DATAMIND AUDIO

ReFractalizer

User Guide

Version 1.0

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SYSTEM REQUIREMENTS

MINIMUM:
Requires a 64-bit processor and operating system
OS: Windows 10 or later / macOS 10.15 or later
Processor: i5-2500 / AMD FX-6300
Memory: 4 GB RAM
Graphics: 720p monitor resolution
Storage: HDD with 600 MB available space
Additional Notes: Internet connection required for initial activation.

RECOMMENDED:
Requires a 64-bit processor and operating system
OS: Windows 10 or later / macOS 10.15 or later
Processor: Ryzen 5600x / i5-12600 / Apple M1
Memory: 16 GB RAM
Graphics: 1080p monitor resolution
Storage: SSD with 600 MB available space
Additional Notes: Internet connection required for initial activation.

Refractalizer can be installed as either a VST3 or Audio Unit plug-in.
All major DAWs are supported (apart from Avid Pro Tools).
AAX support will be available soon!

INTRODUCTION

Welcome and congratulations on purchasing Refractalizer!

Refractalizer is a new kind of granular synthesis instrument that was designed to make granular synthesis more musical and expansive than ever before. It lets you bend time, transform samples, and morph effortlessly between rhythmic, tonal, and chaotic time domains. Drop in any sound or even entire songs, and explore thousands of variations as Refractalizer turns microsonic moments into tones, riffs, textures, and expressive phrases. It's a playground for sonic explorers: a temporal modulation workstation to unlock the hidden depths between the milliseconds.

Refractalizer was designed (with love) by Ben Cantil (Encanti) over several years. It was coded by Lead Developer Luca Ayscough, with additional coding by Developers Robin Leathart and Yashique Chalil. The UI is designed by Jacob Crider, with additional Engineering and Testing by Shreya Gupta.

INSTALLATION

To begin using Refractalizer, download and install the latest version from the official website at datamindaudio.ai by following the provided links.

1. Navigate to the folder to which you downloaded the software and double-click the file to launch the installer. A wizard guides you through the installation.
2. Follow the steps and complete the installation.
3. Launch your preferred Digital Audio Workstation (DAW).
4. Insert Refractalizer into a MIDI channel and start Refractalizing!

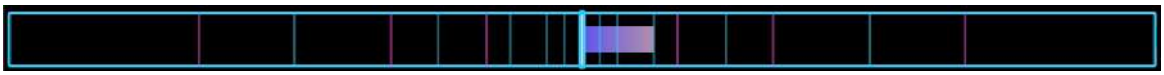
DEMO VERSION

Refractalizer includes a fully functional Demo mode that allows users to evaluate the plugin before purchasing a full license. To begin, you must create an account with Datamind Audio and download Refractalizer with the free trial link on the product page; a Demo license is applied by default if you do not own a license. The **Demo version provides 20 minutes of uninterrupted use,** after which the plugin will be inactive and display a "Your demo has expired" message. Restarting your DAW resets the demo session and restores functionality for another 20 minutes.

Please note that several limitations apply while in Demo mode: **plugin state is not saved** when you save or reload your DAW project, and **preset saving and loading are disabled.** These restrictions are intended to allow meaningful testing while preventing long-term project use. If you wish to enjoy uninterrupted Refractalizing sessions, you can purchase and activate a full license through your account.

GETTING STARTED

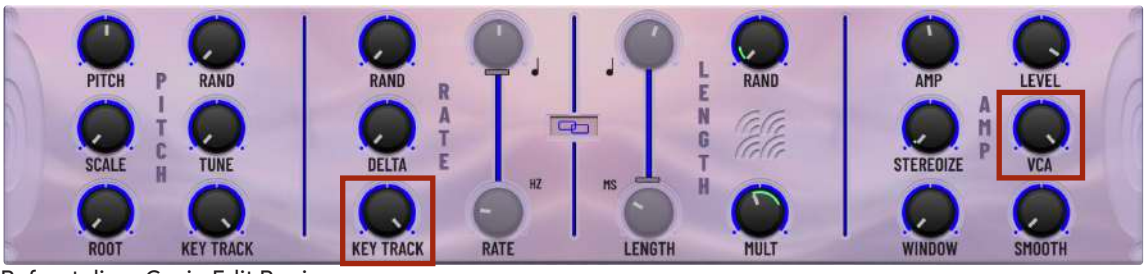
To get started, simply drag and drop one or more audio files into Refractalizer.
Our **Multi-Buffer** system allows you to load as many samples as you like and interpolate between them by toggling the **Interpolate** button on the bottom right corner of the waveform visualizer. You can manage the loaded samples by clicking the **List** Button on the top right corner of the waveform visualizer to open the **Sample Pool**. You can then switch between samples by using the **Sample Selector scroll bar** on the left of the waveform. The Pitch of any sample can be played with MIDI notes via the Key Track knob in the Pitch module.
Once audio is loaded, playback begins automatically. In its initialised state, Refractalizer reproduces the audio exactly as it is. You'll find the **Speed slider** beneath the waveform display; adjusting it introduces the granulation effect.



Playback Speed Bar

Moving the Speed control toward the centre (0) creates a stuttering sound as the grain playback becomes "frozen" in place, while setting it to -1 plays through audio grains in reverse order.

One powerful way to use Refractalizer is as a **Graintable synthesiser**. In this mode, grain length is automatically derived from grain rate. To set this up, enable **Link Length to Rate** , then set the Speed dial to 0. Increase the **Rate Key Track** control to the maximum so the grain rate snaps to the corresponding note frequency. Finally, MIDI notes combined with a raised **VCA Amount** dial make the instrument fully playable.

