

Overview



When the JP-8 arrived in 1981, it wasn't just another analog polysynth. It was a declaration. Japan had entered the golden age of synthesizer design with an instrument that could stand alongside, and in many ways surpass, the American giants that defined the decade before. By this point, synthesizers were no longer the exotic tools of university labs or recording studios. They were the beating heart of popular music. The JP-8 captured that moment perfectly. It was lush, versatile, and unapologetically grand, built to bring the sound of the future to the stage (and studio, of course).

Its bold orange-on-black panel, its unmistakably wide, confident tone, and its uniquely musical filters, capable of both high-pass and low-pass operation, switchable between 12 dB and 24 dB slopes, gave it a character that became the sound of a new era. It was this sound that powered the rise of synth-pop, new wave, and the cinematic soundtracks of the early eighties.

It was also a technical marvel. Each of its sixteen voltage-controlled oscillators was built from discrete components and temperature-stabilized to stay in tune. Its filters and envelope circuits (the same family used in the Juno-60 and TB-303) gave it a rich, liquid warmth that has made it a unique and desirable tool for musicians and producers even today. Even the original engineers admitted it was a beast to build and calibrate, but the result was worth it. It was an instrument that could sparkle, whisper, or roar with complete authority.

With Cherry Audio's Mercury-8, every aspect of the original hardware has been meticulously recreated using advanced circuit and behavior modeling techniques to ensure unparalleled sonic accuracy and even compatibility with the original synthesizer. Its precision not only captures the distinctive sound and essence of the JP-8 but actually allows you to transfer patch data to or from MIDI-retrofitted hardware. Furthermore, Mercury-8 goes "beyond Jupiter" by offering expanded features that far surpass what was possible in 1981.

Key Features at a Glance:

- A highly optimized dual-layer architecture that supports 16 polyphonic voices per layer, enabling powerful split keyboard and dual-stacked modes. Analog drift and condition controls allow fine-tuning of the synth's age and state, and the multi-voice mode provides subtle to extreme per-voice variations in pitch, panning, filtering, and envelopes for true, organic analog feel.
- Analog-modeled high-pass and resonant low-pass filters faithfully recreate the legendary Jupiter curves, with 12 dB and 24 dB slope options.
- A comprehensive modulation matrix with four slots, optional "Via" controls, and user-friendly click-to-assign functionality, offering dozens of source and destination options including Mercury-8's integrated effects.
- A built-in arpeggiator and 16x4 programmable polyphonic step sequencer that are both syncable and transposable, and feature flexible humanize settings to create endless pattern possibilities.
- Three independent five-unit effect chains that provide 20 studio-quality effects that can be customized, saved, and recalled.
- Over 600 presets, including precise recreations of the original JP-8 factory patches along with "Factory Plus" enhanced versions.
- Directly import original JP-8 patch bank SysEx data (Encore Electronics and Groove Electronics formats) via drag-and-drop

- Exports Mercury-8 preset data to SysEx data (Encore Electronics format).
- Standalone virtual instrument and plug-in versions included.

In spirit and in sound, Mercury-8 is what the JP-8 might have become if its designers had access to the technology of the present and the same boundless imagination that originally launched it into history.

A Word About the Presets

Mercury-8 comes loaded with more than 600 presets, covering everything from faithful recreations of the original JP-8 sounds to brand-new creations that push its classic sound engine into modern territory.

Among them, you'll find precise recreations of the 64 original factory patches, plus enhanced versions in the *Factory Plus* category that take advantage of Mercury-8's expanded features while keeping the unmistakable Jupiter character intact. We've also included the eight original factory setups (the classic Dual and Split configurations) ready to play exactly as they appeared on the vintage hardware.

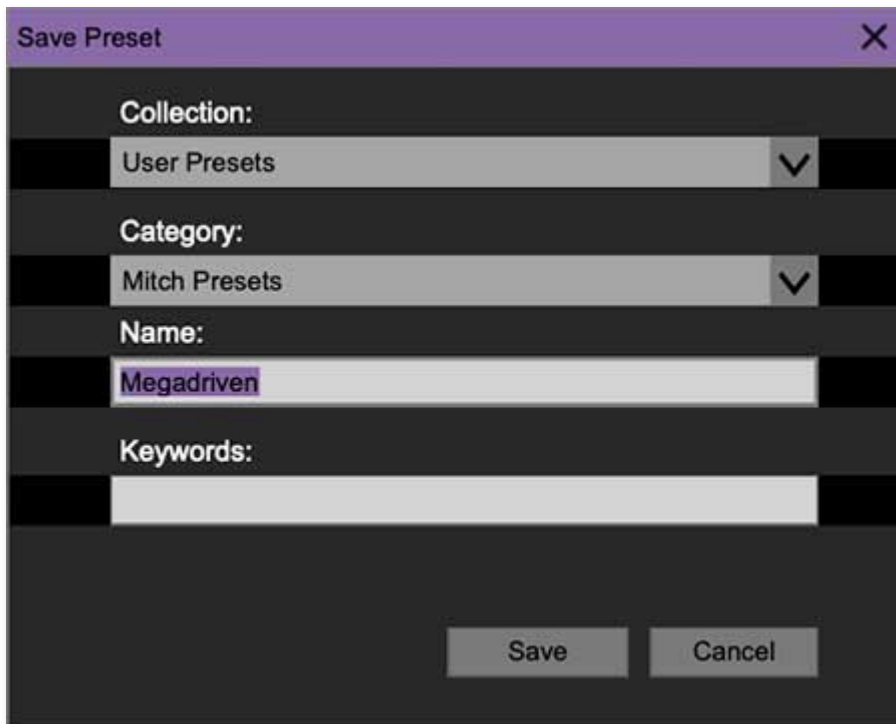
For sound designers and tweekers, the *Templates* category offers excellent starting points that are useful for building your own patches quickly.



Top Toolbar and Preset Browser

The purple strip at the top of the Mercury-8 interface is where you'll load, save, and create sound presets. It also contains utility functions such as undo/redo, UI zoom and *Focus* controls, under-the-hood settings, and more. Let's go over them:

New - Opens a new blank patch preset. If an unsaved patch is currently open or you've modified an existing saved patch, a dialog asks if you'd like to save the patch in its current state. This greatly reduces the possibility of losing an edited unsaved patch.

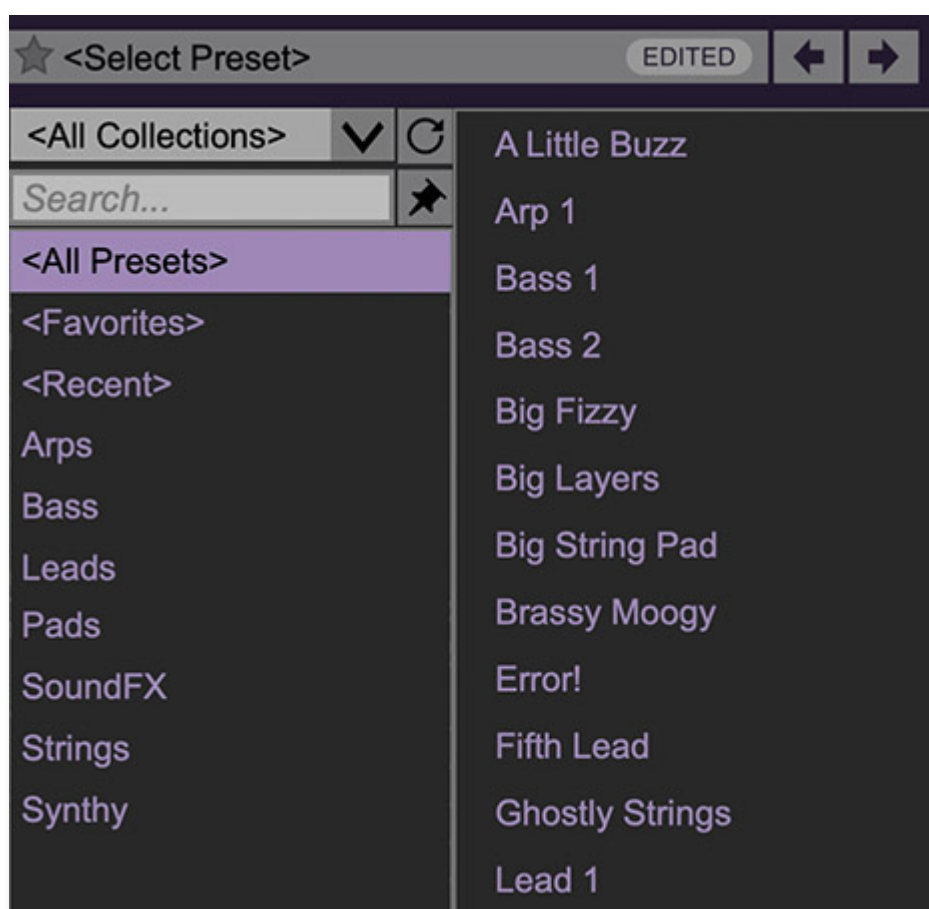


Save- Use this to save patches. There are a couple of levels of hierarchy:

- **Collection**- This is the top level of organization, and contains entire "sets" of presets. The Mercury-8 *Presets* are the main included collection. We also include a *User Presets Collection* for storing your own presets, but you're free to create your own collections. To create a new collections, click in the *Collection* text field (where it says *User Presets* above) and

type a name. User-created sounds can be freely saved to any collection; we like to keep 'em separated for organizational purposes.

- **Categories**- Within each *Collection* are a number of sound categories. As with collections, you're free to create as many categories as you like. To create a category, click in the *Category* text field of the *Save* dialog window and type a new category name.
- **Patch**- A patch is an individual sound. To save a patch, simply type the name in the *Name* field and click *Save*.
- **Keywords**- You can add descriptive words such as "bass," "lead," "spaceship," etc., to patches to make them appear when terms are typed in the *Search* field. Use commas to separate multiple keyword entries.

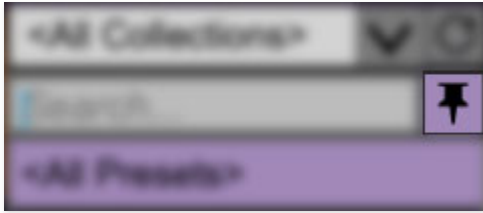


Browsing Patches- Patches can be browsed by clicking the *<Select Preset>* field. To select a preset collection, click in the area that says *<All Collections>* or on the downward-facing arrow next to it.

Clicking on the left-side categories narrows down which patches are displayed.

- **<All Presets>** will show presets from all collections and categories.

- **<Recent>** displays recently used presets.
- **Refresh** - This is the circular arrow button to the right of the downward arrow; clicking this checks the Cherry Audio server for new or updated presets.



Pin - Clicking the push-pin icon locks the patch selection list open, allowing fast and easy browsing and auditioning of patches. Click the icon again to disable pin mode. when in pin mode, the up and down arrow keys can be used to select patches.

Preset Step Back/Forward horizontal arrows- These step to the previous or next preset. macOS [⌘+left/right arrow key] or Windows [CTRL+left/right arrow key] will navigate through presets back and forth in the currently selected collection/category.

Undo/Redo circular arrows- These undo or redo the last action. It remembers many steps, so if you really mucked something up, keep on clickin'.

Settings - This is where user preferences for user interface, audio interfaces, user account, and more are configured. See the [Settings](#) section for full information.

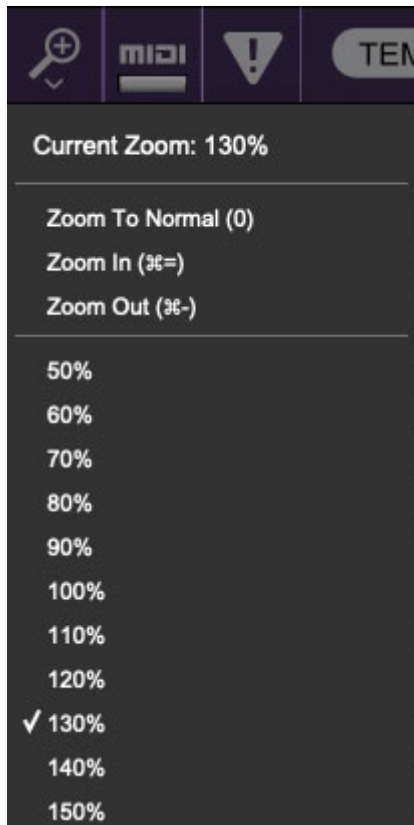
Importing Presets with drag-and-drop

Presets can be imported individually or *en masse* (as a single compressed ZIP file) simply by dragging and dropping from the desktop anywhere on the user interface.

If a single *.preset file is dragged and dropped, the sound is immediately loaded and the standard Save Preset dialog appears; this lets you save the sound to the instrument's preset browser. Note that you don't have to save the sound to preset browser; if you just want to hear and play the sound, click the Cancel button in the Save Preset dialog - the sound will still be loaded.

Compressed zip files containing multiple sounds can also be drag and dropped onto the UI. This works the same as with single sounds, but instead of the Save Preset dialog, you'll see the Import Preset Collection dialog. The

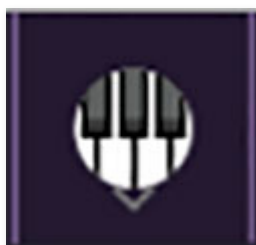
presets will be added as a new collection and available in the categories for which they were tagged.



Zoom Magnifying Glass - Click to resize the Mercury-8 interface. Selecting *100%* returns the user interface to native size.

MIDI Tab - Opens the MIDI controllers tab for configuring internal and hardware MIDI controls. See the [MIDI Controllers Setup and MIDI Tab](#) section for full information.

! (MIDI Panic) - Click to send an all-notes-off message in case of, "why won't this thing stop making noise?!?" stuck-note incidents.



QWERTY Musical Typing Keyboard - Opens an onscreen keyboard allowing a standard QWERTY computer keyboard to be used for playing music notes.

For more information, see [QWERTY Musical Typing Keyboard \(MTK\)](#) section.



Q (Oversampling Quality) - The Q button sets Mercury-8's internal oversampling rate; the higher the setting, the better audio fidelity will be, with the caveat that more computer processing power will be required.

Internal processing can be set to *1x* (same rate as the current sample rate of the host DAW or in the *Settings>Audio/MIDI* window for the standalone version) or to *2x*, *3x*, or *4x* the current sample rate. The sample rate is downsampled at the instrument output stage to match the current host sample rate.

For example, if the current DAW/instrument sample rate setting is 48 kHz, and oversampling is set to *2x*, Mercury-8's internal processing runs at 96 kHz, and is then reduced back to 48kHz at the output stage.

If the current DAW/instrument sample rate setting is 192 kHz and oversampling is set to *4x*, Mercury-8's internal processing will run at 768 kHz, and you will very briefly hear the most mind-blowing synthesizer sound quality ever experienced by mankind before your computer explodes instantaneously in a fiery, white-hot supernova blaze (or not).



? **(Help)** - Clicking this launches your web browser and opens this help document. (Confusing circular logic thing there, amirightpeople?)

Hide/Show Extras - This hides the lower "tray" of the user interface that contains the keyboard and its associated controls, and the expanded effects panel. It's handy for people who are working on laptops with overlapping windows and/or very small monitors. However, this will also hide Mercury-8's pitch and modulation panel.

Focus Button



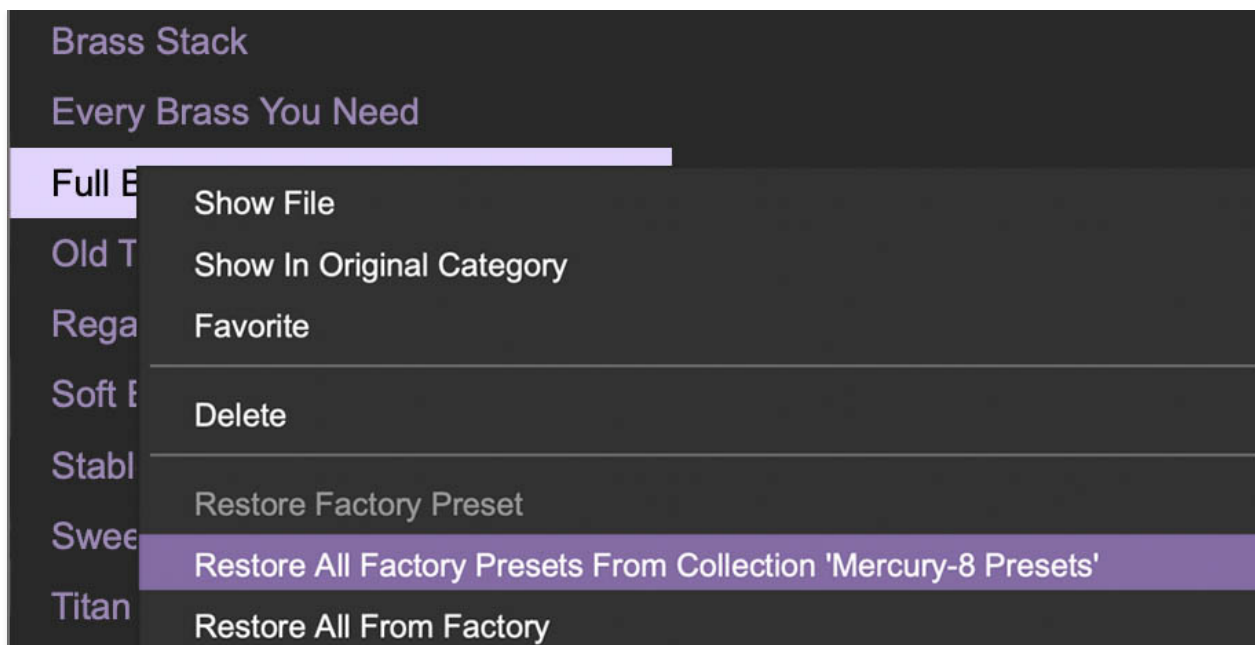
If you're using a laptop, the user interface can potentially be hard to see. With this in mind, the *Focus* button conveniently blows up Mercury-8's view to roughly twice its normal size within the current window size. Unlike the *Zoom* "magnifying glass" function, *Focus* doesn't affect the current window size. By default, the patch panel section fills the current window, but the view can be scrolled vertically and horizontally with a mouse wheel, track pad, or Apple Mighty Mouse finger-scrolling. Or if you're the last person on earth still using a single-button mouse, scroll bars will appear at the window edges when in *Focus* mode.

Using *Focus* mode couldn't be easier - just click the *Focus* button the top menu bar. To return to standard view, click *Reset*.



Mercury-8 logo - Clicking this displays "about" information, and shows the version number and current registered user ID.

Preset List Right-Click Functions



Show File - This displays the selected preset in the Mac or Windows folder containing it. This is useful for backing up or sending a preset file to another user.

Show In Original Category - Selects the preset within its category, i.e. the category will highlight in the left preset menu. The *Show In Original Category* command only displays if the preset was selected within the *<All Presets>*, *<Favorites>*, or *<Recent>* categories.

Favorites - Favorited presets will show in when the *<Favorites>* category is selected. A star will display next to the preset name. Right-click on the preset and reselect *Favorite* to un-favorite it. (Or just ghost it if you don't do the confrontation thing.)

Delete - Deletes the selected preset.

Restore Factory Preset - If one of the factory (i.e. not user) patches is edited and saved, selecting this command restores the patch to its unaltered "factory" setting. This menu will be grayed-out for user bank patches.

Restore All Factory Presets From 'Mercury-8 Presets' - If any patches from the "factory" Mercury-8 bank are edited and saved, selecting this command restores *all* of them to their unaltered "factory" setting.

Restore All From Factory - If any patches from the "factory" banks are edited and saved, selecting this command restores *all* of them to their unaltered "factory" setting. At the time of writing, the Mercury-8 bank mentioned above is the only factory bank, so this function and the *Restore All Factory Presets*



Master Section

The Master Section controls Mercury-8's overall output level, global tuning, layer balance, and output limiting. These parameters affect both the Upper and Lower panels equally unless otherwise noted.

Master Volume

Sets the overall output level of Mercury-8. The range is 0-10. If you notice clipping, either within the preset itself or in your DAW, reduce this control.

Master Tune

Adjusts the global pitch of Mercury-8 by approximately ± 1 semitone. This control is particularly useful for tuning Mercury-8 to external instruments or vintage gear that may not match modern concert pitch (A = 440 Hz).

Balance

Blends between the Lower and Upper panels when operating in Dual or Split modes.

- Turn fully left to hear only the Lower panel.
- Turn fully right to hear only the Upper panel.
- Set to the center position for an equal mix of both.

Limiter

Activates Mercury-8's built-in output limiter, designed to tame unexpected volume peaks that can occur with some patches. An LED meter displays output level for both left and right channels. Green indicates a healthy signal, yellow warns of approaching the threshold, and red shows that limiting is actively taking place.

The limiter is transparent at moderate levels but can be switched off if you prefer unprocessed output for external dynamics control.



Performance Controls

This section houses the Mercury-8's expressive controls. Reach for these when you want to bring your playing to life. These are direct descendants of the JP-8's left-hand performance panel, faithfully recreated with a few modern refinements. To display these controls, select the *Keyboard* tab at the bottom left of the Mercury-8 UI.

Bender

The Bender lever is your primary pitch-bend control. Push it to the right to bend the pitch upward (sharp), and to the left to bend downward (flat). Its range and routing depend on the settings of the VCO-1 Bend, VCO-2 Bend, and VCF Bend switches and sliders. The nearby switch determines which layer(s) the Bender affects.

- Upper - affects the Upper layer only
- Both - affects both layers
- Lower - affects the Lower layer only

Each destination can be independently enabled using its ON/OFF switch, then adjusted with the corresponding Bend slider beneath it to control how strongly the Bender affects that parameter.

- VCO-1 Bend / VCO-2 Bend: Determines how much pitch bend is applied to each oscillator individually.
- VCF Bend: Controls the amount of filter cutoff change when bending — great for wah-like sweeps or expressive tonal shifts.

LFO Modulation

To add real-time modulation while playing, use the LFO Modulation pad. This applies modulation from the low-frequency oscillator to the destinations specified by the VCO Mod and VCF Mod switches and sliders.

- VCO Mod: Adds vibrato-style pitch modulation from the LFO.
- VCF Mod: Adds filter cutoff modulation (tremolo or wah-like effects).
- Use the LFO Mod sliders to set modulation depth for each parameter.

Link Lower to Upper

When *Link Lower to Upper* is enabled, the Lower panel's LFO Mod settings are linked to those of the Upper panel, ensuring unified expressive behavior when playing Dual or Split patches.

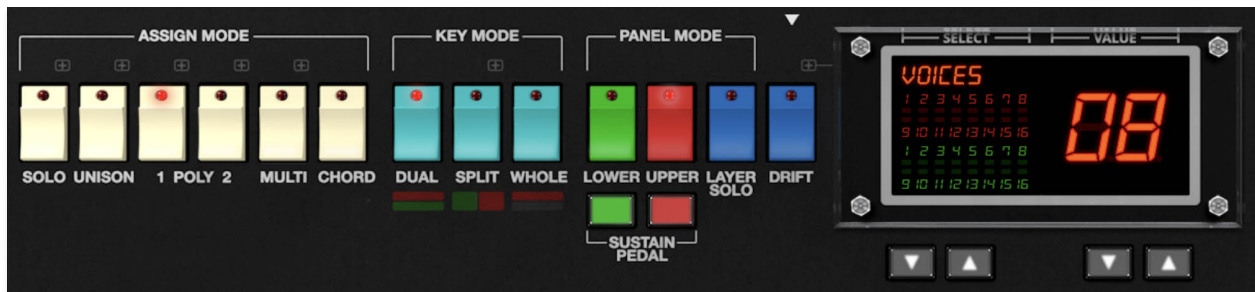
LFO Mod Rise Time

This knob controls how quickly the LFO modulation fades in when using the LFO Mod pad. Lower settings introduce modulation immediately. Higher settings cause it to fade in gradually. Use it to introduce natural-sounding vibrato.

