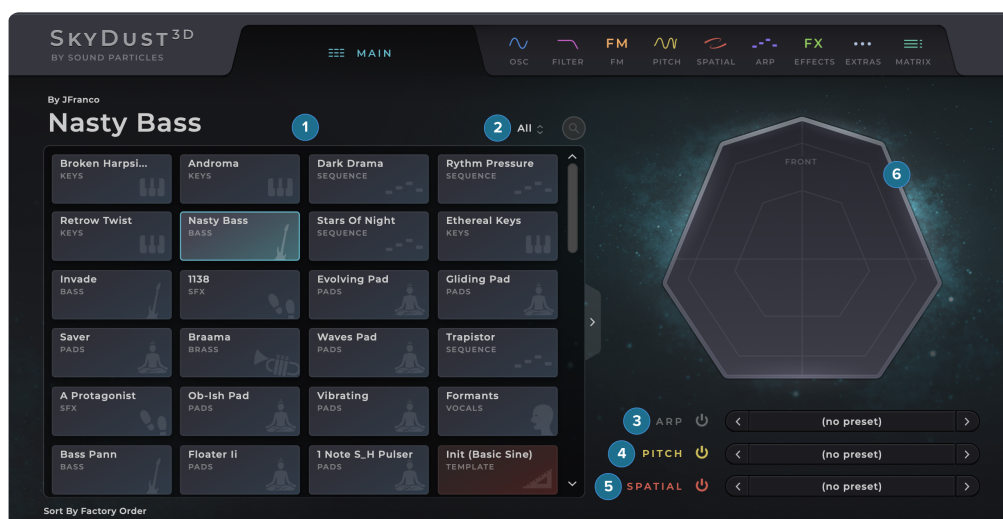


Figure 5. Main Panel

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

1. **Main presets** - Select a global preset.
2. **Filter/Sort/Search**
 - a) Filter - Filter by Factory/User, by artist or by type.
 - b) Sort - Order by factory, by preset name (A...Z), by preset name (Z...A), by preset type (A...Z), by preset type (Z...A), by preset artist (A...Z), by preset artist (Z...A).
 - c) Search - Write the name of the desired preset

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

Oscillators



Figure 6. Oscillators Panel

The Oscillators Page gives you access to controls over the base of your sound, with parameters for each of the **8 oscillators**. On the left side of the page, you can switch between the **Summary** tab and each individual **Oscillator** tab.

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

1. **Power button** - Turn On/Off each oscillator.
2. **Waveform** - Choose one among hundreds of waveforms, or **import your own audio file**
 - a) If you import your own audio file, you'll have the following options:
 - a.1. Unpitch - The audio file will be played as it was imported no matter which note you are playing.
 - a.2. Pitch - The audio file will pitch shift according to the note you play.
 - a.3. Once - The audio file is played once with its original duration, after that there's silence.
 - a.4. Loop - The audio file will be played in a loop.
 - a.5. Forward & Backward - The audio file will be played in a forward and backward loop.
 - a.6. Consider sample as - Define the note of the audio file (if using pitch) so you can tune it.
3. **Waveform Modifier** - Choose from a list of waveform modifiers (Phase and Amplitude modifiers).

4. **Modifier value** - Define the amount of the Modifier effect you want on your oscillator.
5. **Gain** - Control the output gain of your oscillator.
6. **Octave** - Select the oscillators octave range, from -3 to 3.
7. **Transpose** - Transpose your oscillator, from -12 to 12 semitones.
8. **Detune** - Fine tune your oscillator, from -100 to 100 cents.

In the individual **Oscillators** tab, in addition to the above mentioned controls, you also have access to the Envelope Generator (EG) and Low Frequency Oscillator (LFO) which control the gain of the oscillator:



Figure 7. Oscillators Page - EG

The **EG** has the following parameters:

1. **EG Type** - Select the type of EG, from simple AR (Attack/Release) to complex DAHDSR (Delay/Attack/Hold/Decay/Sustain/Release).
2. **Delay** - Control the time it takes for the oscillator to start playing after you press a key on the controller.
3. **Attack** - Control the time it takes for the oscillator to go from 0 ($-\infty$ dB) to the maximum value.
4. **Hold** - Control the time it takes for the oscillator to hold on to the maximum value before it decays.
5. **Decay** - Control the time it takes for the oscillator to go from the Peak value to the Sustain level.
6. **Sustain** - Control the level of the sustain. The sustain has no time value since it endures as long you keep your key pressed.
7. **Release** - Control the time it takes for the oscillator to go from the Sustain level value to 0 ($-\infty$ dB).

The **LFO** has the following parameters:

