USER MANUAL

_SYNTHX V

ARTURIA

_The sound explorers

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Thank you for purchasing Synthx V!

This manual covers the features and operation of Arturia's **Synthx V**, an emulation of the rare and revered Elka Synthex programmable polyphonic synthesizer.

Be sure to register your software as soon as possible! When you purchased Synthx V, a serial number and an unlock code were sent to you by e-mail. These are required during the online registration process.

Special Messages

Specifications Subject to Change:

The information contained in this manual is believed to be correct at the time of printing. However, Arturia reserves the right to change or modify any of the specifications without notice or obligation to update the hardware or software that has been purchased.

IMPORTANT:

The software, when used in combination with an amplifier, headphones or speakers, may be able to produce sound levels that could cause permanent hearing loss. DO NOT operate for long periods of time at a high level or at a level that is uncomfortable.

If you encounter any hearing loss or ringing in the ears, you should consult an audiologist.

EPILEPSY WARNING – please read before using Synthx V

Some people are susceptible to epileptic seizures or loss of consciousness when exposed to certain flashing lights or light patterns in everyday life. This may happen even if the person has no medical history of epilepsy or has never had any epileptic seizures. If you or anyone in your family has ever had symptoms related to epilepsy (seizures or loss of consciousness) when exposed to flashing lights, consult your doctor prior to using this software.

Discontinue use and consult your doctor *immediately* if you experience any of the following symptoms while using this software: dizziness, blurred vision, eye or muscle twitches, loss of consciousness, disorientation, or any involuntary movement or convulsion.

Precautions to take during use

- Do not stand too close to the screen
- Sit a good distance away from the screen
- Avoid using if you are tired or have not had much sleep
- Make sure that the room is well lit
- Rest for at least 10 to 15 minutes per hour of use

Introduction

Congratulations on your purchase of Arturia Synthx V!

As with all of our products, we believe in offering the best of both worlds in a single package and letting you choose how you want to use it. Synthx V offers all of the sound and features of the Synthex, a classic polyphonic synthesizer designed by Mario Maggi and produced by the Italian organ company Elka from 1981 through 1985. Though underrated at the time, in some ways it outperformed its better-known American and Japanese competitors.

Synthx V provides you with all of the sound and features of the original, with added benefits such as DAW integration and more polyphonic voices. We can't wait to hear the sonic adventures you will take with it!

Peace, love, and music,

The Arturia team

Be sure to visit the www.arturia.com website for information about all of our other great hardware and software instruments. They have become indispensable, inspiring tools for musicians around the world.

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1. WELCOME TO SYNTHX V!

Thank you for purchasing Arturia Synthx V. We believe it is the best sounding, most musical, and most playable emulation of the Elka Synthex available. The Synthex was a programmable, 8-voice polyphonic synthesizer made in Italy from 1981 through 1985 and designed by Mario Maggi. Notably, it was the first polysynth to make digitally controlled oscillators (DCOs) sound *good*. The tuning stability of the DCOs made it a desirable outlier among its American (Prophet, OB) and Japanese (Jupiter) contemporaries. Today, it is considered one of the best analog polysynths ever made. Only 1,850 units were produced, so a specimen in good playing condition is rare and expensive.

Fortunately, you don't need to go through this trouble. If you've used our products before, you know we take great pride in recreating the sound and feel of the original instruments. Then, we top it off with 21st-century features not imaginable in the era of the originals, giving new life to vintage sounds in a modern music production environment. With Synthx V, we were especially focused on enhancements we like to believe Mr. Maggi would have loved to put in the original if the resources had been available at the time.

1.1. The original Elka Synthex

Photo by Michaela Rae Childs

The Synthex is the product of collaboration between Italian organ company Elka-Orla and an independent synth designer named Mario Maggi. Maggi had previously created the MCS7O, a monophonic instrument that is arguably the first portable performance synth with programmable preset memory. Since the MCS7O was a custom project and never commercially produced, the Oberheim OB-1 usually takes this credit. In 2020, vintage synth enthusiasts Marco Molendi and Andrea Manuelli restored what is believed to be the only surviving MCS7O in the world.

Maggi wanted to elevate the MCS7O concept into polyphonic territory, but further development would require investment. Elka (and other Italian companies such as Siel and Crumar) had provided performing keyboardists with string machines and "ensemble" keyboards that combined strings with brass, organ, choirs, and other sounds, but these were not full-blown *synthesizers*, which professional keyboardists rapidly started to seek out beginning with the Prophet-5 in 1977.

Elka were certainly aware of the trend and wanted a share of this growing market. They were initially skeptical of the Synthex design – their tastes being rooted in the tradition of console organs that resided in living rooms and hotel lounges – but were largely convinced by one Paul Kevin Wiffen. Familiar with the global synth market, Wiffen basically fell in love with the Synthex at first listen. He became its only international demonstrator and primary product evangelist, and has since enjoyed a storied career in the musical instrument industry and as a film director and composer.

1.1.1. Why the Synthex was different

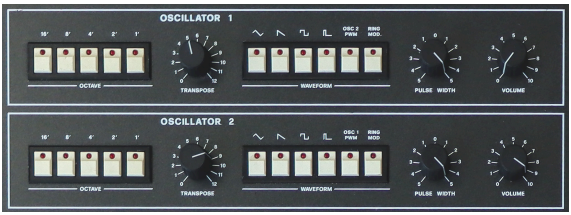


Photo by Michaela Rae Childs

The Synthex used DCOs (digitally controlled oscillators) instead of VCOs (voltage controlled oscillators). Mario Maggi had found a way to make them sound as musical as VCOs but without the oscillators drifting out of tune in response to temperature or humidity changes – which was a real problem for musicians touring with 1980s-era analog synths.

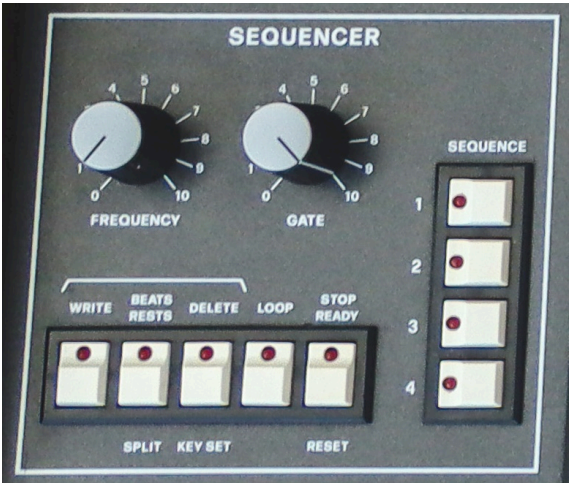
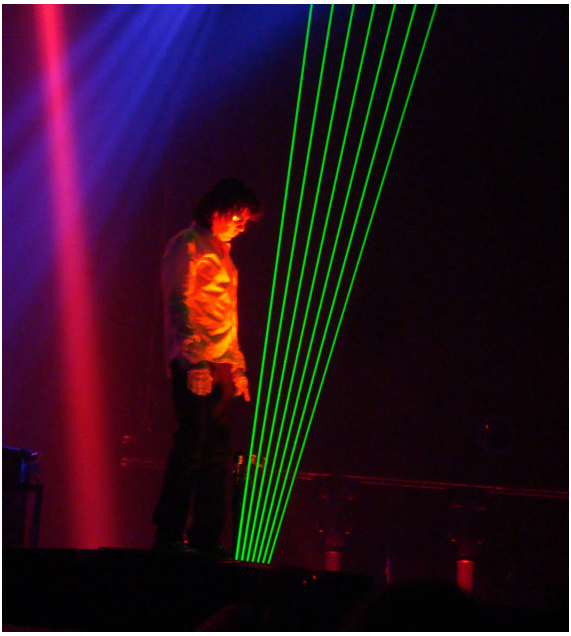


Photo by Michaela Rae Childs

The Synthex also featured a 4-track programmable sequencer that recorded in step or real-time modes. Since the Synthex was bi-timbral (2-part multitimbral) and could split or layer its keyboard, a player could sequence four musical passages divided between two sounds, up to the 8-voice limit. Any other polyphonic synth of the era would have needed an external sequencer (such as the Oberheim DSX or Roland MicroComposer) for this amount of compositional power.

The two bi-timbral parts routed to separate audio outputs, enabling creative stereo options for recording and live performance. Early units lacked MIDI but after MIDI debuted in 1983, a retrofit became available. Instead of pitch and modulation wheels, a joystick bent the pitch along its Y-axis and sent modulation to the VCA or filter in either direction of the X-axis.

1.1.2. Words from Wiffen



Jean Michel Jarre and his Laserharp, for which the Synthex provided the sound. Photo by Morgantup via Wikimedia commons.

Original Synthex demonstrator, music journalist, and keyboard guru to the stars Paul Wiffen was kind enough to offer some history for this introduction.

"I sold most Synthex units personally because music stores didn't trust the Elka brand," he recalls. "Geoff Downes and John Wetton of Asia bought directly from me while I was working on the band's third album. Jean Michel Jarre asked me what I thought was the most exciting synth when I interviewed him about his album *Zoolook*. I had the French distributor send him a Synthex, and when *Rendezvous* came out it was all over the record, including for the Laserharp, which he introduced at the Houston concert for NASA in 1986. I used my own on Stevie Wonder's Grammy Award-winning single 'Skeletons.' When we toured Europe, Elka presented Stevie with the final Synthex ever made, which he still has."

Want to know more? In December 1999, Wiffen published an account of his Synthex journey in the highly respected British gear magazine *Sound on Sound*, which you can read here.

> Jarre's Laserharp was an optical controller that triggered notes when his hand passed through beams of light. In Synthx V, the Preset "4 6 Ring Mod" from the Vintage Factory bank duplicates the sound he used.

1.2. Why Synthx V?

The Synthex has been on our minds for some time. As mentioned above, hardware units are hard to find, and we wanted you to be able enjoy its unique sound and features in your musical explorations. We also wanted to improve upon it in ways that are only possible in software, but in ways that made sense – keeping Synthx V true to the original in terms of what the experience of using it *feels* like. Importantly, we wanted to capture the coolness of its dual-layer setup and stereo implementation, so Synthx V can spread not only its layers but its individual voices across the stereo field. Finally, the Elka Synthex was one of the only classics not yet represented in our V Collection of virtual instruments, so it was definitely on our bucket list!

1.2.1. Synthx V feature summary

- Up to 16 voices of polyphony (8 voices per layer), plus monophonic mode
- Two oscillators and multimode filter as on the original
- Hard oscillator sync
- Ring modulation of oscillator 1 by oscillator 2, or vice-versa
- Faithfully modeled chorus with three intensity choices, as on the original
- Dual-layer architecture with single, duo, and stereo-linked modes
- Stereo-linked mode sends identical layers to either channel for thick sound
- Unison mode per layer with 5 voices allocated to unison
- LFO per layer plus master LFO controlled by mod wheel
- All LFOs can be tempo-synced
- Multi-Arp with four tracks, 30 patterns (plus user patterns), and up to 16 steps
- Each Multi-Arp part can play layer A, B, or both, for complex polyrhythms and generative music
- Multi-Arp outputs MIDI data for use with other instruments
- 17 studio-quality V Collection effects
- Up to four effects at once with serial routing
- New drag-and-drop modulation assignment for quick setups
- Three modulation slots with four source choices each:
    - ADSR envelope
    - Our signature Function generator
    - Random value generator
    - Modulation step sequencer
- Six MIDI modulation sources:
    - Mod wheel
    - Keyboard tracking
    - Velocity
    - Release velocity*
    - Aftertouch*
    - MPE Slide (Y-axis finger position on key)*
- Full support for MIDI Polyphonic Expression (MPE)*
- Over 240 Presets from the synth world's top sound designers

* Not all MIDI controllers can sense release velocity and/or aftertouch. Likewise, only select controllers support MPE and gestures such as Slide. Check the specifications of your MIDI device, and see the section in this manual on MPE [p.103] for more information.

2. ACTIVATION AND FIRST START

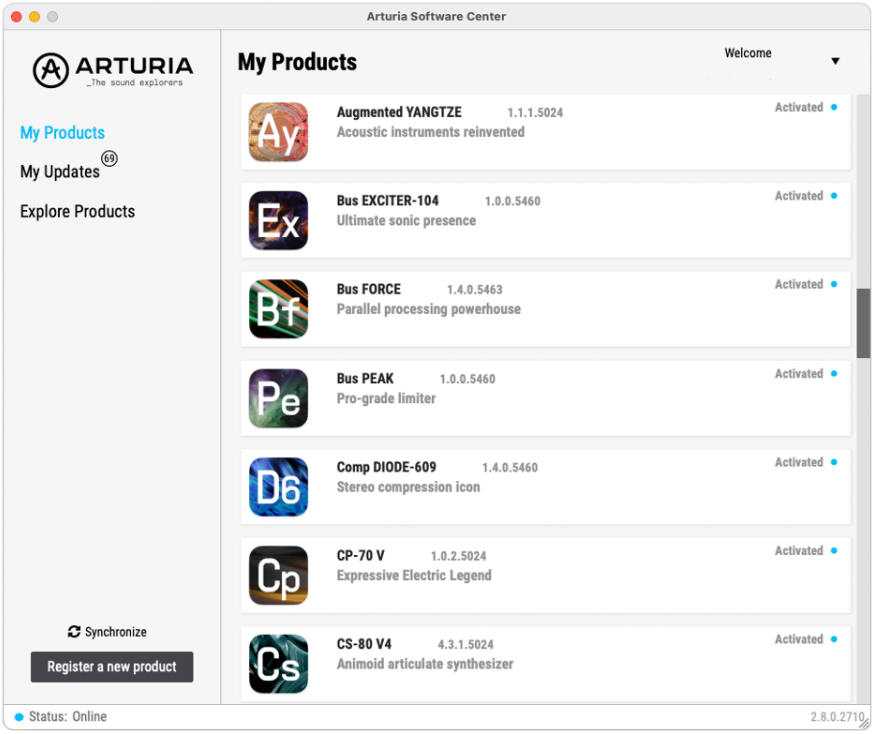
2.1. Register, activate, and install Synthx V

Synthx V works on computers equipped with Windows 10 or later and macOS 11 or later. You can use it as a stand-alone instrument or as a plug-in for your favorite DAW (Digital Audio Workstation) in Audio Units, AAX, VST2, or VST3 format.