Portamento

The Portamento knob sets the glide time between notes (range: 0–10). Lower settings yield near-instant transitions, while higher values produce longer glides between pitches. The adjacent switch determines which layer(s) Portamento affects. By default it affects both layers. Alternatively, choose:

- Upper Only - affects the Upper layer only (and not the Lower layer)
- Off - turns portamento off
- On - turns portamento on



Assign, Key, and Panel Mode Sections

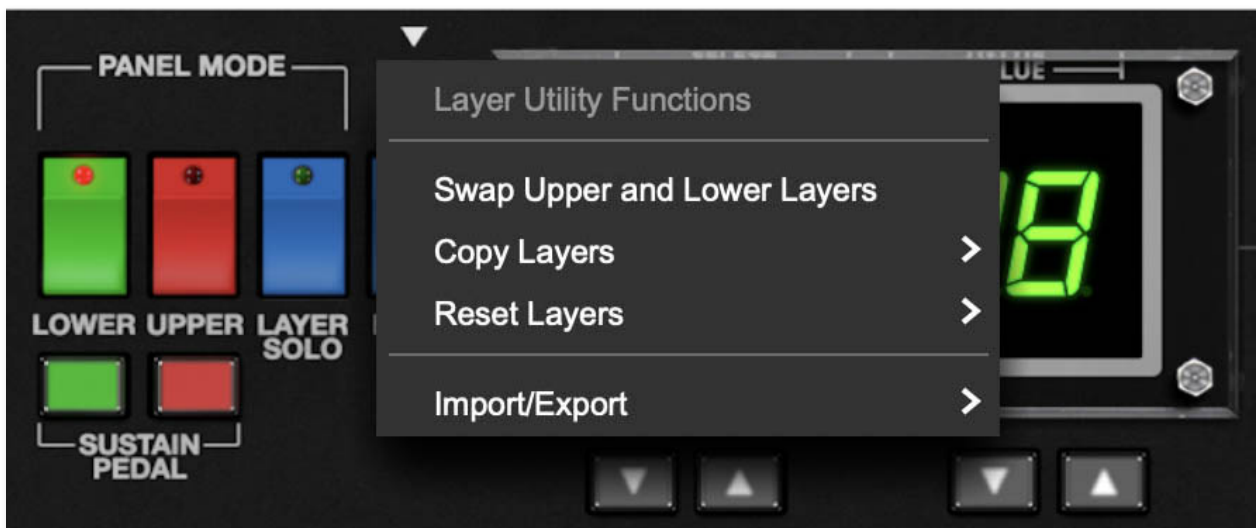
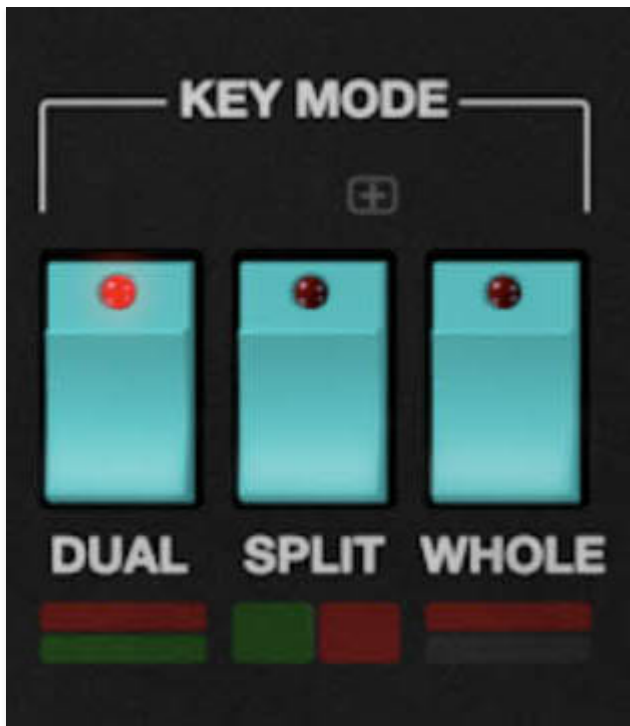
Mercury-8 can play it three ways: as a focused single-sound synth, as a stacked two-part instrument with completely different patches layered together, or as a true split keyboard where one sound lives on the lower keys and another takes the upper range.

You shape all of this through three sections that act as the command center for how the instrument behaves: Assign Mode, Key Mode, and Panel Mode. Together they decide how voice polyphony is handled, how the keyboard is divided, and which layer of the synth is visible at any moment. Once you understand how these sections interact, building splits, stacks, and tight single patches becomes second nature

Key Mode

Key Mode decides how Mercury-8's bi-timbral engine behaves. It tells Mercury-8 whether you want one sound stretched across the full keyboard, two sounds stacked into a single bigger patch, or a true split with one part on the low keys and another on the highs. In other words, it sets the global rules for how the keyboard distributes voices and how the Upper and Lower layers appear when you play.

The Balance knob in the Master section lets you control how loud the Lower and Upper layers are relative to one another. Use it to push one part forward or even them out. The Layer Utility menu in this same area gives you quick tools for managing layers. You can swap them, copy one to the other, or reset a layer entirely. We'll walk through those options in detail later in the chapter



- **Dual** - Upper and Lower layers are stacked and play across the entire keyboard range.

- **Whole** - This is the standard keyboard mode. The Upper layer plays across the entire keyboard range, and the Lower layer is disabled.
- **Split** - This mode allows you to divide or blend the Upper and Lower layers across the keyboard in a variety of ways. This makes it easy to create expressive, bi-timbral setups such as bass in the left hand and leads or pads in the right, or smooth transitions between the Lower and Upper layer sounds.

To activate Split Mode, first enable the Split button, then use the central Main Display's arrow buttons (or just click directly into it) to choose the desired split behavior.



Split Modes

Mercury-8 includes four Split modes: Split, Fade, Layers, and Layers + XFade. Each gives the Upper and Lower parts a different way to meet in the middle. Whether you want a clear breakpoint, a gradual blend, or full stacking, you can dial in the response that fits your style

Split

Creates a hard split between the Lower and Upper layers. Notes played below the split point trigger the Lower sound; notes above it trigger the Upper sound.

- To set the split point, drag the small triangle above the keyboard display.

- The split point is shown where the green (Lower) and red (Upper) ranges meet.



Fade

Creates a soft transition between the two layers. Instead of an abrupt hand-off at the split point, the Lower layer gradually fades out as the Upper fades in.

- Use the same drag method to set the transition point.
- This mode is ideal for softer blends such as evolving pads or acoustic-style splits (for example, strings below, brass above).



Layers

Provides independent range sliders for each layer: a green bar for the Lower layer and a red bar for the Upper.

- Drag either bar to define each layer's key range.
- Where the two ranges overlap, both layers sound together, creating a crossfade region.

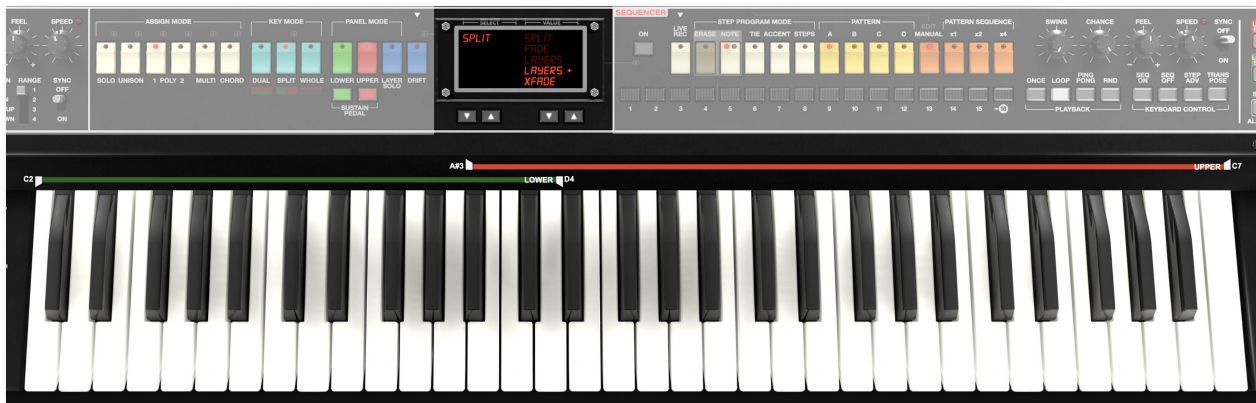
This mode offers precise control over how much the two sounds overlap or remain isolated.



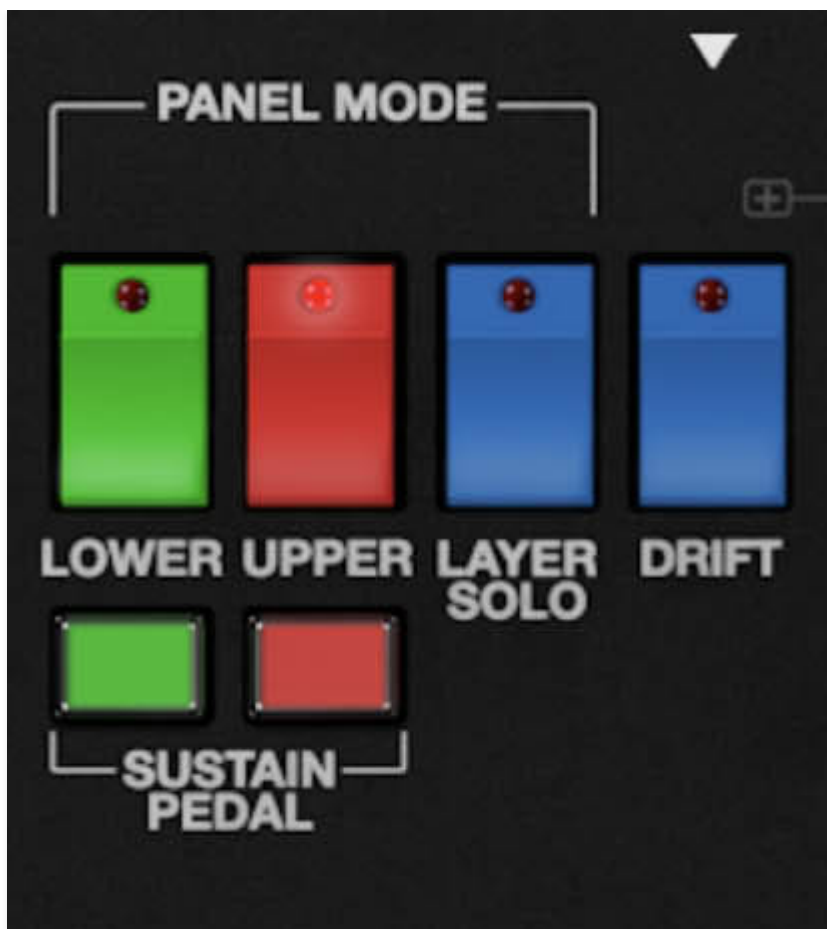
Layers + XFade

Works similarly to Layers, but introduces a smooth, dynamic crossfade across the overlapping range, rather than both layers playing at full volume in the shared region.

- Use this mode for natural, organic transitions between sounds. For example, blending an evolving pad into a bell tone or shifting from synthy electric piano to strings as you play higher.



Panel Mode



This section is super important. As explained above, Mercury-8 can operate in three modes: *Whole*, where one sound plays across the entire keyboard range, *Layer*, where two separate sounds (layers) are stacked across the entire keyboard range, or *Split*, where two individual sounds are played above and below a user-specified split point.

With this in mind, the Panel Mode section allows selection of which control parameters are currently displayed when in *Layer* or *Split* mode. These two sounds are referred to as the **Lower** or **Upper** layers.

Lower/Upper

Selects whether the onscreen controls show current settings for the lower or upper layer.

When *Upper* is selected, the LEDs and all relevant knob and slider marks indicator lines will be red. When *Lower* is selected, the LEDs and all relevant knob and slider marks indicator lines will be green. The rectangular Layer header on the left side of the panel will be red when upper mode is active, and green when when Lower mode is active.



Layer Solo

Solos the layer currently selected Lower or Upper layer for editing. This is useful if you're editing a sound on a layer and don't want to hear the other layer. The *Layer Solo* button only works in *Layer* and *Split* Key Modes. When toggled, the *Layer Solo* button flashes in the appropriate red or green color so you won't forget you're in solo mode.

Drift

If you've ever played a vintage analog synth that's been around the block a few decades, you know the charm: every note has a little wobble, every filter sweep breathes a bit differently, and the whole thing feels alive. That's not an accident. It's the natural result of analog circuitry slowly drifting out of perfect calibration. The result? Warmth, movement, and that living, breathing quality that's sometimes missing in the digital world.

Mercury-8's **Drift** feature faithfully recreates that desirable instability. Found in the **Panel Mode** section, Drift can be switched on via the **Drift** button.

Once enabled, the **Main Display** lets you either:

- Dial in **individual drift amounts (0-100)** for each component — **VCO Drift**, **VCF Drift**, **VCA Drift**, and **Envelope Slop** — or
- Choose one of several **Condition presets** that apply realistic combinations of drift across all sections.

Each **Condition** preset represents a different life stage of a JP-8-style synth, from showroom-fresh to road-wearied veteran:

- **Brand New** - Minimum drift; everything's tight and in tune.
- **In Studio** - Slight looseness, just enough to feel analog.
- **Road Worn** - Warm and unpredictable, like a synth that's seen a few tours.
- **44 Years** - Well aged, with plenty of drifty character.
- **Service!!!** - A technician's nightmare, but a sound designer's dream.

Individual Parameters:

- **VCO Drift** - Random pitch variations in the oscillators (0-100).
- **VCF Drift** - Filter cutoff instability (0-100).
- **VCA Drift** - Subtle amplitude fluctuations (0-100).
- **Envelope Slop** - Randomized timing and contour deviations in the envelopes (0-100).

We generally recommend keeping a touch of Drift active to preserve that analog warmth. However, there's one exception: if you're using **Cross Mod** and want precise, in-tune modulation relationships, set Drift to **0**. The control is extremely sensitive, and a little drift goes a long way toward chaos.



Sustain Pedal Assign

The two **Sustain Pedal** buttons below the Panel Mode section let you enable or disable sustain pedal functionality for each layer independently.

- **Lower** - When lit, the sustain pedal will affect only the **Lower** layer.
- **Upper** - When lit, the sustain pedal will affect only the **Upper** layer.

This allows flexible control in Split or Dual modes. For example, you can sustain a pad in the Lower layer while playing a lead in the Upper layer

without sustain, or vice versa.

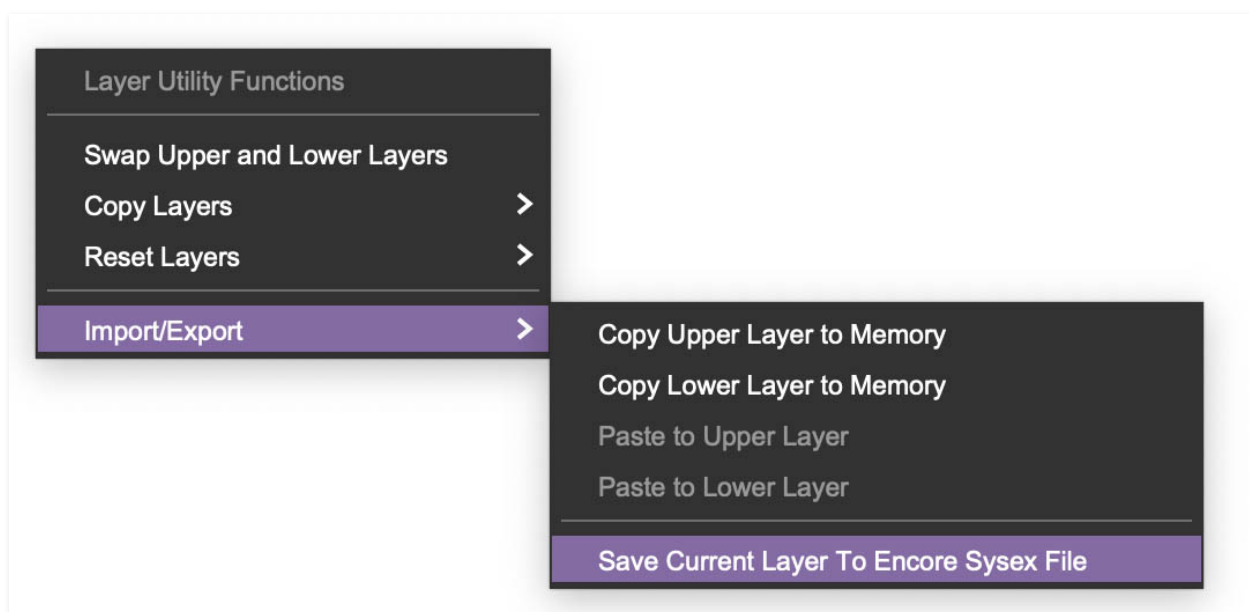
Layer Utility Dropdown Menu

The Layer Utility dropdown menu allows Upper and Lower layer sounds to be swapped, copied, reset, or exported.

- **Swap Upper and Lower Layers** - Reverses the locations of the Upper and Lower layer.
- **Copy Layers** - Duplicates one layer to the other.
- **Reset Layer** - Initializes all settings of the selected layer.
- **Import/Export**- The Import/Export command allows layers to be moved between sound presets. Data from the source preset isn't affected.

The process is simple: Select the appropriate *Copy <Upper or Lower> to Memory* sub-menu to copy the data into Mercury 6's memory, then load a new destination preset. Click the Layer *Utility* dropdown and select the appropriate *Paste to Layer* submenu. Note that you may have to change Key Mode during this process. For instance, if you copy a Layer to memory with plans to create a new Dual or Split, you may have to change the Key Mode of the destination preset to paste to the Lower Layer.

- You can also use the **Save Current Layer to Encore SysEx File** command to save and export the current preset's active layer to a SysEx file. For more information, see the Appendix: Importing Original JP-8 SysEx Data



The "You should really read this" Section

Following are some tips that should make this Lower and Upper business easier to understand, complete with bold text, so you know we mean business. (Don't push us, or we'll mash the CAPS key too and sound like one of those grammatically impaired unhinged internet weirdos.)

- **Switching between *Lower* and *Upper* parameter display has no effect whatsoever on sound**, it just alternates which layer's knob and button settings are currently displayed.
- ***Whole* Key Mode always uses the upper layer only.**
- **Panel Mode *Upper* and *Lower* selection only works in *Layer* and *Split* Key Modes.** When in *Whole* mode, *Upper* is automatically selected and the *Lower* and *Layer Solo* buttons are disabled and grayed out.
- **Lower and Upper layer sounds always save as one single sound patch.**

Step-by-Step Example - Creating Your Own Layered Sounds

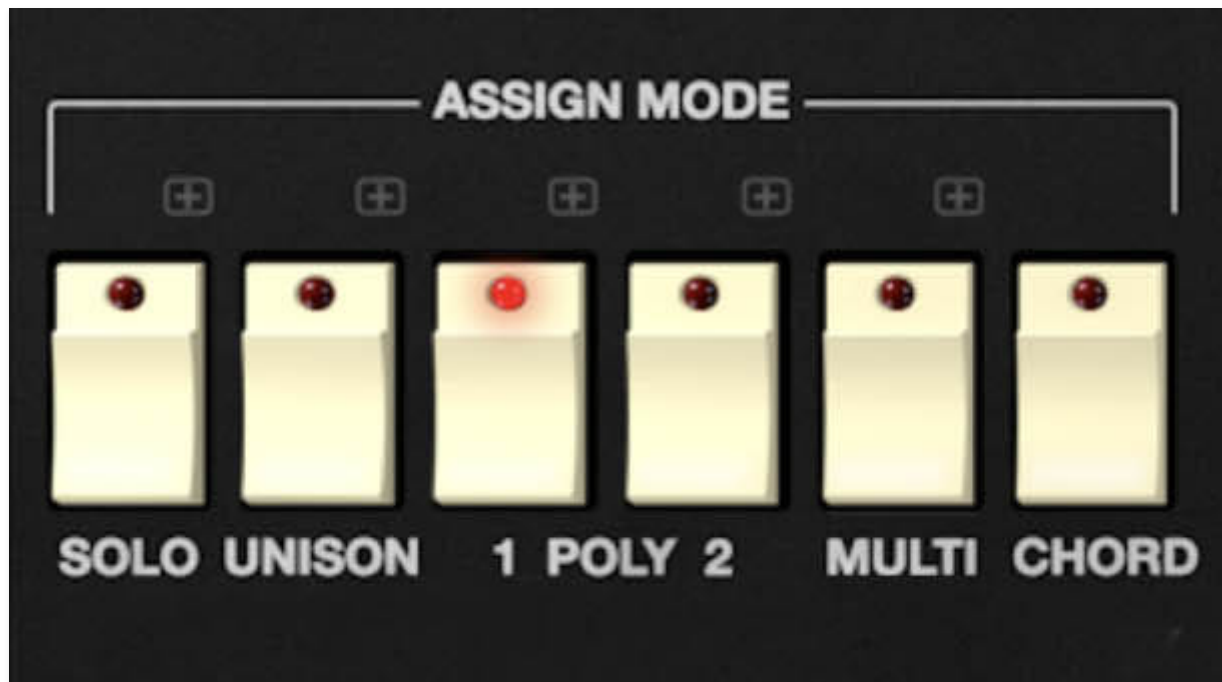
In the following examples, we'll step through the process of selectively using a layer of an existing preset as a foundation for your own sound. As you are auditioning presets, note whether they already feature lower and upper-layer tones, and use the Solo button and switch between the upper and lower layers to isolate the tone you're after.

For instance, say you come across a preset that has a chime sound in the upper layer that you would like to use. You could change Key Mode to Whole, then save it as a new user preset. But if want to combine it with another tone such as a pad to create a new Dual preset, this is where the Layer Utility Functions drop-down menu comes in. As detailed above, you can manage layers in various ways, such as swapping layers, copying and pasting one layer over another, resetting just one layer to its initial patch, or copying a layer to memory like a clipboard. This includes all additional elements like effects and patterns.

In this example, you will want to copy the chime sound from the upper layer with Import/Export, Copy Upper Layer to Memory. Now you can browse to or create a pad sound. If it's a single-layer whole-mode preset, you'll need to change it to Dual mode to make room for the chime sound. Use the utility menu to swap the pad sound to the lower layer. Then go back to the utility

menu to paste the chime sound to the upper layer. At this point you can tweak the two layers individually or make global adjustments to balance, volume, effects, and so on, and save it as a new user preset.

The process for creating a Split is the same. Find the layer you wish to use and copy that layer to memory. Then create or find that other layer, change that to a Split if it's not already, then paste the previous sound to the appropriate layer. As outlined above, there are several more options available for splits, such as adjusting the split point and exploring extended layering options in the central display.



Assign Mode

The Assign Mode section determines how Mercury-8 allocates and triggers voices during performance. These switches replicate and expand upon the JP-8's voice assignment behaviors, offering flexible control over mono, poly, unison, and chord playback modes. Only one assign mode can be active at a time.

Solo

Engages monophonic operation, meaning only one note will sound at a time. Solo mode includes additional performance parameters accessible from the Display:

- Trigger – Selects how envelopes are retriggered.

- o Legato: Envelopes trigger only when all previous notes are released. Perfect for smooth, connected lines.
- o Multi: Envelopes retrigger on each new key press, even when notes overlap. This is great for punchier playing styles.
- Priority – Determines which note plays when multiple keys are pressed simultaneously.
 - o Low: The lowest note has priority.
 - o High: The highest note has priority.
 - o Last: The most recent key played has priority (typical modern behavior).

Tip: For expressive lead or bass sounds, use Legato with Last priority. It delivers classic analog-style phrasing with natural glide between notes.

Unison

Stacks multiple voices on a single note for a rich, detuned sound. When Unison is active, the Display offers several additional parameters:

- Voices – Sets the number of voices stacked per note (up to 16).
- Mode –
 - o Mono: All stacked voices play a single note (traditional unison).
 - o Poly: Voices are dynamically subdivided across multiple notes, enabling polyphonic unison, a modern twist that creates wide, ensemble-like chords.
- Detune – Adjusts the tuning offset between stacked voices (range 0–99). Small values produce gentle thickening. Higher values yield massive detuned width.
- Trigger – As in Solo mode, choose between Legato or Multi retrigger behavior.

Tip: For classic supersaw pads, try Poly Unison with 6–8 voices, Detune around 25–35, and Multi trigger for a lush, animated texture.

Poly 1 / Poly 2

These two polyphonic modes determine how voices are allocated and cycled when playing chords:

- Poly 1: Standard round-robin voice assignment. Each new note steals the oldest released voice.

- Poly 2: Prioritizes voice reuse for repeated notes, producing smoother envelope and filter retriggering. This is particularly useful for legato chords or pads.

Chord

Chord mode lets you assign a user-defined chord shape that's played back whenever a single key is pressed. This makes it easy to create complex harmonies or stabs with one finger.

