
Erae Sound

User Manual

Embodme

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1 Introduction

1.1 What is Erae Sound?

Erae Sound is a software synthesizer plugin by Embodme. It combines a dual analog generator engine with a deep modulation system and built-in effects, all designed to work seamlessly with the Erae controller. Erae Sound is available through Erae Lab and as VST3/AU plugin formats where supported.

1.2 Key Features

- **Dual analog generator engine** – two independent generators, each with its own volume control, feeding into a shared signal chain.
- **Per-parameter modulation** – every synthesis and effects parameter has dedicated envelope and modulation sources, including LFO, MIDI (velocity, pressure, slide), and Erae-specific layout sources like keyboard position and fader movement.
- **Modulation linking** – group parameters under shared modulation configurations using link groups (A, B, C, D). Cross-modulation lets one source control another source's depth.
- **4-slot effects chain** – a series chain of up to four effects chosen from Distortion, Chorus, Flanger, Phaser, Delay, Reverb, Shimmer, Compressor, and Param EQ.
- **Erae integration** – layout-aware modulation sources, preset-linked layouts, and bidirectional visual sync with Erae hardware.
- **Preset library** – browse, search, load, save, and import factory or user presets.
- **MPE support** – per-voice pitch, pressure, and slide for expressive polyphonic performance.

1.3 Who This Manual is For

This manual is written for musicians and sound designers who want to get the most out of Erae Sound. Whether you are building patches from scratch or exploring the preset library, each chapter walks you through a specific area of the plugin.

1.4 Manual Conventions

Throughout this manual:

- Parameter names appear in **bold** (e.g., **Cutoff**, **Resonance**).
- Parameter values appear in code formatting (e.g., 50%, Saw).
- Screenshots are indicated by placeholder captions where applicable.
- Cross-references link to other chapters like [Generators](#) or [Modulation](#).

Tip: Look for tip callouts like this one for shortcuts and best practices.

2 Installation

Erae Sound is installed from Erae Lab as part of the managed component bundle. Use Erae Lab's component installer or **Reinstall components** action to install or repair Erae Sound.

2.1 System Requirements

	Minimum	Recommended
macOS	11.0 (Big Sur) or later, Intel or Apple Silicon (universal binary)	macOS 12 or later
Windows	Windows 10 (64-bit)	Windows 10/11 (64-bit)
Linux	Ubuntu 20.04 or equivalent, x86_64	Ubuntu 22.04 or later
RAM	4 GB	8 GB or more
CPU	Any modern multi-core processor	Quad-core processor or better

A compatible DAW that supports VST3 (all platforms) or AU (macOS) is required for plugin use. To use Erae Sound without a DAW, run it inside Erae Lab.

2.2 Plugin Formats

Erae Lab installs the available Erae Sound plugin formats for your platform:

- **VST3** – Works in any VST3-compatible DAW on macOS, Windows, and Linux.
- **AU (Audio Unit)** – macOS only. Works in Logic Pro, GarageBand, and other AU-compatible hosts.

You do not need to choose between them. Erae Lab places the available formats on your system at once.

2.3 Installation Paths

Erae Lab installs plugin components in standard plugin locations when required by the host, and may keep supporting components in its managed component folder.

2.3.1 macOS

Format	Location
VST3	~/Library/Audio/Plug-Ins/VST3/
AU	~/Library/Audio/Plug-Ins/Components/

2.3.2 Windows

Format	Location
VST3	%ProgramFiles%\Common Files\VST3\

2.3.3 Linux

Format	Location
VST3	~/ .vst3/

2.4 First Launch

2.4.1 Licensing and Demo Mode

On first launch, Erae Sound may ask you to sign in or activate a license. The auth dialog supports magic-link sign-in, purchase flow, logout, machine-limit handling, and a short demo mode.

- **Magic link** – request a link, open it from the same machine, then return to Erae Sound.
- **Demo** – starts a time-limited demo session. Saving can be disabled or restricted after the demo expires.
- **Machine limit** – if your account has reached its activation limit, deauthorize another machine or contact support.

If activation fails, check your internet connection, request a fresh magic link if needed, and retry from the auth dialog.

2.4.2 Loading in a DAW

Most DAWs automatically scan for new plugins at startup. If you installed Erae Sound while your DAW was open, you may need to trigger a manual rescan:

- **Ableton Live** – Go to **Preferences > Plug-Ins** and click **Rescan**.
- **Logic Pro** – Open **Logic Pro > Settings > Plug-in Manager** and click **Reset & Rescan Selection**.
- **Reaper** – Go to **Options > Preferences > Plug-ins > VST** and click **Re-scan**.
- **Bitwig Studio** – Go to **Settings > Plug-ins** and click **Rescan**.
- **FL Studio** – Go to **Options > Manage plugins** and click **Find plugins**.

After the scan completes, look for **Erae Sound** in your DAW's instrument or synthesizer list. Insert it on a MIDI track to get started.

2.4.3 Running Inside Erae Lab

There is no separate Erae Sound standalone application. To use Erae Sound without a DAW, open Erae Lab and run Erae Sound from there.

Erae Lab owns the application-level audio, MIDI, and device setup in this mode. See [Quick Start](#) for a guided walkthrough.

2.5 Troubleshooting

2.5.1 Plugin does not appear in my DAW

1. **Rescan your plugins.** Close and reopen your DAW, or use its manual rescan option (see above).
2. **Check the plugin path.** Make sure the plugin component is in the correct folder listed in the Installation Paths table above.
3. **Confirm format compatibility.** Some DAWs only support certain formats. For example, Logic Pro loads AU but not VST3. Ableton Live and most other DAWs use VST3.
4. **Reinstall components from Erae Lab.** If the files are missing, open Erae Lab and use **Reinstall components**.

2.5.2 macOS Gatekeeper warning

The macOS installer is code-signed and notarized with Apple, so it should not trigger Gatekeeper warnings under normal circumstances. If you do encounter a message saying the application is from an unidentified developer or that it cannot be verified, follow these steps to allow Erae Sound to run:

1. Open **System Settings > Privacy & Security**.

2. Scroll down to the **Security** section.
3. You should see a message about Erae Sound being blocked. Click **Open Anyway**.
4. Confirm when prompted.

You only need to do this once. After that, macOS will remember your choice.

2.5.3 No sound when running inside Erae Lab

Make sure Erae Lab is using the correct audio output and MIDI input, then confirm that Erae Sound's master **Vol** control is turned up. See [Troubleshooting](#) for more detailed diagnostics.

3 Quick Start

3.1 Play Your First Sound in 2 Minutes

1. **Open Erae Sound** – run it inside Erae Lab, or load it as a plugin in your DAW.
2. **Select a preset** – in the header bar, use the left/right arrows to step through presets, or click the preset name to open the full list.
3. **Play some notes** – connect a MIDI controller and play, or send notes from your DAW's piano roll. You should hear sound immediately.
4. **Explore the tabs** – click **Synth** or **FX** in the header to shape the sound further.

That is all you need to get started.

3.2 Modulate a Parameter

Erae Sound modulation is destination-first: select the parameter you want to control, then set how much each source affects it.

1. **Select the destination** – click the knob you want to modulate, for example **Filter Cutoff**.
2. **Find the source** – in the Modulation Display, locate **ENV**, **LFO**, **PRES**, **SLIDE**, or another source from your Erae layout.
3. **Set the amount** – drag that source's depth fader up or down. Up adds positive modulation, down adds negative modulation, and the center line is zero.

Do not drag a modulation source onto a knob. The knob selection chooses the destination; the source depth fader sets the modulation amount.

3.3 Main Tabs

Erae Sound is organized into the main tabs accessible from the header:

- **Synth** – where you choose and shape your sound generators and set up modulation. See [Generators](#) and [Modulation](#).
- **FX** – where you add and configure effects such as reverb, delay, and distortion. See [Effects](#).

3.4 Where to Go Next

- For a detailed tour of every on-screen element, head to [Interface Overview](#).
- To learn how to save and manage presets, see [Presets](#).
- If something is not working as expected, check [Troubleshooting](#).

4 Interface Overview

This chapter walks you through the main areas of the Erae Sound window. Every screen shares the same header bar at the top and a content area below it. The header gives you quick access to presets, modulation overview, and output metering no matter which tab you are working in.



Erae Sound full window

4.1 Window Layout

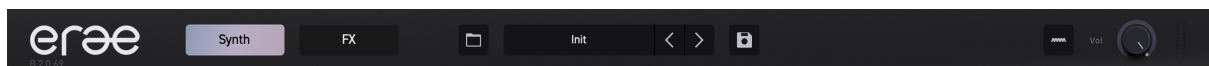
Erae Sound uses a fixed 16:10 aspect ratio. The default size is 1280 x 800 pixels. You can resize the window and the entire interface scales proportionally, from a minimum of 800 x 500 up to 2560 x 1600.

The window is divided into two main regions:

Region	Position	Purpose
Header bar	Top strip	Navigation, presets, modulation overview, master output
Content area	Everything below the header	Tab-specific controls, currently Synth and FX

4.2 Header Bar

The header bar spans the full width of the window. Its dark background keeps it visually distinct from the content area below. Components are arranged left to right in the following order.



Header bar detail

4.2.1 Tab Selector

The tab selector sits at the left of the header. Current builds expose **Synth** and **FX**.

- The active tab is highlighted in accent yellow with dark text.
- Inactive tabs use a dark fill with light text.
- Clicking a tab switches the content area immediately.

The **Synth** tab is selected by default when you first open the plugin.

Tip: You can switch tabs at any time without losing your work. All parameter changes are preserved across tabs.

4.2.2 Library Button

A small square button with a library icon sits just to the left of the preset navigation pill. Clicking it opens the **Preset Library** overlay, where you can browse, search, and filter presets. When the library is open, the button turns accent yellow. See [Presets](#) for full details.

4.2.3 Preset Navigation Pill

The preset navigation pill is a rounded, joined control group with several segments separated by thin vertical dividers:

Segment	Width	What it does
Dropdown	Narrow, shows a chevron-down icon	Opens a dropdown list of all available presets
Preset name	Center area	Displays the name of the currently loaded preset (e.g., Warm Pad)
Previous arrow	Chevron-left icon	Loads the previous preset in the list
Next arrow	Chevron-right icon	Loads the next preset in the list

Click the dropdown chevron to see and jump to any preset by name. Use the left/right arrows to step through presets one at a time.

4.2.4 Save Button

A separate square button with a floppy-disk icon sits to the right of the preset pill. Clicking it enters **edit mode**:

1. The preset name area becomes an editable text field, pre-filled with the current preset name.
2. A checkmark button appears to the right of the text field.
3. Type a new name (or keep the current one) and press **Enter** or click the checkmark to save.
4. Press **Escape** or click outside the field to cancel.

When a save completes, the button briefly flashes accent yellow as confirmation.

A few validation rules apply:

- The name cannot be empty.
- Factory presets are read-only: you cannot overwrite them under the same name.
- Duplicate names are not allowed.

If any rule is violated, a small orange warning message appears below the preset pill.

Right-click the preset area to open the preset context menu. **Save** overwrites the current user preset when available, while **Save As...** creates a new editable user preset. Factory presets keep **Save** disabled because they are read-only; use **Save As...** to make your own editable version.

4.2.5 Modulation Overview Button

A modulation-icon button opens the **Modulation Overview** panel, which shows all active modulation connections across your patch at a glance. When the overview is open, the button lights up in accent yellow. See [Modulation](#) for details.

4.2.6 Volume Knob

Labeled **Vol**, this rotary knob controls the master output level. It uses the same arc-style display as other knobs in the plugin: a grey track with an accent-yellow value arc sweeping across a 270-degree range.

The knob ranges from 0% (silence) to 100% (full output). It defaults to 65%.

4.2.7 VU Meter

The VU meter is the rightmost element in the header. It shows the stereo output level as two vertical columns of small LED-style dots – one column for the left channel, one for the right.

- **10 rows** per channel, spanning from -48 dB (bottom) to 0 dB (top).
- The lower dots light up in white; the top dots turn accent yellow to warn you of approaching clipping.
- A **peak hold** indicator marks the loudest recent level and stays visible for about one second before fading away.

The meter updates in real time so you always have a clear picture of your output level.

4.3 Content Area

The content area fills the rest of the window below the header bar. What you see here depends on which tab is active.

4.3.1 Synth Tab



Synth tab layout

The Synth tab is where you shape your sound. It is divided into three horizontal zones stacked top to bottom:

Zone	What it contains
Generator section (top)	Two side-by-side generator panels – Generator A on the left, Generator B on the right. Each generator has oscillators, filters, and a control bar with routing options.
Modulation Display (middle)	Oscilloscope-style visualizers for every modulation source connected to the currently selected parameter. Sources appear in order: Envelope, Mod (LFO), Pitch, Velocity, Pressure, Slide, Release Velocity, and any active Erae layout sources.
Modulator controls (bottom)	Detailed editing panels arranged side by side: Envelope editor, LFO (Mod) editor, Modulation Curve editor, Voice settings, Split settings, and an Erae layout thumbnail.

Clicking any knob or parameter in the generator section updates the Modulation Display and modulator controls to show that parameter’s modulation configuration.

Tip: The Modulation Display and modulator controls are shared between the Synth and FX tabs. Selecting a parameter in either tab updates both sections.

For a deep dive into each generator panel, see [Generators](#). For modulation details, see [Modulation](#).

4.3.2 FX Tab



FX tab layout

The FX tab follows the same three-zone layout as the Synth tab, but the top zone is replaced by the effects chain:

Zone	What it contains
FX slots (top)	Four effect slots arranged side by side. Each slot holds one effect with its own set of parameter knobs.
Modulation Display (middle)	Same as the Synth tab – shows modulation sources for the selected FX parameter.
Modulator controls (bottom)	Same panels as the Synth tab – Envelope, LFO, Curve, Voice, Split, and Erae thumbnail.

For full coverage of each effect type and its parameters, see [Effects](#).

4.4 What's Next

Now that you know your way around the window, the following chapters explore each section in depth:

- [Generators](#) – oscillators, filters, and routing inside each generator.
- [Modulation](#) – envelopes, LFOs, link groups, and cross-modulation.
- [Effects](#) – the four-slot FX chain and every effect type.
- [Erae Integration](#) – connecting Erae Sound to your Erae.
- [Presets](#) – browsing, saving, and organizing your sounds.

5 Generators

Erae Sound features two identical analog synthesis engines – **Generator A** (left) and **Generator B** (right) – that run side by side. Each generator produces its own independent signal and sends it onward to the effects chain. This chapter covers every parameter you will encounter inside each generator.



Generator section overview

5.1 Generator Layout at a Glance

Each generator is organized into five areas:

Area	Position	Contents
Oscillator 1	Top-left	Waveform visualizer + 5 knobs
Filter 1	Top-right	Frequency response visualizer + 3 knobs + Poles button
Control Bar	Middle strip	Generator label, TZFM, Routing, F1/F2 mix, Vol
Oscillator 2	Bottom-left	Waveform visualizer + 5 knobs (mirrored)
Filter 2	Bottom-right	Frequency response visualizer + 4 knobs + Poles button



Oscillator panel

5.3.1 Parameters

Knob	Description	Range	Default
COARSE	Pitch tuning in semitones (MIDI note number)	0 - 127	60 (C4)
FINE	Fine-tune offset in semitones	-1.0 - +1.0	0.0
SHAPE	Continuous waveform morph	0.0 - 1.0	0.5
FOLD	Wavefolder intensity	0.0 - 1.0	0.0 (off)
VOL	Oscillator output level using the audio taper	0.0 - 1.0	about -12 dB

5.3.2 Waveform Shape

The **SHAPE** knob smoothly morphs through four classic waveforms as you turn it from left to right:

1. **Sine** – pure, smooth tone (far left)
2. **Triangle** – slightly brighter, odd harmonics
3. **Pulse** – hollow, reedy character
4. **Sawtooth** – full harmonic spectrum (far right)

The morph is continuous, so any position between these landmarks produces a blend of the two nearest waveforms. For example, setting **SHAPE** halfway between Sine and Triangle gives you a hybrid that combines qualities of both.

Tip: The waveform visualizer behind the knobs updates in real time, so you can see exactly what the oscillator is producing as you turn the **SHAPE** knob.

5.3.3 Wavefolder

The **FOLD** knob adds harmonic complexity by folding the waveform back on itself. At 0.0 the waveform passes through unchanged. As you increase the value, the waveform is progressively folded, generating rich overtones and increasingly complex timbres.

Wavefolding works especially well with simple waveforms like Sine and Triangle, transforming them into harmonically dense sounds without needing to change the **SHAPE** setting.

Tip: Combine a moderate **FOLD** amount with a Sine wave for vintage-style harmonic distortion that stays musically useful.

5.3.4 Pitch and Tuning

COARSE sets the base pitch as a MIDI note number. The note you play on your controller transposes from this base pitch. **FINE** offsets the pitch by up to one semitone in either direction, useful for detuning Oscillator 2 against Oscillator 1 to create chorus-like thickness.

Oscillator **VOL** uses an audio taper rather than a simple linear gain display. The default leaves headroom at about -12 dB, so two oscillators and modulation can sum without immediately clipping.

Tip: Set Oscillator 2's **COARSE** a fifth or octave above Oscillator 1 for classic interval stacking.

5.4 Filters

Each generator has two independent filters. Filter 1 and Filter 2 have mostly the same controls, with one addition: Filter 2 has a **NOISE** knob.

Each filter section includes a real-time frequency response visualizer that shows the current cutoff, resonance, and filter type at a glance.