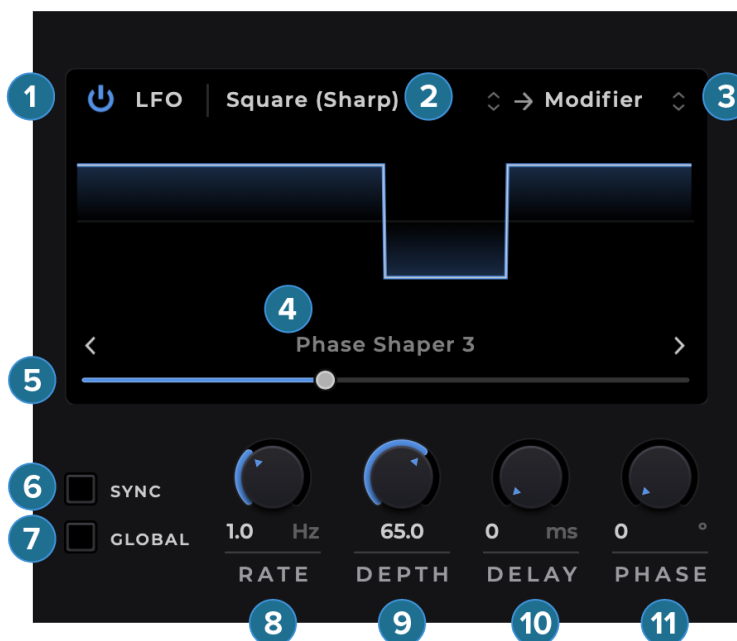


Figure 8. Oscillator Page - LFO

1. **Power button** - Turn On/Off 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. **Destination** - Choose between Gain or Modifier:
 - a) Gain - LFO controls the gain of the oscillator.
 - b) Modifier - LFO controls the amount of the modifier to be applied on the waveform.
4. **Waveform Modifier** - Choose from a list of waveform modifiers (Phase and Amplitude modifiers)
5. **Modifier value** - Define the amount of the Modifier effect you want on your oscillator.
6. **Sync** - If enabled, the rate of the LFO syncs with the DAW's project tempo.
7. **Global** - If enabled, all the voices will be synced together, independently from their start times.
8. **Rate/Note** - Control the rate of the LFO. If Sync is disabled, it ranges from 0.1 to 10 Hz, with Sync enabled you can choose between several time divisions.
9. **Depth** - Control the depth of the modulation of the LFO.
10. **Delay** - Control the time it takes for the LFO to reach its full rate and depth.

11. Phase - It allows you to offset the initial phase of the LFO wave.

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

Filter



Figure 9. 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 oscillators) or **Oscillator** (opens 8 tabs that have one filter for each oscillator). 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 corresponding oscillator.
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 concerning 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:
- Low/High Pass - Frequency (define the cutoff frequency of the filter) and Resonance (increase or decrease the resonance of the filter's cutoff frequency).
 - Band Pass - Frequency (define the center frequency of the filter) and Q (define the quality/slope of the filter).
 - Peak - Frequency (define the center frequency of the filter), Q (define the quality/slope of the filter) and Gain (define the amount of boost or reduction of the center frequency).
 - Low/High Shelf - Frequency (define the frequency of the filter) and Gain (define the amount of boost or reduction of the filter).



Figure 10. Filters Page - EG

The **EG** has the following parameters:

- 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)** - Control the octave offset concerning the filter's frequency when the EG starts.
- 4. Delay (Time)** - Control the time it takes for the EG to start after you press a key on the controller.
- 5. Attack (Frequency)** - Control the octave offset concerning the filter's frequency at the end of attack.
- 6. Attack (Time)** - Control the time it takes for the filter to go from the start value to the attack value.
- 7. Hold (Time)** - Control the time it takes for the filter to hold on to the attack position before it "decays".

8. **Decay (Time)** - Control the time it takes for the filter to go from the attack value to the sustain value.
9. **Sustain (Frequency)** - Control the octave offset concerning the filter's frequency during the sustain.
10. **Release (Frequency)** - Control the octave offset concerning the filter's frequency on the end of the release.
11. **Release (Time)** - Control the time it takes for the oscillator to go from the sustain value to the release value.



Figure 11. Filters Page - LFO

The **LFO** has the following parameters:

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 among a list of waveform modifiers (Phase and Amplitude modifiers)
4. **Modifier value** - Allows you to define the amount of the Waveform Modifier effect you want on your oscillator.
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.

Frequency Modulation

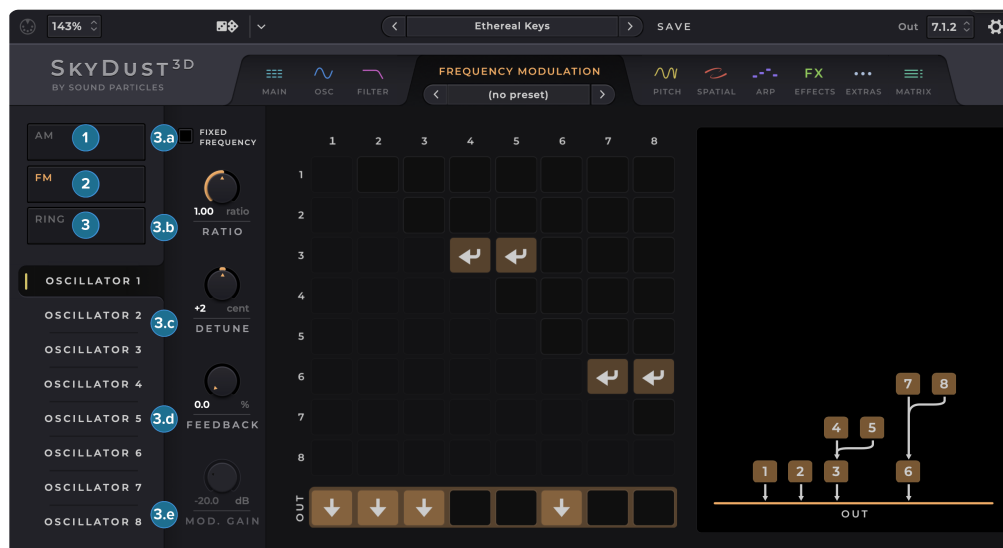


Figure 12. FM Panel

The Frequency Modulation Page allows you to play with classic FM Synthesis, as well as Amplitude Modulation (AM) or Ring Modulation (Ring). Here you can select from a number of algorithms to define how your matrix will work. You can also create your own algorithms by defining the routing of the oscillators (operators) on the matrix.

The oscillators will work as operators, which means some will be carriers and some will be modulators. The **carriers** are the ones that go to the output, the **modulators** are the ones that are routed to the carriers.

On the left side of the page you can select **each oscillator** and change the following modulation parameters:

1. **AM** - The amplitude (volume) of one audio signal, known as the carrier waveform, is modulated by another audio signal, called the modulating waveform. The modulating waveform's fluctuations alter the amplitude of the carrier waveform, resulting in the creation of new frequencies known as sidebands.
2. **FM** - The frequency of one waveform, known as the carrier, is manipulated by modulating it with another waveform's frequency, referred to as the modulator. By altering the modulator's frequency and intensity, FM synthesis generates a diverse array of harmonically complex and evolving sounds, allowing for the creation of tones ranging from metallic and bell-like to rich and evolving textures.
3. **Ring** - Two audio signals are multiplied together to create new harmonically rich tones. The process involves taking the product of the instantaneous amplitudes of the two input signals, often referred to as the carrier and the modulator. Unlike amplitude modulation where the modulator affects the amplitude of the carrier, in

ring modulation, the resulting sound consists of the sum and difference frequencies of both input signals, producing dissonant and atonal timbres.

