



Getting Started

Cherry Audio's Memorymode 2 is inspired by one of the most formidable analog polysynths of the early 1980s. The original Memorymoog paired a Mini-inspired three-oscillator voice architecture with a rich transistor-ladder filter, six-note polyphony, patch memory, and a sound that could be enormous, silky, aggressive, or all three at once.

It was also an ambitious instrument released during a difficult period for its manufacturer. To complicate matters further, it faced stiff competition from other programmable polyphonic instruments including the Sequential Circuits Prophet-5 and Oberheim's OB-X series. Early examples were often temperamental, tuning could be unpredictable, and reliability wasn't always its strongest suit. None of that diminished the sound, however. A well-maintained Memorymoog — or one updated with the Lintronics Advanced Memorymoog (LAMM) modification introduced in 1992 — remains one of the most powerful and distinctive American analog polysynths ever built.

Memorymode 2 captures the distinctive sound and architecture of that original instrument while leaving its less endearing qualities in the past. You now get two independent layers with three oscillators per voice, 16-voice polyphony per layer, a switchable 12/24 dB per octave filter with optional resonance compensation, expanded modulation, MPE, modern preset management, and built-in effects, all without needing a specialist technician standing by with a soldering iron and words of reassurance.

This latest version of Memorymode also expands its original sound quality and functionality. Its substantially improved analog modeling brings greater depth and detail to the oscillators and filter, while the newly CPU-optimized dual-layer architecture places two complete synthesizer layers inside a single preset. Each layer includes its own three-oscillator voice engine, modulation, arpeggiator, polyphonic sequencer with Touch Animator, and effects chain. A third Global effects chain processes the combined output.

Memorymode 2 also adds polyphonic aftertouch, an expanded Polyphonic Voice Mode with a new Multi-Voice option, and a broad collection of effects ranging from its standard set of studio tools to the new Wide Phaser and Rotary Speaker effects. All in all, it's a worthy successor to both the original synth and to Cherry Audio's original re-imagining of it.

Your First Few Minutes

Memorymode 2 can run as an instrument plug-in inside a DAW or as a standalone application.

When using the plug-in version, create an instrument track in your DAW and load Memorymode 2 from the instrument plug-in menu. When using the standalone version, connect a MIDI keyboard and select the appropriate audio and MIDI devices in Settings.

Once Memorymode 2 is open:

- Choose a sound from the Preset Browser at the top of the window.
- Play a few notes or chords and adjust the Master Volume to a comfortable level.
- Explore several presets before changing any controls. This is the quickest way to hear how the two layers, voice modes, sequencers, modulation, and effects can work together.
- Click **New** when you're ready to begin programming from a clean starting point.

- Click-and-drag a control to adjust it. Or map it to a physical MIDI keyboard controller using the MIDI Controllers Setup process outlined later in this user guide. Depending on your Settings, you can also double-click a control to type its numeric or percentage value, or use the mouse wheel or trackpad to adjust the value.

As you browse, listen for how each preset uses oscillator tuning, filter movement, envelope shape, voice assignment, stereo placement, and effects. Some sounds rely on one strong layer. Others combine two contrasting layers into something much larger than either could produce alone.

Compatibility with Memorymode Version 1

There are a few important things to note if you already have Cherry Audio's Memorymode version 1, originally released in 2021:

- Memorymode 2 does **not** install over the original Memorymode. The two are separate apps and plugins, and can coexist on the same system without interfering with each other. Your User Presets or third-party presets in v1 remain untouched and unmodified.
- You can continue to use Memorymode v1.
- Any of your DAW projects that used Memorymode v1 will still call up that version of the plugin.
- The preset files for Memorymode v1 (*.memorymodepreset) are different files and associations than those for v2 (*.memorymode2preset).
- Memorymode 2 does not automatically import the presets from v1. Instead, we have already included the original Preset Collections from v1 as the "Legacy Collection" and those under the names of the original sound designers (example: "Huston Singletary Collection"), ready to use in Memorymode 2.
- Memorymode 2 also includes a refined set of the original 100 Memorymoog factory presets, imported directly from a cassette tape program backup to ensure unprecedented accuracy compared to the hardware.
- If you wish, you can selectively import your User Presets or third-party presets from v1 into Memorymode 2, simply by dragging and dropping the file(s) onto the user interface of Memorymode 2. Do not zip them. These preset files will be automatically duplicated and translated to v2 format as

single-layer whole presets, as v1 did not support layers or splits. They will be added to your v2 User Presets collection under the category "V1 Presets." See the section in this User Guide, Importing Memorymode v1 Presets, for details.

- Memorymode 2 presets are not backward compatible with v1.
- The integrated effects associated with v1 presets -- Phaser, Ensemble, Echo, Reverbs -- are automatically assigned to Cherry Audio's most recent effects and effects chain system in the Upper Layer effects chain. The original Phaser is the new Wide Phaser Effect, Ensemble becomes Flanger & Chorus, Echo becomes Digital Delay, and Reverb becomes Digital Reverb Room, Hall, or Plate).
- Every attempt has been made to facilitate a seamless and equivalent import of presets from v1 to v2 that would result in the same sound. Due to improvements made in Memorymode 2's emulation of the original Memorymoog hardware analog signal path (especially in the filter and envelopes), there may be some small differences that require manual tweaking to get v2 presets to sound precisely as they did in v1. The good news is that your sounds in Memorymode 2 are more accurate to the hardware than ever before!

A Quick Tour of the Signal Path

Memorymode 2 contains two independent synthesizer layers, each supporting up to 16 voices of polyphony. Within each layer, the signal follows the familiar path of a classic subtractive analog synthesizer: oscillators create the raw sound, the mixer combines them, the filter shapes the tone, and the amplifier controls its volume.

Each voice begins with three closely related oscillators. All three offer selectable octave ranges and ramp, triangle, and variable-width pulse waves, which can be combined to create anything from a simple, focused tone to a dense wall of harmonics.

The oscillators also have a few important differences. Oscillator 1 includes **Sync 2 To 1**, which forces Oscillator 2 to restart its waveform in step with Oscillator 1. Sweeping Oscillator 2's pitch while sync is active produces the bright, tearing harmonics associated with classic oscillator-sync sounds.

Oscillators 2 and 3 include **Frequency** controls for fine-tuning, detuning, and creating fixed musical intervals. Oscillator 3 also includes a sub-audio **Low** range and a **Keyboard Control** switch that disconnects it from normal

keyboard pitch tracking. These features allow Oscillator 3 to serve as a powerful per-voice modulation source as well as an ordinary audio oscillator.

The three oscillator signals are combined in the Mixer, where each has its own level control. A noise source can also be added for breath, grit, percussion, wind, or general electronic weather.

The combined signal then enters the Voltage Controlled Filter, or VCF. The filter shapes the tone by reducing or emphasizing parts of the frequency spectrum. Lower **Cutoff** settings generally produce darker, rounder sounds, while higher settings allow more upper-frequency detail to pass through.

The **Emphasis** control, more commonly known as resonance, boosts frequencies around the cutoff point. Low settings can add definition and character. Higher settings create a more pronounced peak and can eventually drive the filter into self-oscillation. Memorymode 2's improved analog modeling gives the filter greater depth and movement, while the optional **Emphasis Compensation** button helps preserve the sound's level and low-frequency weight as emphasis is increased.

A dedicated filter envelope can animate the cutoff frequency over time. This is where static oscillator tones become plucks, sweeps, brass-like attacks, bubbling sequences, and slowly evolving textures.

After the filter, the signal passes through the Voltage Controlled Amplifier, or VCA. The VCA envelope determines how the sound's volume develops from the moment a note begins until it fades away. Because the filter and amplifier have separate envelopes, brightness and volume can evolve independently.

Two Kinds of Modulation

Each layer includes two complementary modulation systems: **LFO Modulation** and **Voice Modulation**.

LFO Modulation uses a single low-frequency oscillator that affects all active voices together. This makes it ideal for unified vibrato, tremolo, pulse-width movement, filter sweeps, and other effects where every note should rise and fall in step.

Voice Modulation works independently within each voice, using Oscillator 3, the filter envelope, or a combination of both as modulation sources. Because every played note has its own Oscillator 3 and filter envelope, the modulation can develop separately for each voice. This is especially useful for polyphonic filter movement, audio-rate modulation, oscillator

interactions, and animated chords whose notes don't all move as a single block.

The two systems overlap in some applications, but their musical behavior is quite different. LFO Modulation moves the whole performance together. Voice Modulation becomes part of the individual voice itself.

Working with Two Layers

Memorymode 2's dual-layer architecture is one of its most important additions. Each preset can contain two complete synthesizer sounds, an Upper layer and a Lower layer, with independent oscillators, filter settings, envelopes, modulation, voice behavior, polyphonic sequencing, Touch Animator data, and effects.

The layers can reinforce one another or serve completely different musical roles. You might combine a warm sustained pad with a brighter percussive attack, place a solid bass beneath a moving sequence, or spread contrasting textures across the stereo field. Even relatively simple sounds can become remarkably rich when the two layers are tuned, shaped, and animated differently.

Each layer follows its own complete signal path:

Oscillators → Mixer → Filter → Amplifier → Layer Effects

The processed Upper and Lower layers are then combined and sent through the Global effects chain before reaching the Master Volume control and audio output:

Upper Layer + Lower Layer → Global Effects → Master Output

Because each layer has its own polyphonic sequencer and Touch Animator, the two sounds can play different note patterns, respond to different performance gestures, and use entirely different processing while remaining part of the same preset.

When learning the instrument, it's often best to begin with one layer at a time. Build a sound you understand, then bring in the second layer with a clear purpose. Two enormous sounds stacked together aren't always twice as good. Sometimes they're just twice as enormous.

Designing Your Own Presets

Begin with a simple one-oscillator sound. Turn down Oscillators 2 and 3, open the filter, and temporarily disable the effects. Listen closely to Oscillator 1 by itself, then add the remaining oscillators one at a time.

Next, adjust the filter and envelopes. Try short amplifier decay and release settings for plucked sounds, or slower attack and release settings for pads. Add filter-envelope movement, then introduce modulation, voice effects, sequencing, and the second layer gradually. This approach makes it easier to hear what each section contributes instead of confronting the full analog stampede all at once.

Memorymode 2 rewards experimentation. Turn knobs, press buttons, exaggerate settings, and listen carefully to what changes. You won't damage the instrument, upset a collector, or reduce its auction value. When you create something worth keeping, save it as a new preset rather than overwriting the original. This gives you the freedom to experiment while preserving a reliable route back to where you started.

Technical Assistance

Cherry Audio's installation, authorization, and automatic-update systems are designed to keep setup relatively painless. Should you encounter a problem, help is available through the Cherry Audio user forums and technical support portal.

The forums are useful for general questions, sound-design discussions, and advice from other users. For account, installation, authorization, or technical problems requiring direct assistance, contact Cherry Audio Support.

Cherry Audio Forums:

<https://forums.cherryaudio.com/viewforum.php?f=37>

Technical Support:

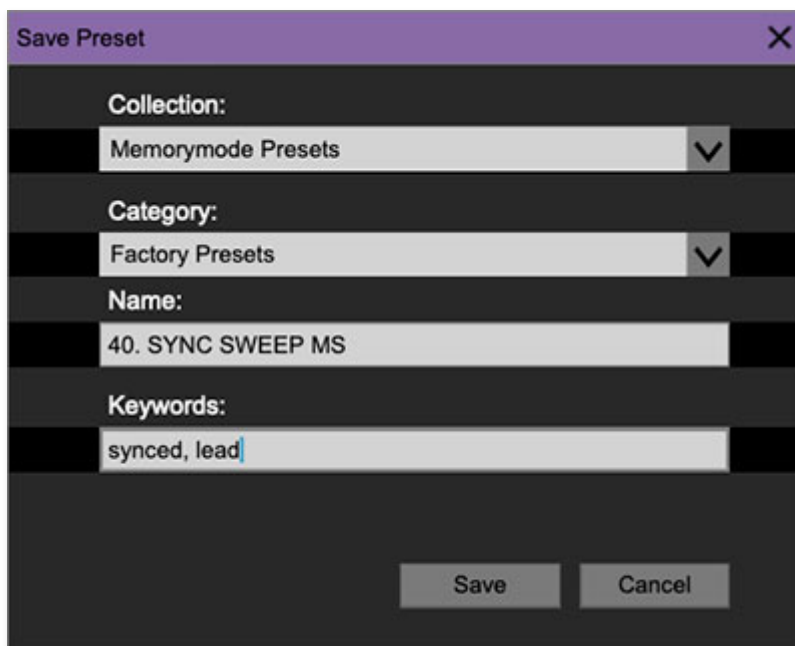
<https://cherryaudio.kayako.com/>

Top Toolbar and Preset Browser



The dark purple strip at the top of the Memorymode contains the newly designed Preset browser, navigation, "under-the-hood" settings, UI zoom and focus control, and more.

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.



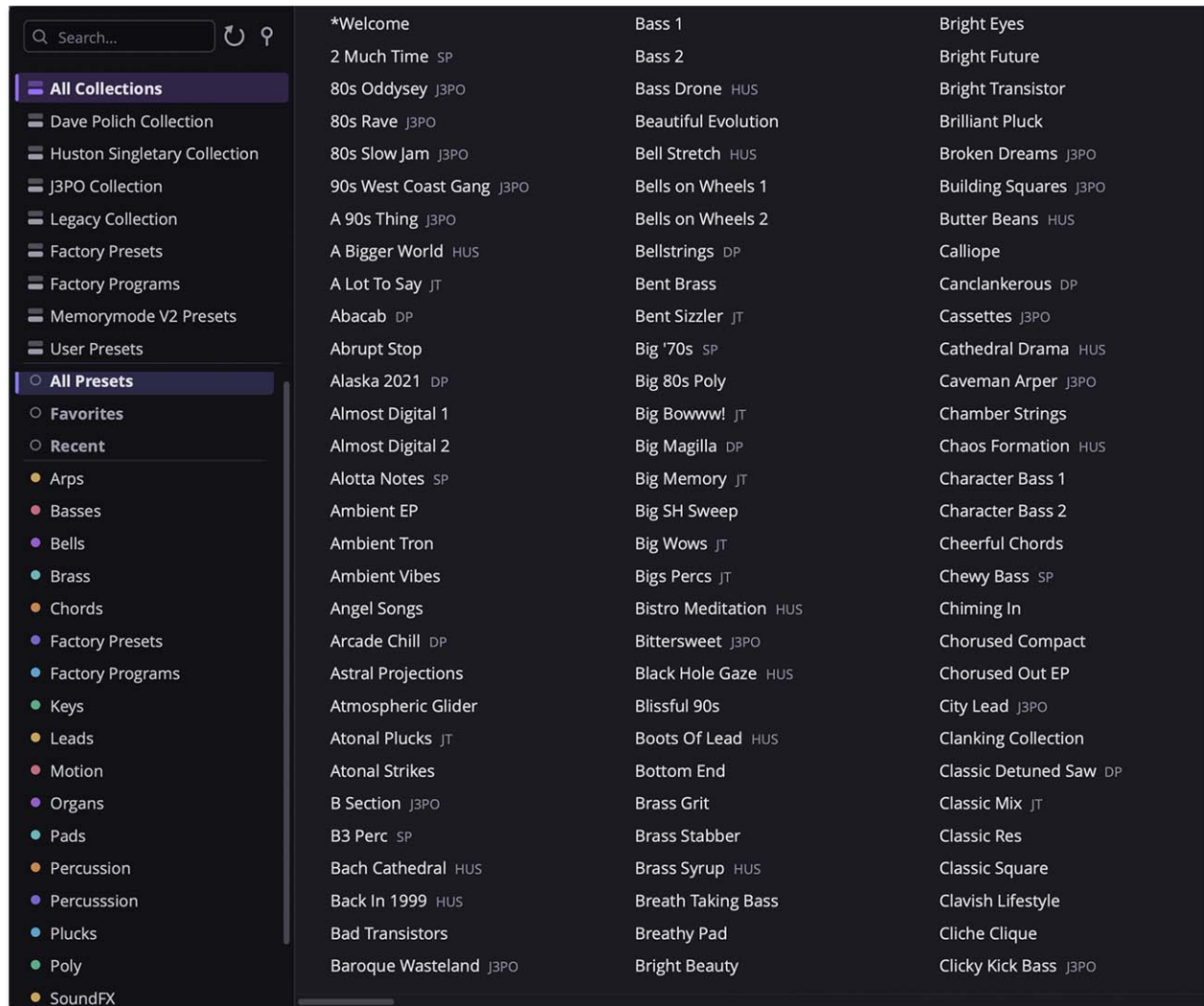
Save - Use this to save patch presets. There are a couple of levels of hierarchy that appear in the Save Preset box, which correlate to the Preset Browser below.

- **Collection**- This is the top level of organization, and contains entire "sets" of presets. The *Memorymode V2 Presets* are the primarily new collection. We also include a *User Presets* collection for storing user presets, but you're free to create your own collections. To create a new collection, 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 sepa-rated" for organizational

purposes. Select a collection in the left panel to filter the display of presets on the right to just those presets.

- **All Collections** - As it says on the label: displays the available presets from all of the collections below, and any you may add in the future, such as the Foundation Preset Pack from Cherry Audio.
- **Andrew Longhurst Collection** - All new presets designed specifically for Memorymode 2 and its features by Andrew Longhurst.
- **Dave Polich Collection** - Memorymode v1 presets by the designer, converted to Memorymode 2. Dave also has new presets in the Memorymode V2 collection.
- **Huston Singletary Collection** - Memorymode v1 presets by the designer, converted to Memorymode 2.
- **J3PO Collection** - Memorymode v1 presets by the designer, converted to Memorymode 2.
- **Legacy Collection** - The original default Memorymode v1 presets, converted to Memorymode 2. Note that all of these are single (whole) layer presets. The effects have been translated to the new Effects panel system.
- **Factory Presets** - The original 100 programs from the Memorymoog, imported from a cassette backup of the hardware and using only the features available to the hardware (i.e., no effects, layers, etc.).
- **Memorymode V2 Presets** - All new presets from the Memorymode 2 sound design team led by James Terris, created to demonstrate, inspire, and take advantage of all of the new features in Memorymode 2.
- **User Presets** - Waiting for your creations!
- **Category**- 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.
- **Name**- The name for an individual sound preset. To save a patch, simply type the name in the *Name* field and click *Save*. Note that if you add characters into parentheses after the name, those characters are displayed as a suffix to the main name. You can use this as a handy way to indicate functionality (such as AT for aftertouch) or the name/initials of the sound designer.
- **Keywords**- You can add descriptive words such as "huge," "noisy," "poly," etc., to patches to make them appear when terms are typed in the *Search* field. Use commas to separate multiple keywords entries.

Presets now also include the initials of the sound designer who created the patch.



The Preset Browser

Memorymode 2 includes a newly redesigned preset browser with a presentation of the Collections, Search, filters for All/Favorites/Recent, and Presets by Category. Memorymode 2 includes over 200 completely new "V2" presets that take advantage of the latest features, as well as updated versions of the over 600 presets and collections originally included in version 1.

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.
- **Favorites** displays presets that you have designated as favorites (by clicking the **star** icon next to the preset name in the preset name field).
- **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.

Preset- Step Back/Forward 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- These circular arrows will undo or redo the last action. It remembers many steps, so if you really loused something up, keep on (un)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

Memorymode 2 Presets (user or third-party) can be imported singly 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 Memorymode interface window. 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 rare, "make this #\$!%ing thing shut up?!?" stuck-note incidents.

Tempo (Standalone Version Only)- Displays Memorymode's current internal tempo setting. Memorymode's internal tempo affects the LFO, Arpeggio, and the Echo section rates when their corresponding *Sync* buttons are enabled. The tempo setting can be changed by moving the mouse up and down anywhere in the tempo section, or by double-clicking the number and entering the desired BPM value.

The tempo display only appears in the standalone version of Memorymode 2. VST, AU, and AAX plug-in versions receive tempo data from their host DAW app.



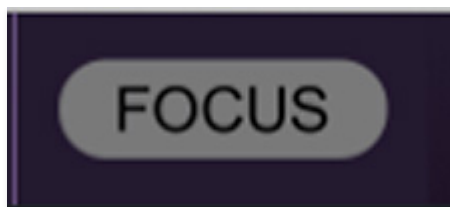
QWERTY Musical Typing Keyboard- Opens an onscreen keyboard allowing a standard QWERTY computer keyboard to be used for playing music notes. For more information, see the **QWERTY Musical Typing Keyboard (MTK)** section.



? (Help)- Clicking this launches your web browser and opens the help document you're already reading. Confusing circular logic at its finest.

Cherry Audio Memorymode 2 Synthesizer logo- Clicking this displays "about" information, and shows the version number and current registered user ID.

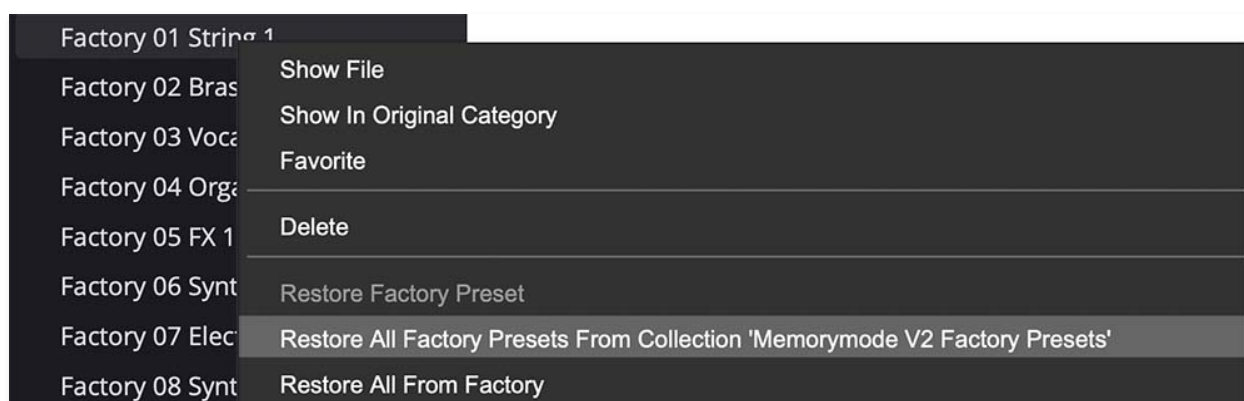
Focus Button



Since the original instrument is over three feet wide and your display likely isn't, it was necessary to ensmallinate lots of things (sure, that's a word). If you're using a tiny laptop, this could make things hard to see. With this in mind, the *Focus* button conveniently blows up Memorymode's user interface 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. (Drop us a line from your AOL account, umkay?)

Using *Focus* mode couldn't be easier - just click the *Focus* button the top menu bar. To return to standard view, click *Reset*. **There's also a superfast key shortcut** - on Mac, hold the ⌘ [COMMAND] key and click the mouse; in Windows, hold the [OPTION] key and click the mouse. Focus can be reset with the same key shortcuts.

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.

Delete- Deletes the selected preset.

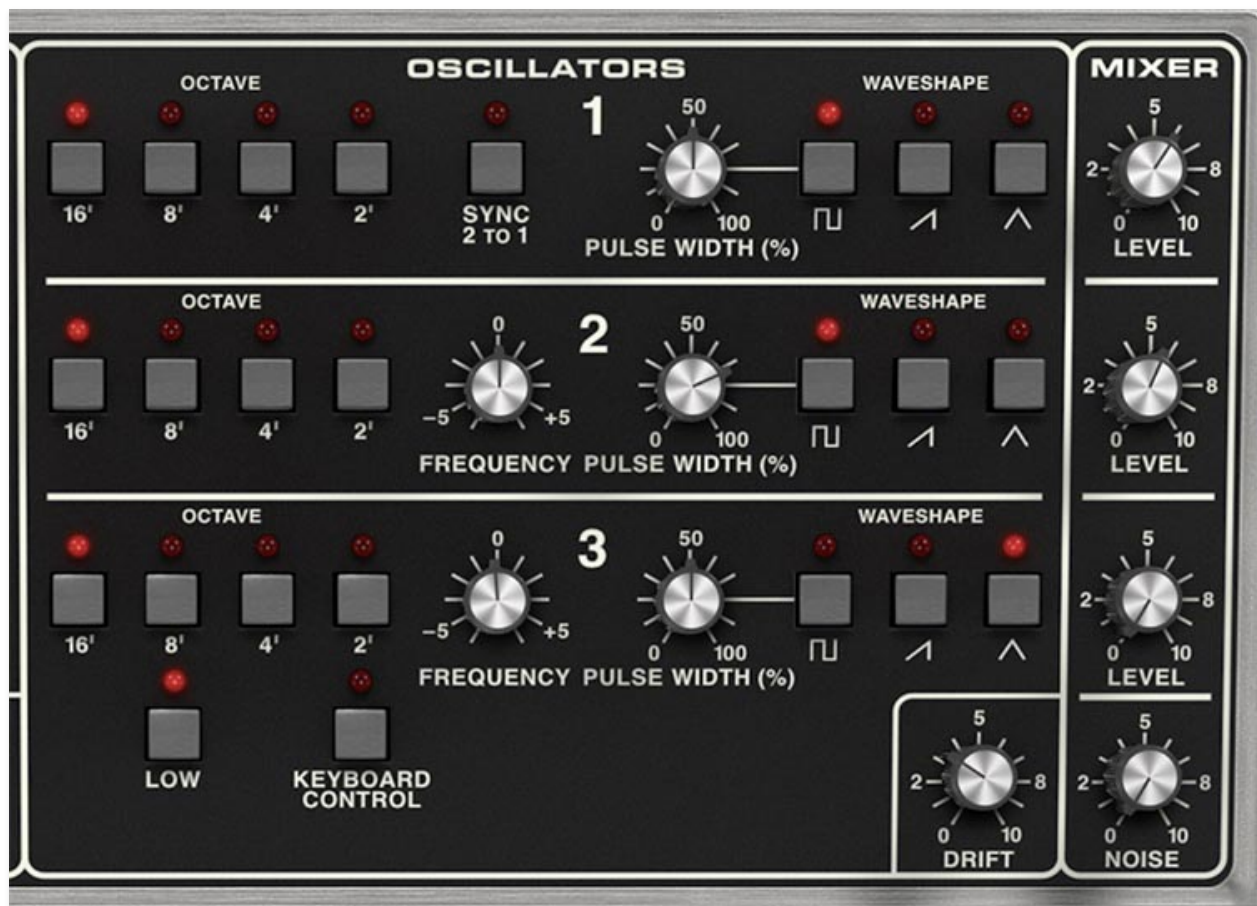
Restore Factory Preset- If one of the factory (i.e. not user) patches is edited and saved, selecting this command restores the patch to its unaltered "factory" setting. This menu will be grayed-out for user bank patches.

Restore All Factory Presets From 'Memorymode Presets'- If any patches from the "factory" Memorymode 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 Memorymode bank mentioned above is the only factory bank, so this function and the *Restore All Factory Presets From 'Memorymode Presets'* above have the same effect.

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.

Oscillators



Every Memorymode 2 sound begins with three analog-modeled oscillators. Each one can generate pulse, ramp, and triangle waves, and those waveforms can be switched on individually or combined. A single oscillator can produce a clean, focused tone, while all three running together can deliver the broad, muscular sound that made the original instrument famous.

The three oscillators share the same basic design, but they aren't identical:

Oscillator 1 includes oscillator sync.

Oscillators 2 and 3 include Frequency controls for detuning and creating musical intervals.

Oscillator 3 can also operate in a low-frequency range and be disconnected from keyboard tracking, allowing it to serve as a per-voice modulation source.

Because every note has its own set of three oscillators, these features operate polyphonically. Chords can therefore include independent oscillator

movement within every voice rather than behaving like a single monophonic modulation source applied across the entire instrument.

Controls Common to All Three Oscillators

Octave: 16', 8', 4', and 2'

Function: Sets the oscillator's basic pitch range using traditional organ-footage labels.

16' – Lowest range.

8' – One octave above 16' and generally the normal keyboard pitch.

4' – One octave above 8'.

2' – Two octaves above 8'.

Only one Octave setting can be active for each oscillator at a time. Selecting a new setting automatically disables the previous one.

Sound: Matching octave settings create a dense, unified tone. Placing the oscillators in different octaves spreads the harmonic energy across a wider range.

Tip: For a solid bass, try Oscillator 1 at 16', Oscillator 2 at 8', and Oscillator 3 at 16' with its Mixer level reduced slightly. For a bright lead or brass sound, combine 8', 4', and 2'.



Waveshape

Each oscillator includes three independently selectable waveforms. More than one can be active at a time, allowing you to create a harmonically complex tone before the signals reach the Mixer.

Pulse

Sound: Hollow and focused at moderate widths, becoming thinner, brighter, and more nasal as the pulse narrows.