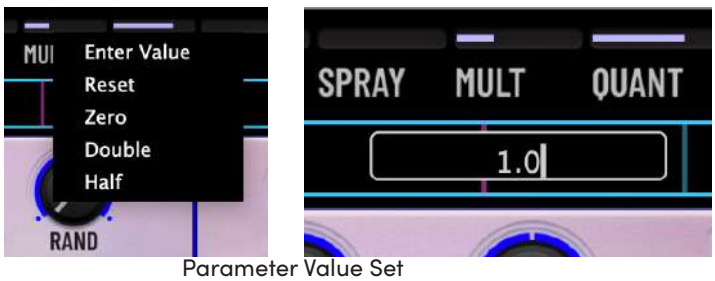


Refractalizer Grain Edit Region

Refractalizer provides deep control over grain rate and length, offering **seamless transitions between tempo-synced rhythmic divisions and audio-rate granular pulses**. With a single gesture, you can move from tight 16th-note chops to clean-pitched tones, to wild exponential "bouncing ball" effects, to the chaos of controlled randomness—opening up a uniquely expressive world of synthesis.

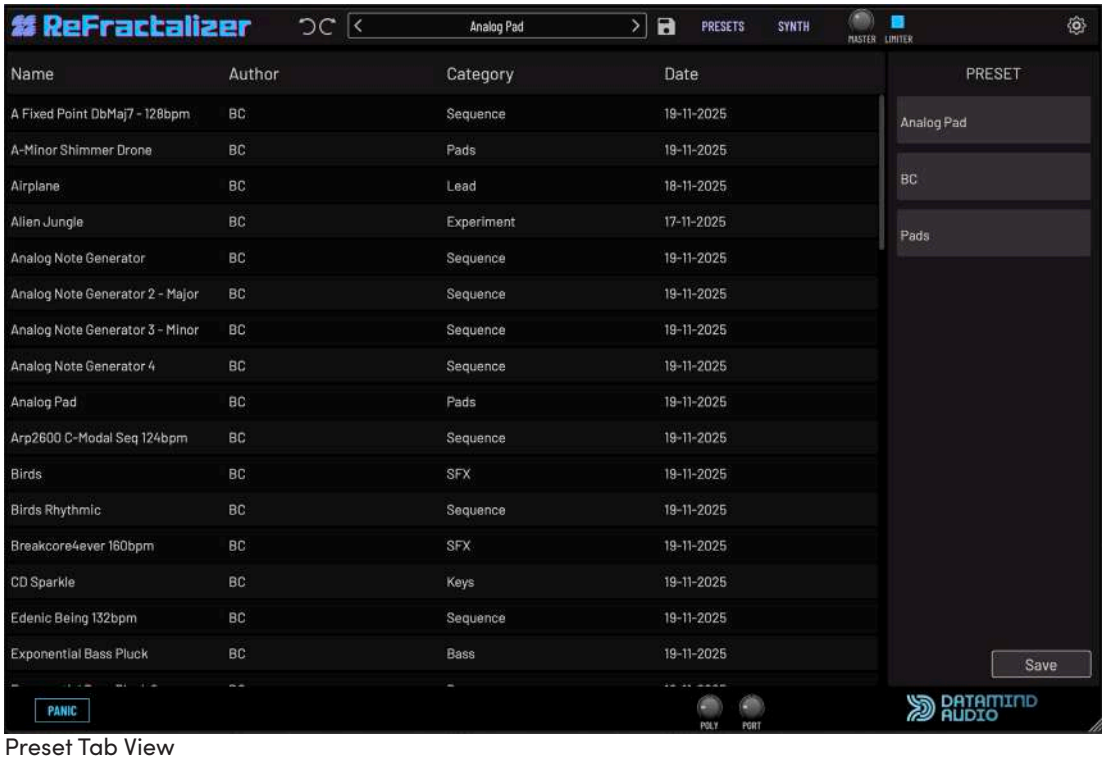
You can change parameter values by

1. Click and drag the parameter knob or slider with your mouse.
2. Right-clicking on the parameter and selecting a pre-defined value or,
3. Selecting the Enter Value from the drop-down list and manually typing in a specific value.



Parameter Value Set

PRESETS



Preset Tab View

Refractalizer comes packaged with over 100 presets, handcrafted by various artists and sound designers (the list of contributors can be found here), who have put in the effort to showcase all the exciting features of Refractalizer. These presets also come with packaged samples, allowing you to immerse yourself in the same sonic world created by our talented community. The presets also serve as an excellent starting point in your own Refractalizing journey, where you can swap out the packaged samples with your own to create a piece that is unique to you with ease.

Tip: When exploring presets, use the **Macros** that have been mapped specifically to the parameters that have exciting responses within each preset.

Preset Navigation Bar

The presets can be accessed by either clicking the preset name in the centre of the toolbar to open the drop-down menu or by opening the preset tab by clicking the **PRESETS** button next to the toolbar. Use the **SYNTH** button to return to the synth (main) UI.

You can save your own presets by clicking the **Save** icon, which opens the explorer (on Windows) or Finder (on Mac) with the Save As dialogue. Alternatively, you can also save presets from the **Preset** tab. On the right side of this tab, you can enter your preset **Name, Author and Category** to better help organise your presets.

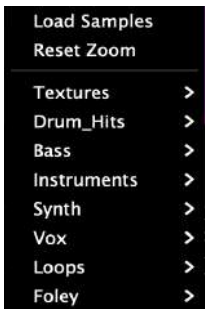
THE BUFFER

Refractalizer features a powerful multi-buffer system that allows you to load—or simply drag and drop—as many samples as you like into its buffer. Similar to working with a wavetable, you can interpolate between these samples by either manually controlling or modulating the Sample Selector slider. This opens up an entirely new palette of creative possibilities for sound design and music production. Unlike traditional wavetables, you're not limited to single-cycle waveforms; Refractalizer lets you interpolate between samples of any length or character, enabling expressive transitions and unique textures that go far beyond conventional synthesis workflows.

The samples you load into the Multi-Buffer can be anything you want. You might stack a series of expressive one-shot recordings from the same instrument and smoothly morph between them to add lifelike nuance to your composition. Or you could fill the buffer with different nature ambiences—each with its own sonic ecosystem—and modulate between them to dynamically sculpt an evolving forest soundscape. And once you start granulating these samples, the creative potential multiplies: every transition, texture, and blend becomes a playground for entirely new sonic possibilities.