- a) **Fixed Frequency** - Fix the frequency of the oscillator, to obtain a specific modulation. If enabled the ratio knob turns into a frequency knob.
- b) **Ratio** - Define the frequency of the oscillator. When using the Command/Control modifier, it has a step behavior based on the usual FM ratios: 0.125; 0.25; 0.75; 1; 1.5; 2; 3; ...
- c) **Detune** - Fine tune your oscillator, from -100 to 100 cents.
- d) **Feedback** - Control the feedback of the oscillator. This will make the oscillator modulate itself.
- e) **Mod. Gain** - Control how much the modulator will affect the carrier sound.

Besides the parameters for each oscillator in this page you will have a matrix to select the routing of each oscillator and a diagram representation of the FM algorithm you are using.

In the matrix you can send each oscillator to the audio output to listen to the signal, you can send it to any other oscillator to modulate it or combine both. The matrix is read by seeing which oscillator on the top is being sent to oscillators on the right or to the audio output. In the image below you can see that only oscillators 1 and 4 are being routed to the output, while 2, 3, 5 and 6 are only modulating other oscillators.

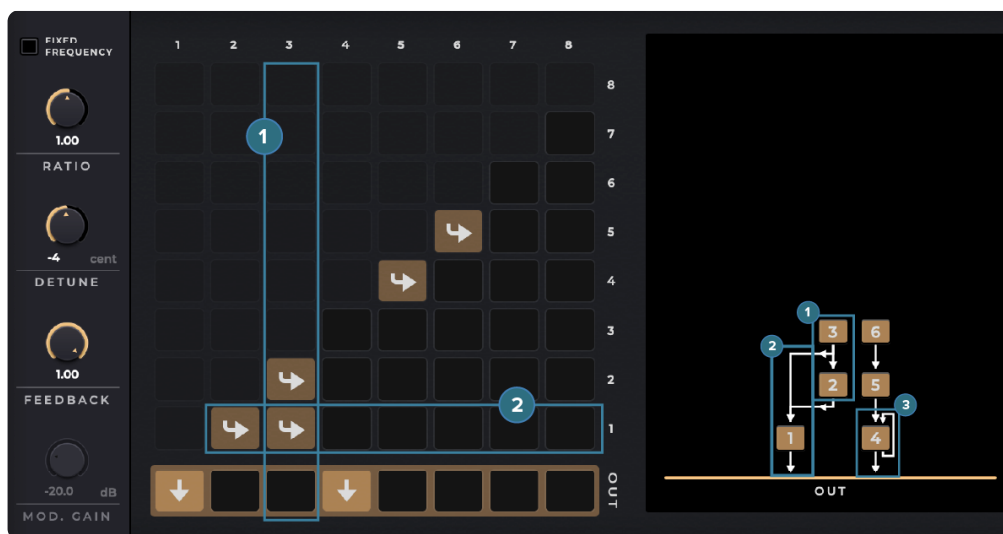


Figure 13. FM Matrix

1. Each modulator oscillator can modulate more than one oscillator (carriers and/or modulators).
2. Each oscillator can be modulated by more than one modulator oscillator.
3. Each oscillator can modulate itself by using the feedback knob.

Note: each oscillator can only modulate other oscillators with an inferior index number (i.e. oscillator 1 can't modulate any other oscillator, while oscillator 8 can modulate all the other oscillators).

Pitch



Figure 14. 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 oscillator. On the left side of the page, you can choose between three modes: **Off** (turns off all pitch effects), **Global** (applies a single pitch effect to all oscillators using an EG and/or LFO), or **Oscillator** (provides different pitch settings for each of the eight oscillators individually with their own EG and/or LFO).

In Oscillator mode, each oscillator's tab displays the **Octave**, **Transpose**, and **Detune** parameters, which are also found on the Oscillators Page.



Figure 15. Pitch Page - EG

The **EG** has the following parameters:

- 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 oscillator 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.



Figure 16. Pitch Page - LFO

The **LFO** has the following parameters:

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 among a list of waveform modifiers (Phase and Amplitude modifiers)
4. **Modifier value** - Allows you to define the amount of the Waveform Modifier effect you want on your oscillator.
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.

Spatial

The Spatial 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 oscillator can be independently placed on a static position.
- **EG** - This mode uses an EG an LFO to control the position and movement of the sounds.
- **Movement Modifiers** - This mode applies some movement patterns.



Figure 17. Spatial Page

Like the other pages, you can also choose to use it in **Global** (applies the same movement to all the oscillators simultaneously), or **Oscillator** (provides position settings for each of the eight oscillators individually).

OFF MODE (STATIC):

The static mode has controls for the position of each oscillator. There is a polygon view where you can adjust the Azimuth and Elevation of each oscillator. Using the shift modifier you can snap to the speakers positions. 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.

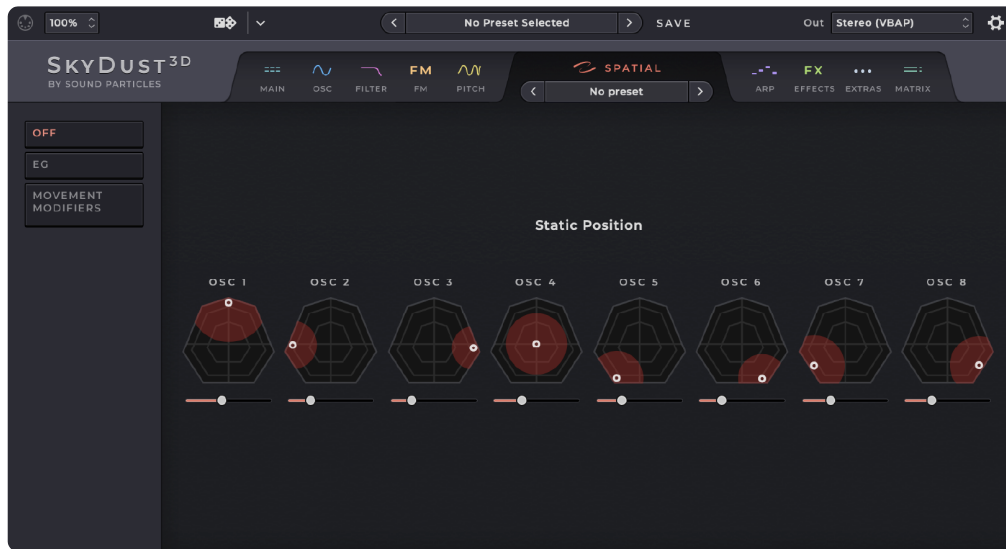


Figure 18. Spatial Off Mode

EG MODE:

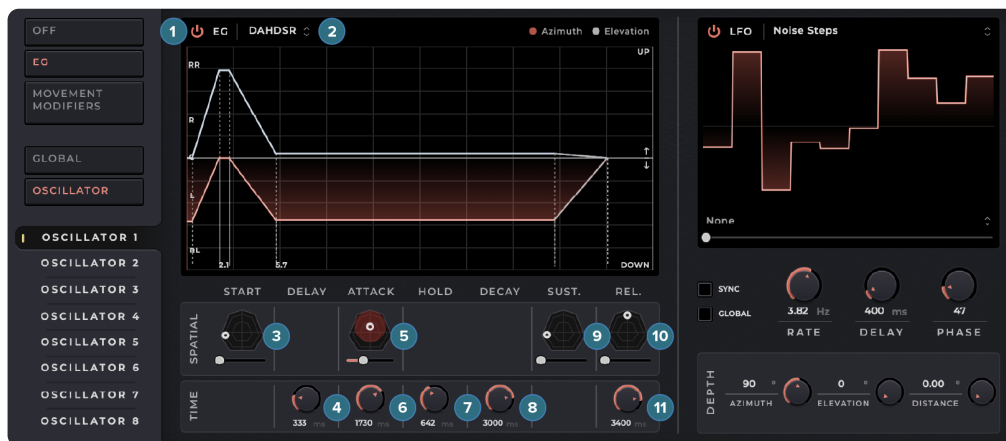


Figure 19. Spatial Page - EG

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 to 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.

*using the shift modifier you can snap to the speakers positions

The **LFO** has the following parameters:



Figure 20. Spatial 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 among a list of waveform modifiers (Phase and Amplitude modifiers)
4. **Modifier value** - Allows you to define the amount of the Modifier effect you want on your oscillator.
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 farther. When it is closer to the listener's position, it creates a big mono sound (all speakers playing the same).
- 9. Delay** - Control the time it takes for the LFO to reach its full rate and depth.
- 10. Phase** - Offset the initial phase of the LFO wave.

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

MOVEMENT MODIFIERS:

Figure 21. Spatial Page - Movement Modifiers

In the Movement Modifiers mode you can choose the position of the sounds in three separate 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 SkyDust you can also sequence endless additional parameters besides the note's pitch, like, for example, the position of the sounds.

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

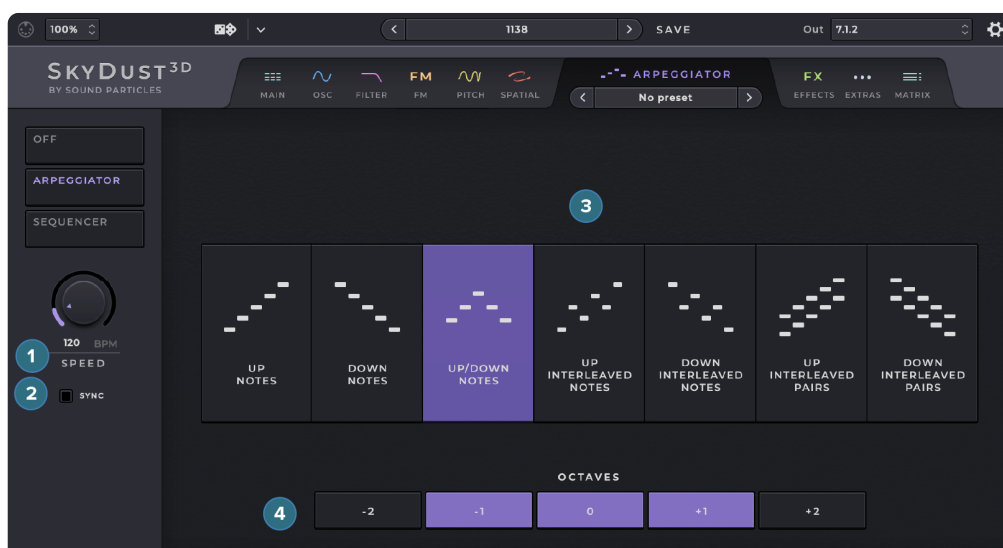


Figure 22. Arpeggiator

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:



Figure 23. 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 any other synth parameter, allowing you to define specific values of it for each step.
- 9. Steps** - Choose 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



Figure 24. 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:

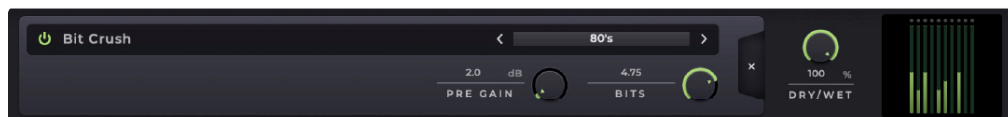


Figure 25. Bit Crush

- 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.



Figure 26. Chorus FX

2. Chorus - Copy, up to 3 voices, and apply an LFO controlling the delays of the sound before mixing it back with the original. This creates a richer and ensemble-like sound by adding slight detunes.

- a) **Delay L** - Additional pre-delay acts as adding a new voice slightly delayed from the original chorus effect to the speakers on the left channels
- b) **Delay R** - Additional pre-delay acts as adding a new voice slightly delayed from the original chorus effect to the speakers on the right channels
- c) **Rate** - Control the rate of the LFO modulating the delayed copies of the signal
- d) **Depth** - Control the depth of the LFO modulating the delayed copies of the signal
- e) **Feedback** - Control the amount of modulated signal that is fed back into the chorus effect. Increasing the feedback level will create multiple repeats of the delayed signal copies.