At a Pulse Width setting of 50%, the waveform is symmetrical and behaves like a square wave, with a strong fundamental and prominent odd-numbered harmonics.

Interactions: Pulse Width affects this waveform directly. The LFO Modulation section can animate the pulse width of all three oscillators, while Voice Modulation can affect the pulse width of Oscillators 1 and 2.

Tip: Use pulse waves for reedy leads, animated pads, clavinet-like tones, and wiry electronic textures.

Ramp

Sound: Bright, bold, and rich in harmonics. Ramp waves provide plenty of material for the filter to shape.

Use it for: Basses, brass, strings, leads, and classic filter sweeps.

Triangle

Sound: Smooth and rounded, with fewer upper harmonics than either ramp or pulse.

Use it for: Mellow leads, flute-like sounds, soft bass reinforcement, and strengthening the fundamental without making a patch excessively bright.

Tip: Layer triangle beneath ramp to add weight while preserving the ramp wave's harmonic detail.

Pulse Width

Function: Sets the duty cycle of the pulse waveform, from a symmetrical square shape to an extremely narrow pulse.

Sound: At approximately 50%, the pulse sounds full and hollow. Narrower settings produce a thinner, brighter, and more nasal tone.

Interactions: Pulse Width has no effect unless the pulse waveform is enabled. It can be animated from the LFO Modulation or Voice Modulation sections.

Tip: For warm pads, begin near 50% and apply a small amount of slow LFO modulation. For thinner, more animated textures, start with a narrower pulse and use deeper modulation.



Oscillator 1

Oscillator 1 acts as the primary pitch reference for the oscillator section. Unlike Oscillators 2 and 3, it has no Frequency control, so its pitch is determined by the selected Octave setting and the notes played from the keyboard.

Sync 2 To 1

Function: Forces Oscillator 2 to restart its waveform every time Oscillator 1 begins a new cycle. Oscillator 1 acts as the master, while Oscillator 2 becomes the synchronized oscillator.

Sound: With both oscillators tuned similarly, the result may be subtle. Raising or sweeping Oscillator 2's pitch creates the bright, tearing harmonics associated with classic oscillator-sync leads and effects.

The fundamental pitch remains anchored to Oscillator 1 while Oscillator 2's harmonic structure changes.

Interactions: Oscillator 2 must be audible in the Mixer for the sync effect to be heard clearly. The most dramatic movement occurs when Oscillator 2's pitch is modulated from the Voice Modulation section.

Tip: Enable Sync 2 To 1, set Oscillator 1 to 8', and set Oscillator 2 to 4' or 2'. Route the filter envelope to Oscillator 2 in the Voice Modulation section, then use the filter envelope Attack and Decay controls to shape the sweep.



Oscillator 2

Oscillator 2 adds independent tuning to the shared Octave, Waveshape, and Pulse Width controls.

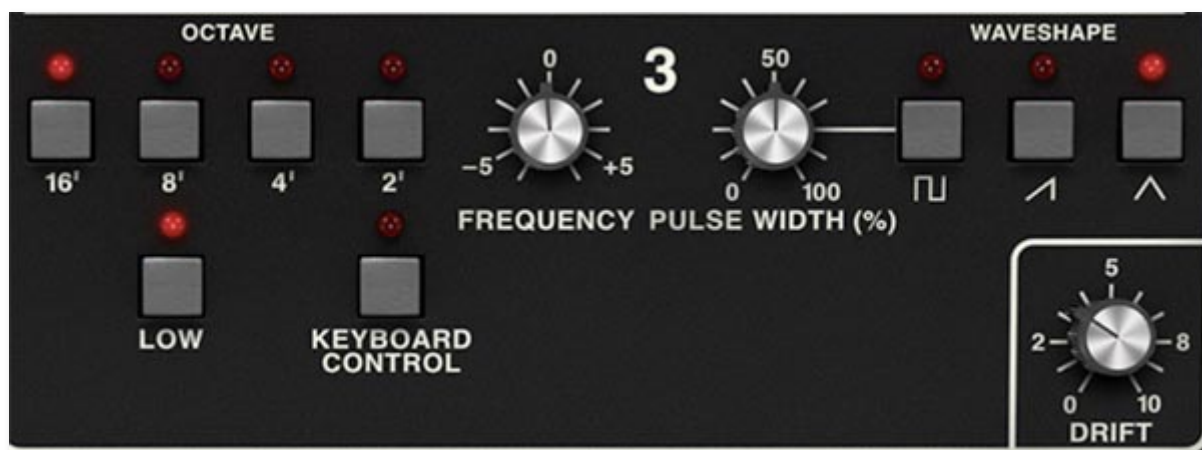
Frequency

Function: Adjusts Oscillator 2 above or below its normal pitch by a little more than a perfect fifth in either direction.

Sound: Small adjustments create slow beating and analog-style thickness. Larger adjustments create fixed intervals, including fourths, fifths, harmonies, and dissonant relationships.

Interactions: When Sync 2 To 1 is enabled, Frequency changes the harmonic content of the synchronized waveform rather than simply detuning Oscillator 2.

Tip: For natural thickness, move the control only slightly away from center. For interval-based leads or basses, tune Oscillator 2 to a fifth above Oscillator 1.



Oscillator 3

Oscillator 3 can function as a conventional audio oscillator, a low-frequency modulation source, or both.

Frequency

Function: Adjusts Oscillator 3 above or below its normal pitch by a little more than a perfect fifth.

Sound: When Oscillator 3 is audible, Frequency creates detuning, musical intervals, or deliberately unstable pitch relationships. When Oscillator 3 is used for Voice Modulation, Frequency determines the modulation rate.

Low

Function: Shifts Oscillator 3 into a sub-audio range so it can act as a low-frequency oscillator.

Sound: Oscillator 3 can create per-voice vibrato, filter sweeps, pulse-width movement, or tremolo. Because every voice has its own Oscillator 3, held notes can move independently rather than sharing one global modulation cycle.

Interactions: Turn down Oscillator 3 in the Mixer when using it purely as a modulation source. Disable Low for audio-rate modulation, which can produce metallic, bell-like, growling, or aggressively synthetic tones.

Tip: Enable Low, turn down Oscillator 3 in the Mixer, then route it to Filter in the Voice Modulation section. Sustained chords will develop complex internal movement as each voice follows its own modulation cycle.

Keyboard Control

Function: Determines whether Oscillator 3 follows the pitch of notes played on the keyboard.

On: Oscillator 3 tracks the keyboard normally. Higher notes produce higher oscillator frequencies.

Off: Oscillator 3 remains at a fixed frequency regardless of the note played.

Sound: With Low and Keyboard Control both enabled, low notes receive slower modulation while higher notes move faster. With Keyboard Control disabled, every voice uses the same Oscillator 3 frequency.

Interactions: Keyboard Control is normally enabled when Oscillator 3 is used as an audio source. Disabling it in the audio range creates a fixed-pitch oscillator that can be used for drones, pedal tones, beating effects, and unusual harmonic relationships.

Tip: For predictable per-voice modulation, enable Low and disable Keyboard Control. For more animated chords whose upper notes move faster than the lower notes, leave Keyboard Control enabled.

Drift

Function: Introduces random tuning variation among the oscillators.

Sound: Low settings add subtle movement. Moderate settings produce more noticeable beating and vintage looseness. High settings create deliberately

unstable tuning.

Interactions: Frequency establishes a fixed pitch relationship for Oscillators 2 and 3. Drift adds continuously changing variation around those settings.

Tip: Increase Drift until the sound begins to move, then back it off slightly.



Mixer

Each Memorymode 2 layer includes its own Mixer for balancing the three oscillators and white-noise source before they enter the filter.

The Mixer does more than set relative volume. Its levels also determine how hard the combined signal drives the filter input. Lower settings preserve a cleaner, more open tone. Higher settings introduce gentle internal overdrive, adding density, warmth, and harmonic weight before the sound reaches the VCF.

Oscillator Level 1, 2, and 3

Function: Sets the volume of the corresponding oscillator in the mixed signal.

Sound: Low settings let the oscillator sit quietly beneath the others. Higher settings make it more prominent and increase the overall level feeding the filter.

Settings above approximately **4** begin to introduce gentle overdrive, similar to the behavior of the original instrument. This isn't the harsh digital clipping you'd get by overloading the final output. It's part of the modeled signal path and can add useful thickness and saturation.

Interactions: The amount of overdrive depends on the combined level of all active oscillators and waveforms. Three oscillators, each producing multiple waveforms, can build level quickly even when no single Mixer control is turned all the way up.

Tip: For a clean, spacious pad, keep the oscillator levels moderate and let the filter and effects provide the movement. For basses, leads, and aggressive brass sounds, push one or more levels above 4 to add weight and edge before the filter.

Noise

Function: Sets the level of the white-noise source sent into the Mixer.

Sound: White noise contains energy across the audible frequency spectrum. At low levels, it adds air, breath, grit, and a subtle sense of texture. At higher levels, it can become the main ingredient in wind, surf, percussion, and special-effect sounds.

Because noise has no fixed pitch, the filter plays a major role in shaping it. Lower Cutoff settings produce dark rumbles and soft bursts. Higher Cutoff settings create brighter hiss and sharper attacks.

Tip: Add a small amount of Noise to pads or brass patches to keep sustained tones from feeling too smooth. For synthesized percussion, turn down the oscillators, raise Noise, and use short filter and amplifier envelopes. High Emphasis settings can turn the filter into the pitched element while the noise provides the initial strike.

Balancing the Mixer

A three-oscillator synthesizer can become crowded quickly. Not every oscillator needs to be equally loud. Use one oscillator as the foundation, another for detuning or an interval, and the third for reinforcement or

modulation. Reducing the level of supporting oscillators often makes the final sound larger and clearer than running everything at maximum.

For example:

- Oscillator 1 can provide the main ramp-wave body.
- Oscillator 2 can sit slightly lower and add detuned width.
- Oscillator 3 can contribute a quiet triangle wave for low-frequency weight.
- Noise can be added just enough to give the attack some texture.

The result will often sound more controlled than three equally loud oscillators competing for the same space.

Clean Versus Driven Mixer Settings

For cleaner patches, keep the oscillator levels around the lower half of their range and compensate with the final output level if necessary. For a thicker, more aggressive sound, push the oscillator levels beyond 4 and listen to how the filter responds. The added harmonics can make low resonance settings feel richer and high resonance settings more forceful. The useful setting is the one that serves the patch. More drive isn't automatically better.

Sometimes the fattest sound comes from leaving enough room for the oscillators, filter, and two layers to breathe.

Programming Tips

Build the Sound One Oscillator at a Time

Begin with Oscillator 1 alone. Choose a waveform that suits the basic character you want, then add Oscillator 2 for detuning or a musical interval. Bring in Oscillator 3 for additional weight, movement, or modulation. This makes it easier to hear what each oscillator contributes and prevents a patch from becoming dense simply because every available control was turned on.

Use Opposing Detuning

Turn Oscillator 2 slightly sharp and Oscillator 3 slightly flat relative to Oscillator 1. This spreads the beating around the central pitch and often sounds more balanced than detuning both oscillators in the same direction. Add a small amount of Drift afterward. Frequency establishes the relationship and Drift adds organic movement.

Combine Waveforms Before Adding More Oscillators

One oscillator can already be harmonically complex because multiple waveforms can be enabled simultaneously. Try ramp and triangle together

for brightness with a stronger fundamental. Pulse and triangle create a hollow tone with additional low-frequency weight. Exploring waveform combinations before adding more oscillators often produces a clearer, more focused patch.

Use Oscillator Sync as a Harmonic Envelope

A sync sweep doesn't always need to be dramatic. Enable Sync 2 To 1, apply a modest amount of filter-envelope modulation to Oscillator 2, and use short envelope times. Instead of an obvious ripping sweep, the beginning of each note gains a bright harmonic snap that settles quickly into the body of the sound. This works especially well for brass, bass, and percussive lead patches.

Give the Two Layers Different Jobs

In a dual-layer preset, the Upper and Lower layers don't need equally dense oscillator settings. One layer might provide a stable foundation using triangle and gently detuned ramp waves, while the other supplies a brighter sync sweep, narrow pulse texture, or per-voice modulation. Dividing these roles often produces a larger and clearer result than stacking two equally massive three-oscillator patches.

Voltage Controlled Filter and Envelope Generator



Voltage Controlled Filter and Filter Envelope Generator

Memorymode 2's Voltage Controlled Filter is where the raw power of its three oscillators is shaped into something musical. The oscillators provide the harmonic material, but the filter determines whether that material becomes a warm pad, a sharply articulated bass, a brassy sweep, a hollow resonant whistle, or something else altogether.

The filter is based on the classic transistor-ladder lowpass design associated with the original Memorymoog. Lowering Cutoff progressively removes high-frequency content, producing a darker, rounder sound. Increasing Emphasis reinforces frequencies around the cutoff point, adding definition, bite, and eventually self-oscillation.

Memorymode 2 features substantially enhanced analog modeling, particularly in the filter's resonance, saturation, and response to the incoming oscillator signal. Each Upper and Lower layer has its own

independent filter and envelope, allowing the two layers to be shaped and animated differently within the same preset.

Voltage Controlled Filter Controls

Cutoff

Function: Sets the frequency above which the filter begins reducing high-frequency content.

Sound: Higher settings allow more harmonics to pass, producing a brighter and more open tone. Lower settings remove upper harmonics, making the sound darker, softer, and more rounded.

At its highest settings, the filter is effectively open for most sounds. At very low settings, only the deepest frequencies may remain.

Interactions: Cutoff establishes the filter's starting point. The Filter Envelope, KB Track, Velocity, modulation, and Emphasis all work relative to this setting.

Cutoff and Contour Amount are especially important partners. If Cutoff is already fully open, the envelope may have little room to move it any higher. Lowering Cutoff gives the envelope space to create a more audible sweep.

Tip: When a filter envelope doesn't seem to be doing much, lower Cutoff before increasing Contour Amount. The envelope may be working perfectly well but have nowhere left to go.

Emphasis

Function: Adds feedback around the filter's cutoff frequency. This is more commonly called resonance.

Sound: Low settings add subtle definition and a gentle peak around the cutoff point. Moderate settings create more obvious brightness, hollowness, and vocal-like coloration. High settings produce a sharp resonant whistle and can drive the filter into self-oscillation.

At self-oscillation, the filter generates a sine-like tone of its own, even when the oscillator levels are turned down.

Interactions: The frequency of the resonant peak follows Cutoff. Moving Cutoff therefore changes both the brightness of the oscillator signal and the pitch of the resonance.

High Emphasis settings can reduce the apparent weight of frequencies below the cutoff point. The adjacent Emphasis Compensation button provides an alternate response when you want to preserve more body.

Tip: For basses and leads, try moderate Emphasis rather than immediately pushing it toward self-oscillation. A smaller resonant peak often adds useful definition without thinning the sound or overpowering the oscillators.



Emphasis Compensation

Function: Compensates for the perceived loss of level and low-frequency weight that can occur as Emphasis is increased.

Sound: With compensation disabled, raising Emphasis produces a more traditional ladder-filter response, in which the resonant peak becomes increasingly prominent while the body of the sound may recede.

With compensation enabled, more of the underlying fullness is retained as Emphasis rises.

Interactions: The difference becomes more noticeable at higher Emphasis settings. At low settings, the two modes may sound quite similar.

Emphasis Compensation doesn't simply raise the output level. It changes the balance between the resonant peak and the frequencies beneath it.

Tip: Enable Emphasis Compensation when programming resonant basses, low leads, and sequences that need to retain their weight. Disable it when you want a leaner resonant sweep with a more exposed peak.

Contour Amount

Function: Sets how strongly the Filter Envelope modulates the cutoff frequency.

Sound: Low settings produce little or no automatic filter movement. Higher settings create a wider upward sweep as the envelope moves through its Attack, Decay, Sustain, and Release stages.

Interactions: Contour Amount works additively with Cutoff. Cutoff sets the filter's resting position, while Contour Amount determines how far the envelope can push it upward.

The audible result also depends on the oscillator waveform. Bright ramp and narrow pulse waves make filter movement easy to hear. Triangle waves may

respond more subtly because they contain fewer upper harmonics.

Tip: For a classic analog pluck, lower Cutoff, raise Contour Amount, use a fast Attack, short Decay, low Sustain, and short Release. Adjust Cutoff and Contour Amount together until the attack has the right amount of snap.

KB Track

Function: Causes the filter cutoff frequency to rise as higher notes are played.

Sound: At low settings, the filter remains near the same frequency across the keyboard, so high notes may become progressively darker. Increasing KB Track keeps upper notes brighter by opening the filter as pitch rises. Higher settings make the filter response feel more closely connected to keyboard pitch, while lower settings preserve a more fixed cutoff position.

Interactions: KB Track adds to the base Cutoff setting and any movement created by the Filter Envelope. Its effect is most obvious when Cutoff is low enough to remove a noticeable amount of high-frequency content. With high Emphasis, KB Track also causes the resonant peak to rise in frequency as higher notes are played.

Tip: Use moderate KB Track on pads, brass, and polyphonic patches to keep chords balanced across the keyboard. For dark basses, use less tracking so the low register remains heavy and upper notes don't become excessively bright.

Slope: 12 dB and 24 dB

Function: Selects how steeply the filter reduces frequencies above the cutoff point.

12 dB

Sound: Brighter, smoother, and more open. The shallower slope allows more upper-frequency content to remain above the cutoff point.

Use it for pads, strings, polyphonic brass, layered sounds, and patches that need filtering without becoming too dark.

24 dB

Sound: Darker, stronger, and more focused, with a more pronounced interaction between Cutoff and Emphasis. This is the slope most closely associated with the original Memorymoog filter.

Use it for basses, leads, resonant sequences, percussion, and classic analog filter sweeps.

Interactions: The same Cutoff setting can sound substantially different in the two modes. Switching from 12 dB to 24 dB may require raising Cutoff slightly to preserve a similar degree of brightness.

Tip: Don't think of 12 dB as merely the mild setting. Its shallower response can produce large, expensive-sounding pads because it preserves harmonic detail while still allowing the envelope to shape the tone.

Filter Envelope Generator

The Filter Envelope creates a changing control signal each time a note is played. That signal is applied to Cutoff according to the Contour Amount setting.

Each voice has its own Filter Envelope, so notes in a chord can progress through their contours independently.

The envelope follows four stages: Attack, Decay, Sustain, and Release. The envelope doesn't produce sound by itself. It shapes the filter over time, turning a static oscillator tone into something that snaps, swells, opens, closes, or slowly unfolds.

Attack

Function: Sets how long the envelope takes to rise from its starting level to its maximum level after a note is played.

Range: Approximately 1 millisecond to 10 seconds.

Sound: Short settings create an immediate filter opening. Longer settings produce a gradual brightening or swelling effect.

Interactions: Attack movement is heard only when Contour Amount is raised and Cutoff leaves enough room for the envelope to open the filter further.

Tip: Use a fast Attack for basses, plucks, and percussion. Increase Attack for strings, pads, and sounds that slowly brighten after the note begins.

Decay

Function: Sets how long the envelope takes to fall from its maximum level to the Sustain setting.

Range: Approximately 2 milliseconds to 20 seconds.

Sound: Short settings create a quick, percussive drop in brightness. Longer settings produce a gradual change that can continue developing after the initial attack.

Interactions: The destination of the Decay stage is determined by Sustain. If Sustain is set to maximum, there may be little or no audible decay.

Tip: For analog brass, use a fast Attack, medium Decay, and moderate Sustain. The filter opens quickly, then settles into a slightly darker held tone.

Sustain

Function: Sets the Filter Envelope level maintained while a note remains held.

Sound: Low Sustain settings allow the filter to close substantially after the Decay stage. Higher settings keep the held portion of the note brighter. Unlike Attack, Decay, and Release, Sustain controls level rather than time.

Interactions: Sustain establishes the destination of the Decay stage and the starting point of the Release stage.

Tip: Use low Sustain for plucks and percussive sounds. Use moderate or high Sustain for pads, organs, and sustained leads that need to remain harmonically open while held.

Release

Function: Sets how long the Filter Envelope takes to return to its resting level after the note is released.

Range: Approximately 2 milliseconds to 20 seconds.

Sound: Short settings cause the filter to close quickly when the key is released. Longer settings allow the tone to continue darkening gradually during the release tail.

Interactions: Filter Release is easiest to hear when the VCA envelope also has enough Release time for the sound to remain audible. If the amplifier shuts off immediately, the filter may continue moving, but there will be nothing left to hear.

The shared Release button must be enabled for the Release knob to take effect.

Tip: Match the Filter and VCA Release settings for a natural, unified fade. Offset them deliberately when you want the sound to darken or brighten as it disappears.

Velocity

Function: Sets how strongly note velocity affects the filter cutoff response.

Sound: At zero, playing harder or softer doesn't change the filter response. Higher settings allow stronger key strikes to produce a brighter, more open sound.

Interactions: Velocity works with Cutoff, Contour Amount, and the Filter Envelope. If the filter is already fully open, increased velocity may have little audible effect.

The response also depends on the velocity range produced by the connected MIDI controller or recorded MIDI performance.

Tip: Moderate Velocity settings can make a patch feel expressive without becoming unpredictable. Try it on brass, electric-piano-like sounds, basses, and leads so softer notes remain round while harder notes cut through.

Shared Envelope Controls

The five switches positioned between the Filter and VCA envelopes affect both envelope generators. They determine how the envelopes retrigger, respond across the keyboard, enter their Release stages, and react to sustain-pedal messages.

Because these controls operate on both envelopes simultaneously, they can significantly change the feel of a patch even when the individual Attack, Decay, Sustain, Release, and Velocity settings remain unchanged.

Return To Zero

Function: Determines where the Filter and VCA envelopes begin when a voice is retriggered before its current envelope cycle has finished.

With Return To Zero disabled, a retriggered envelope begins from its current level. With Return To Zero enabled, it resets to zero before beginning the new Attack stage.

Sound: Disabling Return To Zero creates smoother transitions between rapidly repeated notes because the envelopes continue from their current levels.

Enabling it gives each retrigger a more clearly defined beginning, producing a sharper and more consistent attack.

Interactions: The difference is most noticeable with longer Attack or Release settings and when notes are played or repeated quickly. With very short envelope times, the two modes may sound similar.

Tip: Enable Return To Zero for punchy basses, brass, percussion, and sequences that need a consistent attack on every note. Disable it for flowing pads, legato lines, and patches where repeated notes should connect more smoothly.

Unconditional Contour

Function: Causes both envelopes to complete their contours without waiting for the key to be released.

When disabled, the envelopes move through Attack and Decay, remain at the Sustain level while the note is held, and enter Release when the key is released.

When enabled, the envelopes complete the Attack stage and proceed directly into Release, regardless of how long the key remains held. This effectively changes them from ADSR envelopes into simpler attack-and-release contours.

Sound: Notes become less dependent on how long keys are held. A quick tap and a long press can produce the same basic contour, making the sound behave more like a triggered event than a continuously held note.

Interactions: Unconditional Contour affects both brightness and volume because it controls the Filter and VCA envelopes together. Attack and Release become the primary controls for shaping the contour.

Tip: Use Unconditional Contour for percussion, struck or plucked sounds, repeating sequencer patterns, and effects that should complete a predictable contour with each trigger.

Keyboard Follow

Function: Shortens the Attack, Decay, and Release times of both envelopes as higher notes are played.

Sound: Lower notes retain slower, broader contours, while higher notes respond more quickly. This can make a patch feel more naturally balanced across the keyboard, much as many acoustic instruments respond more quickly in their upper registers.

Interactions: Keyboard Follow changes envelope timing, not filter brightness. It shouldn't be confused with the filter's KB Track control, which raises the cutoff frequency as higher notes are played.

Because it affects both envelopes, upper notes can become faster in both their tonal development and volume contour.

Tip: Try Keyboard Follow on piano-like, mallet, plucked-string, and orchestral patches. It can prevent high notes from feeling sluggish when the lower register uses relatively long envelope settings.

Release Button

Function: Enables or disables the Release stages of both the Filter and VCA envelopes.

With Release enabled, releasing a key causes each envelope to fall according to its Release knob setting. With Release disabled, the Release controls are bypassed and the envelopes end immediately when the note gate is removed.

Sound: Enabling Release allows notes to fade naturally after the keys are released. Disabling it produces a tighter, more abrupt ending.

Interactions: A long Filter or VCA Release setting won't be heard when the Release button is disabled.

The button also works with Sustain Pedal behavior. When sustained notes are finally released, the envelopes enter their Release stages only if Release is enabled.

Tip: Disable Release for tight basses, clipped sequences, and sharply articulated parts. Enable it for pads, leads, strings, and sounds that should continue fading after the keys are released.

Sustain Pedal

Function: Enables the Filter and VCA envelopes to respond to incoming MIDI sustain-pedal messages.

With Sustain Pedal enabled, pressing the pedal keeps released notes sustained as though their keys were still held. When the pedal is released, the envelopes proceed into their Release stages.

With Sustain Pedal disabled, incoming sustain-pedal messages don't hold the envelopes.

Sound: This allows chords and notes to overlap without requiring the keys to remain held. Depending on the envelope settings, it can produce anything from piano-like sustain to large overlapping pads and slowly accumulating harmonic clouds.

Interactions: The final fade after the pedal is released depends on the shared Release button and the individual Filter and VCA Release settings.

Long pedal holds can also consume additional voices as new notes are played. Each layer supports up to 16 voices, so dense sustained passages may eventually cause older notes to be reassigned.

Tip: Enable Sustain Pedal for pads, strings, layered keyboard sounds, and evolving textures. Disable it for sequenced basses or tightly articulated parts when pedal messages would blur the pattern.

Sound Design Tips

Start with Cutoff and Contour Amount

These two controls establish most of the filter envelope's behavior. Lower Cutoff until the raw oscillator sound becomes noticeably darker, then raise Contour Amount until the envelope opens it by the desired amount. Only after that should you fine-tune the envelope times. This is usually faster than adjusting every control at once and hoping they eventually reach an agreement.

Use Slope to Separate the Layers

Set one layer to 24 dB for a dark, solid foundation and the other to 12 dB for a brighter, more open texture. Even when both layers use similar oscillator settings, the different slopes help them occupy distinct tonal roles. This works especially well for layered pads, brass, and composite bass sounds.

Preserve Bass with Emphasis Compensation

For a resonant bass, choose the 24 dB slope, lower Cutoff, and increase Emphasis until the resonant peak becomes clearly audible. Engage Emphasis Compensation to retain more low-frequency weight beneath it. Disable compensation afterward and compare. The leaner response may work better when the bass needs to leave room for a kick drum.

Make Resonance Playable

Raise Emphasis toward self-oscillation, reduce the oscillator Mixer levels, and increase KB Track. The resonant filter can become a pitched tonal element that follows the keyboard. Adjust Cutoff and KB Track by ear. This technique is useful for sine-like leads, whistles, electronic percussion, and layered tones.

Add Filter Snap Without a Full Sweep

Set Attack very fast, Decay short, Sustain moderately high, and Contour Amount fairly low. The filter will produce a brief bright accent at the beginning of each note, then settle quickly into the body of the sound. This adds articulation to basses, brass, and leads without creating an obvious sweep.

Let the Filter and Amplifier Envelopes Differ

The Filter and VCA envelopes don't need identical settings. A longer Filter Release can allow a sustained tail to become progressively darker. A shorter Filter Release paired with a longer VCA Release creates a muted, receding decay. A slower Filter Attack than VCA Attack lets the note begin softly and brighten after its volume has already arrived. Small differences between the

two envelopes often make a patch feel more organic than perfectly matching settings.

Note Regarding Actual Values in Memorymode 2

You may notice that the values displayed in the pop-up Tooltips, especially the time values for the envelopes (Attack, Decay, Sustain, and Release) do not match the labels as shown on the UI. This is not an error. During our reanalysis of the Memorymoog hardware for Memorymode 2, we found that actual curves and timings of the hardware do not precisely match what was labeled. We chose to keep the labels as they were on the original, but the tooltip values precisely match the actual behavior of what you will see and hear on both the hardware and in Memorymode 2.

Voltage Controlled Amplifier and Envelope Generator



Voltage Controlled Amplifier and VCA Envelope Generator

The Voltage Controlled Amplifier, or VCA, controls the level of each note as it moves through time. The oscillators create the raw sound and the filter shapes its tone, but the VCA determines whether that sound snaps into existence, fades in gradually, sustains evenly, or disappears with a long trailing release.

Despite the name, the VCA isn't primarily intended to make the synthesizer louder. It behaves more like an automatic volume control, opening and closing in response to its dedicated envelope generator. Each voice has its own VCA and envelope, allowing every note in a chord to progress through its volume contour independently.

The VCA Envelope follows the familiar four-stage ADSR structure:

Attack controls how quickly the sound rises to full level.

Decay determines how long it takes to fall from that initial peak to the Sustain level.

Sustain sets the level maintained while the note remains held.

Release controls how long the sound takes to fade after the note is released.