Before you install or register the software, you'll need to create a My Arturia account here, using an email address and password of your choice: https://www.arturia.com/createanaccount/

While it's possible to handle registration, activation, and other tasks manually online, it's far simpler to download and use the Arturia Software Center app, which can be found here: https://www.arturia.com/support/downloads&manuals

You'll enter your email address and password to set up Arturia Software Center, which acts as a central location for all of your Arturia software registrations and activations. It also helps you install and update your software by keeping track of current versions.



The Arturia Software Center

You can register, activate, and install your product inside Arturia Software Center by pressing the **Register a new product** button, and clicking the boxes to **Activate** and then **Install** your software. The registration process will require you to enter the serial number and the unlock code you received when you bought your software.

You can also do this online by logging into your account and then following the instructions here: http://www.arturia.com/register

Once you've registered, activated, and installed Synthx V, it's time to get it to talk to your computer.

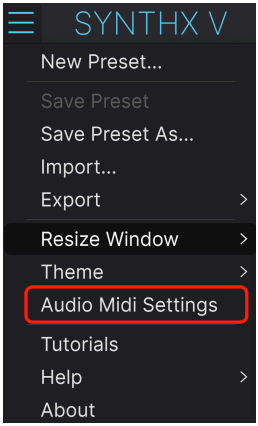
2.2. Initial setup for stand-alone use

If you would like to use Synthx V in standalone mode, you will need to ensure that its MIDI input/output and audio outputs are being routed properly to and from the software. You'll generally only need to do this once, unless you change your MIDI controller or audio/MIDI interface. The setup process is the same on both Windows and macOS.

> This section only applies to those of you who plan to use Synthx V in stand-alone mode. If you are only going to use Synthx V as a plug-in inside a host DAW or other music software, you can safely ignore this section - your host music software handles these settings.

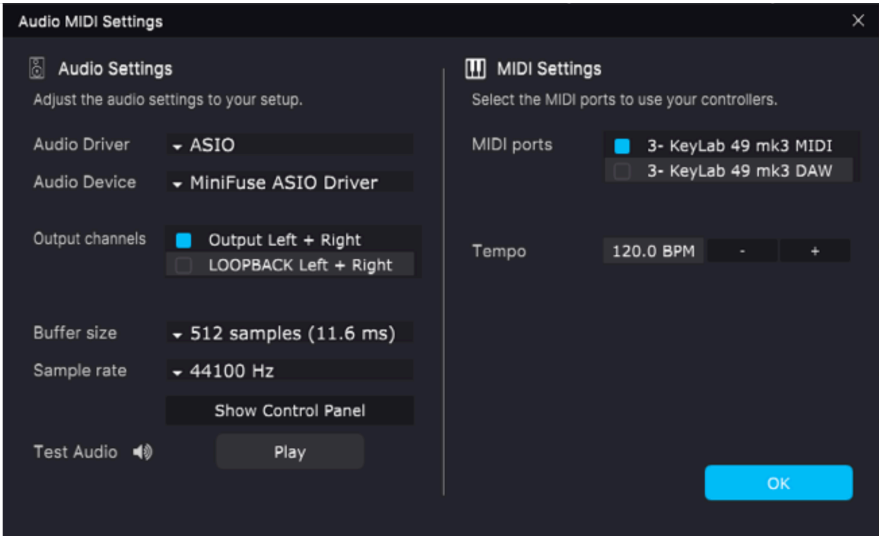
2.2.1. Audio and MIDI settings: Windows

At the top left of the Synthx V application is a pull-down menu. It contains various setup options.



Synthx V Main Menu

Click on **Audio Midi Settings** to open the following window. This works in the same way on both Windows and macOS, although the names of the devices available to you will depend on the hardware you are using. Remember, this menu option is only available (and needed) when running Synthx V in stand-alone mode.



Audio and MIDI settings for Windows

Starting from the top, you have the following options:

- **Driver:** Selects which audio driver will handle playback of Synthx V. This can be your computer's internal driver, a generic ASIO driver, or an external soundcard or interface driver. The name of your hardware interface(s) may appear in the field below, depending on your selection.
- **Device** Selects the audio hardware through which you will hear Synthx V.
- **Output Channels** lets you select which of the available outputs will be used to route audio out. If you only have two outputs, this selection box will not be shown. If you have more than two, you can select a specific pair of outputs.
- The **Buffer Size** menu lets you select the size of the audio buffer your computer uses to calculate sound. The latency in milliseconds is displayed after the buffer size setting.

> A smaller buffer means lower latency, i.e. a shorter delay between pressing a key and hearing the note, but loads your CPU more heavily and can cause pops or clicks. A larger buffer means a lower CPU load, as the computer has more time to think, but can result in a noticeable delay between playing a note and hearing it. A fast, modern computer should easily be able to operate at a buffer size of 256 or even 128 samples without clicks. If you still hear clicks, enlarge the buffer size until they stop.

- The **Sample Rate** menu lets you set the sample rate at which audio is sent out of the instrument.

> The options here will depend on what your audio device can support; nearly every device can operate at 44.1 kHz or 48 kHz, which will be perfectly fine for most applications. If you have a specific need to use a higher sample rate, up to 96 kHz, Synthx V will happily support that.

- The **Show Control Panel** button will jump to the system control panel for whatever audio device is selected.

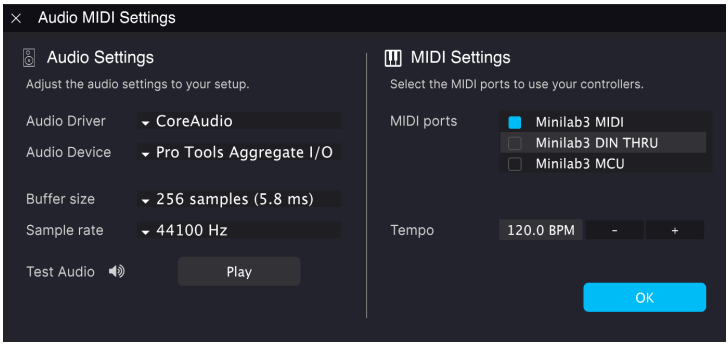
> Note that this button is only available in the Windows version.

- **Test Tone** sends a short test tone when you click the **Play** button, to help you troubleshoot audio issues. You can use this feature to confirm that the instrument is routed correctly through your audio interface and that audio is playing back where you expect to hear it (your speakers or headphones, for example).
- The **MIDI Devices** area will display any MIDI devices you have connected to your computer (if any). Click the check box to accept MIDI from the device(s) you want to use to control the instrument. You can select multiple MIDI devices at once with the checkboxes.

> In stand-alone mode, Synthx V listens for all MIDI channels, so there's no need to specify a channel.

- **Tempo** sets a base tempo for features inside Synthx V such as LFO and effects sync. When using Synthx V as a plug-in, the instrument gets tempo information from your host software.

2.2.2. Audio and MIDI settings: macOS



Audio MIDI Settings for macOS

The menu for setting up audio and MIDI devices for macOS is accessed in the same way as for Windows, and the setup process is nearly identical. All options work the same way as described above in the Windows section. The only difference is that all macOS devices, including external audio interfaces, use the CoreAudio driver built into macOS to handle routing. In the second drop-down menu under **Device**, choose the audio device you wish to use.

2.2.3. Using Synthx V as a plug-in

Here, Synthx V is shown running as an AU plug-in within Apple Logic Pro.

Synthx V comes in VST2, VST3, Audio Unit (AU), and AAX plug-in formats, for use in all major DAW software such as Ableton Live, Cubase, Logic, Pro Tools, Studio One, and more.

When using Synthx V as a plug-in, all audio and MIDI device settings are handled by your host music software. Please refer to your host music software's documentation if you have any questions about loading or using plug-ins.

Note that when you load Synthx V as a plug-in instrument inside your host software, its interface and settings work the same way as in standalone mode (see below), with a few small differences:

- Synthx V will synchronize to your DAW's host tempo/BPM when sync is required
- You can automate numerous parameters using your DAW's automation system
- You can use more than one instance of Synthx V in a DAW project
- You can run the outputs of Synthx V through any additional audio effects available in your DAW, such as delay, chorus, filters, etc.
- You can route Synthx V's audio outputs creatively inside your DAW, using the DAW's own audio routing system.

2.3. Playing Synthx V for the first time

Now that you have Synthx V up and running, let's take it for a quick test drive!

If you haven't done so already, launch Synthx V as a plug-in or as a stand-alone instrument. If you have a MIDI controller set up, use it to play some notes on Synthx V. You can also use your mouse to play the on-screen keyboard or use the keys of your computer keyboard [p.30].

The up and down arrows at the top of the instrument let you step through all of Synthx V's available presets. Try playing a few, and when you find one that you like, try adjusting some of the other on-screen controls to see how they affect the sound.

Play with the controls, and don't worry – nothing is saved unless you specifically save a preset (described later in this User Guide), so there is no risk you'll mess up any of Synthx V's factory presets.

We hope this chapter has gotten you off to a smooth start. Now that you're up and running, the rest of this guide will help you work your way through all of Synthx V's features on a section-by-section basis. By the time you reach the end, we hope you'll understand all of Synthx V's capabilities – and will be using this fantastic instrument to create equally fantastic music!

3. MAIN PANEL

This chapter covers the controls numbered in red above

In this chapter, we will cover Synthx V's core synth engine functions, which are as follows:

Number	Area	Description
1.	Layer Control [p.17]	Manages how Synthx V's two layers are heard
2.	Oscillators [p.18]	Adjusts sound of the two DCOs
3.	Noise Generator [p.20]	Controls the built-in noise source
4.	Multimode Filter [p.20]	Adjusts the multimode resonant filter
5.	Envelopes [p.22]	ADSR envelopes for filter and amp, with velocity
6.	Layer LFO [p.23]	Assignable dual-depth LFO per layer
7.	Master LFO [p.25]	Triangle-wave LFO that can effect either or both layers
8.	Chorus [p.26]	Duplicates the signature three-position Chorus of the Synthex
9.	Glide/Portamento [p.26]	Controls Synthx V's sophisticated portamento functions
10.	Unison [p.27]	Activates stacked unison voicing per layer
11.	Pan/Volume [p.27]	Volume, panning, and stereo spread of voices per layer
12.	Dispersion [p.28]	Accesses randomness/drift parameters that add authentic vintage character
13.	Master [p.29]	Hold, tuning, and overall dispersion per layer
14.	Keyboard Controls [p.29]	Pitch-bend and modulation wheels; quick access performance controls for Multi-Arp
15.	Keyboard [p.30]	Overview of the onscreen keyboard

3.1. Common behaviors

All Arturia virtual instruments share some common control behaviors to make editing sounds easier. These behaviors are common to every control in Synthx V.

3.1.1. Value pop-ups

Move or hover on any control and a pop-up banner or "tool tip" will display its value.

3.1.2. Parameter descriptions

Operating or hovering on any control displays its name and a brief description of its function in the left corner of the lower toolbar [p.98].

3.1.3. Fine adjustment

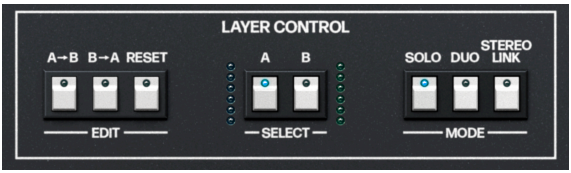
Hold the right mouse button or Control key while dragging on any knob to adjust it more slowly. This helps when you want to dial in precise values.

3.1.4. Double-click for default

Double-click on any knob to return it to its factory default setting.

3.2. Layer Control

Why are we starting by talking about layers? Because the bi-timbral design of the Synthex was one of its central features, so we designed Synthx V around it from the ground up.



Nearly all main panel settings are per layer

Nearly everything on the main panel is independent per layer unless stated otherwise. Layers A and B are more than alternate panel settings in the same Preset – they are two full synthesizers that can have their voices allocated, and work in the stereo picture, in various ways. The Layer Control section is where those ways are set. As a visual aid, Layer A is color-coded blue and Layer B is green.

3.2.1. Layer Select

The A/B buttons in the center simply select which layer is edited from the front panel. On either side is a color-coded level meter for the corresponding layer.

3.2.2. Layer Edit

This section lets you quickly copy and reset settings between layers, which can speed up sound editing.

- **A→B:** Copies Layer A's settings to B
- **B→A:** Copies Layer B's settings to A
- **Reset:** Returns the selected Layer's settings to the values stored in the current Preset

3.2.3. Layer Mode

This is where the fun begins. These three buttons decide what is heard when incoming MIDI notes (or notes from the onscreen keyboard) are played.

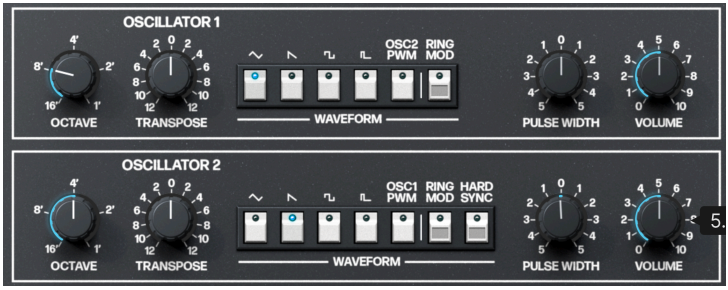
- **Solo:** Only the selected Layer is heard
- **Duo:** Both Layers are heard
- **Stereo Link:** Currently selected layer is copied to the other Layer; the two are then panned hard left and right

Stereo Link in particular can sound positively huge!

3.2.3.1. What about splits?

The Elka Synthex could split its keyboard to play different layers on either side of the split. In Synthx V, we decided to leave that up to the comprehensive "multi" management features in our Analog Lab software and its free version, Analog Lab Play.

3.3. Oscillators



Oscillators 1 and 2 function almost identically

Here, we duplicate the Synthex's DCOs with some subtle improvements. Oscillators 1 and 2 operate almost identically, so we'll cover what they have in common first.

3.3.1. Octave and Transpose

As on the Synthex, you can select the oscillators' octave with one knob (buttons on the original hardware) and the fine pitch with another. Here, the Transpose knob is marked in semitones but can sweep pitch continuously between them.

3.3.2. Waveform Select

Each oscillator offers a choice of triangle, sawtooth, square, pulse, and cross-modulation from the other oscillator.

3.3.2.1. Pulse Width knob

Pulse width refers to the ratio between the negative and positive cycles of a waveform that would otherwise be square. In other words, the positive pulses become wider (at lower ratios) or narrower (at higher ratios) relative to the negative ones. A perfect square wave has a ratio of 50 percent. The **Pulse Width** knob sets this ratio when the Pulse wave is selected. Modulating the pulse width can produce pleasing harmonic shifts.