Filter panel

5.4.1 Filter 1 Parameters

Knob / Button	Description	Range	Default
FREQ	Cutoff frequency (as MIDI note)	0 - 143	93
RESO	Resonance / Q	0.0 - 1.0	0.0
TYPE	Continuous filter type morph	0.0 - 1.0	0.5 (Lowpass)
POLES	Filter slope toggle	2 or 4	4

5.4.2 Filter 2 Parameters

Filter 2 has all the same controls as Filter 1, plus one extra:

Knob / Button	Description	Range	Default
NOISE	Crossfade between oscillator signal and noise	0.0 - 1.0	0.0 (pure signal)
FREQ	Cutoff frequency (as MIDI note)	0 - 143	93
RESO	Resonance / Q	0.0 - 1.0	0.0
TYPE	Continuous filter type morph	0.0 - 1.0	0.5 (Lowpass)
POLES	Filter slope toggle	2 or 4	4

5.4.3 Filter Type Morph

The **TYPE** knob continuously morphs between three filter modes:

- **Far left (0 . 0) – Bandpass:** passes only frequencies near the cutoff, attenuating both lows and highs.
- **Center (0 . 5) – Lowpass:** passes frequencies below the cutoff, the classic subtractive synthesis filter.
- **Far right (1 . 0) – Highpass:** passes frequencies above the cutoff, removing bass and low-mid content.

Just like the oscillator **SHAPE** knob, every position between these points produces a smooth blend.

5.4.4 Resonance

Turning up **RESO** boosts frequencies right at the cutoff point, creating a sharper, more pronounced peak. At high settings the filter begins to self-resonate, producing a ringing, pitched tone at the cutoff frequency.

5.4.5 Poles (Filter Slope)

Click the **POLES** button to toggle between two slope settings:

- **2** – 12 dB/octave (gentler slope, more of the original signal bleeds through)
- **4** – 24 dB/octave (steeper slope, more aggressive filtering)

The button displays the current setting. When set to 4, it appears highlighted.

5.4.6 Noise (Filter 2 Only)

The **NOISE** knob on Filter 2 crossfades the filter input between the oscillator signal and a noise source. At 0 . 0, Filter 2 receives only the oscillator signal (or Filter 1's output in Serial mode). At 1 . 0, it receives only noise. Intermediate values blend the two using an equal-power crossfade.

Tip: A small amount of **NOISE** mixed into Filter 2 with high **RESO** creates airy, breathy textures – great for pads and atmospheric sounds.

5.5 Visualizers

Each oscillator and filter section includes a real-time visualizer:

- **Oscillator visualizers** show the current waveform shape, reflecting **SHAPE**, **FOLD**, and (for Oscillator 1) the effect of **TZFM** modulation from Oscillator 2. The waveform display updates as you adjust any relevant parameter or play notes.
- **Filter visualizers** show the frequency response curve, reflecting the current **FREQ**, **RESO**, **TYPE**, and **POLES** settings. You can see the cutoff peak move and the response shape change in real time.

Both visualizers also respond to modulation, so if an envelope or LFO is moving a parameter, you will see the visualizer animate accordingly.

5.6 Control Bar

The control bar is the horizontal strip between the oscillator/filter areas, labeled **ANALOG A** or **ANALOG B**. It contains the generator's routing and output controls.



Control bar

5.6.1 Control Bar Parameters (left to right)

Control	Type	Description	Range	Default
Label	Text	Displays “ANALOG A” or “ANALOG B”	–	–
TZFM	Knob	Through-zero FM depth	0.0 – 1.0	0.0 (off)
Routing	Toggle buttons	Serial, Parallel, or Split filter topology	Serial / Parallel / Split	Serial
F1 / F2	Slider	Output mix between Filter 1 and Filter 2	0.0 – 1.0	0.5 (equal blend)
Vol	Knob	Generator output volume	0.0 – 1.0	1.0

5.7 Through-Zero FM (TZFM)

The **TZFM** knob controls through-zero frequency modulation, where **Oscillator 2's output modulates Oscillator 1's frequency**. This produces complex, harmonically rich timbres – metallic, bell-like, and clangorous tones that are difficult to achieve with standard synthesis.

- At 0.0, there is no FM – Oscillator 1 runs at its normal pitch.
- As you increase **TZFM**, Oscillator 2's waveform pushes Oscillator 1's frequency up and down, even through zero Hz, creating the characteristic “through-zero” sound without the pitch-drift artifacts of simpler FM implementations.

The resulting timbre depends heavily on the frequency ratio between the two oscillators. Try tuning Oscillator 2 to simple intervals (octaves, fifths, fourths) relative to Oscillator 1 for more harmonic results, or use non-integer ratios for inharmonic, bell-like sounds.

Tip: The Oscillator 1 waveform visualizer shows the effect of TZFM in real time, so you can see how Oscillator 2 is reshaping the waveform as you turn up the depth.

5.8 Filter Routing

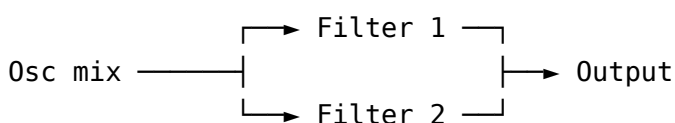
The routing toggle in the control bar determines how the two filters receive the oscillator signal. Three icon buttons represent the available modes:

5.8.1 Serial (default)

Osc mix → Filter 1 → Filter 2 → Output

The mixed oscillator signal enters Filter 1 first. Filter 1's output then feeds into Filter 2. This cascaded arrangement lets you sculpt the sound in two successive stages – for example, a lowpass followed by a highpass to create a bandpass-like effect with independent control over each cut-off.

5.8.2 Parallel



Both filters receive the same mixed oscillator signal independently. Their outputs are then blended together using the **F1/F2** slider. This is useful for creating dual-filter sounds where each filter contributes a different character to the final tone.

Tip: In Parallel mode, try setting Filter 1 to Lowpass and Filter 2 to Highpass for a “formant-like” split that emphasizes two different frequency regions.

5.8.3 Split

Oscillator 1 → Filter 1 —┐
Oscillator 2 → Filter 2 —┘→ Output

Oscillator 1 feeds Filter 1 while Oscillator 2 feeds Filter 2. The two filtered paths are then blended with the **F1/F2** slider. This keeps the oscillators separate through the filter stage, which is useful for dual-oscillator patches where each oscillator needs its own filter shape.

Tip: In Split mode, use Oscillator 1 for a stable low foundation through Filter 1 and Oscillator 2 for a brighter or noisier layer through Filter 2.

5.9 Output Mix (F1 / F2)

The **F1/F2** slider in the control bar blends between the outputs of Filter 1 and Filter 2 using an equal-power crossfade:

- **Hard left** – only Filter 1’s output is heard.
- **Center** (default) – an equal blend of both filters.
- **Hard right** – only Filter 2’s output is heard.

This gives you a single control to balance two different filter characters, which is especially powerful in Parallel and Split routing modes where each filter contributes a distinct path.

5.10 Generator Output Volume

The **Vol** knob at the far right of the control bar sets the overall output level of the generator. This is the final gain stage before the signal leaves the generator and enters the effects chain.

The default value of 1.0 sets the generator at full level. Turn it down if your patch is clipping, or automate it with modulation for tremolo and swell effects.

5.11 Generator Modulation

Every knob-based parameter in the generator section can be modulated by envelopes, LFOs, and MIDI sources (velocity, pressure, slide, pitch bend, and more). Small colored LED indicators below each knob show whether a modulation source is connected.

Modulation setup is covered in detail in [Modulation](#).

5.12 Two Generators Working Together

Generator A and Generator B are completely independent. Each has its own pair of oscillators, pair of filters, TZFM, routing, and output volume. Their outputs are combined downstream in the effects and mixer stages.

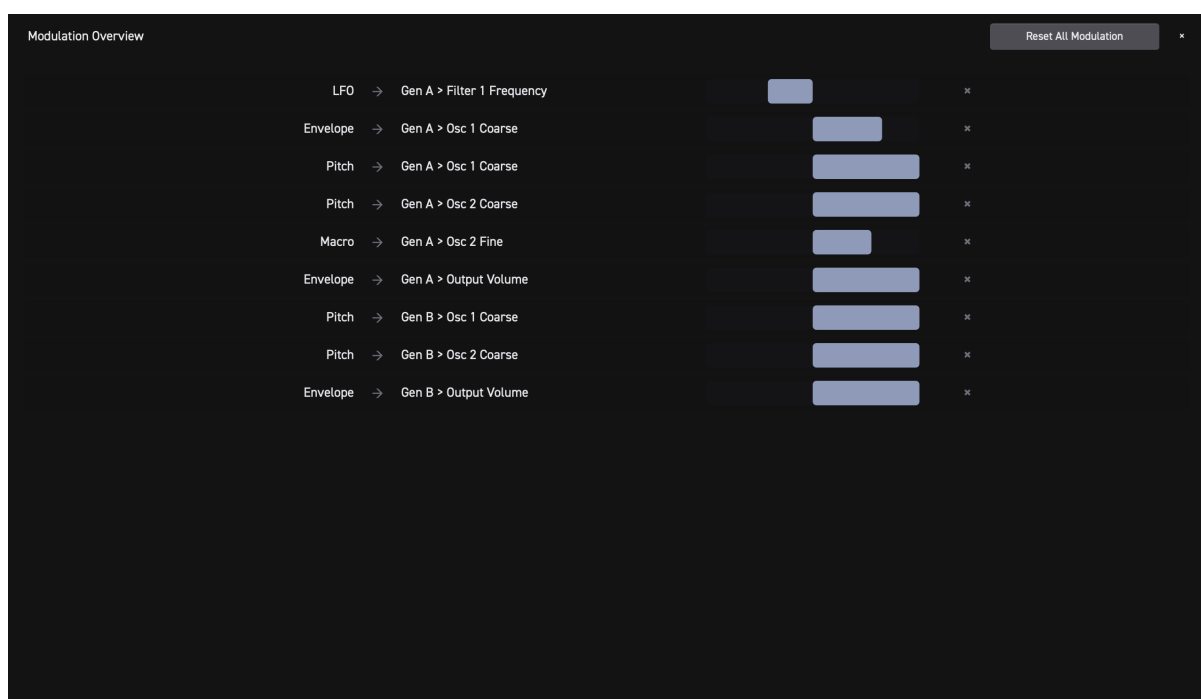
Some strategies for using both generators:

- **Layer two timbres** – use Generator A for a bright, cutting lead and Generator B for a warm pad underneath.
- **Split the performance range** – use the Split panel to send different notes or MPE channels to Generator A and Generator B. See [Voice and Split](#) for Note Split and MPE Split setup.
- **Detune for thickness** – set both generators to similar patches but slightly detune them for a massive unison sound.
- **Contrast** – set one generator to a simple waveform with heavy filtering and the other to a complex, folded waveform with an open filter for textural contrast.

Tip: Each generator's **Vol** knob lets you balance the two generators against each other without reaching for a separate mixer.

6 Modulation

Erae Sound’s modulation system is designed around one powerful idea: **every knob has its own complete modulation engine**. Instead of a centralized modulation matrix, each parameter carries its own envelope, LFO, MIDI sources, response curves, and cross-modulation connections. Click any knob to reveal and edit its modulation in the panels below.



Modulation overview

6.1 Concept: Per-Parameter Modulation

In most synthesizers, modulation is handled by a global matrix where you pick a source, pick a destination, and set a depth. Erae Sound takes a different approach.

Every parameter in Erae Sound – oscillator pitch, filter cutoff, effect mix, and so on – owns a complete modulation system. When you click a knob, the bottom section of the interface shows that parameter’s envelope, LFO, response curves, and modulation depths. There is no separate modulation matrix page to navigate.

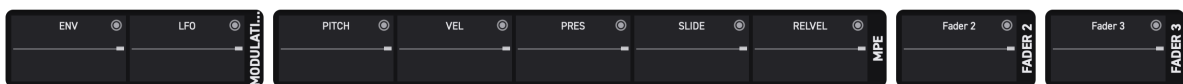
This means:

- **No slot limits.** Every parameter can be modulated by every source simultaneously.
- **No context switching.** Select a knob and everything about its modulation appears right below.
- **Independent depths.** Two parameters can share the same LFO shape but have completely different modulation amounts.

Tip: Click any knob label or right-click the knob itself to select it. The bottom panels instantly update to show that parameter's modulation settings.

6.2 Modulation Display Section

The **Modulation Display** is a horizontal strip located in the middle of the screen, between the generator area and the bottom panels. It shows all modulation sources for the currently selected parameter using a rolling history of roughly two seconds.



Modulation display strip

6.2.1 Fixed Sources

Seven sources are always visible, in this order:

Label	Source	Description
ENV	Envelope	ADSR envelope output for the selected parameter
LFO	Modulator	LFO / modulator output for the selected parameter
PITCH	Pitch Bend	Pitch bend value from your controller
VEL	Velocity	Note-on velocity
PRES	Pressure	Channel aftertouch / pressure
SLIDE	Slide	MPE slide (CC74)
RELVEL	Release Velocity	Note-off velocity

6.2.2 Erae Layout Sources

Additional sources appear to the right of the fixed sources when your Erae layout includes faders, buttons, XY pads, or other control zones. These are labeled with the zone name from your Erae layout (for example, “Fader 1” or “XY Pad X”). Up to 8 layout sources can appear simultaneously.

Per-voice sources show the currently relevant voice activity, while FX parameters use global modulation traces. When the LFO **POLY** switch is enabled, the display follows per-voice LFO behavior; otherwise it reflects the shared/global LFO behavior for the selected parameter. Layout sources can be grouped and scrolled when the layout exposes more sources than fit on screen.

6.2.3 Visualizer and Depth Fader

Each source cell contains two layers:

- **Waveform display.** A real-time oscilloscope showing the source’s current output as a rolling waveform.
- **Depth fader overlay.** A vertical fader that sets how much this source affects the selected parameter. Drag up or down to set the depth from -100% (bottom) to +100% (top), with 0% at the center.
 - Positive depth values are shown as a yellow-tinted fill.
 - Negative depth values are shown as a red-tinted fill.

Tip: The ENV and LFO depth knobs use quadratic scaling for finer control near zero. Small knob movements near the center produce subtle depth changes, while larger movements toward the extremes ramp up more aggressively. MIDI source faders (VEL, PRES, SLIDE, etc.) use linear scaling.

6.2.4 Cross-Modulation Connection Points

Each source cell also acts as a connection point for cross-modulation (see [Cross-Modulation](#)). You can drag from one source to another to create a cross-mod connection.

6.3 Envelope (ADSR)

The **Envelope** panel sits in the bottom-left area of the screen. It provides a standard ADSR (Attack, Decay, Sustain, Release) envelope generator for the currently selected parameter.



Envelope panel

6.3.1 Envelope Shape Preview

The upper portion of the panel shows a live ADSR shape visualization. The curve updates in real time as you adjust the knobs, giving you instant visual feedback of the envelope contour.

6.3.2 Parameters

Parameter	Range	Description
Attack	approx. 0.002 s – 10 s	Time for the envelope to rise from zero to full level after a note-on
Decay	approx. 0.002 s – 10 s	Time for the envelope to fall from full level down to the sustain level
Sustain	0% – 100%	Level the envelope holds at while the note is held
Release	approx. 0.002 s – 10 s	Time for the envelope to fall from the sustain level back to zero after note-off

All time parameters use an exponential scaling curve, so the lower portion of the knob range gives you fine control over short times while the upper portion covers longer sweeps.

6.3.3 Using the Envelope

1. Select a knob (for example, **Filter Cutoff**).

2. In the Modulation Display, drag the **ENV** depth fader upward to a positive value.
3. Adjust **Attack**, **Decay**, **Sustain**, and **Release** to shape the modulation contour.

The envelope triggers on every note-on and enters its release phase on note-off.

Tip: To create a pluck-like filter sweep, set a short **Attack** (~5 ms), moderate **Decay** (~300 ms), low **Sustain** (~10%), and short **Release** (~200 ms). Then assign a positive ENV depth to the filter cutoff.

6.3.4 Link Buttons

Below the four knobs, you will find the **A, B, C, D** link buttons. These assign the parameter's envelope to a shared link group (see [Modulation Linking](#)).

6.4 Modulator (LFO)

The **LFO** panel sits beside the Envelope panel at the bottom of the screen. It provides a continuously variable modulator (LFO) for the currently selected parameter.



LFO panel

6.4.1 Waveform Preview

The upper portion of the panel shows a preview of the current waveform shape, updating live as you change the **Wave** and **Skew** knobs.

6.4.2 Mode Selector

A vertical card on the left side of the controls offers three rate modes:

Mode	Rate Meaning
Free	Rate in Hz (0.01 – 20 Hz). The LFO runs at a fixed frequency independent of the host tempo.
Sync	Rate locked to the host tempo. Choose from musical divisions (1/64 through 4 bars). See the Tempo Sync Reference Table for all available values.
Audio	Rate as a MIDI note frequency (C-2 through G8). Useful for audio-rate FM or AM effects.

6.4.3 Parameters

Parameter	Description
Rate	LFO speed. The unit changes depending on the mode (Hz, sync division, or note).
Wave	Waveform shape. Continuously morphs through five shapes: Sine – Triangle – Saw Up – Square – Sample & Hold . Intermediate positions produce smooth crossfades between adjacent shapes.
Skew	Waveform symmetry / phase distortion. At 50% (center) the waveform is symmetrical. Turning left or right compresses or stretches the first half of each cycle, changing the character of the shape.
Phase	Starting phase offset for the LFO cycle.
Offset	Shifts the LFO output range up or down.
POLY	Switches between one shared LFO and per-voice LFO behavior.