Because the VCA determines whether a voice can be heard at all, its envelope often has the greatest influence on the perceived shape and

playing response of a patch.

VCA Envelope Controls

Attack

Function: Sets how long the sound takes to rise from silence to its maximum level after a note is played.

Range: Approximately 1 millisecond to 10 seconds.

Sound: Short settings produce an immediate entrance with a clearly defined attack. Longer settings cause the sound to fade in gradually.

Interactions: Attack works independently from the Filter Envelope Attack. This means the sound's volume and brightness don't have to rise at the same speed. For example, a fast VCA Attack with a slower Filter Attack produces a note that begins immediately but gradually becomes brighter. A slow VCA Attack with a faster Filter Attack creates a bright transient that fades into view more gently.

The shared Return To Zero and Keyboard Follow controls also affect VCA Attack behavior.

Tip: Use very short Attack settings for basses, percussion, plucks, and sharply articulated sequences. Increase Attack for strings, pads, bowed textures, and sounds that should emerge gradually.

Decay

Function: Sets how long the VCA Envelope takes to fall from its maximum Attack level to the Sustain setting.

Range: Approximately 2 milliseconds to 20 seconds.

Sound: Short settings create a quick drop in volume after the initial attack. Longer settings allow the sound to settle gradually.

Interactions: The audible result depends heavily on Sustain. If Sustain is set to maximum, there may be little or no audible Decay because the envelope has nowhere lower to go. When Sustain is set to zero, Attack and Decay together create a simple percussive volume contour. The note rises during Attack and then fades toward silence during Decay, even if the key remains held.

Tip: For plucked or struck sounds, use a fast Attack, moderate Decay, and low Sustain. For brass or keyboard sounds, use a medium Decay with a

higher Sustain so the initial accent settles into a stable held level.

Sustain

Function: Sets the VCA level maintained after the Attack and Decay stages have completed and while the note remains held.

Sound: Low Sustain settings allow the note to fade substantially after its initial attack. Higher settings keep the held portion of the sound louder and more continuous.

At maximum Sustain, the sound remains near its peak level until the note is released.

Unlike Attack, Decay, and Release, Sustain controls level rather than time.

Interactions: Sustain establishes the destination of the Decay stage and the starting level of the Release stage. The shared Unconditional Contour control changes this behavior. When Unconditional Contour is enabled, the envelope doesn't remain at the Sustain level while the key is held. Instead, it proceeds into Release automatically.

Tip: Use low Sustain for plucks, percussion, mallets, and short sequenced sounds. Use higher Sustain for organs, leads, strings, pads, and other sounds that need to remain present while the keys are held.

Release

Function: Sets how long the sound takes to fade to silence after the key is released.

Range: Approximately 2 milliseconds to 20 seconds.

Sound: Short settings stop the note almost immediately. Longer settings allow it to trail away gradually, ranging from a natural decay to a long ambient fade.

Interactions: The shared Release button must be enabled for the VCA Release knob to take effect. When the button is disabled, released notes stop immediately regardless of the knob setting. The VCA Release also determines how long the Filter Envelope remains audible after the key is released. If VCA Release is very short, a longer Filter Release may continue internally, but the amplifier will have already silenced the voice. Sustain-pedal behavior also interacts with Release. When a sustained note is finally released by lifting the pedal, the VCA enters its Release stage according to this setting.

Tip: Use short Release settings for tight basses, staccato sequences, and rhythmic parts. Longer settings work well for pads, strings, leads, and layered sounds that should overlap smoothly.

Velocity

Function: Sets how strongly incoming note velocity affects VCA level.

Sound: At zero, notes play at a consistent volume regardless of how hard or softly the keys are struck. Increasing Velocity causes harder playing to produce louder notes and softer playing to produce quieter notes.

Higher settings create a wider dynamic range and a more touch-sensitive response.

Interactions: The final response depends on the velocity curve and range of the connected MIDI keyboard or recorded MIDI data. Velocity also works independently from the Filter Envelope Velocity control. You can therefore make harder playing affect volume, brightness, or both.

For example:

- Raise VCA Velocity but keep Filter Velocity low for dynamic volume without major tonal changes.
- Raise Filter Velocity but keep VCA Velocity lower for notes that become brighter when played harder without changing dramatically in volume.
- Raise both for a more natural acoustic-style response.

Tip: Moderate Velocity settings are often more playable than maximum values. Enough response to reward expressive playing is useful, but a patch that nearly disappears whenever you play gently can become hard work surprisingly quickly.

Layer Level and Pan

Each Memorymode 2 layer includes its own Level and Pan controls. These allow the Upper and Lower layers to be balanced and positioned independently within a preset.

Level

Function: Sets the overall output level of the current layer.

Sound: Raising Level makes the layer more prominent in the final sound. Lowering it allows the other layer to take the foreground while this one

provides support, texture, or ambience.

Interactions: Level is separate from the oscillator Mixer controls. The Mixer determines how strongly the oscillators feed the filter and can affect internal saturation. The layer Level control adjusts the completed layer's overall contribution without changing the oscillator balance or filter drive.

This distinction is important. If a patch sounds too loud but you like the driven character created by high Mixer settings, reduce the layer Level rather than turning down the oscillators.

Level also works with the Upper/Lower layer balance and the Master Volume control. When both layers are active, their combined output may be substantially louder than either layer alone.

Tip: When programming a dual-layer preset, temporarily lower one layer and establish the main sound first. Then raise the second layer until its role becomes audible without overwhelming the foundation.

Pan

Function: Places the current layer in the stereo field.

Sound: Center keeps the layer equally balanced between the left and right channels. Turning Pan left or right shifts the layer toward that side of the stereo image.

Interactions: The Upper and Lower layers have independent Pan settings, making it possible to place them in different stereo positions. Wide separation can make a layered preset sound expansive, but extreme panning can also make the instrument feel disconnected or unbalanced, especially when heard in mono or from speakers rather than headphones. Stereo effects may add additional width and movement after the layer's basic position has been established, so evaluate Pan in the context of the entire effects chain.

Tip: For a naturally wide layered patch, pan one layer slightly left and the other slightly right rather than placing them at the extremes. Small differences in tuning, envelopes, and effects will make the image feel wider without leaving an empty space in the middle.

Shared Envelope Controls

The shared controls positioned between the VCF and VCA envelopes affect both sections simultaneously:

Return To Zero determines whether retriggered envelopes restart from zero or continue from their current levels.

Unconditional Contour causes the envelopes to move directly into Release after Attack rather than remaining at Sustain while a key is held.

Keyboard Follow shortens Attack, Decay, and Release times as higher notes are played.

Release enables or disables the Release stages of both envelopes.

Sustain Pedal determines whether incoming sustain-pedal messages hold the Filter and VCA envelopes. Like all of these controls, this is a per layer setting.

These controls are described in detail in the Filter Envelope section. Their placement between the two envelopes is a useful reminder that they affect both brightness and volume at the same time.



Output

The Output section controls Memorymode 2's final level and provides protection against unwanted digital clipping. Unlike the oscillator Mixer, where higher settings can create musically useful modeled overdrive, overloading the final output can produce hard digital clipping. The first sounds like analog character. The second sounds like your audio interface is broken.

Master Volume

Function: Sets the overall output level of Memorymode 2 after the Upper and Lower layers and Global effects have been combined.

Sound: Master Volume doesn't intentionally add coloration or saturation. It simply determines the final signal level sent to your DAW or audio interface.

Interactions: The final output level is influenced by many earlier stages, including oscillator Mixer levels, layer Level controls, effects, overlapping notes, long releases, and the combined output of both layers. A preset that sounds fine with one note may become much louder when played as a dense chord, particularly when both layers are active.

Tip: Use the individual layer Level controls to balance the Upper and Lower layers, then use Master Volume to set the overall preset level. This preserves the internal relationship between the two sounds.

Output Level Meters

The LED meters display Memorymode 2's final stereo output level.

Green LEDs indicate a healthy operating range. Red LEDs indicate that the signal is approaching or exceeding the available digital headroom.

Occasional brief peaks into the red may not cause obvious problems, but sustained red levels are a warning that clipping may occur. Reduce Master Volume, layer Level, effect output, or another earlier gain stage until the signal remains under control.

Tip: Test output level by playing the loudest chords or passages the preset is likely to encounter. Setting the level using a single note can provide an unrealistic picture of what happens when you play chords.

Limit

Function: Enables a transparent output limiter that reduces excessive peaks before they overload the final output.

Sound: At moderate levels, the limiter should have little or no obvious effect. When strong peaks occur, it restrains them to help prevent clipping.

Interactions: The limiter is useful for patches with high resonance, strong velocity response, dense polyphony, long overlapping releases, or effects that generate large level changes. It shouldn't be used as a substitute for sensible gain staging. If the meters remain heavily in the red, reduce the signal level rather than asking the limiter to perform damage control.

Tip: Enable Limit as a safety measure for performance presets with unpredictable dynamics. When sound designing or mixing, compare the

preset with the limiter off to make sure excessive internal levels aren't being concealed.

Modern

Function: Applies an output EQ contour that increases low- and high-frequency emphasis for a broader, more contemporary tonal balance.

Sound: Modern adds extra bass weight and upper-frequency clarity, giving the completed sound a more polished and extended character. With the button disabled, the response is flatter and closer to the tonal balance associated with the original instrument.

Interactions: Modern processes the completed output, so it affects both layers and their effects together. Its impact depends heavily on the preset. Dark pads may gain useful air, while already-bright patches can become overly sharp. Bass-heavy sounds may gain weight or begin competing with everything else in the lower half of the mix.

Tip: Treat Modern as an alternate final voicing rather than an automatic improvement. Audition it in the context of the track. A sound that seems bigger in isolation isn't always the one that leaves room for the rest of the arrangement.

Sound Design Tips

Shape the Volume Before Adding Effects

When creating a new sound, establish the VCA Envelope before adding delay or reverb. Effects can make almost any patch feel larger and smoother, but they can also disguise an envelope that isn't working musically. Once the dry sound responds correctly, effects become an enhancement.

Match the Envelope to the Musical Role

A bass or rhythmic sequence usually benefits from a fast Attack and controlled Release so notes remain clearly separated. A pad can use slower Attack and Release settings to overlap and blend. A lead often works best somewhere between the two, with enough Attack to remove clicks but enough immediacy to remain playable.

Create Plucked Sounds with Decay

Set Attack very fast, Sustain low or zero, and adjust Decay to control the length of the note. Release can then be kept short for tight articulation or raised slightly so released notes fade more naturally. This works especially well when the Filter Envelope uses a similar shape but closes slightly faster than the VCA.

Make Pads Breathe

Use a medium or slow Attack, high Sustain, and long Release. Set the Filter Attack slightly slower than the VCA Attack so the volume arrives first and the brightness unfolds afterward. On a two-layer patch, give the layers slightly different Attack and Release times. The resulting movement feels more organic than two perfectly synchronized envelopes.

Use Velocity to Separate the Layers

Set one layer with stronger VCA Velocity response and the other with a more stable level. Soft playing can emphasize the steady layer, while harder playing brings the more dynamic layer forward. This creates expressive layer balance without requiring a dedicated crossfade control.

Keep Long Releases Under Control

Long VCA Release settings can sound beautiful, but they also cause notes to overlap and consume voices. With up to 16 voices available per layer, dense chords, sustain pedal, and long release times can still accumulate quickly. If a patch becomes cloudy or notes appear to disappear, shorten Release, reduce Sustain Pedal use, or lower the level of the supporting layer.

Utilize Sustain Pedal per Layer

Because the Sustain Pedal setting is independent for each layer, you can set up Duals or Splits so that one layer can sustain while the other doesn't. Use this method for bass in the left hand and sustained chords in the right, or sustained chords in the left and a mono solo performance on the right, and so on.



Keyboard Modes, Multi-Voice, and Touch

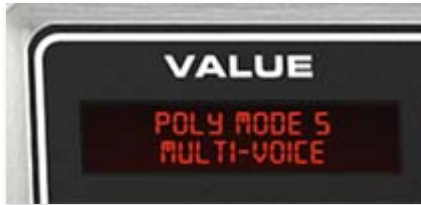
Memorymode 2 can behave like a conventional polyphonic synthesizer, a single-voice lead synth, a massive unison instrument, an expressive MPE controller destination, or something far less orderly through Multi-Voice mode.

The controls in this section determine how notes are assigned to the available voices, how many voices can sound, whether envelopes retrigger during legato playing, and how individual voices can vary in pitch, placement, filter tone, and envelope timing.

Each layer supports up to 16 voices independently. With both Upper and Lower layers active, a preset can use as many as 32 voices in total.

A “voice” refers to one complete instance of the Memorymode 2 synthesis path: three oscillators, mixer, filter, VCA, envelopes, and associated modulation. Playing a four-note chord normally uses four voices. Playing the same chord with both layers active can use eight.

The Glide, Bend Depth, and Chord Mode controls are located in the Performance Controls section and are covered in that chapter. Glide is still relevant here, however, because several Poly modes determine how it behaves as voices are assigned.



Value Display

The Value display provides information about the control currently being adjusted.

When a knob is moved, two values (from 000 to 100) appear:

Left value: The setting stored in the currently loaded preset.

Right value: The control's current edited setting.

This makes it easy to compare an adjustment with the original preset value or return a control to its saved position by matching the two numbers.

On/off buttons display their current state when clicked. Controls with menus, including Poly, Mono, and Number Of Voices, show the currently selected option when the pointer is placed over them.

The Value display also identifies the active Keyboard Mode. For example, selecting the first Poly mode displays:

POLY MODE 1
CYCLIC

This is considerably more civilized than memorizing numbered commands on a calculator-style keypad, as owners of the original hardware were expected to do.



Voices Display

The Voices display contains 16 LEDs arranged in two rows:

Top row: Voices 1 through 8

Bottom row: Voices 9 through 16

The LEDs illuminate to show which voices are currently active. A single note normally lights one LED. Chords illuminate several. In Unison modes, one played note may light many LEDs because multiple voices are stacked together.

The display is especially useful in Multi-Voice mode, where it shows voices advancing through the repeating four-voice variation pattern. It's a monitor rather than an editing control. The LEDs don't select voice groups or offset rows.

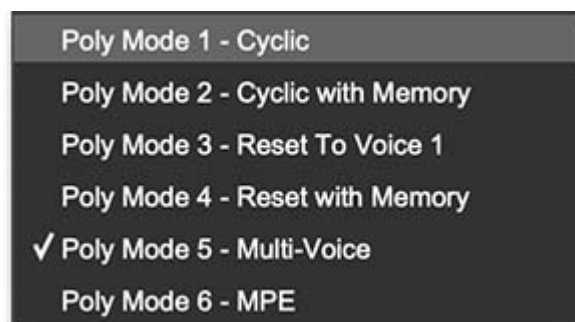


Keyboard Mode

The Poly and Mono buttons open menus containing Memorymode 2's available voice-assignment modes. These modes determine how played notes are distributed among the internal voices.

The first four Poly modes reproduce the characteristic voice-allocation behavior of the original instrument. Their differences become most apparent when Glide is enabled, when notes are repeated, or when a passage alternates between chords and single-note lines.

Poly Mode 5 activates the Multi-Voice system. Poly Mode 6 activates MPE.



Poly Modes

Poly Mode 1: Cyclic

Function: Assigns played notes to the available voices in a repeating sequence.

With four voices available, successive notes are assigned:

1 → 2 → 3 → 4 → 1 → 2 → 3 → 4

Sound and feel: This is the most straightforward general-purpose polyphonic mode. Voice allocation moves continuously forward, regardless of which pitches were previously played.

Glide interaction: Because repeated notes may be assigned to different internal voices, Glide can produce movement even when the same notes or chords are played again.

Use it for: Conventional polyphonic playing, animated Glide effects, arpeggios, and passages where changing voice assignment is part of the sound.

Poly Mode 2: Cyclic with Memory

Function: Uses cyclic voice assignment but remembers which voices were assigned to repeated pitches.

If a chord is assigned to Voices 1, 2, and 3, repeatedly playing the same chord continues using those voices. New voice assignments occur when different notes are introduced.

Sound and feel: Repeated notes and chords behave more consistently because they return to the same internal voices.

Glide interaction: Repeated pitches generally remain in place instead of gliding from another voice's previous pitch.

Use it for: Repeated chords, rhythmic comping, and Glide-enabled patches that should remain stable when the same notes are restruck.

Poly Mode 3: Reset To Voice 1

Function: Resets voice allocation when all notes have been released, so the next note begins again with Voice 1.

Sound and feel: Chords still play polyphonically, but each new phrase begins from a predictable voice assignment.

Glide interaction: Single-note phrases can behave more like a monophonic synthesizer because each new phrase begins with the same internal voice.

Use it for: Patches that move between chords and single-note leads, or any sound that benefits from a consistent start to each phrase.

Poly Mode 4: Reset with Memory

Function: Combines the pitch memory of Poly Mode 2 with the voice-reset behavior of Poly Mode 3.

Repeated pitches retain their previous voice assignments, but releasing all notes resets the next new phrase to Voice 1.

Sound and feel: This provides stable repeated notes while keeping the beginning of each new phrase predictable.

Use it for: Expressive Glide patches, repeated chords, and performances where consistent retriggering matters without sacrificing polyphony.

Poly Mode 5: Multi-Voice

Function: Enables the Multi-Voice section and applies its voice-to-voice offsets.

When another Poly mode is selected, the Multi-Voice controls are disabled and appear darkened.

Multi-Voice mode allows repeated voices to differ in pitch, pan position, filter cutoff, VCA Attack, and VCA Release. It can be used subtly to mimic the component variation of vintage hardware or pushed much further for chord stacks, rotating stereo patterns, and deliberately unruly behavior.

The complete Multi-Voice section is described later in this chapter.

Poly Mode 6: MPE

Function: Activates MIDI Polyphonic Expression mode directly.

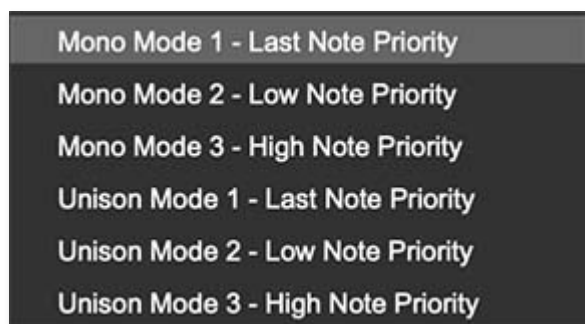
Selecting Poly Mode 6 replaces the previous Memorymode workflow that required MPE to be enabled from the Settings window. No separate global MPE switch is necessary.

When MPE is active:

- The MPE indicator illuminates.
- Mono, Mult Trig, Number Of Voices, and Multi-Voice are overridden.
- The four Touch controls relabel as V, X, Y, and Z.

- Expression can be assigned independently for each note.

A standard non-MPE controller plays only one note while Poly Mode 6 is selected. Use one of the ordinary Poly modes unless an MPE-compatible controller is connected and configured.



Mono and Unison Modes

Clicking the Mono button opens six options: three single-voice Mono modes and three stacked Unison modes.

The priority setting determines which note is heard when more than one key is held.

Mono Mode 1: Last Note Priority

Function: Plays one voice at a time. The most recently played note takes priority.

Sound and feel: This is usually the most natural and responsive Mono mode for leads and basses because newly played notes immediately take control.

Use it for: Fast leads, legato basses, solos, and most modern monophonic playing.

Mono Mode 2: Low Note Priority

Function: Plays the lowest currently held note.

Sound and feel: Higher notes can be played and released above a held bass note without replacing it.

Use it for: Vintage-style bass technique, pedal tones, and passages where the bottom note should remain anchored.

Mono Mode 3: High Note Priority

Function: Plays the highest currently held note.

Sound and feel: Lower held notes can act as anchors while higher notes take precedence.

Use it for: Trills, ornamented leads, and playing styles in which the upper melodic line should dominate.

Unison Mode 1: Last Note Priority

Function: Stacks multiple voices on one note, with the most recently played note taking priority.

The number of stacked voices is set by Number Of Voices.

Sound and feel: Large, dense, and immediate. This is the most broadly useful Unison mode for leads, basses, and effects.

Unison Mode 2: Low Note Priority

Function: Stacks the selected number of voices on the lowest held note.

Use it for: Heavy basses, pedal tones, and low-note lines that must remain stable beneath additional fingering.

Unison Mode 3: High Note Priority

Function: Stacks the selected number of voices on the highest held note.

Use it for: Cutting leads, upper-note trills, and phrases where the highest pitch should remain dominant.

Mult Trig

Function: Determines whether the Filter and VCA envelopes retrigger when a new note is played while another note remains held.

Mult Trig applies to the Mono and Unison modes. It's disabled in Poly modes.

Mult Trig On

Every new note retriggers the envelopes.

Sound and feel: Each note receives a fresh attack. The result is more articulated, percussive, and responsive.

Use it for: Punchy basses, aggressive leads, fast passages, and sounds whose attack is an important part of every note.

Mult Trig Off

The envelopes retrigger only when no other notes are held. Playing legato changes pitch without restarting the envelopes.

Sound and feel: Notes connect smoothly, allowing a phrase to flow through one continuous filter and volume contour.

Use it for: Legato solos, expressive portamento, and techniques resembling a guitarist or wind player changing pitch without beginning a new articulation.

Tip: Combine Mult Trig Off with Glide for smooth monophonic lines. Turn Mult Trig on when every note needs a fresh filter snap or volume attack.

Number Of Voices

Function: Selects from 2 through 16 available voices independently for each layer. Its exact role depends on the active mode.

In Poly Modes

Number Of Voices sets the maximum polyphony for the selected layer. A setting of 8 allows up to eight notes to sound simultaneously. When more notes are played than are available, older voices may be reassigned to new notes.

In Mono Unison Modes

Number Of Voices sets the number of voices stacked on each played note. Higher values create greater density and movement but also consume more processing power.

In Multi-Voice Poly Mode

Number Of Voices sets the maximum number of simultaneous polyphonic notes.

In Multi-Voice Unison Mode

Number Of Voices sets the size of the unison stack.

Tip: More voices aren't automatically better. A 16-voice unison patch can sound enormous, but four or six voices may retain more definition, especially when both layers are active.

Unison Detune

Function: Spreads the tuning of stacked voices in the Unison modes.

Sound: Low settings add gentle thickness and beating. Higher settings create a broader, looser, and more obviously detuned stack.

Interactions: Unison Detune is applied in addition to any Pitch offsets created in Multi-Voice mode. Combining wide Pitch intervals with heavy Unison Detune can become harmonically adventurous rather quickly.

Tip: For a focused lead, begin with four voices and a small amount of detuning. For huge pads or cinematic stabs, increase the voice count and spread, but listen carefully to the center pitch. A sound can become impressive and vaguely seasick at the same time.



Multi-Voice

Multi-Voice gives individual voices slightly different characteristics. On a vintage analog polysynth, component tolerances caused each hardware voice card to respond a little differently. One might be slightly sharp, another a little darker, and another might have a slower envelope.

Memorymode 2 lets you create that behavior deliberately.

The system uses a repeating four-voice pattern:

Voice 1: Main panel settings, unchanged

Voice 2: Offset row 2

Voice 3: Offset row 3

Voice 4: Offset row 4

When more than four voices are used, the same pattern repeats:

Voices 5, 9, and 13: Unchanged reference settings

Voices 6, 10, and 14: Row 2 offsets

Voices 7, 11, and 15: Row 3 offsets

Voices 8, 12, and 16: Row 4 offsets

This keeps programming manageable. You create three variations around one reference voice rather than editing 16 separate sets of parameters.

The offsets are added to the main panel settings. Changing the main Filter Cutoff, for example, moves every voice together while preserving the relative Cutoff differences established in Multi-Voice.

Multi-Voice Assignment Modes

After selecting **Poly Mode 5: Multi-Voice**, choose one of the five assignment modes in the Multi-Voice section.

Unison

Function: Stacks the selected Number Of Voices on each played note.

All voices sound simultaneously, so the four-voice offset pattern is heard as a layered stack rather than a sequence.

Musical result: Pitch offsets can create chord intervals, Pan offsets spread the stack across the stereo field, and envelope differences keep the voices from moving in perfect lockstep.

Tip: Use small Pitch offsets for thick unison sounds or select one of the Unison Multi chord presets for one-finger harmonies.

Poly

Function: Plays notes polyphonically while applying the repeating Multi-Voice offset pattern.

Musical result: Notes within a chord can differ slightly in tuning, stereo placement, brightness, and envelope timing. Used subtly, the chord feels less mechanically uniform. Used dramatically, each note can appear to come from a different instrument.

Tip: Begin with tiny Pitch and Cutoff offsets. The goal is often to notice that the chord feels richer without immediately hearing why.

Cycle Loop

Function: Assigns each new note to the next available voice in a fixed forward sequence.

With four variations, the pattern follows:

1 → 2 → 3 → 4 → 1 → 2 → 3 → 4

Musical result: Repeated notes can rotate through tuning, pan, filter, and envelope differences in a predictable pattern.

Tip: Apply alternating Pan offsets to create a repeated sequence that walks across the stereo field.

Cycle Ping-P

Function: Moves forward and backward through the voice order.

With four variations, the pattern follows:

1 → 2 → 3 → 4 → 3 → 2 → 1

Musical result: Creates symmetrical motion that reverses direction rather than jumping abruptly from the last voice back to the first.

Tip: This is particularly effective with Pan and Cutoff offsets, producing stereo and tonal movement that feels structured but less obviously repetitive than Cycle Loop.

Cycle Random

Function: Assigns each new note to a randomly selected available voice.

Musical result: Voice differences occur unpredictably, creating a more organic and less patterned result.

Tip: Use modest Pitch, Cutoff, Attack, and Release variations to make repeated notes feel as though they're being played by a slightly unreliable vintage instrument. Push everything harder for a machine that may require both servicing and an exorcism.

Multi-Voice Offset Controls

Pitch

Range: -12 to +12 semitones.

Function: Offsets the pitch assigned to each variation row from the main oscillator tuning.

Sound: Small values create subtle tuning differences. Larger values create musical intervals or deliberate dissonance.

Tip: For analog-style variation, use very small offsets. For chord stacks, tune Rows 2, 3, and 4 to useful intervals around the unchanged reference voice.

Pan

Range: -100 to +100.

Function: Offsets the voice's stereo position from the layer's main Pan setting.

Sound: Small offsets add width. Larger values distribute voices strongly across the stereo field.

Interactions: Pan offsets are relative to the main layer Pan setting and are followed by the layer and Global effects chains. Stereo effects may broaden or alter the resulting placement.

Tip: Avoid hard-panning every variation by default. Moderate differences often create a wider and more coherent image.

Cutoff

Range: -100 to +100.

Function: Offsets the voice's filter Cutoff from the main VCF Cutoff setting.

Sound: Negative and positive offsets make individual voices darker or brighter than the reference voice.

Interactions: The offset remains relative to the main Cutoff control, so sweeping the main filter moves all voices together while preserving their differences.

Tip: Small Cutoff variations can make sustained chords feel remarkably alive. This is one of the most effective ways to suggest independent analog voice cards without making the patch sound out of tune.

VCA ATT

Range: -100 to +100.

Function: Offsets the VCA Envelope Attack time for each variation row.

Sound: Individual voices can begin slightly earlier or later than one another. Small variations soften the mechanical precision of a chord. Large variations can turn a single chord into a staggered swell.

Interactions: The offset is applied to the main VCA Attack setting. One direction shortens the Attack and the other lengthens it.

Tip: Use subtle differences on pads so the chord blooms rather than arriving as one solid block.

VCA REL

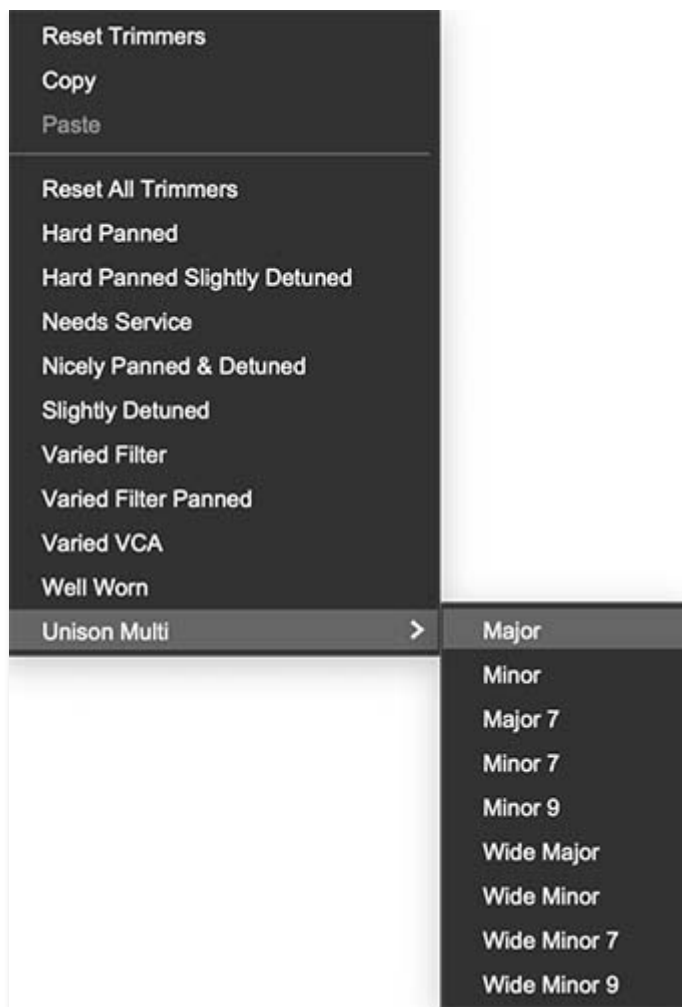
Range: -100 to +100.