Waveforom Buffer View

The samples in the multi-buffer can be smoothly transitioned through by using the **Sample Selector** slider on the left side of the buffer.
Toggle the **Interpolation** button on the bottom left of the buffer to enable/disable crossfading/interpolation between adjacent samples when the sample selector is positioned between two samples. When the **Interpolation** is disabled, samples do not crossfade and rather snap to the next sample.
Use the blue **Region Markers (Labelled as Loop A & B)** that are present on either end of the waveform by default to set the start and end points of the sample loop; this limits the playable/grainable area of the loaded sample.
Refractalizer allows you to manually change the grain playback position by clicking anywhere on the waveform. The **Scan** head is the black line that is fixed at the scan position. It can also be controlled with the **Scan** parameter found in the buffer playback controls panel. The **Play Head** is the red line that moves along the buffer that marks the position of the current grain playback. Each voice has its own play head.



Sample Load Menu

You can also add samples to the buffer by clicking the **SAMPLES +** button on the right. Additionally, right-click on the buffer (or Sample Pool) to access **Load Samples,** which opens Finder/Explorer to browse samples. From this menu, you can also **Reset Zoom,** which zooms out the waveform to the default view, lastly also lets you directly load **Datamind Audio's bundled sample library.**

To view and manage all the samples that have been loaded to the multi buffer, select the **List** icon on the top right corner to open the **Sample Pool.**

SAMPLE POOL

The sample pool tab allows you to tweak and manage your loaded samples.

Sample Pool View

Here, you can enable/disable specific samples from the list using the **Toggle** next to each file-name. The **Octave, Semitone, Fine and Coarse** allow you to change the pitch of the entire list of samples at once. This can be useful if you have loaded up samples of the same or relative pitch and you want to tune the entire collection to a specific key (A use case for this will be explained in the **Grain Pitch** section).

Octave - Adjust the pitch by an octave of all the samples in the pool.
Semitone - Adjust the pitch by a semitone for all samples.
Fine - Adjust the pitch by cents for all samples.
Coarse - Adjust the pitch in a continuous (no snap to semitones or cents) step.

Clear removes all samples from the sample pool. While **Purge** clears unused samples from memory. Frees up RAM by removing samples that are no longer referenced or needed.

You can also right-click in the sample pool to get access to the bundled sample library and other options mentioned in the buffer section.

PARAMETERS AND CONTROLS

BUFFER PLAYBACK

Grain/Sample Playback Region

Refractalizer offers various grain playback parameters that might be familiar to you if you have experience with Granular Synthesis.

Scan - Sets the position in the buffer from which grains begin playing.

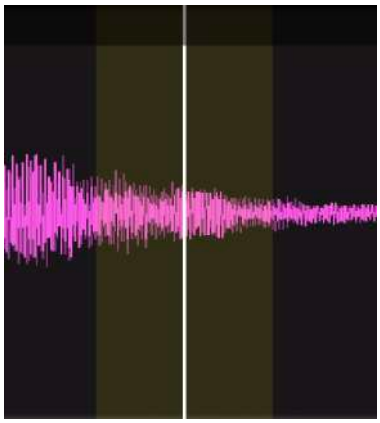
Spray - Sets the amount of randomness introduced to the starting position of each grain.

Speed - The slider at the bottom of the main buffer that controls the rate at which the grain playhead advances through the buffer.

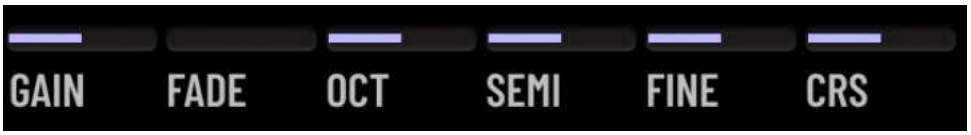
Mult - Scales the Speed value.

Quant - Sets the quantisation interval to use for the starting position of the grains.

Quant Amt - Sets the amount of quantisation to be applied to the grain start position.


Spray Region

SAMPLE CONTROLS



Sample Controls

Unlike the **pitch parameters** in the Sample Pool, the controls above do not affect the entire sample pool but rather only apply to the **selected sample**. The actual behaviour of each of these parameters is the same as mentioned earlier in the sample pool section. The **Gain** sets the level for the selected sample, and the **Fade** parameter applies a simple Fade In/Out equally at the beginning and end of the selected sample's marked region.

GRAIN PLAYBACK

Grain PlayBack Controls

Control the behaviour of individual grain playback. **Reverse** flips the playback direction of each grain. **Retrig** forces all grains to stop and restart immediately whenever a MIDI note-on message is received, ensuring a tightly aligned attack. Whereas, **Restart** resets only the grain's start position at note-on to the position defined by the **Scan** control. Finally, enabling **Host** sync locks the grain rate to your DAW's tempo for rhythmically consistent, tempo-locked granular effects.

GRAIN PITCH

Refractalizer gives you extensive control over grain pitch, offering multiple ways to shape musicality and expression. You can adjust the overall pitch of all grains using the **Pitch** knob, or enable per-voice musical tracking by setting **Pitch Key Track** to 100%, allowing grains to follow incoming MIDI notes. For harmonic shaping, you can quantise grain pitch to a musical scale using the **Scale** control—simply set **Tune** to 100% and select your desired scale and **Root** note. To introduce a more organic, human feel (or chaos), you can add subtle (or not-so-subtle) randomness to any of these parameters, giving your sound more character.

Pitch
Transpose the overall pitch of the grains.
This pitch transform will be applied to all the grains in all voices.

Pitch Rand
Sets the amount of randomness to be introduced to the grain pitch. Turn this all the way for some tonal chaos.

Scale
Choose from a range of scales to quantise the grain pitch. The incoming notes are automatically snapped to the nearest pitch within the chosen scale.

Grain Pitch Controls

Tune
Controls how much the grain pitch is quantised to the selected scale. At 0%, grain pitch follows the global **Pitch** setting or the incoming MIDI note (when **Pitch Key Track** is enabled). At 100%, grain pitch is fully snapped to the nearest note in the chosen scale. At values in between—such as 50%—the resulting pitch becomes a smooth interpolation between the unquantized pitch and the fully quantized, scale-locked pitch.