6.4.4 Retrigger

Retrigger is available from the Voice panel as the **Retrig** toggle. When enabled, repeated note-ons restart the voice envelopes from the beginning, which gives repeated notes a consistent attack. When disabled, held notes can continue smoothly into the next note for legato playing.

Use **Retrig** with short envelopes for tight percussive patches, and leave it off for smoother lead

lines or pads. The LFO's **Phase** and **POLY** controls still define how LFO motion starts and whether it runs per voice or globally.

6.4.5 Using the Modulator

1. Select a knob (for example, **Oscillator Pitch**).
2. In the Modulation Display, drag the **LFO** depth fader to set the modulation amount.
3. Set the **Mode** (Free, Sync, or Audio).
4. Adjust **Rate**, **Wave**, **Skew**, **Phase**, **Offset**, and **POLY** to shape the LFO output.

Tip: For a classic vibrato, select the oscillator **Pitch** knob, set the LFO depth to a small positive value (~5%), choose **Free** mode, set **Rate** to around 5 Hz, and leave **Wave** fully on Sine.

6.4.6 Link Buttons

Below the three knobs, you will find the **A, B, C, D** link buttons. These assign the parameter's LFO to a shared link group (see [Modulation Linking](#)).

6.5 MIDI Modulation Sources

Erae Sound responds to several expressive MIDI sources. Each source has an independent depth fader per parameter, allowing fine-grained control over how performance gestures affect every aspect of your sound.

6.5.1 Available Sources

Source	Label	Default Polarity	Description
Velocity	VEL	Unipolar (0 to 1)	Note-on velocity. Higher velocity = larger modulation.
Pressure	PRES	Unipolar (0 to 1)	Channel aftertouch. Continuous pressure while holding a note.
Slide	SLIDE	Unipolar (0 to 1)	MPE slide / CC74. Usually mapped to finger position along the Y axis on the Erae.

Source	Label	Default Polarity	Description
Pitch Bend	PITCH	Bipolar (-1 to +1)	Pitch bend wheel or MPE per-note pitch. Center = no modulation.
Release Velocity	RELVEL	Unipolar (0 to 1)	Note-off velocity. How quickly you release the note.

6.5.2 Depth Faders

Each source's depth fader in the Modulation Display sets the modulation amount for the selected parameter, ranging from -100% to +100%. A depth of 0% means the source has no effect.

- **Positive depth:** The source adds to the parameter value. For example, higher velocity increases filter cutoff.
- **Negative depth:** The source subtracts from the parameter value. For example, higher velocity decreases filter cutoff.

6.5.3 Response Curves and Polarity

Each MIDI source can have its own response curve and polarity setting per parameter. These are edited in the Curve Editor panel (see [Modulation Curves](#)).

- **Polarity** determines whether the source operates in unipolar (0 to 1) or bipolar (-1 to +1) range.
- **Curves** reshape the source's response (for example, making velocity more or less sensitive in certain ranges).

Tip: If you want velocity to only affect loud notes, apply an exponential curve to the VEL source. Soft notes will produce very little modulation while hard notes produce a lot.

6.6 Modulation Linking (A/B/C/D)

Link groups let multiple parameters share the same Envelope or LFO settings. This is useful when you want several knobs to respond to the same modulation shape without having to duplicate settings manually.

6.6.1 How It Works

Both the Envelope and the Modulator have four link groups: **A**, **B**, **C**, and **D**. Each parameter can independently assign its envelope to one group and its LFO to another (or to no group at all).

Assignment	Behavior
Dedicated (no button highlighted)	The parameter uses its own private envelope or LFO. Changes only affect this parameter.
A, B, C, or D	The parameter shares envelope or LFO settings with every other parameter assigned to the same group. Changing the Attack knob in group A updates it for all group-A parameters.

6.6.2 Important Details

- **Depths remain independent.** Even when two parameters share group A's envelope, each parameter keeps its own ENV depth fader. One can have +80% depth while the other has -20%.
- **Envelope and LFO link separately.** A parameter can use Envelope link group B and LFO link group C at the same time.
- **Radio-button behavior.** The link buttons act like radio buttons – clicking one deselects any previously selected button. To return to Dedicated mode, click the currently active button to deselect it.

6.6.3 Assigning a Link Group

1. Select a knob.
2. In the Envelope or LFO panel, click one of the **A / B / C / D** buttons.
3. The panel knobs now control the shared group settings.
4. Select another knob and assign it to the same group letter.
5. Both parameters now share the same envelope or LFO shape.

6.6.4 LED Indicators

Each modulable knob has a small colored LED indicator below it. The LED shows the link group assignment at a glance:

- **No LED color** = Dedicated (no link group assigned)

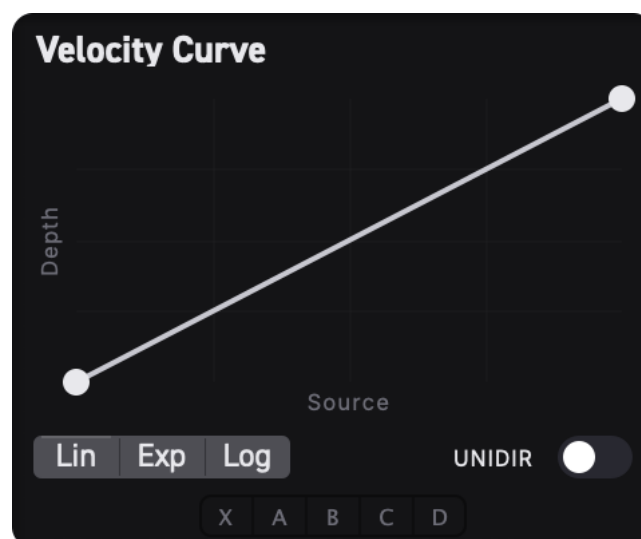
- **Colored LED** = Assigned to a link group. The color corresponds to the group (A, B, C, or D) and whether it is an envelope or LFO link.

The LED is split into two halves – one side for the envelope link and the other for the LFO link – so you can see both assignments at once.

Tip: Use link groups to keep filter cutoff and resonance on the same envelope shape, while giving each a different depth. Assign both to Envelope group A, then set the cutoff depth high and the resonance depth low.

6.7 Modulation Curves

The **Curve Editor** panel lets you reshape how each modulation source responds before it reaches a parameter. Instead of a straight-line relationship between source value and modulation amount, you can create custom response curves.



Curve editor panel

6.7.1 Panel Layout

The Curve Editor sits alongside the Envelope and LFO panels in the bottom section. It automatically shows the curve for the most recently clicked modulation source (VEL, PRES, SLIDE, PITCH, or any Erae layout source). The panel title updates to reflect the active source (for example, “Velocity Curve” or “Slide Curve”).

Modulation curves also apply when editing modulator sub-parameters. When you select a modulator knob (such as **Attack**, **Rate**, or **Skew**), the Curve Editor shows the response curve for whichever MIDI source is active on that sub-parameter. This lets you fine-tune how velocity, pressure, or slide affects your envelope times and LFO settings.

6.7.2 Editing Curves

The main area displays a graph with a curve drawn from bottom-left (input = 0) to top-right (input = 1).

- **Drag a control point** to reshape the curve.
- **Double-click on empty space** to add a new control point (and immediately drag it).
- **Double-click an existing point** to remove it.
- The first point is locked at $x = 0$ and the last point is locked at $x = 1$.
- You can have between 2 and 9 control points.

6.7.3 Preset Curves

Three quick-preset buttons appear below the curve graph:

Button	Curve Shape
Lin	Linear – straight diagonal line (no reshaping)
Exp	Exponential – gentle at low values, steep at high values
Log	Logarithmic – steep at low values, gentle at high values

6.7.4 Polarity Toggle

The **Uni / Bi** button switches the source polarity:

- **Uni** (Unipolar): Source values range from 0 to 1. Good for velocity, pressure, and slide.
- **Bi** (Bipolar): Source values range from -1 to +1. Good for pitch bend, which naturally centers at zero.

Pitch bend defaults to bipolar. All other sources default to unipolar.

6.7.5 Curve Link Groups (A/B/C/D)

Just like Envelope and LFO settings, curves can be shared across parameters via link groups **A**, **B**, **C**, **D**. When multiple parameters share a curve link group for the same source type, editing the curve for one updates it for all of them.

- Click a link button to assign the curve to that group.
- Click the active button again to return to Dedicated mode.

6.7.6 Copy and Paste

Use the **Copy** and **Paste** buttons to transfer a curve shape from one source or parameter to another. Copy the curve, select a different parameter or source, then paste.

6.8 Cross-Modulation

Cross-modulation lets one modulation source control another source's depth. This creates layered, dynamic modulation behaviors that evolve during performance.

6.8.1 What Is Cross-Modulation?

Normally, each modulation source has a fixed depth fader. Cross-modulation makes that depth vary in real time based on another source's output.

Examples:

- **Envelope depth modulated by Velocity.** The ENV modulation amount grows when you play harder, and shrinks when you play softly.
- **LFO depth modulated by Pressure.** Vibrato increases as you press harder into the surface.
- **Velocity depth modulated by an Erae fader.** Use a fader from the active Erae layout to control how much velocity affects the sound.

6.8.2 Creating a Cross-Mod Connection

1. Select a knob to view its modulation sources in the Modulation Display.
2. **Drag from one source cell to another.** For example, drag from the VEL cell to the ENV cell.
3. A connection line appears between the two sources.
4. The connection has its own depth control ranging from -100% to +100%.

6.8.3 How It Works

When a cross-mod connection exists, the target source's depth is dynamically adjusted:

effective depth = base depth + (cross-mod source output x cross-mod depth)

For instance, if the ENV depth fader is set to +50% and Velocity cross-modulates ENV at +30%, then: - At velocity = 0: effective ENV depth = +50% - At velocity = 1: effective ENV depth = +80%

6.8.4 Limits and Safety

- **Maximum 64 connections** across the entire patch.
- **Cycle detection** prevents feedback loops. You cannot create a chain where Source A modulates Source B's depth while Source B simultaneously modulates Source A's depth.
- Each cross-mod connection can be independently adjusted or removed.

6.8.5 Managing Connections

- **Adjust depth:** Click on a connection line to edit its depth.
 - **Remove:** Delete connections from the Modulation Overview (see [Modulation Overview](#)) or by using the connection's delete control.
-

6.9 Modulation Overview

The **Modulation Overview** is a full-screen overlay that shows every active modulation connection across all parameters in your patch. It is your bird's-eye view of the entire modulation routing.

6.9.1 Opening the Overview

Click the **Modulation Overview** button in the header bar (top of the screen, near the volume control). The overview appears as a scrollable overlay on top of the main interface.

6.9.2 What You See

Each row in the overview represents one active modulation assignment:

- **Parameter name** – which knob is being modulated
- **Source name** – which source is providing the modulation (ENV, LFO, VEL, PRES, etc.)
- **Depth slider** – editable slider showing the current modulation depth
- **Delete button** – removes this modulation assignment

6.9.3 Editing from the Overview

You can adjust any depth fader directly in the overview without leaving the screen. You can also delete connections you no longer need. Changes take effect immediately.

6.9.4 When to Use It

- To audit your patch and see all active modulation at a glance.
- To quickly zero out or clean up unused modulation assignments.
- To get an overview after loading a complex preset.

Press **Escape** or click the close button to dismiss the overlay and return to normal editing.

6.9.5 Multiple Erae Devices

When more than one Erae device is connected, choose the active device in Erae Lab. Erae Sound follows Erae Lab's active device selection when device-backed layout sources are used.

6.10 DAW Host Automation

Erae Sound exposes its parameters to your DAW so you can record and play back automation from Ableton Live, Logic Pro, Cubase, or any host that supports plug-in automation.

There are two layers:

1. **Base parameters** are exposed directly. Every oscillator, filter, FX, link-group, voice, and routing knob shows up in your DAW's automation list (around 595 parameters total). Pick them from the DAW's parameter chooser exactly like any other plug-in's controls.
2. **Modulation depths** – the per-source depth faders shown on every visualizer in the Modulation Display – are routed through **64 Host Automation Slots**. Slots are opt-in: assign a depth to a slot, and that slot becomes the automation lane your DAW writes to.

This split keeps the DAW automation list manageable while still letting you automate any modulation depth you care about.

6.10.1 Assigning a Modulation Depth to a Host Slot

1. In the Modulation Display, find the source whose depth you want the DAW to control.
2. **Right-click the depth fader** on that visualizer.
3. A small menu opens with a header showing what is being assigned (for example, Host Automation: env -> filter1_freq).
4. Pick one of:
 - **Auto-assign to next free slot** – the fastest path; Erae Sound chooses the lowest unused slot.

- **Choose specific slot...** – opens a submenu listing all 64 slots so you can pick one (useful when you want consistent slot numbers across presets, or to swap an existing binding).

Once assigned, the slot's `host_slot_N` parameter mirrors the modulation depth in both directions: moving the depth fader in Erae Sound moves the DAW automation lane, and DAW automation moves the depth fader.

6.10.2 Replacing or Removing a Binding

Right-click the same depth fader again to:

- **Unassign** – frees the slot. The DAW lane stays present (it always exists for `host_slot_N`) but no longer drives any depth.
- **Choose specific slot...** – picking a different slot moves the binding. The previous slot becomes free.

6.10.3 Host Slots Tab

The **Modulation Overview** has a **Host Slots** button in the header that switches its main panel to a 64-row list showing every slot's current binding, live value, and an X button to unassign that slot.

Use it to audit a complex preset, free up slots in bulk with **Clear All**, or check which depths a DAW automation lane is currently driving.

6.10.4 Slot Names in the DAW

The slots appear in the DAW's parameter chooser as `Slot 1`, `Slot 2`, ... `Slot 64`. They keep these generic names while a session is open: Erae Sound does not push live name updates to the host (some DAWs interpret the refresh request as a parameter-set change and behave unpredictably). The slot's actual binding is always visible inside Erae Sound on the Host Slots tab. When you reload the project or rescan the plug-in, your DAW will pick up the latest binding names if it supports name updates between scans.

6.10.5 Bindings and Presets

Host slot bindings are saved with the preset, so loading a preset restores both the modulations and which depths are mapped to which DAW automation slots. If two presets bind different depths to the same slot, the slot follows the preset that was last loaded.

Tip: Use **Auto-assign** for most modulation depths. Reserve specific slot numbers (`Slot 1`,

Slot 2, ...) for the few macros you want at consistent positions across all your presets, so muscle memory transfers between patches.

6.11 Tempo Sync Reference Table

When the Modulator is set to **Sync** mode, the **Rate** knob selects from the following musical divisions. The T suffix indicates a triplet division.

Division	Label
1/64 note	1/64
1/32 note triplet	1/32T
1/32 note	1/32
1/16 note triplet	1/16T
1/16 note	1/16
1/8 note triplet	1/8T
1/8 note	1/8
1/4 note triplet	1/4T
1/4 note	1/4
1/2 note triplet	1/2T
1/2 note	1/2
1 bar	1 bar
2 bars	2 bars
4 bars	4 bars

The LFO completes one full cycle over the selected division. At 1/4 and 120 BPM, for example, the LFO completes one cycle per quarter note (2 Hz).

Tip: For a tremolo effect synced to eighth notes, set the Modulator to **Sync** mode, choose 1/8, apply an LFO depth to the generator **Vol** knob, and set the **Wave** to a smooth Sine or Triangle.

6.12 Summary

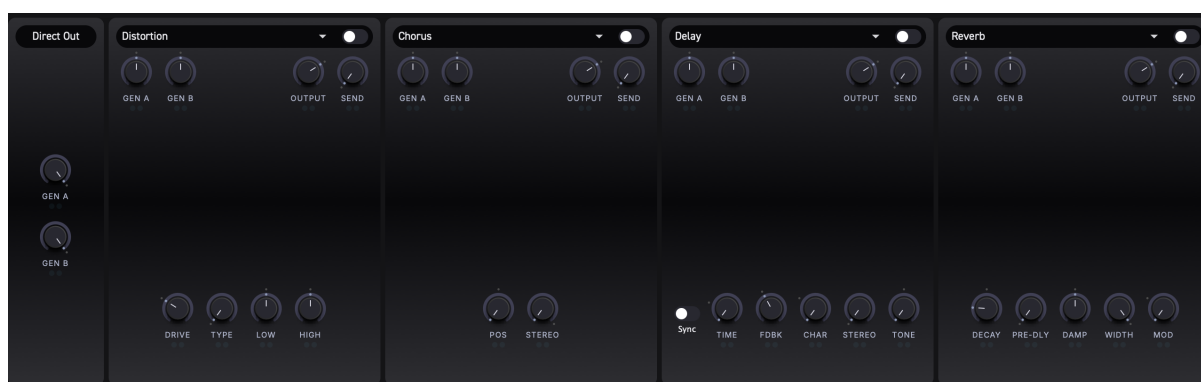
Erae Sound's per-parameter modulation system gives you deep, intuitive control over every aspect of your sound:

Feature	What It Does
Per-parameter modulation	Every knob owns its own complete modulation engine
Modulation Display	Real-time visualization and depth control for all sources, with live modulation indicators on modulator sliders
Envelope (ADSR)	Shape modulation with Attack, Decay, Sustain, Release
Modulator (LFO)	Free, Sync, or Audio-rate modulation with morphable waveforms
MIDI Sources	Velocity, Pressure, Slide, Pitch Bend, Release Velocity
Link Groups (A/B/C/D)	Share Envelope, LFO, or Curve settings across multiple parameters
Modulation Curves	Custom response shaping with presets and polarity control
Cross-Modulation	Sources modulating other sources' depths for layered dynamics
Modulation Overview	Full-patch view of all active modulation assignments
DAW Host Automation	Direct automation of all base parameters plus 64 opt-in slots for modulation depths

For more on how modulation interacts with the Erae controller, see [Erae Integration](#). For effect parameter modulation, see [Effects](#).