Function: Offsets the VCA Envelope Release time for each variation row.

Sound: Notes can fade at different rates, adding movement and depth to sustained chords and layered textures.

Interactions: The offset is applied to the main VCA Release setting. The shared Release button must still be enabled for release tails to be heard.

Tip: Vary Attack and Release together for ensemble-like behavior, or vary only Release so the notes begin together but dissolve at different speeds.



Multi-Voice Menu

Click the white triangle at the upper-right of the Multi-Voice section to open its Utility menu. This menu contains both editing commands as well as multi-voice presets.

Editing Commands

Reset Trimmers: Returns the current Multi-Voice trimmer settings to neutral values.

Copy: Copies the Multi-Voice setup.

Paste: Pastes a copied Multi-Voice setup.

Reset All Trimmers: Clears all Multi-Voice variations and returns the complete setup to its unaltered reference state.

Multi-Voice Presets

The menu includes prepared configurations that quickly demonstrate different uses of the offset system:

Hard Panned
Hard Panned Slightly Detuned
Needs Service
Nicely Panned & Detuned
Slightly Detuned
Varied Filter
Varied Filter Panned
Varied VCA
Well Worn

The names give a useful indication of what each preset changes. Some focus on stereo placement and tuning, while others introduce filter or envelope variation. Needs Service and Well Worn lean further into deliberate instability.

These presets are useful starting points, but they're also educational. Load one, examine the trimmer positions, and adjust the offsets to suit the patch.

Unison Multi Presets

The **Unison Multi** submenu contains ready-made chord tunings:

Major
Minor
Major 7
Minor 7
Minor 9
Wide Major
Wide Minor
Wide Minor 7
Wide Minor 9

These presets configure the Pitch offsets so a single played note produces a chord in Multi-Voice Unison mode.

The Wide variations distribute the chord tones across a broader register for a more open voicing.

Tip: Unison Multi presets and Performance Chord Mode solve related problems in different ways. Unison Multi uses the repeating Multi-Voice Pitch offsets and offers instant prepared chord types. Chord Mode lets you record a custom chord shape from the keyboard.



Touch Controls

The Touch section contains four independent modulation assignments. Each slot consists of:

- A bipolar amount knob
- A destination label beneath it
- An independently selectable modulation destination

Click the destination label, initially shown as **None**, to choose a target.

The available top-level categories are:

None

Unison Detune

Upper/Lower Balance

LFOs

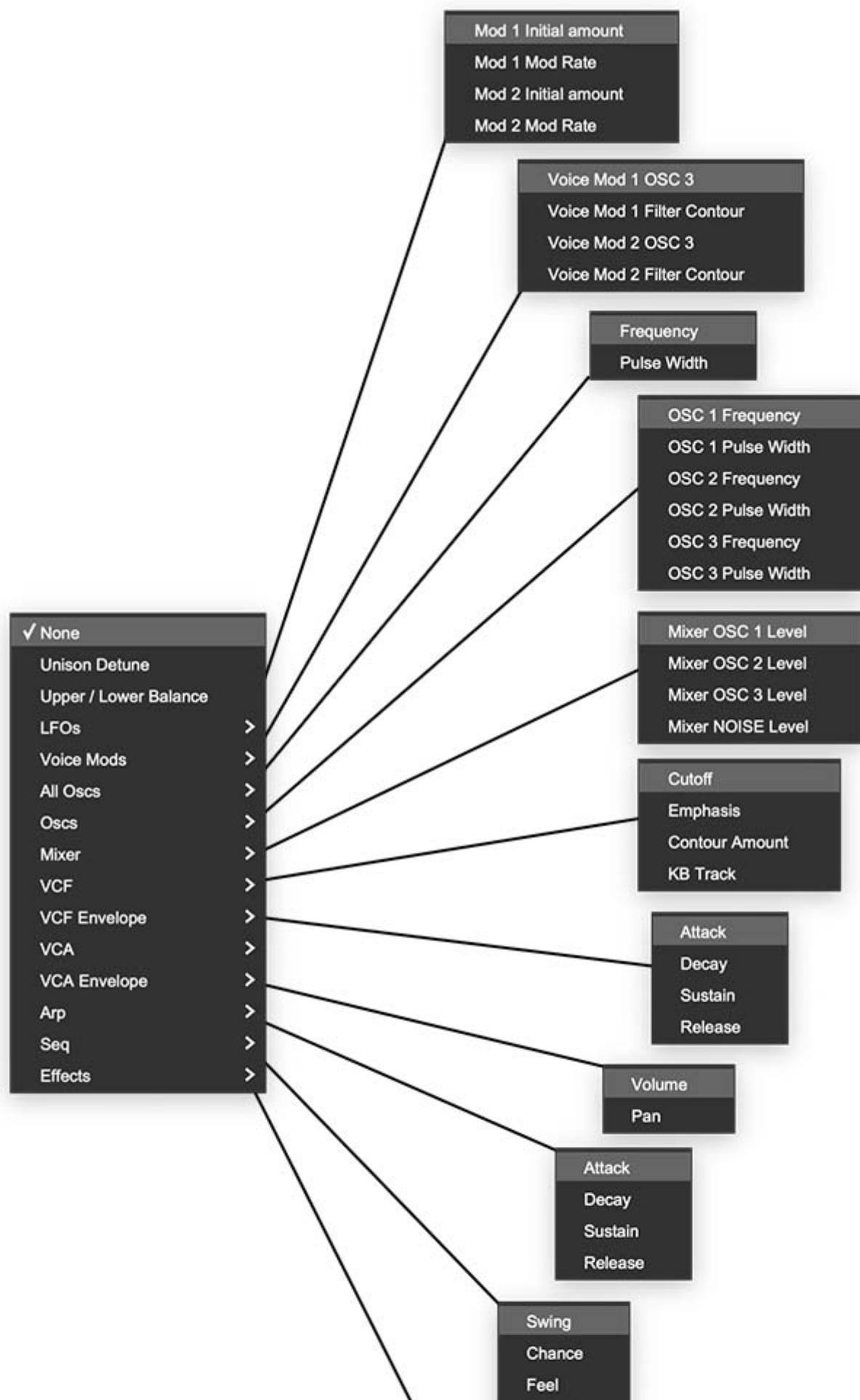
Voice Mods

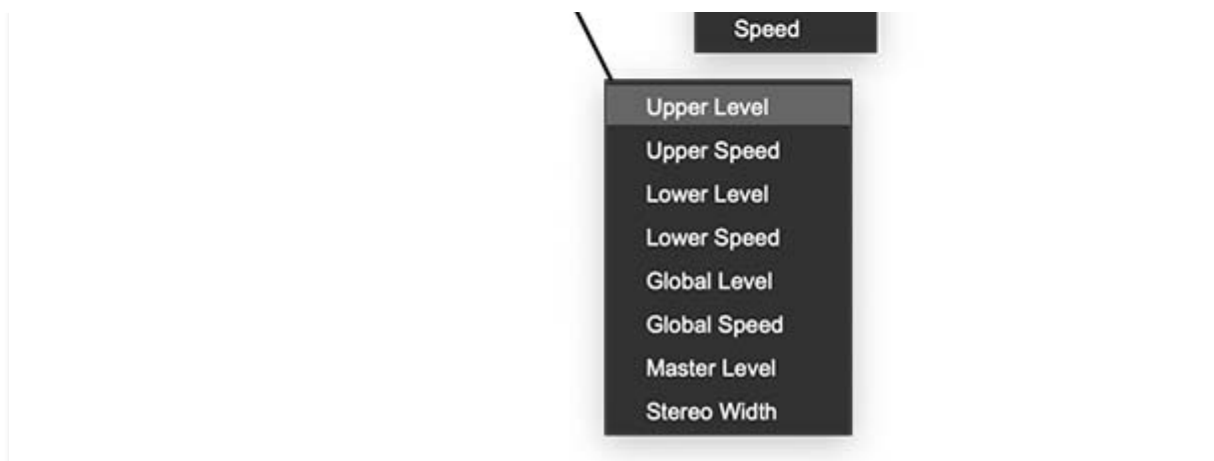
All Oscs

Oscs

Mixer
VCF
VCA
Arp
Seq
Effects

Categories containing multiple parameters open additional submenus.





Touch Amount Knobs

Function: Sets the amount and polarity of pressure modulation sent to the selected destination. At the center position, no modulation is applied. Turning clockwise applies positive modulation. Turning counterclockwise applies negative modulation.

What positive and negative mean depends on the destination. A positive VCF Cutoff assignment opens the filter as pressure increases, while a negative assignment closes it. A negative effect-mix assignment could reduce an effect as pressure increases rather than adding more.

Each Touch assignment is stored independently for the Upper and Lower layers.



Touch Animator and Sequenced Modulation

The **Touch Animator**, available in the **Motion** view, can automate the four modulation routings assigned in the Touch section. The Touch knobs

determine each slot's destination, polarity, and maximum modulation amount, while Touch Animator changes that amount step by step as the Sequencer runs.

T1, T2, T3, and T4 correspond directly to Touch slots 1 through 4. For example, if Touch 1 is assigned to VCF Cutoff, sequencing T1 can make the filter open by a different amount on every step. This can create rhythmic accents, gradual sweeps, alternating values, or evolving modulation patterns without requiring live pressure input.

Touch Animator can operate alongside sequenced notes or animate manually played and held notes without triggering a note pattern. See the **Motion Controls** chapter for complete Touch Animator programming instructions.

Polyphonic Aftertouch Behavior

Memorymode 2 supports polyphonic aftertouch when used with a controller that provides it. In ordinary Poly modes, polyphonic aftertouch affects each held note independently. Pressing harder on one note can change its filter, pitch, level, or another assigned destination without applying the same change to the rest of the chord.

In Mono and Unison modes, pressure is applied to the active note.

This makes Touch useful for much more than conventional vibrato. A held chord can contain individually opening filters, independently changing effects, or notes that move in and out of prominence according to finger pressure.

Touch Programming Ideas

Pressure-Controlled Brightness

Assign Touch to VCF Cutoff with a moderate positive amount.

Soft pressure keeps the sound dark. Pressing deeper opens the filter. On a polyphonic-aftertouch controller, individual notes within a chord can brighten independently.

Pressure-Controlled Unison Spread

Assign Touch to Unison Detune.

The patch can begin focused and become wider and more animated as pressure increases. This works especially well for sustained leads and dramatic chord swells.

Layer Morphing

Assign Touch to Upper/Lower Balance.

Use one layer for a stable foundation and the other for a brighter, more animated, or heavily processed variation. Pressure can then move the sound between the two.

Performance Effects

Assign one or more Touch slots to effect parameters.

Pressure can introduce rotary motion, widen a phaser, increase delay feedback, or move a sound into a more spacious effect chain. Negative amounts are useful when the performance should become drier or more focused as pressure increases.

Touch in MPE Mode

When Poly Mode 6 is selected, the four Touch slots relabel as **V, X, Y, and Z**. These are the four expression sources used by Memorymode 2's MPE implementation.

Each source can be routed to an independently selected destination.

V: Velocity

Function: Represents the note's initial strike velocity.

V is captured once when the note begins. Unlike X, Y, and Z, it isn't a continuously changing stream while the note is held.

Use it for: Initial brightness, level, envelope depth, oscillator balance, or other note-on articulation.

X: Per-Note Pitch

Function: Represents continuous per-note pitch bend, usually produced by sideways finger movement on an MPE controller.

Each note receives its own independent X data.

Use it for: Individual bends within chords, vibrato gestures, scoops, and pitch movement that affects only the touched note.

Y: Per-Note Timbre

Function: Represents continuous per-note timbre data, conventionally transmitted as MIDI CC74.

On many MPE controllers, Y is generated by moving a finger forward and backward along the playing surface.

Use it for: Filter cutoff, pulse width, oscillator balance, effects, or any destination that changes the note's tone.

Z: Per-Note Pressure

Function: Represents continuous pressure applied after the note begins.

Each held note can send its own Z stream independently.

Use it for: Volume swells, filter expression, vibrato depth, layer balance, effects, and other pressure-controlled gestures.

Understanding the Difference

V describes how the note begins.

X, Y, and Z describe what happens while it continues.

This distinction is central to MPE. A chord can begin with different velocities, then each note can bend, brighten, and respond to pressure independently for as long as it remains held.

MPE Performance Tip

Avoid assigning every dimension at maximum depth immediately. Begin with one clear relationship:

- X to pitch
- Y to filter cutoff
- Z to volume or effect depth
- V to envelope or brightness

Once those responses feel natural, add secondary destinations. MPE becomes expressive when gestures remain controllable.

Layers and Splits

Cherry Audio's Memorymode 2 gives you two fully independent synth layers: **Upper** and **Lower**. Each layer has its own complete synth engine, including oscillators, filter, envelopes, modulation, and effects.

This is one of Cherry Audio's biggest expansions of the Memorymode concept. A preset can be a single focused sound, two sounds stacked together, or two different sounds split across the keyboard. Each layer can also have up to **16 voices**, giving Memorymode 2 generous room for long releases, dense chords, layered pads, sequenced patterns, and expressive performance setups.



Layer Controls

These controls determine how the layers are used and balanced. They let you select the active layer, choose Whole, Dual, or Split mode, solo the selected layer, adjust the master output level, and balance Upper layer against Lower layer. This section answers one of the most important performance questions in the instrument: "Am I playing one sound, two stacked sounds, or two sounds split across the keyboard?"

The interface uses color to make the layer structure easy to follow. **Upper** layer is shown in red, and **Lower** layer is shown in green. This color coding appears throughout the instrument, including the layer controls, keyboard range display, and effects section.

When you select a layer, you're choosing which layer is currently being edited. In a layered or split preset, you may hear both layers at the same time, but the front-panel controls affect the selected layer.

Controls:

- **Utility** – Displays a utility menu for swapping, copying, resetting, or importing and exporting layer settings.
- **Lower** – Selects Lower layer for editing. Lower layer is color-coded green.

- **Upper** – Selects the Upper layer for editing. Upper layer is color-coded red.
- **Solo Layer** – Solos the currently selected layer, making it easier to hear and edit one layer at a time.
- **Balance** – Balances Upper and Lower layers. Turn the knob toward **Low** to emphasize Lower layer, or toward **Upper** to emphasize Upper layer.
- **Whole** – Plays the Upper layer across the full keyboard.
- **Dual** – Stacks Upper and lower layers across the full keyboard.
- **Split** – Places Lower layer on the lower keyboard range and Upper layer on the upper range.

Tip 1: If you move a filter slider, change an oscillator wave, or adjust an envelope and don't hear the expected change, check which layer is selected. You may simply be editing the other layer.

Tip 2: In a layered patch, the Balance knob is one of the fastest ways to reshape the sound without editing either layer. If Upper provides a warm pad and Lower adds a bright digital shimmer, Balance decides whether the patch feels soft and rounded or more open and sparkling.

Whole Mode

Whole mode plays the selected layer across the full keyboard. This is the simplest way to use Memorymode 2 when you want to focus on one sound.

Whole mode is especially useful when building a patch from scratch, exploring oscillator waves, adjusting the filter, shaping envelopes, or troubleshooting modulation. It keeps the signal path clear and lets you hear exactly what the selected layer is doing.

Tip: Start in Whole mode when designing a new sound. Once one layer feels good on its own, switch to Dual or Split mode and build around it.

Dual Mode

Dual mode stacks Upper and Lower across the full keyboard. When you play a note, both layers sound together.

This is where Memorymode 2 can become especially lush, wide, and animated. One layer might provide the attack while the other supplies the sustain. One might be bright and digital while the other is darker and filtered. One might use slow modulation while the other remains steady.

Dual mode is excellent for pads, keys, leads, soundscapes, hybrid brass, animated textures, and large performance sounds.

Tip: A good layered patch usually gives each layer a clear job. Try using Upper for body and Lower for attack, shimmer, motion, width, or edge. If both layers are trying to be the whole sound, they may fight each other.

Split

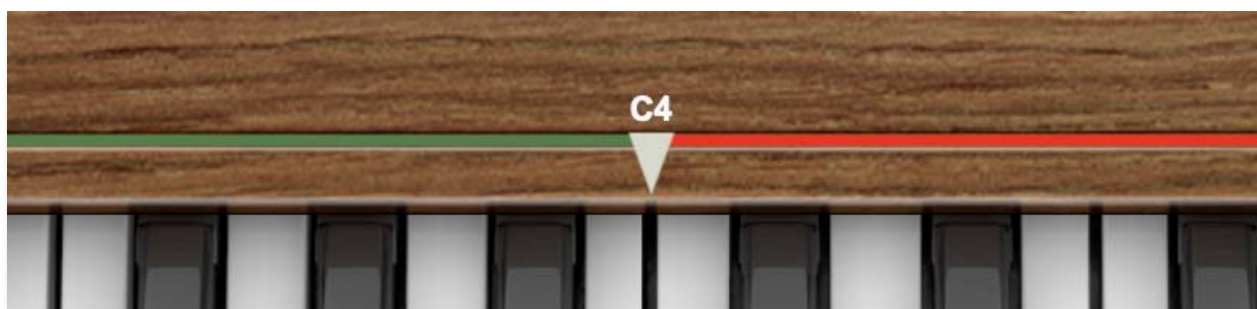
Split divides the keyboard so **Lower** plays on the lower range and **Upper** plays on the upper range. Split is useful for performance setups such as bass on the left hand and lead on the right, pad below and keys above, or a sequenced lower part with a manually played upper sound.

Keyboard Range Controls

In Dual and Split modes, the keyboard range controls above the on-screen keyboard show where each layer is assigned. Drag the range handles to define each layer's playable area.

In Dual mode, the two layers can cover the full keyboard or overlap in specific ranges. In Split modes, the range display shows the lower and upper zones, making it easy to adjust the split point.

Tip: Choose the split point based on the part you intend to play. A left-hand bass may need more lower range than a simple drone, while a right-hand lead may need enough room for bends, expressive playing, and the occasional dramatic flourish.





Solo Layer

Solo Layer lets you hear only the currently selected layer. This is one of the most useful controls when working with layered or split sounds.

A preset may sound like one unified patch, but underneath, the two layers may be doing very different things. Soloing each layer lets you hear what each one contributes.

Use Solo Layer when balancing oscillator levels, adjusting envelopes, editing modulation, setting effects, or diagnosing a patch that sounds muddy, too bright, too slow, or too busy.

Tip: After editing a layer in solo, turn Solo Layer off and listen again in context. The goal is not for each layer to sound perfect by itself. The goal is for the two layers to work together.

Copying and Managing Layers

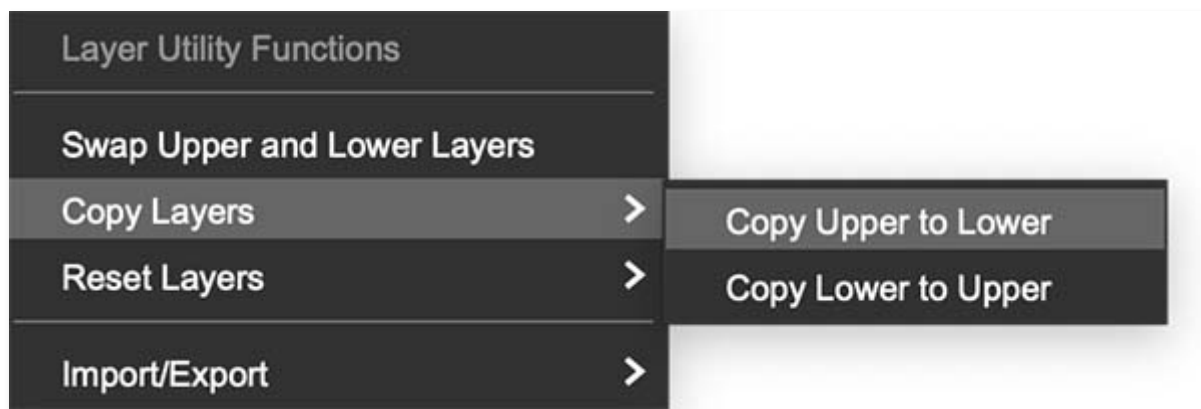
The **Utility** button opens layer utility options. These let you copy, paste, reset, swap, import, or export layer data. This is very useful when building layered sounds. You can copy a layer, paste it to the other layer, then modify the copy to create a wider, brighter, darker, slower, or more animated version of the original.

Common uses:

- Copy Upper to Lower, then detune or filter Lower for width.
- Copy a finished sound to the other layer and give it a slower attack.
- Save a layer as a SysEx file for reuse or archiving.

- Reset one layer without disturbing the other.
- Swap Upper and Lower layers when reworking a split.

Tip: Try copying a strong single-layer sound to the second layer, then change only the waveform, filter mode, envelope attack, or effects. It's a quick way to create a richer patch while keeping both layers musically related.



Editing Layers

Layer editing is straightforward once you remember the rule: **the selected layer is the layer you're editing**.

If Upper is selected, the panel controls affect Upper layer. If Lower is selected, they affect Lower layer. This applies to oscillator settings, filter, envelopes, modulation assignments, effects, and voice behavior.

Also note that **Lower layer becomes available for editing when Dual mode is enabled**. If you're in Whole mode, the interface focuses on the selected single-layer setup. Switch to Dual or Split when you want access to both layers as part of a combined preset.

Tip: Program each layer separately first. Use Whole mode or Solo Layer to get one layer working musically, then combine the layers and adjust Balance, effects, and modulation.

Practical Layering Ideas

A strong layered patch usually begins with contrast.

Try these approaches:

- Pair a bright attack layer with a darker sustained layer.
- Use one layer as the main harmonic bed and the other as shimmer or motion.

- Use one layer for the core key sound and another for transient brightness or octave reinforcement.
- Use one layer as a stable lead center and the other as a slightly detuned support layer.
- Use one layer as a slow pad and the other as a texture that fades in later.

Tip: The best layered sounds often feel like one instrument, not two presets playing at once. Use Balance, envelopes, filter settings, and effects to make the layers cooperate.

Practical Split Ideas

Splits are ideal for performance and composition. A classic setup is bass on the lower keys and lead on the upper keys. Another useful setup is pad below and keys above, with the lower range holding sustained harmony while the upper range plays rhythmic or melodic parts.

You can also create a split where one layer is sequenced or arpeggiated while the other remains manually playable. This can make a single preset feel like a small arrangement.

Tip: In split patches, watch envelope release times. A long-release lower layer can blur fast left-hand changes, while an upper layer with too short a release may feel abrupt if it's meant to float.

Avoiding Layer Overload

Two independent layers, 16 voices per layer, three oscillators per voice, modulation, Motion tools, and effects give you a lot of power. They also give you many opportunities to overbuild.

If a layered preset sounds too dense, solo each layer and listen separately. Check for overlapping frequency ranges, similar envelopes, excessive release times, too much low end, or too many bright oscillators competing for attention.

Common fixes:

- Reduce one layer with the **Balance** knob.
- Darken one layer's filter.
- Shorten the release on one layer.
- Reduce low-end content from the upper layer.
- Use different envelope attacks so both layers don't speak at exactly the same moment.

- Move some depth or space to the Global effects rather than both layer effects.

Tip: Layering works best when each part has a job. If one layer provides body and the other adds color, motion, attack, or space, the patch will usually feel intentional.

Quick Layering Exercise

- Start with a single-layer sound in **Whole** mode. Choose a saw waveform and shape it with the filter and filter envelope. This will be the body layer.
- Switch to **Dual** mode and select the Lower layer. Use **Solo Layer** so you can hear it by itself. Create a brighter or more textured sound with a faster attack and a slightly shorter release.
- Turn Solo Layer off and use the **Balance** knob to blend the two layers. The first layer should provide the foundation. The second should add definition, shimmer, or motion.
- Now open the Effects view. Add a subtle effect to only one layer, such as chorus on the body layer or delay on the brighter layer. Then add a small amount of Global reverb to place both layers together.

Quick Split Exercise

- Create or load a bass sound on Upper layer. Keep the envelope tight and the low end focused.
- Create or load a lead, key, or pad sound on Lower layer. Give it enough brightness and release to work in the upper range.
- Select **Split** so Upper layer plays on the lower part of the keyboard and Lower layer plays on the upper part. Adjust the keyboard range controls until the split point feels natural.
- Play a left-hand bass part and a right-hand melody or chord part. Then adjust the **Balance** knob until the two layers feel balanced.

Tip: If the bass feels too roomy, reduce its release or effects. If the upper layer feels too dry, add delay or reverb to Lower layer or the Global chain.



Performance Controls

The Performance Controls provide quick, hands-on access to pitch, modulation, tuning, glide, octave transposition, and Chord Mode. These are the controls most likely to be used while playing rather than while constructing the basic sound.

The Pitch and Mod wheels add expression in real time. Bend Depth determines how far the Pitch wheel moves. Glide creates smooth transitions between notes. The Octave buttons shift the instrument's playing range without changing the oscillator settings inside the preset. Chord Mode turns any chord you play into a transposable one-finger performance tool.

Together, these controls can make a static preset feel much more like an instrument and considerably less like a handsome collection of knobs.

Octave: -1, 0, and +1

Function: Transposes the instrument's playing range by one octave down, no transposition, or one octave up.

-1 – Transposes the played pitch down one octave.

0 – Plays at the normal pitch.

+1 – Transposes the played pitch up one octave.

Only one Octave setting can be active at a time.

Interactions: The Octave buttons transpose the complete preset without changing the octave-footage settings of the individual oscillators. This makes them useful for moving a sound into a different register while preserving the relationships among Oscillators 1, 2, and 3.

For example, a bass patch built with 16' and 8' oscillator settings can be shifted upward for a lead part without reprogramming the oscillator section.

Tip: Use the Octave buttons for broad performance changes and the oscillator Octave controls for designing the internal harmonic structure of the sound. They may both move pitch by octaves, but they solve different problems.

Pitch Wheel

Function: Bends the pitch of played notes upward or downward.

The wheel is spring-loaded and returns to its center position when released.

Sound: Small movements can add subtle expression, scoops, vibrato-like gestures, and blues-style inflections. Larger movements produce wide bends, dive-bombs, octave jumps, and more dramatic effects.

Interactions: The maximum bend range is determined by the Bend Depth control.

Pitch bending applies to the completed sound rather than changing the tuning relationship among the three oscillators. All oscillators therefore move together while preserving any detuning or intervals already programmed into the patch.

Tip: For expressive leads, use a Bend Depth of 2 semitones. This provides familiar whole-step bends that are easy to control. Wider ranges are useful

for effects, but they demand a steadier hand. A 12-semitone bend can sound magnificent right up until it doesn't.

Bend Depth

Function: Sets the maximum Pitch wheel range from 0 to 12 semitones in either direction.

At 0, the Pitch wheel has no effect. At 12, moving the wheel fully upward or downward bends the sound by one octave.

Common settings:

2 semitones – Conventional expressive bends for leads and solos.

3 semitones – Minor-third bends and more exaggerated melodic movement.

5 semitones – Perfect-fourth bends.

7 semitones – Perfect-fifth bends.

12 semitones – Full octave bends and dramatic effects.

Interactions: Bend Depth sets the range for both upward and downward movement.

A wider range also makes small wheel movements produce larger pitch changes. For subtle playing, use a narrower range. For dramatic performance effects, increase it.

Tip: Match Bend Depth to the musical role of the preset. A bass patch may benefit from a tight 2-semitone range, while a lead or effects sound can make good use of a fifth or octave.

Mod Wheel

Function: Introduces or increases modulation during performance.

Unlike the Pitch wheel, the Mod wheel remains at its current position when released.

The result depends on the settings programmed in the Modulation section. Each Modulation setup has its own **Mod Wheel Amount**, waveform, destinations, and other parameters. Because Modulation 1 and Modulation 2 remain active simultaneously, one wheel movement can control two different modulation behaviors at once.

For example, the Mod wheel could:

- Add vibrato through Modulation 1

- Open the filter through Modulation 2 in DC mode
- Increase pulse-width animation
- Introduce tremolo
- Add oscillator pitch movement
- Control several destinations simultaneously

Interactions: The Mod wheel doesn't create modulation by itself. The destination buttons and Mod Wheel Amount controls in the Modulation section determine what it affects and how strongly.