To program a chord:

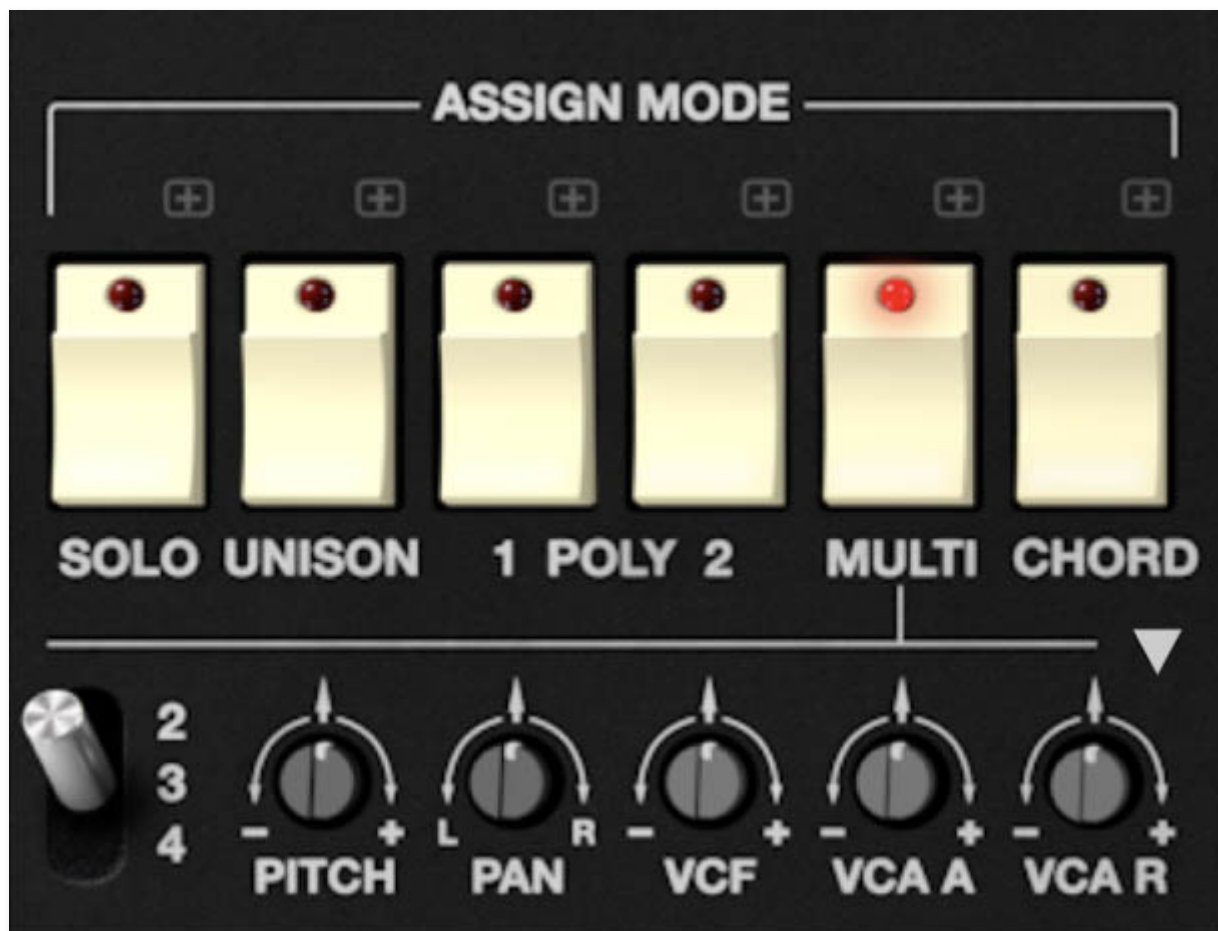
Enable Chord mode.

Hold the desired notes on the keyboard.

Press the Chord button again — the chord is stored until you program a new one.

You can then transpose the chord by playing any key. The chord definition remains active until changed or the preset is switched.

Tip: Combine Chord mode with Unison Detune or Dual Layering for massive, cinematic stabs and evolving harmonic textures.



Multi

When you enable Multi, the *Multi Voice* controls appear below the Multi-button. These "offset" knob controls allow you to tweak several key sound parameters: Pitch, Pan, VCF, VCA Envelope Attack, and VCA Envelope Release. This enhances the sound of the selected patch with slight per-note/voice variations. It's like handing each voice in a chord its own distinct personality. When used creatively, it unlocks an entire new dimension of animation and complexity.

Offsets are set on a per-note/voice basis by first setting the desired voice with the 2,3,4, toggle switch at the left of the offset knobs, then setting the desired offsets for that voice.

Once you have set the desired offsets for each voice, with each note played, Mercury-8 cycles through notes in the following way: the first note that is played uses the normal, unaltered synth parameters, the second note's parameters are offset by the knob settings in the #2 offset, the third note by the settings in the #3 offset, and so forth.

An easy way to understand Multi mode functionality is to set Mode to *Multi*, and Voices to 4. In the #2 offset controls, use the trimmer to set *Pitch* to something odd, like +9. Now slowly play and hold four consecutive notes. Hear how the pitch of the second note played is offset?

You may be wondering how the offset knob controls function when the *Voices* control is set to 8 or 16. In this case, the sequential nature of Multi mode repeats. If you look closely, you'll see that when *Voices* is set to 8, the main voice controls and each offset parameter box now have *two* voice active LEDs each. When voices is set to 16, each offset parameter box gets *four* voice active LEDs. If you're in *Multi/Poly* mode (see below) and a 5th note is played, the main voice sounds, when a 6th note is sounds, multi voice 2 sounds, and so on until a maximum of 16 voices is sounding (i.e. four LEDs for each multi voice), at which point the cycle starts over.

It is important to note that there are a number of Multi mode parameters available in the display. Let's go over how each Multi voice mode operates, then we'll detail the available offset parameters that are selectable.

VOICES - Choose the maximum number of voices for Mult Mode.

MODE - choose from the following options:

- **Unison**- Unison stacks multiple voices monophonically according to the current *Voices* setting. Since all voices play simultaneously in unison mode, they won't cycle through as with poly modes - they all play at once.

The offset controls still work on individual voices, allowing super massive sounds. By retuning the Pitch trimmers of the synthesizer offsets to form triads, you can create one finger chords. Note that the *Detune* knob still does its random-ish oscillator detuning thing on top of the offset box *Pitch* controls, so it's easy get out in the weeds tuning-wise.

- **Poly**- Multiple keys can be played simultaneously with the maximum number of notes set by the *Voices* control. The first available voice sounds - in other words, held notes will never get stolen. When playing one note at a time, the note will always sound from voice 1 of the primary synth. However, when playing multiple notes together, notes play sequentially and step to the next multi voice group.
- **Cycle Loop**: This setting cycles through the available voices in a fixed, repeating order. The first note you play uses Voice 1, the next uses Voice 2, and so on, wrapping back to the first voice when it reaches the end. This creates a predictable, rotating pattern, often producing a consistent panning or modulation movement across repeated notes depending on the pan and modulation settings of the sound.
- **Cycle Ping-Pong**: As the name implies, this mode bounces back and forth through the voice order. For example, with four voices, it will move 1 → 2 → 3 → 4 → 3 → 2 → 1, and repeat. This back-and-forth can produce a more symmetrical stereo effect, useful for creating motion that feels less repetitive than loop mode but is still structured.
- **Cycle Random**: Each new note is assigned to a random voice, meaning there's no fixed pattern to the order. This results in a more dispersed stereo image depending on voice pan settings. This can be great for thick textures or more organic, unpredictable behavior in some patches.

These settings are especially impactful when combined with subtle variations between voices such as slight pitch detunes, panning offsets, or modulation differences, making the Note Order parameter a powerful tool for spatial animation and timbral variation.

Multi Mode Voice Panel Parameters

Adjustments made to these trimmers can be subtle to simulate the slight variations one might expect between multiple chained synthesizers or voice components. You can also apply extreme settings to produce single-fingered chords or patterns, stereo effects, and more.

Pitch - Fine tuning of the pitch, offset from the primary synthesizer settings, for the synth voice in a range from -12 to +12 semitones. By retuning the

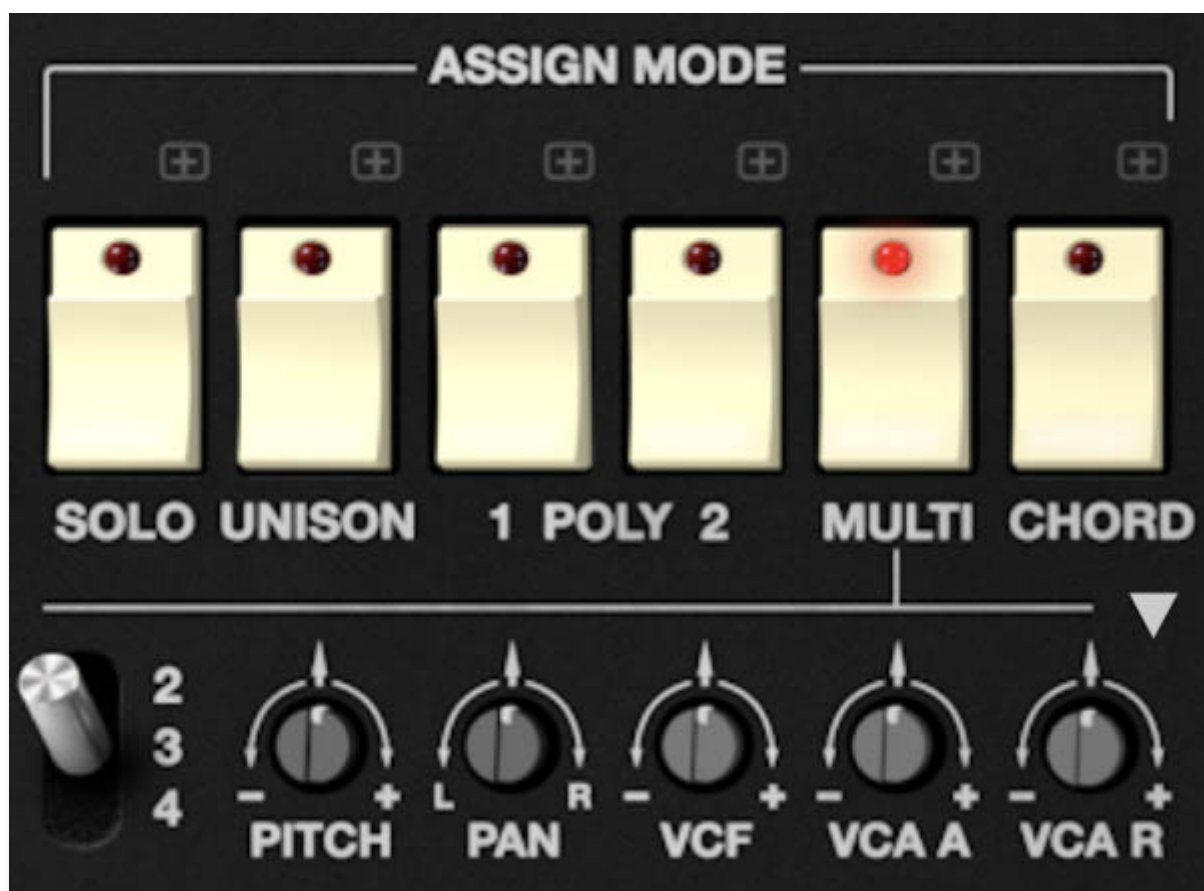
Pitch trimmers of the individual panels to form triads, you can create one-finger chords, or use in conjunction with the arpeggiator to create a transposable one-finger four-note step sequence.

Pan - Sets the % offset of output placement for the synth voice from left to right in the stereo image.

VCF - Sets the % offset of the Filter Frequency for the synth voice, from -100% to +100%.

VCA A - Sets the % offset of the VCA Envelope Attack for the synth voice, from -100% to +100%.

VCA R - Sets the % offset of the VCA Envelope Release for the synth voice, from -100% to +100%.



Multi Voice Presets

The downward-pointing arrow ▼ above the set of trimmer knobs provides several panel configuration quick presets, such as *Hard Panned*, *Slightly Detuned*, *Well Worn*, and so on. Each preset applies pre-configured settings to all three voice panels at once to achieve the effect described.

Unison Multi is a collection of nine tuned panel sets primarily intended to be used when Keyboard mode is set to Multi / Unison mode, and includes individual tunings (*Major, Minor, Major 7, etc.*) and variations with hard panning. These are also useful for producing melodic sequences when used with the arpeggiator.

Also included are *Reset Trimmers, Copy, and Paste*. Unlike the presets detailed above, these commands are applied per single panel. For instance, selecting *Reset Trimmers* on synth panel 3 resets only that panel. Settings can also be copied from one panel and pasted to another without changing the third.

Layer Master Section



While this section isn't actually contained within the Assign, Key, and Panel Mode section, it's useful to talk about it here as it functions as sort of a master settings for each layer. These are independent for each layer.

Volume- Sets the layer volume.

Pan- Sets the position of the layer in the stereo image. The *Pan* knob only affects dry signals - Flanger/Chorus, Delay, and Reverb effect wet signal panning isn't affected (because you don't want big, wide stereo chorus, for example, collapsing into one-speaker mono).

Tune- Sets the tuning of the layer, up or down by one semitone. This control may seem like a "set and ignore" control, but it's useful in *Layer* mode, because VCO-1 doesn't have a fine-tuning control. Without the Layer *Tune* control, tuning for both layers of VCO-1 would be always be locked; Layer *Tune* allows some detuning for fatter sounds.



VCO's and LFO

The Voltage-Controlled Oscillators (VCOs) are where every Mercury-8 sound begins: two rich, analog-modeled tone generators that speak with unmistakable Jupiter character. Each voice includes two fully independent oscillators (VCO-1 and VCO-2) plus a flexible VCO Modulator and LFO section for adding motion and expressiveness. Modeled from the original JP-8 architecture, these oscillators faithfully reproduce the warmth and harmonic detail that made the hardware one of the most musical synthesizers ever built.

LFO (Low Frequency Oscillator)

The **LFO** provides a repeating modulation source used to animate pitch, pulse width, or filter frequency. Use it to create subtle movement or deep, rhythmic motion.

- **Rate** – Adjusts the speed of the LFO, from glacially slow sweeps to audio-rate modulation for FM-style effects.
- **Delay Time** – Introduces a fade-in period before modulation reaches full depth. Try it for vibrato that blooms after a note is held.
- **Waveform** – Offers four shapes: triangle for smooth motion, reverse sawtooth for falling ramps, square for stepped modulation, and random (sample-and-hold) for unpredictable, percussive variations.
- **Sync** – Locks the LFO to host tempo for time-synchronized movement.
- **Re-Trig** – Restarts the LFO phase with each note press, ensuring a consistent modulation starting point, which is useful for rhythmic precision.
- **LOW/UPP LEDs** – Indicate the active LFO rate for the Upper and Lower layers.

VCO Modulator

This section defines how the oscillators are modulated by the LFO or Envelope 1.

- **Freq Mod** (LFO Mod / Env Mod) – Two sliders control how much the LFO and Envelope 1 modulate oscillator frequency. The three-position switch selects whether modulation is applied to VCO-1, VCO-2, or Both.
- **Pulse Width Mod** – Controls the depth and movement of the square wave’s pulse width for one or both oscillators, shaping harmonic richness and motion. The adjacent switch determines the modulation source. When set to **LFO**, the pulse width continuously cycles according to the selected LFO rate and waveform, creating a classic animated chorusing effect. **Manual** mode fixes the pulse width at a static value defined by the slider position, allowing precise tone-shaping control without modulation. **Env-1** mode uses Envelope 1 to dynamically alter the pulse width over time, following the envelope’s attack, decay, sustain, and release stages to add evolving character and expression to each note

VCO-1

The primary oscillator, capable of standard musical intervals and precise tuning.

- **Cross Mod** – Applies frequency modulation from VCO-2 to VCO-1 for aggressive metallic timbres and FM-style tones.
- **Range** – Sets the base pitch: 16’, 8’, 4’, or 2’. Each step represents one octave higher as the number decreases.
- **Waveform** – Selects from triangle, sawtooth, square, or pulse waves, each offering a distinct harmonic profile. Triangle waves sound smooth and flute-like. Sawtooth waves are full of rich harmonics. Square and pulse waves add body and presence that can be modulated for chorus-like movement.

VCO-2

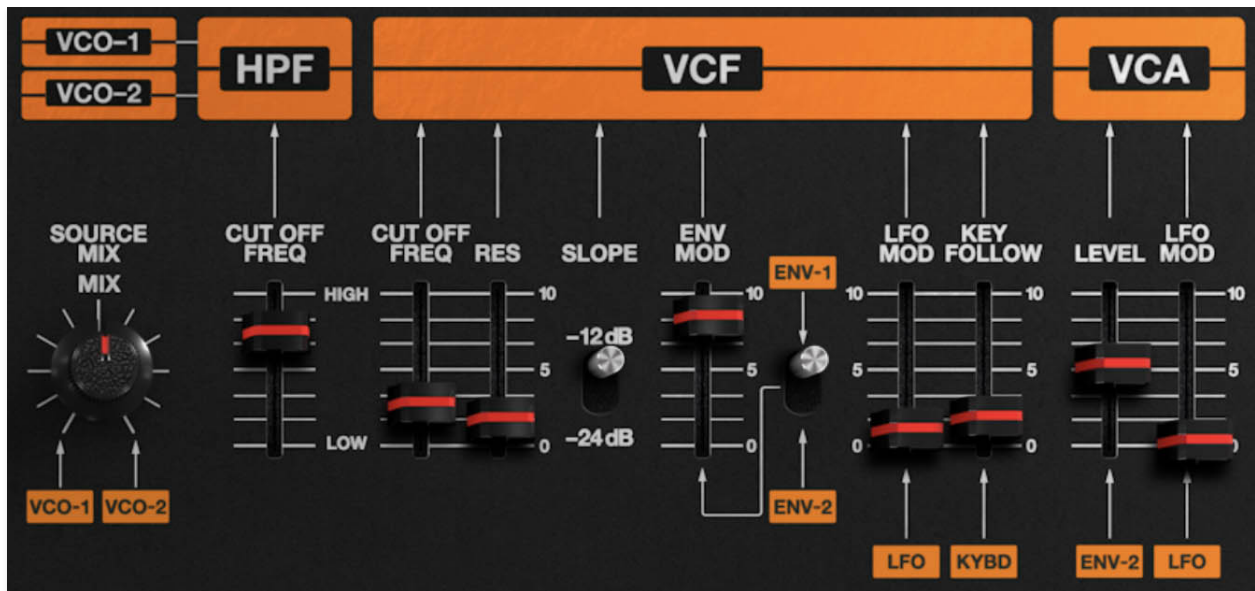
The second oscillator adds detuning, sync, and noise capability for thicker and more dynamic sounds.

- **Sync** – When switched on, locks VCO-1’s phase to VCO-2, producing rich, harmonically complex “sync sweep” tones when VCO-2’s pitch is modulated.
- **Low Freq** – Converts VCO-2 into a second low-frequency oscillator for extended modulation possibilities.

- **Range** – Sets pitch interval as with VCO-1. Unlike VCO-1 this control is continuous and can be used to set VCO-2 to a different octave or an interval.
- **Fine Tune** – Allows subtle pitch detuning relative to VCO-1, essential for chorus-like beating effects.
- **Waveform** – Selects from triangle, sawtooth, square, pulse, or noise sources..

Power User Tips

- For the iconic Jupiter-style sync sweep sound, engage Sync ON in VCO-1, set VCO-2 Range one octave above VCO-1, and modulate VCO-2 pitch with Env-1. You'll hear that unmistakable hard-edged, cutting sweep that defined countless early-'80s leads and effects.
- Try offsetting the VCOs in ways that feel slightly wrong. Instead of the usual handful of cents for "analog drift," push one oscillator a touch sharp and the other a hair flat, then bring in a slow LFO on only one of them. The result is a tone that feels alive but not random.
- If you usually think of pulse width as a static setting, turn it into a moving target. Assign an envelope to pulse width with a short attack and long decay. What you'll hear is a tone that opens with a pinched, nasal bite and slowly rounds out as the note settles.
- Use the LFO as a "micro-arpeggiator" by routing it to oscillator pitch at a very fast rate with barely any depth. You'll get a tight, quivering energy that reads more like texture than vibrato. It's great for turning boring saws into something with an electric edge, especially when layered with a cleaner voice underneath.
- For pads or evolving atmospheres, run two LFOs (the main LFO and the FX LFO, for example) at different speeds and/or wave shapes: one modulating VCO pitch very lightly, and another shaping PWM. The combination creates a slow-fast interplay that doesn't repeat in a predictable loop.
- Try routing velocity to LFO speed. When you play softly, the sound stays stable and clean. When you dig in, the pitch wobbles or the PWM gets wilder. It's a simple trick that makes the synth feel touch-sensitive in a way most players don't expect, and it can turn even a simple bass line into a performance.



VCF and VCA Section

The VCF (Voltage-Controlled Filter) and VCA (Voltage-Controlled Amplifier) sections shape the soul of Mercury-8's sound, defining its brightness, warmth, and dynamic feel as notes evolve. Modeled directly after the JP-8's legendary circuitry, the filter here isn't just a tone shaper. It's the very soul of what makes this synth unique and still highly coveted today.

What made the JP-8 so beloved wasn't merely its precision or range, but the character of its filter. Where many early-'80s synths leaned toward the aggressive or the clinical, the JP-8 struck a perfect balance: smooth yet full of presence, capable of warmth one moment and crystalline edge the next. Its dual-mode filter could switch between 12 dB and 24 dB slopes, giving it a flexibility few others could match: the brighter 12 dB setting offered airy, open timbres ideal for pads and strings, while the steeper 24 dB mode delivered that classic Jupiter punch that was tight, bold, and instantly recognizable.

The filter's resonance was another defining trait. Instead of the sharp, nasal peak found on many of its contemporaries, the Jupiter's resonance bloomed in a way that seemed almost vocal, adding a human-like inflection without overpowering the sound underneath. This gave every sweep, pluck, and pad a sense of dimension.

Mercury-8 captures all of this nuance with remarkable accuracy. Every shift in cutoff frequency, every subtle resonance interaction, every sweet spot of drive and clarity has been faithfully modeled. Open it up for high-end sizzle,

or close it down for that unmistakable “Jupiter hush” a smooth, dark tone that glows with warmth.

Source Mix

This knob blends the outputs of VCO-1 and VCO-2 before they reach the filter. Turning it fully left passes only VCO-1. Turning it right shifts the balance toward VCO-2. The center position delivers an even mix of both. Subtle adjustments here can dramatically affect harmonic balance and character, especially when the oscillators are detuned or set to different waveforms.

HPF (High-Pass Filter)

Before hitting the main low-pass filter, Mercury-8 includes a dedicated High-Pass Filter for trimming low frequencies and tightening the tone. It's useful as a kind of sophisticated EQ to tame peaky or bottom-heavy patches.

Cutoff Frequency

Sets the cutoff point of the high-pass filter. Raising the slider removes low-end frequencies, giving patches a thinner, brighter character. Lower settings preserve bass response. This stage can be used gently to reduce muddiness or aggressively to create sparkling, high-focused textures.

VCF (Main Low-Pass Filter)

The centerpiece of Mercury-8's tone sculpting, the Voltage-Controlled Filter replicates the unique musical character that made the JP-8 legendary.

Cutoff Frequency

The Cutoff Frequency slider determines where the filter begins to roll off higher harmonics. Moving the slider upward allows more brightness and harmonic content to pass through; lowering it darkens the tone. Because the filter response is so smooth and musically tuned, small adjustments here can dramatically change a sound's personality from gentle, glassy top-end to deep, rounded warmth.

Resonance

The Resonance control emphasizes frequencies right at the cutoff point. On many synthesizers this can sound harsh or piercing, but on Mercury-8 it produces that signature Jupiter sheen, a resonant peak that feels organic and almost liquid. Moderate resonance adds presence and shape to the tone, while higher settings yield self-oscillating sweeps that can double as a sine-wave oscillator when pushed to the extreme.

Slope

The Slope switch toggles between two distinct filter characters: -12 dB and -24 dB per octave. The 12 dB mode offers a brighter tone well-suited to

brassy tones or harmonically-rich textures, while the 24 dB setting provides a steeper, punchier contour, ideal for basses, plucks, and lead sounds that need focus and weight. Many players love blending both in layered patches, using the 12 dB mode on one layer for sizzle and the 24 dB on another for grounding power.

Envelope Modulation

The Env Mod slider controls how much a selected envelope (either ENV-1 or ENV-2) affects the filter cutoff. Use this to shape dynamic, time-based changes in brightness to create snappy attacks for percussive synths, sweeping decays for evolving leads, or long, expressive openings for pads. The selector chooses which envelope is used as the modulation source.

LFO Mod

The LFO Mod slider determines how much the Low Frequency Oscillator modulates the filter cutoff. This allows everything from gentle, breathing motion to rhythmic pulsations or tremolo-style movement, depending on the LFO's waveform and speed.

Key Follow

The Key Follow slider makes the filter cutoff track the pitch of played notes. Higher settings open the filter more as you play up the keyboard, ensuring brightness remains consistent across octaves. Lower settings can be used to create darker, moodier upper registers, a hallmark of many classic Jupiter patches.

VCA (Voltage-Controlled Amplifier)

After the filter sculpts the tone, the VCA shapes its volume, determining how the sound swells and fades over time. Like the original JP-8, its amplifier stage has a transparent response: powerful and punchy when driven hard, but still capable of subtlety at lower levels.

Level

The Level slider controls the overall amplitude of the voice before it reaches the output stage. Higher settings deliver more signal strength and presence, while slightly reducing the level can smooth dynamics and preserve headroom in layered patches. Because the VCA and filter interact organically, small changes here can subtly affect perceived brightness and body.