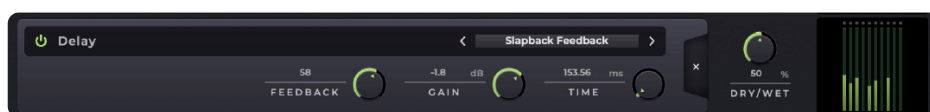


Figure 27. Delay Effect

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

- a) **Feedback** - Control 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** - Control 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** - Control 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.



Figure 28. Distortion Effect

4. Distortion - Adjust 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 (which generates a more aggressive and "hard" distortion sound) and Overdrive (which creates a "soft" distortion that adds warmth and sustain to the original sound). You can adjust it using the following parameters:

- a) **Pre Gain** - Control 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** - Control 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.



Figure 29. Equalizer Effect

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

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

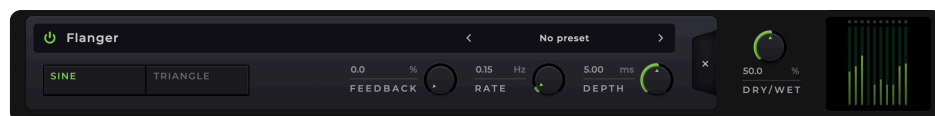


Figure 30. Flanger FX

6. Flanger - Duplicate and apply an LFO controlling the delay of a sound before mixing it back with the original. This creates a sweeping comb filter effect.

- a) **Rate** - Control the rate of the LFO modulating the duplicated delayed signal

- b) **Depth** - Control the depth of the LFO modulating the duplicated delayed signal
- c) **Feedback** - Control the amount of modulated signal that is fed back into the Flanger effect. Increasing the feedback level will create multiple repeats of the duplicated delayed signal.
- d) **Sine/Triangle** - Select the LFO waveform. Sine or Triangle.



Figure 31. Phaser FX

7. Phaser - Duplicate and apply an LFO controlling the phase of a sound before mixing it back with the original. This creates a sweeping effect.

- a) **Rate** - Control the rate of the LFO controlling the duplicated delayed signal
- b) **Depth** - Control the Depth of the LFO controlling the duplicated delayed signal
- c) **Feedback** - Control the amount of modulated signal that is fed back into the Phaser effect. Increasing the feedback level will create multiple repeats of the duplicated out of phase signal.



Figure 32. Reverb Effect

8. 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.

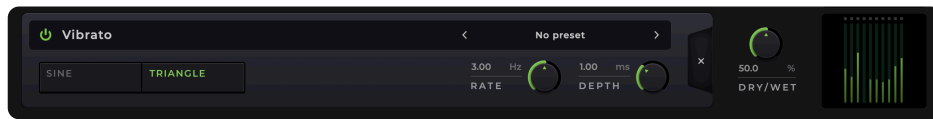


Figure 33. Vibrato FX

9. Vibrato - Variate the playback speed of the audio, controlled by an LFO, creating the vibrato effect

- a) **Rate** - Control the rate of the LFO controlling the duplicated delayed signal
- b) **Depth** - Control the Depth of the LFO controlling the duplicated delayed signal
- c) **Sine/Triangle** - Select the LFO waveform. Sine or Triangle.

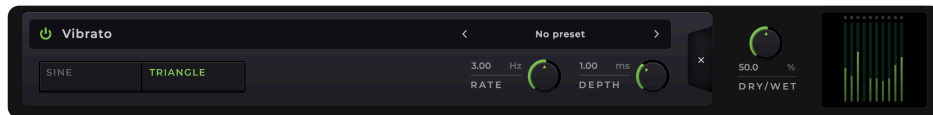


Figure 34. Vibrato FX

Extras



Figure 35. 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 SkyDust 3D.

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:



Figure 36. Extras Page - EG

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

Each **LFO** has the following parameters:



Figure 37. 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 from a list of waveform modifiers (Phase and Amplitude modifiers)
4. **Modifier value** - Define the amount of the Modifier effect you want on your oscillator.
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 synced together, independently from their start times.
7. **Rate/Note** - Control 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** - Control the depth of the modulation of the LFO.
9. **Delay** - Control the time it takes for the LFO to reach its full rate and depth.
10. **Phase** - Offset the initial phase of the LFO wave.

*Sharp waveforms generate 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.

In the Curve Editor you have the following parameters:



Figure 38. 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** - Invert the curve.
3. **Reset** - Reset the curve to the default value.
4. **Depth** - Control how much the Source will modulate the Destination by reducing or increasing the range between the minimum and maximum value.
5. **Min** - Define the minimum value to which the Source will modulate the Destination.
6. **Mid** - Move the entire curve up and down.
7. **Max** - Define the maximum value to which the Source will modulate the Destination.

Matrix



Figure 39. 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 an oscillator, or use the Modulation Wheel to control the elevation of an oscillator.

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** - Entry for a Source/Destination connection.
2. **Delete Entry** - Remove the selected entry

Each Entry has 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 or decreasing concerning 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** - Invert the curve.
- 9. Reset** - Reset the curve to the default value.
- 10. Depth** - Control how much the Source will modulate the Destination by reducing or increasing the range between the minimum and maximum value.
- 11. Min** - Define the minimum value to which the Source will modulate the Destination.
- 12. Mid** - Move the entire curve up and down.
- 13. Max** - Define 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 SkyDust 3D, you have the option to select four additional tabs: **Mixer**, **Macros**, **Pads**, and **Spatial**.