If **Initial Amount** is set above zero, some modulation is already present before the wheel is moved. The Mod wheel adds to that amount.

To make modulation entirely wheel-controlled, set Initial Amount to minimum and raise Mod Wheel Amount.

Tip: Use Modulation 1 for gentle vibrato and Modulation 2 in DC mode for filter movement. The Mod wheel can then brighten the sound and add pitch expression in one coordinated gesture.

Master Tune

Function: Adjusts the overall tuning of Memorymode 2.

The center position applies no tuning offset. Turning toward the flat symbol lowers the tuning, while turning toward the sharp symbol raises it.

Use it for:

- Matching instruments or recordings that aren't tuned precisely to concert pitch
- Correcting for a track recorded slightly sharp or flat
- Creating deliberate tuning offsets between multiple instrument instances
- Producing slow beating against another sustained instrument

Interactions: Master Tune shifts the complete instrument while preserving the internal tuning relationships among the oscillators and layers.

It shouldn't be confused with the Frequency controls for Oscillators 2 and 3. Those controls change the pitch relationship inside the sound. Master Tune moves the entire sound together.

Tip: When layering two instances of Memorymode 2, leave one at center and adjust the other very slightly. A small tuning difference can create broad,

natural movement without using chorus.

Glide

Glide, also known as portamento, creates a continuous pitch slide between notes rather than jumping instantly from one pitch to the next.

Glide On/Off

Function: Enables or disables Glide.

When Glide is disabled, notes move immediately to their new pitches. When enabled, pitch changes occur gradually according to the Glide control.

Glide Amount

Function: Sets how long the pitch transition takes.

Lower settings produce quicker slides. Higher settings create slower, more pronounced movement.

Sound: Short Glide settings add a subtle connection between notes. Longer settings create obvious sweeps, swoops, and classic analog lead effects.

Interactions: Glide behavior is influenced by the selected Keyboard Mode and voice-assignment mode.

In Mono and Unison modes, Glide produces the familiar monophonic portamento effect as one note moves into the next.

In Poly modes, the result depends on how notes are assigned to the available voices. The four legacy Poly modes provide different voice-memory and reset behaviors specifically because these differences become audible when Glide is used.

Mult Trig also changes the articulation of gliding Mono and Unison lines:

- With Mult Trig enabled, each new note restarts the envelopes while pitch glides.
- With Mult Trig disabled, legato notes glide without restarting the envelopes.

Tip: For a classic legato lead, select Mono Mode 1, disable Mult Trig, enable Glide, and use a moderate Glide setting. Overlapping notes will slide smoothly through one continuous filter and volume contour.

Tip: For a more articulated sound, enable Mult Trig. The pitches still glide, but every note receives a new envelope attack.

Chord Mode

Chord Mode memorizes a chord and lets you transpose the complete chord shape from a single key.

This is useful for chord stabs, house and techno patterns, stacked intervals, soundtrack gestures, and any situation where a complex voicing needs to be moved around the keyboard quickly and consistently.

Chord Mode stores the interval relationships among the notes rather than one fixed absolute chord. After the chord is learned, playing any single key transposes the stored shape to that position.

Programming a Chord

1. Click the **Chord Mode** button.

The LED flashes to indicate that Memorymode 2 is waiting for a chord.

2. Play and hold the desired chord on your MIDI controller or the onscreen keyboard.

The chord can contain simple intervals, triads, seventh chords, clusters, octave stacks, or any other collection of notes within the available polyphony.

3. Release all of the notes.

Memorymode 2 memorizes the chord. The Chord Mode LED remains steadily lit to indicate that Chord Mode is active.

4. Play a single key.

The complete memorized chord sounds and is transposed according to the key you play.

5. Play different single notes to move the chord shape around the keyboard.

The stored chord remains active until Chord Mode is disabled or a new chord is programmed.

Replacing the Stored Chord

To memorize a different chord:

1. Turn Chord Mode off.

2. Click Chord Mode again to enter chord-learning mode.
3. Play and release the new chord.

The new chord replaces the previous one.

Disabling Chord Mode

Click the Chord Mode button while it's active.

The LED turns off, and the keyboard returns to normal note entry.

Chord Mode Ideas

One-Finger Stabs

Program a minor, minor-seventh, or suspended chord and use a short VCA envelope.

The entire voicing can then be played rhythmically with one finger, leaving the other hand free for filter, modulation, or effect changes.

Open Fifths and Octaves

Chord Mode isn't limited to conventional chords. Store a root, fifth, and octave for a powerful interval stack that remains harmonically useful across many notes.

This works especially well for basses, leads, and cinematic unison sounds.

Wide Cinematic Voicings

Program a chord spread across several octaves rather than keeping every note close together.

Combine it with the dual-layer architecture so one layer supplies a solid center while the other adds a wider or brighter version of the chord.

Chord Mode and Unison Detune

Add a modest amount of Unison Detune to make the memorized chord broader and more animated. Large voice stacks and wide chord voicings can consume voices quickly, so use enough density to create the desired impact without turning every key press into an overwhelming cacophony of sound.

Chord Mode and Layering

Give the Upper and Lower layers different oscillator ranges, filter contours, envelope timing, or effects. A single played key can then trigger a complete chord built from two contrasting sounds. One layer might provide the attack while the other supplies a sustained pad or effect tail.

Performance Tips

Use the Wheels as Part of the Patch

A factory preset may sound intentionally restrained until the Mod wheel is raised or the Pitch wheel is used. When auditioning sounds, move both wheels and apply pressure if the controller supports it.

Match Glide to Envelope Timing

Long Glide with very short envelopes can produce disconnected pitch swoops. Long envelopes with very short Glide may make the slide nearly disappear. Adjust Glide and envelope timing together so the pitch movement remains audible for the duration of the note.

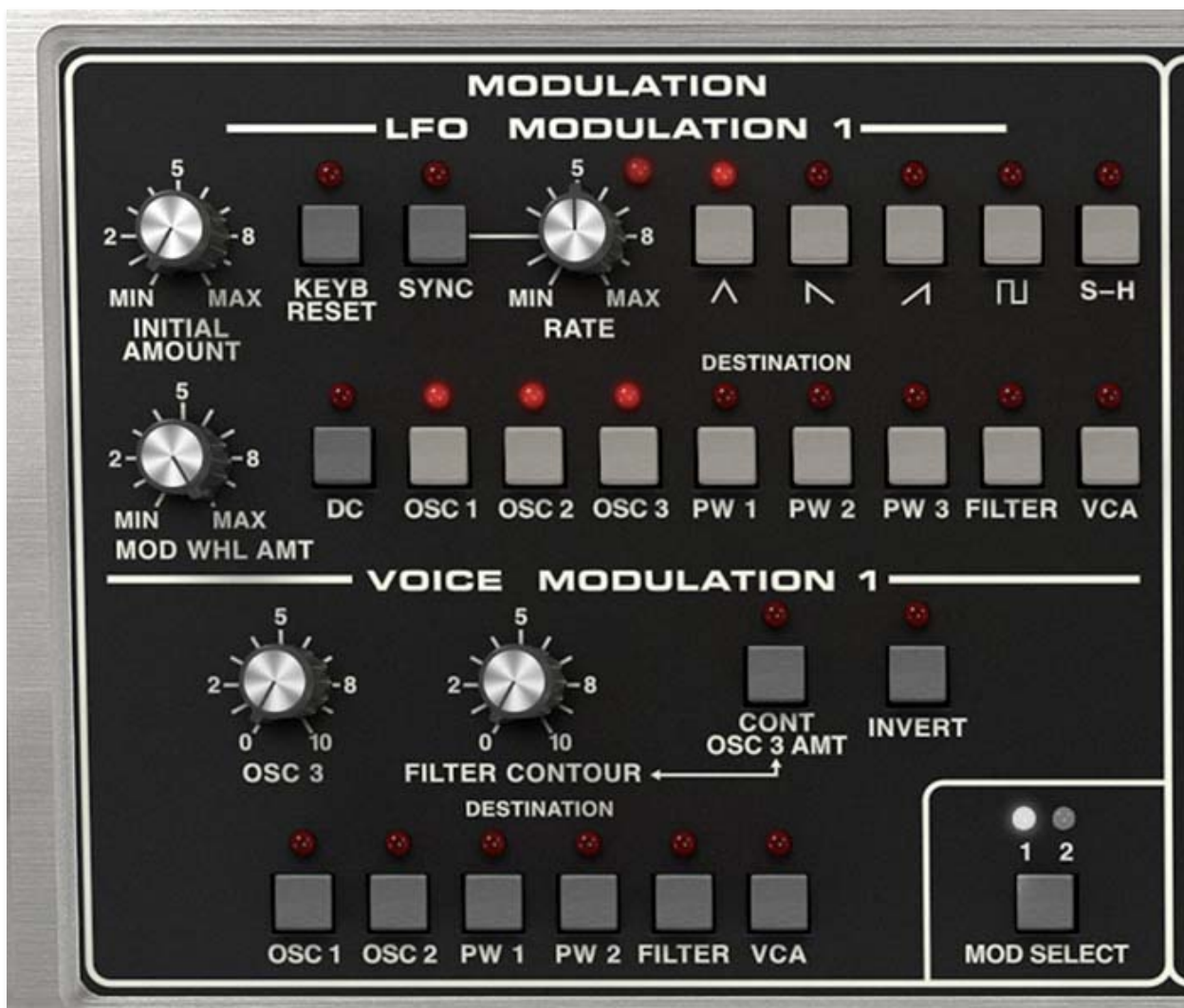
Keep Chord Voicings Clear

A stored chord played through two dense three-oscillator layers can become crowded quickly. Try reducing oscillator levels, using different filter slopes for the two layers, or placing one layer in a higher octave.

Save Performance Settings with the Preset

Octave selection, Bend Depth, Glide, Chord Mode, modulation behavior, and related performance settings are part of the sound's playing experience. When a patch relies on a particular chord, wheel range, or Glide response, save it as part of the preset so it behaves correctly the next time it's loaded.

Modulation



Memorymode 2 includes two complementary modulation systems: **LFO Modulation** and **Voice Modulation**.

LFO Modulation uses a shared low-frequency oscillator to move all active voices in a layer together. It's ideal for unified vibrato, tremolo, pulse-width movement, rhythmic filter sweeps, and other effects that should follow one common cycle.

Voice Modulation works independently inside each voice, using that voice's Oscillator 3 and Filter Envelope as modulation sources. This allows each note in a chord to develop its own movement, much like the Poly-Mod systems found on some classic programmable polysynths.

Memorymode 2 expands this architecture with two complete modulation setups per layer: **Modulation 1** and **Modulation 2**. Both remain active at

the same time, giving each layer two LFOs and two parallel Voice Modulation paths.

With both Upper and Lower layers active, a preset can contain four independent modulation setups. Things can become animated rather quickly.



Mod Select

Function: Chooses whether Modulation 1 or Modulation 2 is currently displayed and available for editing. The LEDs above the button indicate the selected setup.

Important: Mod Select doesn't turn either setup on or off. Both modulation systems remain active simultaneously. The button simply changes which set of controls is shown on the panel. Every parameter is stored independently for Modulation 1 and Modulation 2. Each Upper and Lower layer also stores its own pair of modulation setups.

Tip: Use Modulation 1 for the patch's basic motion, such as slow pulse-width animation or vibrato, and reserve Modulation 2 for a contrasting rhythmic effect or a performance-controlled flourish.



LFO Modulation

Each modulation setup includes its own low-frequency oscillator. The LFO produces a repeating control signal that can be routed to one or more destinations. Because the LFO is shared across the layer, all sounding voices receive the same modulation cycle. A held chord therefore rises, falls, pulses, or vibrates as a unified group.

Initial Amount

Function: Sets the baseline depth of LFO modulation, before any additional amount is introduced by the Mod Wheel.

Sound: At minimum, the selected LFO produces no audible modulation unless the Mod Wheel adds some. Increasing Initial Amount makes the modulation active continuously.

Interactions: Initial Amount works together with Mod Wheel Amount.

- Use Initial Amount for modulation that should always be present.
- Use Mod Wheel Amount for modulation that should be introduced or increased during performance.
- Use both when you want a small permanent amount with additional depth available from the wheel.

Tip: For natural vibrato, set a very small Initial Amount and use the Mod Wheel to increase it only when needed.

Keyb Reset

Function: Restarts the LFO waveform from the beginning of its cycle when a new phrase begins. Because the LFO is shared by the entire layer, Keyb Reset behaves monophonically. It resets only when a note is played while no other notes are currently held.

Sound: With Keyb Reset disabled, the LFO runs continuously in the background, and each note enters at whatever point the waveform has reached. With Keyb Reset enabled, each new phrase begins from a consistent modulation position.

Interactions: Keyb Reset is particularly useful with sawtooth, square, and sample-and-hold waveforms, where the starting position is easy to hear. It also helps synced modulation line up predictably with played notes.

Tip: Enable Keyb Reset for rhythmic pulses, repeated filter movements, and one-note sequences that need consistent timing. Disable it for pads and drifting textures where variation from note to note is desirable.

Sync

Function: Locks the LFO Rate to tempo.

In the standalone version, Sync follows Memorymode 2's internal tempo. When used as a plug-in, it follows the host DAW's project tempo.

Sound: Synced modulation repeats in musical divisions rather than free-running frequencies.

Interactions: When Sync is disabled, Rate is freely adjustable from slow sweeps into audio-rate territory. When Sync is enabled, Rate selects rhythmic note values.

Tip: Use Sync for tremolo, filter pulses, alternating pitch patterns, and other modulation that should reinforce the groove. Leave it off for vibrato, slow drift, and movement that should float independently of the tempo grid.

Rate

Function: Sets the speed of the selected LFO.

Sound: Low settings create gradual sweeps and slow movement. Medium settings produce familiar vibrato, tremolo, and pulse-width modulation. High settings enter the audio range and can create rough, metallic, or FM-like coloration.

Interactions: When Sync is enabled, Rate selects tempo divisions. When Sync is disabled, it controls the LFO frequency directly. The LED near the Rate control flashes in time with the current LFO cycle.

Tip: Don't overlook very slow rates. A modulation cycle that takes several seconds can add life to a pad without sounding obviously like an LFO.

LFO Waveforms

Only one waveform can be selected within each modulation setup. Modulation 1 and Modulation 2 offer slightly different waveform choices, allowing them to complement one another.

Modulation 1 Waveforms

- **Triangle** - Smooth, symmetrical rising and falling movement. Use it for Vibrato, tremolo, pulse-width modulation, gentle filter sweeps, and any

effect that should move evenly in both directions.

- **Falling Sawtooth** - Gradually moves in one direction, then snaps back to the beginning. Use it for Repeating downward pitch sweeps, rhythmic filter falls, and descending modulation patterns.
- **Rising Sawtooth** - Gradually rises, then snaps back. Use it for Rising pitch ramps, repeating filter openings, and upward rhythmic motion.
- **Square** - Alternates abruptly between two levels. Unlike the smoothly changing waveforms, square modulation jumps instantly between states. Use it for Trills, octave alternation, rhythmic switching, pulsing filter or VCA effects, and mechanical step-like motion.
- **S-H** - Produces a new random value at each LFO step and holds it until the next step. Unpredictable stepped movement. Use it for Random pitch sequences, filter burbles, computer-like effects, and unstable modulation.

Modulation 2 Waveforms

- **Sine** - Smooth and rounded, similar to triangle but with softer transitions at the top and bottom of the cycle. Use it for: Natural vibrato, gentle filter motion, smooth tremolo, and subtle modulation that shouldn't feel sharply mechanical.
- **Falling Sawtooth** - Produces a repeating downward ramp followed by an instantaneous reset.
- **Rising Sawtooth** - Produces a repeating upward ramp followed by an instantaneous reset.
- **Opposite-Phase Square** - Alternates between the same two levels as the Modulation 1 square wave but begins on the opposite phase. When both LFOs run at the same Rate and are reset together, one square wave is high while the other is low. Try routing the two opposite-phase square waves to different layers, oscillator levels, filter settings, or stereo-related parameters for alternating call-and-response effects.
- **S-H** - Produces stepped random modulation independently from the S-H waveform in Modulation 1. Because the two modulation setups have separate rates and random streams, using both S-H sources can create complex, irregular motion that takes a long time to repeat.

Mod Wheel Amount

Function: Sets how much additional LFO modulation can be introduced by the MIDI Mod Wheel.

Sound: Higher settings give the wheel greater control over the selected destinations. At minimum, the wheel adds no modulation from that setup.

Interactions: Mod Wheel Amount adds to the modulation established by Initial Amount. For wheel-only modulation, set Initial Amount to minimum and raise Mod Wheel Amount. For continuous modulation with additional performance control, raise both.

Because Modulation 1 and Modulation 2 have independent Mod Wheel Amount settings, the wheel can control two different modulation effects at once.

Tip: Set Modulation 1 to add gentle vibrato and Modulation 2 to open the filter. One wheel gesture can then introduce both pitch expression and brightness in carefully balanced amounts.

DC

Function: Replaces the selected LFO waveform with a steady control value. DC stands for direct current. Instead of constantly rising and falling, the modulation signal remains fixed and is controlled by the Mod Wheel and Mod Wheel Amount.

Sound: DC doesn't create automatic movement. It turns the Mod Wheel into a direct manual controller for the selected LFO destinations.

Use it for:

- Manual filter sweeps
- Pulse-width control
- Oscillator pitch changes
- VCA level control
- Static parameter offsets introduced during performance

Interactions: Mod Wheel Amount limits the maximum range of the wheel, allowing the movement to be carefully scaled. When DC and the VCA destination are selected, Memorymode 2 adjusts the available VCA range so that the Mod Wheel can increase volume even if the VCA Sustain setting is already high.

Tip: Use DC with Filter as a simple performance macro. Set a moderate Mod Wheel Amount so the wheel opens the filter expressively.



LFO Destinations

Multiple destination buttons can be active simultaneously.

Osc 1, Osc 2, and Osc 3

Function: Route LFO modulation to the pitch of the selected oscillator.

Sound: Small amounts create vibrato. Larger amounts produce sirens, trills, wide pitch sweeps, and audio-rate frequency modulation.

Tip: Modulate only one oscillator for harmonic movement while the others hold the central pitch. Modulating all three together produces conventional whole-patch vibrato.

PW 1, PW 2, and PW 3

Function: Route LFO modulation to the Pulse Width of the corresponding oscillator.

Sound: Creates animated harmonic movement in the pulse waveform, ranging from subtle thickening to dramatic nasal sweeps.

Interactions: The pulse waveform must be enabled for the result to be heard.

Tip: Use different LFO rates from Modulation 1 and Modulation 2 on separate oscillators. The pulse widths will move independently, creating a richer result than modulating all three from one source.

Filter

Function: Modulates the VCF Cutoff frequency.

Sound: Triangle or sine waves create smooth wah-like movement. Sawtooth waves produce repeating rises or falls. Square waves create abrupt two-position filter switching. S-H produces stepped random tone changes.

Tip: Use a low Rate and shallow depth for gentle animation. For synced rhythmic filtering, choose a sawtooth or square wave and enable Keyb Reset.

VCA

Function: Modulates amplitude.

Sound: At moderate rates, this creates tremolo. Square waves produce hard rhythmic gating, while sawtooth waves create repeating swells or fades. At high rates, VCA modulation introduces rough, buzzy amplitude-modulation effects.

Tip: Use opposite-phase square waves from Modulation 1 and 2 on different layers to alternate their levels rhythmically.



Voice Modulation

Voice Modulation uses the Oscillator 3 and Filter Envelope belonging to each individual voice. This is fundamentally different from LFO Modulation. The LFO is shared across the layer, so all notes move together. Voice Modulation is polyphonic, so every note in a chord has its own modulation sources. If notes begin at different times, their Oscillator 3 cycles and Filter Envelopes can develop independently. This creates complex internal movement that a single global LFO can't reproduce.

Each Modulation setup contains its own Voice Modulation routing and amounts.

Osc 3

Function: Sets the amount of modulation supplied by Oscillator 3.

Interactions: Oscillator 3's controls in the Oscillator section determine the character of the modulation.

For conventional low-frequency modulation:

1. Enable Oscillator 3 Low.
2. Turn down Oscillator 3 in the Mixer if you don't want to hear it directly.
3. Disable Keyboard Control for a consistent modulation rate across the keyboard.

Leave Keyboard Control enabled when you want the modulation rate to rise with played pitch.

Disable Low to use Oscillator 3 at audio frequencies.

Sound: At low frequencies, Oscillator 3 can create per-voice vibrato, pulse-width movement, filter sweeps, and tremolo. At audio frequencies, it produces metallic, bell-like, growling, and aggressively synthetic modulation.

Tip: Route Oscillator 3 to Filter with Low enabled and Keyboard Control disabled. Play a chord one note at a time. Each note begins its own sweep cycle, creating a lively, loosely synchronized texture.

Filter Contour

Function: Sets the amount of Voice Modulation supplied by the Filter Envelope.

Sound: The selected destinations follow the envelope's Attack, Decay, Sustain, and Release shape.

Interactions: The Filter Envelope can control the filter directly through the VCF Contour Amount and simultaneously act as a Voice Modulation source.

To use it only for Voice Modulation, set the main VCF Contour Amount to zero.

Tip: Route Filter Contour to Oscillator 2 while Sync 2 To 1 is enabled. The envelope sweeps Oscillator 2's pitch, producing the classic tearing oscillator-sync effect.

Cont Osc 3 Amt

Function: Allows the Filter Envelope to control the amount of Oscillator 3 modulation. When enabled, the Osc 3 amount knob is bypassed. The Filter Contour setting determines how strongly the envelope shapes the depth of Oscillator 3 modulation.

Sound: Oscillator 3 modulation can fade in, fade out, peak briefly, or evolve according to the Filter Envelope shape.

Use it for:

- Vibrato that appears gradually
- Audio-rate modulation that intensifies during the note
- Filter movement that blooms after the attack
- Tremolo that fades away
- Laser-like pitch and sync effects

Tip: Set Oscillator 3 to an audio range, route it to Oscillator 1 or 2, enable Cont Osc 3 Amt, and use a slow Filter Envelope Attack. The sound will begin relatively stable and become progressively more complex as the modulation depth rises.

Invert

Function: Reverses the polarity of the Voice Modulation signal.

Invert affects modulation from Oscillator 3 and Filter Contour.

Sound: An upward envelope movement becomes downward at the destination. Positive oscillator movement becomes negative, and vice versa.

Interactions: The exact result depends on the selected destination.

For example:

- Filter Contour normally opens the filter. Inverted, it closes it.
- An upward oscillator pitch sweep becomes downward.
- VCA modulation reverses its direction.

Tip: Use normal Voice Modulation in one setup and inverted modulation in the other. When both address related destinations, the result can create push-pull motion rather than simply adding more of the same sweep.

Voice Modulation Destinations

Multiple destinations can be enabled at once.

Osc 1 and Osc 2

Function: Route Voice Modulation to oscillator pitch.

Sound: Filter Contour creates envelope-driven pitch sweeps. Oscillator 3 creates per-voice vibrato or audio-rate frequency modulation.

Use it for: Sync sweeps, pitch envelopes, bells, metallic tones, percussion, and effects. Oscillator 3 isn't offered as a pitch destination because it serves as the modulation source.

PW 1 and PW 2

Function: Route Voice Modulation to the Pulse Width of Oscillators 1 and 2.

Sound: Filter Contour creates pulse-width changes that evolve over the life of each note. Oscillator 3 produces independent per-voice pulse-width cycling.

Interactions: The pulse waveform must be active on the destination oscillator.

Tip: Use the Filter Envelope for a pulse width that begins narrow and gradually opens, adding movement without changing filter cutoff.

Filter

Function: Routes Voice Modulation to VCF Cutoff.

Sound: Oscillator 3 creates per-note filter animation. Filter Contour adds an additional envelope path to the cutoff.

Tip: Combine a small amount of global LFO filter movement with per-voice Oscillator 3 modulation. The chord moves together broadly while each note also develops its own finer motion.

VCA

Function: Routes Voice Modulation to amplitude.

Sound: Low-frequency Oscillator 3 produces independent tremolo for each voice. Audio-rate modulation produces rough amplitude-modulation textures. Filter Contour can add envelope-shaped level movement beyond the normal VCA Envelope.

Tip: Use shallow Oscillator 3 modulation on VCA for ensemble-like movement. Because each voice has its own modulation cycle, sustained chords gently shift internally rather than pulsing as one block.

Programming Tips

Give the Two Modulation Setups Different Jobs

A useful starting strategy is to assign a clear role to each system.

For example:

Modulation 1: Slow free-running triangle modulation of pulse width.

Modulation 2: Synced rising sawtooth modulation of filter cutoff.

One creates continuous organic motion while the other contributes rhythm.

Build Movement on Two Time Scales

Use one LFO at a very slow rate and the other at a moderate rate. The slow source can shape Filter or Pulse Width, while the faster source adds subtle pitch or amplitude movement. Because their cycles differ, the patch feels more complex and less obviously repetitive.

Combine Global and Per-Voice Motion

Use LFO Modulation for broad movement shared by the entire chord, then add a smaller amount of Voice Modulation for independent note-to-note variation. This is one of the best ways to make pads and sustained chords sound alive without making them chaotic.

Create Complementary Square-Wave Patterns

Set Modulation 1 and Modulation 2 to the same synced Rate, enable Keyb Reset on both, and select their opposite-phase square waves. Route them to different destinations or layers. When one modulation signal rises, the other falls. This can produce alternating oscillator levels, stereo movement, filter responses, or rhythmic exchanges between the Upper and Lower layers.

Turn the Mod Wheel into a Multi-Parameter Performance Control

Set Initial Amount to zero in both modulation setups. Use Modulation 1 to route the wheel to oscillator pitch for vibrato. Use Modulation 2 in DC mode to route the same wheel to Filter or another destination. One gesture can then introduce vibrato and brighten the sound at different depths.

Use the Filter Envelope Without Filtering

Set the VCF Contour Amount to zero, then raise Filter Contour in Voice Modulation. The Filter Envelope becomes a dedicated polyphonic modulation

envelope while the main filter remains stationary. Use it for oscillator sync, pulse-width movement, pitch envelopes, or VCA articulation.

Use Audio-Rate Modulation Carefully

Audio-range LFO and Oscillator 3 modulation can produce striking tones, but small control changes often have large effects. Start with low modulation amounts, especially when routing to oscillator pitch or VCA. Increase gradually while listening for useful harmonic relationships rather than simply turning every control.

Touch Animator and Sequenced Modulation

The four bipolar **Touch** knobs at the upper left of the panel normally set the modulation amounts for the four Touch modulation slots. The **Touch Animator** takes that idea further by letting the Sequencer change those modulation amounts step by step.

When **Touch Animator** is enabled in the Sequencer, the Sequencer can act as a 16-step x 4-pattern modulation source, varying the amount of modulation applied by one of the four Touch modulation slots.



Controls:

- **T1** – Animates the amount for Touch Mod slot 1.
- **T2** – Animates the amount for Touch Mod slot 2.
- **T3** – Animates the amount for Touch Mod slot 3.
- **T4** – Animates the amount for Touch Mod slot 4.

For example, if Touch Mod knob 1 is routed to filter cutoff, enabling the Touch Animator and sequencing **T1** lets the Sequencer vary the strength of that filter envelope movement on each step. Some steps can have a sharp, bright filter sweep, while others have little or none.

Refer to the "**Motion Controls**" chapter for details on how to use the Sequencer to control the Touch Animator.



Touch Animator Shape Menu

The white triangle near the Touch Animator section opens a menu of preset motion shapes. These can quickly create step-based modulation patterns such as ramps, saws, alternating high/low shapes, waves, and rhythmic patterns.

Use these as starting points, then adjust individual steps by hand if needed.

Good uses:

- Ramp shapes for gradual builds
- Saw shapes for repeating rises or drops
- Alternating high/low shapes for pulsing motion
- Wavy shapes for smoother movement
- Rhythm shapes for more complex step emphasis

Tip: Load a preset shape, listen, then edit. The shapes are starting points. Refer to the "**Motion Controls**" chapter for details on how to use the Touch Animator and Sequencer to control modulation.