LFO Mod

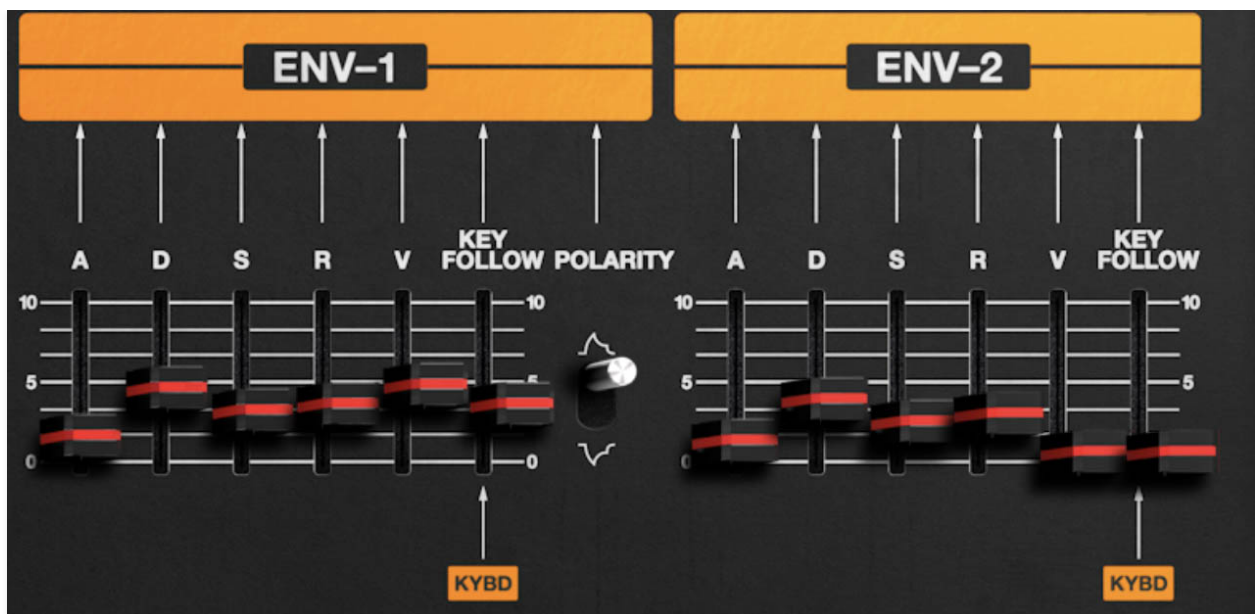
The LFO Mod slider allows the Low Frequency Oscillator to modulate the VCA's amplitude, producing tremolo and rhythmic volume pulsations. Use it sparingly to add life to pads and sustained tones, or push it further for dramatic rhythmic modulation synced to your project tempo.

Dynamic Expression

Because Mercury-8 is fully bi-timbral, each layer (Upper and Lower) has its own independent VCA section and envelope, allowing one sound to swell while another remains static, or one to tremble with LFO modulation while the other stays solid and centered. This makes it possible to create evolving, dual-layer performances that feel wide, expressive, and unmistakably "Jupiter."

Power User Tips

- Try modulating the high-pass and low-pass filter independently. The high-pass adds air while the low-pass has that unmistakable Jupiter weight. If you modulate them separately with different LFO wave shapes (either in the main LFO or FX LFO) you get a shifting sense of focus. It's an easy way to make a static pad feel like it's breathing.
- If you want a bass that sounds like it's arguing with gravity, stack the Upper and Lower layers and give each its own filter envelope personality. One can open fast and bright; the other can bloom slowly and stay darker. Let them disagree. That tension creates a thicker, more dimensional tone than any single filter sweep.
- Split mode may be a performance feature, but don't sleep on it for sound design. Put a dark, round patch on the low half of the keyboard and a brighter, modulated one on the top, then play arpeggios that wander across the split point. It feels like the filter is morphing under your hands, even though it's really two different personalities stitched together. It's a fun way to fake a complex evolving filter without touching the mod matrix



Envelopes

The Envelope Section of Mercury-8 features two independent and fully assignable ADSR envelopes, ENV-1 and ENV-2, each providing precise, musical control over how a sound evolves over time. Just like the JP-8, these envelopes are fast, smooth, and capable of everything from sharp percussive attacks to long, flowing sweeps. They're at the core of Mercury-8's dynamic expression, shaping both filter and amplifier responses and modulating other destinations throughout the synth.

ENV-1

By default, ENV-1 is routed to the VCF (filter) to shape brightness and harmonic movement, though it can also be assigned elsewhere via the toggle modulation matrix.

- A (Attack) - Determines how quickly the envelope rises from silence to its peak value. Low settings produce a sharp, immediate onset; higher values create gradual fade-ins or sweeping builds.
- D (Decay) - Sets the time it takes for the envelope to fall from its peak to the sustain level.
- S (Sustain) - Establishes the level held while a key is pressed.
- R (Release) - Controls how long the envelope takes to return to zero after the key is released.
- V (Velocity) - Adjusts how strongly key velocity affects the overall envelope depth, making the sound more expressive when you play

dynamically.

- Key Follow - When increased, the envelope's rate shortens for higher notes on the keyboard, mimicking natural instrument behavior as you play up and down the keyboard.
- Polarity - Determines whether the envelope acts in a positive or inverted direction. In positive mode, higher values open filters or increase modulation depth. In negative mode, the envelope closes filters or decreases a parameter over time.

ENV-2

ENV-2 is typically routed to the VCA (amplifier) and controls the loudness contour of each note, but like ENV-1, it can be assigned to additional modulation targets for more advanced sound design.

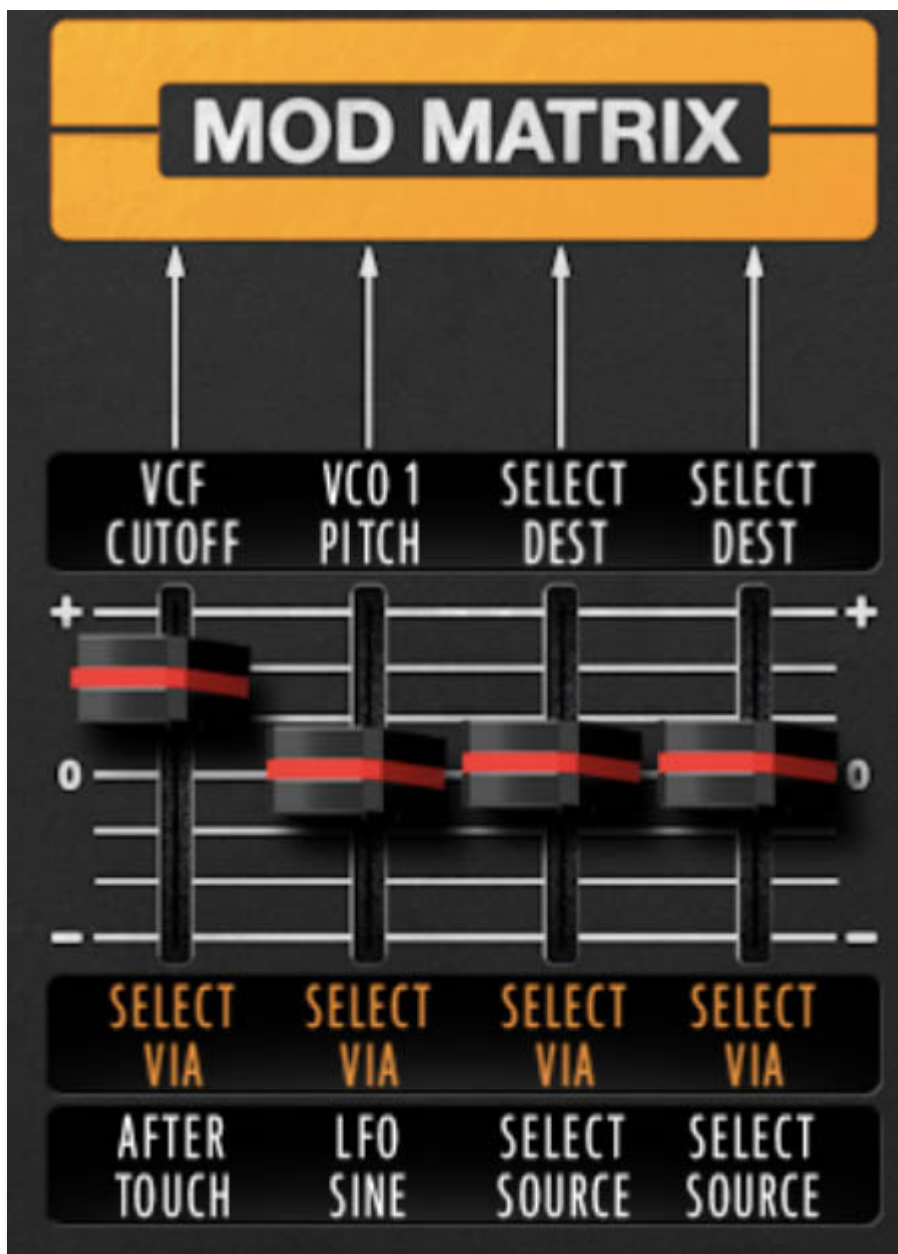
- A (Attack) - Controls how quickly the sound reaches full volume.
- D (Decay) - Sets how long it takes to drop from maximum to sustain level.
- S (Sustain) - Defines the steady volume held while a note is sustained.
- R (Release) - Adjusts how long the sound fades out after the key is released.
- V (Velocity) - Controls how keyboard velocity influences amplitude response—ideal for bringing subtle dynamic nuance to performances.
- Key Follow - When increased, the envelope's rate shortens for higher notes on the keyboard, mimicking natural instrument behavior as you play up and down the keyboard.

Power User Tips

- For classic analog expressiveness, assign ENV-1 to modulate the filter cutoff with a short attack, moderate depth and a short decay for snappy synth plucks, while ENV-2 shapes the VCA with a matching contour for tight articulation. For ambient textures or pads, increase both envelopes' attack and release times and experiment with negative polarity on ENV-1 for evolving, inverted sweeps.
- Use envelopes to fake "macro" controls. For example, assign an envelope to both filter cutoff and resonance, but in opposite directions. As the envelope opens the filter, let it pull resonance down a bit. The result is a sweep that starts nasal and tense, then opens into a broad, confident

tone. It feels like one knob that is secretly moving two or three things at once.

- On layered Upper and Lower sounds, try contrasting envelope curves instead of matching them. Let one layer have a sharp attack and quick decay while the other has a slower fade in and longer release. When you play staccato, you mostly hear the punchy layer. When you hold notes, the slower one swells up and takes over. It almost feels like you are crossfading between two patches based on how you phrase, even though it is all envelopes.



Mod Matrix

Modulation is where patches stop behaving like polite presets and start acting like ideas with real character and depth. Anyone can dial in a basic pad or bass. The fun begins when you start asking, “What happens if I send this thing over there?” The Mod Matrix is simply a switchboard for curiosity. Route a slow LFO to pulse width, or a snappy envelope to resonance, or velocity to something that probably should not be velocity-controlled. Suddenly the sound starts to move and misbehave in ways that make you stop, listen, and grin. There is no rocket science here. It is just connecting one motion to another and seeing what happens. Once you see how many ways you can connect one thing to another, it stops feeling like a feature and

starts feeling like a playground. You can shape motion, break rules, and build tones that no preset browser has ever seen before.

Each of the four modulation slots includes:

- Select Source
- Select Destination
- Select Via
- Depth Slider

Select Source

Defines what's doing the modulating: the origin of movement. Available options include LFOs, envelopes, velocity, aftertouch, keyboard tracking, and more. Each behaves differently:

- LFOs provide periodic modulation, perfect for vibrato, tremolo, or rhythmic pulsing.
- Envelopes shape one-shot movements such as filter sweeps or attack transients.
- Performance controls (velocity, aftertouch, mod wheel) introduce dynamic, touch-sensitive expression.

Select Destination

Specifies the parameter being modulated. Nearly any Mercury-8 control can be targeted: oscillator pitch, pulse width, filter cutoff or resonance, VCA level, pan position, or even effects parameters.

Use this to inject movement into your patches. For example, send a slow LFO to filter cutoff, or route an envelope to oscillator pitch for classic analog percussive blips and zaps.

Select Via

Adds an extra level of modulation control. It's essentially a "modulator of a modulator." It defines how much of the main modulation is applied, based on another control source.

For example:

- LFO → Pitch via Mod Wheel: vibrato that fades in as you move the wheel. (This is actually set up by default under the hood when you create a new patch with the "New" command.)
- Aftertouch → Filter Cutoff via Velocity: harder key strikes increase how sensitive the filter is to pressure.

If you leave the Via slot empty, the modulation depth remains constant according to the amount that you have set with the Mod Depth Slider.

Mod Depth Slider

Sets the amount and polarity of the modulation. Move the slider up for positive modulation or down for negative (inverted) modulation. The center position represents zero modulation.

Modulation Routing Examples

The Mod Matrix isn't just for experimental sounds, though it's good for those, too. It's also your tool for classic synth sounds, expressive performance controls, and creating evocative textures.

Here are a few modulation routings to spark some ideas. Be aware that these are just starting points. The Mod Matrix is designed to encourage curiosity. Mix and match sources and destinations, try subtle and extreme amounts, and don't be afraid to modulate your modulators. The results can be extremely musical and expressive.

1. Aftertouch to Filter Cutoff

- **Source:** Keyboard → Aftertouch
- **Destination:** VCF Cutoff
- **Why it's useful:** This is a bread-and-butter mod for dynamic expression. Press harder, and the filter opens up. This is a very tactile way to add expression to pads, strings, synth horns, and more.

2. Mod Wheel to Oscillator Pulse Width

- **Source:** Keyboard → Mod Wheel
- **Destination:** VCO 1+2 → VCO 1+2 PW
- **Why it's useful:** Pulse width modulation adds harmonic movement to static waveforms. Routing it to a wheel gives you hands-on control over the timbre, perfect for expressive sweeps or animated textures in real time. Note that the wave shape

3. Filter Envelope to Oscillator 1 Pitch

- **Source:** Env-1
- **Destination:** VCO 1 → VCO 1Pitch
- **Why it's useful:** This creates a subtle pitch bend at the start of each note. Use it for analog-style "brass" or "pluck" sounds with just a bit of

pitch dip or ramp to add character.

4. LFO (Random) to Filter Resonance

- **Source:** VLFO → LFO Random
- **Destination:** Filters → VCF Resonance
- **Why it's useful:** Randomized resonance modulation gives your sound a bubbling edge. This is useful for generative-type patches, glitchy effects, or unpredictable sci-fi atmospheres.

5. Aftertouch to Arpeggiator Chance

- **Source:** Keyboard → Aftertouch
- **Destination:** Arpeggiator → Arp Chance
- **Why it's useful:** Use pressure to add variety to an arpeggio while you hold a note.

6. Noise to Filter Cutoff

- **Source:** White Noise (or Pink Noise)
- **Destination:** Filters → VCF Cutoff
- **Why it's useful:** A touch of noise modulation applied to filter cutoff can add grit to a sound. Dial it in subtly.

7. Envelope 1 to LFO Rate

- **Source:** Env-1
- **Destination:** LFO Rate
- **Why it's useful:** This sets up nested modulation. Envelope 1 gradually speeds up or slows down the LFO over time. If you then route the LFO to the VCF (turn up LFO Mod in the VCF section), you will create rhythmic filter modulation that evolves as you play.

8. LFO (Sine) to Pan (VCA)

- **Source:** LFO → LFO Sine
- **Destination:** VCA → VCA Pan
- **Why it's useful:** A slow triangle wave panning the signal left and right gives instant stereo movement akin to tremolo. This is useful for ambient patches, pads, and soundscapes that travel across the stereo field.

9. LFO (Random) to Arpeggiator Swing

- **Source:** LFO → LFO Random
- **Destination:** Arpeggiator Swing
- **Why it's useful:** Randomly varying swing gives your arpeggios a quirky, humanized feel that's less rigid and more alive. Especially fun for experimental or generative patches.

Modulation Sources and Destinations

MOD SOURCES

None

VCO 1

VCO 2

White Noise

Pink Noise

LFO (Sine, Saw, Square, Random)

Envelope 1

Envelope 2

Pitch Bend

Mod Wheel

Keyboard

Glide

Velocity

Aftertouch

Mono Random

Poly Random

+10V DC

Arpeggiator CV

Sequencer Lowest Note CV

Sequencer Highest Note CV

MOD DESTINATIONS

None

VCO 1+2 Pitch

VCO 1+2 Fine

VCO 1+2 PW (pulse width)

VCO 1 Pitch

VCO 1 Fine

VCO 1 PW

VCO 1 Cross Mod

VCO 2 Pitch

VCO 2 Fine

VCO 2 PW

VCO Source Mix

Filters - HPF Cutoff

Filters - VCF Cutoff

Filters - VCF Resonance

VCA - Volume

VCA - Pan

Unison Detune

ENV-1 - Attack

ENV-1 - Decay

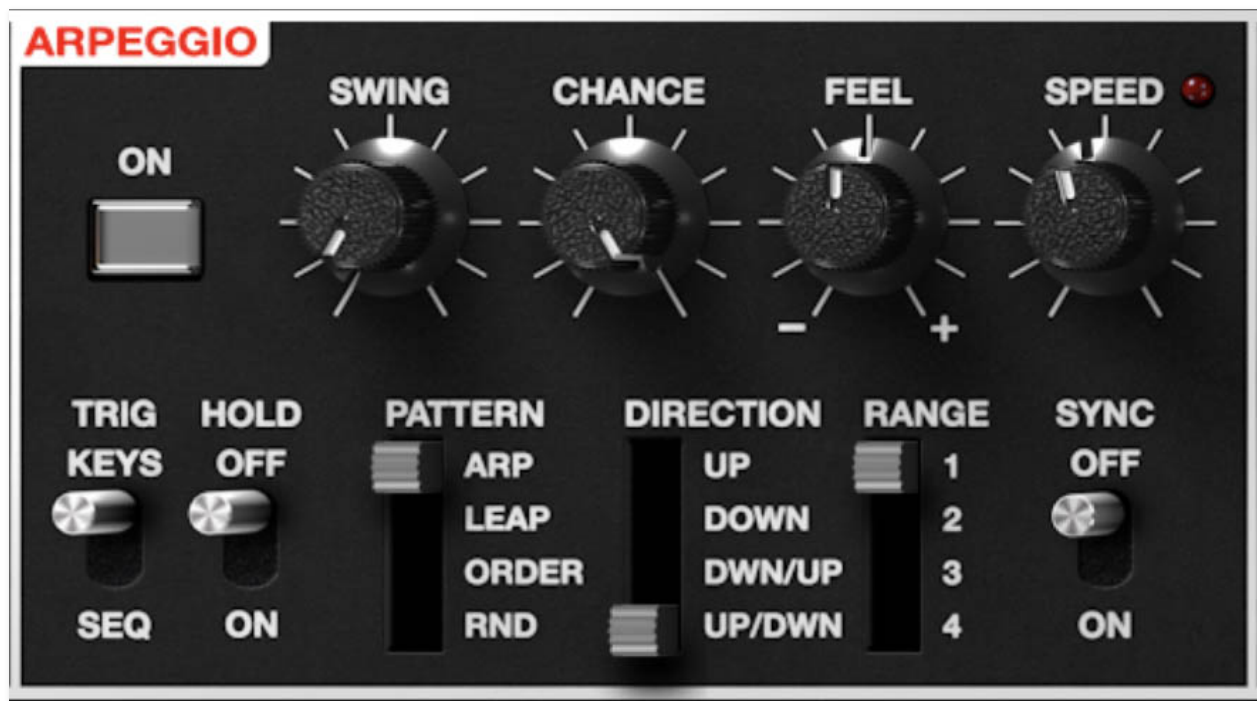
FX Upper LFO
FX Lower LFO
FX Global LFO

ENV-1 - Sustain
ENV-1 - Release
ENV-2 - Attack
ENV-2 - Decay
ENV-2 - Sustain
ENV-2 - Release
Upper/Lower Balance
Arpeggiator - Swing
Arpeggiator - Chance
Arpeggiator - Feel
Arpeggiator - Speed
Sequencer - Swing
Sequencer - Chance
Sequencer - Feel
Sequencer - Speed
FX Upper LFO Rate
FX Upper Level
FX Lower LFO Rate
FX Lower Level
FX Global LFO Rate
FX Global Level
FX Level
FX Stereo Width

Arpeggiator and Sequencer

The Arpeggiator and Sequencer are where inspiration meets automation, but they're also where Mercury-8 hands you a ticket to new musical ideas you might never stumble onto by playing alone. Think of them as guided-motion engines. You feed them notes or patterns, and they respond with movement, rhythm, and evolving shapes that can spark entire songs. The arp can turn a simple triad into a dancing melodic line or a pulsing texture, while the sequencer lets you sketch riffs, basslines, or shifting phrases one step at a time. And because both tools respond to performance controls, they never feel like you're "programming" anything. They feel like extensions of your hands and creative energy.

Tip: When using these features with POLY 1 mode, the sound may become blurred and less distinct. This mode memorizes the notes played and continuously assigns those same notes to the same voices, which can lead to longer release times. For snappier, more defined arpeggios and sequences, it is recommended to use POLY 2 mode.



Arpeggiator

Mercury-8's arpeggiator takes the notes you play and turns them into a repeating pattern that can be simple or complex, depending on how you set

it. It's simple on the surface, but rich with variations. A few small tweaks can turn a steady arpeggiation into something expressive and even surprising.

On - Turns the arpeggiator on or off.

Trig Mode (Keys / Seq) - In Keys mode, the arpeggiator plays directly from the notes you hold on the keyboard. In Seq mode, it is driven by the Step Sequencer, combining the two features for complex rhythmic interplay.

Hold - Keeps the pattern running even after you release the keys.

Swing - Adds rhythmic groove by delaying every second step. At 0%, the pattern is locked to the grid; around 60-70%, you'll get a triplet feel that adds movement.

Chance - Determines the probability that each note will sound. Lower values introduce rests and syncopation; higher settings result in steady drive.

Feel - Adjusts micro-timing and human nuance. Negative values pull notes slightly behind the beat, positive values push them forward. It's a subtle way to make the arpeggiator feel either laid-back or insistent.

Speed - Controls playback rate. Slow speeds create gentle, evolving phrases; faster rates turn chords into rhythmic streams. The LED flashes in time with playback.

Pattern - Chooses how the arpeggiator orders your notes:

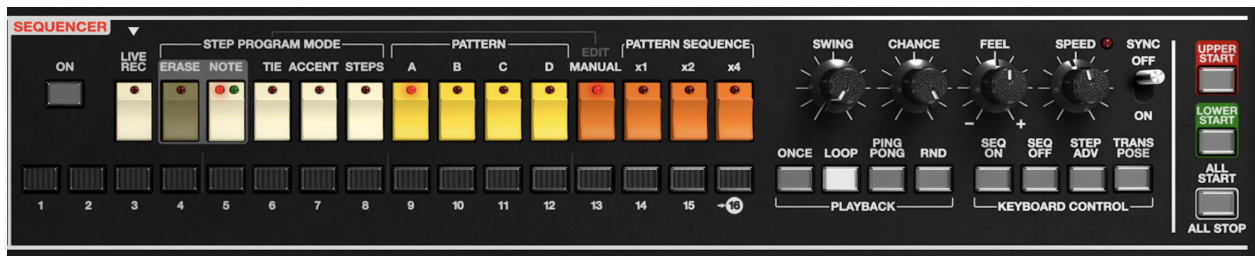
- Arp - Classic upward stepping pattern.
- Leap - Each held note jumps across octaves in a tumbling three-step cycle.
- Order - Plays notes in the order they were pressed. This is useful for creating pseudo melodic phrases.
- Rnd (Random) - Fires off notes in unpredictable order for organic, never-repeating patterns.

Direction - Sets the motion: Up, Down, Down/Up, or Up/Down.

Range - Determines how many octaves the arpeggio spans (1-4). Wider ranges create expansive, climbing patterns that stretch across the keyboard.

Sync - Locks the arpeggiator to host tempo or the standalone clock, automatically switching Speed from Hertz to rhythmic divisions.

Tip: Hold a major-seventh chord, select Leap mode, set the Range to three octaves, and dial in Chance around 70% with a touch of Swing. You'll get a distinctive cascading movement that sounds half-mechanical, half-human.



Polyphonic Step Sequencer

Where the arpeggiator provides chord-based rhythmic drive, the Polyphonic Step Sequencer gives you structure and memory. It captures your musical ideas: notes, chords, dynamics, and timing, and plays them back with the same flexibility and musicality that made early analog sequencers so appealing. Mercury-8's version goes much further, however, allowing polyphonic programming, pattern chaining, and live transposition so your ideas can grow.

On - Activates or deactivates the sequencer. When ON is active, the display allows you to set the Sequencer Route parameter. If you choose UPPER or LOWER, the Sequencer behaves normally and plays back any notes or chords you've recorded. If you choose OFF, the Sequencer won't trigger audible notes at all, and instead lets you use its stored patterns purely as a modulation source in the Mod Matrix without hearing the sequence play. Note that the Mod Matrix allows you to choose either "Sequencer Lowest Note CV" or "Sequencer Highest Note CV" so that if you have recorded a chord on a sequence step, you can choose to use either the highest note or lowest note of the chord as the modulation value for that step.

Step Buttons (1-16) - Represent the sequence's steps. Each can contain a single note, a chord, or a rest.



Programming Controls

- **Live Rec** - Records your performance directly into the sequence.
- **Erase** - Clears the selected step.
- **Note** - Manually enters or edits notes per step.
- **Tie** - Connects adjacent steps for sustained notes.
- **Accent** - Emphasizes steps for more dynamic patterns.
- **Steps** - Sets total sequence length (1-16). Non-standard lengths (5, 7, 11, etc.) create evolving rhythmic loops that shift naturally against 4/4 time.
- **Pattern Select** (A-D) - Stores up to four independent patterns. Use them for variations or chain them for longer passages.
- **Pattern Sequence** (x1-x4) - Determines how many times a pattern repeats before switching to the next.

Playback Modes

- **Once** - Plays through once, then stops.
 - **Loop** - Repeats continuously.
 - **Ping-Pong** - Plays forward, then backward.
 - **Random** - Reorders steps for generative unpredictability.
-



Keyboard Control

- **Seq On/Off** – Starts or stops playback with a key press.
- **Step Adv** – Advances one step per key press—useful for manual sequencing or experimental rhythms.
- **Transpose** – Shifts the running sequence up or down in pitch, letting you “play” the sequence like an instrument. This feature has low note priority. In practice, that means the sequence will lock to the lowest key you’re holding. Hold a low key and the sequence anchors itself there, even if you’re playing chords or leads on the other layer. It’s an easy way to run a transposable bass line underneath a polyphonic part without the sequence jumping around unless you actually release that lowest note.