Keyboard

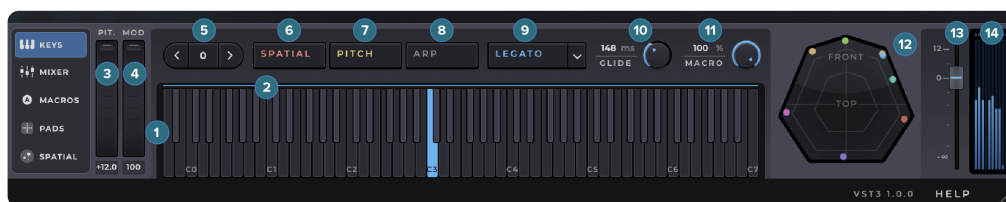


Figure 40. Keys Tab

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 SkyDust 3D 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** - Shift the pitch of the played notes. In the Settings panel you can define the Up and Down range values of the wheel.
4. **ModWheel** - Control the modulation value that is sent to any assigned expression parameters.
5. **Octave Offset** - Offset the octave of the original MIDI input.
6. **Spatial** - Turn On/Off all the spatial movement settings. When Off it will use the spatial settings defined in the Off mode on the Spatial Page.
7. **Pitch** - Turn On/Off any existent pitch effects.
8. **Arp** - Turn 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** - Define the time it takes to go from the pitch of the previous note to the new note.
11. **Macro** - Control the Macro A. On the Macros tab or in the Matrix Page you can define the parameters controlled by the macro.
12. **Spatial view** - monitor the movement and position of the generated voices from a top "perspective".
13. **Master Fader** - Control the output level of the synth.
14. **Master VU meter** - Monitor the output level of all the channels on the output.

Mixer



Figure 41. Mixer Tab

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

1. **Fader** - Control the level of the oscillator.
2. **Oscillators meter** - Monitor the audio level of each oscillator.
3. **Oscillators Mute** - Mute a particular oscillator.
4. **Oscillators Solo** - Solo the oscillator (mute all the others).
5. **FX Dry/Wet** - Control the Dry/Wet relation to the respective effect.
6. **Master Mute** - Mute the master output of the synth.
7. **Master Fader** - Control the output level of the synth.
8. **Master meter** - Monitor the output level of all the channels on the output.

Macros



Figure 42. 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 right 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

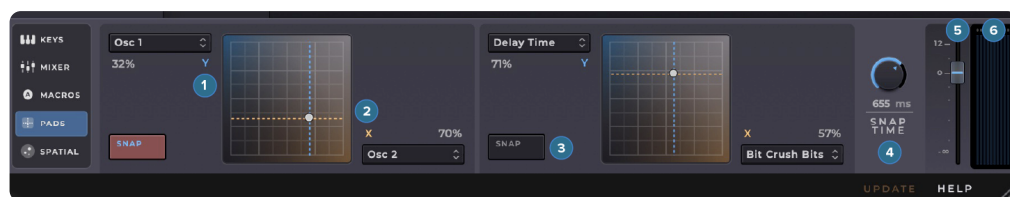


Figure 43. Pads Tab

On this tab you have access to two XY pads. With these 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 enabled, set the time it takes for the dot to return to the previous position.
5. **Master Fader** - Control the output level of the synth.
6. **Master meter** - Monitor the output level of all the channels on the output.

Spatial

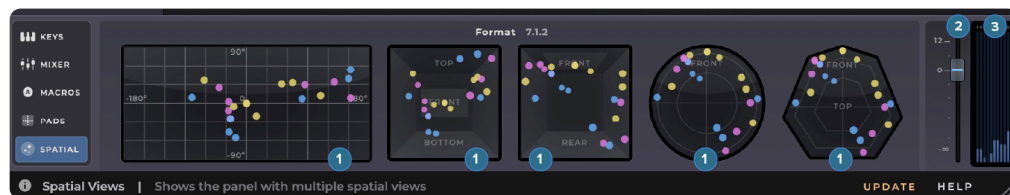


Figure 44. Spatial Tab

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

1. Spatial Views

- a) **360° View** - Display 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)** - Display the voices from the rear perspective, in a squared room.
 - c) **Top View (Cube)** - Display the voices from the top perspective, in a squared room.
 - d) **Top View (Sphere)** - Display the voices from the top perspective, in a circular room.
 - e) **Polygon View** - Display the voices from the top perspective, in a squared room.
2. **Master Fader** - Control the output level of the synth.
 3. **Master meter** - Monitor 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:

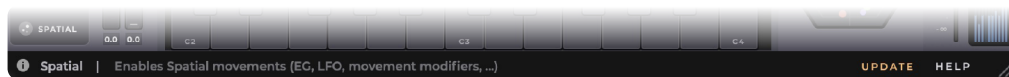


Figure 45. Bottom Bar

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** - Open the Help Panel, which shows additional information and useful links.
 - a) **Visit our Website** – Link to soundparticles.com
 - b) **Watch Tutorials** – Link to SkyDust 3D [tutorials](#)
 - c) **Read Manual** – Web version of this Manual.
 - d) **Request Support** – 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** - 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.
**Please note that hosts may deal differently with plugin resizes.*

Plugin and Presets Location

Installing SkyDust 3D copies the plugin into appropriate plugin folders, and the hosts will automatically recognize them. It also allows SkyDust 3D users to choose a custom folder for the installation, in both operating systems — MacOS and Windows.

On MacOS, the default paths for SkyDust 3D 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 SkyDust 3D 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 SkyDust User presets is the following:

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

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

- C:\Users\USERNAME**\AppData\Roaming\Sound Particles\SkyDust\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 straightforward 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 SkyDust). But don't worry, if you follow these steps, you will be able to take full advantage of SkyDust with multichannel.