Reset This Pattern	
Reset All Patterns	
Copy Animation To >	Pattern A
	Pattern B
Alt. HighLow 1 (Pos)	Pattern C
Alt. HighLow 1	Pattern D
Alt. HighLow 2 (Pos)	All Patterns
Alt. HighLow 2	
Alt. HighLow 3 (Pos)	
Alt. HighLow 3	
Alt. HighLow 4 (Pos)	
Alt. HighLow 4	
Alt. LowHigh 1 (Pos)	
Alt. LowHigh 1	
Alt. LowHigh 2 (Pos)	
Alt. LowHigh 2	
Alt. LowHigh 3 (Pos)	
Alt. LowHigh 3	
Alt. LowHigh 4 (Pos)	
Alt. LowHigh 4	
Four Ramps (Pos)	
Four Ramps	
Four Saws (Pos)	
Four Saws	
Long Ramp (Pos)	
Long Ramp	
Long Saw (Pos)	
Long Saw	
Rhythm 1	
Rhythm 2	
Rhythm 3	
Rhythm 4	
Rhythm 5	
Two Ramps	
Two Saws	
Wavy 1 (Pos)	
Wavy 1	
Wavy 2 (Pos)	
Wavy 2	

MPE

MPE, short for **MIDI Polyphonic Expression**, allows compatible controllers to send continuous, expressive touch control for individual notes instead of applying the same pitch bend, pressure, or controller movement to the entire instrument (generally known as channel aftertouch). That means one note in

a chord can bend, brighten, or respond to pressure while the other notes remain unchanged.

To leverage the expanded potential of MPE, you need an MPE-compatible controller such as those from companies like Expressive E, Roli, Roger Linn Design, Haken Audio, Ableton, and others.

In previous Cherry Audio instruments such as Memorymode version 1, Dreamsynth, Sines, Miniverse, DCO-106 and others, the MPE implementation required the user to change to MPE mode in Settings, then map the controls in the MIDI MPE Control Tab.

In Memorymode 2, MPE is now more integrated into the modulation system. To use MPE, select **MPE** as the current **Keyboard Mode (Poly > Poly Mode 6 - MPE)**. If MPE is not selected as the Keyboard Mode, Memorymode 2 won't respond to MPE performance data from your controller, even if the controller is transmitting MPE correctly.



✓ Poly Mode 1 - Cyclic

Poly Mode 2 - Cyclic with Memory

Poly Mode 3 - Reset To Voice 1

Poly Mode 4 - Reset with Memory

Poly Mode 5 - Multi-Voice

Poly Mode 6 - MPE

In MPE mode, Memorymode 2 responds to up to 15 polyphonic voices per layer (one MIDI channel is reserved for control information). Note that MPE mode is individually configured and assigned on a per layer basis.

Once MPE is enabled, the Touch Panels allow you to freely assign **MPE V**, **MPE X**, **MPE Y**, and **MPE Z** to modulation sources. Note that the assignable Touch controls 1 - 4 change to show V, X, Y, and Z, respectively.

Typical MPE sources:

- **MPE V** - Velocity
- **MPE X** - Often associated with left/right movement, commonly used for per-note pitch bends.
- **MPE Y** - Often associated with forward/backward or vertical touch-position movement, commonly used for timbral control.
- **MPE Z** - Usually associated with pressure.

Note: Other MPE dimensions such as strike and release are not directly supported in Memorymode 2.

Using MPE Musically

MPE is most powerful when used musically rather than as a technical demonstration.

Try these approaches:

- For pads, route **MPE Z** to filter cutoff or oscillator level so individual notes bloom inside a chord.
- For leads, route **MPE X** to pitch and **MPE Z** to vibrato depth or filter brightness.

- For digital keys, use MPE pressure or slide to add brightness, tremolo, or subtle pitch movement.
- For evolving textures, assign MPE gestures to filter cutoff, oscillator mix, formant-wave level, LFO depth, or effects mix.

Tip: The most musical MPE assignments usually feel like natural gestures: slide to bend or brighten, press to intensify, move along the playing surface to change tone.

A Note on MPE Controllers

Cherry Audio's Memorymode 2 includes several MPE presets, which were designed using a variety of MPE controllers. Consider the MPE presets included with Memorymode 2 as practical examples and starting points.

As MPE technology is still in its early stages, we've noticed that different manufacturers like Roli, Keith McMillan, Haken, and Expressive E have varying default implementations and interpretations of how MPE should function with their hardware. Some presets may require fine-tuning to align with your hardware or to suit your personal preferences for expressive performance.

For example, when using MPE to express filter frequency or pitch more effectively with certain controllers, you may need to increase some parameter values in the preset. Some controllers automatically map the MPE X dimension to pitch, so you might have to disable this mapping in the presets and save (overwrite) them to work better with your gear. Additionally, you may find you need to adjust the settings for the lower and upper ranges in the controller's configuration software. Consult your controller documentation for further details.



Motion Controls

To access the **Arpeggiator, Sequencer, and Touch Animator**, click the **Motion** tab at the bottom-left corner of the Memorymode 2 interface. The main panel switches from the Keyboard controls to the complete Motion Controls view. Click **Keyboard** to return to the primary synthesis and performance controls, or **Effects** to open the expanded effects view.

The Motion Controls are where inspiration meets automation. They combine an Arpeggiator, a polyphonic 16-step Sequencer with up to four chained patterns, and four lanes of Touch Animator modulation, giving Memorymode 2 a substantial vocabulary for creating movement.

- The Arpeggiator transforms notes you play into repeating patterns.
- The Sequencer stores notes, chords, rests, ties, and performance patterns across four pattern memories.
- Touch Animator changes the four Touch modulation amounts step by step, allowing a sequence to animate filters, oscillators, effects, layer balance, and many other destinations.

A sequence can contain notes and Touch Animator data at the same time. It can also operate purely as a modulation sequencer by clearing its note data while retaining the Touch Animator values.

Together, these tools can create bass lines, pulsing chords, cascading arpeggios, evolving pads, rhythmic filter movement, and patterns that can be transposed or reshaped during performance. Each layer has its own independent polyphonic Sequencer and Touch Animator, so the Upper and Lower layers can perform entirely different roles within the same preset.

Tip: Use the Arpeggiator when you want your playing turned into a pattern. Use the Sequencer when you want to program the notes yourself. Use Touch Animator when the notes should remain steady while the sound moves around them.



Arpeggio

The Arpeggiator turns played or sequenced notes into repeating patterns. Hold a chord, and Memorymode 2 plays its notes according to the selected Pattern, Direction, Octave Range, Speed, and groove settings.

At its simplest, it can produce a familiar rising or falling synth pattern. With Leap, Random, Chance, and a wider Octave Range, it can create tumbling melodic figures that would be difficult to play manually and possibly inadvisable to attempt before coffee.

On

Function: Turns the Arpeggiator on or off.

With On disabled, notes play normally. With On enabled, the selected note source is processed by the Arpeggiator.

Trigger: Keys and Seq

The Trigger buttons determine where the Arpeggiator gets its notes.

Keys

Function: Uses notes played or held from the keyboard.

Musical result: This is the traditional arpeggiator workflow. Hold a chord, and its notes are reorganized according to the selected Arpeggiator settings.

Seq

Function: Uses notes or chords stored in the Sequencer.

Musical result: The Sequencer provides the harmonic and rhythmic material, while the Arpeggiator breaks that material into additional movement. When a sequence step contains a chord, the Arpeggiator processes its notes according to the selected Pattern, Direction, and Octave Range.

Tip: Use Keys when you want to play the Arpeggiator directly. Use Seq when you want the Sequencer to provide structure while the Arpeggiator adds another layer of activity.

Hold

Function: Keeps the Arpeggiator running after the keys are released. Play another note or chord to replace the currently held note set.

Tip: Enable Hold when you want both hands free for filter sweeps, modulation changes, or effect adjustments.

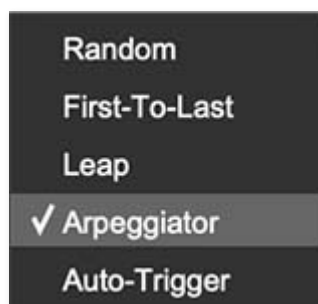
Sync

Function: Locks Arpeggiator timing to the master tempo. In the standalone version, Sync follows Memorymode 2's internal tempo. When used as a plug-in, it follows the host DAW tempo. With Sync disabled, Speed runs freely. With Sync enabled, Speed selects musical note divisions.

Speed

Function: Sets the Arpeggiator playback rate.

Sound: Slower settings create spacious, deliberate patterns. Faster settings turn held notes into rapid rhythmic streams. The LED above the control flashes at the current playback rate.



Pattern Select

Click **Select** to open the Arpeggiator Pattern menu. The display shows the currently selected mode.

Arpeggiator

Function: Plays the available notes as a conventional arpeggio.

Musical result: Notes are sorted and played according to the selected Direction and Octave Range.

Use it for: Classic synth arpeggios, bass patterns, rolling chords, and steady rhythmic figures.

First-To-Last

Function: Plays notes in the order they were originally pressed.

Selecting Down reverses the entered order.

Musical result: The keyboard becomes a simple phrase-entry tool. Instead of automatically sorting notes by pitch, Memorymode 2 remembers the sequence in which you played them.

Tip: Enter a short melodic phrase one note at a time, then use Hold to keep it repeating while you adjust the sound.

Leap

Function: Moves each note through a repeating octave pattern: original octave, one octave above, then one octave below.

Musical result: Held chords turn into tumbling, wide-ranging figures with much larger melodic jumps than a conventional arpeggio.

Tip: Hold a minor-seventh chord, select Leap, set Octave Range to 3 or 4, and add a tempo-synced delay. The result can become cinematic with very little encouragement.

Random

Function: Selects notes from the available note set in an unpredictable order.

Musical result: Patterns vary from cycle to cycle rather than repeating in a fixed melodic sequence.

Tip: Lower Chance slightly and add reverb or delay. The missing notes leave openings for the effects to fill, creating a more spacious generative texture.

Auto-Trigger

Function: Repeatedly retriggers the complete held chord rather than playing its notes individually.

Musical result: Produces pulsing chords, rhythmic stabs, and repeated harmonic patterns.

Tip: Use a short VCA envelope for clipped chord pulses, or increase Release for overlapping washes. Auto-Trigger is particularly effective with layered brass, pads, and sync-heavy chord stabs.



Direction

Direction determines how the selected Pattern moves through its note order.

- **Up** - Plays from the lowest note toward the highest.
- **Down** - Plays from the highest note toward the lowest. In First-To-Last mode, Down reverses the original note-entry order.
- **D-Up** - Plays downward and then upward.
- **Up-D** - Plays upward and then downward. The two alternating directions can sound slightly different at their turning points, depending on whether the highest and lowest notes are repeated when the direction changes.



Octave Range: 1-4

Function: Sets how many octaves the Arpeggiator spans.

Sound: A range of 1 stays close to the played notes. Higher settings extend the pattern through additional octaves, producing wider melodic movement.

Interactions: Octave Range can alter the character of the selected Pattern significantly. A simple three-note chord at Range 1 may become a long cascading phrase at Range 4.

Tip: Wider isn't always better. Range 1 or 2 often works best for basses and tightly focused patterns. Range 3 or 4 is useful for pads, leads, and more expansive textures.

Swing

Function: Delays alternating notes to create a shuffled rhythmic feel.

Sound: At minimum, the pattern plays evenly. Increasing Swing creates progressively stronger long-short timing.

Tip: Add Swing after establishing the basic pattern and Speed.

Chance

Function: Sets the probability that each arpeggiated event will play.

At maximum, all events sound. Lower settings introduce skipped notes and rests.

Sound: Moderate Chance settings create variation and syncopation. Lower values produce increasingly sparse and unpredictable patterns.

Tip: Chance becomes especially useful with delay. Skipped notes create space, while the delay repeats preserve rhythmic continuity.

Feel: Pull and Push

Function: Moves the Arpeggiator timing slightly behind or ahead of the beat.

Turning toward **Pull** relaxes the timing. Turning toward **Push** makes the pattern feel more urgent. Unlike Swing, which changes the relationship between alternating events, Feel shifts the overall timing character.

Tip: Use small adjustments. Feel works best as a musical nudge.

Arpeggiator Ideas

Classic Analog Arpeggio

Select Arpeggiator, choose Up or Up-D, set Octave Range to 1 or 2, enable Sync, and adjust Speed to suit the track. Add a small amount of Swing if the result feels too rigid.

Cascading Pattern

Select Leap, set Octave Range to 3 or 4, and lower Chance slightly. This works well with bright ramp or pulse waves, moderate filter-envelope movement, and tempo-synchronized delay.

Ordered Phrase

Select First-To-Last and play a short sequence of notes in the desired order. Enable Hold, then use the Direction buttons to play the phrase forward, backward, or in alternating directions.

Pulsing Chords

Select Auto-Trigger and play a chord. Use a short VCA Decay and low Sustain for sharp stabs, or a high Sustain and longer Release for overlapping pulses. Touch Animator can add a different filter or effect value to each repeated chord.



Polyphonic Sequencer

The Sequencer is a 16-step, four-pattern polyphonic pattern engine per layer. Each step can contain a single note, a complete chord, a rest, or tied note information.

Each layer contains four independent pattern memories, labeled **A**, **B**, **C**, and **D**. These can be selected manually or chained to play as an automated sequence of patterns.

The Sequencer also works with Touch Animator, an additional 16-step, four-pattern sequencer to drive modulation based on the Touch controls. This means a step can play a chord while simultaneously changing filter cutoff, oscillator balance, effect depth, layer balance, or any other destination assigned in the Touch section.

Sequencer On

Function: Turns the current layer's Sequencer on or off. When disabled, stored pattern data doesn't play. When enabled, playback follows the selected Playback and Keyboard Control settings.



Step Buttons 1-16

The 16 lower buttons represent the pattern steps.

Each step can contain:

- A single note
- A chord
- A rest
- A tie extending previous note data

The illuminated step indicates the current playback or editing position.



Setting the Pattern Length

Click the number beneath a step to make it the final active step in the pattern.

For example:

- Clicking 8 creates an eight-step pattern.
- Clicking 12 creates a 12-step pattern.
- Clicking 16 uses the complete pattern length.

Short and odd-numbered patterns can produce useful rhythmic movement against conventional 4/4 arrangements.

Tip: Try lengths of 5, 7, 11, or 13 steps. As the pattern repeats against the bar line, its accents shift into new positions without requiring any additional programming.



Playback Modes

Once

Plays the pattern one time and then stops.

Use it for: Triggered phrases, one-shot effects, transitions, and patterns that should behave like a musical event rather than a continuous loop.

Loop

Repeats the pattern continuously.

Use it for: Bass lines, repeating chord progressions, ostinatos, rhythmic modulation, and most conventional sequencing.

Ping-P

Plays forward through the pattern and then backward.

Use it for: Symmetrical melodic movement, evolving modulation shapes, and phrases that reverse without jumping immediately from the final step back to the first.

Random

Selects pattern steps in an unpredictable order.

Use it for: Generative textures, irregular note patterns, unpredictable chord movement, and modulation sequences that avoid obvious repetition.

Tip: Random playback combined with reduced Chance can become extremely sparse.



Keyboard Control

The Keyboard Control buttons determine how played notes interact with Sequencer playback.

On

Playing the keyboard starts Sequencer playback.

Use it for: Patterns that should begin when you start performing.

Off

Playing the keyboard doesn't start the Sequencer. Playback is controlled from the Motion start controls instead.

Use it for: Patterns that should run independently from manual keyboard performance.

Step

Each key press advances the Sequencer by one step.

Use it for: Manually paced sequences, unusual rhythms, stuttering effects, and performances in which the step timing should follow your playing rather than a steady clock.

Trans

Keyboard notes transpose the running sequence.

Musical result: A single programmed riff, bass line, or chord progression can be moved through different keys without rewriting the pattern.

Tip: Program the sequence around a convenient tonal center, then use Trans to perform it harmonically. This is especially effective for bass patterns and repeating melodic figures.

Live Record

Live Record captures a keyboard performance into the current pattern in real time.

Use it when the musical shape and performance feel matter more than entering every step individually.

A basic workflow:

1. Select Pattern **A**, **B**, **C**, or **D**.
2. Set the desired pattern length.
3. Choose a Playback mode.
4. Enable **Sync** and set Speed if the sequence should follow tempo.
5. Click the **Live Record** button.
6. Play the desired notes or chords on the keyboard or an external controller.
7. Disengage **Live Record** when recording is complete.
8. Live Record captures note performance. It doesn't record aftertouch or MPE gestures into Touch Animator. Touch Animator values are programmed separately by dragging the sliders above the sequencer step buttons.

Tip: Establish the tempo and pattern length before recording. A clear rhythmic framework makes it much easier to play a useful phrase than discovering halfway through that your inspired seven-note idea is being recorded into a four-step loop.

Step Program Mode

Step Program Mode provides precise tools for building and editing the sequence one step at a time.

Note

Function: Enters or replaces note information on a selected step.

To program a note or chord:

1. Select **Note**.
2. Select the destination step.
3. Play the desired note or chord.
4. Repeat for the remaining steps.

A step can contain several notes, allowing complete chord progressions to be programmed rather than only monophonic lines.

Erase

Function: Removes the stored note contents from the selected step. Use Erase when you want to create a rest or replace unwanted material without resetting the entire pattern.

- Click the **Erase** button then choose the step you want to clear.

Tie

Function: Extends the notes from the preceding step through the selected step. Ties create sustained notes and legato phrases instead of retriggering the envelopes on every step. They can also extend complete chords across several steps.

Tip: Tied steps are useful for creating syncopated bass lines, held chord changes, and melodic phrases that contain a mixture of short and sustained notes.

Steps

Function: Provides step-length programming behavior.

- Click the **Steps** button and choose the desired final step to define the active pattern length.

You can also set the length directly by clicking the number beneath the desired final step.



Programming a Sequence

Here's a workflow for creating a pattern from scratch:

1. Select a Pattern. Choose Pattern **A**. Pattern A is usually the best place to establish the main musical idea. Patterns B, C, and D can later become variations.
2. Set the Length. Click the number beneath the desired final step. Begin with eight steps if you want a compact, easy-to-hear pattern. Once the basic workflow is familiar, try longer or odd-numbered lengths.
3. Choose Playback. Select **Loop** so the pattern repeats while you work. This lets you hear edits immediately.
4. Set Timing. Enable Sync and choose a Speed that suits the part. Start with an even division and leave Swing, Chance, and Feel near their neutral positions. Add groove after the notes are working.
5. Enter Notes. Select Note, choose Step 1, and play a note or chord. Continue through the remaining steps. Leave some steps empty if you want rests.
6. Add Ties. Select Tie and extend selected notes or chords across following steps. Ties are especially useful when the sequence feels too clipped or mechanical.
7. Adjust the Groove. Increase Swing for shuffle, lower Chance for variation, or use Feel to push or pull the pattern against the beat.
8. Create a Variation. Copy Pattern A to Pattern B using the Utility menu. Edit a few notes, remove ties, change Touch Animator values, or alter the pattern length. The result remains related to the original while providing useful contrast.

Tip: Program the pattern dry or with modest effects first. Long delays and reverbs can make almost anything sound impressive, but they can also conceal timing collisions, excessive release times, and notes that should never have met.

Pattern A, B, C, and D

The Sequencer includes four independent pattern slots. Each pattern stores its own note, chord, tie, pattern-length, and correlates to the Touch Animator sequence above it.

The four patterns can be used as separate ideas or as related sections of a longer performance:

Pattern A: Main phrase

Pattern B: Variation

Pattern C: Breakdown or alternate harmony

Pattern D: Fill, transition

Sequence

Plays the currently selected pattern. Use the A, B, C, and D buttons to change patterns manually.

- **Manual** - Plays the currently selected pattern. Use the A, B, C, and D buttons to change patterns manually.
- **x1** - Select which patterns to play by clicking on A, B, C, and/or D buttons. By selecting multiple patterns, they are "chained" as a pattern sequence to play successively in a loop. This will run each pattern once before advancing to the next, and the blinking LED will indicate which pattern is active. After the final pattern, playback returns to the beginning of the pattern sequence.
- **x2** - Plays each pattern twice before advancing to the next pattern.
- **x4** - Plays each pattern four times before advancing to the next pattern.

Tip: Use A as the main pattern and B as a busier variation. Set x4 to establish the idea for several passes before moving into the variation.

Sequencer Timing and Groove

The Sequencer has its own Speed, Swing, Chance, Feel, and Sync controls.

- **Sync** - Locks the Sequencer to the master tempo. In the standalone version, it follows Memorymode 2's internal tempo. In plug-in use, it follows the host DAW tempo.
- **Speed** - Sets the Sequencer playback rate. When Sync is enabled, Speed selects musical divisions. With Sync disabled, it runs freely.
- **Swing** - Delays alternating steps to create shuffle.
- **Chance** - Sets the probability that programmed note events will play. Lower values introduce missing notes and rhythmic variation without altering the stored pattern.
- **Feel** - Moves the pattern slightly behind the beat toward Pull or ahead of the beat toward Push.

Tip: Establish the notes first, then add one groove control at a time. Swing, Chance, and Feel are all useful, but turning all three aggressively can make things sound chaotic.

Touch Animator

Touch Animator turns the Sequencer into a four-lane modulation system. The four lanes correspond directly to the four Touch assignments in the Keyboard Mode section:

- **T1** animates Touch assignment 1
- **T2** animates Touch assignment 2
- **T3** animates Touch assignment 3
- **T4** animates Touch assignment 4

The Touch section determines what is modulated and by how much.

Touch Animator determines how that modulation amount changes from step to step.

For example, if Touch assignment 1 controls VCF Cutoff, selecting T1 lets the Sequencer vary filter movement across the pattern. One step might remain dark, another might open fully, and the following steps might create a gradual rising sweep.

Touch Animator On

Function: Enables step-based Touch animation of 16 steps per Pattern. With Touch Animator disabled, its stored values don't affect the sound.

T1, T2, T3, and T4

Selects which Touch Animator lane is shown and edited. The selected lane's 16 values appear as red horizontal indicators above the step buttons. Only one lane is displayed for editing at a time, but all four lanes can operate simultaneously.

Editing Touch Animator Step Values

- Drag a step's red indicator vertically to set its Touch Animator value. Higher positions create greater positive modulation. Lower positions

create negative modulation when the selected shape and Touch assignment permit bipolar movement.

The Touch knob on the main panel still determines:

- Modulation destination
- Overall polarity
- Maximum modulation depth

Touch Animator supplies the changing step-by-step value within that range.

Touch Animator has 16-steps per Pattern (A,B,C, and D) that correlate to the note step-sequencer patterns. It is an independent sequence, however, and its values do not get copied or modified using the Sequencer Utility Functions (Transpose, Clear, Copy To, etc.). Use the Touch Animator Shape Menu (below) for these utilities specific to the Touch Animator.



Combining Touch Animator and Live Expression

Touch Animator values are combined with incoming polyphonic aftertouch or MPE expression. Stored animation doesn't prevent you from adding live pressure or movement while the sequence runs. The two sources work together. This makes it possible to create a repeating baseline of modulation and then push individual notes further during performance.

In MPE mode, the four animator lanes correspond to the four V, X, Y, and Z Touch slots.

Using Touch Animator Without Sequenced Notes

In some cases, you may want to use the Touch Animator to play sequenced modulation without the Sequencer also playing notes.

To use Touch Animator as a pure modulation sequencer:

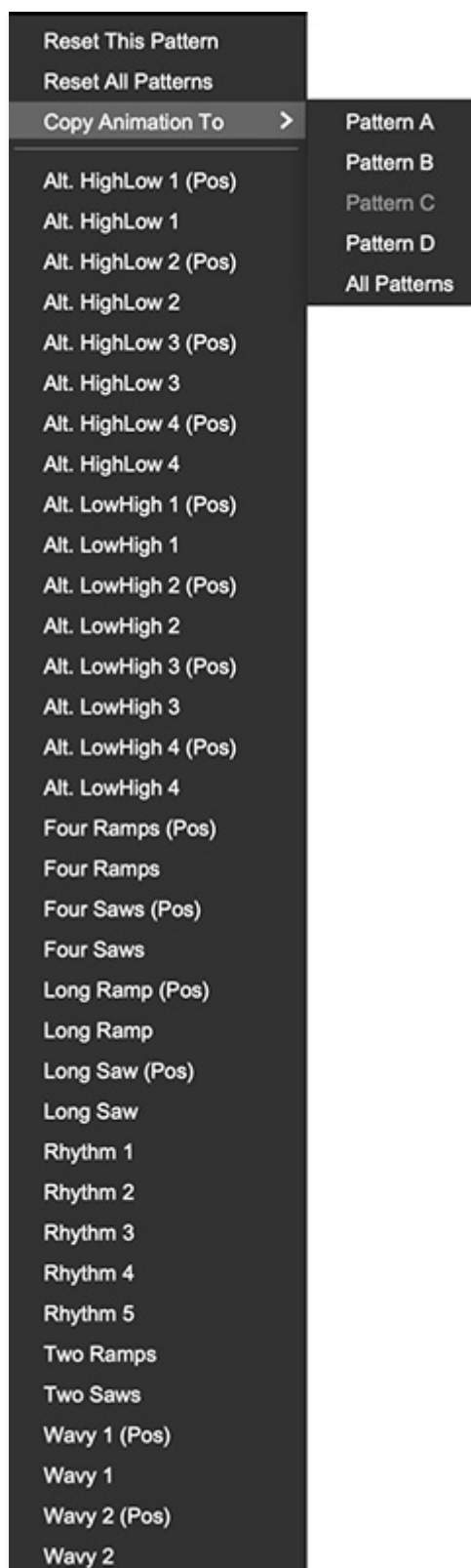
1. Program the desired Touch modulation assignments in the Touch section of the main panel.
2. Create Touch Animator modulation. To do this manually, drag a sequence step's red indicator vertically up or down to set its value. Alternatively use the Touch Animator Shape Menu to choose a preset pattern for the modulation. (Click the white triangle next to the Touch Animator).
3. Click the **Notes Trigger** toggle to disable note playback on the Sequencer.

Tip: This is one of Touch Animator's most useful applications. Hold a sustained pad and let the Sequencer animate filter cutoff, layer balance, or an effect parameter underneath it.



Touch Animator Shape Menu

Click the triangle near the Touch Animator controls to open the shape menu. The menu provides ready-made patterns for quickly filling the four animator lanes.



Reset This Pattern

Clears the current Touch Animator pattern (A, B, C, or D) and returns its values to neutral.

Reset All Patterns

Clears all four Touch Animator patterns and returns their values to neutral.

Copy Animation To...

Copies the animation of the current Touch lane (T1, T2, T3, or T4) and its animated pattern (A, B, C, or D) and pastes it to the pattern(s) you choose.

Alternating High/Low and Low/High

The **Alt. HighLow** and **Alt. LowHigh** shapes create alternating step values.

Versions 1 through 4 provide different relationships among the four Touch Animator lanes.

Use these for:

- Rhythmic filter switching
- Alternating layer balance
- Stereo or effect changes
- Call-and-response modulation

Ramps and Saws

The menu includes:

- Two Ramps
- Four Ramps
- Long Ramp
- Two Saws
- Four Saws
- Long Saw

Ramp shapes gradually rise across part or all of the sequence.

Saw shapes rise or fall and then reset sharply.

Use them for evolving filter movement, gradual effect changes, pitch transitions, and repeating modulation cycles.

Wavy Shapes

Wavy 1 and **Wavy 2** create smoother rising and falling contours.

Use them for pads, evolving effects, pulse-width changes, and modulation that should feel less rigidly stepped.

Rhythm 1-5

The Rhythm presets create more complex step patterns with varied accents and rests.

Use them when you want rhythmic movement without drawing every value manually.

Positive-Only Shapes

Preset names ending in **(Pos)** use positive values only.

The corresponding versions without **(Pos)** use both positive and negative values.

Positive-only shapes are useful when a destination should move away from its base setting in one direction.

Bipolar shapes move above and below the base setting, creating more balanced or dramatic motion.

Tip: Load a preset shape, listen to it in the context of the patch, then edit individual steps. The menu is a starting point, not a binding legal agreement.