Groove Control

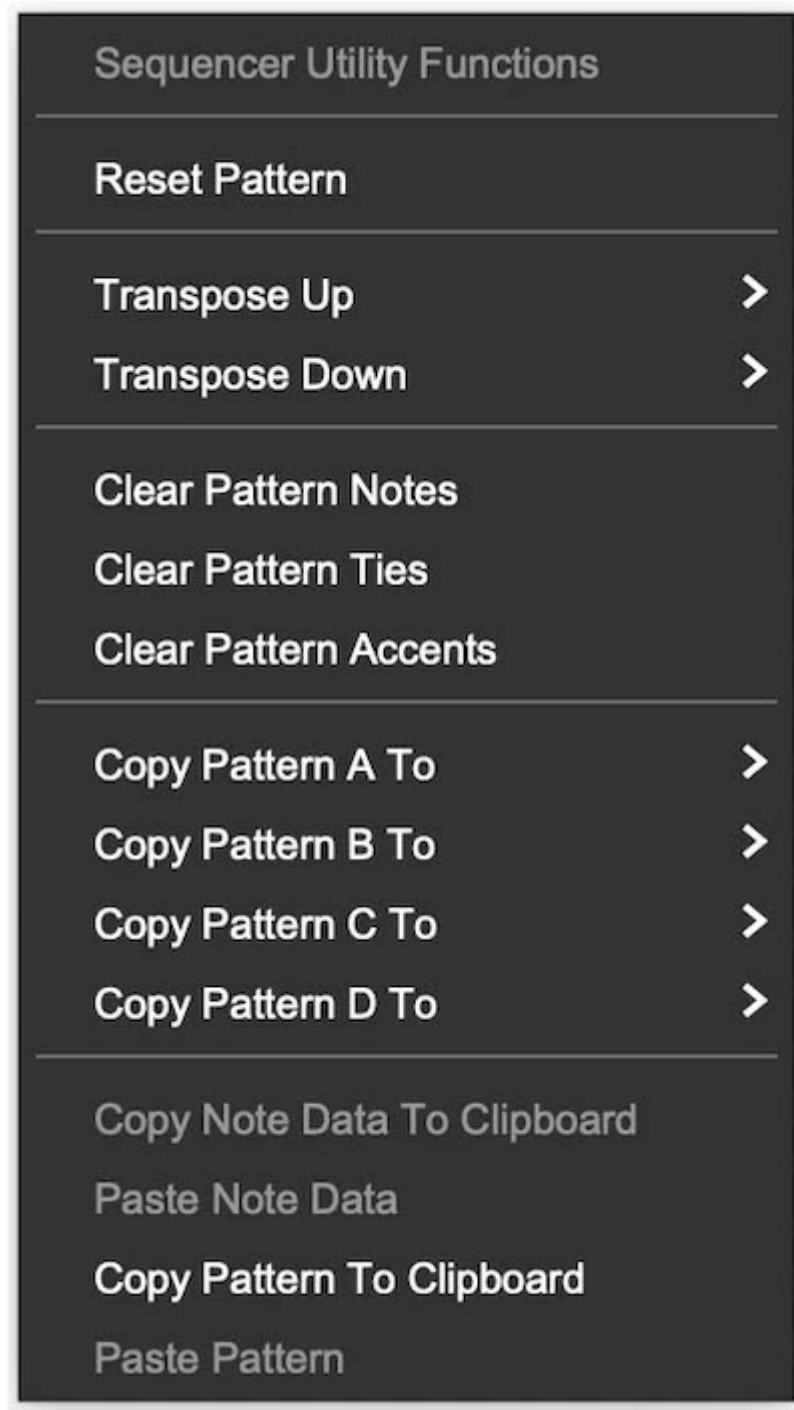
- **Swing, Chance, Feel, Speed, Sync** - Match the functions found in the arpeggiator, offering identical control over groove and timing.
- **Upper Start / Lower Start / All Start / All Stop** - Launch or stop playback independently for the Upper and Lower layers, or both at once in Dual or Split mode.

Tip: Record a few chords into Pattern A, set playback to Ping-Pong, and enable Transpose. Then use the keyboard to shift the pattern through new harmonies while it plays. It feels like you're conducting the Sequencer in real time.



Sequencer Utility Menu

In addition to hands-on editing, the Sequencer features a Utility dropdown menu (click the triangle in the upper-right corner of the Sequencer panel) with a set of utilities for managing your patterns quickly.



- **Reset Pattern** - Clears the current pattern and returns all steps to their default state. This creates a clean slate when you want to start over.

- **Transpose Up / Transpose Down** – Shifts the entire sequence up or down in pitch 1 semitone or 12 semitones (1 octave). Handy for re-keying a riff without re-entering every note.
- **Clear Pattern Notes** – Removes all note values from the sequence while leaving ties and accents untouched.
- **Clear Pattern Ties** – Deletes all tie information while keeping notes and accents intact.
- **Clear Pattern Accents** – Strips away all accents, leaving note and tie data in place.
- **Copy Pattern to** – Duplicates one pattern bank into the other. Good for creating variations without starting from scratch.
- **Copy Note Data to Clipboard / Paste Note Data** – Lets you copy just the note information from one pattern and paste it into another, even across different presets or incidents of Mercury-8.
- **Copy Pattern to Clipboard / Paste Pattern** – Copies or pastes the entire pattern (notes, ties, accents, the works) to or from the clipboard.

Together, these commands make it easy to manage multiple ideas, build variations, and keep your workflow moving fast.

Tips: Managing Sequences

- **Keep a Safety Copy:** Before experimenting, use **Copy Pattern A to B** so you've always got the original tucked away.
- **Transpose for Inspiration:** If a sequence feels stale, try **Transpose Up** or **Down** because sometimes new inspiration is just a few semitones away.
- **Selective Clearing:** Don't nuke everything if you don't have to. Clearing just **Ties** or **Accents** is a quick way to reshape a groove without reprogramming the whole line.
- **Clipboard Power:** Use the clipboard commands to move sequences between projects or duplicate ideas across presets or multiple Mercury-8 instances. It's a hidden workflow booster.
- **Variation Builder:** Copy a sequence, then strip accents or ties to create subtle variations. Alternate between them in A/B mode for evolving patterns.

Sequencer Tips

- Chords in steps - instant song sketches. Load full triads into steps instead of single notes, and suddenly the sequencer is writing progressions while you focus on textures.
- Transpose is your friend - Record a 4-bar chord pattern, then use a single key to move the whole thing around. You'll feel like you're conducting the song with one finger.
- Steps \neq 16 only. Set the sequence length to an odd number like 7 or 11. Against a 4/4 drum track, you'll get endlessly shifting polyrhythms that never quite repeat.
- Accent for drama. Sprinkle a few accented steps into otherwise quiet patterns and you'll create grooves with natural push and pull. Works wonders on brass stabs.
- Chance + Random = happy accidents. Let the sequencer surprise you. Patterns with low Chance and Random playback create note and chord variations that feel more like generative ambient music than a rigid sequence.

Effects

Mercury-8 features a complete five-slot, studio-grade effects rack that lets you add depth and motion directly within the synth. Each slot can host one of Cherry Audio's built-in processors, from swirling choruses and lush reverbs to crunchy distortions and atmospheric delays.

Because Mercury-8 is bi-timbral, both the Upper and Lower layers have their own independent five-slot effects chains. This means each layer can have a completely different sound design and processing setup. For example, a bright, echo-enhanced lead on the Upper layer and a warm, chorussy pad on the Lower. Whether you're working in Dual, Split, or Whole mode, the two layers remain fully independent and can be mixed, balanced, or processed separately.

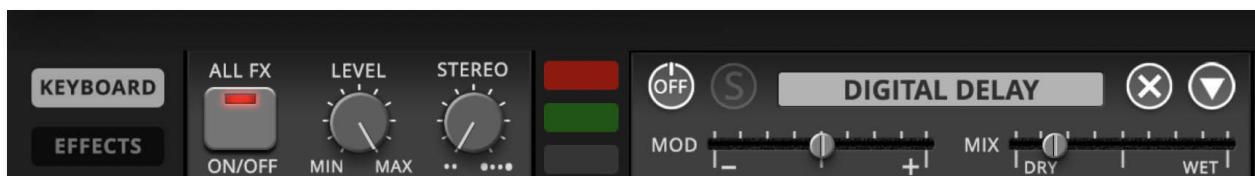
Each effect can be tweaked, bypassed, reordered, copied, soloed, duplicated, or saved for use in other presets. You can even modulate entire chains with a dedicated Effect Modulator.

Quick Tip: *The mini FX panel is always visible, but click the **Effects** tab at the bottom right for the full parameter view and deeper editing. Alternatively double-click the effects "footer" (the part with the always-visible mod and mix controls) to toggle the view from mini to full.*

Quick Controls (Always Available)

Even if you're in Keyboard View, the most essential FX controls are always within reach, sitting neatly under the chain:

- **All FX On/Off** - Instantly bypasses the entire chain.
- **Level** - Adjusts the overall level of the chain.
- **Stereo** - Widens (or narrows) the stereo field after processing.



Section Selectors (Color-Coded)

At the bottom of the panel you'll see three colored squares. These pick which section's effects chain you're editing:

- **Red** - Upper
- **Green** - Lower
- **Gray** - Global (affects both Upper and Lower)

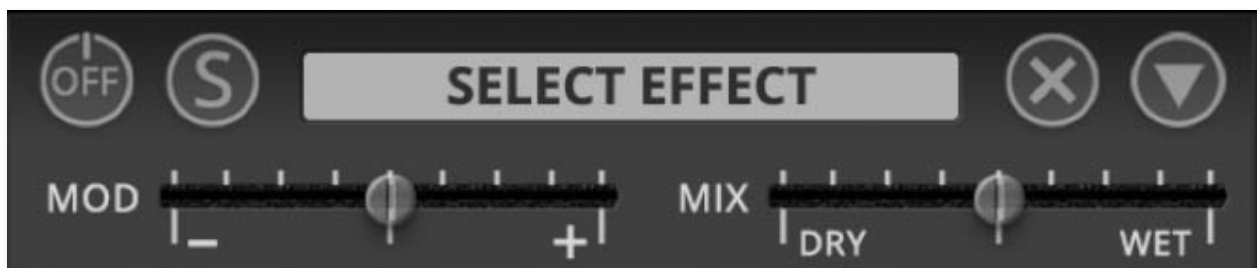
Click the color, build your chain, and get creative. Each chain is fully independent, so yes, you can have phasers and ping-pong delays on an Upper layer pad and tape echo and reverb on a Lower layer brass sound.



Per-Effect Controls

Each effect block in a chain has its own set of mini-controls:

- **On/Off** - Toggle the effect.
- **Solo** - Bypass all other effects to hear just this one.
- **Remove** (X) - Delete the effect from the chain.
- **Menu** - Copy, paste, duplicate, move, swap, or save.
- **Modulation Amount** - From the Effect Modulator.
- **Wet/Dry Mix** - Blend processed vs. dry signal.



The Effect Modulator

Sometimes you may want to modulate a delay time or a phaser sweep for extra movement or a bit of weirdness. Enter the **Effect Modulator**. It's a dedicated LFO just for the effects. Used subtly, the Effect Modulator can add motion and depth. Push it harder, and things can get more dramatic and unstable. Either way, it's one of the quickest ways to make an effect feel more varied and animated.

Each effect has one specific parameter that is permanently tied, or “hard-wired,” to the Effect Modulator. In other words, you don't assign modulation destinations manually. The destination is already chosen for you by the effect's design.

To see which parameter is being modulated, look for the arrow labeled “**Mod**” on the effect's panel. That graphic points from the affected control down toward the Effect Modulator, making it easy to spot the modulation target at a glance. If a control has that arrow, it's the one the Effect Modulator will affect.

This means every effect has its own built-in modulation relationship. On one effect, the Effect Modulator might animate delay time. On another, it might sweep a tonal or spatial parameter. The exact target depends on the effect, but the visual cue is always the same: Follow the “Mod” arrow.

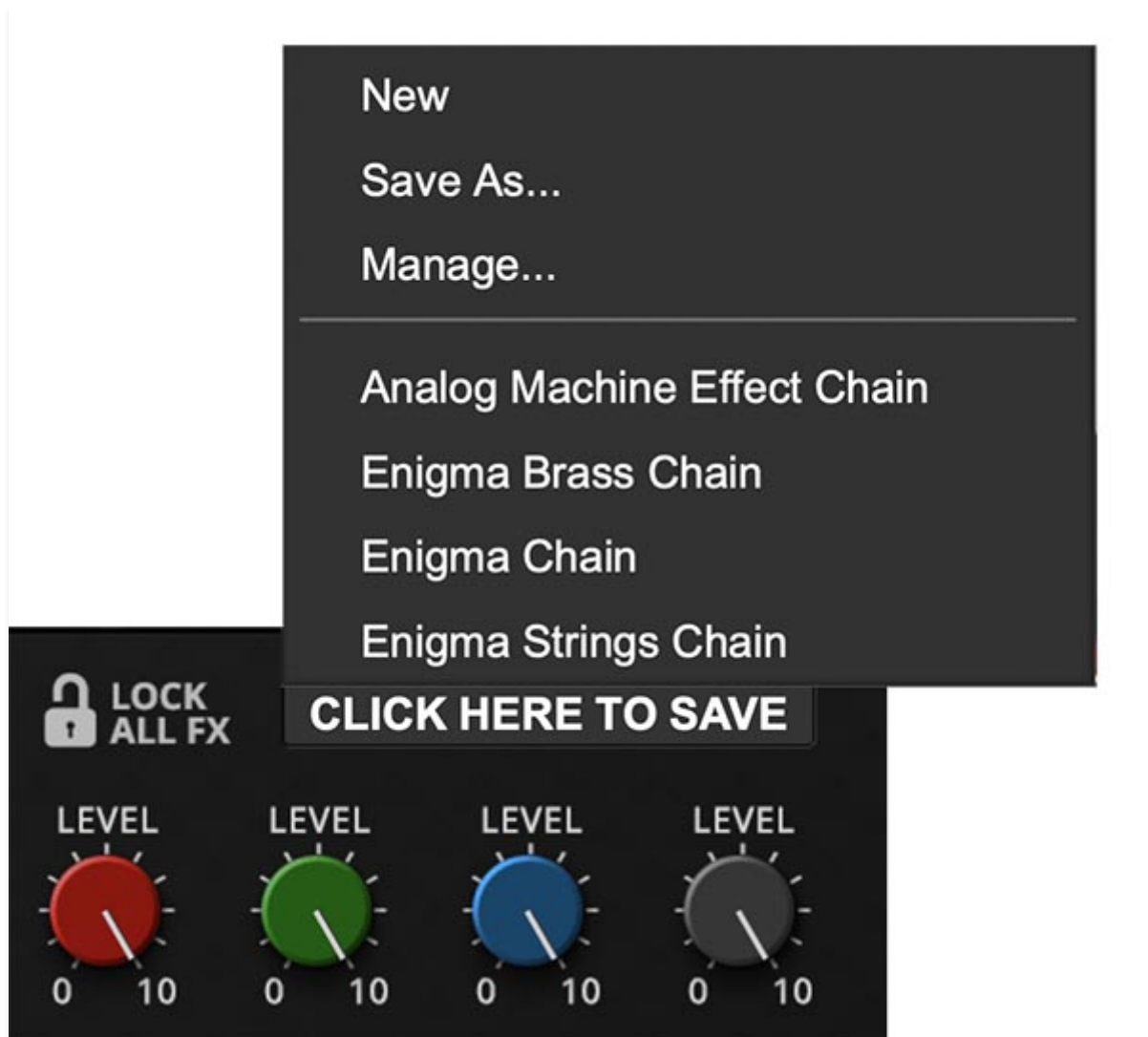


Effect modulator controls include:

- **Speed** - 0.01 Hz to 20 Hz, or tempo-syncable from 1/64T to 8 beats. LED above flashes in time.
- **Waveform** - Ramp, sawtooth, triangle, sine, square, or random.
- **Delay** - Fade-in time for modulation (0-5000 ms).
- **Sync** - Locks modulation speed to host tempo.

- **Mod Wheel** - Lets your MIDI Mod Wheel scale the modulation depth in real time.
- **Key Reset** - Restarts the waveform with each key press.





Managing Effects Chains

Building and wrangling effects and effect chains straightforward. Use the Effects menu dropdown (the triangle) to save and move effects and chains.

- **Add an Effect** - In the Effects View, select a section (Upper, Lower, or Global). Click the *Select Effect* dropdown to pick your effect, then tweak away.
- **Delete an Effect** - Click the “X” next to its name.
- **Save a Chain** - Display the Full Effects view → Use the *Click Here To Save* dropdown menu → Save As. Name it, reuse later.
- **Recall a Saved Chain** - Load from the same dropdown.
- **Solo an Effect** - Hit the “S” button; all others mute.
- **Reorder** - Drag the effect by its top “grip” edge to rearrange.
- **Numerical Edit** - Double-click a knob/slider, type a value, press Enter.

- **Copy Effect to Another Section** - Click the triangle dropdown → Copy To → choose Upper or Lower.
- **Copy or Move Entire Chain** - Click the triangle dropdown → Copy/Move Effect Chain To → choose Upper or Lower.
- **Duplicate an Effect** - Click the triangle dropdown → Duplicate (places a copy right next to it).
- **Swap an Effect** or chain - Click the triangle dropdown → Swap an Effect Chain with → choose Upper, Lower, or Global.
- **Align Effects** - Click the triangle dropdown → Align All Effects to automatically shift all effects to the left, closing any empty slots in between.
- **Lock All FX** - Click the padlock icon to keep the current effects chain in place when switching presets. Any new preset you load will use your locked chain instead of its own, making it easy to carry your favorite effect setup from sound to sound.



Practical Tips

- Don't overlook the **Global chain**. A touch of reverb or EQ here can glue all three sections together.
- The **Effect Modulator + Mod Wheel** combo is excellent for live performance. Map it, and suddenly your phaser swoops in only when you push the wheel.
- Try saving a few **favorite chains** and re-using them across presets. Treat them like your personal pedalboards.
- Extreme stereo widening can be fun in headphones, but keep an ear on mono compatibility if you're making tracks.
- The library of Effect Chains that you build over time is shared with other Cherry Audio instruments that utilize this same system, from Trident Mk III synthesizer (October 2025) onward.

The Effects

There are 20 effects in total to add potency to any Mercury-8 sound. Whether you're after subtle polish, full-throttle grit, or spacey atmospheres, these effects add even more character to any patch.



Digital Delay

Delay pedals and tape echoes have been a keyboardist's sidekick for decades. The Digital Delay offers three classic flavors:

- **Digital** - Clean, pristine repeats.
- **Tape** - Warm, saturated echoes.
- **Ping Pong** - Echoes that bounce between left and right for stereo ambience.

Controls:

- **Delay Time** - Sets the gap between repeats (1 ms to 2000 ms). With Sync on, times follow the beat (1/64T to 8 bars). This can be controlled by the Effect Modulator.
- **Feedback** - Controls how many repeats you get. Low values = slapback echo; high values = infinite runaway.
- **Spread** - Adjusts the stereo width of the delayed signal.
- **Damp** - Softens repeats by filtering highs, making echoes darker and rounder.
- **Mod Rate / Mod Depth** - Adds modulation to delay time. Subtle settings = chorus shimmer; extreme = pitch warbles and glitching.

Tip: Try Digital mode with high feedback and a little modulation depth for a psychedelic wash that hovers on the edge of freak out.



Tape Echo

Few effects are as iconic as tape echo. Originally created with loops of magnetic tape and multiple playback heads, these machines defined the sound of countless dub records, psychedelic jams, and experimental soundscapes. The **Tape Echo** captures all that vintage character without the headaches of demagnetizing heads or replacing tape loops.

Controls:

- **Mode Selector** – Chooses which playback heads are active. Each mode offers different rhythmic subdivisions and textures, from simple single repeats to multi-head cascades.
- **Repeat Rate** – Sets the delay time. Lower values = slower, spaced-out repeats; higher values = rapid-fire echoes. With **Sync** engaged, rates lock to host tempo. Modulation can be applied here by the Effect Modulator for even more vintage spaciness and psychedelic vibes.
- **Intensity** – Controls feedback (how much of the echo feeds back into itself). Low settings = quick fadeouts; higher values = dense, self-oscillating repeats and greater sonic mayhem.
- **Heads Indicators (1-3)** – Lights show which tape heads are active for the selected mode.

Practical Tip:

For classic dub-style echo, select multiple heads with **Intensity** cranked high, then ride the **Repeat Rate** knob during playback for wild pitch sweeps. For more subtle use, stick to a single head and moderate intensity to add depth without overwhelming the mix.



Digital Reverb

Back in the '70s, reverb meant spring tanks or giant plates welded into studio walls. Digital reverbs were exotic, studio-only beasts. The Digital Reverb gives you a compact, modern reverb with three classic models:

- **Room** - Tight, natural ambience.
- **Hall** - Expansive, lush decay.
- **Plate** - Smooth, metallic sheen.

Controls:

- **Predelay** - Time before the reverb kicks in (0-150 ms). Longer predelays create a sense of bigger space. This can be controlled by the Effect Modulator.
- **Decay** - Length of the reverb tail, from short and snappy to cavernous. Modulation target. This can be controlled by the Effect Modulator.
- **Highpass / Lowpass Filters** - Shape the tone of the reverb by trimming boomy lows or harsh highs.
- **Mod Routing Switch** - Chooses whether modulation affects Predelay or Decay.

Tip: Use a short Room reverb on Strings to glue them into a mix, or a long Plate on Brass for cinematic atmosphere.



Galactic Reverb

When you need more than a room, hall, or plate to launch your sound into the stratosphere, reach for **Galactic Reverb**. Designed for cavernous, cosmic spaces, it excels at ambient washes, cinematic swells, or simply making your synth sound like it has left the building (and maybe the planet).

Controls:

- **Predelay** – Sets the time before the reverb begins (0–150 ms). Short settings keep things tight; longer values create separation between the dry attack and the wash of reverb. This can be controlled by the Effect Modulator.
- **Decay Time** – Determines how long the reverb tail lingers. Dial it short for manageable ambience, or long for infinite, space-drifting sustain.
- **High Freq** – Adjusts the tonal brightness of the reverb by shaping the high-frequency response. Higher settings yield shimmering, airy tails; lower settings make the reverb darker.
- **Low Freq** – Sets how much low end is preserved in the reverb. Keep it up for a massive, bass-heavy wash, or pull it back to avoid muddiness.
- **Damp Amount** – Controls the damping of reflections over time. Higher values cause the reverb tail to lose brightness as it decays, simulating natural absorption in real spaces.

Tip:

For lush pads, combine a long **Decay Time** with a rolled-back **Low Freq** and moderate **Damp Amount** to create a deep but clear ambient space. On leads, try adding a touch of **Predelay** so the note speaks clearly before the reverb bloom takes over.



Spring Reverb

Spring reverb is one of the most distinctive ambience effects in music history. From surf guitar twang to vintage organs to early synths patched through amps, its metallic, splashy character has a charm all its own. The **Spring Reverb** recreates the sound of physical springs housed in tanks, complete with extra controls that let you shape it far beyond the originals.

Controls:

- **Drive** – Pushes the input signal into the springs. Higher settings increase saturation and grit, adding vintage bite to the reverb.
- **Predelay** – Sets the time gap before the reverb begins (0–150 ms). Useful for keeping the dry attack clear before the spring kicks in.
- **Decay** – Adjusts how long the spring vibrations last. Low values yield short, splashy bursts; higher settings give longer, ringing tails. This can be controlled by the Effect Modulator.
- **Highpass / Lowpass** – Filters that trim unwanted lows or highs from the reverb signal. Use them to tame muddiness or harsh metallic overtones.
- **Tension** – Simulates the tightness of the springs. Looser = wobblier, more boingy character. Tighter = more controlled, refined response.

Tip:

For vintage organ vibes, set **Decay** short and **Tension** loose to get that splashy, percussive spring burst. For a more modern twist, roll back the **Lowpass**, tighten the **Tension**, and add a touch of **Drive** for a darker, thicker ambience.



Distortion & EQ

Sometimes clean just won't cut it. Distortion adds grit, attitude, and warmth. The Distortion & EQ effect offers four modes:

- **Tube** - Smooth overdrive like a cranked guitar amp.
- **Fuzz** - Aggressive, buzzy saturation modeled after germanium fuzz pedals.
- **Sat** - Tape-style saturation for warmth and compression.

- **EQ** – A standalone 3-band equalizer without added drive.

Controls:

- **Drive** – Amount of gain/saturation (active in Tube, Fuzz, and Sat modes).
- **Level** – Output volume to balance the effect.
- **Bass / Middle / Treble** – ± 15 dB gain for tone shaping.
- **Mid Band Frequency** – Selects which frequencies the Middle control boosts/cuts.
- **Modulation Target** – In Tube, Fuzz, and Sat modes, Drive is modulatable. In EQ mode, the Mid Band frequency can be modulated.

Tip: A touch of tape saturation can add body to Strings or Brass without sounding distorted. Crank Fuzz on a Lead sound to make it snarl.