Root
Sets the root note of the selected scale used for pitch tuning. By default—much like in a conventional sampler—each sample is assumed to have a root of C. If your samples are not naturally pitched to C, you may need to tune them manually. This can be done either through the sample-specific pitch controls located beneath the buffer or by using the pitch controls within the Sample Pool, which transpose the entire set of samples so that the chosen **Root** accurately represents their musical pitch.

Pitch Key track
Controls the amount of how much MIDI note-in values control the pitch of the grains.
When set to **0%** the rate is only controlled by the **Pitch** parameter.
When the parameter is set to **100%**, the grain pitch is set by the incoming MIDI note-in values.
Any position in between is an interpolation between the two states.

GRAIN RATE

This section controls how quickly grains are triggered and how that timing responds to MIDI, randomness, and host tempo. It lets you choose between free-running rates (in Hz) or tempo-synced divisions, blend between the two, and introduce randomness for controllled chaos. You can enable MIDI key tracking so the grain rate follows the pitch of incoming notes, and use Delta to correct deturing that occurs when grains overlap while the buffer is being scannedv. Together, these controls shape the timbral and tonal behaviour of the grains.

Rate
Sets the rate at which each grain is triggered. This parameter is split into two types that are visible on the UI. **Free-running with unit Hz** and **tempo-synced in beats**, which is synced to the host BPM. Both these dials are ignored when the **Rate Key Track** dial is set to 1.

Rand Rate
Sets the amount of randomness to be injected into the rate at which the grains are triggered.

Sync Amount
Controls the blend between free-running (in hertz) grain rate and tempo-synced (e.g. 1/4, 1/8, etc) grain rate.

Delta
Sets the amount of correction to apply to the Grain Rate based on the Scan Rate to account for the grain overlap delta frequency. Helpful for staying in tune when grains are overlapping at tonal Grain Rates and non-zero Scan Rates.

Key Track (Grain Rate)
Converts MIDI input Note frequency to Grain Rate frequency.
When set to 0% the rate is only controlled by the Rate Parameters (Either Free-Running Grain Rate (in Hz) or the Tempo-Synced Grain Rate).
When the parameter is set to 100%, both the Rate knobs (Free-Running and Tempo-Synced) become inactive, and the rate of the grain is now controlled by the MIDI note values.

Grain Rate set in Hz
(Free Running)

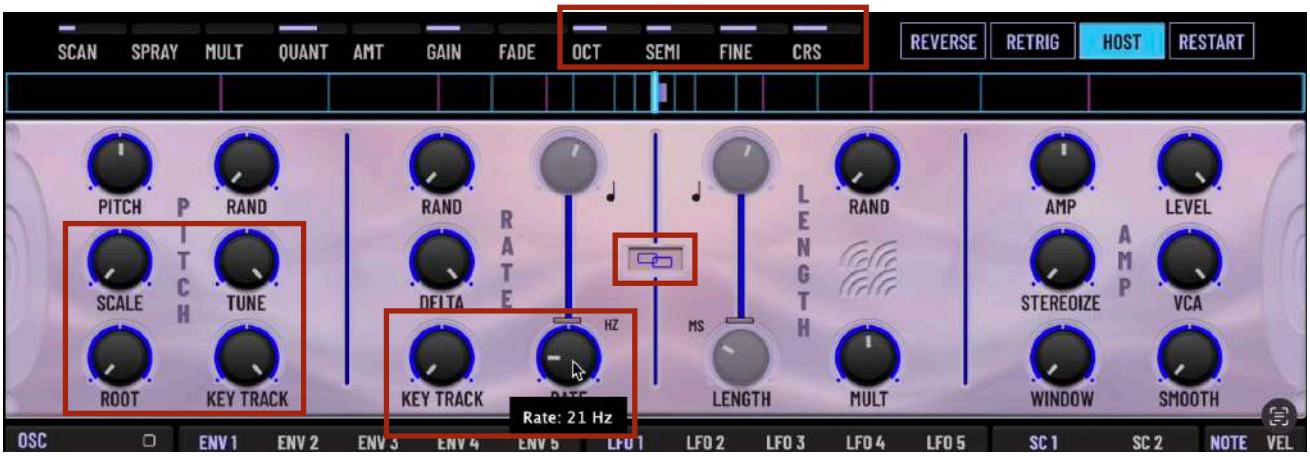
Grain Rate set in Beats

Grain Rate set with
MIDI note-in

HOW TO TUNE REFRACTALIZER

Refractalizer's Grain Rate can create grain repetitions at time scales both rhythmic (BPM subdivisions / below 30Hz) and tonal (above 30Hz). While samples can be pitched using the standard variable-rate playback method, grain repetitions at the tonal time scale are also capable of creating their own notes, melodies, harmonies, and dissonance.

There are two ways to convert MIDI notes into pitch in Refractalizer: **Key Track** on the **Pitch** (like any conventional sampler), on Key Track on the **Grain Rate** (graintable synthesis).



Refractalizer Grain Edit Region

Instead of Key Tracking appearing as toggles, we've made them knobs so you can interpolate between time scales smoothly. When Key Tracking is all the way up on the Pitch or Rate modules, the input MIDI note values will take over control of the tuning – but any Key Tracking value between 0 and 100 will result in pitched responses to MIDI notes that are relatively detuned from the note frequency.

The **Pitch** Module's **Key Track** will repitch samples across equal temperament steps using the classic variable-rate playback method: middle C4 will playback the sample at the standard rate, and other MIDI notes will scale notes relatively to distance from C4. Just like a normal sampler, if it is desired to make a pitched sample playback a true C4 for a C4 MIDI note, the tuning of the sample must be adjusted using Octave, Semi, and Fine to match the frequency of the MIDI note input.

Once your sample is in tune, it becomes easier to utilise the Scale, Root, and Tune knobs in the Pitch module. These knobs will snap the pitch of the grains to be in tune with the selected Scale, which is particularly useful while utilising the Random Pitch parameter. Since Tune is a knob instead of a toggle, this parameter can impact the amount of perceivable detuning as well.