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



Figure 46. Nuendo Workflow - Step 1

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

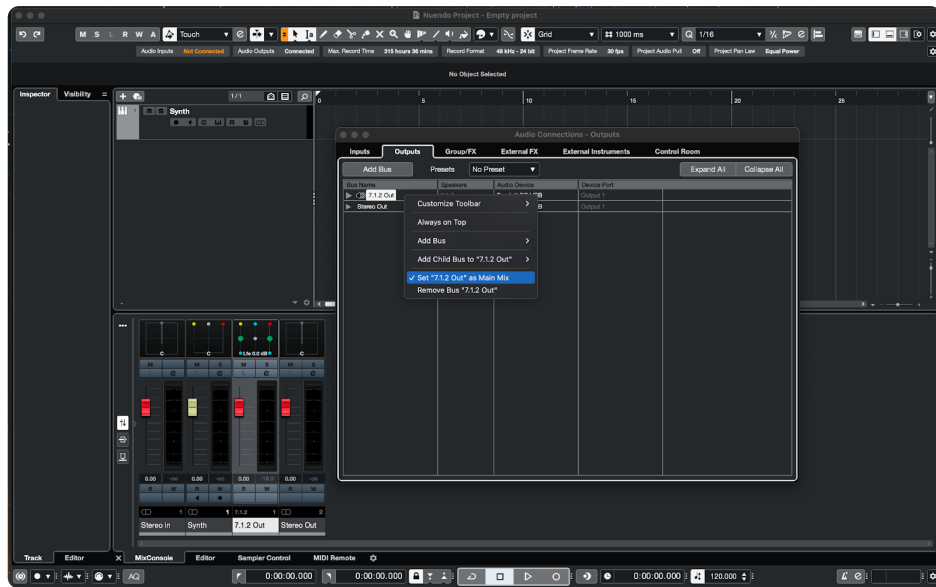


Figure 47. Nuendo Workflow - Step 2

3. Create an Instrument track;

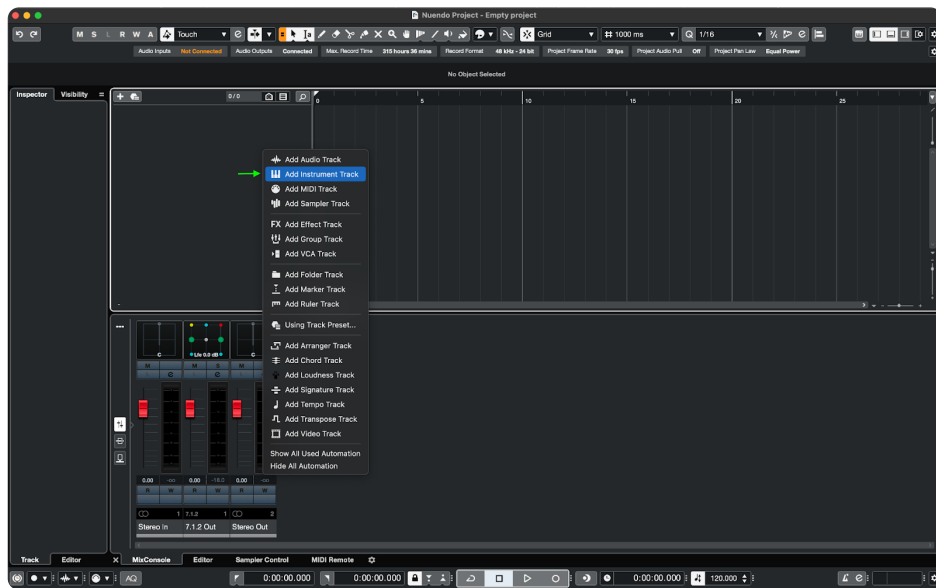


Figure 48. Nuendo Workflow - Step 3

4. Select **SkyDust** as instrument;



Figure 49. Nuendo Workflow - Step 4

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

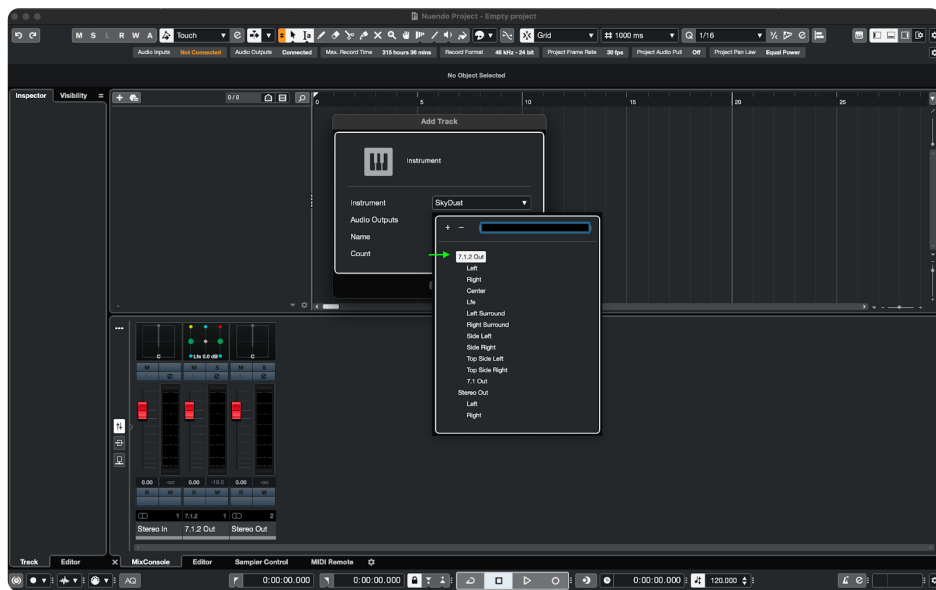


Figure 50. Nuendo Workflow - Step 5

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



Figure 51. Nuendo Workflow - Step 6

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

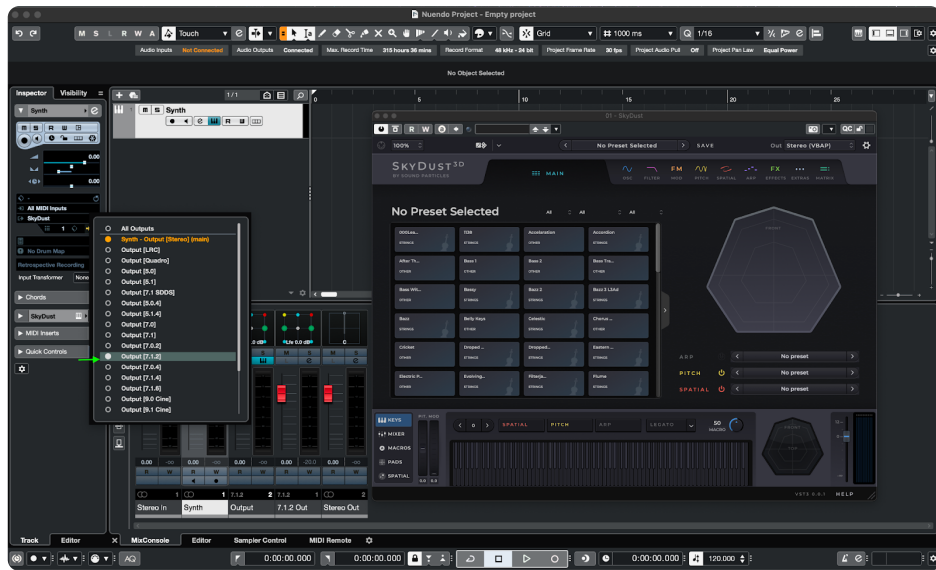


Figure 52. Nuendo Workflow - Step 7

8. Go to **SkyDust Out** format pop-up, on the top right corner of the plugin, and select the corresponding surround format;