3.3.2.2. Cross-modulated PWM

This last option is labeled *OSC2 PWM* in Oscillator 1 and vice-versa. It provides a pulse wave modulated by the companion oscillator's controls. To hear it in action, try this:

- Select *OSC2 PWM* as the waveform in Oscillator 1
- Make sure Oscillator 1's volume is audible
- Turn Oscillator 2's volume down all the way
- Play notes while moving the Octave or Transpose knobs of Oscillator 2

3.3.3. Ring Modulation

Ring Mod and Hard Sync active on Oscillator 2

Each Oscillator can also be ring-modulated by the other, and one oscillator's controls will change the character of the effect in a way similar to cross-modulated PWM. However, where the former is a waveform choice, Ring Mod is an effect *in addition to* the waveform choice, as the image above shows. Only one oscillator's Ring Mod can be active at a time.

♪ Ring modulation is a common form of sound generation, where the two oscillators are input to a circuit that includes four diodes in a ring (hence the name). The output frequencies are the sum and difference of the input frequencies, which don't follow the pitch and harmonic structure of the inputs. While you can use the Patch Panel to create wide variations with clanging metallic tones, varying the **Pitch** of Oscillator 2 will produce dramatic pulsating sounds that remain in tune.

3.3.4. Hard Sync

Oscillator 2 may be hard-synced to Oscillator 1 by pressing its **Hard Sync** button. This locks the starting phase of Oscillator 2 to the frequency of Oscillator 1, such that both phases start at the same time even if the two oscillators' pitches are set differently.

♪ Musically, hard sync can produce some edgy and interesting results. The most famous of these is the "quacking" synth sound that enhances the bass line of the song "Let's Go!" by The Cars.

3.3.5. Volume

Lastly, each oscillator has a volume knob. You can balance the two oscillators, or turn one down entirely to use it solely as a PWM or ring modulation source for the other.

3.4. Noise Generator

Noise is a signal in which all frequencies in the frequency spectrum are present at once. In synthesis, it has been used to simulate wind or ocean waves, and Synthx V has a simple noise generator with a volume control and two noise options:

- **White:** The volume of frequencies is equal across the spectrum, resulting in a brighter or harsher sound
- **Pink:** The volume of frequencies decreases as their frequencies get higher, resulting in a softer sound

3.5. Multimode Filter

Synthx V's filter follows the original design with the addition of a second lowpass mode. All filter modes are resonant. The controls are straightforward if you're at all familiar with subtractive synthesis:

- **Frequency:** Sets the cutoff frequency (lowpass/highpass) or center frequency (bandpass) of the filter
- **Resonance:** Emphasizes a peak of frequencies at the cutoff/center
- **Keyboard:** Adjusts the amount of keyboard tracking
- **Envelope:** Scales the effect the Filter Envelope [p.22] has on the cutoff/center frequency (note: this is a bipolar control that can send positive or negative values)

♪ The higher the keyboard tracking value, the more the cutoff/center frequency will shift upward as you play higher notes. This is commonly used with lowpass filtering to compensate for our ears' natural rolloff curve and ensure that synth leads or acoustic instruments don't sound unnaturally dull in higher pitch ranges.

3.5.1. Filter Modes

Synthx V offers five filter modes, selected by the buttons:

Mode	Type	Slope
LP1	Lowpass	24dB per octave
LP2	Lowpass	12dB per octave
BP1	Bandpass	6dB per octave
BP2	Bandpass	12dB per octave
HP	Highpass	12dB per octave

♪ What does "per octave" mean? When a filter blocks frequencies outside the permitted range, it doesn't cut them off all at once like a cliff. It has a slope. With a slope of 12dB per octave, frequencies are reduced by 12dB for every octave they stray outside of the permitted range. An audio term for this range is "passband," i.e. those frequencies that are allowed to pass.

3.6. Envelopes

The envelope generators of the Synthex were straightforward ADSR types. In Synthx V, we have added a Velocity control that acts as a positive modulation offset relating MIDI velocity to how much either Envelope affects its destination.

The Filter Envelope is "hard wired" to modulate the cutoff of the Multimode Filter; the Amp Envelope always controls the Layer's volume. The familiar controls are:

- **Attack:** Sets the time it takes for the envelope to rise to peak level once a note is played
- **Decay:** Sets the time it takes for the envelope to fall from peak level to the sustain level
- **Sustain:** Adjusts the sustain level at which the envelope remains as along as a note is held
- **Release:** Sets the time it takes for the envelope to fall from the sustain level when a note is released
- **Velocity:** Changes the extent to which MIDI velocity affects the envelope

For the Amp Envelope, "peak level" means the Layer volume as set in the Pan/Volume [p.27] section. For the Filter Envelope, it references the Filter Frequency.

3.7. Layer LFO

The Synthex had quite a sophisticated LFO for its time. Notably, it could modulate selectable destinations at two different depths. We've expanded on that capability just a little. As with most main panel controls, this LFO operates per Layer (there's also a Master LFO [p.25] that can affect both Layers).

- **Frequency:** Sets the LFO rate, either free-running or tempo-synced to rhythmic divisions when Sync [p.24] is engaged.
- **Delay:** Adds lag time before the LFO begins to affect the sound
- **Depth 1:** Adjusts the intensity of modulation to the Depth 1 destinations [p.24]
- **Depth 2:** Adjusts the intensity of modulation to the Depth 2 destinations [p.24]

3.7.1. LFO waveforms

The first row of buttons in the Layer LFO section chooses from commonly used shapes for the modulation waveform: triangle, sawtooth, ramp (falling saw), square, and a random waveform.

3.7.2. LFO Reset

Also in this row is a **Reset** button. When it is turned on, each new note gets its own LFO that retriggers from the beginning of the cycle. When it's off, all notes share the same cycle. This is more commonly called a polyphonic versus monophonic LFO, respectively.

3.7.3. LFO destinations

Synthex designer Mario Maggi thought you might want to modulate different things at different depths, and he was not wrong! In Synthx V, there are a total of six, split between the two depth knobs, and you can have as many active at the same time as you please.

3.7.3.1. Depth 1 destinations

The destinations affected by the **Depth 1** knob are:

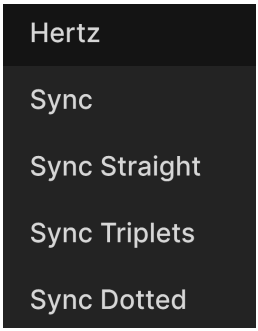
- **OSC1:** Oscillator 1 Frequency
- **OSC2:** Oscillator 2 Frequency
- **PW1:** Pulse width of Oscillator 1 (when set to pulse wave)
- **PW2:** Pulse width of Oscillator 2 (when set to pulse wave)

3.7.3.2. Depth 2 destinations

The destinations affected by the **Depth 2** knob are:

- **Filter:** Frequency of Multimode Filter
- **Amp:** VCA (overall Layer volume)
- **Pan:** Position of Layer in the stereo field

3.7.4. LFO tempo sync



The frequency of the Layer LFO can free-run in Hertz or sync to divisions/multiples of your project tempo. Click the **Sync** button to bring up the following options for the values the knob sweeps through:

- *Hertz:* Free-running with no tempo sync

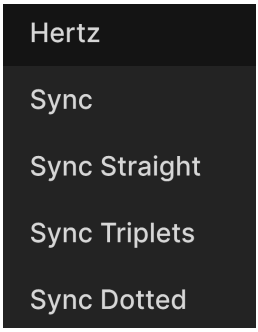
- *Sync:* Straight, triplet, and dotted ratios are all present serially when you turn the knob
- *Sync Straight:* Only even rhythmic values are represented
- *Sync Triplets:* Tempo is synced with a triplet feel; a quarter-note = three eight-notes played in the space of two
- *Sync Dotted:* Tempo is synced with a dotted feel; a quarter-note = a dotted eighth-note followed by a 16th-note

3.8. Master LFO

In addition to the Layer LFO, Synthx V includes a Master LFO that can affect either or both layers. This is another of our additions to the original design. The Master LFO uses a triangle wave only, so think of it as a vibrato generator that can affect other things besides pitch.

- **Frequency:** Sets the rate, with sync [p.24]
- **Mod Wheel:** Clicking this button lets the mod wheel control the overall modulation amount
- **A/B buttons:** Lets the Master LFO control Layer A, Layer B, or both
- **Pitch slider:** Depth for pitch of both Oscillators at once (i.e. vibrato)
- **PWM slider:** Depth for pulse-width modulation of both Oscillators at once (when pulse wave is used as the oscillator waveform)
- **Filter slider:** Depth for Frequency of Multimode Filter
- **Amp slider:** Depth for VCA volume of either or both Layers
- **Pan:** Depth for moving stereo panning of either or both Layers

3.8.1. Master LFO tempo sync

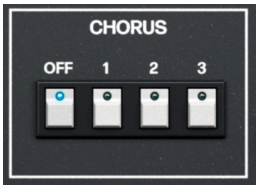


As with the Layer LFO, the Master LFO frequency can free-run in Hertz or sync to divisions/multiples of your project tempo. Click its **Sync** button to bring up the following options:

- *Hertz:* Free-running with no tempo sync

- *Sync:* Straight, triplet, and dotted ratios are all present serially when you turn the knob
- *Sync Straight:* Only even rhythmic values are represented
- *Sync Triplets:* Tempo is synced with a triplet feel; a quarter-note = three eight-notes played in the space of two
- *Sync Dotted:* Tempo is synced with a dotted feel; a quarter-note = a dotted eighth-note followed by a sixteenth-note

3.9. Chorus Effect



Elka was an Italian company, and Italian keyboard makers were known for analog "string machine" keyboards. These usually included a built-in chorus effect to thicken the sound – a feature absent on many American and Japanese polysynths. We've duplicated the Synthex chorus to a tee – simply push one of the buttons for increasing goodness!

- **Off:** Bypass
- **Chorus 1:** Adds one chorus voice to the signal; sounds like a slow rotary speaker
- **Chorus 2:** Adds two chorus voices to the signal; sounds deeper like a choral texture
- **Chorus 3:** Adds three chorus voices to the signal; do not drive a car after playing

3.10. Glide/Portamento

Glide and portamento mean the same thing, right? On the Synthex, these were different. *Portamento* was what we usually think of: notes slide smoothly up or down towards each other according to a set speed. On the Synthex, this happened whether or not you played legato, and Synthx V follows that behavior.

Glide, though, was a simple pitch envelope – the attack phase, to be precise. When you played notes, they slid up or down by the Glide Amount setting, which was in semitones. Either Glide or Portamento could be active, but not both at the same time. With all this in mind, here are the controls:

- **Speed:** Adjusts the rate for both Glide and Portamento in Hz
- **Glide Amount:** Sets the number of semitones by which the pitch will slide up or down when notes are played
- **Port.:** Selects Portamento mode
- **Glide:** Selects Glide mode

- **OSC 1/2:** Chooses whether Glide/Portamento affects Oscillator 1, Oscillator 2, or both

> ♪ You can make some wonderful music by assigning Glide/Portamento to one oscillator while leaving the other stable. The non-affected oscillator provides a solid foundation for the gliding one to "dance" over!

3.10.1. Glide can affect the Filter

If Filter Glide [p.103] is turned on in the side panel settings, and Glide mode is selected above, the frequency of the Multimode Filter will "slide" up or down to its set value according to the Glide settings. To find out where to turn this on, see the side panel settings [p.102] subsection of Chapter 7.

3.11. Unison

Unison mode stacks the selected Layer's voices such that playing a note triggers multiple voices at once for an extremely thick sound. When the **Unison** button is engaged, the sound becomes monophonic and one note triggers five voices. This can be further enhanced by unison detuning [p.99], for which settings for this appear in the Polyphony menu of the Lower Toolbar when the **Unison** button is turned on.

Remember that since Synthx V has two Layers, you could use one Layer to play a monophonic unison voice and still have the other for polyphonic sound.

3.12. Pan/Volume

This section does not appear on the original Synthex, but on a virtual version such as ours, it makes sense. It simply controls the volume, pan position, and stereo spread of the current Layer.

The **Spread** knob is especially fun because as you increase it, the Layer's voices are spread wider across the stereo field. Try it together with Unison [p.27] mode to hear just how immersive Synthx V can be.

Pan and Spread interact in a useful way. For example, if Pan is set in the center and Spread is at maximum, and you play two notes, those notes will be panned hard left and right. Then, if you move Pan all the way to the left, the voice on the right will move to the center. This lets you offset the overall signal in the stereo picture via panning, but maintains the overall balance of spread voices.

> Note that when **Stereo Link** mode is set in the Layer Control [p.17] section, Spread is unavailable. This is because Stereo Link takes over the voice spread by panning the Layers hard left and right.

3.12.1. Stereo on the original Synthex

The stereo/mono switch on the original Synthex

The hardware Synthex had a stereo/mono switch. In Mono, all voices were sent to both of its outputs regardless of the selected keyboard mode (Single, Double, or Split). In Stereo, the two layers were routed to separate outputs if Split was selected, or randomly to either output in Double mode.

Synthx V allows you to move continuously from mono to stereo by progressively placing voices across the stereo field, and this can be done separately for each Layer. You could, for example, create a wide stereo pad with one Layer and a more focused, centered bass or lead sound using the other.

3.13. Dispersion

Dispersion controls are accessed by clicking on the Arturia label

Click the Arturia logo between the Layer Control and Master sections to access the "secret" Dispersion knobs. These introduce variation in certain parameters across the voices when Synthx V is played polyphonically, and randomness to the parameters when it is in monophonic mode. This enhances analog character and "warmth."

The Dispersion controls affect both Layers at once, because they are designed to affect all voices at once. Each of the 8 trimmers adds variation to an aspect of the sound:

- **Pitch:** Oscillators' pitch
- **Level:** Volume of all oscillators
- **Cutoff:** Frequency of Multimode Filter
- **Env Time:** Time parameters (attack, decay, release) of all envelopes
- **Pulse Width:** Pulse width of all oscillators (when pulse wave is used)
- **Drive:** Subtle overdrive of oscillators into filter
- **Resonance:** Resonance of Multimode Filter
- **Pan Spread:** Stereo panning of voices across Layers

Turning all of these up to maximum can approximate the sound of an old analog synth in need of a tune-up, but overall the effects are subtle.

3.14. Master Section

The Master section affects both Layers and offers three simple but useful parameters:

- **Hold:** When turned on, played notes are sustained
- **Vintage:** Scales all 8 trimmers in the Dispersion [p.28] section while preserving the relationships between their values
- **Tuning:** Fine-tunes the overall pitch of Synthx V; default is A = 440Hz

Hold is of course useful for sound design. You can hold notes or a pattern in the Multi-Arp [p.31] without a sustain pedal as you adjust other settings or edit the pattern.