7 Effects

Erae Sound includes a built-in effects chain that processes the output of your generators before it reaches the final mix. You can stack up to four effects in series, each with independent controls, to sculpt everything from subtle ambience to dramatic sonic transformations.



FX tab overview

7.1 FX Chain Overview

The effects chain consists of **4 slots** arranged in series. The audio signal flows through them in order:

Slot 1 -> **Slot 2** -> **Slot 3** -> **Slot 4** -> Output

Each slot can hold one effect type at a time, or be set to None to let the signal pass through untouched. You can place any combination of effects in any order – for example, Distortion in Slot 1, Chorus in Slot 2, and Reverb in Slot 4.

Tip: The order matters. Placing a reverb *before* a distortion will produce a very different result than placing it *after*. Experiment with slot ordering to discover new textures.

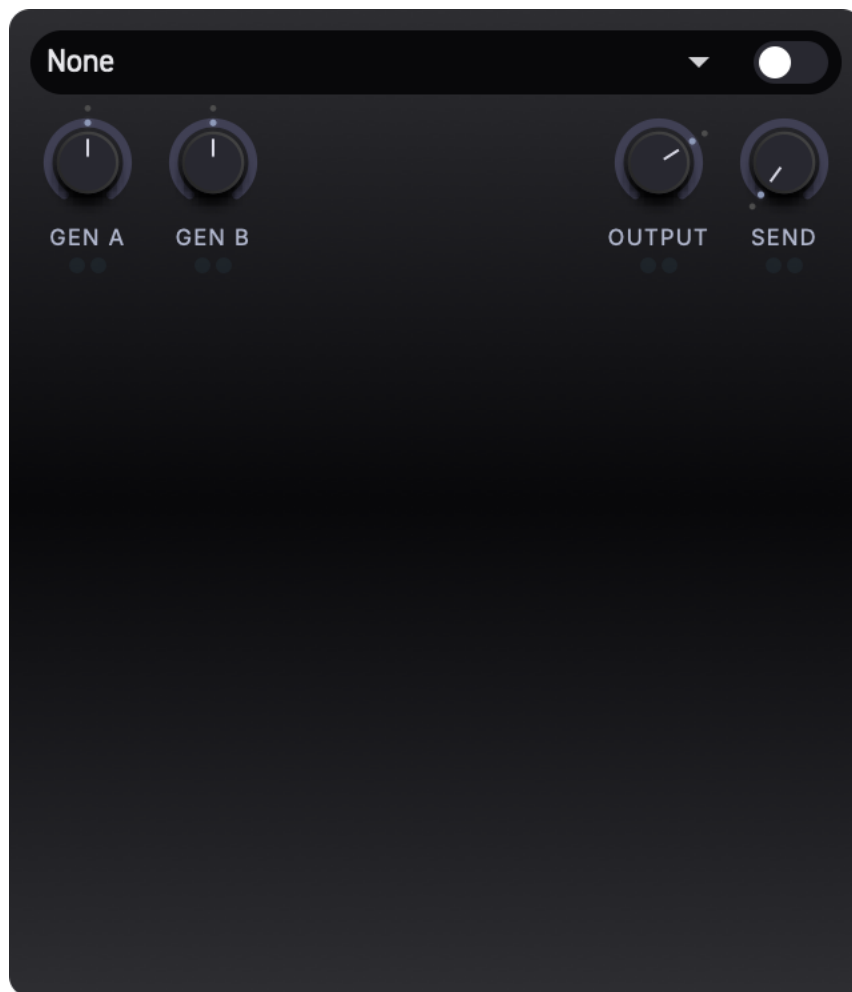
7.2 Available Effect Types

Use the dropdown at the top of each slot to choose from the following:

Type	Description
None	Disables the slot (signal passes through unchanged)
Distortion	Multi-algorithm overdrive and fuzz with low/high tone shaping
Chorus	Juno-style BBD chorus with position and stereo controls
Flanger	Classic flanger with adjustable feedback and manual offset
Phaser	4-stage phaser with stereo offset
Delay	Analog-style delay with character morphing
Reverb	Plate reverb with modulation
Shimmer	Pitch-shifted reverb for ambient textures
Compressor	Dynamics control with threshold, ratio, timing, and makeup gain
Param EQ	Two-band parametric equalizer

7.3 Common Controls

Every active FX slot shares the same set of routing controls, regardless of the effect type loaded.



FX slot common controls

7.3.1 Bypass (BYP)

The **BYP** button at the top of each slot bypasses the effect. When engaged, the signal passes through the slot unprocessed. This is useful for quick A/B comparisons without removing the effect from the chain.

7.3.2 D/W A and D/W B

Each slot provides two independent wet-send controls:

- **D/W A** – sets how much Generator A is sent into this effect.
- **D/W B** – sets how much Generator B is sent into this effect.

At 0.0, that generator does not feed the effect input. At 1.0, it feeds the effect at full send level. Direct dry output is controlled separately by the generator/direct output path, not by these knobs.

Having separate controls for each generator lets you apply different effect amounts to each sound source. For example, you might drench Generator A in reverb while keeping Generator B mostly dry.

7.3.3 Output

The **Output** knob controls the overall output level of the slot after the dry/wet mix has been applied. Use this to balance the volume between slots in the chain.

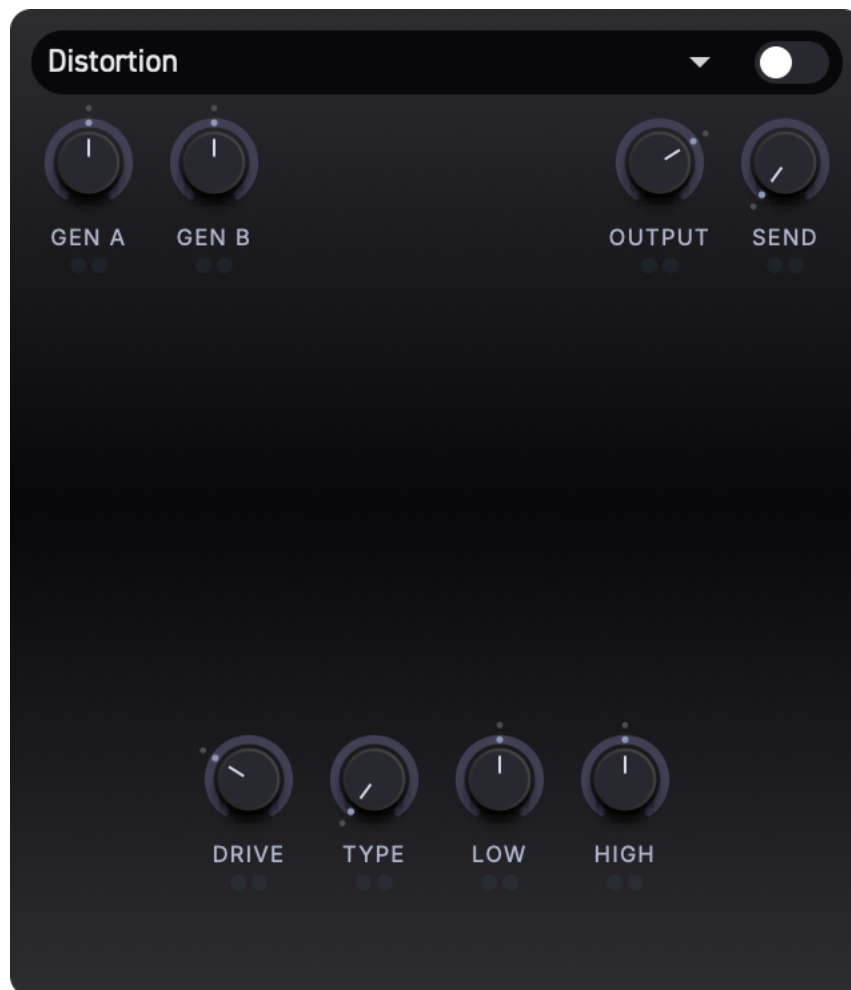
7.3.4 Send

The **Send** knob controls how much of the slot's output is passed forward to the next slot in the chain as an additional send signal. This is set to 0.0 by default.

Tip: All FX parameters – including these common routing controls – can be modulated using the same modulation system available to generators. See [Modulation](#) for details.

7.4 Distortion

A multi-algorithm distortion effect featuring classic drive circuits and low/high tone shaping.



Distortion effect

7.4.1 Parameters

Label	Description	Default
Drive	Amount of gain applied before the distortion stage. Higher values produce more saturation and harmonic content.	0.3
Type	Selects the distortion algorithm (see below). This is a continuous control that morphs smoothly between adjacent algorithms.	0.0
Low	Shapes low-frequency tone after the drive stage. Center position is neutral.	0.5

Label	Description	Default
High	Shapes high-frequency tone after the drive stage. Center position is neutral.	0.5

7.4.2 Distortion Algorithms

The **Type** knob sweeps continuously through six distortion algorithms. As you turn it, the sound morphs smoothly between adjacent models – you are never limited to just one algorithm at a time.

From left to right, the algorithms are:

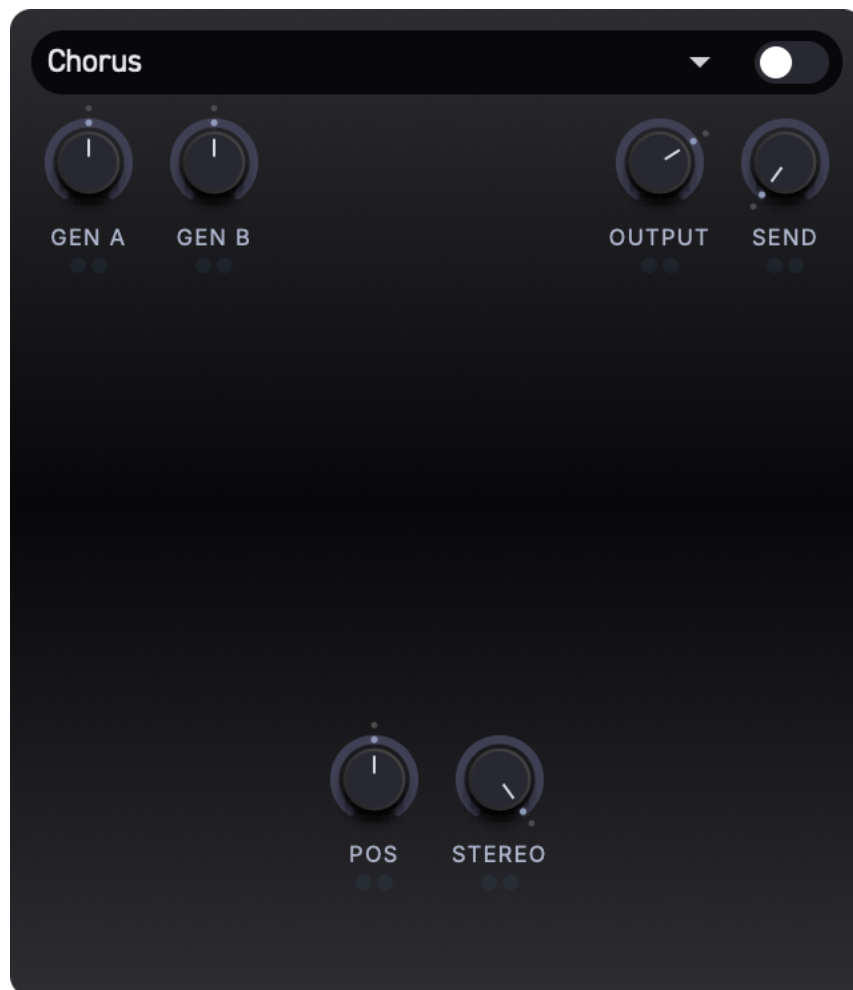
1. **Clean Boost** – a transparent gain stage with gentle saturation.
2. **Tube Screamer** – warm, mid-focused overdrive inspired by classic pedal circuits.
3. **RAT** – aggressive, clipping distortion with a harder edge.
4. **Big Muff** – thick, sustaining fuzz with a scooped midrange.
5. **Fuzz Face** – vintage silicon fuzz with a buzzy, gated character.
6. **Tape** – smooth tape saturation with soft compression.

Tip: Because the **Type** control morphs continuously, you can find unique tones *between* the classic algorithms. Try setting it halfway between Tube Screamer and RAT for a blend of warmth and bite.

The low/high tone controls sit after the distortion stage, letting you shape the driven signal without adding a separate EQ slot.

7.5 Chorus

A lush chorus effect modeled after the classic Roland Juno synthesizer chorus circuit. It uses bucket-brigade device (BBD) delay line emulation for an authentic analog character.



Chorus effect

7.5.1 Parameters

Label	Description	Default
Pos	Manual position within the chorus delay/modulation character.	0.5
Stereo	Selects the chorus mode (see below).	1.0

7.5.2 Stereo Modes

The **Stereo** knob selects between three operating modes inspired by the Juno-60/106 chorus:

- At 0.0 – **Mode I**: A slower LFO rate (approx. 0.5 Hz) with both channels in phase. Produces a subtle, warm thickening.
- At 0.5 – **Mode II**: A faster LFO rate (approx. 0.9 Hz) with both channels in phase. More noticeable movement and animation.
- At 1.0 – **Mode I+II**: Both LFO rates combined with inverted phase between left and right

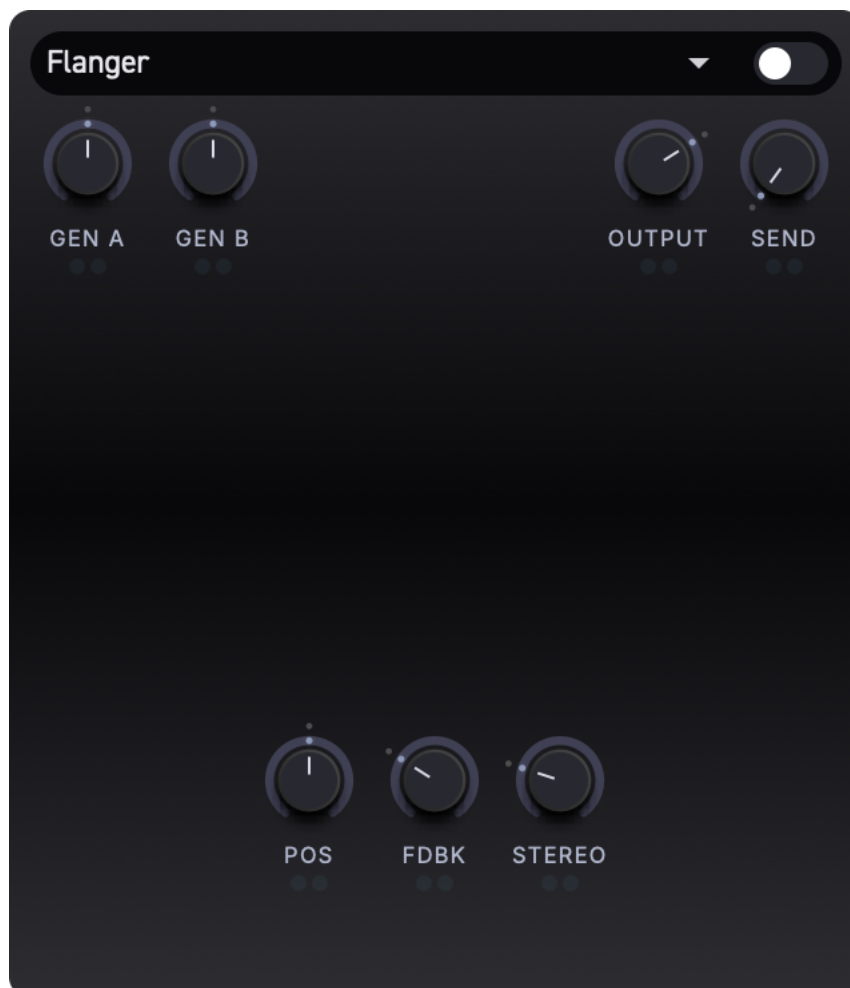
channels, creating a wide stereo spread.

Values between these positions crossfade smoothly for in-between variations.

Tip: Mode I+II is the signature Juno chorus sound – a wide, immersive stereo effect. Start there and dial back if you want something more subtle.

7.6 Flanger

A classic flanger effect built on short modulated delay lines with feedback. Produces sweeping, jet-like tones that range from subtle movement to metallic resonance.