When the Rate Module's Key Track or (Hz) is set the grain rate to higher frequencies, the audible pitch is no longer determined by the variable-rate playback or Pitch module, but the grain rate itself. In this state, changing the sample or adjusting the grain's pitch will only impact the timbre because the grain rate has effectively taken over as the oscillator that defines the tone.

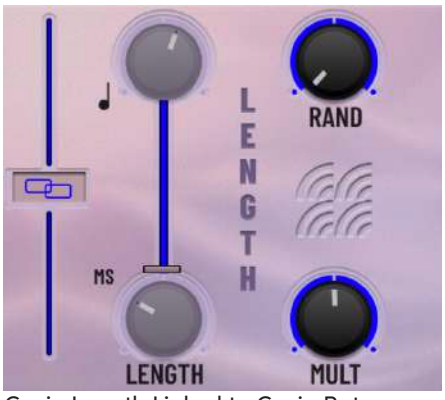
The Scan Speed will have an impact on the perceived pitch while using Key Track to control the grain rate, which will become particularly prominent when there is a large grain overlap. The "Delta" knob can usually help to correct the Doppler-like detuning caused by scanning the buffer, but there will still be some pitch distortions at higher frequencies and with more overlap. If "perfect pitch" is desired for Key Track on the grain rate, set the Scan Rate to zero.

GRAIN LENGTH

Refractalizer allows you to define how long each grain lasts and how that duration interacts with grain rate and tempo. You can set grain length manually—either in milliseconds or tempo-synced beat divisions—or enable automatic linking so length is derived directly from the grain rate for clean, evenly spaced playback. Additional controls let you introduce randomness for more natural variation and apply scaling to fine-tune or exaggerate grain duration.

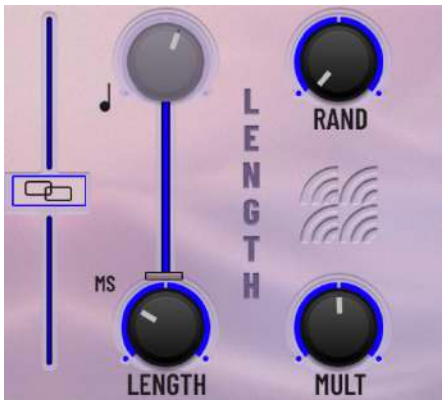
Note: Be careful when cranking up the grain length with a high grain Rate and polyphony. This can lead to memory overload and may put strain on your CPU!

Link Length to Rate
Enables automatic calculation of grain length based on the current grain rate. When this option is active, the grain length is derived so that each grain fits neatly within the interval between each grain. For example, if the Grain Rate is set to 1 Hz, the time between each grain triggered is one second, so the grain length will also be calculated as one second. This ensures clean, evenly spaced grains without manual adjustment.

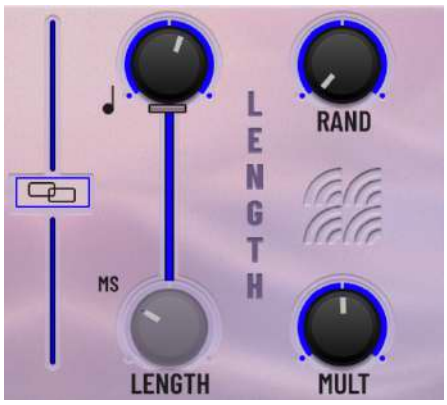


Grain Length Linked to Grain Rate

Length
Sets the length of the grains manually. The length of the grains can be set in either milliseconds or in beat subdivisions. You smoothly change between these two modes using the slider connecting the two knobs. **Both these dials are ignored when the Link Length to Rate parameter is enabled.**



Grain Length Set in Milli Seconds (MS)



Grain Length Set in Beats

Rand Length
Sets the amount of randomness to be introduced into the length of the grains. This can create some interesting grain overlaps.

Length Mul
Scales the length of the grains. Use this parameter to increase the grain length when **Link to Rate** is enabled. Also introduces grain overlaps.

With overlapping grains, use the smoothing windows in the AMP section if you want smooth transitions between grains.

GRAIN AMP

This section shapes the loudness, channel distribution, and amplitude contour of each grain. You can adjust the grain's internal amplitude, set the overall summed grain output level, and use **Stereoize** to create anything from standard stereo playback to ping-pong movement and wider stereo distribution. The **VCA** control determines how much the output responds to Envelope 1, allowing smooth transitions between Refractalizer's two playback modes, **continuous free-running** playback and **fully envelope-driven**, MIDI-triggered mode. Additional controls for Window and Smoothing let you refine the grain's amplitude envelope, preventing clicks in order to create cleaner transitions between grains.

Amp
Sets the amplitude of each grain.

Level
Sets the amount of gain to apply to the final output (Pre-FX).

Stereoize
Determines how many times a grain repeats on one channel before moving on to the next.
1 = normal stereo output;
2 = ping pong; etc.. At tonal Grain Rates, Stereoize creates ghost subharmonics, audible in the side image of the stereo field.

Grain Amp Controls Region

VCA
The VCA parameter determines the extent to which **Envelope 1** governs the overall output amplitude (Pre-FX).
At 0 %, the engine operates in continuous (free-running) mode, with grains playing back uninterrupted regardless of MIDI input.
At 100 %, **Envelope 1** is applied at full depth: output is silent until a MIDI note triggers it, and the amplitude then precisely follows the contour of **Envelope 1.**
Intermediate values blend between continuous playback and fully note-triggered, enveloped behaviour.

Window
Sets the window shape to be applied to the grains. To avoid harsh jumps in amplitude that cause audible clicks when moving from one grain to another.
The different windows available are **Hann, Ramp, Reverse Ramp and Square.**

Smoothing
Sets the amount of smoothing to apply to the grain window. This can be thought of as a fade-in and out for individual grains, to smooth out hard edges on the **Square and Ramp** windows.

OSCILLATOR

The OSC module introduces a clean, playable oscillator that can be layered with the main Refractalizer engine. When enabled, it generates a waveform—**sine, triangle, saw, or square**—that is blended into the synth's signal path or, if desired, sent straight to the output to bypass all effects. This provides an easy way to reinforce or enhance the tonal foundation of your sound, often adding weight, clarity, or definition to Refractalizer's granular output. The controls in this section let you fine-tune the oscillator's pitch, tuning, and level to suit your mix.