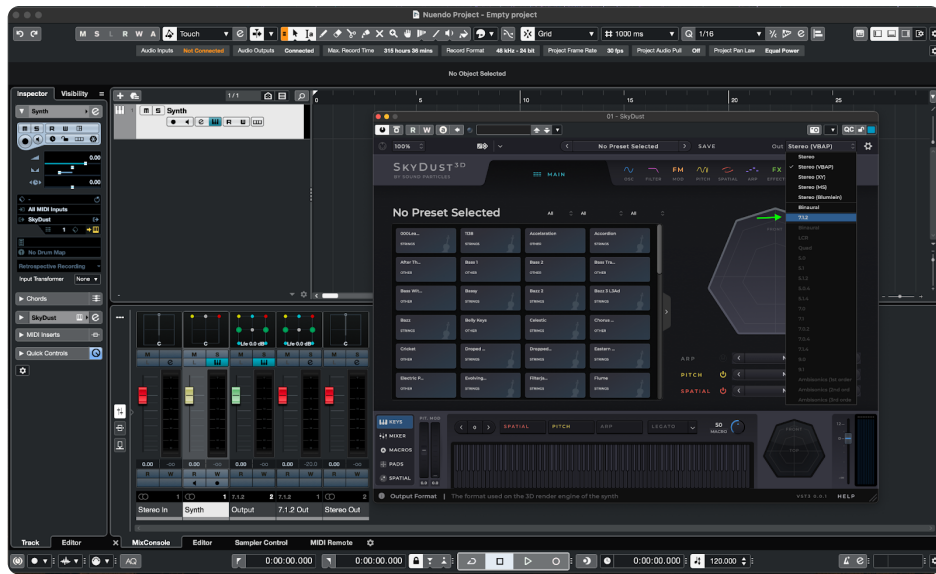


Figure 53. Nuendo Workflow - Step 8

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

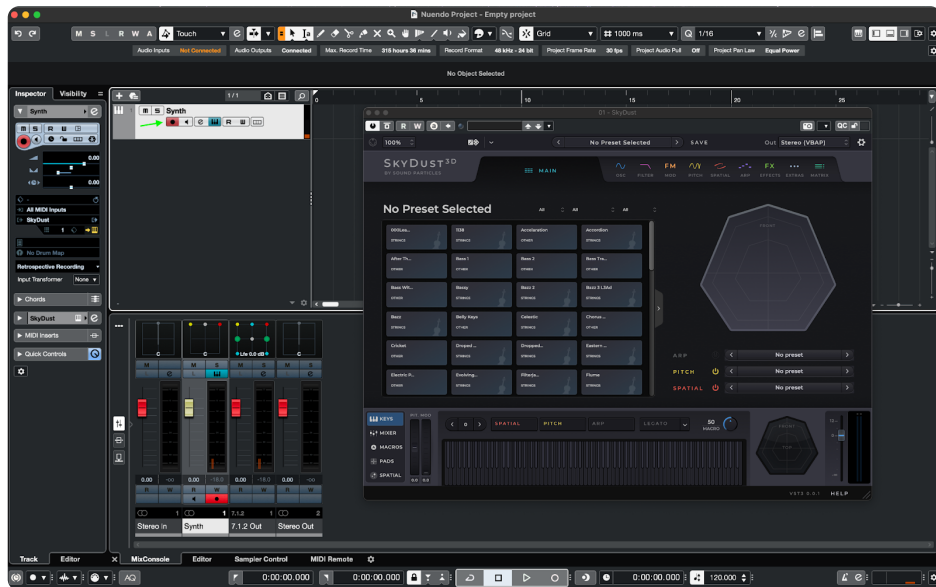


Figure 54. Nuendo Workflow - Step 9

Pro Tools MPE workflow

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

(Please note that Pro Tools might have the "MIDI Input Filter" with some exceptions by Default. If that's the case, go to Setup > MIDI > MIDI Input Filter and set to "Record All")

1. Create an Instrument track and load SkyDust 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);



Figure 55. Pro Tools Workflow - Step 4

5. To each MIDI track output, select a MIDI channel from SkyDust;



Figure 56. Pro Tools Workflow - Step 5

6. Record enable each MIDI track;
7. Play.

Other DAWs 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-tuning.

Ratio Knob:

- Command/Alt-click makes the knob work with steps.

Pan Control:

- Shift-drag snaps the point to the closest speaker.

VU Meter:

- Clicking 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 right-click inside the VU’s area.

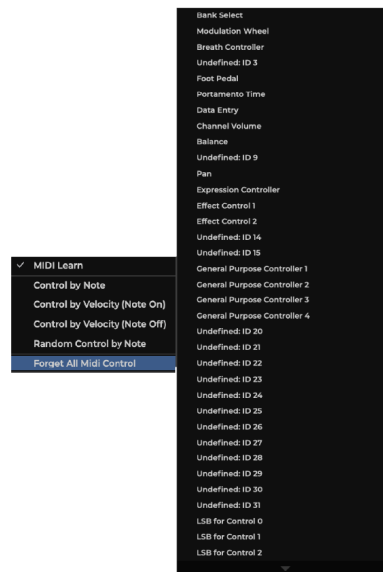


Figure 57. Control options_

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 SkyDust 3D 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 plugin 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 SkyDust 3D plugin tries to access a simple XML file located at <https://www.soundparticles.com>.

SOUND PARTICLES SKYDUST 3D DOES NOT SEND ANY INFORMATION FROM THE USER OVER THE INTERNET.

SUPPORT

If you detect a bug, if you have 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 to us.

Help us help you

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All

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MACROS M S M S M S M S M S M S M S M S

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