Flanger effect

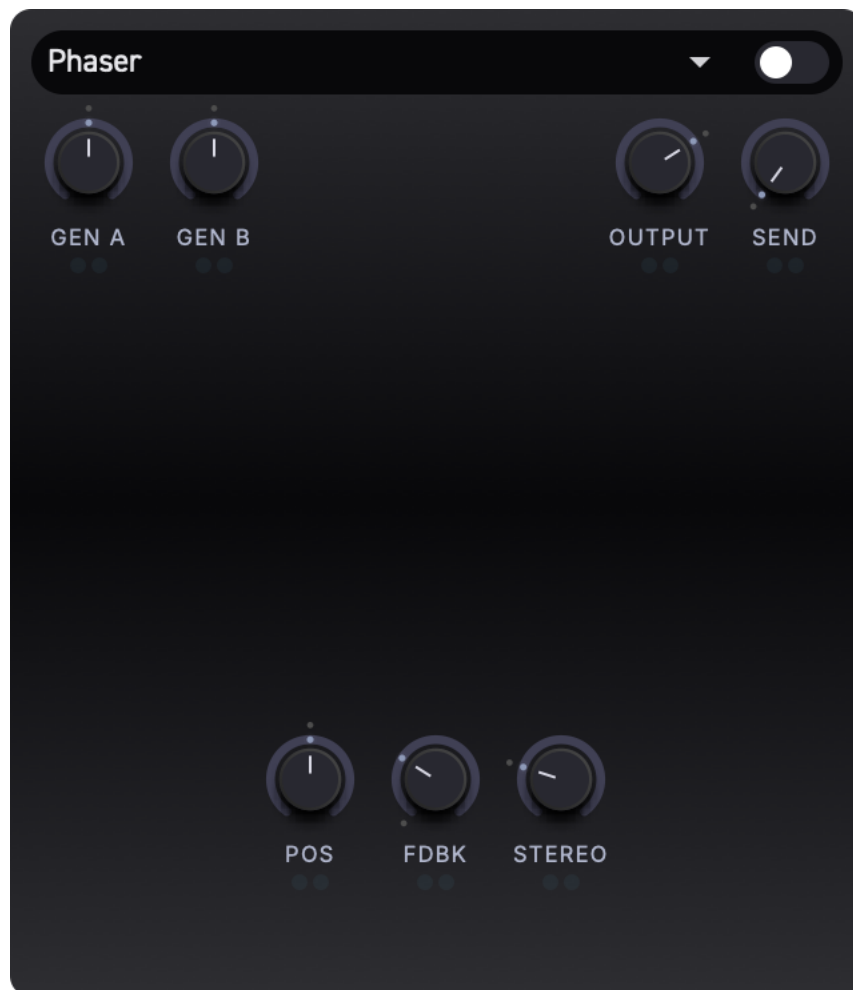
7.6.1 Parameters

Label	Description	Default
Pos	Sets the manual delay/sweep position. Adjusting this shifts the harmonic character of the flanging.	0.5
Fdbk	Amount of the output fed back into the input. Higher values produce more resonant, metallic tones.	0.3
Stereo	Phase offset between the left and right LFOs. At 0.0, both channels sweep together. Higher values create a wider stereo image.	0.25

Tip: For a classic jet-plane tone, set **Fdbk** high and sweep **Pos** slowly. For a more subtle doubling effect, reduce **Fdbk**.

7.7 Phaser

A 4-stage phaser that sweeps a series of notches through the frequency spectrum. The result ranges from gentle swirling to deep, resonant swooshes.



Phaser effect

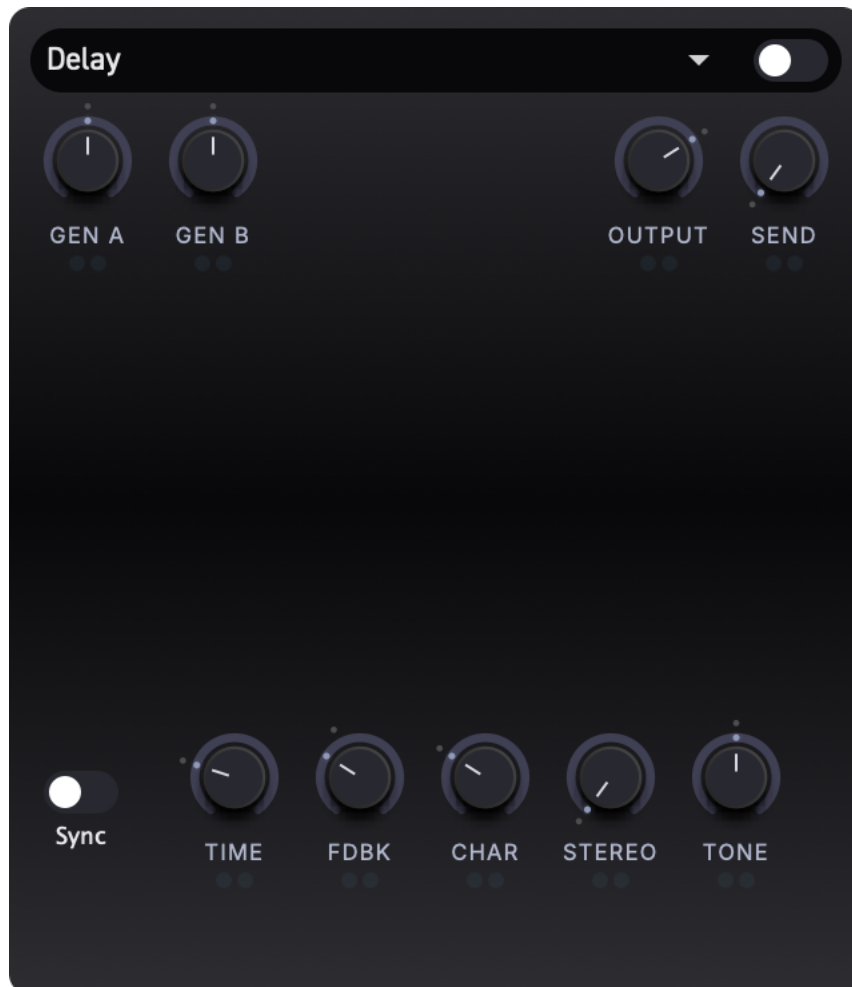
7.7.1 Parameters

Label	Description	Default
Pos	Manual notch position.	0.5
Fdbk	Feeds the output back into the input, intensifying the notches and producing a sharper, more resonant effect.	0.0
Stereo	Phase offset between the left and right channel LFOs. Higher values create a wider stereo spread.	0.25

Tip: Phaser with zero feedback produces a smooth, gentle movement. Adding feedback makes the effect more dramatic and pronounced – great for leads and pads.

7.8 Delay

An analog-style delay with a continuously morphing character control that blends between pristine digital repeats and degraded lo-fi echoes.



Delay effect

7.8.1 Parameters

Label	Description	Default
Time	Delay time, ranging from 100 ms to 2000 ms.	0.3
Fdbk	Amount of the delayed signal fed back into the input. Higher values produce more repeats.	0.4
Char	Character of the delay repeats (see below).	0.3

Label	Description	Default
Stereo	Stereo spread of the delay. At 0.0, both channels have the same delay time. Higher values create a ping-pong or offset stereo image.	0.0
Tone	A tilt EQ applied to the delay line. Lower values darken the repeats; higher values brighten them.	0.5

7.8.2 Delay Character

The **Char** knob morphs continuously between three delay personalities:

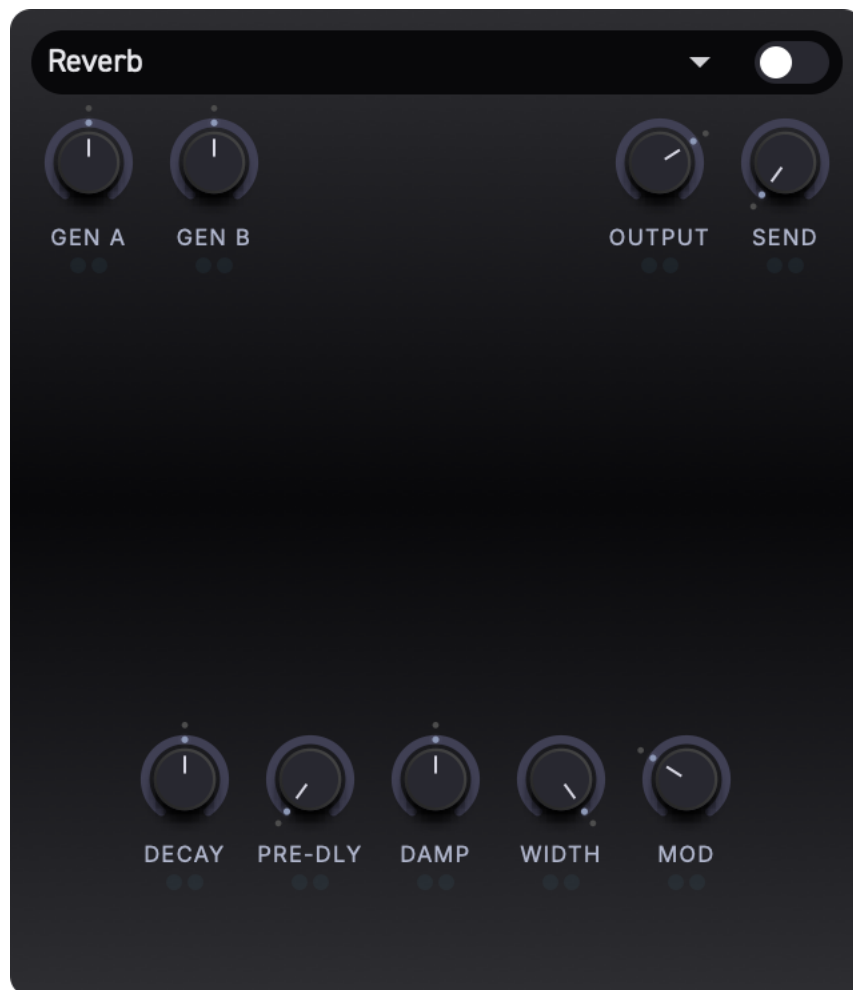
- At 0.0 – **Clean**: Pristine, digital-quality repeats with no degradation.
- At 0.5 – **Tape**: Warm, analog-style echoes with subtle saturation, wow and flutter, and soft high-frequency rolloff.
- At 1.0 – **Lo-Fi**: Heavily degraded repeats with aggressive filtering, diffusion, and noticeable artifacts.

Values in between blend the characteristics smoothly, letting you find exactly the right amount of grit for your sound.

Tip: A little bit of **Char** (around 0.2-0.4) adds warmth and life to delay repeats without making them obviously lo-fi. This works especially well on pads and atmospheric sounds.

7.9 Reverb

A high-quality plate reverb based on the Dattorro algorithm. It produces lush, smooth reverb tails suitable for everything from tight rooms to expansive halls.



Reverb effect

7.9.1 Parameters

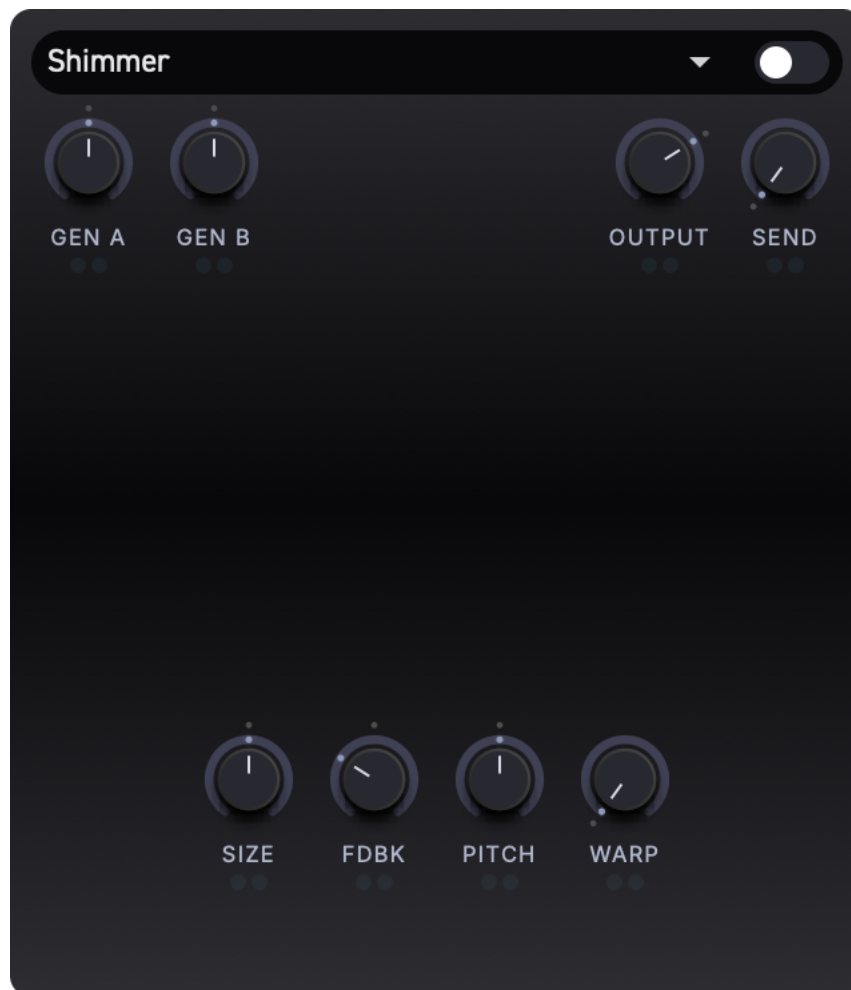
Label	Description	Default
Decay	Length of the reverb tail. Low values produce short, tight reflections; high values create long, sustained tails.	0.5
Pre-Dly	The time between the dry signal and the onset of reverb. Adds space and separation between the source and the reverb.	0.0
Damp	High-frequency damping applied to the reverb tail. Higher values absorb more treble with each reflection, producing a warmer, darker reverb.	0.5

Label	Description	Default
Width	Stereo width of the reverb output. At 0.0, the reverb is mono. At 1.0, it fills the full stereo field.	1.0
Mod	Amount of internal modulation within the reverb tank. Adds subtle pitch variation that smooths out the tail and reduces metallic ringing.	0.3

Tip: A small amount of **Pre-Dly** (around 0.1-0.2) helps the dry signal stay clear and upfront even with long reverb tails. This is especially useful for lead sounds.

7.10 Shimmer

A pitch-shifted reverb designed for creating ethereal, ambient textures. The reverb feeds into a pitch shifter, whose output is fed back into the reverb, building shimmering layers of harmonics.



Shimmer effect

7.10.1 Parameters

Label	Description	Default
Size	Size of the reverb space. Higher values produce longer, more diffuse tails.	0.5
Fdbk	Amount of the pitch-shifted signal fed back into the reverb. Higher values build up denser harmonic layers over time.	0.7
Pitch	Pitch shift amount applied to the reverb signal. At center (0.5), no pitch shift is applied. Values above and below shift the pitch up or down respectively.	0.5

Label	Description	Default
Warp	Additional spectral warping applied to the feedback path. Adds unusual, evolving tonal characteristics to the shimmer tail.	0.0

Tip: For a classic shimmer sound, set **Pitch** slightly above center (an octave up) and **Fdbk** around 0.5-0.7. For more experimental textures, increase **Warp** and push **Fdbk** higher.

7.11 Compressor

A dynamics processor for controlling peaks, adding sustain, or tightening the output before later FX slots.

7.11.1 Parameters

Label	Description	Default
Thresh	Level where compression begins. Lower settings compress more of the signal.	0.5
Ratio	Compression strength once the signal crosses the threshold.	0.3
Atk	How quickly compression reacts to peaks.	0.2
Rel	How quickly gain recovers after compression.	0.3
Makeup	Output gain after compression.	0.0

7.12 Param EQ

A two-band parametric equalizer for corrective or creative tone shaping.

7.12.1 Parameters

Label	Description	Default
Freq 1	Center frequency of EQ band 1.	0.3
Gain 1	Gain of EQ band 1. Center is neutral.	0.5
Q 1	Width/resonance of EQ band 1.	0.3
Freq 2	Center frequency of EQ band 2.	0.7
Gain 2	Gain of EQ band 2. Center is neutral.	0.5
Q 2	Width/resonance of EQ band 2.	0.3

7.13 Modulating FX Parameters

All FX parameters can be modulated using the same modulation system used by the generators. This means you can assign envelopes, LFOs, or performance controllers (such as aftertouch or slide) to any knob in the effects chain.

7.13.1 Cross-Modulation

Cross-modulation connections also work on FX parameters. You can wire one FX modulation source to control another source's depth, just as you would for generator parameters. See [Modulation](#) for cross-modulation details.

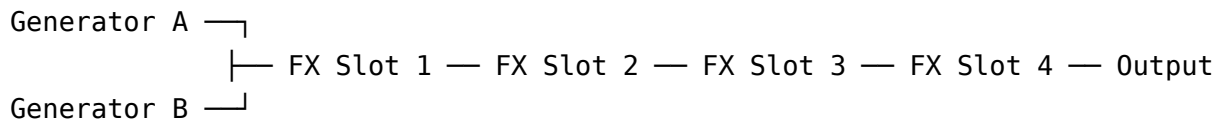
For example, you could:

- Modulate **Decay** on a reverb with aftertouch, so pressing harder into a key creates a longer tail.
- Use an LFO to sweep the **Char** knob on a delay for evolving echo textures.
- Map velocity to the distortion **Drive** for touch-sensitive overdrive.

To set up modulation on an FX parameter, select the parameter by clicking its knob, then assign a modulation source and depth. See [Modulation](#) for full instructions.

7.14 Signal Flow Summary

The complete effects signal path looks like this:



At each slot, the **D/W A** and **D/W B** controls determine how much of each generator's signal enters the effect. The processed signal is scaled by the **Output** level and can be passed to the next slot with **Send**. Direct generator output is controlled separately from the FX wet sends.