Layer Start and Stop Controls

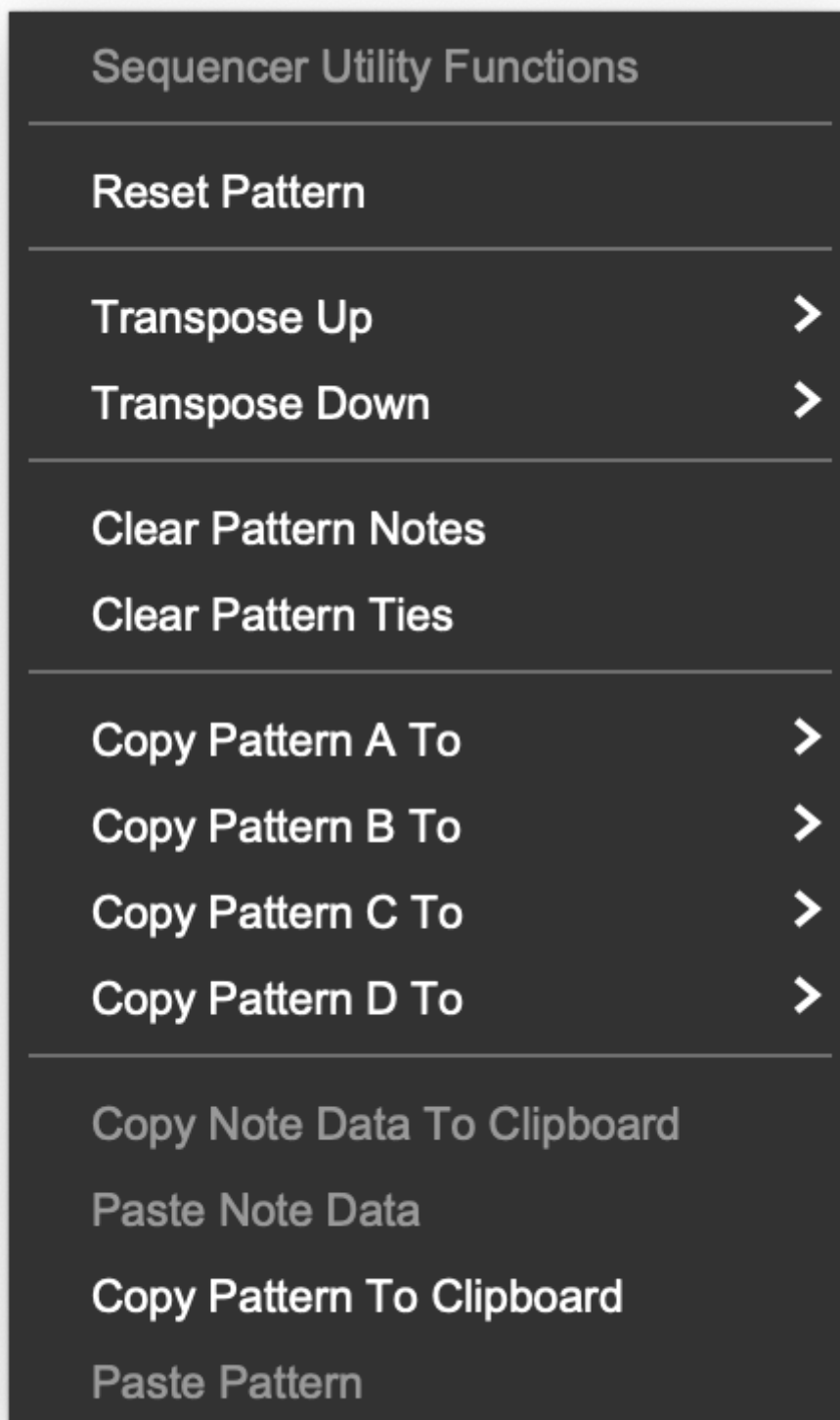
Memorymode 2's Upper and Lower layer Motion engines can be started independently or together. This lets the two layers function like separate musical parts. One layer might play a sequenced bass while the other remains manually playable. One might provide an arpeggiated upper texture while the other uses Touch Animator to move a sustained pad.

- **Upper** - Starts Motion playback for the Upper layer.
- **Lower** - Starts Motion playback for the Lower layer.
- **All Start** - Starts Motion playback for both layers.
- **All Stop** - Stops Motion playback for both layers.

Tip: Build and audition one layer at a time. Once each part works on its own, use All Start to hear them together. Two complicated patterns rarely become simpler merely through proximity.

Sequencer Utility Menu

In addition to hands-on editing, the Sequencer features a dropdown menu (click the triangle in the upper-right corner of the Sequencer panel) with a set of utilities for managing your note patterns quickly: Click the triangle near the Step Program Mode controls to open the Sequencer Utility menu.



- **Reset Pattern** - Clears the current pattern and returns it to its default state. Use this when you want a completely clean starting point.
- **Transpose Up and Transpose Down** - Moves every stored note in the current pattern upward or downward. The submenu provides semitone

and octave transposition options. Use this to move a phrase into another key or register without re-entering every note.

- **Clear Pattern Notes** - Removes note and chord data from the current pattern while leaving ties and Touch Animator information intact. This is the quickest way to convert a note sequence into a pure Touch Animator modulation pattern.
- **Clear Pattern Ties** - Removes all ties while preserving the stored notes and chords. Use it when a pattern has become too legato or when you want every note to retrigger independently.
- **Copy Pattern A/B/C/D To** - Copies one pattern into another pattern slot.

This is ideal for creating variations:

1. Copy Pattern A to B.
 2. Change a few notes or ties.
 3. Switch or sequence between A and B.
- **Copy Note Data To Clipboard** - Copies the current pattern's note information for use elsewhere.
 - **Paste Note Data** - Pastes previously copied note information into the current pattern. This allows note material to be transferred without replacing the complete pattern setup.
 - **Copy Pattern To Clipboard** - Copies the entire current pattern, including its full sequence information.
 - **Paste Pattern** - Replaces the current pattern with the complete pattern stored in the clipboard. Clipboard commands can be used to move material among patterns, presets, projects, or separate Memorymode 2 instances.

Practical Motion Ideas

- **Transposable Bass Line** - Program a short bass sequence in Pattern A and select Trans under Keyboard Control. Use the keyboard to move the running pattern through different keys. Keep VCA Release relatively short so successive notes remain clearly separated.
- **Sequenced Chord Progression** - Enter full chords instead of individual notes. Use ties to hold some chords longer than others, then copy the

pattern to B and alter the final few steps. Sequence A and B to create a repeating harmonic phrase with variation.

- **Rhythmic Filter Pattern** - Assign Touch 1 to VCF Cutoff. Enable Touch Animator, select T1, and load an alternating or rhythmic shape. Edit individual steps until the filter accents support the programmed notes.
- **Evolving Pad** - Clear the pattern notes but retain Touch Animator data. Assign T1 to VCF Cutoff, T2 to Upper/Lower Balance, and T3 to a reverb or phaser parameter. Hold a chord and allow the Sequencer to animate the sound without retriggering it.
- **Arpeggiated Sequence** - Program chords into the Sequencer, set the Arpeggiator Trigger to Seq, and choose Leap or First-To-Last. The Sequencer determines the harmonic progression while the Arpeggiator generates movement within each step.
- **Layered Motion** - Use the Lower layer for a sequenced bass and the Upper layer for a manually played pad with Touch Animator movement. Alternatively, run different patterns on both layers at related speeds for interlocking rhythmic parts.

Avoiding Motion Overload

The Motion Controls can produce a great deal of activity, and it's easy to confuse complexity with improvement.

If a preset becomes crowded:

- Turn off the Arpeggiator and listen to the Sequencer alone.
- Disable Touch Animator and evaluate the note pattern.
- Shorten VCA Release if notes are blurring together.
- Increase Chance if too many notes are disappearing.
- Reduce Octave Range if the Arpeggiator is covering too much territory.
- Simplify one layer while the other provides motion.
- Reduce delay or reverb if the pattern loses definition.

Motion is usually most effective when it moves against something stable. A steady pad beneath a busy sequence often sounds larger than two layers fighting each other with too much animation.

Effects

Three Effects Chains for Layered Sound Design

Memorymode 2 provides 22 separate studio-quality effects available in three separate effects chains for enhancing, shaping, and polishing your sounds: one for **Upper**, one for **Lower**, and one **Global** chain for the final combined signal.

This gives you a much more flexible effects structure than simply placing one shared effect chain at the end of the instrument. Each layer can have its own processing first, then both layers can pass through shared Global effects for final polish.

The basic routing is:

Upper sound engine → Upper effects → Global effects

Lower sound engine → Lower effects → Global effects

Each effects chain includes five effect slots, so you can process the two layers independently before they reach the final Global chain. For example, Upper might use chorus and reverb for a wide pad, while Lower uses compression and delay for a more focused attack. The Global chain can then add final ambience, EQ, compression, limiting, or other processing that helps the whole preset feel unified.

Controls and Concepts:

- **Upper Effects Chain** – Processes only the Upper sound engine.
- **Lower Effects Chain** – Processes only the Lower sound engine.
- **Global Effects Chain** – Processes the combined output of both layers.
- **Five Slots Per Chain** – Each chain can host up to five Cherry Audio effects.
- **Effect Modulator** – Provides dedicated modulation for adding movement to effect parameters.

Tip: Use the layer effects to give each layer its own identity. Use the Global effects to make the finished patch feel connected, polished, and ready to sit in a mix.

How this Changes The Way You Design Patches

Instead of asking, “What effect should I put on the synth?” You should ask, “Which part of the synth deserves which effect treatment?” That’s a much

more mix-friendly way to build patches, because you're not forcing your entire sound through the same effects chain..

Tip: Start patches with no effects, then assign effects by role. Build the tone first. Then decide what needs movement, width, grit, or which should stay clean so the patch has definition.

Important Note

Effects can change gain. They can also emphasize certain frequencies and create peaks. This is why Memorymode 2 contains a Limiter.

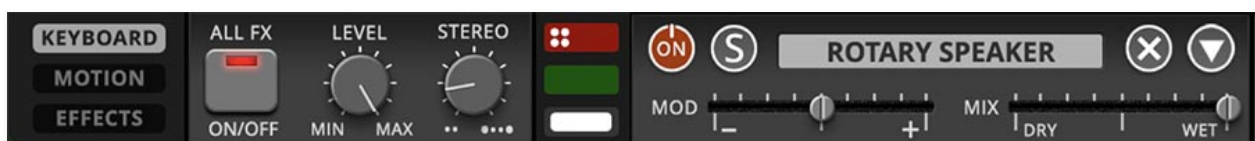


Tip: The mini FX panel is always visible, but click the **Effects** tab at the bottom right for the full parameter view and deeper editing. Alternatively double-click the effects "footer" (the part with the always-visible mod and mix controls) to toggle the view from mini to full.

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 effects chain you're editing:

- **Red** – Upper
- **Green** – Lower
- **Gray** – Global (affects entire output signal path)

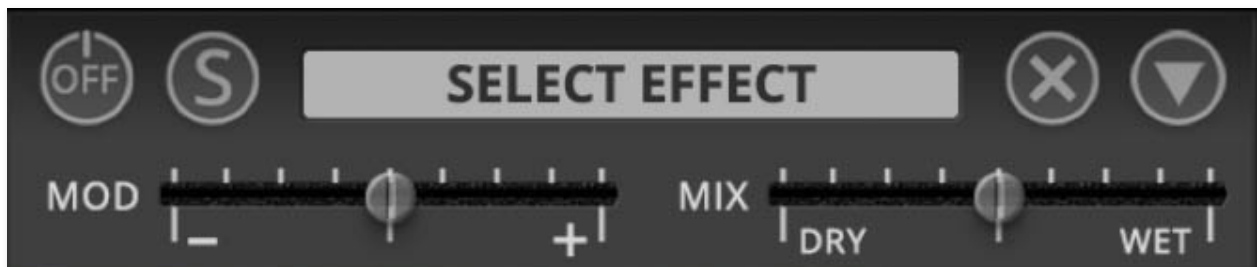
Click the color, build your chain, and get creative. Each chain is fully independent, so yes, you can have chorus and delay on Upper and a Phaser and Envelope Filter on Lower.



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.

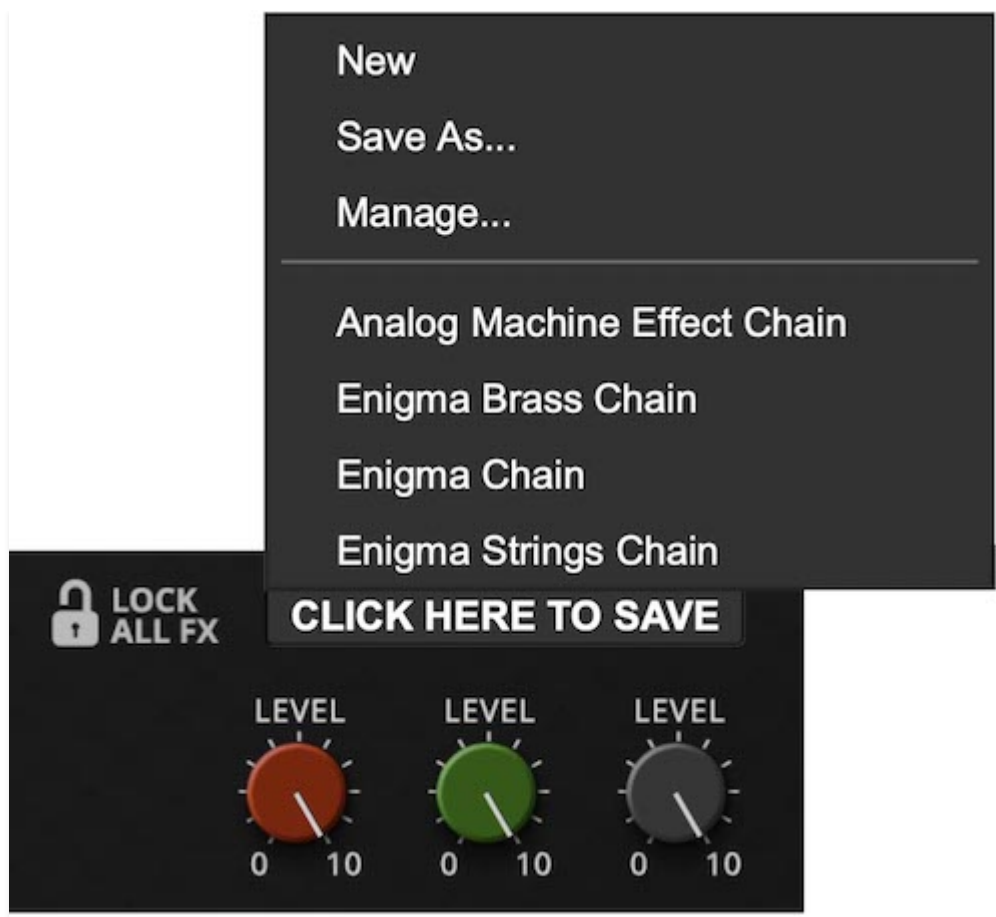


Effect modulator controls include:

- **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, 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 Layer** - Click the triangle dropdown → Copy To → choose the desired destination (Layer or Global).
- **Copy or Move Entire Chain** - Click the triangle dropdown → Copy/Move Effect Chain To → choose the desired destination.

- **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 the desired destination.
- **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.



Tips

- Don't overlook the **Global chain**. A touch of reverb or EQ here can glue everything 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.

Gain Staging and Troubleshooting

1. "I'm tweaking effects but nothing changes."

You're likely editing the wrong Layer.

2. "Everything sounds washy."

You probably put big space effects on Global effects. Use effects on Upper or Lower for character, and use Global effects lightly for cohesion.

The Effects

There are 22 effects in total to add potency to any sound, including the new **Wide Phaser** and **Rotary Speaker** effects. 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.

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 with presence 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 adds a wobblier, more boingy character. Tighter adds a 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). This can be controlled by the Effect Modulator.
- **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 pads 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. This can be controlled by the Effect Modulator.
- **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. This can be controlled by the Effect Modulator.

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 vibe.



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:

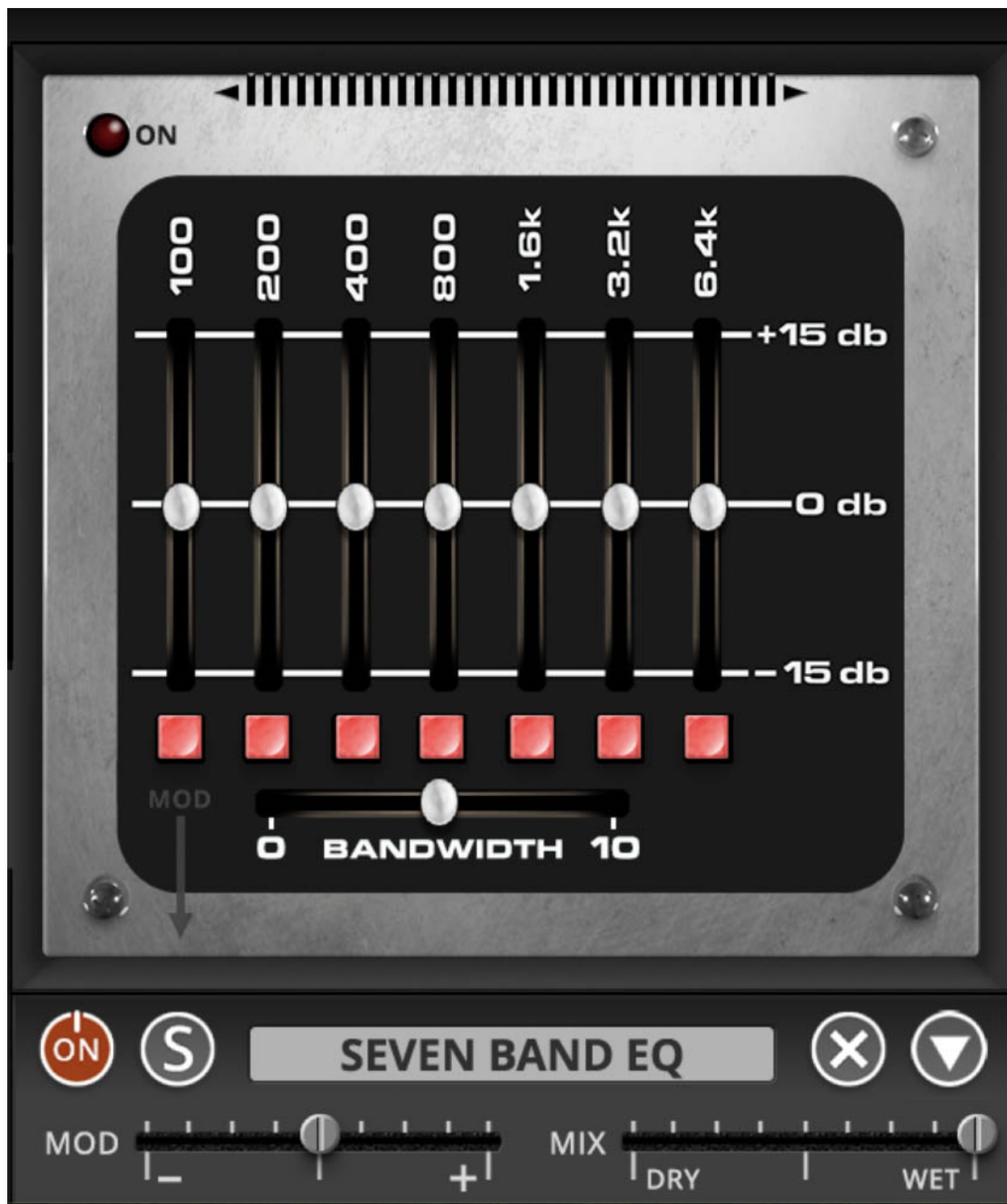
- **Gain (Trimmer)** – Balances the output level.
- **MOD Slider** – Adjusts how much modulation is applied.
- **MIX Slider** – Balances dry vs. processed.

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. This can be controlled by the Effect Modulator.
 - **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. This can be controlled by the Effect Modulator.
- **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.



Rotary Speaker

Few effects can transform a sound as completely as a rotary speaker. At slow speeds, it adds a rich swirl that can make pads, strings, and sustained chords feel wider, warmer, and more alive. Push it faster and the effect becomes more urgent, with pulsing lows, spinning highs, gritty cabinet color, and a Doppler shimmer that can edge into psychedelic territory. It can sound silky and spacious or rough and gritty.

That character comes from the interaction of two moving speaker elements inside the cabinet: a high-frequency horn and a low-frequency drum rotating at different speeds. As they sweep past the microphones, they continuously alter pitch, volume, tone, and stereo position. The Rotary Speaker effect models both rotor assemblies, along with their acceleration, cabinet character, microphone placement, and the small mechanical quirks that give a real rotary cabinet its unmistakable motion and depth.

Cabinet Type Controls:

Selects the rotary speaker cabinet model. Each cabinet has its own amplifier character, frequency response, and overall tonal balance.

- **122** – Models the warm, rounded character of a classic 122 rotary cabinet. This is the traditional choice for rich lows, smooth highs, and the familiar vintage rotary sound.
- **147** – Models a vintage 147 cabinet. Its basic character is similar to the 122, but its unbalanced input circuitry gives it a slightly different tonal response. It's a good choice when you want classic rotary movement with a subtly different edge and presence.
- **Custom** – Models a modified rotary cabinet fitted with higher-output drivers and amplification. It retains the broad character of the 122 and 147 models but sounds somewhat smoother, with more extended low- and high-frequency response.

Tip: Start with the 122 for warm pads, strings, and traditional organ-like textures. Try the 147 when a sound needs a little more midrange personality. Custom is especially useful for full-range synth patches that need deeper lows and clearer highs without losing the character of a rotary cabinet.

- **Diffuser** – Enables or disables the simulated diffuser fitted to the mouth of the rotating treble horn. With Diffuser enabled, the horn sounds smoother and less directional. Turning it off creates a brighter, more focused tone with a stronger sense of the horn sweeping past the microphones.
- Removing the diffuser became a popular real-world modification among players who wanted more upper-frequency bite and a more pronounced rotary effect.
- **Memphis** – Stops the bass rotor and holds it facing forward while leaving the treble horn free to rotate. This reduces low-frequency pulsing and Doppler movement while preserving the faster swirl of the horn.
- The result is a firmer, more stable bottom end, with most of the rotary movement concentrated in the mids and highs. It's especially useful on bass-heavy synth patches, where a fully rotating bass rotor can make the low end feel overly animated or unfocused.
- **Front Stop** – Forces the horn and bass rotor to settle in a forward-facing position whenever the rotary speed selector is moved to Stop. On a traditional cabinet, the rotors coast to a halt wherever inertia leaves them, so the stopped sound may vary slightly each time. Front Stop

makes the result consistent by placing both rotor openings in a predictable position.

Front Stop affects only the final resting position. It doesn't change the sound while the rotors are running in Chorale or Tremolo mode.

Horn Rotor Controls:

The Horn Rotor controls govern the rotating high-frequency horn.

- **Slow** – Sets the horn rotation speed in Chorale mode. Lower settings produce a gentle, gradual shimmer. Higher settings create more noticeable movement, even at the slow speed.
- **Fast** – Sets the horn rotation speed in Tremolo mode. Increasing it produces faster pitch movement and a more pronounced fluttering or swirling effect.
- **Accel** – Sets how long the horn takes to accelerate from Stop or Chorale speed to Tremolo speed. Lower settings reach the new speed quickly, while higher settings produce a slower, more dramatic ramp.
- **Decel** – Sets how long the horn takes to slow from Tremolo to Chorale or Stop. The horn assembly is relatively light, so it normally responds more quickly than the bass rotor. Separate acceleration and deceleration settings let you exaggerate or soften this mechanical behavior.

Bass Rotor Controls:

The Bass Rotor controls govern the rotating drum or baffle surrounding the cabinet's low-frequency speaker.

- **Slow** – Sets the bass rotor speed in Chorale mode.
- **Fast** – Sets the bass rotor speed in Tremolo mode.
- **Accel** – Sets how long the bass rotor takes to reach its faster speed.
- **Decel** – Sets how long the bass rotor takes to slow down.

Because the bass rotor represents a much heavier mechanical assembly, it normally accelerates and decelerates more slowly than the horn. Using different transition times for the two sections is an important part of the classic rotary-speaker sound. As the horn reaches speed first and the bass drum lingers behind it, the effect passes through shifting combinations of motion, pitch, and phase.

Microphones

The microphone controls determine how the virtual cabinet is captured. These settings can change the character of the effect almost as much as the rotor speeds themselves.

- **Spread** – Sets the stereo separation of the horn microphones. Low settings produce a narrow or nearly mono image. Higher settings move the microphones farther apart around the horn, creating a wider and more dramatic stereo sweep.
- Spread is the Rotary Speaker effect's hard-wired Effect Modulator destination. Positive modulation widens the image around the current setting, while negative modulation narrows it. Used subtly, this creates a gentle breathing motion in the stereo field. At higher amounts, the sound can swell from a focused center image into a broad, sweeping panorama.
- **Distance** – Sets how far the microphones are placed from the cabinet. Close settings produce stronger pulsing, sharper movement, and a more intense sense of the rotors passing the microphones. Greater distances smooth the motion and allow the cabinet tone to blend more naturally.
- **Bal** – Balances the microphone levels of the bass rotor and treble horn. Turn it toward the bass side for more low-frequency weight and throb, or toward the horn side for a brighter, more animated swirl.

Type

Selects dynamic or condenser microphones independently for the horn and bass rotor. Because the two rotor sections occupy very different frequency ranges, changing either microphone can significantly alter the cabinet's tonal balance.

- **Horn: Dynamic, Bass: Dynamic** – Uses dynamic microphones on both rotors. This produces a punchy, direct sound with strong highs and firm lows, similar to a common live-miking setup.
- **Horn: Condenser, Bass: Dynamic** – Uses a condenser microphone on the horn and a dynamic microphone on the bass rotor. The horn sounds smoother and less biting while retaining extended high-frequency detail, and the low end remains tight and punchy.
- **Horn: Dynamic, Bass: Condenser** – Uses a dynamic microphone on the horn and a condenser microphone on the bass rotor. This preserves the horn's direct, energetic character while extending the depth and fullness of the low frequencies.

- **Horn: Condenser, Bass: Condenser** – Uses condenser microphones on both rotors. This provides the broadest frequency response, with deeper lows and smoother, more extended highs. It generally produces the most polished and studio-like sound of the four combinations.

Tip: Dynamic microphones emphasize the physical pulse and bite of the effect, while condensers capture a broader, smoother frequency range. For gritty leads, start with Dynamic/Dynamic. For expansive pads and polished stereo textures, try Condenser/Condenser.

Placement

Selects whether the microphones are positioned near the closed front or open rear of the rotary cabinet.

Front – Places the microphones near the cabinet’s closed front panel. This produces a mellower, woodier sound with softer highs and a stronger sense of the cabinet enclosure.

Back – Places the microphones near the open rear of the cabinet. This produces a brighter, more open sound with greater clarity and a more immediate sense of rotor movement.

Tip: Front placement works well when the rotary effect feels too bright or aggressive. Back placement helps darker patches cut through and makes fast Tremolo movement more clearly audible.

Rotary Speed Selector

- **Chorale** – Runs the horn and bass rotor at their respective Slow settings. Chorale is useful for gentle animation, wide pads, strings, and sustained sounds that need movement without an obvious pulsing effect.
- **Stop** – Allows both rotors to slow to a complete stop. The sound still passes through the selected cabinet and microphone model, but without rotational movement.
- **Tremolo** – Runs both rotors at their respective Fast settings. Despite the name, this produces far more than ordinary tremolo. The combination of changing volume, frequency response, stereo position, and Doppler pitch shift creates the characteristic fast rotary swirl.

Moving between Chorale, Stop, and Tremolo doesn’t change the rotor speeds instantly. Each rotor transitions according to its own Accel and Decel settings, recreating the mismatched mechanical ramping of a physical cabinet.

Tip: For a spacious vintage pad, select Chorale, keep the rotor speeds near their center settings, use moderate Spread, and move the microphones slightly away from the cabinet.



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 reverberation 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 enhances synths, vocals, and pads by wrapping them in a glowing halo.