Oscillator Region

Toggle - Enables or disables the OSC module. When on, the OSC module generates a waveform based on the type of OSC chosen, which is then mixed in with the main synth output.
Type - Set the oscillator type. Users can choose between **sine, triangle, saw and square wave.**
Octave - Transposes the oscillator pitch by octaves relative to the incoming MIDI note.
Semitone - Transposes the oscillator pitch by semitones (half-steps) relative to the incoming MIDI note.
Fine - Provides fine-tuning control over the oscillator pitch with cent precision. One cent is 1/100th of a semitone, allowing for subtle detuning and microtuning adjustments.
Coarse - Provides continuous (no snap to semitones or cents) pitch adjustment.

Direct Out - When turned on, the output of the OSC module will skip all effects processing and be sent directly to the output.
Level - Set the level oscillator.

MODULATORS

You can utilise up to five LFOs, two envelope followers, and five MIDI envelopes to dynamically modulate parameters within the plugin. Assigning a modulator to a parameter is straightforward: simply drag the handle (the title) of the modulator and drop it to the centre of the parameter you wish to control.

MIDI ENVELOPE

There are **five envelopes** available for unipolar modulation.
Attack sets how quickly the envelope rises after a MIDI note is triggered.
Decay controls the time it takes to drop from the peak to the sustain level.
Sustain defines the level held while the note is pressed.
Release sets how long the envelope continues after the note is released.
Velocity scales the envelope based on how hard the note is played.
Depth controls how much the envelope affects the target

MIDI Envelope

LFO

Choose from **five available LFOs** for modulation.

Rate - Sets the LFO's frequency/Rate. The Sync toggle can be used to switch the Rate mode between **Beat Synced** and **Free Running**. In beat-sync, the LFO follows your DAW's tempo in beats and its subdivisions (e.g., 1/4, 1/8). In Free Running, the LFO runs freely at a frequency set in Hertz.

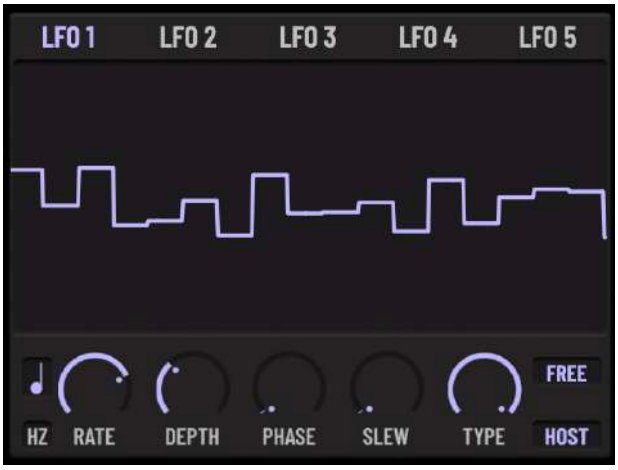
Depth - Controls how strongly the LFO modulates the target parameter. At 0%, no modulation occurs; At 100%, the LFO applies its full range.

Phase - Offsets the LFO's starting point within its cycle.

- 0.0 = start of waveform
- 0.5 = halfway point (180°)
- 1.0 = full cycle, returning to the start

Slew - Applies smoothing to the LFO output, rounding sharp transitions for more natural, fluid modulation.

Type - Selects the LFO waveform: sine, saw, triangle, square, or Sample & Hold.



LFO Module with Sample and Hold Type

LFO Mode - You can switch between three modes:

Free: Runs continuously, ignoring note-on messages.
Retrig: Resets with each note-on.
Envelope: Runs a single cycle per note and then stops.

Host Toggle - Syncs the LFO to the DAW transport. When enabled, the LFO starts, stops, and resets in sync witch your host's play/stop/rewind controls.

MIDI MAP

MIDI-IN Modulator

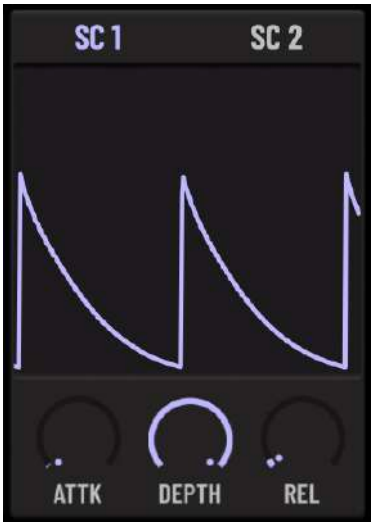
You can modulate parameters directly with either MIDI **Note** values or the **Velocity** of incoming MIDI notes. Simply drag and drop either one of them to your desired parameter and use the **Scale** parameter to adjust the depth of modulation applied to the target.

SIDECHAIN (ENVELOPE FOLLOWER)

Sidechaining is a technique in which an external audio signal (the sidechain input) is used to control the behaviour of another process. It does this by following the envelope of the side chain signal and using it as a control value for the target process.

Note: You will have to explicitly set up a sidechain signal into the plugin for this module to work. Every DAW has slightly different terminology and routing options, so there isn't a single click-by-click universal method. Please refer to your DAW-specific instructions on how to do this.

Attack determines how quickly the sidechain responds to rising input levels.
Depth controls how strongly the sidechain modulates the target parameter.
Release sets how quickly the sidechain falls back after the input level decreases.



Side Chain Modulation Module

MODULATION

To utilise the modulators, hover over the modulator title, then click and drag it toward a parameter. As you drag the modulation handle, modulatable parameters will be highlighted when you hover over them with the handle, as shown in the accompanying image. Release the handle over a highlighted parameter to link it to the modulator.

Once connected, small green dials will appear atop the modulated parameter. Adjust these dials to control the amount of modulation sent from the source to the destination parameter. Click and hold on the modulation dials to see details about the modulator and its depth on the target.