3.15. Keyboard Controls

3.15.1. Multi-Arp controls

To the leftmost of the onscreen keyboard are quick-access controls for the four-track Multi-Arp [p.31], which we created in tribute to the Synthex's four-part sequencer. All the controls mirror functions found in the Multi-Arp's full view, accessed by clicking the Advanced [p.97] button.

- **Rate:** Adjusts the arpeggiator rate (tempo sync settings are in the full view)
- **Gate:** Sets the arpeggiator gate time
- **Buttons 1-4:** Toggles each of the four Multi-Arp tracks on or off
- **Edit:** Opens the Advanced view and displays the full Multi-Arp interface

3.15.2. Pitch-Bend and modulation wheels

The pitch-bend wheel bends the pitch of either or both layers (depending on the Layer Control [p.17] settings. Bend range is symmetrical up and down, and set in the side panel [p.102].

The modulation wheel can control the overall depth of the Master LFO [p.25]. It can also be assigned to just about anything via dragging and dropping an icon, which we cover in the Modulators [p.64] chapter,

3.16. Onscreen keyboard

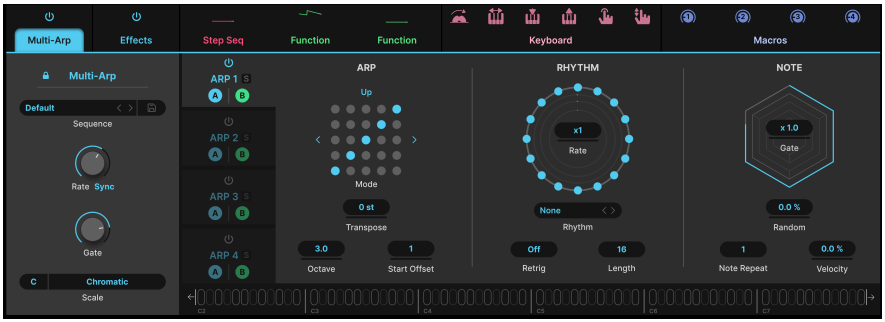
The onscreen keyboard is handy for working on a laptop without any other MIDI input device. Clicking on a key closer to its front edge increases the MIDI velocity of the note.

3.16.1. Playing from a computer keyboard

Notes corresponding to keys on the computer keyboard

You can play an octave plus a ninth in the key of *C* using a standard QWERTY keyboard, according to the diagram above. In addition, the **Z** key shifts the pitch range an octave down and the **X** key shifts it an octave up.

4. MULTI-ARP



Synthx V's fabulous Multi-Arp

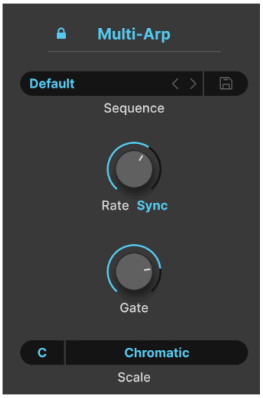
The original Synthex was unique in its time thanks to its built-in 4-track sequencer. We wanted to pay homage to that, but you will most likely sequence Synthx V in your DAW. We came up with something else we think is very much in the Synthex spirit: the Multi-Arp!

The Multi-Arp is a four-track arpeggiator capable of some dazzling polyrhythms, since each track can have different pattern and rhythmic settings. Unlike a sequencer, an Arpeggiator plays only as long as notes are held, and transforms chords into repeating note patterns.

To access it, press the Advanced button [p.97] at the top right of the Synthx V window to open the Advanced views, then click the tab labeled "Multi-Arp" all the way on the left.

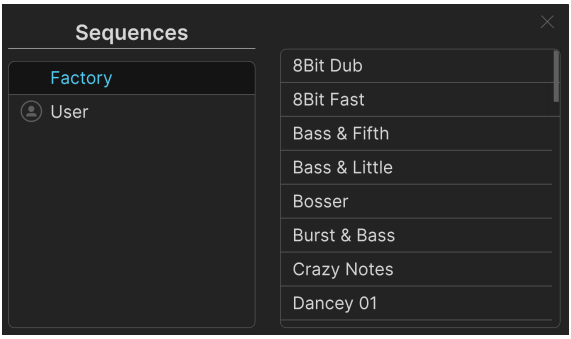
> The Multi-Arp can also output MIDI data to play other instruments [p.41].

4.1. Global settings



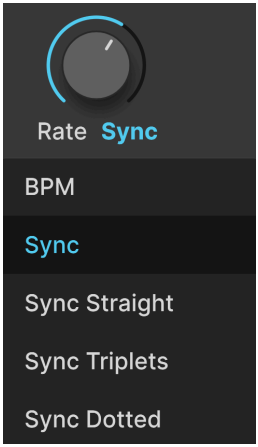
Certain settings are common to all four tracks of the Multi-Arp, so let's begin there.

4.1.1. Multi-Arp presets



A variety of setups for the Multi-Arp are available by clicking on the Sequence menu. You can also use the arrows to step through them one at a time. Click the disk icon to save all the current Multi-Arp settings as a user preset. You will be prompted to name it, then you can recall it at any time from the user bank.

4.1.2. Rate and tempo sync



The Multi-Arp's rate can run free or be synced to project tempo via a drop-down menu accessed by clicking below the **Rate** knob. The options are:

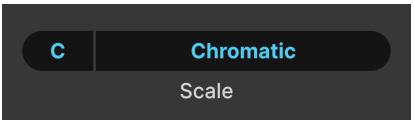
- *BPM:* Free-running in beats per minute
- *Sync:* Straight, triplet, and dotted ratios are all present serially when you turn the knob
- *Sync Straight:* Only even rhythmic values are represented
- *Sync Triplets:* Tempo is synced with a triplet feel; a quarter-note = three eight-notes played in the space of two
- *Sync Dotted:* Tempo is synced with a dotted feel; a quarter-note = a dotted eighth-note followed by a 16th-note

4.1.3. Global Gate time

Gate time shortens or lengthens the duration each note is played by the Multi-Arp. In musical terms, this leads to a more sustained sound at longer gate times and a clipped sound at shorter ones.

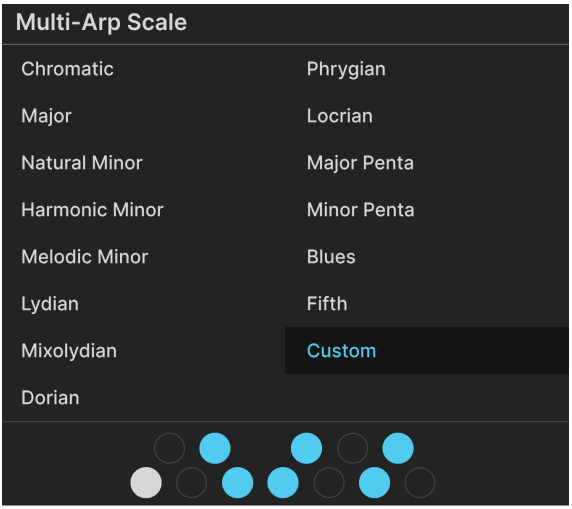
Thanks to a gate multiplier [p.40] per Multi-Arp track, each track can have a different effective gate time.

4.1.4. Scales



The field on the left selects the root note

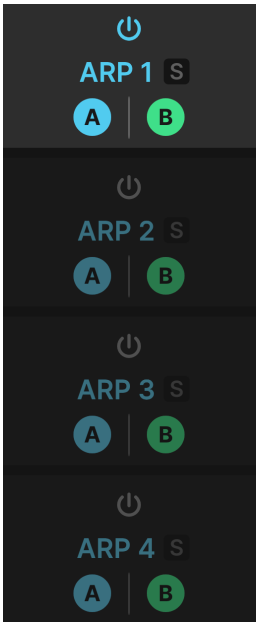
The Multi-Arp can play chromatically (all notes are fair game) or be confined to a number of scales and modes from traditional music theory. Click on the note field to the left to set the root note of the scale. Then click on the scale name to bring up the following menu:



Notice the *Custom* option. This sets a scale that you define by clicking on the blue circles at the bottom of the menu, which are arranged as a piano octave. Blue indicates an allowed note.

4.2. Settings per part

From here on, the other settings are independent per track/part, but all four parts have the same options.



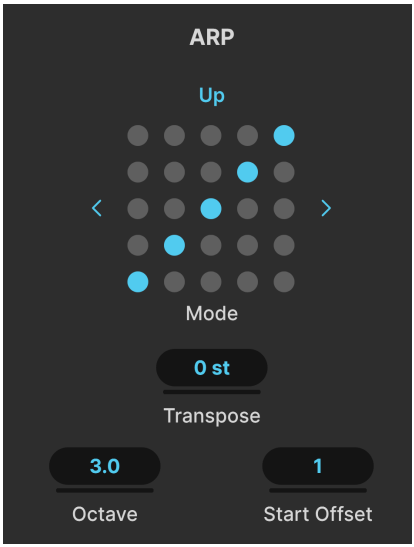
Click one of the tabs in this column to select a part to work on.

Each tab includes the following utility and assignment settings.

- **On/off button:** Turns the part on or off while retaining its settings
- **A/B buttons:** Assigns the part to play Layer A, Layer B, or both
- **Solo:** Solos the part (i.e. mutes playback of the others) so you can work on it by itself

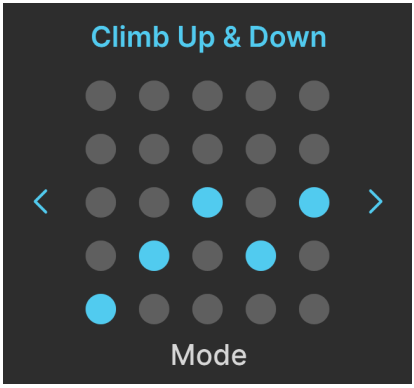
> If Layer A or B has no arpeggio assigned from either part, it is available for you to play "normally" (from a keyboard) while the other Layer is played by the Multi-Arp. Also, if Stereo Link [p.17] is active, assigning a Multi-Arp part to A or B effectively assigns it to the left or right stereo channel.

4.2.1. Arp Section

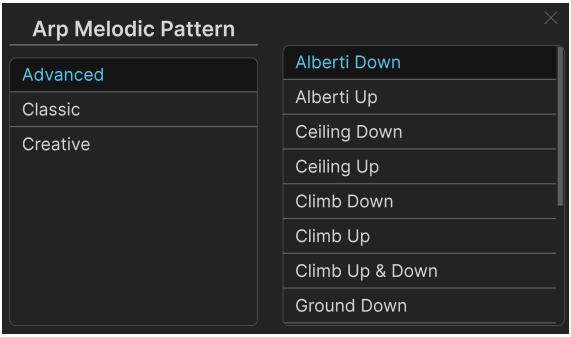


Many vintage synth arpeggiators had simple up, down, up/down, and random modes that controlled the order in which the synth played notes in a held chord. The Multi-Arp gives you so much more.

4.2.1.1. Pattern

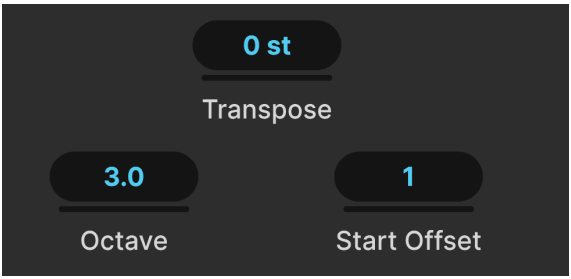


The 5 x 5 matrix of dots illustrates the current pattern. This doesn't necessarily mean the pattern has five notes; it's simply a visual reference for the up and down directions the pattern takes. You can audition the patterns using the arrows, or click on the matrix to display the full menu, with categories on the left and patterns on the right:



- *Classic:* Traditional modes like those found on most analog synth arpeggiators
- *Advanced:* Patterns that follow more complex rules while still keeping a strong sense of repetition
- *Creative:* Fun, unconventional patterns that experiment with different melodic and rhythmic phrasing

4.2.1.2. Arp settings



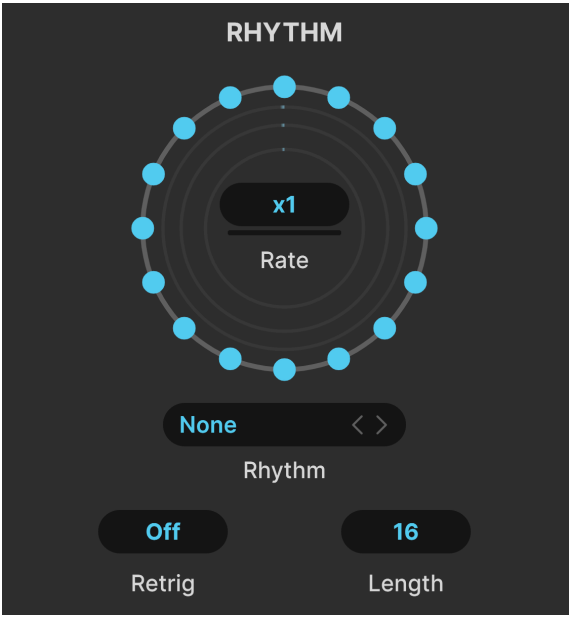
Three further settings govern the pattern behavior.

- **Transpose:** Changes the pitch of all notes in the pattern in semitones
- **Octave:** Determines the range of the pattern in octaves, including partial octaves
- **Start offset:** Defines which step in the pattern is the first step played

Drag up or down on any of the fields to edit them.

> ♪ Values for Octave range are expressed as "X.Y" and are decimal. Given that a chromatic scale has 12 notes, a range of 3.5 octaves would therefore split the octave at the tritone – i.e. F# assuming a root note of C.

4.2.2. Rhythm section



In the Multi-Arp, patterns are not restricted to playing evenly-spaced series of notes. The Rhythm section allows you to determine the rhythm of the pattern.

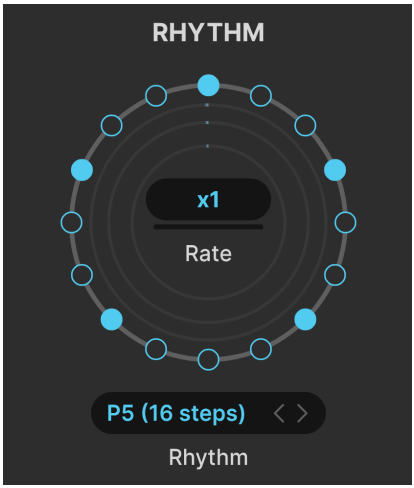
Notice the concentric circles ringed with 16 blue dots.