Dual Phaser

Phase shifters were everywhere in the '70s, and the legendary Mu-Tron Bi-Phase set the standard. The Dual Phaser brings that same rich, sweeping character times two.

Each phaser has its own controls, but you can sync them together or let them run wild independently.

Controls (per phaser):

- **Speed** – Sweep rate (0.01 Hz–8 Hz, or tempo-synced from 1/64T to 8 beats).
- **Depth** – Intensity of the phasing effect.
- **Stages** – Number of filters in the phaser circuit. More stages = deeper, more pronounced sweeps.
 - Phaser 1: 4 or 8 stages.
 - Phaser 2: 6 or 12 stages.
- **Resonance** – Emphasizes the notches for sharper, more hollow tones.
- **Mix** – Balances between Phaser 1 and Phaser 2. Can be modulated.
- **Sync** - the **Sync switch** determines whether the two phaser stages run free and independent or whether one is locked to (synchronized with) the other:
 - **Off** (unsynced):
Each phaser has its own LFO running freely. This means they can drift in and out of alignment, creating evolving, swirling movement and complex stereo textures.
 - **On** (synced):
The second phaser's sweep is locked to the first. Instead of moving independently, both phasers cycle together, so you get a more unified, rhythmic phase motion. This setting is tighter and more predictable, useful when you want a consistent pulse or groove.

Tip: Try syncing both phasers at different stage settings (e.g., 4 vs. 12) for complex, evolving sweeps.



Flanger & Chorus

These two modulation effects use short delays to create movement and depth. Flanging mixes dry and very short-delayed signals for a sweeping “jet plane” comb-filter sound. Chorus uses slightly longer delays to thicken tones, simulating multiple instruments playing together.

Flanger Controls:

- **Speed** - LFO rate of the sweep (0.01 Hz–8 Hz, or tempo-synced).

- **Depth** – Amount of sweep applied.
- **Delay** – Sets the base delay time (1-13 ms). Shorter = brighter notches.
- **Resonance** – Boosts the notches, producing the classic jet-flange effect.

Chorus Controls:

- **Speed** – LFO rate of the sweep (0.01 Hz-8 Hz, or tempo-synced).
- **Depth** – Amount of sweep applied.
- **Waveform** – Shape of the LFO (sine, triangle, saw, ramp). Each yields a different flavor of movement.

Shared Control:

- **Mix** – Balances Flanger and Chorus. Can be modulated.

Tip: Use a slow, shallow chorus on Brass to add width without getting in the way, or crank up flanging on a lead synth for '70s sci-fi drama.



Envelope Filter

The Envelope Filter is a triggered modulation effect. Every time you play a key, it generates a filter sweep. Unlike a traditional envelope follower that reacts to signal volume, this one gives you consistent, predictable sweeps. Great for auto-wah effects, synth zaps, and funky textures.

Envelope Section:

- **Shape** – Pick an envelope contour (ramp, triangle, square, etc.). Shapes determine how the filter cutoff moves over time. Square acts more like an LFO.
- **PARA/POLY Switch**
 - **PARA (Paraphonic)**- One shared envelope and filter for all notes.
 - **POLY (Polyphonic)**- Each note triggers its own envelope and filter, enabling more detailed, note-specific modulation.

Length – Duration of the envelope sweep. Short = snappy; long = slow evolving.

- **Envelope Amount** – Sets how far the filter cutoff moves in response to the envelope.

Filter Section:

- **Cutoff** – Base frequency of the filter. The envelope adds/subtracts from this point.
- **2-Pole / 4-Pole** – Choose slope steepness: 2-pole = smoother; 4-pole = sharper. This can be controlled by the Effect Modulator.
- **Resonance** – Boosts frequencies at the cutoff, making sweeps more dramatic.
- **Drive** – Adds gain before the filter for extra grit and presence.

Other Controls:

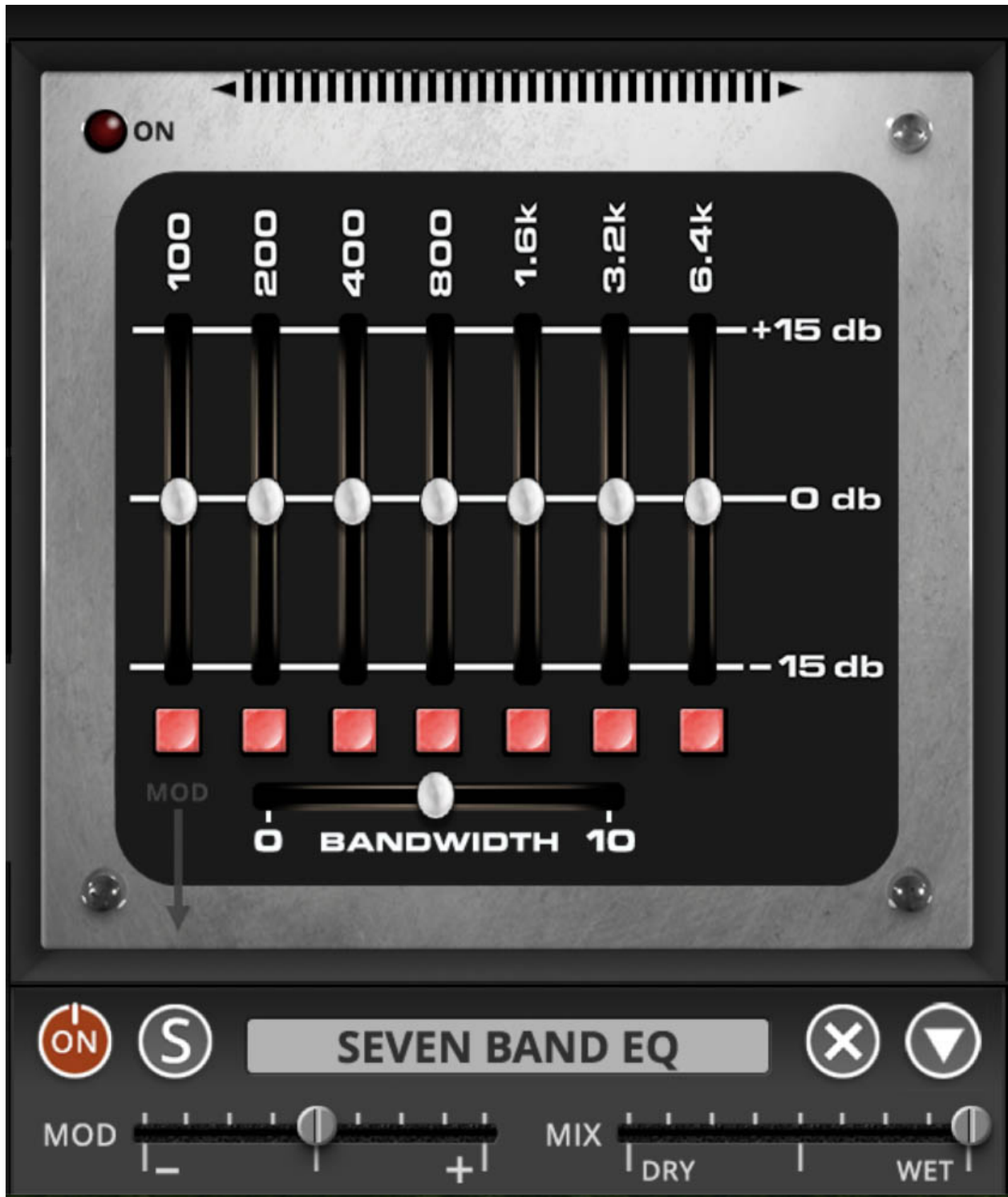
- **Gain (Trimmer)** – Balances the output level.
- **MOD Slider** – Adjusts how much modulation is applied.
- **MIX Slider** – Balances dry vs. processed.

Tip: Set a long ramp-up shape with high resonance on Strings for dramatic sweeps that evolve with each note, or go short and snappy for funky auto-wah leads.

Tip 2: Filters on Filters

You don't have to trigger the Envelope Filter with an envelope at all. Just leave the sensitivity low and it becomes a fixed filter instead. This essentially gives you an extra paraphonic filter that you can apply to a single sound, or drop in the global FX chain for the whole mix. Stack it with the synth's built-in filters, and the multiple filters line up in series to carve out shifting bands of tone. This technique is an excellent way to shape formant-like textures,

focus a patch more narrowly, or travel to new sonic realms the synth never imagined.



Seven Band EQ

Equalization is one of the most fundamental tools in shaping sound, and the **Seven Band EQ** makes it straightforward and musical. Modeled after classic graphic equalizers, this effect lets you boost or cut seven key frequency

ranges to sculpt tone, tame problem areas, or bring out character in any sound.

Controls:

- **Frequency Bands (100, 200, 400, 800, 1.6k, 3.2k, 6.4k Hz)** – Each vertical slider boosts or cuts its band by up to ± 15 dB. Push up to emphasize, pull down to reduce.
 - **100 Hz** – Sub-bass and low-end weight.
 - **200 Hz** – Warmth or muddiness.
 - **400 Hz** – Body and thickness (or boxiness if overdone).
 - **800 Hz** – Midrange punch.
 - **1.6 kHz** – Presence and edge.
 - **3.2 kHz** – Clarity and attack.
 - **6.4 kHz** – Brightness and air.
- **Bandwidth** – Adjusts how wide or narrow each band's effect is. Lower values = broader, smoother curves. Higher values = tighter, more surgical adjustments.

As with all other effects, the **Seven Band EQ** can be modulated, opening the door to rhythmic tone-shaping or evolving filter-like sweeps across multiple bands.

Tip:

Use gentle boosts or cuts across a few bands for natural tone shaping. For example, trimming a little **200 Hz** mud while boosting **3.2 kHz** clarity on Brass. Or crank up **100 Hz** and **6.4 kHz** together to give synth basses thump and sparkle.



Ring Modulator

Ring modulation is the sound of science fiction ray guns, metallic clangs, and otherworldly textures. By multiplying your signal with an internal oscillator, it creates sum and difference frequencies that often sound inharmonic, robotic, or downright alien. The **Ring Modulator** gives you full control over how wild (or subtle) things get.

Controls:

- **Gain** – Adjusts the input level sent into the modulator. Higher gain means a stronger, more pronounced effect.
- **Range (High/Low)** – Switches the oscillator’s frequency range. Low is better for tremolo-like modulation; High ventures into bell tones and metallic territory.
- **Freq** – Sets the frequency of the carrier oscillator. Lower settings = slow, throbbing tremolo. Higher = clangorous sidebands.
- **Wave** – Selects the oscillator’s waveform: sine for smooth, or square for harsher, edgier modulation.
- **Rate** – Controls oscillator speed when in Low range (essentially tremolo rate). Syncs to tempo when **Sync** is enabled.
- **Amount** – Sets the depth of modulation, from subtle shimmer to total signal disintegration.
- **Drive** – Adds gain and harmonic grit after the modulation stage, thickening or dirtying up the output.

Tip:

For classic sci-fi “flying saucer” tones, set **Range** to High, pick a sine wave, and crank **Freq** into the audio range. For more musical use, try Low range with Rate synced to tempo and it becomes a tempo-locked tremolo that adds groove without going completely alien.



Lushverb

If you want your sounds to swim in ambience, **Lushverb** is your go-to. As the name suggests, it's built for wide, dreamy reverbation that can be subtle and supportive or massive and enveloping. With tone-shaping filters and built-in modulation, it excels at everything from natural roominess to lavish, evolving textures.

Where **Galactic Reverb** reaches for infinite, cosmic expanses, **Lushverb** focuses on silky smoothness and animated depth. It's the kind of reverb that flatters synths, vocals, and pads by wrapping them in a glowing halo.

Controls:

- **Predelay** - Time before the reverb kicks in. Short = immediate wash; longer = clearer separation between dry sound and reverb bloom.
- **Early Reflections** - Shapes the very first echoes you hear when a sound bounces off walls. Low settings keep things tight and intimate, like you're in a smaller space. Higher values push those reflections further forward, adding presence, punch, and a sense of real room before the tail blooms. Great for adding dimension without always using longer decay times.
- **Decay** - Sets the length of the reverb tail, from short ambience to cavernous sustain. Can be modulated.
- **Highpass / Lowpass** - Trim low-end rumble or high-end fizz in the reverb signal to keep mixes clean.
- **Damp** - Determines how much brightness is lost over time. Higher values = tails that darken as they fade.
- **Mod Rate / Mod Depth** - Add movement to the reverb tail by modulating its delay lines. Subtle settings = gentle shimmer; extreme settings = chorus-like animation.
- **Sync** - Locks modulation to host tempo for rhythmic effects.
- **Mod Switch (Predelay/Decay)** - Chooses whether modulation applies to the Predelay or Decay parameter.

Tip:

For ambient pads, set a long **Decay**, roll off some lows with the **Highpass**, and add a touch of **Mod Depth** for evolving atmospherics. For tighter mixes, use shorter **Predelay** and keep **Decay** moderate, adding just enough **Damp** to sit naturally under the dry sound.



Lo-Fi

Sometimes perfection is the enemy of vibe. **Lo-Fi** is designed to rough up your sound with the kinds of imperfections that make old recordings feel warm and gritty. From dusty vinyl crackle to wobbly tape warble, this effect can take pristine synth tones and throw them straight into the basement of a 1970s record store.

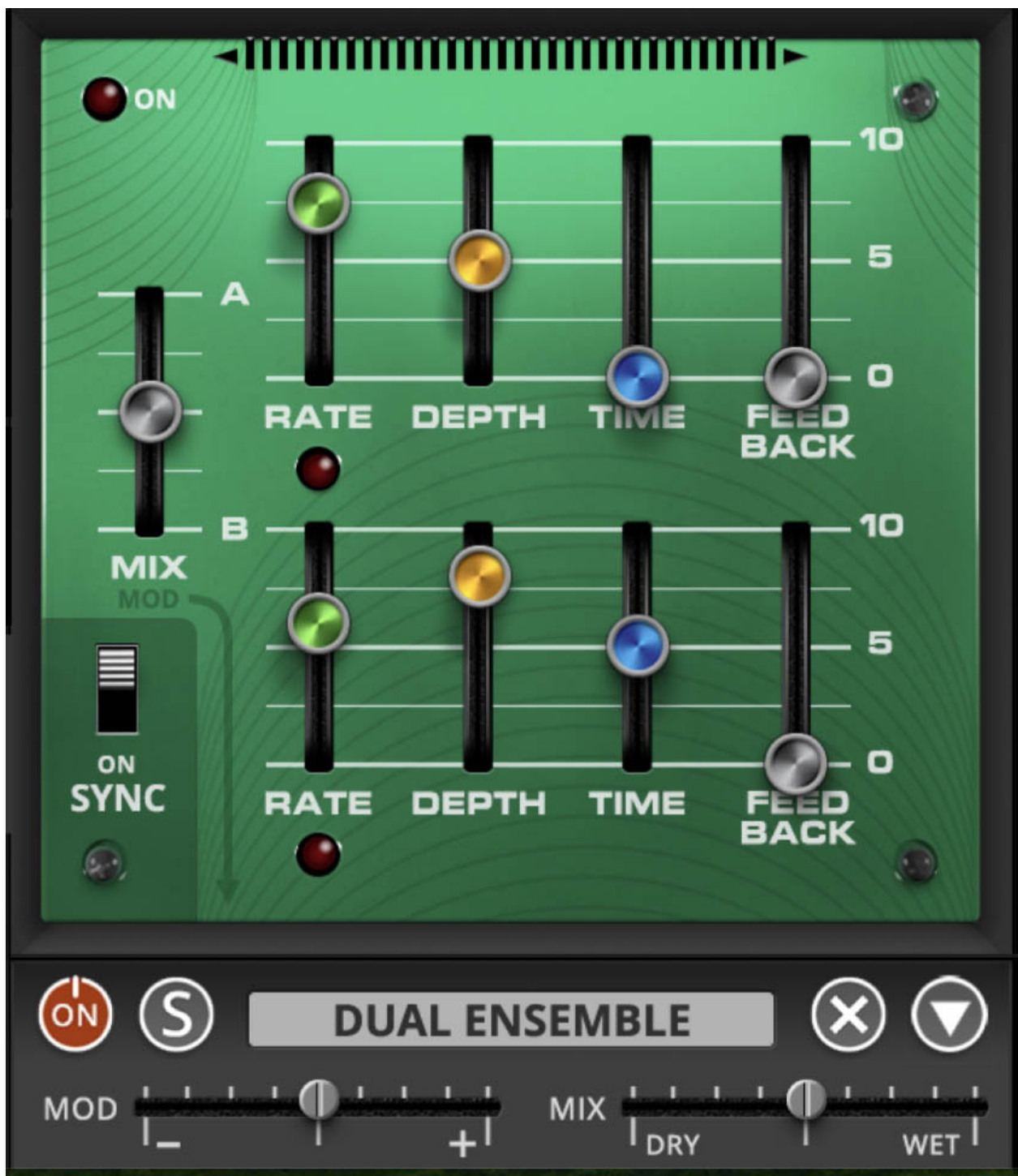
Controls:

- **Vinyl** – Adds record-like crackle and pops. Higher settings = more frequent, louder artifacts.
- **Wow** – Simulates the slow pitch drift of a warped record or stretched tape.
- **Flutter** – Adds faster, jittery pitch variations, like a worn cassette transport.
- **Hiss** – Introduces broadband noise, reminiscent of tape or cheap electronics.
- **Hum** – Injects mains hum into the signal, with a switch for **50 Hz / 60 Hz** to match regional power noise flavors.
- **Random (center knob)** – Introduces unpredictable fluctuations across the effect parameters, enhancing the chaotic, analog feel.
- **Noise Gate** – To help keep the grit under control, Lo-Fi includes a **Gate**. Think of it as an automatic volume control. It lets your instrument through when you're playing, and slams the door shut when things go quiet, keeping hiss, hum, and crackle from hanging around between notes.
 - **Enable Button:** Switches the gate on and off.
 - **ATT (Attack):** How quickly the gate opens when you play a note. A fast attack gives you sharp, immediate entrances; a slower attack eases the noise in more gently.
 - **REL (Release):** How quickly the gate closes after the sound drops below the threshold. A short release cuts noise instantly. A longer release lets things fade more naturally.

Gate Tip: When using long-decay sounds (especially with reverb or delay), you might hear “chatter,” that sputtering, open-close-open stutter as the gate struggles to decide whether the tail is loud enough to keep. If that happens, try increasing the **Release** for smoother fades, or dial back your effect tails slightly. A touch of balance here makes the difference between vintage character and sounding like a broken speaker.

Lo-Fi Tip:

For subtle retro flavor, add a touch of **Wow** and **Hiss** to synth pads. For full-on grit, crank **Vinyl** and **Hum** and let the **Random** knob do its thing. It's great for lo-fi hip-hop or downtempo textures that need a worn, nostalgic character.



Dual Ensemble

The lush, swirling sound of ensemble effects is a hallmark of vintage string machines and poly synths. The **Dual Ensemble** effect gives you two fully independent ensemble units for everything from subtle shimmer to deep, swirling motion.

Controls (for each Ensemble A & B):

- **Rate** – Sets the speed of the modulation (how fast the pitch/phase shifts). Slow = gentle drift; fast = warbly motion.
- **Depth** – Controls how far the pitch is detuned by the modulation. Low = subtle thickening; high = seasick wobble.
- **Time** – Adjusts the base delay time of the effect. Longer times = looser, more chorus-like feel; shorter times = tighter, phase-like coloration.
- **Feedback** – Feeds the delayed signal back into itself for resonance and more pronounced movement.

Shared Control:

- **Mix** – Balances between Ensemble A and Ensemble B. Use it to layer two different modulation speeds and depths for a rich, evolving chorus.

Tip:

For classic string-machine shimmer, set both ensembles with slow **Rates** and low **Depths**, then balance them with the **Mix** slider. For a more psychedelic wash, give one ensemble a slow, deep drift and the other a faster, shallower variation. The interaction creates a lush, animated stereo field.

Note: If you're torn between **Dual Ensemble** and **Chorus/Flanger**, think of it this way: Ensemble excels at smooth, swirling textures with a vintage string-machine flavor, while Chorus/Flanger covers more dramatic sweeps, jet whooshes, and thicker doubling effects.



Dual Delay

Why settle for one echo when you can have two? The **Dual Delay** lets you run two independent delay lines side by side for everything from tight rhythmic interplay to wide, spacious echoes. Each delay has its own controls, and you can sync them to tempo, run them free, or send them bouncing across the stereo field in ping-pong mode.

Controls (per Delay Line 1 & 2):

- **Time** - Sets the delay length. With **Sync** engaged, times lock to tempo divisions; in **Free Run** they're adjustable in milliseconds.
- **Feedback** - Determines how many repeats occur. Low = quick slapback; high = long echoes or self-oscillation.
- **Damp** - Applies high-frequency damping to the repeats, making them darker and more natural as they fade.

Shared Controls:

- **Mix (1/2)** - Balances between Delay 1 and Delay 2.
- **Sync/Free Run Switch** - Toggles between tempo-synced and free-running time modes.
- **Spread** - Adjusts stereo spacing of the delays. Low = centered echoes; high = wide, panned echoes.
- **Ping-Pong** - Sends repeats alternating left and right for a classic stereo bounce.

Tip:

For rhythmic complexity, set Delay 1 to dotted eighths and Delay 2 to quarters, then spread them wide for instant “U2-style” echo textures. For ambient sound design, keep both delays long, add plenty of **Damp**, and engage **Ping-Pong** for endless stereo wash.

Note: If you're wondering whether to reach for **Dual Delay** or **Digital Delay**, here's the difference: Digital Delay is quick and straightforward, with classic single-line flavors (digital, ping-pong). Dual Delay offers more flexibility, stereo interplay, and rhythmic layering. This is great when you want echoes to become part of the composition.



Compressor

Compression is a powerful tool for shaping the dynamics of your synths. It can make basses hit harder, leads sit firmly in a mix, and pads feel more even and controlled. The Compressor keeps things simple, with just the essential controls you need to add punch, presence, or smoothness to your patches. It operates with a fixed threshold of -12 dB and built-in auto makeup gain, ensuring consistent levels without extra balancing work, making it very plug-and-play. Dial in Attack and Release to taste, push the

Input until you like what you hear, and you're good. There's no need to trouble with gain staging or threshold hunting.

Controls:

- **Ratio (slider at top)** - Sets how much the signal is reduced once it passes the threshold. Lower ratios (4:1) = gentle smoothing. Higher ratios (12:1, 20:1) = firm control.
- **Input** - Adjusts how much signal is pushed into the compressor. More input = more compression.
- **Output** - Balances the overall level after compression so the processed signal matches or exceeds the bypassed sound.
- **Attack** - Controls how quickly the compressor reacts, measured in milliseconds (ms). Fast = tight and snappy; slow = allows more of the transient bite through.
- **Release** - Sets how quickly the compressor recovers, measured in milliseconds (ms). Fast = punchier feel; slow = smoother, sustained leveling.
- **VU Meter** - Shows how much gain reduction is being applied, so you can see the effect as well as hear it.
- **Auto Makeup Gain** - One common side effect of compression is that the overall signal level can drop as peaks are reduced. Normally you'd compensate for this with an Output (or Makeup Gain) control, nudging the level back up by ear. The Compressor effect saves you that step by including built-in auto makeup gain that you can switch on or off. With it on, as you increase compression, it automatically boosts the signal so your processed sound stays roughly as loud as the uncompressed version. The benefit is that you can focus on shaping punch and dynamics without constantly juggling output levels, making the Compressor faster and more intuitive to use.

Compressor Specs:

- Input: -20dB to +20dB
- Output: -20dB to +20dB
- Attack: .1ms to 200ms
- Release: 5ms to 3000ms
- Detector HP: 100Hz

- Threshold: -12dB
- Soft Knee (-3dB below threshold)

Tip:

For synth bass, use a medium **Attack** and fast **Release** to keep the low end solid without losing punch. On pads, slower **Attack** and **Release** settings even out the dynamics, giving you a warm, flowing texture that sits perfectly under leads and arpeggios.



BBD Flanger

Flanging is all about mixing a signal with a very short, modulated delay, creating swooshing comb-filter effects. The **BBD Flanger** nails the character of vintage bucket-brigade analog units, known for their warm, slightly gritty sound compared to pristine digital models. This makes it ideal for thickening synths, adding movement to pads, or creating the classic jet plane sweep.

Controls:

- **Speed** – Sets the LFO rate that modulates the delay time. Slow = gradual sweeps; fast = rapid, shimmering motion.
- **Intensity** – Adjusts how much the LFO affects the delay time. Subtle settings = gentle movement; higher = deeper sweeps.
- **Manual** – Manually offsets the flanger’s delay time. Use it to set the starting point of the sweep or to park the flanger for static comb-filter tones.
- **Feedback** – Feeds part of the output back into the input. Low = smooth, subtle flange. High = resonant, metallic sweeps with that signature jet-like sound.
- **Sync** – Locks the modulation rate to host tempo for time-synced sweeps.

Tip:

For classic “jet whoosh” effects, set **Feedback** high, **Speed** slow, and **Intensity** deep. For subtler chorus-like thickening, keep **Intensity** low, **Manual** slightly offset, and just a touch of **Feedback**.

Note: If you’re deciding between **BBD Flanger** and **Flanger/Chorus**, here’s the distinction: BBD Flanger delivers darker, warmer, more organic sweeps. This is perfect for vintage-style movement. Flanger/Chorus offers cleaner, brighter modulation and the flexibility to switch into chorus mode.