Setting a slot to None passes the signal through without any processing, so you do not need to fill all four slots to use the chain.

8 Erae Integration

Erae Sound works with Erae through the current shared connection and layout-sync model. Erae Lab and the device own project slots and keep them synchronized; Erae Sound owns sound presets and uses layout uniqueID values to relate presets to device slots.

Tip: You do not need an Erae to use Erae Sound. The synth works in Erae Lab or as a DAW plugin. Erae-specific modulation sources appear when a compatible layout is active.

8.1 Connection Model

Inside Erae Lab, Erae Sound follows Erae Lab's active device selection and shares the same device connection. In a DAW, Erae Sound uses the active Erae layout context supplied through the normal integration layer.

If multiple devices are connected, choose the active device from Erae Lab.

8.2 Layout Slots and Presets

A preset and a device slot are considered related when they contain the same layout uniqueID.

When **Sync** is enabled:

1. Changing the active slot on the device or in Erae Sound checks the slot layout uniqueID.
2. Erae Sound searches its preset library for a preset with the same embedded layout uniqueID.
3. If it finds one, that preset loads automatically.
4. If it does not find one, Erae Sound applies the slot layout directly and marks the current preset as modified until you save.

When **Sync** is disabled, slot switching applies the slot layout without automatically changing the current sound preset. This is useful in DAW sessions or multi-instance setups where you do not want one hardware slot change to replace a plugin instance's sound.

8.3 Loading Presets With Layouts

When a preset contains an Erae layout and a device is connected:

1. Erae Sound applies the preset locally.
2. Erae Sound checks all device slots for a matching layout uniqueID.
3. If a slot matches, Erae Sound switches the device to that slot and links to it.
4. If no slot matches, Erae Sound sends the layout as a preview and stays unlinked.

If no device is connected, the preset still loads normally. The layout becomes active inside Erae Sound and will be evaluated against the device later if you connect one.

8.4 Assigning a Layout to a Slot

Normal use is automatic, but you can assign the current Erae Sound layout to a real device slot when needed. Long-hold a target slot for about 1.5s, either on the device or in Erae Sound, when you want the current layout inside Erae Sound to become that slot's layout.

8.5 Erae as Modulation Source

After a layout is active, Erae Sound analyses the zones in that layout and creates modulation sources for them. These appear in the Modulation Display alongside internal sources such as envelopes, LFOs, velocity, pressure, and slide.

Typical sources include:

- keyboard X/Y position
- keyboard relative movement
- fader positions
- fader pressure
- buttons and keys with CC outputs

All Erae sources still travel as standard MIDI data, so they remain recordable and editable in your DAW.

8.6 Using Erae Sound without Erae

Erae Sound works fully without connected hardware.

- Presets still load.
- The synth engine, modulation, and FX still work.
- Erae-specific sources stay inactive until a matching layout becomes active.

If you load a preset that was saved with Erae modulation assignments, those assignments are preserved in the preset data and become active again when a matching layout is available.

8.7 What's Next

- To learn how modulation sources connect to parameters, see [Modulation](#).
- To explore saving and recalling patches, see [Presets](#).
- For voice and split configuration, see [Voice and Split](#).

9 Presets

Presets capture your entire Erae Sound configuration in a single file. Loading a preset restores every parameter, effect chain setting, voice configuration, split layout, Erae layout reference, and modulation assignment – exactly as it was when saved.



Preset navigation in the header

9.1 Browsing Presets

9.1.1 Header Navigation

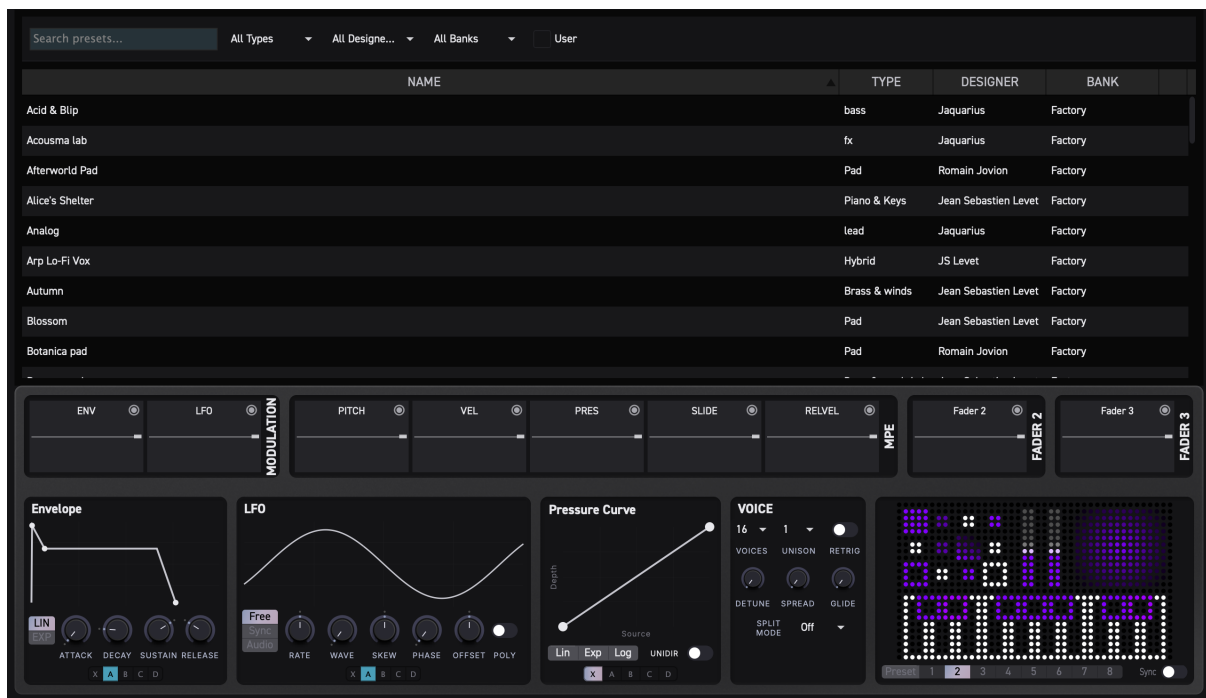
The header bar provides quick access to presets without opening the full library.

- **Preset name** – the center of the header shows the name of the currently loaded preset. Click it to open a dropdown list of all available presets.
- **Dropdown arrow** – click the down-chevron to the left of the preset name to open the same dropdown list.
- **Previous / Next arrows** – use the left and right arrow buttons to step through presets one at a time. This is a fast way to audition presets sequentially.

Selecting a preset from the dropdown loads it directly. The previous/next arrows may ask what to do with unsaved changes before loading another preset.

9.1.2 Library Browser

For more powerful browsing, click the **Library** button (the book icon to the left of the preset navigation area). This opens the library overlay with search, a preset list, and a close button.



Library browser

9.1.2.1 Search Bar

Above the preset list, the search bar lets you narrow results further:

- **Search field** – type any text to filter presets by name. Results update as you type.
- **Types** dropdown – filter by preset type (e.g., Pad, Bass, Synth). Select **All Types** to clear the filter.
- **Designers** dropdown – filter by the creator of the preset. Select **All Designers** to clear the filter.
- **Banks** dropdown – filter by bank. Select **All Banks** to clear the filter.
- **User** toggle – when enabled, only user-created presets are shown (factory presets are hidden).

All filters combine together. For example, you can search for “warm” with the Type set to Pad and the User toggle on to find only your own pad presets with “warm” in the name.

9.1.2.2 Preset List

The main area displays matching presets in a sortable table with these columns:

Column	Description
Name	The preset name
Type	The preset type category

Column	Description
Designer	The creator of the preset
Bank	The preset bank
Delete icon	Remove a user preset (not available for factory presets)

Click a column header to sort by that column. The currently loaded preset is highlighted in the list. Where available, partial-load chips let you load only parts of a preset instead of replacing the whole sound.

To load a preset, click its row or double-click it.

Tip: Factory presets are displayed in a subtler color so you can quickly distinguish them from your own user presets.

9.1.3 Factory and User Presets

Erae Sound separates presets into two ownership types:

- **Factory presets** – bundled sounds installed with Erae Sound. They are read-only and may be refreshed by application/component updates.
- **User presets** – sounds you create, import, or save with **Save As...** These are editable and live in your user preset library.

Factory presets can be loaded, played, and edited temporarily while you design a sound, but the factory preset file itself cannot be renamed, deleted, or overwritten. The library disables direct metadata editing and deletion for factory rows, and the header **Save** action will not overwrite a factory preset.

To keep changes made from a factory preset, use **Save As...** and give the sound a new name. Erae Sound writes an editable user preset and leaves the factory original unchanged.

Factory content updates may add or replace read-only factory presets. Editable user presets and **Save As...** copies are preserved, even if they share a similar filename.

9.2 Saving Presets

To save the current state as a preset or preset variation:

1. Click the **Save** button (floppy disk icon) in the header, to the right of the preset navigation area.
2. The preset name becomes an editable text field. Type a new name, or keep the existing one.
3. Press **Enter** or click the **checkmark** button to confirm.

The save button flashes briefly to confirm the preset was saved.

You can also right-click the preset area to open the preset context menu:

- **Save** – immediately overwrites the current user preset when it is editable.
- **Save As...** – enters the name-entry flow and creates a new user preset.
- **Import Preset...** – imports one or more .espreset files into the user preset library.
- **Open Presets Folder** – reveals the preset folder in the file browser.

For factory presets, **Save** is disabled because the preset is read-only. Use **Save As...** to store your edited version as a user preset.

The header save button always uses the name-entry flow. If the current preset is dirty, an asterisk (*) appears after its name. Previous/next navigation may prompt **Save**, **Don't Save**, or **Cancel** before loading another preset. Dropdown selection currently loads the chosen preset directly.

9.2.1 Canceling a Save

- Press **Escape** to cancel without saving.
- Click anywhere outside the name field to cancel.

9.2.2 Save Warnings

Erae Sound validates the preset name before saving:

- **Empty name** – you will see a warning: “Name cannot be empty.”
- **Read-only factory preset** – if you try to save over a factory preset with the same name, you will see: “Cannot overwrite read-only preset.” Use **Save As...** or give it a different name to save your own version.
- **Duplicate name** – if another preset already has the same name, you will see: “A preset with this name already exists.” Choose a unique name.

Tip: To create a variation of a factory preset, load it, tweak the settings, then choose **Save As...** and type a new name. Your version is saved as a user preset while the factory original stays untouched.

9.3 Organizing Presets

9.3.1 Tags and Filters

Preset metadata can store liked/color information, and current library filters may expose a subset such as **Liked**, **Red**, **Orange**, and **Yellow**. The current UI does not expose a full color-tag assignment workflow for every stored color.

9.3.2 Editing Metadata

For user presets, you can edit metadata directly in the library list. Double-click the **Name**, **Type**, or **Designer** cell to enter edit mode, type your changes, and press Enter to confirm. This makes it easy to re-categorize presets or fix typos without leaving the library view.

Factory preset metadata cannot be edited. Load a factory preset and use **Save As...** if you want an editable copy.

9.3.3 Deleting Presets

To delete a user preset, click the **delete icon** (X) on the right side of its row in the library. A confirmation dialog will appear before the preset is permanently removed.

Factory presets cannot be deleted from the library. They are managed by Erae Sound's installed factory content.

9.3.4 Importing Presets

Import Preset... copies selected .espreset files into your user preset library. If a name collides with an existing preset, Erae Sound adds a suffix to keep both files. When several presets are imported at once, the first imported preset is loaded automatically.

9.4 Preset File Format

Erae Sound presets use the .espreset file extension. Each preset file is self-contained and stores:

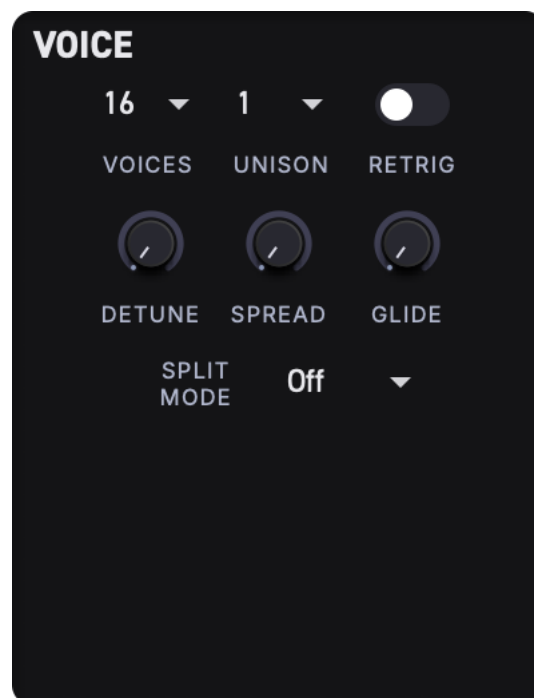
- All synthesizer parameter values
- FX chain configuration (effect types, slot settings, routing)
- Voice settings (polyphony, unison, retrigger, detuning, stereo spread)
- Split configuration
- Erae layout reference
- Modulation assignments

Loading a preset restores the complete synth state. You can share .espreset files with other Erae Sound users – simply copy the file and load it on another system.

Tip: Preset metadata such as type, designer, and bank is embedded in the file. When you share a preset, the recipient will see all of this information in their library.

10 Voice and Split

The Voice and Split panels sit in the bottom section of the Synth / FX view. Together they control how many notes can play at once, how those notes are stacked and spread, and how the keyboard is divided between Generator A and Generator B.



Voice and Split panels in the bottom bar

10.1 Voice Panel

The Voice panel sets polyphony, unison, and portamento for the entire instrument.

10.1.1 Parameters at a Glance

Parameter	Control	Range	Default	Description
Voices	Dropdown	1 – 16	16	Maximum number of notes that can sound at once
Unison	Dropdown	1 – 8	1	Number of stacked voices per note
Retrig	Toggle	On / Off	Off	Restart envelopes when a new note is played
Detune	Knob	0.0 – 100.0 cents	0.0	Pitch spread between unison voices
Spread	Knob	0.00 – 1.00	0.00	Stereo width of unison voices
Glide	Knob	0.00 – 1.00	0.00	Portamento time between consecutive notes

10.1.2 Voices

Voices sets the maximum polyphony – the number of notes that can sound simultaneously. With **Voices** set to 1, the synth behaves as a monophonic instrument: each new note cuts the previous one. At 16, up to sixteen independent notes can ring out at once.

Tip: Lowering the voice count saves CPU. If your patch only needs a few notes at a time, try 4 or 8 instead of the full 16.

10.1.3 Unison

Unison stacks multiple copies of each note on top of one another. Setting **Unison** to 4, for example, plays four voices every time you press a single key.

Unison voices share the same note but are spread apart in pitch and stereo position by the **Detune** and **Spread** controls (see below). The total number of voices used is **Voices x Unison**, so keep an eye on both settings if CPU is a concern.

10.1.4 Retrig

When **Retrig** is turned on, every new note restarts all envelopes from the beginning – even when playing legato or in mono mode. When it is off, held notes allow envelopes to continue smoothly into the next note, which is useful for legato lead lines.

10.1.5 Detune

Detune sets how far apart the unison voices are spread in pitch, measured in cents (hundredths of a semitone). At 0.0, all unison voices play exactly the same pitch. Increasing the value creates a wider, chorused sound.

Tip: A small **Detune** of 5 – 15 cents gives a classic analog “thickness.” Values above 50 start to sound more like a deliberate detuned effect.

10.1.6 Spread

Spread controls the stereo positioning of unison voices. At 0.00, all voices sit in the center. At 1.00, voices are distributed across the full stereo field from hard left to hard right.

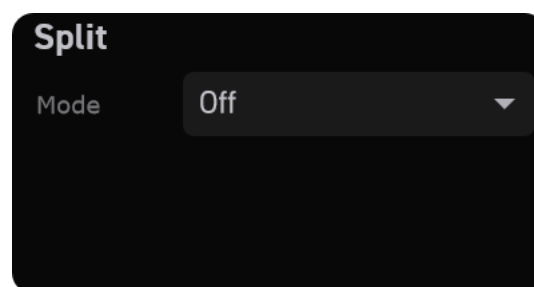
10.1.7 Glide

Glide (portamento) smoothly slides the pitch from one note to the next instead of jumping instantly. At 0.00, notes change pitch immediately. Turning the knob up increases the glide time, producing longer, more noticeable slides.

Glide works well in combination with a low **Voices** count for expressive mono or duo leads.

10.2 Split Panel

The Split panel divides incoming notes between Generator A and Generator B. This lets you layer different sounds across the keyboard or assign separate timbres to different MIDI channels.



Split panel

10.2.1 Split Mode

Mode selects how notes are routed:

Mode	Behavior
Off	Every note plays through both generators
Note Split	Notes are divided by pitch at a chosen split point
MPE Split	Notes are divided by MIDI channel

When **Mode** is set to Off, the **Split** point knob is hidden since it is not needed.

10.2.2 Note Split

In `Note Split` mode, a **Split** knob and note-name display appear below the mode selector. The split point can be set anywhere from MIDI note 0 (C-1) to 127 (G9), and the display shows the corresponding note name (for example, C4).

- Notes **below** the split point are sent to **Generator A** only.
- Notes **at or above** the split point are sent to **Generator B** only.

This is perfect for creating keyboard splits – for instance, a bass sound on the left hand and a pad on the right.