- Each dot represents a note. When all dots are active (blue), the pattern plays like on a conventional arpeggiator: evenly. This is also the case if active dots are evenly spaced.
- When dots are deactivated (by clicking on one), this represents a rest or rhythmic gap before the next note plays.
- In terms of pitch, the next note played is *still* the next note in the pattern according to the set scale [p.33] – no notes are skipped – but that note will not play until the rest period has elapsed.
- The four circles correspond to the four Multi-Arp parts, from the outermost (part 1) proceeding inward. When you switch parts, the corresponding circle is populated with dots.

4.2.2.1. Rhythm rate

The **Rate** setting in the center of the circles is a multiplier/divider. It causes the individual Multi-Arp part to run at a fraction or multiple of the global Rate [p.32]. Experiment with this across more than one part for some wild avant-garde polyrhythms!

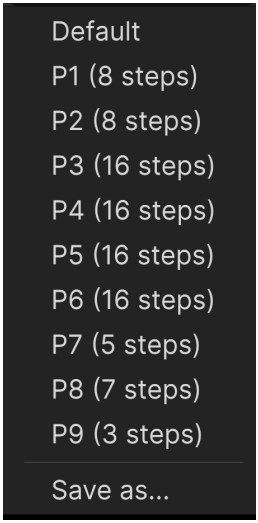
4.2.2.2. Rhythm presets



Brubeck might have liked this rhythm preset

The Multi-Arp comes with nine factory presets (plus the default of all 16 steps active) for rhythms.

Step through them with the arrows, or click on the name field to bring up the menu:



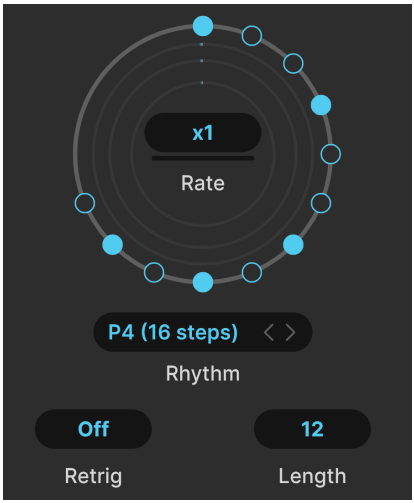
Notice that some of the presets support odd or unusual step lengths. Once you have set up the dots, you can also save your own by clicking "Save as..." and naming it in the prompt that pops up. It will then be available in the menu.

4.2.2.3. Retrigger

Retrig is a draggable field which causes the Multi-Arp pattern to restart from the beginning. It has quite a lot of options:

- *Off:* Pattern loops normally
- *Note:* Pattern restarts when a MIDI note is received
- *Whole number values:* Pattern restarts every so many musical bars
- *Fraction values:* Pattern restarts at subdivisions of a bar, e.g. 1/8

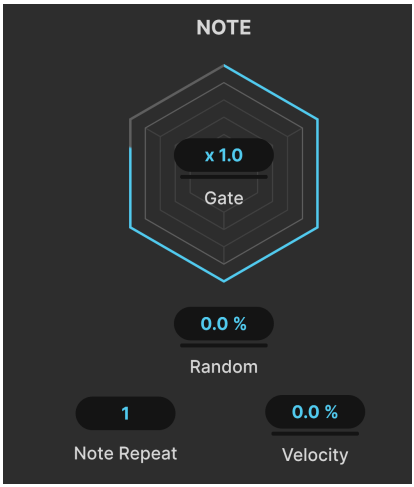
4.2.2.4. Length



A pattern with 12 steps, 5 of which are speaking

Length simply sets the overall pattern length. The default is 16 steps, but you can set odd or untraditional lengths. In the above example, when the pattern completes step 12, it returns to step 1 and starts working through the steps all over again.

4.2.3. Note section



The hexagon graphic visualizes gate time

The final section of the Multi-Arp governs how individual notes behave.

4.2.3.1. Gate multiplier

In the center of the hexagon graphic – a visualizer for the individual Multi-Arp part's gate time – is a multiplier/divider field. This makes the selected part's gate time a multiple or division of the global Gate time [p.33], allowing the different parts to "speak" with a more sustained or shortened note duration.

4.2.3.2. Note parameters

The final parameters for individual notes in the Multi-Arp part are as follows:

Random introduces randomness to the part's gate time, octave, and velocity. Octave randomness is subject to the range set by the Octave parameter, which must be set to a value greater than 1.0 for randomness to be heard.

Note Repeat adjusts how many times a note is repeated at each step before the pattern moves on to the next step, from one to four times.

Velocity is an offset for MIDI velocity as played by the Multi-Arp part, and expressed as a percentage. In terms of what you can hear, it makes arpeggiated notes louder or softer.

4.3. Global Visualizer

Across the bottom of the Multi-Arp is a visualizer in which all notes played by all four parts illuminate the ovals, which you may notice correspond to piano keys. Bright blue ovals correspond to notes in the currently selected part while the slightly dimmer ones indicate notes from the other parts. Click the arrows on either end to move through the entire possible note range, as the visualizer has screen space to show six octaves.

4.4. Using the Multi-Arp externally

In addition to playing Synthx V's two layers, the Multi-Arp can transmit its MIDI note data to an external destination such as another virtual instrument or even a MIDI interface. This allows you to use its sophisticated patterns and rhythmic options to play other synths!

Synthx V does not contain settings or controls for this. Most DAWs, as well as plug-in host programs geared for live performance, can route MIDI from a given virtual instrument track to another instrument track, MIDI track, or port and channel on a connected MIDI interface. If the track in which Synthx V resides is configured to transmit MIDI, and the instrument on the other end is configured to receive it, that instrument should play the Multi-Arp's output. MIDI notes from all active Multi-Arp parts are transmitted on the same channel.

Consult your DAW or host program's documentation for the exact MIDI routing settings to make.

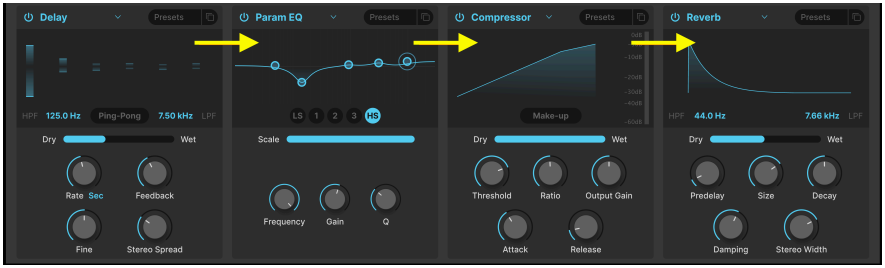
5. EFFECTS

Synthx V includes a suite of powerful stereo effects curated from our latest V Collection of virtual instruments. You can use up to four effects at once, and each of the four effects slots offers a choice of 17 pedal-style effects.

Click the **Advanced** button at the top right of the Upper Toolbar [p.92] to open the Advanced Panel. Then select the **Effects** tab, second from the left. Notice the on/off button above the tab? It bypasses *all* effects while retaining their settings.

Depending on the size [p.94] of the Synthx V window, you may need to scroll down to see the effects.

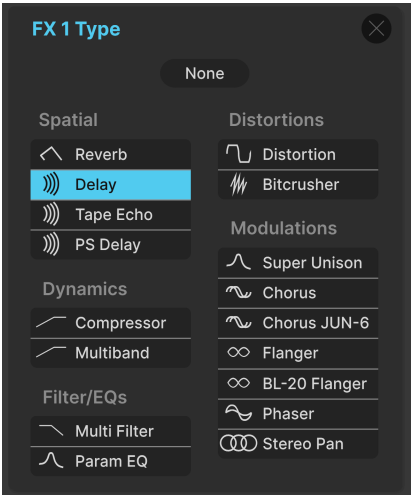
5.1. Effects routing



Synthx V effects are routed serially left to right

Effects routing in Synthx V is "hard wired" as serial. The signal is first processed by the effect in the slot at far left, then moves from left to right. This keeps things simple. Just set up the effects chain you want, like a guitar pedalboard.

5.2. Selecting an effect



The effects in Synthx V offer 17 types in five categories

Click the name field at the top of any of the effects slots (you can also click any empty square that says "none" above it) to bring up the effects selection menu. The effects are divided into five categories to make choosing a little easier.

- *Spatial:* Reverb, delays, and tape echo
- *Dynamics:* Compressor
- *Filter/EQs:* Multi-mode synth-like filter and parametric equalizer
- *Distortion:* Distortion effect with 16 different algorithms; Bitcrusher
- *Modulations:* Super Unison, choruses, flangers, phaser, and stereo panner

The full list of effect types [p.44] with descriptions of all their parameters is further below.

5.2.1. Effects copy

An effect in one slot can be copied to any of the other three

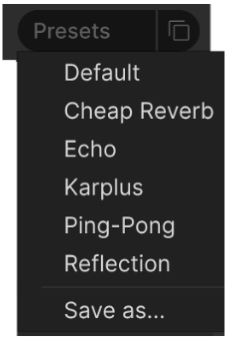
You can copy any effect, with its settings, to another slot. Click the double-document (overlapping squares) icon, then select a slot from the above pop-up menu. The effect in the original slot is not changed or swapped.

5.2.2. Effects reorder

Grab the six-dot icon to drag the effect to another slot

When your cursor is in an effect's area, notice the six-dot icon that appears in the title bar. Click and hold on it to drag the effect to a different slot. The effect in the destination slot will exchange positions with the one you are dragging. (In fact, you can drag anywhere in the effect that's not a parameter or the visualizer, but the six-dot icon is always available as a handle.)

5.3. Effect presets



The factory presets for the Delay effect in Synthx V

Each effect type in Synthx V comes with a handful of presets, accessed by clicking on "Presets" at the top right of the name bar within an effects slot.

The presets can be great starting places, not to mention convenient for when you want to grab a sound quickly, so please do explore them all. Notice the "Save as" option, which will bring up a dialogue box that prompts you to name and save any settings you like as your own FX preset. This is then saved within the overall Synthx V Preset. "Save" is available only when working on a user preset, i.e. one you've already copied with a "Save As" operation.

5.4. Effect types

It's almost time to explore each effect individually. To start out, though, we will cover a handful of features common to all of them.

5.4.1. On/Off

Each effects slot has an on/off button at its upper left. This lets you bypass the individual effect without losing its settings. This is useful for soloing a slot as you build and adjust your effects rack.

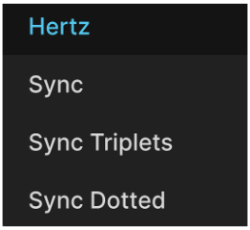
5.4.2. Dry/Wet mix

Most of the effects have a slider for **Dry/Wet mix**, i.e. how much pre-effect vs. post-effect signal you hear. There are three exceptions:

- The **Multiband** effect has an *Amount* slider
- The **Parametric EQ** has a *Scale* slider
- The **Stereo Pan** effect has an *Amount* slider

> ♪ Remember that due to the serial routing, a sound that's relatively dry with respect to one effect may still be carrying a lot of the previous one in the chain.

5.4.3. Effects tempo sync



Engaging Sync makes tempo-division options available for the time setting in the Delay

Some effects offer tempo-sync options for their time or rate parameter in addition to running freely in absolute units such as Hz or milliseconds. The mode is chosen by clicking on the blue label adjacent to a Time or Rate knob, then choosing from the pop-up menu shown above. The blue word may read "Seconds," "Hertz," "Sync," or some variant thereof depending on the current sync setting.

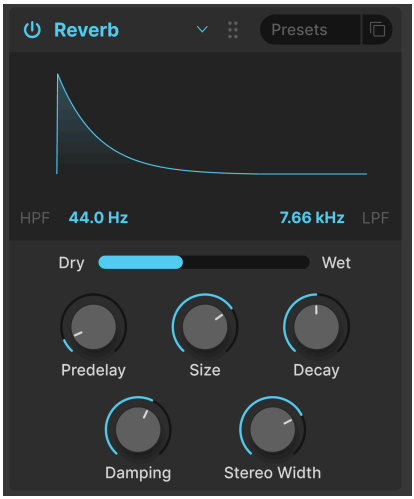
Then, adjusting the related parameter will display a pop-up that shows the current division or multiple of your project tempo. A *t* suffix after the value indicates a triplet value, *d* denotes a dotted value, and no suffix means a "straight" rhythmic feel.

The effects with tempo sync in Synthx V are:

- Delay
- Tape Echo
- PS Delay
- Chorus JUN-6
- Flanger
- BL-2O Flanger
- Phaser
- Stereo Pan

Now, let's visit the effects in the order in which they appear on the menu. In general, you can adjust two of the parameters that also have knobs by clicking and dragging inside the effect's graphic visualizer. In the charts below, we mark *(H)* for those you can drag horizontally and *(V)* for those you can drag vertically.

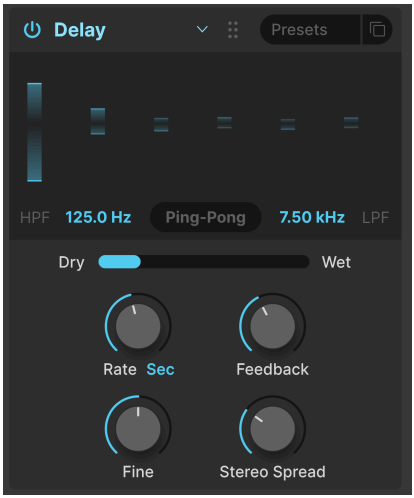
5.4.4. Reverb



Reverb is the sound of a space – a recording studio, concert hall, stairwell, tiled bathroom, you name it. Reverb is often used as the final effect in a chain to put everything else that's going on into the same acoustic space, lending cohesiveness to the sound.