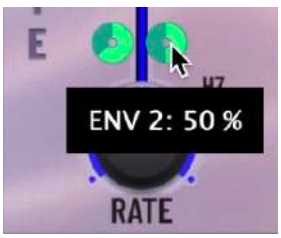
Each dial operates within a range of [-100, 100]:

- 100: Sends 100% of the source signal to the destination parameter.
- -100: Sends 100% of the inverted source signal to the destination parameter.
- 0: Sends none of the source signal to the destination parameter.

To disconnect a modulation source, double-click the corresponding dial.

LFO Modulation Handles

Modulation Controls



Modulation Details

FILTER SECTION

The filter module is a classic dual filter design with a **serial/parallel** mixer, with ladder circuits that feature **drive knobs.**

Filter Module

Toggle both Filters A and B on or off with the square shaped buttons next to the respective titles.

Filter Type can be changed by clicking the filter type field to open the drop down. Choose between Digital and Ladder filter types for 12dB and 24dB LP, HP, and BP.

Freq
Sets the filter cutoff frequency.

Resonance
Sets the filter resonance. It boosts the frequencies around the cut-off frequency by increasing the feedback in the filter circuit.

Drive
Increases the gain of the input signal going into the filter to apply a mild distortion. This feature only works with the **Ladder Filters.**

Pan
Use the PAN knob to apply an offset to the cutoff frequencies of the left and right channels. At its centre position (50% / 12 o'clock), the knob has no effect, and both channels use the same cutoff frequency. Turning it left (counter-clockwise) raises the left channel's cutoff while lowering the right channel's. Turning it right (clockwise past centre) does the opposite: it lowers the left channel's cutoff and raises the right channel's.

Filter Parallel/Serial Slider
Smoothly blends between serial and parallel arrangements of both Filter A and B.

Level
Sets the level of the output after the filter is applied.

FX

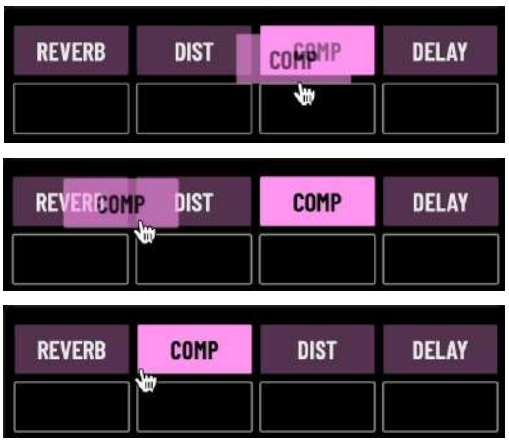
To help you further shape your sound, Refractalizer features a dedicated FX section with four powerful tools: Reverb, Delay, Distortion, and Compression. These effects allow you to add space, movement, grit, or dynamic control to your signal.
You can add an effect module by double-clicking on one of the eight FX slot boxes and selecting the desired effect from the drop-down list.

Adding an FX Module

Only one instance of an effects module can be loaded per session. The effects signal flow runs in series from left to right.

Adding Multiple FX Modules

Once multiple FX are loaded, you can change the order by clicking and dragging the FX slot box to a new box.



Switching FX Modules Order

You can enable/disable an FX module by either toggling the ON/OFF button inside the module or by double-clicking the FX slot box.

Enabling/Disabling FX Modules

Refractalizer FX/Macro's Panel

REVERB

The REVERB module offers a hall reverb, using a modified version of the Diffused Feedback-Delay Network Reverb algorithm (courtesy of Signalsmith Audio).

Reverb Module

Size - Reverb Size controls how big the virtual room feels. Turned down low, it sounds like a tiny closet—reflections hit fast and the reverb dies quickly.
Crank it up and you get huge halls or cathedrals where the echoes take ages to arrive and the tail stretches, making everything sound vast and epic.
Decay - Sets the time for the reverb to fade to silence.
Damp Amount - Damping implies how much the reverb soaks up the high-pitched sounds. Turn it down low, and the reverb stays bright and sparkly, like singing in a big empty church or a bathroom with hard tiles, emulating cleaner reflections of sound in a room.
Crank it up and the high notes get decayed fast, so the reverb quickly sounds warm, dark, and muffled—like a room full of carpets and curtains where the high frequency waves disappear (absorbed) almost instantly.
Damp Freq - Damping Frequency sets the cutoff for the damping in the reverb.
Low setting = reverb gets muffled early (even mids dull quickly).
High setting = only the very high frequencies fade, so it stays bright much longer.
Low - Sets the reverb equaliser's low-shelf gain.
Mid - Sets the reverb equaliser's mid frequency band gain.
High - Sets the reverb equaliser's high-shelf gain.
In/Out - Controls the gain of the signal pre and post reverb, respectively.
Dry/Wet - Controls the level of the unprocessed/dry and reverb-processed/wet signal.

COMPRESSOR

Our Compressor has a lot of grit and colour, with extreme ranges available. Compression decreases the dynamic range of an audio signal by reducing the input gain relative to the ratio of how much dB the input amplitude passes the compressor's threshold.

Compressor Module

Attack - The time it takes to respond to signals exceeding the threshold.
Release - The time it takes to stop compressing after the signal falls below the threshold.
Threshold - Sets the level above which compression should be applied.
Ratio - Sets the compression ratio, determining how much the signal is reduced above the threshold.
In/Out - Controls the gain of the signal pre and post reverb, respectively.

DELAY

The DELAY module captures the incoming audio signal and replays it after a specified time interval. This delayed signal can be repeated multiple times or fed back into the input at a reduced level, producing the characteristic effect of a repeating, gradually decaying echo.

Delay Module

Delay Time L & R - Sets the time between the original signal and the delayed repetition. This can be set explicitly for the left and right channels.
Link - Syncs the delay time of both left and right channels.
Mode - Allows the user to choose between stereo, ping-pong, and mid/side delay modes. In mid/side mode, Time L corresponds to the mid signal and Time R corresponds to the side signal.
Feedback - Controls how much of the delayed signal is fed back into the delay line.
LP & HP Freq - Sets the cutoff frequency of the low and high-pass filter in the delay feedback.
LP & HP Res - Controls the resonance (Q) of the low and high-pass filter in the delay feedback.
I**n/Out** - Controls the gain of the input and output signal pre- and post-delay.
Dry/Wet - Controls the level of the unprocessed/dry and delay-processed/wet signal.