Tip: The default split point is C4 (middle C), which is a natural place to divide most keyboard layouts.

10.2.3 MPE Split

In `MPE Split` mode, notes are routed by their MIDI channel rather than their pitch:

- By default, MIDI channels **1 – 8** are sent to **Generator A**.
- By default, MIDI channels **9 – 16** are sent to **Generator B**.

The **Split Ch** control moves the split channel and is clamped to channels 2 through 14. Its default is 8, which produces the channel split above. This is especially useful with MPE controllers (like the Erae) that assign each finger to a unique MIDI channel.

Tip: See [Erae Integration](#) for details on configuring Erae zones to work with MPE Split.

10.3 MPE Support

Erae Sound is built around MPE (MIDI Polyphonic Expression). Every active voice responds independently to three expressive dimensions:

- **Pitch bend** – per-note pitch deviation with a range of 48 semitones, allowing dramatic pitch sweeps on individual notes.
- **Pressure** – per-note aftertouch, often mapped to filter cutoff, amplitude, or other timbral parameters through the modulation system.
- **Slide** – per-note timbre control (CC 74), typically driven by vertical finger movement on an MPE surface.

These three signals are available as modulation sources throughout Erae Sound. See [Modulation](#) for how to route them to any parameter.

Tip: Even without an MPE controller, you can still use Erae Sound's voice and split features normally. Standard MIDI keyboards work with polyphonic note and channel aftertouch as expected.

10.4 Practical Recipes

10.4.1 Thick Unison Lead

1. Set **Voices** to 1 (mono).
2. Set **Unison** to 4.
3. Dial **Detune** to around 10 – 20 cents.
4. Set **Spread** to 0.50 for a wide stereo image.
5. Turn **Retrig** off and add a short **Glide** for smooth legato transitions.

10.4.2 Split Keyboard (Bass + Pad)

1. Open the Split panel and set **Mode** to Note Split.
2. Set the **Split** point to C3.
3. Configure Generator A with a bass preset.
4. Configure Generator B with a pad preset.
5. Play bass notes with your left hand and pad chords with your right.

10.4.3 MPE Dual-Timbre Performance

1. On your MPE controller, assign Zone 1 to MIDI channels 1–8 and Zone 2 to channels 9–16.
2. In the Split panel, set **Mode** to MPE Split.
3. Design a different sound on Generator A and Generator B.
4. Each zone now plays its own timbre with full per-note expression.

11 Shortcuts and Interactions

This chapter is a quick-reference guide to every keyboard shortcut, mouse gesture, and interaction pattern available in Erae Sound. Keep it handy while you work.

11.1 Keyboard Shortcuts

Action	macOS	Windows / Linux
Undo	Cmd + Z	Ctrl + Z
Redo	Cmd + Shift + Z	Ctrl + Y

These shortcuts are available globally – they work no matter which tab or panel is in focus.

Press **Escape** to close the preset library overlay or Modulation Overview when either overlay is open.

11.2 Knob and Slider Interactions

Every rotary knob and slider in Erae Sound responds to the same set of mouse gestures.

Gesture	What it does
Click + drag (up/down or left/right)	Adjust the parameter value. Drag up or right to increase, down or left to decrease.
Shift + drag	Fine adjustment – the knob moves at one-tenth of the normal speed for precise edits.
Double-click	Reset the parameter to its default value.
Right-click	Open a context menu with a Reset to Default option.
Mouse wheel	Increment or decrement the value one step at a time.

Gesture	What it does
Hover	Display a value tooltip just below the knob (see Parameter Tooltips below).

Tip: Hold **Shift** while dragging any knob to dial in exact values. This is especially useful for filter frequencies and envelope times.

11.3 Parameter Selection

Clicking a knob does more than change its value – it also tells Erae Sound which parameter you want to modulate. The Modulation Display and modulator controls (bottom half of the Synth and FX tabs) update automatically to reflect the selected parameter.

Gesture	What it does
Click a knob label	Select that parameter for modulation editing. The Modulation Display updates to show all sources connected to it.
Right-click a knob	Select that parameter for modulation editing (same as clicking the label).
Right-click an envelope or LFO knob (Attack, Decay, Rate, etc.)	Select that modulator sub-parameter. The Modulation Display drills down to show its connections.
Click an envelope or LFO label (Attack, Decay, Rate, etc.)	Select that modulator sub-parameter, same as clicking the slider itself.

For full details on modulation routing, see [Modulation](#).

11.4 Modulation Display Interactions

The Modulation Display (middle strip of the Synth and FX tabs) shows oscilloscope-style visualizers for each modulation source connected to the selected parameter. Each visualizer has a built-in depth fader and a connection point.

11.4.1 Depth Faders

Gesture	What it does
Click + drag inside a visualizer	Set the modulation depth for that source. Drag up for positive depth, down for negative depth. The center line is zero.
Double-click a visualizer	Reset the depth to zero.
Right-click the depth fader on a visualizer	Open the Host Slot assignment menu so a DAW can automate this depth. See DAW Host Automation .
Hover a knob in the generator or FX section	The knob displays a depth indicator showing how much modulation is applied, and the visualizers temporarily show that knob's current modulation depths with a highlighted overlay.

Depth values are bipolar, ranging from -100% to +100%. Positive depth is shown in yellow, negative depth in red.

11.4.2 Cross-Modulation Connections

Each visualizer has a small **connection point** (circle) in its top-right corner. You can wire modulation sources together by dragging between these points.

Gesture	What it does
Drag from one connection point to another	Create a cross-modulation connection between those two sources. A curved arrow appears to show the link.
Click + drag a cross-mod fader	Adjust the cross-modulation depth (the colored fader that appears after a connection is made).
Double-click a cross-mod fader	Remove the cross-modulation connection.

11.4.3 Hover Highlighting

Gesture	What it does
Hover over a source visualizer	Highlights the corresponding zone on the Erae layout thumbnail (for Erae-linked sources).

Gesture	What it does
Hover over an Erae zone on the layout thumbnail	Highlights the matching source visualizers in the Modulation Display.

This bidirectional highlighting makes it easy to see which Erae zones feed which modulation sources. See [Erae Integration](#) for more on the layout thumbnail.

11.5 Parameter Tooltips

When you hover over or drag a knob, a small tooltip appears just below it showing the current value in a human-readable format. The display format depends on the parameter type:

Parameter type	Tooltip format	Example
General (level, mix, depth, etc.)	Percentage	75%
Oscillator pitch	Note name + octave	C4, F#3
Filter cutoff	Frequency (Hz or kHz)	440 Hz, 2.5 kHz
LFO rate (free-running)	Frequency in Hz	0.25 Hz, 4.0 Hz
LFO rate (tempo-synced)	Note division	1/4, 1/8 dot

The tooltip appears on hover and stays visible while you drag. It disappears when you move the mouse away from the knob.

11.6 Visual Feedback Summary

Erae Sound provides consistent visual cues across all interactive controls:

Control state	What you see
Normal	Grey track with accent-colored value arc.
Hover	Track brightens slightly; a subtle outer glow appears around the knob.
Dragging	Value arc brightens further; the glow intensifies.

Control state	What you see
Modulated	Modulator sliders (Attack, Rate, etc.) display a live offset indicator showing real-time modulation from MIDI sources.
Disabled	The knob is dimmed to 40% opacity and does not respond to input.

11.7 Quick Reference Card

I want to...	Do this
Undo my last change	Cmd + Z (Mac) or Ctrl + Z (Win/Linux)
Redo an undone change	Cmd + Shift + Z (Mac) or Ctrl + Y (Win/Linux)
Make a fine adjustment	Hold Shift while dragging a knob
Reset a knob to default	Double-click it, or right-click and choose Reset to Default
Select a parameter for modulation	Click the knob's label, or right-click the knob
Set modulation depth	Drag up or down inside the source visualizer
Reset modulation depth to zero	Double-click the source visualizer
Automate a modulation depth from the DAW	Right-click the depth fader, then pick Auto-assign or a specific slot
Create a cross-mod connection	Drag from one visualizer's connection point to another
Remove a cross-mod connection	Double-click the cross-mod fader
Scroll a value by small steps	Use the mouse wheel over a knob
Select a modulator sub-parameter	Click its knob or its label text
Close an overlay	Press Escape

11.8 Layout Bar Interactions

When an Erae layout bar is visible, clicking a slot previews or switches to that slot according to the current Sync state. Long-hold a slot for about 1.5s to assign the current Erae Sound layout to that real device slot.

12 Troubleshooting

This chapter covers the most common issues you may encounter when using Erae Sound and how to resolve them. If your problem is not listed here, please visit the Embodme support page for further assistance.

12.1 Problem: Plugin doesn't appear in DAW

After installing Erae Sound, your DAW may not list it among available instruments. First, verify that the plugin files are in the correct location for your platform:

- **macOS:** ~/Library/Audio/Plug-Ins/VST3/
- **Windows:** %ProgramFiles%\Common Files\VST3\
- **Linux:** ~/.vst3/

Once you have confirmed the files are in place, run a plugin rescan from your DAW's preferences or plugin manager. On macOS, the system Gatekeeper may quarantine newly downloaded plugins – if the plugin still does not appear, open **System Settings > Privacy & Security** and allow Erae Sound to run. See [Installation](#) for full setup instructions.

12.2 Problem: No sound

If Erae Sound loads but produces no audio, check the following:

1. **MIDI routing** – Make sure your DAW is sending MIDI to the Erae Sound track. The instrument needs to receive MIDI note data to produce sound.
 2. **Preset** – Verify that a preset is loaded. An empty or uninitialized state will not generate audio. See [Presets](#) for how to browse and load presets.
 3. **Vol knob** – Check that the master **Vol** knob in the header bar is turned up. If it is set to its minimum value, the output will be silent.
 4. **VU meter** – Look at the VU meter in the header. If it shows activity, the synth is producing sound and the issue is likely downstream in your DAW's mixer or audio routing.
-

12.3 Problem: High CPU usage

Erae Sound's CPU consumption depends primarily on voice count and active effects. To reduce load:

- Lower the **Voices** value in the Voice panel. Fewer simultaneous voices means less processing. See [Voice and Split](#) for details on voice management.
 - Disable any effects you are not using by setting unused FX slots to **None**. Each active effect adds to CPU overhead. See [Effects](#).
 - Increase your audio interface buffer size in your DAW's audio settings. A larger buffer (e.g., 512 or 1024 samples) gives the CPU more time to process each block of audio.
-

12.4 Problem: Erae not connecting

If Erae Sound does not detect your Erae controller:

- Confirm that the Erae is connected to your computer via USB and is powered on.
- Current builds negotiate the Erae connection automatically through Erae Lab. If the connection does not appear, unplug and reconnect the USB cable, then restart Erae Lab if needed.
- If using Erae Sound in a DAW, make sure Erae Lab is running when you need device-backed layout context.

See [Erae Integration](#) for a full overview of how Erae Sound communicates with the Erae.

12.5 Problem: Audio glitches or crackling

Clicks, pops, or crackling during playback usually indicate that your system cannot process audio fast enough. To resolve this:

- Increase your audio interface buffer size. A setting of 512 or 1024 samples is a good starting point for stable playback.
 - Reduce polyphony by lowering the **Voices** parameter in the Voice panel. See [Voice and Split](#).
 - Close other CPU-intensive applications running on your system. Background tasks such as web browsers, video editors, or other plugins competing for CPU time can cause audio dropouts.
-

12.6 Problem: Preset won't save

If you are unable to save a preset, check for these common causes:

- The preset name field must not be empty. Enter a name before saving.
- Factory presets are read-only and cannot be overwritten, renamed, or deleted. If you want to keep changes made from a factory preset, use **Save As...** and give the sound a new name.
- Duplicate names may cause conflicts. If a preset with the same name already exists in your user library, choose a different name or confirm that you want to replace the existing preset.
- Demo mode can restrict saving after the demo expires. Activate a license or restart the allowed demo flow if available.

See [Presets](#) for more details on managing your preset library.

12.7 Problem: CC macros don't respond in a DAW

If a key's CC outputs (Key Pressure, X, Y) or a fader's CCs reach Erae Sound but the matching macro does not move, the cause is almost always a MIDI channel mismatch introduced by the host.

Most DAWs collapse incoming MIDI to a single channel (typically channel 1) before delivering it to a VST or AU instrument, unless the track is explicitly configured for MPE. Ableton Live, Logic without per-track MPE, Cubase, FL Studio, and Reaper all behave this way to some degree. The plugin receives the CC value but on a different channel than the layout assigned it to, so the macro mapping does not match.

To resolve:

- **Use a single MIDI channel for all macro CCs in a layout** when the layout is intended for a DAW plugin. Channel 1 is the safest default.
- **Or enable MPE mode on the DAW track**, which preserves per-channel routing (Ableton Live 11+, Logic Pro, Cubase 12+, Bitwig, Reaper).
- **Avoid assigning the same CC number to elements on different channels** within one layout. Even with a fallback in place, the plugin cannot disambiguate which element a CC value targets when the host strips the channel.

See [Appendix C: DAW Setup](#) in the Erae 2 manual for per-DAW MPE configuration steps.

12.8 Problem: Modulation not working

If a modulation source (envelope or LFO) does not seem to affect a parameter:

- Make sure you have selected the target parameter by clicking its knob first. The selected parameter is shown in the Modulation Display at the bottom of the interface.
- Check that the **depth** fader in the Modulation Display is not set to zero. A depth of zero means the modulation source will have no effect on the parameter, regardless of its configuration.
- Verify that the modulation source itself is properly configured. For example, an envelope with all stages set to the same level, or an LFO with its rate at zero, will not produce meaningful modulation.

See [Modulation](#) for a complete guide to setting up modulation routing.

12.9 Problem: Licensing or demo activation fails

- If a magic link does not work, request a fresh link and open it on the same machine where Erae Sound is running.
 - If you reached the machine limit, deauthorize another machine from the auth dialog or contact support.
 - If the demo expired, saving and some editing flows may be disabled until you activate a license.
-

12.10 In-App Bug Reports

When available, the bug report button opens an in-app report form. Reports can include the current preset, Erae layout context, current-session device diagnostics, app metadata, and recent logs. Reconnect the device and reproduce the issue before submitting when possible so the report captures the relevant timeline.

If the button is not visible, contact support and include your Erae Sound version, operating system, host application, connected Erae model, and steps to reproduce.

12.11 Stuck Notes

If you are running inside Erae Lab, stop playback, release all held notes, then reconnect the Erae or MIDI controller if notes remain stuck. In plugin mode, use your DAW's panic/all-notes-off command because the host owns final MIDI routing. If stuck notes repeat after layout switching, submit a bug report with device diagnostics if available.

13 Appendix A: Parameter Reference

This appendix lists every user-facing parameter in Erae Sound, organized by section. Generators A and B share an identical set of parameters – they are listed once below and apply to both.

All parameters support modulation unless otherwise noted. For details on assigning envelopes, LFOs, and MPE sources to parameters, see Chapter 6 (Modulation).

13.1 Generator – Oscillator 1

Parameter	Range	Default	Description
COARSE	0 – 127 (MIDI note)	60 (C4)	Sets the base pitch of Oscillator 1 in semitone steps.
FINE	-1.00 – +1.00 semitones	0.00	Fine-tunes Oscillator 1 pitch in fractions of a semitone.
SHAPE	0.00 – 1.00	0.50	Morphs the oscillator waveform continuously from sine through triangle and pulse to sawtooth.
FOLD	0.00 – 1.00	0.00	Applies wavefolding to the oscillator output for added harmonic content.
VOL	0.00 – 1.00	about -12 dB	Sets the output level of Oscillator 1 before it enters the filter stage.

13.2 Generator – Oscillator 2

Parameter	Range	Default	Description
COARSE	0 - 127 (MIDI note)	60 (C4)	Sets the base pitch of Oscillator 2 in semitone steps.
FINE	-1.00 - +1.00 semitones	0.00	Fine-tunes Oscillator 2 pitch in fractions of a semitone.
SHAPE	0.00 - 1.00	0.50	Morphs the oscillator waveform continuously from sine through triangle and pulse to sawtooth.
FOLD	0.00 - 1.00	0.00	Applies wavefolding to the oscillator output for added harmonic content.
VOL	0.00 - 1.00	about -12 dB	Sets the output level of Oscillator 2 before it enters the filter stage.

13.3 Generator - Filter 1

Parameter	Range	Default	Description
FREQ	0 - 143 (MIDI note, approx. 8 Hz - 32 kHz)	93 (approx. 1.4 kHz)	Sets the cutoff frequency of Filter 1.
RESO	0.00 - 1.00	0.00	Controls the resonance (emphasis) at the cutoff frequency.
TYPE	0.00 - 1.00	0.50	Morphs the filter response continuously: Bandpass at 0.0, Lowpass at 0.5, Highpass at 1.0, with smooth blending between adjacent types.
POLES	2 / 4	4	Toggles between 2-pole (12 dB/oct) and 4-pole (24 dB/oct) filter slopes. Not modulatable.

13.4 Generator – Filter 2

Parameter	Range	Default	Description
FREQ	0 – 143 (MIDI note, approx. 8 Hz – 32 kHz)	93 (approx. 1.4 kHz)	Sets the cutoff frequency of Filter 2.
RESO	0.00 – 1.00	0.00	Controls the resonance (emphasis) at the cutoff frequency.
TYPE	0.00 – 1.00	0.50	Morphs the filter response continuously: Bandpass at 0.0, Lowpass at 0.5, Highpass at 1.0, with smooth blending between adjacent types.
POLES	2 / 4	4	Toggles between 2-pole (12 dB/oct) and 4-pole (24 dB/oct) filter slopes. Not modulatable.
NOISE	0.00 – 1.00	0.00	Injects pink noise into Filter 2's input for adding texture or breathiness.