Control	Description
HPF	Reduces the high-frequency content before processing
LPF	Scoops out the low-frequency content before processing
Predelay	Sets the amount of time before the input signal is affected by the reverb
Decay (V)	Determines the length of time the reverb effect will last
Size (H)	Adjusts the size of the room: counter-clockwise is smaller, clockwise is larger
Damping	Controls the rate at which the high frequencies decay
Stereo Width	Adjusts the reverb from mono to an increasingly wide stereo space

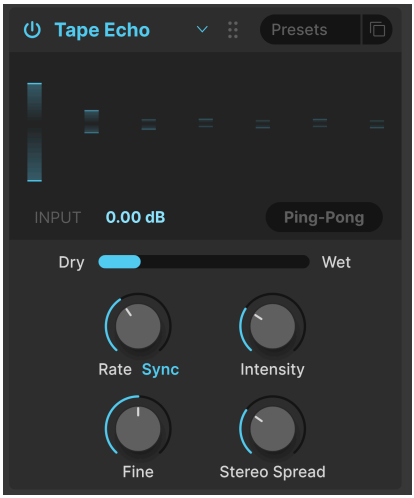
5.4.5. Delay



Delay is a generic term for any effect that makes a copy of an input sound and repeats it later, one or more times. There are three delay effects in Synthx V, and this first one sounds good all around.

Control	Description
HPF	Higher values reduce low-frequency content with each echo
LPF	Higher values reduce high-frequency content with each echo
Time (H)	Changes the length of the delay, with unsynced and tempo-sync options (sync, triplets, dotted)
Fine	Fine-tunes the delay time using an offset in milliseconds
Feedback (V)	Adjusts how many times the delay will repeat
Stereo Spread/ Width	Higher values increase the distance between the left and right sides of the delayed signal
Ping Pong	Toggles alternating left/right echoes with exact rhythmic spacing; Stereo Spread parameter becomes Stereo Width

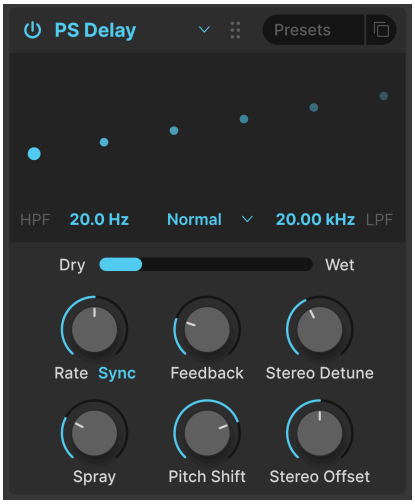
5.4.6. Tape Echo



Tape Echo is a characteristic of early tape-based delay machines such as the Maestro Echoplex and Roland Space Echo. Input sounds are recorded to a loop of tape with one or more playback heads to create the echoes. Because tape loops can be unstable and shift in pitch and timbre, they produce an effect that is warmer and less precise than a digital delay.

Control	Description
Input	Adjusts the incoming signal to achieve varying amounts of analog saturation
Time (H)	Changes the length of the delay, with unsynced and tempo-sync options
Intensity (V)	Sets the feedback amount of the delayed signal
Fine	Fine-tunes the delay time using an offset in milliseconds
Stereo Spread/ Width	Higher values increase the distance between the left and right sides of the delayed signal
Ping-Pong	Toggles alternating left/right echoes with exact rhythmic spacing; Stereo Spread parameter becomes Stereo Width

5.4.7. PS Delay



PS stands for **pitch-shifting** delay, a classic effect popularized by the Eventide Harmonizer. It works like a conventional delay, but in addition to being fed back to create echoes, the delayed audio signals are subjected to a pitch shift, either up or down.

Control	Description
HPF	Controls the cutoff of a highpass filter that affects the delayed signal only
LPF	Controls the cutoff of a lowpass filter that affects the delayed signal only
Time (H)	Sets delay time, with unsynced and tempo-sync options
Feedback	Controls how much of the delayed signal feeds back into the effect to be delayed again
Stereo Detune	Detunes the delayed signal relative to the incoming signal
Spray	Adds a scattering effect across the sound for each successive echo with slightly randomized echo times
Pitch Shift (V)	Adjusts the amount that the delayed signal is pitch-shifted relative to the incoming signal
Stereo Offset	Offsets the delayed signal in the stereo picture

5.4.8. Compressor

A **Compressor** is used to control the dynamic range of a sound: it reduces the difference between the softest and loudest levels a sound can have. It does this based on reducing a gain by a certain amount (the ratio) once the audio releases a certain level (the threshold).

Control	Description
Threshold (H)	Sets the level where compression will begin
Ratio (V)	Determines the amount of compression to be applied once the threshold is reached
Attack	Adjusts the speed with which the compression will be applied once the threshold is reached
Release	Sets the release time of the compressor
Output Gain	Use this to compensate for changes in volume if compression settings lower the output gain
Makeup	Enables control of the output level to compensate for the gain reduction of the input

♪ There's an old joke that's great for understanding compressors. Threshold is how loud your music has to be before your parents tell you turn it down. Ratio is how much you turn it down. Attack is how fast your parents react once it's too loud. Release is how soon you turn it back up once they're gone.

5.4.9. Multiband

A multiband compressor works like a series of regular compressors, but each one works on a separate range of frequencies (*band*). First used by mastering engineers to squeeze the maximum level out of recordings, these compressors are now used for subtle sculpting, sound design, special effects, and much more.

The multiband compressor is probably the most complex effect type in Synthx V, first of all because there are things you can *only* adjust by dragging inside the effect's graphic visualizer. It can work on up to three frequency bands, and you can use the two on/off under the low and high bands to turn them on and off. You can also drag up or down on the numbers below the visualizer to set the frequency crossover between the low and mid bands (left number) and mid and high bands (right number).

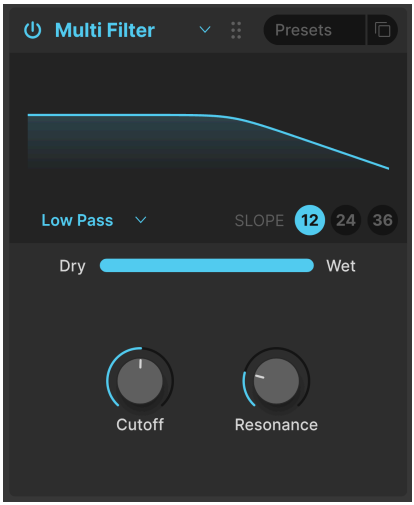
On top of all that, it's also an *expander*, which means it can boost soft signals. The blue bars with horizontal lines inside on the top are for compression; those below are for expansion.

With all this in mind, here is the parameter rundown:

Control	Description
Threshold (V)	Drag the border of a blue bar to adjust the point at which the compression (or expansion) starts working
Ratio (V)	Drag *inside* of a bar to adjust the amount of compression or expansion for that band. Increasing ratios are depicted by denser horizontal lines, until the inside bar turns solid blue at maximum
Band On/ Off Icons	The high and/or low bands may be switched off, resulting in a 2- or 1-band compressor/ expander
Low-Mid Crossover	Drag on this field, located at the lower left of the visualizer, to change the crossover point between the low and mid bands
Mid-High Crossover	Drag on this field, located at the lower right of the visualizer, to change the crossover point between the mid and high bands
Out Low	Independent output level control for low band

Control	Description
Out Mid	Independent output level control for mid band
Out High	Independent output level control for high band
Input	Sets the overall input gain
Attack	Sets the time it takes for the compressor/expander to "grab" the signal once a threshold is reached
Release	Sets the time it takes for the compressor/expander to "let go" of the signal once the signal falls beneath the threshold
Output	Governs the overall makeup gain while preserving the difference in output between the bands

5.4.10. Multi Filter



Sometimes it's nice to have an extra filter handy for further sculpting your tone without needing to tie up Synthx V's main filter. The Multi Filter has five modes: lowpass, highpass, bandpass, feedback comb, and feed-forward comb . The comb filters simulate the behavior of a flanger with two different tonal qualities – CombFB produces a series of evenly spaced peaks, and CombFF produces evenly-spaced notches.

Control	Description
Filter type	Drag up or down on the letters to the lower left of the visualizer to choose the filter type
Slope	Click a selection at the lower right of the visualizer to choose the filter steepness; these do not apply to the comb filters
Cutoff (H)	Adjusts the cutoff frequency of the filter
Resonance (V)	Sets the resonance of the filter, which is a peak of frequencies clustering near the cutoff

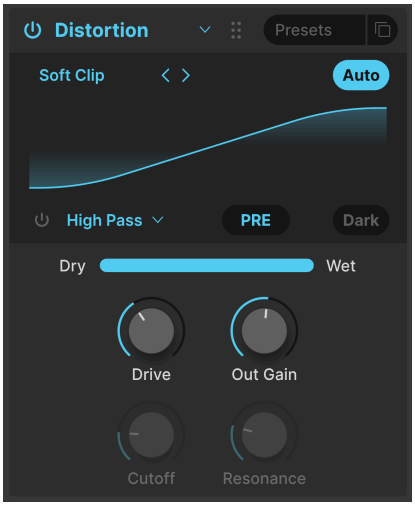
5.4.11. Parametric EQ

The Parametric Equalizer lets you sculpt tone precisely, as opposed to the broad tonal strokes you get from a synth filter or tone controls. It can be used to boost or cut certain frequencies gently or surgically, to alter the overall sound or remove problem frequencies.

The EQ in Synthx V has five bands, and you can adjust the frequency, gain (boost or cut), and Q (how wide the band is around the selected frequency) for each. In fact, the ability to tweak the frequency and bandwidth is just what "parametric" means.

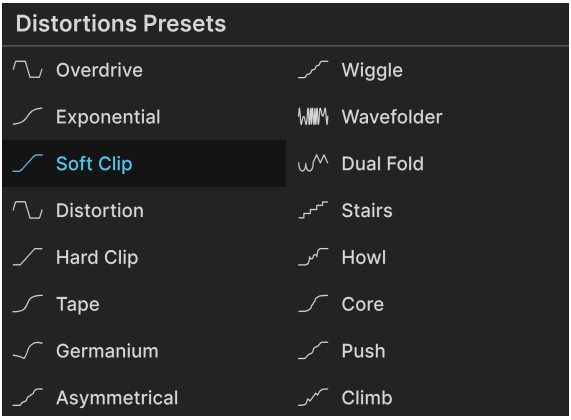
Control	Description
Band select	Click one of the points in the visualizer or one of the five buttons below to select the band the next controls listed will affect
Scale	Adjusts the overall impact of the EQ curve on your sound
Frequency (H)	Selects the center frequency of the current band
Gain (V)	Adjusts the boost or cut to the level of the current band
Q	Adjusts the width of the spectrum around the Frequency that is affected by the boost or cut

5.4.12. Distortion



Distortion in Synthx V offers 16 different algorithms derived from our flagship distortion effect, Dist COLDFIRE. Each has its unique sonic signature – and they can transform sounds in ways ranging from subtle warmth to all-out devastation.

5.4.12.1. Distortion algorithms



The 16 distortion types

Select the type of distortion by clicking on the left and right arrows at the top left of the effect's visualizer area, or bring up the pop-up menu shown above by clicking on the distortion type name between the arrows.

What do the algorithms sound like? Some come from familiar types of analog distortion – examples include gradually increasing amounts of gain (*Overdrive*, *Exponential*, *Soft Clip*, *Distortion*, *Hard Clip*), *Tape* saturation, and *Germanium* transistor preamp tone.

Other distortions are more digital in character – in addition to *Wavefolder* and *Dual Fold* which fold the peaks of waveforms to create more harmonics, there are unusual types such as **Asymmetrical**, **Wiggle**, **Stairs**, **Howl**, **Core**, **Push**, and **Climb**.

Rather than offering lengthy technical descriptions of what each algorithm is doing "under the hood," we encourage you to click through them and explore their sound for yourself.

5.4.12.2. Common distortion controls

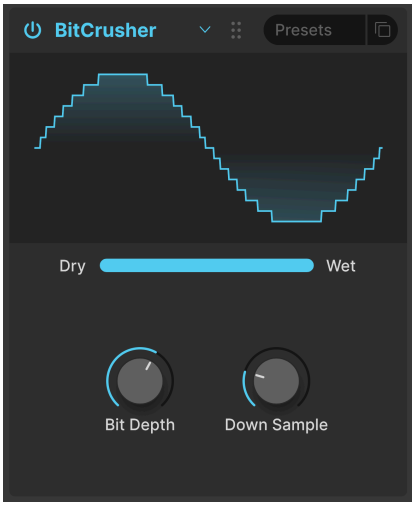
The distortion algorithms mostly share the same parameters, as well as an integrated lowpass/bandpass/highpass filter, as shown on this chart:

Control	Description
Drive (H)	Sets the amount of distortion via driving the input
Out Gain	Use this to compensate for increased output gain caused by the Drive setting
Auto (button)	Applies automatic volume compensation to the post-effect output
Filter on/off (button)	Toggles the integrated multi-mode filter
Filter pre/post (drag on text)	Places the integrated filter before or after the distortion process
Filter mode (pop-up)	Selects lowpass, bandpass, or highpass
Cutoff	Adjusts integrated filter cutoff frequency
Resonance	Adjusts integrated filter resonance
Dark	Applies high-frequency dampening to the output signal

Exceptions/additions to the above are:

- **Overdrive** is the only algorithm that also has a **Tone** control, which adjusts the brightness of the distorted portion of the output.
- The **Wavefolder** algorithm features a sine/sawtooth toggle for the folding in place of the filter pre/post setting.

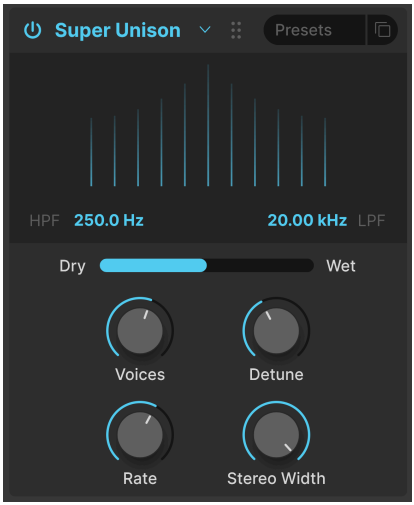
5.4.13. Bitcrusher



A **bitcrusher** does exactly what it sounds like: it crushes bits! Technically, it can reduce both the bit depth and the sample rate of the signal. Bit depth (e.g. 16-bit vs. 8-bit) deals with differences in volume; sample rate (e.g. 44,100 kHz, like a CD) deals with frequency response. When musicians talk about the "lo-fi" sound of vintage samplers, game consoles, or computers, they're talking about bitcrushing.