DCO Chorus

Inspired by the legendary stereo chorus of the Juno-60, the DCO Chorus in the Mercury-8 adds rich, swirling movement to analog pads and is great for beefing up textures with that classic 80s spread. The Juno-60's original chorus gave its single-oscillator engine a depth and width that made it a hallmark of synthpop and electronic music.

Controls:

I - The first mode gives a rich chorus effect, adding width and shimmer. It's ideal for thickening pads, strings, and other sounds

II - The second mode intensifies the chorus effect by increasing the modulation speed by 70%. It's great for lush textures, or anything where you want the synth to bloom.

I + II - Both modes engaged simultaneously. This third variation was a feature of the Juno-60 (pressing both buttons) and became a go-to trick for an unmistakably intense chorus. The modulation speed is faster, the depth shallower, and it uses a sine wave instead of a triangle wave.

Noise Level (knob) - Adds a subtle analog-style noise floor to the effect chain, helping the chorus feel less digital and more lived-in.

Tip:

For a warm pad that never sits still, set mode II, dial Noise Level low, and let the chorus breathe. Want your lead to spread? Use I + II, pull Noise Level up a bit, then stack a subtle delay behind it for full '80s width.



Panner

The Panner effect brings life and movement to your patch in the stereo field. Use it to animate a wandering pad, give your lead a swirling stereo motion, or simply place layers dynamically across the stereo field. By controlling how your sound moves left-to-right, how wide the sway is, and how quickly it sweeps, you can turn a static sound into a living soundscape. To trigger the Panner, press a key on the keyboard. If you continue to down a key (or keys), pressing other keys won't retrigger the effect.

Controls:

Rate (Min → Max) – Sets the speed of the movement across the stereo field. Lower settings slow down the pan sweep; higher settings make the motion rapid and rhythmic.

Width (Min → Max) – Determines how far the sound moves from left to right. At minimum the motion is subtle; at maximum it spans the full stereo spectrum.

Offset (Left ↔ Right) – Lets you set the starting point or bias of the movement. Move towards “Left” to start or favour the left side; move towards “Right” to start/favour the right.

Shape – Selects the modulation waveform used for panning (sine, triangle, saw, square). Different shapes give different character to the movement.

Smoothing (Hard ↔ Soft) – Controls how quickly the panning transitions occur: “Hard” gives abrupt jumps or sharp movement, “Soft” smoothens the glide between positions.

Mode Switch (Manual / ON / Trig Once / Trig ON) –

- **Manual:** Panning follows the Offset knob only – no automatic sweep.
- **ON:** Continuous automated panning according to Rate, Width, Shape, and Offset.
- **Trig Once:** On receiving a trigger event (i.e. pressing a key on the keyboard), the panning sweep runs once and then stops. In this mode, the Attack knob is active.
- **Trig ON:** On receiving trigger events, panning restarts automatically each time a key is pressed (if no other keys are currently held down). In this mode, the Attack knob is active.

Attack (Min → Max) – Active when Mode is set to Trig Once or Trig On. Sets how quickly the panning sweep begins after the trigger. Short values give an immediate sweep. Longer values ease in gradually.

SYNC (Off / On) – When ON, the Rate control syncs to the synth's own tempo setting (in standalone mode) or if used in a DAW, to the project tempo. When OFF, Rate is freely set in Hz.

Tip:

For a slowly drifting stereo pad, set Width relatively high, Rate low (around 1 – 2), Shape to triangle, Mode = ON, and Smoothing = Soft. If you want a lead that jumps left-right on each note trigger, switch to Mode = Trig Once, set

Attack short, Width high, Rate moderate, and tie the trigger to your note-on event for dramatic stereo hops.



Pulser

The Pulser effect is a flexible 16-/32-step gate/sequencer built to inject rhythmic motion into sustained sounds or static patches. Think of it as a live, programmable tremolo, stutter or step-gate engine that sits on the end of

your signal chain and chops or paces your synth voice, turning pads, leads or drones into patterns that rhythmically pulsate with life.

Controls:

Attack (0-10) — Determines how hard the gate opens at each step. Lower values give sharp, abrupt cuts. Higher values soften the entrances so the gating effect is smoother and less choppy.

Sustain (0-10) — Sets how long the gate stays open during each active step. At maximum sustain, the silence holds for the length of the step.

Length (Min → Max) — Sets the number of active steps in the sequencer. In Single mode this runs from 2-16 steps. In x32 mode the total length doubles (up to 32 steps).

Playback (Single / Dual / x32) —

- Single: Runs one sequencer of up to 16 steps.
- Dual: Enables two independent 16-step sequences running simultaneously (so you can layer or offset patterns).
- x32: Runs a single sequence of up to 32 steps (essentially the 16-step engine doubled).

Speed (Min → Max) — Controls the rate at which the sequence advances. Higher values make faster step changes; lower values slow things down for broad rhythmic movement. This can be controlled by the Effect Modulator.

Direction switch (▶ / ◀) — Determines playback direction: forward (▶) or reverse (◀). Reverse mode can yield unexpected textures, especially when gating sustained patches.

Sync (Off / On) — When ON, the Speed parameter locks to your host tempo or internal clock; when OFF, Speed is free-running.

16 Step Buttons — Each button corresponds to one step in the sequence. Clicking a button toggles the gate on that step (active) or off (muted). A lit button means the signal passes; unlit means the gate is closed for that step.

Tip:

For a dramatic stutter effect, set Length to ~8, Speed moderate (so each step aligns with a 16th-note), Attack low for crisp gate opens, Sustain around mid for choppy rhythm. Use the forward direction. On the other hand, for evolving drone motion, try Length = 16, Speed = slow, Attack = high, Sustain = long, Direction = reverse, and use Sync = Off so the pattern drifts free of the tempo grid.

Power Tip: Rhythmic Crossfire

The Pulser becomes even more powerful when you use it across both layers. Try assigning different Pulser settings to the Upper and Lower panels with one running a short, percussive 8-step pattern, and the other a slower 16-step pulse. Set the Upper layer's playback to forward and the Lower to reverse, then balance them with the Master Balance control.

The result is a hypnotic interplay of gated rhythms weaving in and out of each other. This is great for creating Berlin-school sequences, rhythmic ambient beds, or anything that needs motion without a drum track.

For bonus chaos, switch one Pulser to Dual mode and the other to x32, and let the overlapping cycles drift naturally out of sync.

MIDI Controllers Setup and the MIDI Tab

Assigning Internal and External Hardware Controls

Assigning internal and external hardware controls adds a whole new dimension of control and musicality to patches, and it's really easy to do. The **MIDI Tab** is where all controller assignments can be viewed and tweaked, and we'll go through all of its parameters and functions. We recommend reading this whole section to best take advantage of Mercury-8's full array of MIDI control assignment possibilities.

First, though, we'll give you a quick look at how to assign an external hardware controller to a Mercury-8 control using MIDI Learn, so you can get started with basic MIDI control while you're learning the fancy stuff.

New: Mercury-8 Layers, MIDI, and Focus

Mercury-8 introduces a new setting that enhances the user experience when using MIDI controllers with this multi-layered instrument. As outlined in the [Assign, Key, and Panel Mode](#) section, users can stack independent tones across two layers, Upper and Lower, either as a keyboard split or as a layered dual tone.

Due to the design, many controls are duplicated, making it challenging to map a limited number of physical controls to numerous functions in both layers. For example, adjusting the filter cutoff for the upper layer requires one control, while a separate control is needed for the lower layer. Mapping a single control to both layers with a shared MIDI CC would result in simultaneous adjustments to both layers and identical values (which may sometimes be desirable).

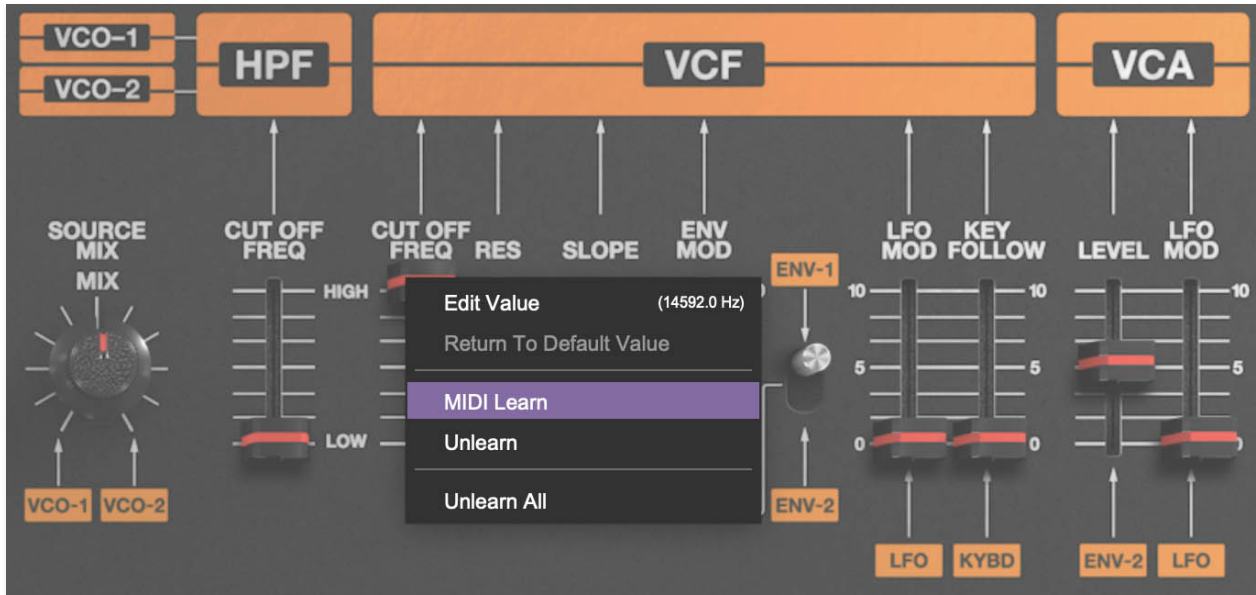
The new "MIDI Mapping Only Affects Visible Controls" option in the [Settings](#) (Interface tab) allows users to assign the same control and MIDI CC to both layers. But only the currently displayed layer will respond to adjustments, enabling users to easily switch between layers and independently modify parameters such as cutoff and ADSR with a single set of controls.

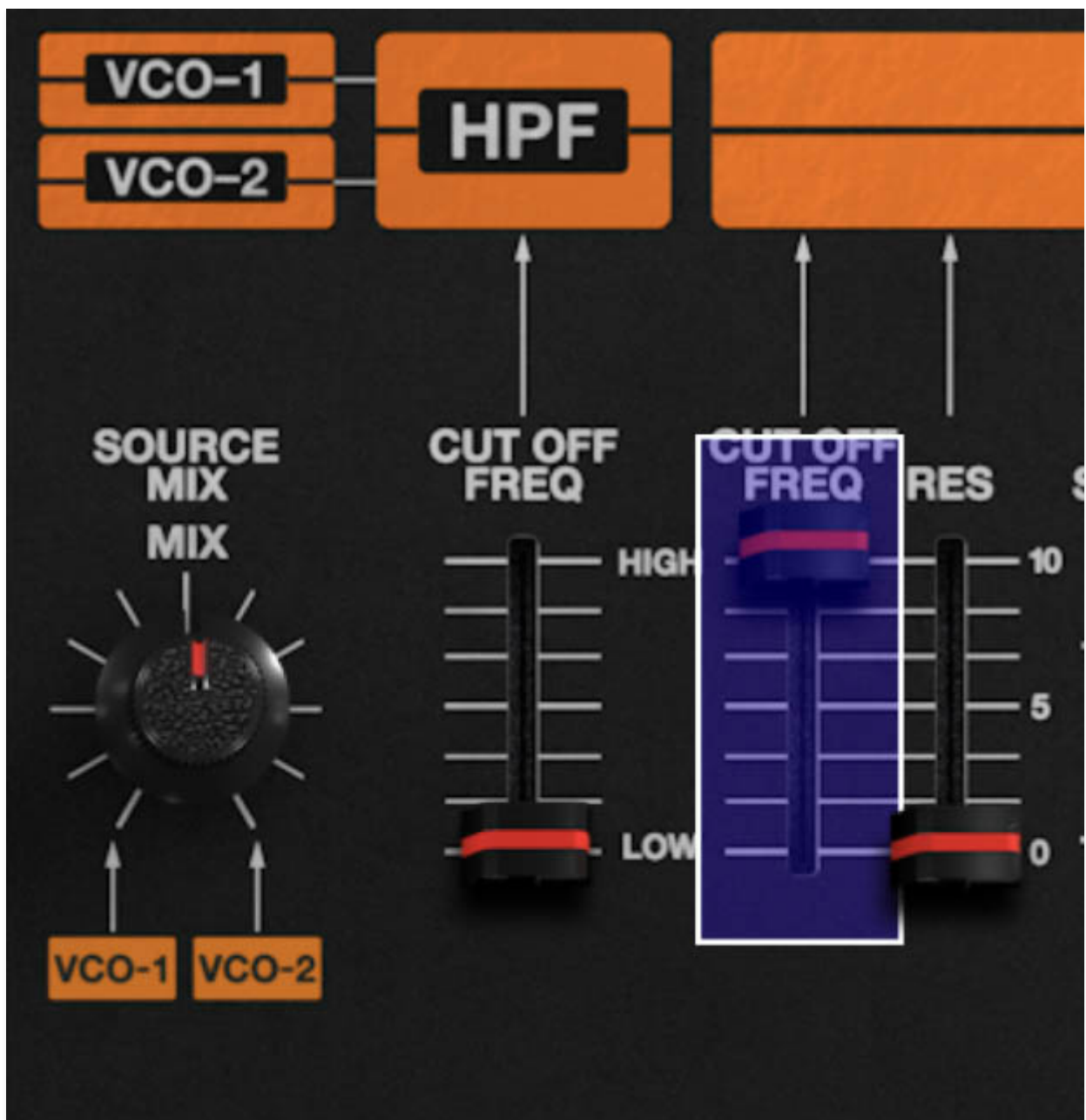
Quick and easy controller assignment

In this example, we'll assign a hardware slider/knob control to the *Cutoff* parameter in the Synthesizer section.

Begin by right-clicking on the *Cutoff* knob and selecting *MIDI Learn*, as shown here:

A transparent purple overlay appears over the slider, indicating that it's in MIDI Learn mode:





Now move the desired hardware control device. The purple overlay disappears and the hardware control will move the onscreen knob. If you have second thoughts (or accidentally put the wrong control into learn mode), learn mode can be aborted by right-clicking and selecting *Stop Learning*.

If you later decide you don't like that mapping, right-click the control and select *Unlearn*.

When in MIDI Learn mode, any already-assigned controller numbers will show in squares. These indicate the MIDI continuous controller number for the assigned hardware control (these are also displayed in the MIDI Tab at left).

Once a MIDI controller has been assigned, in addition to real-time control of a Mercury-8 parameter, you'll also be able to record and play back controller data from a DAW.

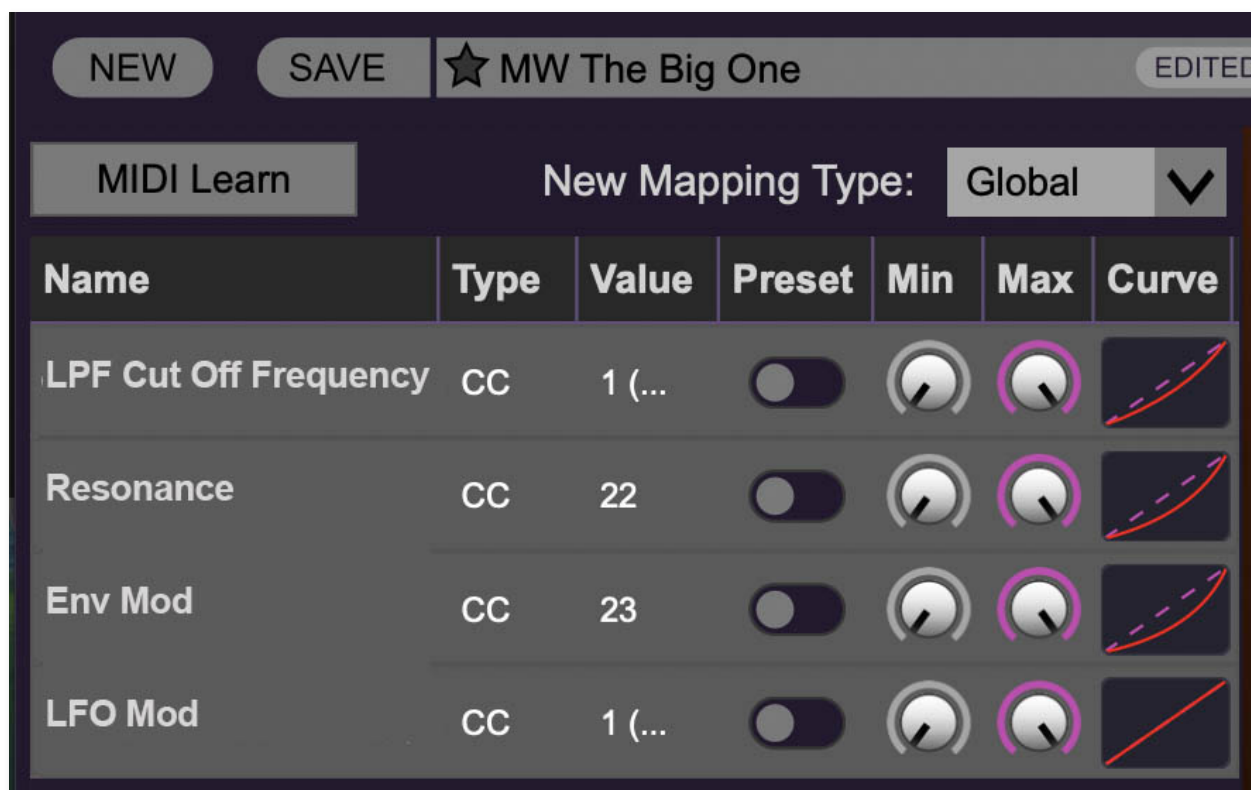
The MIDI Tab

This is command central for all MIDI controller assignments. Here you'll be able to see information about all currently assigned controllers and adjust control ranges.

To view or hide the MIDI Tab, click the *MIDI* button in the purple top toolbar:



Here's what a typical set of assignments in the MIDI Tab might look like. Let's take a tour around the MIDI Tab:



MIDI Learn button- This is almost exactly the same as enabling MIDI Learn mode by right-clicking a control. Click the *MIDI Learn* button to enter learn

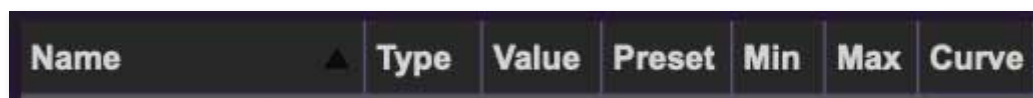
mode (all controls turn purple). Unlike right-clicking on specific knobs, where Mercury-8 automatically exits controller assignment mode, clicking the *MIDI Learn* knob "stays on" to enable assignment of multiple hardware controls. This is handy for quickly assigning a bunch of sliders or the buttons of a grid-style controller.

To assign multiple controls, click *MIDI Learn*, click an on-screen control, move the desired hardware knob or slider, continue clicking and assigning on-screen controllers until all desired controls are assigned, then click *Stop Learning* to exit learn mode.

Remember that a single hardware knob/slider/button isn't limited to controlling just one parameter - a single hardware controller can simultaneously operate as many controls as you'd like.

New Mapping Type- This popup menu selects whether newly assigned MIDI mappings will be global (affects all sounds and doesn't change when different presets are selected) or saved with individual presets.

MIDI Tab Columns



Name	Type	Value	Preset	Min	Max	Curve
------	------	-------	--------	-----	-----	-------

Name- Displays the name of the parameter being controlled.

Type- There are five possible types of controller automation in Mercury-8:

- **Note**- Notes played on a MIDI keyboard controller, expressed as C-1 to G9
- **CC (MIDI Continuous Controller)**- The standard 128 MIDI controller numbers as defined in the MIDI spec. More specifically, these are the controllers transmitted by hardware knob and slider controls. MIDI CC's can be used to control parameters in real-time or recorded and played back within DAW software.
- **MMC (MIDI Machine Control)**- The MIDI control protocol for tape machine-style transport controls. Back in the dark ages, this was used to control old TASCAM and Fostex reel-to-reel monsters, but it's useful if your MIDI controller has tape-style transport control buttons.
- **Aftertouch**- Some keyboard controllers transmit controller data when keys are pressed and released as they're held down. The vast majority of keyboard controllers with aftertouch transmit "mono" aftertouch only; in other words, aftertouch data is the sum of all keys to one single data

stream. Mercury-8 responds to mono aftertouch as well as poly aftertouch, provided your USB/MIDI controller is poly AT capable.

- **Key**- This allows keys of the computer QWERTY keyboard to act as button controls for Mercury-8's onscreen controls.

Value- Displays the specific automation controller. In the case of a *Note* this would show a MIDI note number (C-1 to G9, for a MIDI CC, this would be the MIDI CC controller number, etc. Clicking on the value opens a pop-up menu where all values are displayed and can be selected.

Preset- This slider works in conjunction with the *New Mapping Type* menu. In the left position (gray background), the MIDI mapping is global (affects all sounds and doesn't change when different presets are selected), in the right position (lavender background), the MIDI mapping is saved with, and only affects the current sound preset.

The *Preset* switch is super nifty, because it means MIDI mappings can easily be set to global or per-preset status at any time. (A lot of folks asked us for this feature.)

Min- Sets a limit on the lowest value any automation control can set a mapped controller to. This actually recalibrates the range of the automation controller to the remaining parameter range.

Max- Sets a limit on the highest value any automation control can set a mapped controller to. This actually recalibrates the range of the automation controller to the remaining parameter range.

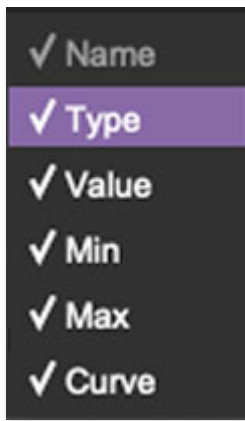
Not only can parameter ranges be limited via the the *Min* and *Max* knobs, mapped control destinations can be *inverted* - just set the *Min* knob value higher than the *Max* knob value.

Limiting and inverting parameter ranges with the *Min/Max* controls is particularly useful when setting up a single hardware control to operate multiple parameters. Combined with the *Curve* control, these capabilities let you create powerful and finely tuned "macro" control combinations, all activated from one MIDI control.

Curve- These allow the customization of how incoming MIDI CC controls affect the movement of Mercury-8's onscreen controls, ranging from exponential to linear to logarithmic curves.

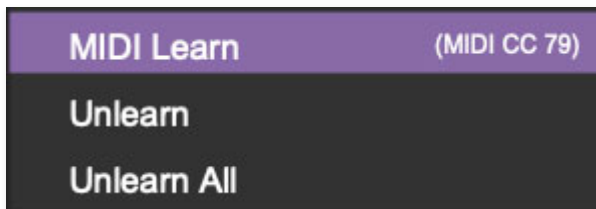
MIDI Tab Column Configuration Right-Click Menus

Right-clicking anywhere in the top row (*Name*, *Type*, *Value*, etc.) displays the **Column Configuration Menu**:



Checking/unchecking these allows you to hide or display each column. This has no effect on control assignments, it just cleans up the view when you don't need to see certain things.

Right-clicking on an assigned parameter opens this pop-up menu:



It offers the following operations:

MIDI Learn- This is used to change the controller assigned to a particular parameter.

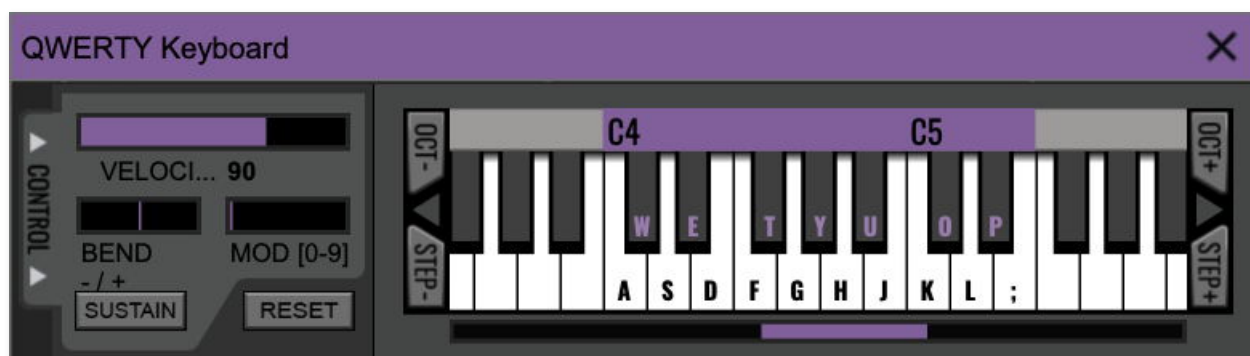
Unlearn- Deletes the selected automation parameter.

Unlearn All- Deletes all controller assignments for the patch. Mercury-8 will display a warning dialog prior to deletion in order to thwart potential unlearn-related disasters.