13.5 Generator – Control Bar

Parameter	Range	Default	Description
TZFM	0.00 – 1.00	0.00	Controls the amount of through-zero frequency modulation from Oscillator 2 into Oscillator 1, producing metallic, bell-like timbres.

Parameter	Range	Default	Description
Routing	Serial/ Parallel/ Split	Serial	Selects how the two filters are connected: Serial routes the mixed oscillator signal through Filter 1, then Filter 2; Parallel sends the mixed signal to both filters independently; Split sends Oscillator 1 to Filter 1 and Oscillator 2 to Filter 2. Not modulatable.
F1/F2	0.00 – 1.00	0.50	Crossfades between the outputs of Filter 1 and Filter 2 before the generator output. At 0.0 only Filter 1 is heard; at 1.0 only Filter 2.
Vol	0.00 – 1.00	1.00	Sets the overall output level of the generator after the filter stage. The default envelope depth for this parameter is 1.0, so it responds to the amplitude envelope out of the box.

13.6 FX Slot – Common Parameters

Every FX slot (1 through 4) has these shared routing parameters, regardless of which effect type is loaded.

Parameter	Range	Default	Description
Type	None, Distortion, Chorus, Flanger, Phaser, Delay, Reverb, Shimmer, Compressor, Param EQ	None	Selects the effect algorithm loaded into this slot. Not modulatable.
BYP	Off / On	Off	Bypasses the effect, passing audio through unprocessed. Not modulatable.
D/W A	0.00 – 1.00	0.50 (Reverb: 0.33)	Sets the wet send level from Generator A into this effect.
D/W B	0.00 – 1.00	0.50 (Reverb: 0.33)	Sets the wet send level from Generator B into this effect.
Output	0.00 – 1.00	1.00	Controls the volume of this effect's output mixed into the main audio bus.
Send	0.00 – 1.00	0.00	Controls how much of this effect's output is sent to the next FX slot's input.

13.7 FX: Distortion

Multi-algorithm distortion with continuous morphing between circuit models and low/high tone controls.

Parameter	Range	Default	Description
Drive	0.00 – 1.00	0.30	Sets the amount of gain applied before the distortion circuit.

Parameter	Range	Default	Description
Type	0.00 – 1.00	0.00	Morphs continuously between six distortion algorithms: Clean Boost, Tube Screamer, RAT, Big Muff, Fuzz Face, and Tape Saturation. Adjacent algorithms blend smoothly.
Low	0.00 – 1.00	0.50	Post-distortion low tone control. Center position is flat.
High	0.00 – 1.00	0.50	Post-distortion high tone control. Center position is flat.

13.8 FX: Chorus

Juno-style BBD chorus with dual bucket-brigade delay lines.

Parameter	Range	Default	Description
Pos	0.00 – 1.00	0.50	Manual position within the chorus delay/modulation character.
Stereo	0.00 – 1.00	1.00	Adjusts the stereo spread of the chorus by controlling the phase relationship between the left and right delay lines.

13.9 FX: Flanger

Through-zero flanger with analog-style feedback path.

Parameter	Range	Default	Description
Pos	0.00 – 1.00	0.50	Sets the manual delay/sweep position.

Parameter	Range	Default	Description
Fdbk	0.00 – 1.00	0.30	Sets the amount of delayed signal fed back into the input, intensifying the comb-filtering effect.
Stereo	0.00 – 1.00	0.25	Offsets the LFO phase between the left and right channels for stereo width.

13.10 FX: Phaser

4-stage analog-modeled allpass phaser.

Parameter	Range	Default	Description
Pos	0.00 – 1.00	0.50	Sets the manual notch position.
Fdbk	0.00 – 1.00 (maps to 0 – 95%)	0.00	Feeds the phaser output back into the input for a more resonant, pronounced sweep.
Stereo	0.00 – 1.00	0.25	Offsets the LFO phase between the left and right channels for stereo width.

13.11 FX: Compressor

Dynamics processor with threshold, ratio, timing, and makeup gain.

Parameter	Range	Default	Description
Thresh	0.00 – 1.00	0.50	Sets the level where compression begins.
Ratio	0.00 – 1.00	0.30	Sets compression strength.
Atk	0.00 – 1.00	0.20	Sets compression attack time.
Rel	0.00 – 1.00	0.30	Sets compression release time.
Makeup	0.00 – 1.00	0.00	Adds gain after compression.

13.12 FX: Param EQ

Two-band parametric equalizer.

Parameter	Range	Default	Description
Freq 1	0.00 – 1.00	0.30	Center frequency of EQ band 1.
Gain 1	0.00 – 1.00	0.50	Gain of EQ band 1. Center is neutral.
Q 1	0.00 – 1.00	0.30	Width/resonance of EQ band 1.
Freq 2	0.00 – 1.00	0.70	Center frequency of EQ band 2.
Gain 2	0.00 – 1.00	0.50	Gain of EQ band 2. Center is neutral.
Q 2	0.00 – 1.00	0.30	Width/resonance of EQ band 2.

13.13 FX: Delay

Analog-style delay with character morphing and stereo spread.

Parameter	Range	Default	Description
Time	0.00 – 1.00 (maps to 100 – 2000 ms)	0.30	Sets the delay time.
Fdbk	0.00 – 1.00	0.40	Controls the amount of delayed signal fed back into the delay line, creating repeating echoes.
Char	0.00 – 1.00	0.30	Morphs the delay character from clean digital through tape-style warmth to lo-fi degradation, adding saturation, filtering, and wow/flutter.
Stereo	0.00 – 1.00	0.00	Controls the stereo spread of the delay, from mono to ping-pong.
Tone	0.00 – 1.00	0.50	Tilts the frequency balance of the delayed signal from dark to bright.

13.14 FX: Reverb

Dattorro plate reverb algorithm for rooms, halls, and plates.

Parameter	Range	Default	Description
Decay	0.00 – 1.00	0.50	Controls how long the reverb tail sustains before fading to silence.
Pre-Dly	0.00 – 1.00	0.00	Adds a short delay before the reverb onset, creating a sense of distance between the dry sound and the reverb.
Damp	0.00 – 1.00	0.50	Attenuates high frequencies in the reverb tail; higher values produce a warmer, darker reverb.
Width	0.00 – 1.00	1.00	Controls the stereo spread of the reverb output, from mono to full stereo.
Mod	0.00 – 1.00	0.30	Adds subtle pitch modulation inside the reverb tank, reducing metallic artifacts and adding lushness.

13.15 FX: Shimmer

Shimmer reverb with pitch-shifting feedback for ambient and evolving textures.

Parameter	Range	Default	Description
Size	0.00 – 1.00	0.50	Controls the overall size of the reverb space.
Fdbk	0.00 – 1.00	0.70	Sets the feedback amount within the reverb network, affecting both decay length and how much the pitch-shifted signal accumulates.

Parameter	Range	Default	Description
Pitch	0.00 - 1.00	0.50	Controls the pitch-shift interval applied to the reverb feedback path, creating rising or falling harmonic layers.
Warp	0.00 - 1.00	0.00	Applies spectral warping and detuning to the pitch-shifted feedback, adding dissonance and otherworldly textures.

13.16 Voice

Parameter	Range	Default	Description
Voices	1 - 16	16	Sets the maximum number of simultaneous polyphonic voices. Not modulatable.
Unison	1 - 8	1	Sets the number of unison voices stacked per note. Not modulatable.
Retrig	Off / On	Off	When enabled, re-triggers envelopes when a note is stolen or retriggered. Not modulatable.
Detune	0.0 - 100.0 cents	0.0	Sets the maximum random detuning spread between unison voices, in cents. Not modulatable.
Spread	0.00 - 1.00	0.00	Controls the stereo spread of unison voices across the stereo field. Not modulatable.

Parameter	Range	Default	Description
Glide	0.00 – 1.00	0.00	Sets the portamento time for pitch gliding between consecutive notes. At 0.0 glide is off; at 1.0 the glide is at its longest. Not modulatable.

13.17 Split

Parameter	Range	Default	Description
Mode	Off, Note Split, MPE Split	Off	Selects the split mode. Off sends all notes to both generators. Note Split divides the keyboard at the split point. MPE Split assigns notes based on MPE channel. Not modulatable.
Split Point	0 – 127 (MIDI note)	60 (C4)	Sets the keyboard split point for Note Split mode. Notes below this value go to Generator A; notes at or above go to Generator B. Only visible when Mode is set to Note Split. Not modulatable.
Split Ch	2 – 14	8	Sets the MPE Split channel boundary. Only visible when Mode is set to MPE Split. Not modulatable.

13.18 Master

Parameter	Range	Default	Description
Vol	0.00 – 1.00	0.65	Controls the master output volume of the entire synth, located in the header bar. A dB-to-linear curve is applied internally. Not modulatable.

13.19 Host Automation Slots

The DAW automation list also includes 64 generic slots named Slot 1 ... Slot 64 (parameter IDs `host_slot_0` through `host_slot_63`). These slots are inert by default and only carry a value when a modulation depth has been assigned to them from inside Erae Sound.

Parameter	Range	Default	Description
Slot 1 .. Slot 64	-1.00 – +1.00	0.00	Bipolar host-automation slot. When bound to a modulation depth, its value drives that depth in both directions (DAW automation -> depth, and manual depth changes -> DAW lane). Bound from the right-click menu on any depth fader. See DAW Host Automation .

14 Appendix B: MIDI Reference

This appendix lists every MIDI message that Erae Sound responds to, organized by category. Use it as a quick-reference when setting up controllers, recording automation in your DAW, or troubleshooting modulation routing.

For details on how to assign these sources to parameters, see [Modulation](#). For Erae-specific setup, see [Erae Integration](#).

14.1 Standard MIDI Sources

Erae Sound listens for five standard MIDI message types. Each one is available as a modulation source for every parameter in the synth.

Source	Modulation Display Label	MIDI Message	Value Range	Description
Velocity	VEL	Note On velocity	0 - 127 (normalized to 0.0 - 1.0)	How hard you strike the key. Captured once at note-on and held for the life of the note.
Release Velocity	RELVEL	Note Off velocity	0 - 127 (normalized to 0.0 - 1.0)	How quickly you release the key. Captured once at note-off. Useful for controlling release character.

Source	Modulation Display Label	MIDI Message	Value Range	Description
Pressure	PRES	Channel Pressure (Aftertouch)	0 – 127 (normalized to 0.0 – 1.0)	Continuous pressure applied while holding a note. Updates in real time. In MPE mode, this is per-voice.
Slide	SLIDE	CC 74 (MPE Timbre)	0 – 127 (normalized to 0.0 – 1.0)	Vertical finger position on an MPE surface. Updates continuously while a note is held.
Pitch Bend	PITCH	Pitch Bend	14-bit (normalized to -1.0 – +1.0)	Pitch deviation from the played note. In MPE mode, this is per-voice. See the Pitch Bend section below for range details.

Note: Velocity and Release Velocity are “snapshot” sources – they capture a single value at note-on or note-off and hold it. The other sources stream continuous values that update throughout the note.

14.2 Pitch Bend Range

Erae Sound uses a fixed pitch bend range of **48 semitones** (four octaves in either direction). This wide range is designed for expressive MPE performance, where per-note pitch gestures benefit from a large sweep.

The pitch bend range applies equally to all voices and affects both standard pitch bend and MPE per-note pitch bend.

14.3 MPE (MIDI Polyphonic Expression)

Erae Sound is an MPE instrument. It uses a **lower-zone MPE configuration** with 15 member channels (channels 2–16), plus channel 1 as the MPE manager channel.

14.3.1 Per-Voice Expression

In MPE mode, each voice responds independently to three expressive dimensions:

Dimension	MIDI Message	Per-Voice?	Description
Pitch Bend	Pitch Bend (per channel)	Yes	Smooth pitch deviation per finger. Fixed range of 48 semitones.
Pressure	Channel Pressure (per channel)	Yes	Aftertouch per finger. Each note responds to the pressure on its own MPE channel.
Slide	CC 74 (per channel)	Yes	Timbre control per finger. Typically mapped to vertical finger movement on the playing surface.

14.3.2 Channel Allocation

Erae Sound allocates voices across MIDI channels 2–16 (the 15 member channels of the lower MPE zone). When a new note arrives on a member channel, Erae Sound assigns it to an available voice. If all voices are in use, voice stealing kicks in – the oldest or quietest voice is reassigned to the new note.

14.3.3 MPE Split

When **MPE Split** mode is active in the Split panel, notes are routed by channel:

- Channels **1 – 8** play through **Generator A**
- Channels **9 – 16** play through **Generator B**

This lets you play two different timbres from separate zones on an MPE controller. See [Voice and Split](#) for setup details.

14.3.4 Using Erae Sound without MPE

Erae Sound also works with standard (non-MPE) MIDI controllers. In that case, pitch bend and channel pressure are shared across all voices on the same MIDI channel, rather than being per-voice. Velocity and release velocity work identically in both modes.

14.4 Erae-Sourced MIDI CCs

When an Erae controller is connected and a layout is active, Erae Sound discovers all the control zones in the layout and registers them as additional modulation sources. These sources appear in the Modulation Display alongside the standard sources listed above.

14.4.1 How CC Numbers Are Assigned

The specific MIDI CC numbers used by Erae sources **depend entirely on your Erae layout configuration**. Erae Sound reads the layout and automatically maps each zone to the correct CC number and MIDI channel. You do not need to know or configure the CC numbers yourself – Erae Sound handles this for you.

14.4.2 DAW Compatibility

All Erae sources transmit **standard MIDI CC messages**. This means:

- Every gesture is **recordable** in your DAW's MIDI editor.
- Recorded CC data can be **played back** to drive Erae Sound, even without the Erae hardware connected.
- You can **edit and automate** Erae-sourced parameters just like any other MIDI CC.

14.4.3 Erae Source Types

The table below lists every type of Erae modulation source that Erae Sound can discover from a layout. Which sources actually appear depends on what zones your layout contains and which axes are enabled.

14.4.3.1 Keyboard Position Sources

Source Type	Example Label	Description
Keyboard X	KB1 X	Absolute horizontal finger position across the keyboard
Keyboard Y	KB1 Y	Absolute vertical finger position (front-to-back on the surface)
Keyboard X Relative	KB1 XR	Horizontal movement relative to the initial touch point
Keyboard Y Relative	KB1 YR	Vertical movement relative to the initial touch point

The number increments for each keyboard in the layout (KB1, KB2, etc.).

Note: Keyboard pressure and slide use the built-in **PRES** and **SLIDE** sources listed in the Standard MIDI Sources section. They are not separate Erae sources.

14.4.3.2 1D Fader Sources

Source Type	Example Label	Description
Fader position	Fader 1	Position along the fader's single axis
Fader pressure	Fdr1 Pres	Finger pressure on the fader surface

14.4.3.3 2D Fader (XY Pad) Sources

Source Type	Example Label	Description
Fader X	Fdr1 X	Horizontal position on the pad
Fader Y	Fdr1 Y	Vertical position on the pad
Fader pressure	Fdr1 Pres	Finger pressure on the pad surface

14.4.3.4 Button Sources

Source Type	Example Label	Description
Button	Btn 1	CC value sent by the button

14.4.3.5 Individual Key Sources

Source Type	Example Label	Description
Key Pressure	Key1 P	Pressure on the individual key
Key X	Key1 X	Absolute horizontal finger position on the key
Key Y	Key1 Y	Absolute vertical finger position on the key
Key X Relative	Key1 XR	Horizontal movement relative to the initial touch point
Key Y Relative	Key1 YR	Vertical movement relative to the initial touch point

14.5 Quick Reference: All Modulation Sources

This table summarizes every modulation source available in Erae Sound.

Category	Source	Label	Always Available?
Standard MIDI	Velocity	VEL	Yes
Standard MIDI	Release Velocity	RELVEL	Yes
Standard MIDI	Pressure	PRES	Yes
Standard MIDI	Slide (CC 74)	SLIDE	Yes
Standard MIDI	Pitch Bend	PITCH	Yes
Built-in	Envelope (ADSR)	ENV	Yes
Built-in	Modulator (LFO)	MOD	Yes

Category	Source	Label	Always Available?
Erae	Keyboard position (X, Y, XR, YR)	e.g. KB1 X	Only with Erae layout
Erae	1D Fader (position, pressure)	e.g. Fader 1	Only with Erae layout
Erae	2D Fader (X, Y, pressure)	e.g. Fdr1 X	Only with Erae layout
Erae	Button	e.g. Btn 1	Only with Erae layout
Erae	Individual Key (pressure, X, Y, XR, YR)	e.g. Key1 P	Only with Erae layout

14.6 Tips for DAW Integration

- **Record everything.** All MIDI sources – including Erae CCs – are standard MIDI data. Arm your track for MIDI recording and every gesture will be captured.
- **Playback without hardware.** Once recorded, MIDI CC automation plays back through Erae Sound regardless of whether an Erae or any other controller is connected.
- **Pitch bend resolution.** Erae Sound reads full 14-bit pitch bend messages, giving you smooth, high-resolution pitch control.
- **MPE-aware DAWs.** For the best experience with per-voice expression, use a DAW that supports MPE (most modern DAWs do). This ensures that per-channel pitch bend, pressure, and slide are routed correctly to individual voices.

For general troubleshooting, see [Troubleshooting](#).