Cabinet Controls:

- **Predelay** – Time before the reverb kicks in. Short gives an immediate wash. Longer gives a clearer separation between dry sound and reverb bloom. This can be controlled by the Effect Modulator.
- **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. This can be controlled by the Effect Modulator.
- **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 give 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 create 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

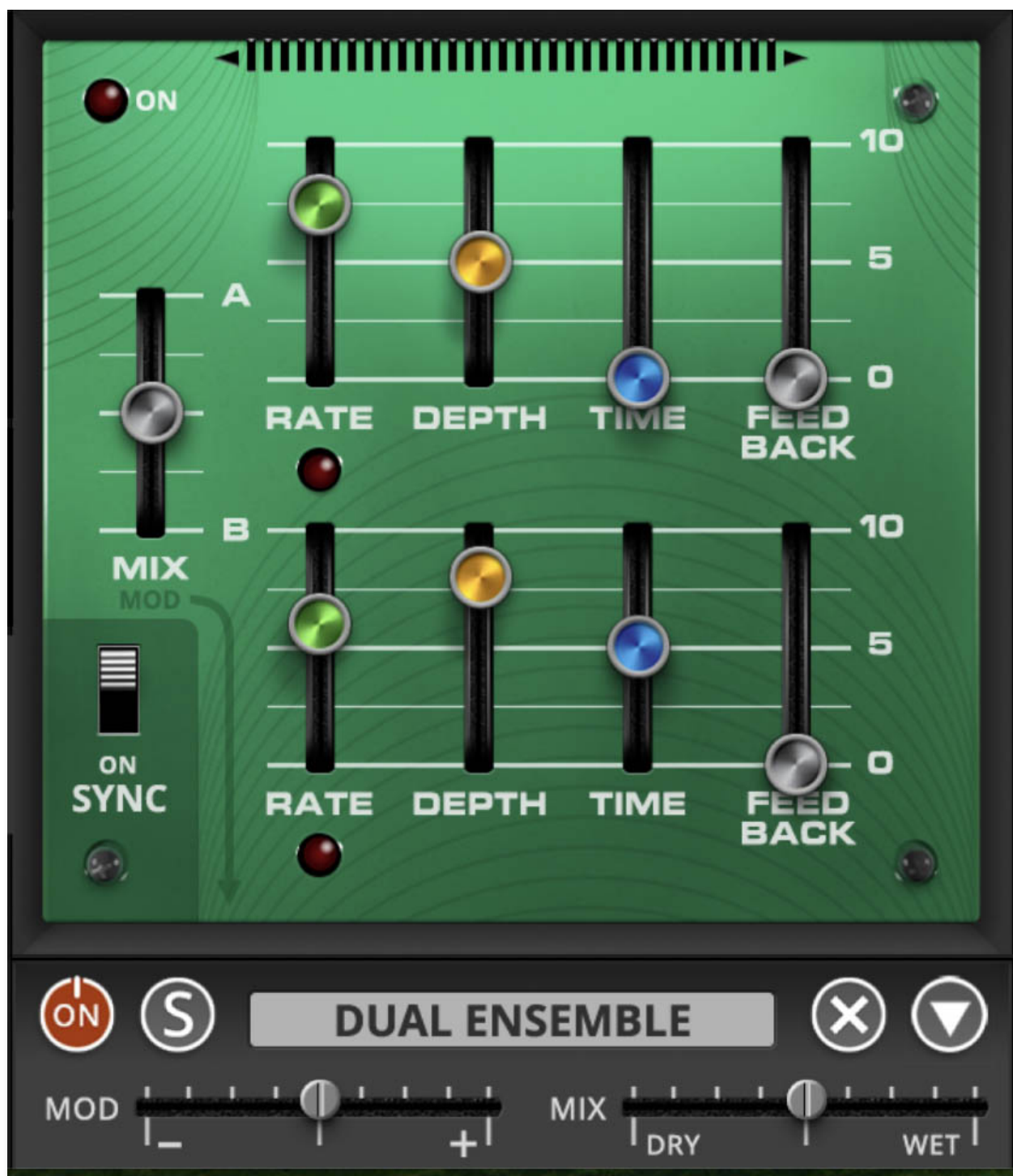
Sometimes perfection is the enemy of vibe. **Lo-Fi** is designed to rough up your sound with the kinds of imperfections that make old recordings feel warm and gritty. From dusty vinyl crackle to wobbly tape warble, this effect can take pristine synth tones and throw them straight into the basement of 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. This can be controlled by the Effect Modulator.
- **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,” a 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 adds gentle drift; fast adds warbly motion.
- **Depth** – Controls how far the pitch is detuned by the modulation. Low adds subtle thickening; high adds 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. This can be controlled by the Effect Modulator.

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. This can be controlled by the Effect Modulator.
- **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) create gentle smoothing. Higher ratios (12:1, 20:1) give firm control.
- **Input** – Adjusts how much signal is pushed into the compressor. More input equals 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 is 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.

Note: the Compressor is the one effects unit that does not utilize the Effect Modulator, and has no mapping applied to it.



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 is good for gradual sweeps; fast is good for rapid, shimmering motion. This can be controlled by the Effect Modulator.
- **Intensity** – Adjusts how much the LFO affects the delay time. Subtle settings are good for gentle movement; higher is good for 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 gives a smooth, subtle flange. High gives a resonant, metallic sweep with a 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 a bit 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 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. This can be controlled by the Effect Modulator.

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 with some movement, 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. This can be controlled by the Effect Modulator.

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 favor the left side; move towards “Right” to start/favor 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 to ON, and Smoothing to Soft. If you want a lead that jumps left-right on each note trigger, switch to Mode to 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 approximately 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 in multiple effect lanes. Try assigning different Pulser settings to the VCF and BPF with one running a short, percussive 8-step pattern, and the other a slower 16-step pulse. Set the VCF layer's playback to forward and the BPF 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.



Wide Phaser

The Wide Phaser is based on the same four-stage Phaser effect originally included with Memorymode v1. It delivers the deep, liquid sweep that made phasing one of the defining effects of the 1970s, then spreads the movement

across the stereo field. Instead of the entire sound rising and falling through the same phase cycle, the left and right channels sweep at offset positions. The result is broad, fluid motion that seems to roll around the sound rather than simply pass through it.

At restrained settings, it adds a silky shimmer and gentle animation to pads, strings, and sustained chords. Increase the Depth and the sound becomes more hollow, vocal, and dramatically psychedelic. It's particularly well suited to Memorymode 2's thick three-oscillator patches.

- **Sync** – Locks the phaser's modulation rate to the current tempo. In the standalone version, it follows Memorymode 2's internal tempo. When used as a plug-in, it follows the host DAW's project tempo. Turn Sync off for a freely adjustable sweep.
- **Rate** – Sets the speed of the phaser sweep. Low settings create slow, spacious movement that flows across sustained sounds. Higher settings produce faster, more animated motion. When Sync is enabled, the knob selects rhythmic note divisions rather than a freely running speed.
- **Depth** – Sets how far the phaser sweeps through its range. Low settings add subtle width and tonal movement. Higher settings produce deeper notches, stronger coloration, and the full swirling character of the effect. Depth is the Wide Phaser's hard-wired Effect Modulator destination. Subtle modulation can make the phaser gently breathe. More extreme settings create a deep, dramatic sweep.

Tip: For a wide vintage pad, set Rate slow, keep Depth around the middle of its range, and blend in enough wet signal to hear the stereo motion without washing out the original tone. For more psychedelic textures, increase Depth, slow the Rate, and use the Effect Modulator to make the sweep gradually expand and recede.

Rhythmic Tip: Enable Sync and try quarter-note or half-note sweeps on sustained chords. The stereo phase movement will rise and fall with the track instead of drifting freely, which can add a strong pulse without using another arpeggiator, gate, or tremolo. Note that changing the Rate while in Sync is on will result in a low-level thump as the phaser resets to match the new rate.

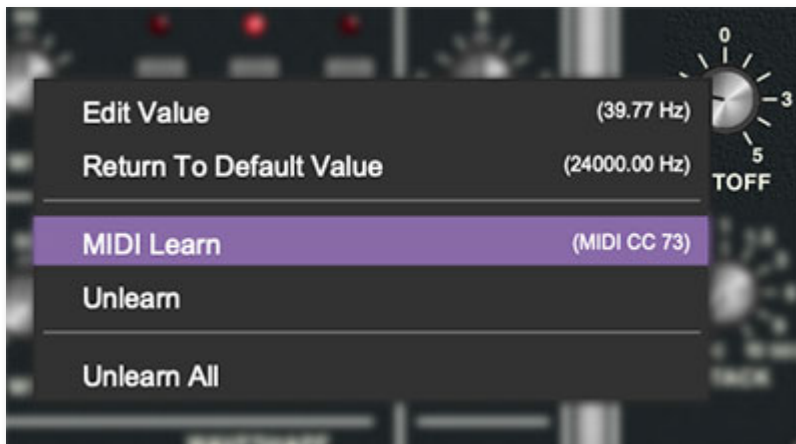
MIDI Controllers Setup and The MIDI Tab

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. First we'll show how to assign an external hardware controller to a Memorymode control, then we'll go over all parameters in the MIDI Tab.

Basic External Hardware Control Assignment

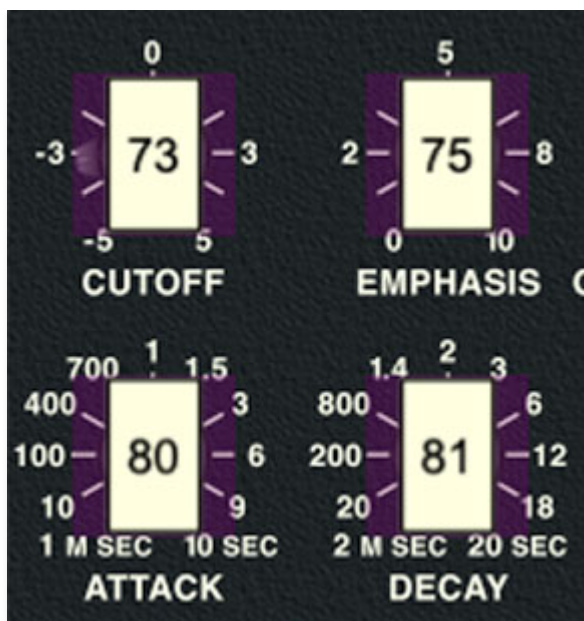
This is the quick, "I just want to assign a hardware control right now!," section. We recommend reading this entire section to best take advantage of Memorymode's MIDI control assignments.

In this example, we'll assign a hardware slider control to the Voltage Controlled Filter *Cutoff* knob.



Begin by right-clicking on the *Cutoff* knob in the Voltage Controlled Filter section and selecting *MIDI Learn*. A transparent purple overlay appears over the knob indicating that it's in learn mode. Now move the desired hardware control device. The purple overlay disappears and the hardware control will move the onscreen knob. If you change your mind (or accidentally select the wrong control), learn mode can be cancelled by right-clicking and selecting *Stop Learning*.

This is the basic procedure for assigning hardware controllers to almost any Memorymode control.



When in MIDI learn mode, any previously assigned controller numbers will show in squares. These indicate the MIDI continuous controller number of the assigned hardware control (these are also displayed in the *MIDI* library tab at left).

Once a MIDI controller has been assigned, in addition to real-time control of a Memorymode 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 top toolbar.

MIDI Learn					
Name	Type	Value	Min	Max	Curve
Filter - Cutoff	CC	73 (S...			
Filter - Emphasis	CC	75 (S...			
Filter - Contour Amount	CC	79 (S...			
Filter - Keyboard Track	CC	72 (S...			
Filter - Attack Time	CC	80 (G...			
Filter - Decay Time	CC	81 (G...			

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 Memorymode 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 knobs, 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. Combined with the MIDI Tab's controller range and inversion controls explained below, this can be a very powerful and customizable way to control parameters.

MIDI Tab Columns

Name- Displays the name of the parameter being controlled.

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

- **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 wonky old Tascam and Fostex reel-to-reel monsters, but it's useful if your MIDI controller has tape-style transport control buttons.
- **Pressure**- Most modern 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. Note that Memorymode only responds to mono aftertouch.
- **Key**- This allows keys of the computer QWERTY keyboard to act as button controls for Memorymode'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.

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.

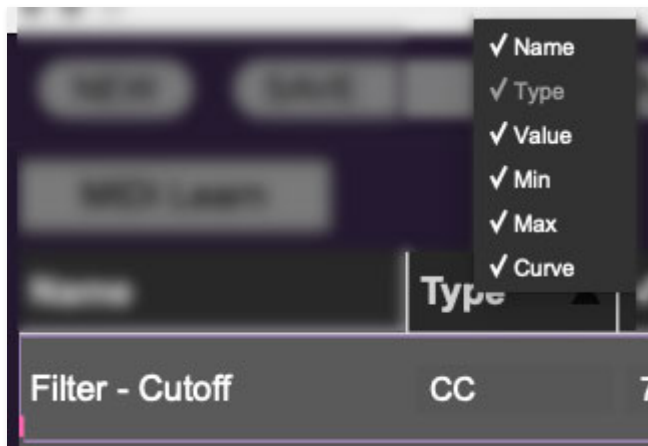
Max- Sets a limit on the highest value any automation control can set a mapped controller to. This actually recalibrates the range of the automation controller to the remaining parameter range.

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

Super Cool Min-Max Tricks- Not only can parameter ranges be limited via the *Min* and *Max* knobs, mapped control destinations can be completely inverted by setting the *Min* knob all the way up and the *Max* knob all the way down (or anywhere in between).

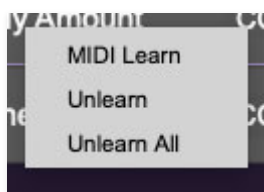
Limiting and inverting parameter ranges with the *Min/Max* controls is particularly useful when multiplexing a single hardware control to operate multiple parameters. Because *Min/Max*, range inversion and *Curve* settings can be separately set for each onscreen control, the customization options are super flexible.

MIDI Tab Column Configuration Right-Click Menu



Right-clicking anywhere in the top row (*Name*, *Type*, *Value*, etc.) displays the column configuration menu. Checking/unchecking these allows hiding and display of each column. This has no effect on assignments.

MIDI Tab Parameters Right-Click



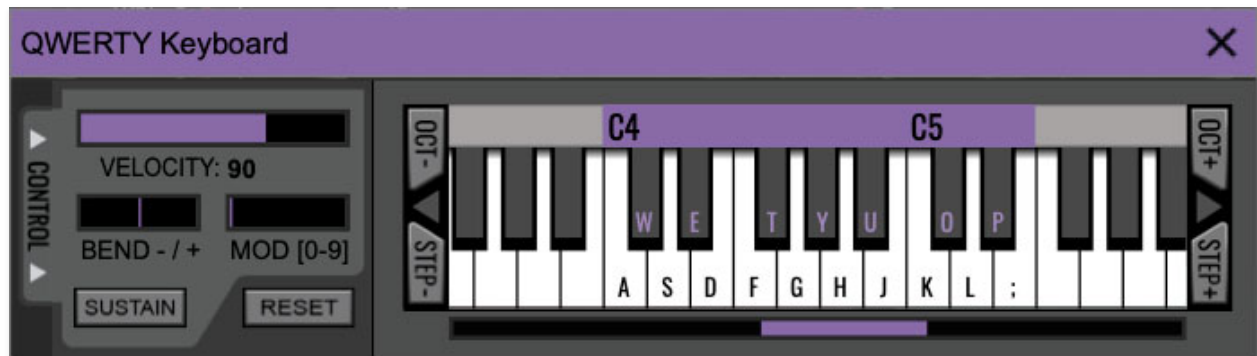
Right-clicking on an assigned parameter opens the menu above.

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. Memorymode will display a warning dialog prior to deletion in order to thwart potential unlearn-related disasters.

QWERTY Musical Typing Keyboard (MTK)



If you don't have a MIDI keyboard attached to your computer, the standard QWERTY computer keyboard can be used to play notes - we're pretty sure you've got one of those! We'll refer to this as the "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, simply 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 Eight Voice 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, bend, mod, and sustain control parameters. Hiding the control view makes more space available for the keyboard.

Set Note Velocity- Move the purple *Velocity* bar to adjust the output velocity of notes.

Pitch Bend- To pitch a note or notes, press the + or - computer keyboard keys while playing a note. Bend depth is determined by the *Bend Depth* knob at the left of Memorymode'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.

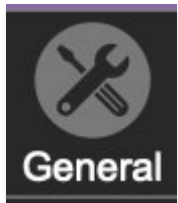
Sustain- The *Sustain* button mimics the functionality of a standard sustain pedal. Click the [TAB] key to engage sustain, or [SHIFT]+[TAB] to lock it. The *Sustain* button can also be engaged by mouse clicking it.

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 use most is on the front panel, where it should be!

General



- **Add Undo For Control Changes With The Mouse**- Enabling this allows undo of knob, switch, and button adjustments. You'll want this on if you want the ability to undo all aspects of patch editing and programming.
- **Load Last Preset On Startup (Standalone Only)**- Automatically loads the last preset used when Memorymode standalone version is started.
- **Create A Log File For Usage**- This creates a text doc of all of Memorymode'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 Memorymode log file docs.
- **Preset Folder**- Displays the current location of Memorymode'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 Memorymode's user interface settings.

- **Reset To Default Window Size-** Resets the Memorymode 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.
- **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 a Suzuki RE5 motorcycle fan.
- **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 button down.
- **Show Tooltips When Automating Controls-** Enabling this causes control tooltip flags to show when automation data is being received.
- **MIDI Program Changes Should Change Current Preset-** Allows MIDI program change messages to change Memorymode 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 off.

- **Remember MIDI Mappings For New Plug-in Instances**- When enabled, Memorymode remembers all MIDI Tab controller settings.



Account

Settings for your personal login information and account.

- **Email**- Displays the email address of the current login.
- **Update Login Info**- Clicking this opens the same email and password login screen you'll see when initially launching Memorymode and allows changes to be made.

View Account Settings- This opens your personal account page on the Cherry Audio Store website containing information about modules purchased and more.

Software Update

- We often fix bugs and make improvements; below are options defining how Memorymode handles updates. Click **Check For Update** to see if an updated version of Memorymode is available.

Status:

- **Automatically Install Updates**- Updates are automatically downloaded and installed.
- **Ask Before Installing Updates**- By default, Memorymode automatically downloads new versions of modules when available. Checking this box defeats automatic updates and will ask if you'd like to install updates when they become available.

We'll never make changes that can potentially "break" existing patches but we recommend enabling *Ask Before Installing Updates* if you're using Memorymode for live performances or other "mission critical" situations.

- **Never Install Updates**- Memorymode never automatically installs updates.
- **Show Updates On Toolbar**- Checking this will display an icon in the toolbar next to the logo letting you know there's an update available.

Show Notifications From Cherry Audio- We occasionally will fire off in-app advertisements; disabling this checkbox will hide them. We hate repetitive, annoying ads as much as you, so we won't use this feature too often. When we do, it'll be for something super cool (like a killer sale), so we recommend leaving it on.



Audio/MIDI

Settings for audio and MIDI hardware input and output. **This tab is only visible in the standalone version of Memorymode.**

- **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.
- **Sample Rate**- This sets Memorymode's global sample rate. Lower sample rates offer better performance, but if you have a fast computer, high sample rates may offer slightly improved fidelity.
- **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 gapping or crackling noise.
- **Active MIDI Inputs**- Displays all available MIDI input sources, i.e. keyboards, pad controls, MIDI knob/fader control surfaces, etc. Check boxes to enable one or more devices. If you're using a fader controller with touch-sensitive sliders (like a Mackie Control, for example) and

Memorymode plays weirdo notes when you touch the faders, uncheck it [here](#) to make that stop.

Importing Memorymode v1 User Presets

The import feature described here is intended for your own User Presets created or saved in Memorymode v1.

The preset files for Memorymode v1 (*.memorymodepreset) are different files and associations than those for v2 (*.memorymode2preset).

Memorymode 2 does not automatically import the presets from v1. Instead, we have already included the original Preset Collections from v1 as the "Legacy Collection" and those under the names of the original sound designers (example: "Huston Singletary Collection"), ready to use in Memorymode 2.

Memorymode 2 also includes a refined set of the original 100 Memorymoog factory presets, imported directly from a cassette tape program backup to ensure unprecedented accuracy compared to the hardware.

Memorymode 2 presets are not backward compatible with v1.

Memorymode 2 can translate these older presets automatically, carrying over the original synth settings and recreating compatible effects in the new Effects chains. The integrated effects used in Memorymode v1 are assigned to their corresponding Memorymode 2 effect pedals wherever possible. Ensemble, Echo, and Reverb settings are transferred to their Memorymode 2 equivalents, while the original Phaser is converted to the new Wide Phaser. MIDI mapping associated with v1 presets is not imported.

Importing Memorymode v1 User Presets

1. Open Memorymode v1 and locate the User Preset you want to import.
2. **Right-click the preset name** and choose the command that reveals or locates the preset file on your computer. This opens the folder containing the original preset.
3. Open Memorymode 2.
4. Drag the Memorymode v1 preset file from its folder directly onto the Memorymode 2 interface. You may select more than one preset at a time. Do not zip them.
5. Memorymode 2 converts the preset and loads the translated sound using the corresponding Memorymode 2 parameters and effects.

You can repeat the process for any other Memorymode v1 User Presets you want to bring forward.

Memorymode v1 User Preset Locations

On **macOS**, Memorymode v1 User Presets are normally stored here:

/Users/(username)/Library/Application
Support/CherryAudio/Memorymode/Presets/User Presets

On **Windows**, Cherry Audio supplied the following location:

C:\Users\((username))\AppData\Roaming\CherryAudio\Memorymode
V2\Presets\User Presets

Why an Imported Preset May Sound Slightly Different

Our latest analysis and analog modeling techniques have led to a complete rearchitecture of Memorymode 2, making it the most accurate emulation of the Memorymoog hardware synthesizer available. We understand that compatibility with the original version of Memorymode is important to our users. Memorymode 2 is designed to translate presets from Memorymode v1 as closely as possible, although an imported preset may not sound exactly the same. This is due to significant improvements in the analog modeling, including enhancements to the filter model, envelope curves, and effects. As a result, identical parameter values may sometimes yield slightly different sounds.

In most cases, the imported preset should serve as an excellent starting point. You may need to make small adjustments to settings such as **filter cutoff, emphasis, contour amount, envelope timing, effect levels, and master output volume** to better match the original sound.

The advantage is that your favorite Memorymode v1 sounds don't have to be left behind just because the instrument has advanced. Once imported, these sounds can take advantage of Memorymode 2's dual-layer architecture, expanded modulation, Motion Controls, Touch Animator, Multi-Voice features, and updated effects.

Importing Memorymoog SysEx Data

Memorymode 2 can import and export compatible Memorymoog SysEx data, making it possible to bring vintage hardware programs, cartridge dumps, third-party libraries, and user-created Memorymoog sounds into the software instrument. The original factory Memorymoog didn't support SysEx transfer, however, so this capability applies to instruments fitted with the **Lintronics Advanced Memorymoog (LAMM) upgrade**, which added expanded MIDI

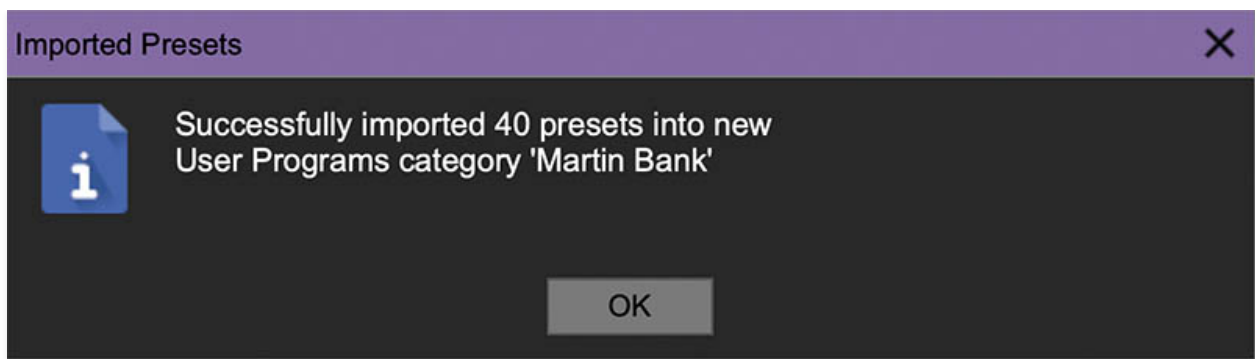
and SysEx functionality. This provides a useful bridge between surviving upgraded Memorymoog hardware and Memorymode 2, allowing decades of stored sounds to continue living in a modern software environment. More information about the Lintronics Memorymoog upgrades is available at lintronics.de/lamm.html.

Please note that Memorymode 2 doesn't export SysEx data back to LAMM-upgraded Memorymoog hardware. This is a one-way compatibility feature: Memorymode 2 can interpret the older LAMM SysEx format and translate compatible Memorymoog program data into the software instrument, but Memorymode 2 presets can contain many parameters and features that have no equivalent in the hardware, including dual layers, expanded modulation, modern voice modes, sequencing, and effects. Because that information can't be represented faithfully in the LAMM Memorymoog format, Memorymode 2 doesn't provide reverse SysEx export to the hardware.

SysEx, short for **System Exclusive**, is a type of MIDI message used to send manufacturer-specific data between instruments, computers, librarians, and storage utilities. For the original Memorymoog, SysEx made it possible to save and transfer programs digitally rather than manually recording every parameter setting, a noble pursuit best left to monks, archivists, and people with unusually forgiving wrists.

- To import a SysEx file, drag and drop a compatible .syx file anywhere onto the Memorymode 2 interface.
- If the file contains valid Memorymoog program data, the instrument recognizes it and translates the sound into its native preset structure. Depending on the file, you may be importing a single program or an entire bank.
- Once imported, the sounds appear in the Preset Browser, where they can be loaded, played, edited, saved, favorited, and organized like any other Memorymode 2 preset.

Because these sounds were created for the original hardware, some may sound great immediately, while others may benefit from level adjustments, effects, filter refinement, or updated performance controls. Once imported, they can be layered, split across the keyboard, processed with effects, enhanced with new modulation, animated with the Touch Animator, routed through different filter modes, assigned to MIDI or MPE control, and reshaped with the same tools available to any Memorymode 2 preset.

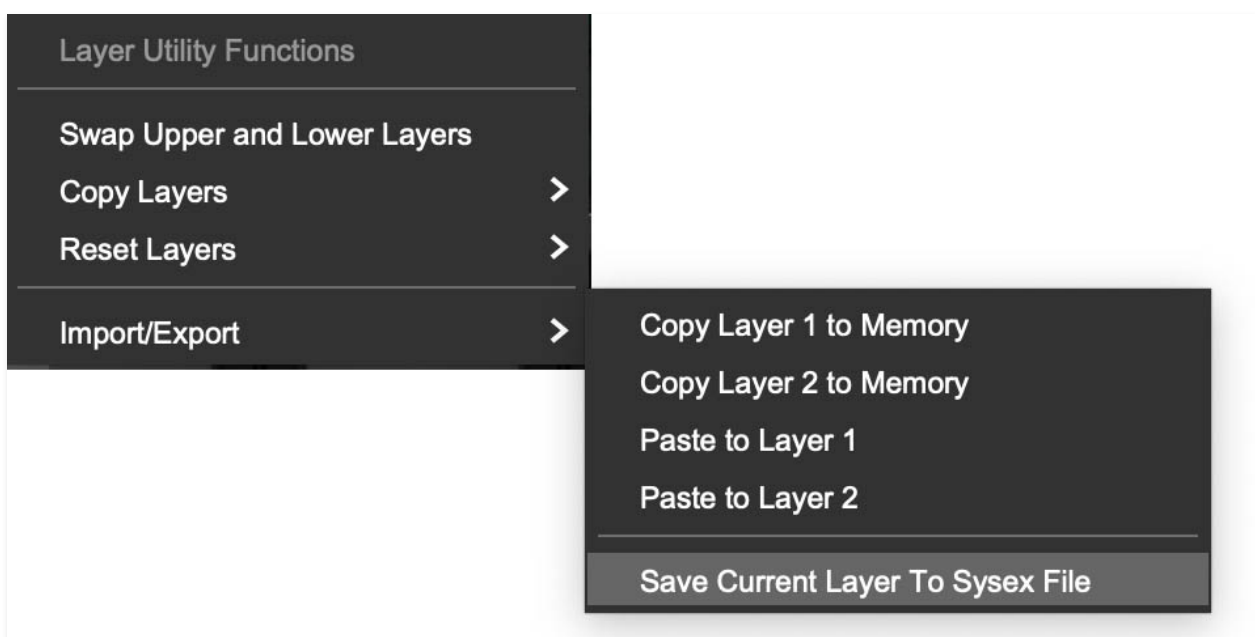


Working With Imported Legacy Sounds

Imported Memorymoog sounds are a great way to explore the instrument's history, but they're also useful for modern sound design. Try loading an imported patch, then making one focused change at a time:

- Add a second layer for width or contrast.
- Try a different filter mode.
- Use Layer effects to modernize the sound without changing its core character.
- Copy the imported layer, paste it to Lower layer and modify the copy.
- Use the Touch Animator to animate a formerly static patch.

The best part is that you don't have to choose between preservation and expansion. Memorymode 2 lets you bring original Memorymoog sounds forward, then decide whether to leave them classic, tweak them to your taste, or use them as the basis for entirely new sounds of your own.



Importing Original Memorymoog Cassette WAV Data

Long before synthesizers routinely exchanged patch data over MIDI, the original Memorymoog could save and load program memory using an ordinary audio cassette recorder. The synth converted its program data into an audio signal that could be recorded to tape, then decoded that signal when the recording was played back.

Memorymode 2 can import compatible Memorymoog cassette-data recordings that have been transferred to WAV files, allowing original hardware backups and archived sound libraries to be recovered directly in the software instrument. A complete Memorymoog cassette dump contains 100 presets.

The recording must be an uncompressed .wav file. Memorymode 2 accepts mono or stereo files at any sample rate.

To import a cassette-data backup, simply drag the WAV file onto the Memorymode 2 interface. Memorymode 2 analyzes the recording and, if the data is successfully decoded, imports the stored Memorymoog programs. If the recording is incomplete, damaged, or can't be decoded reliably, an error message is displayed.

This can be particularly valuable for musicians and collectors with old cassette backups containing sounds created decades ago. Once the cassette audio has been preserved as a WAV file, there's no need to rely on the original tape transport for subsequent imports, and digital files are considerably less susceptible to the level, alignment, and mechanical problems that made cassette-based data storage such an adventure in the first place.