QWERTY Musical Typing Keyboard (MTK)



Mercury-8 can be played by clicking its onscreen keyboard with a mouse or trackpad, but if you don't have a MIDI keyboard attached to your computer, there's a better way - your computer's QWERTY computer keyboard can be used to play notes. We call this the **Musical Typing Keyboard (MTK)**. Following is a list of MTK keyboard modifiers and functions:



Opening and Closing the MTK - Click the the circular keyboard icon in the top toolbar. To close the MTK, click the keyboard icon in the top toolbar, or click the X in the top right corner.

Play Notes- To trigger notes, press the corresponding computer keyboard key or mouse click the onscreen keys.

Adjust Currently Visible MTK Range- Slide the purple scroll bar horizontally to adjust the currently visible keyboard range.

Adjust Overall Visible Keyboard Range- Clicking and dragging the right edge of the MTK window allows the overall size of the window to be adjusted. This lets you view more or less of the onscreen keyboard. Note that the MTK window's borders cannot exceed the overall outside dimensions of the Mercury-8 window.

Shift Range Up/Down Octave- Click the *OCT-* and *OCT+* buttons at the top left and right of the onscreen MTK. The current range is displayed above the keyboard.

Shift Range Up/Down Semitone- Click the *STEP-* and *STEP+* buttons at the bottom left and right of the onscreen MTK. The current range is displayed above the keyboard.

Hide/View Controllers- Clicking *CONTROL* at the far left hides and displays velocity, bender, mod, and sustain control parameters. Hiding the control view makes more space available for the keyboard.

Pitch Bend- To pitch a note or notes, press the + or - computer keyboard keys while playing a note. Bend depth is determined by the setting of the *Pitch Bend* slider above the keyboard in Mercury-8's UI. Notes can also be pitchbent by clicking the mouse in the *Bend* area.

Mod Wheel- To add mod wheel modulation, press the number keys from 0-9 (above the character keys) while playing a note. The modulation amount will vary from none (0) to full modulation (9). Note that modulation will "stick" at the selected number; to disable modulation, click the 0 key. Mod can also be engaged by clicking the mouse in the mod bar area.

Sustain- The *Sustain* button mimics the functionality of a standard sustain pedal. Click the [TAB] key to engage sustain, or [SHIFT]+[TAB] to lock it. The *Sustain* button can also be engaged by mouse clicking it.

Reset- Initializes all MTK parameters including keyboard range and control parameters.

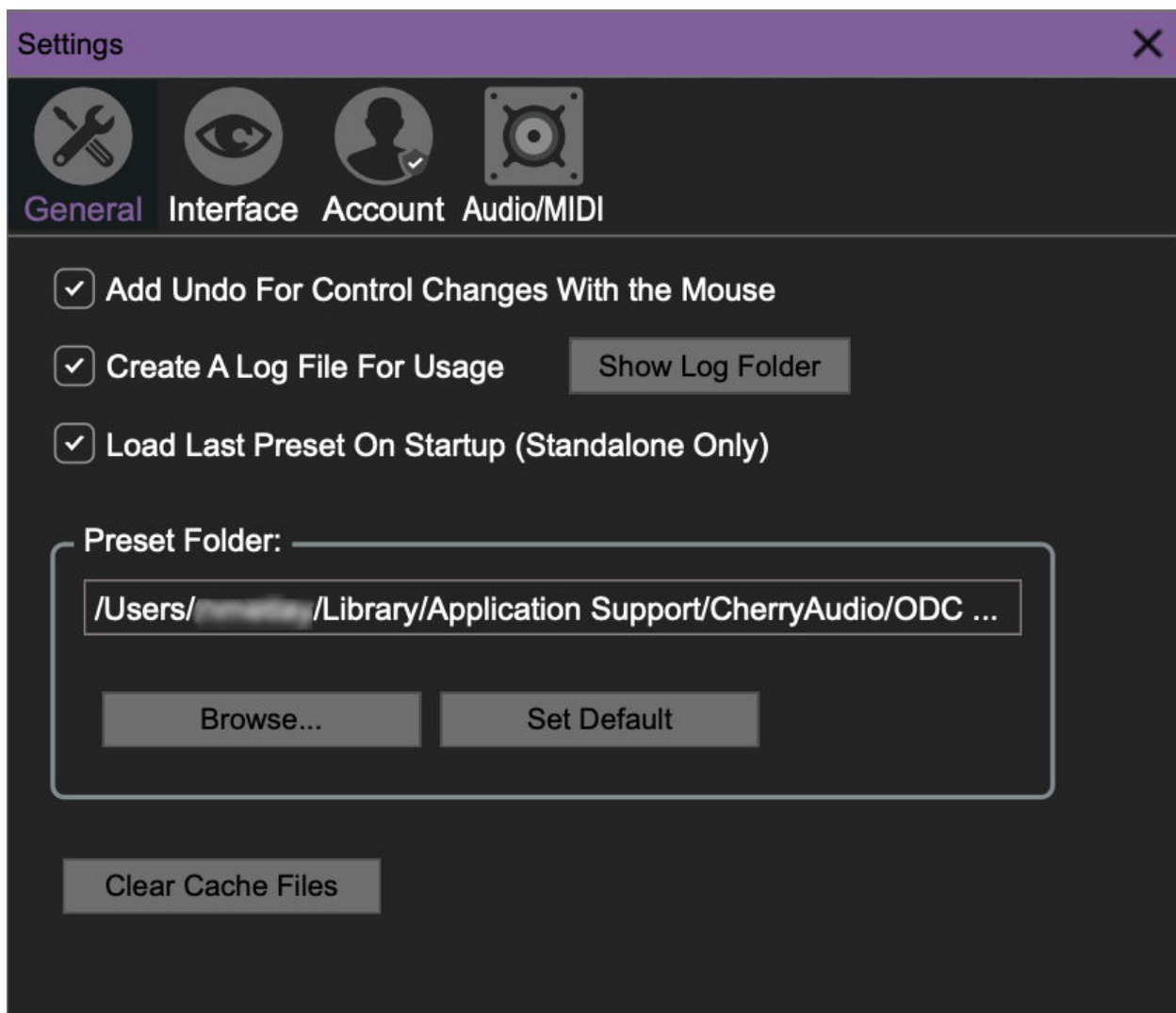


Settings

Clicking the **Settings** gear opens a window with multiple tabs for configuring various "under-the-hood" settings. These are mostly set-and-forget kind of parameters - all the stuff you'll want to tweak will be on the main display, as it should be!

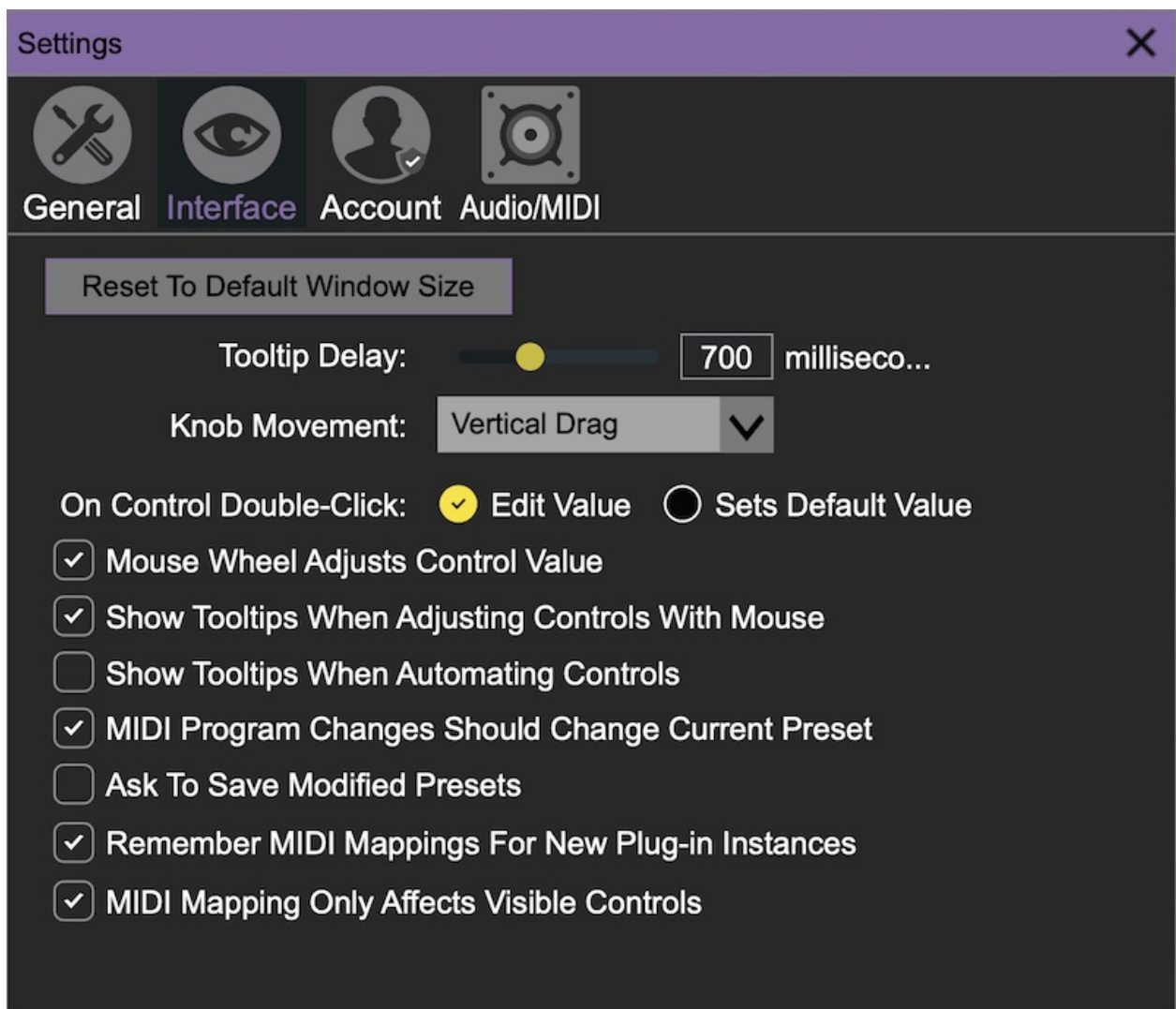
The Settings tabs are: General, Interface, Account, and (on the standalone version of Mercury-8) Audio/MIDI.

General



- **Add Undo For Control Changes With the Mouse**- Enabling this allows undo of knob/slider/button adjustments. You'll want this on if you want the ability to undo all aspects of patch editing and programming.
- **Create A Log File For Usage**- This creates a text doc of all of Mercury-8's internal and routines during use. It is mainly intended for our tech staff should you experience any issues. Clicking *Show Log Folder* opens the folder containing Mercury-8 log file docs.
- **Load Last Preset On Startup (Standalone Only)**- Automatically loads the last preset used when Mercury-8 standalone version is started.
- **Preset Folder**- Displays the current location of Mercury-8's sound presets. This can be changed by clicking and typing in the field.
 - **Browse...** - Displays the current location of preset folder in the file manager.
 - **Set Default**- Sets the current displayed *Preset Folder* path as the default location
- **Clear Cache Files**- Deletes all log files, temporary sounds, and the image cache.

Interface



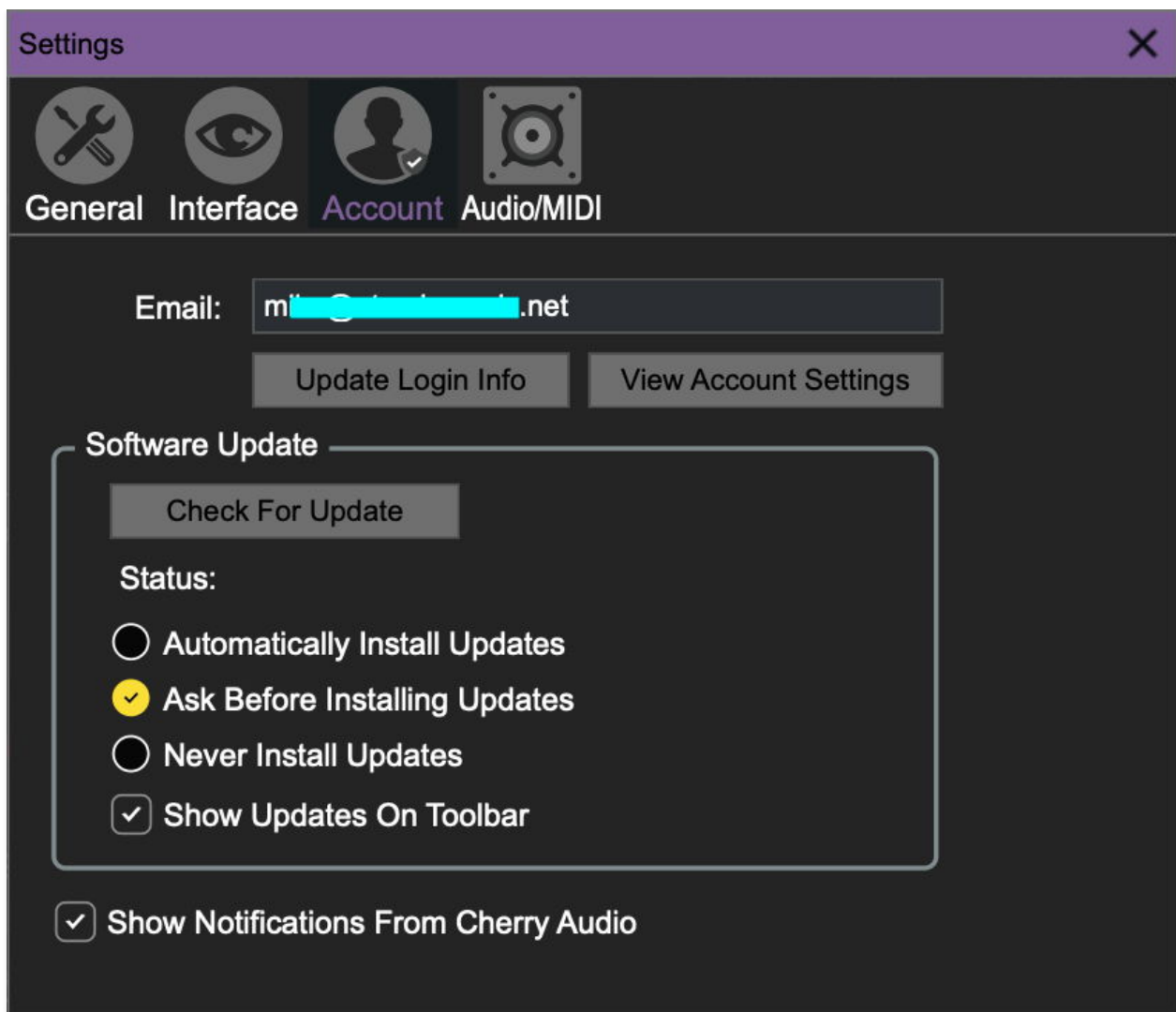
Allows customization of Mercury-8's user interface settings.

- **Reset To Default Window Size-** Resets the Mercury-8 workspace to default size. Use this to reset the window size if the window somehow becomes too large for your display and can't be resized (pretty sure we fixed that bug a while back though!).
- **Tooltip Delay-** Tooltips are those informative bits of text that pop up when hovering over a control (go ahead and try it, we'll wait...). The *Tooltip Delay* setting defines how long you must hover before the tooltip pops up.
- **Knob Movement-** Defines how mouse movements relate to turning onscreen knobs. It defaults to *Vertical Drag*, but can be changed to *Horizontal Drag*, or *Rotary Drag* if you're one those folks that cut their teeth on the *Steinberg Model E* VST back in 2000.
- **On Control Double-Click-** Defines what happens when the mouse is double-clicked on a control. If *Edit Value* is selected, an exact number can

be entered by typing the number and hitting [ENTER] or [RETURN]. If *Sets Default Value* is selected, double-clicking a control resets it to its default value.

- **Mouse Wheel Adjusts Control Value-** Enabling this lets you adjust knob, slider, and switch values by moving the mouse wheel. This works great with a standard mouse wheel, but you'll want to disable it if you're using an Apple Magic Mouse (which will move the control AND scroll the window).
- **Show Tooltips When Adjusting Controls With Mouse-** Displays parameter tooltips/values when the mouse is hovered over a control or as a control is moved with mouse clicked.
- **Show Tooltips When Automating Controls-** Displays parameter tooltips/values next to controls any time a control is changed, i.e. if a control is moved via an assigned MIDI controller or a *Perform* panel knob, etc.
- **MIDI Program Changes Should Change Current Preset-** Allows MIDI program change messages to change Mercury-8 patches.
- **Ask To Save Modified Presets-** This opens a dialog window asking if you'd like to save changes if a patch has been edited and a new patch is selected. If you're the type that likes to click through presets and tweak a control here and there, it can be annoying to have a window pop-up asking if you'd like to save every time you switch presets - if you're that person, keep this turned off.
- **Remember MIDI Mappings For New Plug-in Instances-** When enabled, Mercury-8 remembers all global MIDI Tab controller settings.
- **(NEW) MIDI Mapping Only Affects Visible Controls-** this option allows users to assign the same physical control of a controller and MIDI CC to identical functions in both upper and lower layers. When enabled, only the currently displayed layer will respond to adjustments, enabling users to easily switch between layers and independently modify parameters such as cutoff and ADSR with a single set of controls.

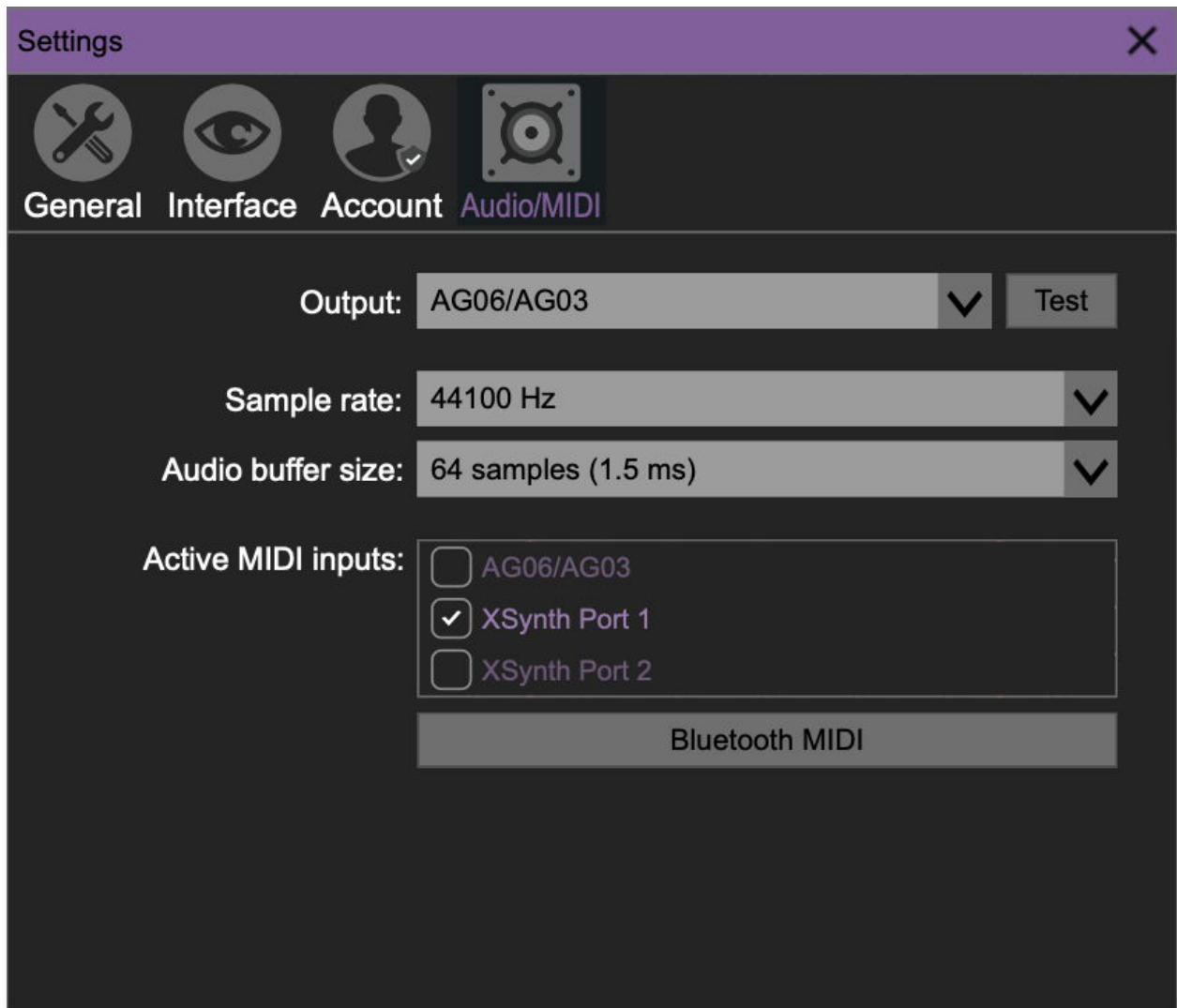
Account



Settings for your personal login information and account.

- **Email-** Displays the email address of the current login.
- **Update Login Info-** No, this isn't where you sign up to keep informed of news and tour dates for jazz/rock fusion superstar, and monumental Odyssey player, Herbie Hancock. (That would be [here](#).) Clicking this opens the same email and password login screen you'll see when initially launching Mercury-8.
- **View Account Settings-** This takes you to the Cherry Audio website, where you can login and verify your settings or make changes. This won't work on a computer that's not connected to the Internet. (If it does, consult your local exorcist *immediately*.)
- **Software Update-** Here's where you can manually check for an update, and set up how much Mercury-8 does on its own to keep you updated.
- **Show Notifications From Cherry Audio-** Because hey, we love you, and sometimes just reaching out is the right thing to do.

Audio/MIDI



These are settings for audio and MIDI hardware input and output.

This tab is only visible in the standalone version of Mercury-8.

- **Output-** Use this drop-down menu to choose a physical audio output source. This defaults to *Built-In Line Output*, i.e. your computer's onboard system audio, but you'll get better fidelity with an external professional audio interface. The biggest audible difference is usually reduced background noise or hum, but external audio hardware also offers greater flexibility in terms of number of inputs and outputs and built-in mic or low-level instruments pres (i.e. electric guitars). The *Test* button will produce a sine wave when clicked; this will help with troubleshooting. In other words, "Why can't I hear anything? Aargh!"
- **Sample Rate-** This sets the global sample rate. Lower sample rates offer better performance, but if you have a fast computer, high sample rates

may offer slightly improved fidelity – or at the very least, they'll give you something to argue about on audio online forums rather than writing and playing music.

- **Audio Buffer Size-** As with any digital audio app, this defines performance vs. note latency, and will largely depend upon computer CPU speed. A professional external audio interface will almost always exhibit better performance than “built-in” system audio. Lower settings will result in less latency (in the form of faster response to notes played), but will increase the chances of audio dropouts or crackling noises.
- **Active MIDI Inputs-** Enable MIDI input sources, i.e. MIDI/USB keyboards, pad controls, MIDI knob/fader control surfaces, etc. Check boxes to enable one or more devices. **If a MIDI/USB controller isn't working in standalone mode, make sure the appropriate box is checked here.** (We put this tip all the way at the end of this manual, to make it extra challenging to figure out why things aren't working. You're welcome!)

Exchanging Original JP-8 SysEx Data

Before MIDI was a thing, the original JP-8 had no way to send or receive digital data. System Exclusive (SysEx) messages, the now-familiar MIDI method for saving and transferring presets, didn't yet exist. Fortunately, third-party retrofit kits such as those from Encore Electronics and Groove Electronics added MIDI capability to vintage JP-8s, allowing patch dumps in proprietary SysEx formats.

Even though these formats follow the standard SysEx framework, the data inside is unique to their hardware. When you export sounds from a JP-8 retrofitted with either Groove or Encore hardware, you'll end up with .syx files containing the synth's internal patch data. To import these into Cherry Audio's **Mercury-8**, just drag and drop the .syx file anywhere onto the Mercury-8 interface. The software will automatically recognize and translate the preset data into Mercury-8's native preset structure.

A few notes before you start: JP-8 patches only contain core voice parameters, and not performance settings. This means controls such as Poly/Solo/Unison, the arpeggiator, portamento, and all left-hand performance sliders weren't stored in the original patches and won't transfer. Similarly, the Mercury-8 uses sliders for features that were fixed or switchable on the hardware, like **VCA LFO Mod** (four fixed positions on the JP-8) and **Envelope Key Follow** (on/off on the JP-8, continuous on Mercury-8).

Also note that most original JP-8 parameters were stored as **8-bit values (0-255)**, while Mercury-8's controls are infinitely variable. During import, Mercury-8 translates these values with high precision. In short, you're getting the true Jupiter sound, with the added precision and flexibility of Mercury-8's modern engine.

Importing Sound Banks and Individual Presets

- To import an entire sound bank or individual preset, simply drag and drop the SysEx file anywhere on the Mercury-8 UI. The file must be in either Encore Electronics or Groove Electronics .syx format.

If the bank is valid, you'll see a confirmation window and new category containing the banks is created in the presets browser.



Exporting Presets

You can also export a Mercury-8 preset to SysEx format.

- To export the currently active preset layer, click the dropdown menu in the Assign/Key/Panel Mode section.
- Name the file, and set a location and click Okay. The file is exported in Encore Electronics .syx format.