Control	Description
Bit Depth (V)	Reduces the number of bits used to render increments of amplitude
Downsample (H)	Divides the sample rate used to represent the signal, which can introduce aliasing typical of vintage digital synths and samplers

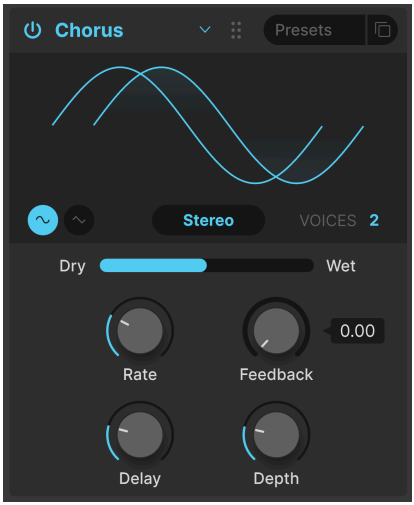
5.4.14. Super Unison



Not unlike a synth's Unison mode, this effect adds duplicates of the input signal to itself, with the option to detune them. The graphic indicates the amount of detuning between the voices horizontally and volume of detuned voices vertically. The original signal is the tallest line in the center.

Control	Description
HPF	Controls the cutoff of a highpass filter that affects the processed signal only
LPF	Controls the cutoff of a lowpass filter that affects the processed signal only
Voices (H)	Sets the number of unison voices
Detune (V)	Determines the detuning amount
Rate	Adjusts the speed of modulation of all voices
Stereo Width	Adjusts the spread of the voices across the stereo image

5.4.15. Chorus



Chorus is an effect first developed in the mid-1970s by Roland for the Jazz Chorus amplifier and CE-1 pedal. In a chorus, the dry signal is mixed with one or more slightly delayed copies of itself (called *voices*), whose amount of delay is gently varied by an LFO to create a sense of thickness.

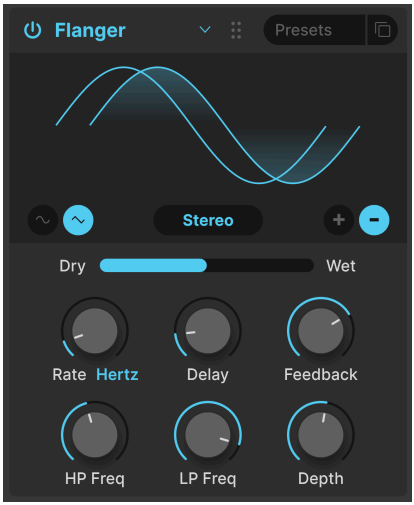
Control	Description
Rate	Adjusts the speed of the chorus
Depth	Controls the intensity of the chorus
Feedback (V)	Adjusts the amount of chorused signal that is fed back into the effect
Delay (H)	Sets the amount of delay applied to the input signal
Stereo/Mono	Toggles between mono or stereo operation
Voices	Selects the number of delay lines the chorus will use (1, 2, or 3), with a different starting phase for each voice
Shape	Selects sine or triangle as modulation waveform

5.4.16. Chorus JUN-6

One of the most famous chorus effects is the one built into the Juno-6 synthesizer and its successors. This chorus is an accurate model of the original.

Control	Description
Rate (H)	The chorus rate, with unsynced and tempo-synced options
Depth (V)	The depth of the chorus effect in milliseconds
Phase	The phase of the chorused signal relative to the dry signal

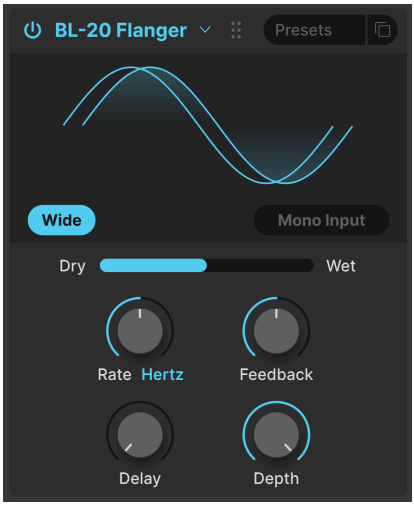
5.4.17. Flanger



The Flanger is an intense time/modulation effect. It originated from audio engineers pressing on the flange (rim) of a moving tape reel to slow down the playback a tiny bit. Combined with the original signal, this produces the signature "jet engine" effect.

Control	Description
Rate	Adjusts the rate of the LFO that controls the flanging speed, with tempo-synced options
Delay (H)	Changes the delay time between flanged and original signals, which affects the harmonic content
Feedback (V)	Adds feedback for a harsher or "ringing" sound. Maximum is 99% to avoid runaway feedback
Depth	Adjusts the depth of the delay that modulates the flanged signal
Mono/Stereo	Toggles between mono or stereo operation
+/-	toggles the Flanger's phase shifting between additive and subtractive
HP Frequency	Determines the amount of low-frequency content that will enter the flanger effect
LP Frequency	Determines the amount of high-frequency content that will enter the flanger effect

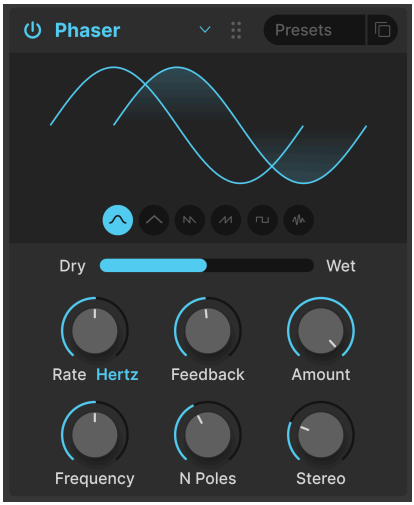
5.4.18. BL-20 Flanger



The **BL-20 Flanger** is based on the sound of Arturia's Flanger BL-20 plug-in, which is in turn based on the sound of the rare and beautiful-sounding Bel BF-20 hardware flanger from the 1970s.

Control	Description
Wide	Provides a wider stereo image by inverting the phase of the LFO modulating the right channel
Mono Input	When engaged, optimizes the flanger for processing a monaural signal
Rate	Adjusts the rate of the flanger, with unsynced and tempo-synced options
Delay (H)	Adjusts the audible depth of the flange effect
Feedback (V)	Adjusts the amount of effected signal feeding back into the flanger
Depth	Adjusts the depth of the LFO that modulates the delayed signal

5.4.19. Phaser

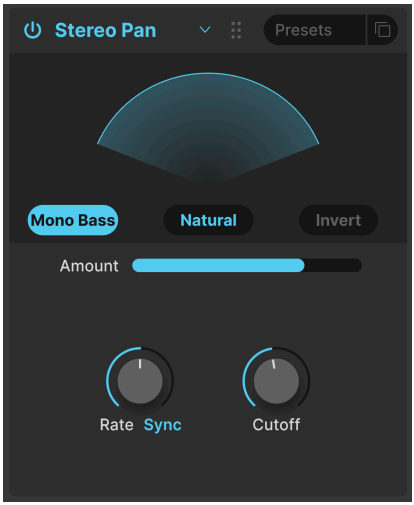


Phase shifting splits the incoming signal, changes the phase of one side, and recombines it with the unaffected signal. Modulation of this signal via an LFO results in a notch-comb filter that sweeps through the frequency spectrum, causing that familiar "whooshing" sound.

♪ Two iconic uses of the phaser are on analog strings by Gary Wright and Jean Michel Jarre, and on electric piano by Steely Dan, the Doobie Brothers, and other "yacht rock" artists.

Control	Description
Rate	Adjusts the rate of the phaser, with unsynced and tempo-synced options
Feedback (V)	Controls the amount of phased signal feeding back into the effect for a more resonant sound
Amount	Adjusts the intensity of the phasing effect
Frequency (H)	Sets the harmonic center of the phasing effect
N. Poles	Determines the steepness of the phaser's filter frequency response
Mono/Stereo	Toggles the phaser between mono and stereo output

5.4.20. Stereo Pan



Stereo Pan automatically moves the stereo position of the Synthx V sound, to provide motion and breadth.

Control	Description
Rate (V)	Controls the speed of stereo panning, with tempo-synced and unsynced options
Natural/ Linear	Toggles whether the signal pans according to a linear volume relationship between the sides, or a gentler logarithmic curve
Invert	Flips the side-to-side panning
Mono Bass	When engaged, low frequencies will not be panned, which may be desirable for a solid bass sound with movement in the treble
Cutoff	When Mono Bass is active, this sets the point at which low frequencies (50-200Hz) will not be panned

6. MODULATORS

ADSR

Function

Random Generator

Step Sequencer

Synthx V's all-new modulation section features easy drag-and-drop assignment of modulation sources. To access it, click the Advanced button [p.97] to open the Advanced view. The Multi-Arp [p.31] and Effects [p.42] tabs reside here too – and we already covered those in previous chapters.

6.1. Overview

Every tab to the right of the Effects tab is a Modulation source. These can further be divided into internal sources, MIDI sources [p.85], and Macros [p.88]. The first three tabs are for internal sources, and you have a choice of *four* source types for each of those three slots:

Source	Color Code	Description
ADSR [p.69]	Amber	ADSR envelope generator
Function [p.72]	Green	Hyper-flexible shape creator
Random [p.78]	Violet	Complex random value generator
Step Sequencer [p.80]	Magenta	Modulation sequencer for sending stepped values

To the right of these are the MIDI modulators [p.85]: performance gestures such as the mod wheel, keyboard note, key and release velocity, aftertouch, and MPE slide, which refers to the position of your finger along the Y-axis of a key on an MPE controller [p.103]. MIDI modulators are color-coded pale pink.

Finally, we have the four Macros [p.88]. These control multiple parameters with a single knob twist. Then you could MIDI learn each Macro to a physical knob or fader for powerful command over your performance. Macros are color-coded dark blue.

6.1.1. Important note about modulations and Layers

Before going any further, we should point out that modulation *assignments* are independent per Layer, including their respective modulation amounts. The modulation sources *themselves* and their parameters (such as the times and levels of an ADSR envelope) are global to both Layers.

6.1.2. Assigning a modulation

Synthx V features a new drag-and-drop approach designed to remove the guesswork and squinting from assigning modulation routings. Suppose we want to assign the Random generator to filter frequency to create a bubbling "1970s computer brain" sound.

Synthx V makes assigning modulations easy with drag-and-drop

Step 1 Click-hold on the source's icon or animated thumbnail (not the text tab below it). The icon will turn into a 4-way arrow, as shown above.

Step 2. As you begin to drag the source, a bubble with its name appears.

Step 3. Drop the bubble on the destination, in this case the filter frequency, like so:

Dropping a source on a destination creates a Quick Edit knob

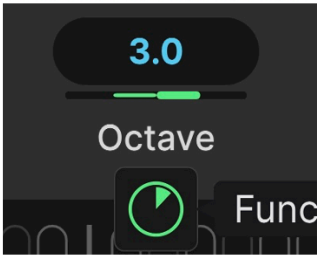
Notice the Quick Edit knob that appears below the destination, matching the color of the source. Turn it to adjust the modulation amount in a positive or negative direction. It reappears any time you hover over that destination.

Hover over the Quick Edit knob to see the modulation amount around the source

If you hover over the quick edit knob, a "collar" around a knob or line adjacent to a slider appears in matching color to indicate the modulation amount. The collar/line appears in one of two ways:

- If the modulation source is bipolar, the collar extends in both directions from the destination control's position (as shown above).
- If the modulation source is unipolar, the collar extends in one direction from the destination control's position.

With parameters that appear as numerical fields, a black line underneath the field indicates it is an eligible modulation destination.



The Octave parameter of the Multi-Arp modulated by a Function

Assign a source, and the line will display a color-matching bar to show the modulation source type and amount, as shown above.

You can assign as many sources as you want to a destination, and Quick Edit knobs will appear under it. When a destination is receiving modulation, the standard collar (Layer color) that indicates its position animates to show the real-time effect on the destination value.

> Don't forget that you can assign modulation sources to parameters in the Multi-Arp, Effects, and even other modulation sources. Simply select the destination area using the text tabs, then drag on an icon/thumbnail to make the assignment.

6.1.2.1. Viewing sources at the destination

ADSR, Function, and Random sources all assigned to filter frequency

There are two ways to view modulation assignments once they're made. This first method is when you want to see which source(s) modulate a given destination. Simply hover over the destination (you may need to click in its general area first) to display as many Quick Edit knobs as there are sources. In turn, hovering over a Quick Edit knob will display a pop-up identifying the source and modulation amount.

6.1.2.2. Viewing destinations at the source

An ADSR assigned to both oscillators' pulse width plus the frequency and envelope amount of the filter, all in Layer A

The second approach displays a list of which destinations are modulated by the chosen source. Click on the source's thumbnail/icon (not the text tab) to show the list. Here are its basics:

- Individual and global on/off buttons mute the modulation routing without deleting it
- Horizontal sliders control positive/negative amounts and correspond to the Quick Edit knobs at each destination
- Hover on the destination text and it scrolls so you can read the whole thing
- Destination text begins with the letter of the current Layer
- Move the mouse cursor out of the list area to hide it

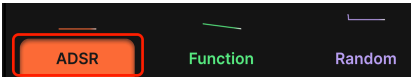
Remember that the destinations shown in the list are *only* for the current Layer. To see assignments in the other Layer, switch to it using the buttons on the main panel [p.17] or Upper Toolbar. The MIDI modulators and Macros also have more comprehensive lists of both Layers' destinations; we will cover these in their respective sections.

6.1.3. Remove a modulation assignment

To remove an assignment, double-click on its Quick Edit knob underneath the destination. This first sets the value to zero. Then when your cursor leaves the area, the Quick Edit knob disappears. If you want to disable the modulation without removing it (so that you can hear other things better, for example), use the on/off buttons in the Source View lists. In any case, drag-and-drop makes it easy to redo any assignment deleted accidentally.

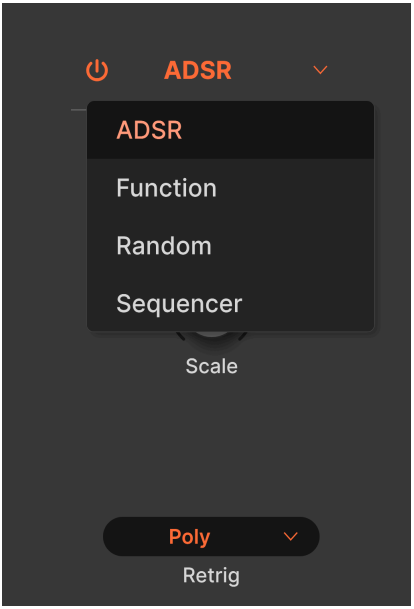
6.1.4. Selecting an internal source type

You can mix and match source types in the first three slots any way you like. Here's how you do it.