DISTORTION

Doom Fuzz is a fuzz distortion with a built-in time-domain frequency shifter (aka single-side-band ring modulator). It was inspired by the sound of Ruina by Noise Engineering.

Distortion Module

Doom - Controls the intensity of the "Doom" effect.
Freq - Sets the base frequency shift for the doom effect (-100 to +100 Hz).
Fuzz - Controls the amount of fuzz-style clipping and saturation applied to the input signal.
Amt - Controls the depth of modulation on the Doom signal level.
Mod - Sets the frequency for the modulation of the Doom signal level.
In - Generally, the gain boost (drive) applied to the input signal.
Out - Controls the gain applied after the distortion stage, compensating for level changes from distortion.
Dry/Wet - Controls the level of the unprocessed/dry and Distortion-processed/wet signal.

MACROS

Control multiple parameters with a single unipolar macroknob. Drag and drop the handle to one or more parameters and make custom macros for each preset. Each Macro can be renamed to anything you like by just clicking the label.

You can also use the eight macro controls to assign any parameters to your external MIDI controller quickly. This is especially handy when switching presets: map all your key parameters (ENV Attack, Depth, Grain Rate, mix, etc.) to the macros once, and the assignments remain the same regardless of which preset you load.

Macros Module

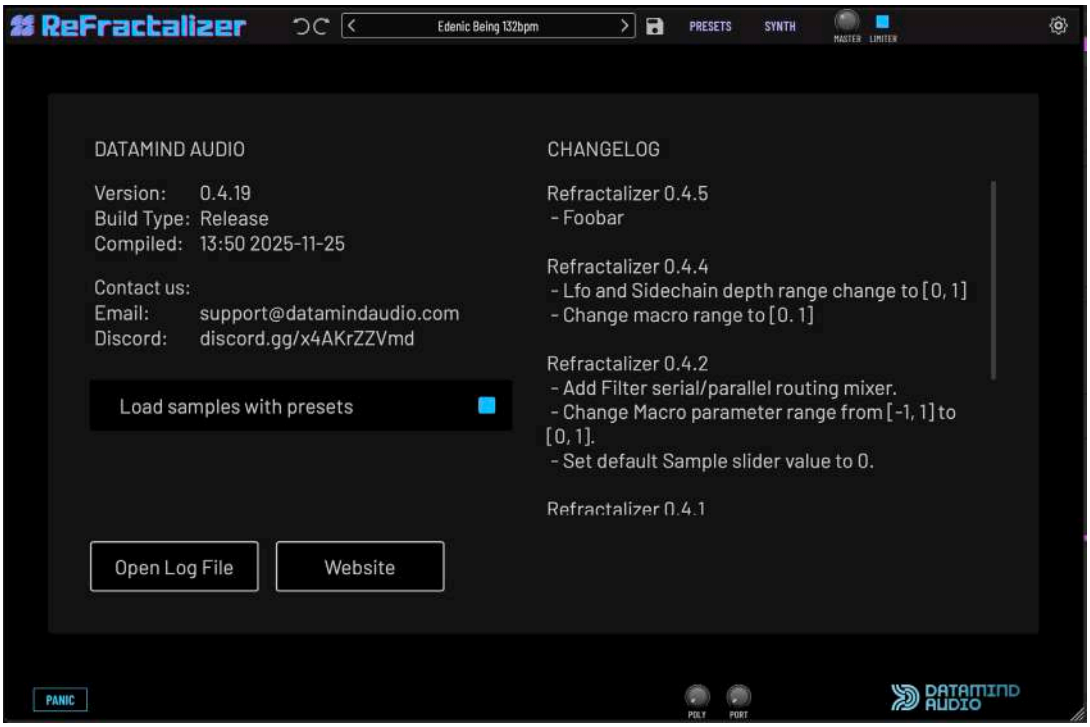
TOOLBAR

Top Toolbar

Bottom Toolbar

Undo/Redo - Standard undo/redo functionality for parameter changes within the plugin.
Preset Navigation - Click the arrows in the preset name dialogue to navigate to the next/previous preset.
Preset Drop Down - Access the preset list dropdown quickly by clicking on the preset name.
Save Preset - Click on the save logo next to the preset dialogue to save a preset.
Preset Tab - Clicking on the PRESETS button will open up the detailed Presets tab.
Synth Tab - Once in the Preset tab, click on the Synth button to return to the main synth window.
Master Volume - Sets the amount of gain to apply to the final output.
Limiter - Enables or disables the output limiter.
Panic - If you have gone deep into a chaotic experiment and want to pull the plug, hit the emergency Panic button that resets the audio processor.
Poly - Sets the polyphony (the number of voices to use) of the synthesiser.
Portamento - Sets the amount of smoothing to use on changes in the grain rate and pitch.
Window Resize - Allows the user to change the plugin window size.
Settings - Opens the Settings tabs.

SETTINGS



Settings Tab

Load Samples With Presets
Toggles between the option to load presets with samples or without.
If enabled, the presets are loaded with the attached samples.
If disabled, only preset settings are loaded.

Open Log File
The log file keeps track of the functioning of the plugin. It is a great tool for tracking crashes.

Website
To get more information about Datamind's products, visit our website!

GETTING HELP

DataMind Audio is here to help you. Join our discord to reach our team with queries. You can also email us, but by joining our Discord channel you have direct contact with the developers working on the plugin!

Discord: discord.gg/x4AKrZZVmd
Info email: info@datamindaudio.com
Support email: support@datamindaudio.com

P.S. If you encounter any issues and would like to file a bug report, please email us or post a message on our Discord bug-reports channel and attach the Log.txt file that can be found in the Logs folder. Thank you!

Note: The Log.txt file may contain the paths of files that have been added to the Sample Pool. If you are working on something super secret and don't want to share the log file on a public channel, don't hesitate to email us or DM either Ben, Luca, Robin or Yashique on Discord.

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