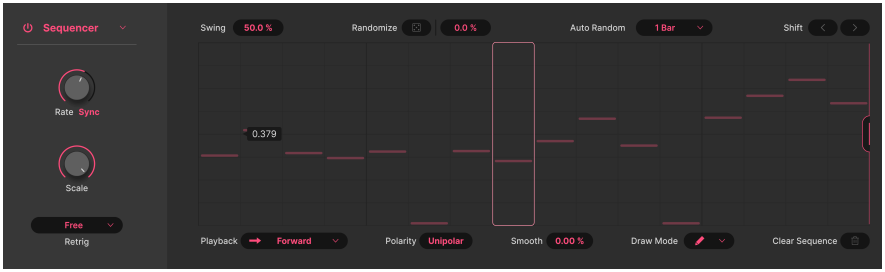
Click an internal slot's tab to select it

First, choose one of the three tabs. Here, we have picked the first, currently populated by an ADSR envelope.



The modulation source select menu

Now, go to the left side of the screen and click the drop-down menu. Suppose we want to change that ASDR to a Step Sequencer. Select it from the menu and presto:



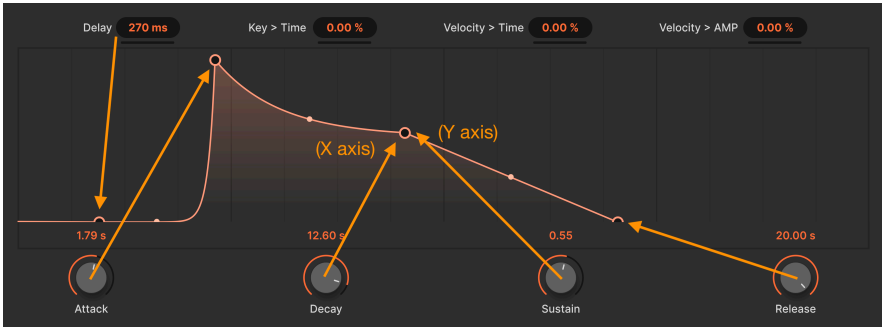
Now, the Step Sequencer occupies the first modulation slot

Now let's examine the modulation source types themselves!

6.2. ADSR

The ADSR modulation source

The ADSR source type is essentially a synth envelope generator, with the addition of an adjustable delay before the attack phase begins – so technically it's a DADSR. You can adjust its main settings with either the knobs or by moving the breakpoints in the graphic visualizer. Try it and you'll see their actions mirror each other.

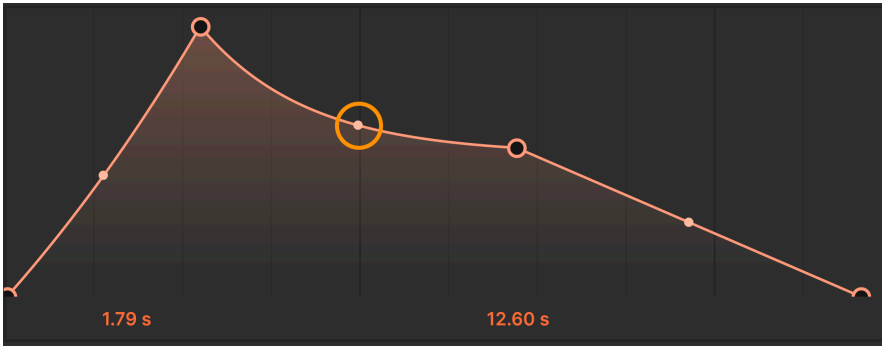


Each parameter mirrors the position of a breakpoint in the graphic envelope

6.2.1. ADSR Scale

The **Scale** knob at far left sets a ceiling on the overall modulation output of the envelope. You can think of it as determining the ADSR's peak level at the top of the attack phase.

6.2.2. ADSR curves



Grab the handle to adjust the shape of the envelope segment

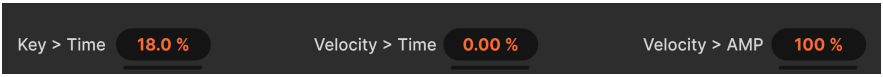
You can also adjust the shape of the envelope segment between each breakpoint. Hover over the small dot in the center of a segment. Up and down arrows will appear. Now, click and drag the segment into the desired shape.

6.2.3. Main envelope parameters

The main envelope parameters work as expected:

- **Delay:** Adds a time lag before the attack phase begins
- **Attack:** Sets the time it takes for the envelope to rise to peak level once a note is played
- **Decay:** Sets the time it takes for the envelope to fall from peak level to the sustain level
- **Sustain:** Adjusts the sustain level at which the envelope remains as along as a note is held
- **Release:** Sets the time it takes for the envelope to fall from the sustain level when a note is released

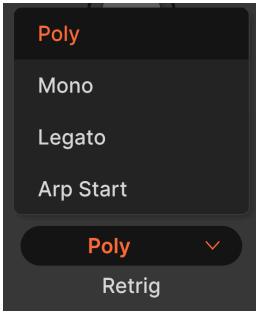
6.2.4. Envelope MIDI modulations



Three more parameters let MIDI notes and velocity affect the envelope for added expression.

- **Key > Time:** Envelope times (attack, decay, release) become more sensitive to keyboard note
- **Velocity > Time:** Envelope times (attack, decay, release) become more sensitive to MIDI velocity
- **Velocity > Amp:** Scale parameter becomes more sensitive to velocity

6.2.5. ADSR Retrigger

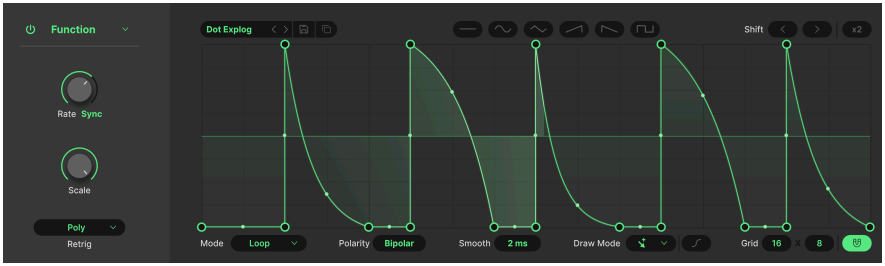


The retrigger settings determine what actions will start the envelope over from the beginning of its cycle, and how notes are affected.

- *Poly:* Each new note starts the cycle over only for that note, i.e. every note gets its own cycle
- *Mono* Each new note starts the cycle over for *all* currently held notes
- *Legato:* New notes played legato (before previous notes are released) will *not* retrigger the envelope
- *Arp Start:* Envelope retriggers at the beginning of any Multi-Arp track affecting the same Layer

To get familiar with these, assign an ADSR to something quite audible, like a filter cutoff. Then play notes, listen, and watch the tracer puck glide along the envelope curve, looking for when it goes back to the beginning.

6.3. Function

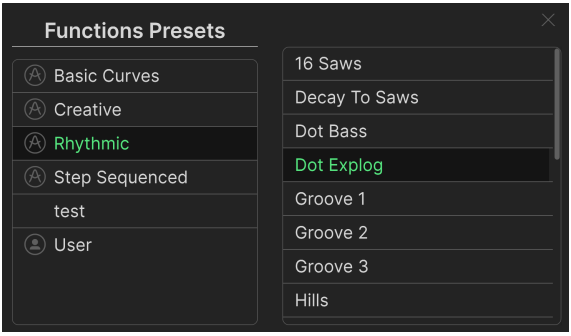


The Function generator can be thought of as a highly flexible envelope-meets-LFO – if the two were fused by a mad scientist. The concept is that you can create any kind of modulation shape you can imagine.

6.3.1. Function Scale

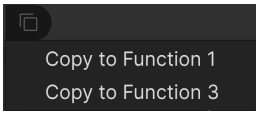
As with the ADSR, the leftmost knob sets the scale (overall output) of the function while preserving all of the time and level relationships within it.

6.3.2. Function Presets



Before we create our own functions, click on the Presets field to see the factory selections and get an idea of just how many shapes a function can take. On the left are general categories of functions. Click the disk icon to save your own creations, which will then appear in the user category.

6.3.3. Function Copy

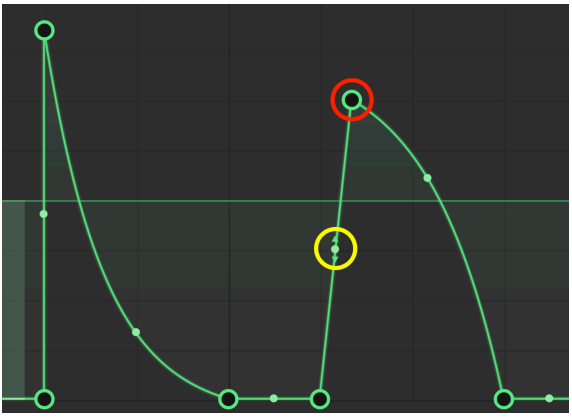


Click the double-document icon to copy the selected Function's settings to another Function occupying either of the other two slots. If a different modulation source (ADSR, Random, or Step Sequencer) is currently in the target slot, copying will *not* overwrite that setting. You first need to put a Function in that slot, then perform the copy operation.

6.3.4. Function LFO shapes

In addition to this preset library, there are six basic waveshapes intended for using the Function like an LFO or starting your own shape: flat, sine, triangle, ramp, aw, and square.

6.3.5. Breakpoints and grab handles



A breakpoint is circled in red; a grab handle in yellow

Functions let you create any curve or shape of modulation with two simple tools: *breakpoints* and *grab handles*. A *breakpoint* is a point in time at which the modulation changes direction. (It doesn't have to – you could use a breakpoint as a spot where, for example, the curve increases or decreases in steepness – but changing direction is usually what a breakpoint is for.)

Left-click on the graph to add a breakpoint. Right-click on the point to delete it – a quick confirmation pop-up will appear.

Between any two breakpoints, there is a *grab handle* that you can drag to change the shape or intensity of the curve between those two points, much like with the ADSR. Leaving a handle in mid-position would create a more or less straight line between points. Dragging it as far as it will go in a direction generally creates a steep "knee" shape.

Between grab handles and breakpoints, any shape can be created, from a simple sine wave for an LFO to a conventional synth-style ADSR to extremely complex shapes.

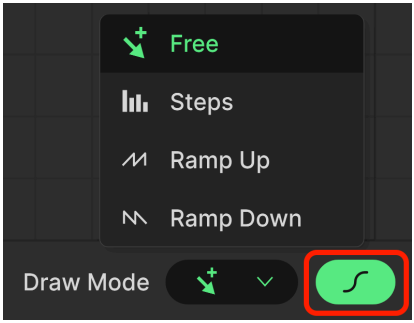
6.3.6. Drawing Tools

Click on **Draw Mode** to bring up the list of drawing tools. These can speed up your Function creation by letting you draw repeating shapes via click-dragging inside the visualizer.

- *Free:* Creates a single point
- *Steps:* Creates a repeating square wave-like pattern
- *Ramp Up:* Creates a rising sawtooth pattern
- *Ramp Down:* Creates a falling sawtooth pattern

Position the mouse in the visualizer so that your cursor becomes a pencil icon, then drag.

6.3.6.1. Curve

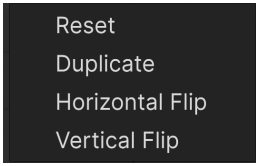


The S-shaped curve button to the right of the Draw Mode menu toggles a more curved shape for the Function's segments. The exact shape change is different from one Function to another; it is merely meant as another creative tool.

6.3.6.2. Grid and Magnetize

When the magnet button is lit, moving breakpoints around the display will "snap to grid," aiding you in creating rhythmic Functions or precise shapes. You can then drag up and down on the numerical fields to adjust the resolution of the grid in both the horizontal and vertical axes.

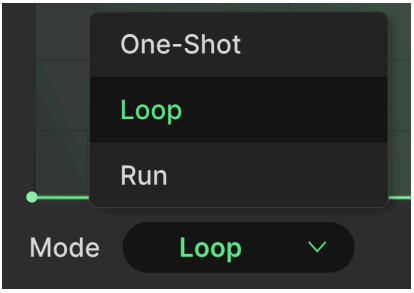
6.3.6.3. Additional editing tools



Right-click anywhere in the display *other* than on a breakpoint to bring up the above menu of editing options:

- *Reset:* Resets the function to "flatline" – be careful with this one!
- *Duplicate:* Performs a Duplicate [p.76] operation
- *Horizontal Flip:* Creates a mirror image of the function horizontally
- *Vertical Flip:* Creates a mirror image of the function vertically

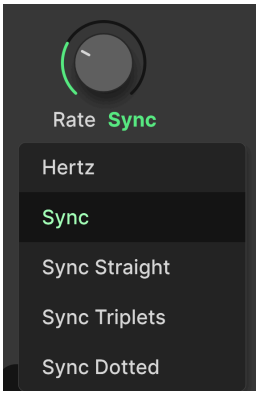
6.3.7. Function Mode



The **Mode** setting is an important one, because it selects whether the Function behaves more like an envelope or more like an LFO.

- *One-Shot:* The Function plays through once, i.e. more like an envelope
- *Loop:* The Function plays repeatedly and can retrigger from the start point based on a selectable event
- *Run:* The Function plays repeatedly and only returns to the start point when it reaches the end

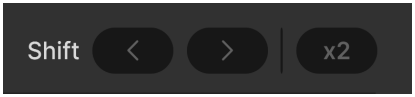
6.3.8. Function Rate and tempo sync



The rate of the Function can run free or be synced to project tempo via a drop-down menu accessed by clicking below the **Rate** knob. The options are:

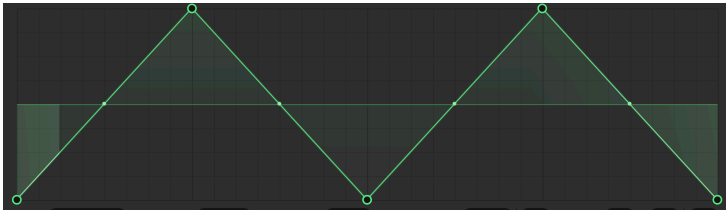
- *Hertz:* Free-running with no tempo sync
- *Sync:* Straight, triplet, and dotted ratios are all present serially when you turn the knob
- *Sync Straight:* Only even rhythmic values are represented
- *Sync Triplets:* Tempo is synced with a triplet feel; a quarter-note = three eighth-notes played in the space of two
- *Sync Dotted:* Tempo is synced with a dotted feel; a quarter-note = a dotted eighth-note followed by a 16th-note

6.3.9. Function Shift and Duplicate

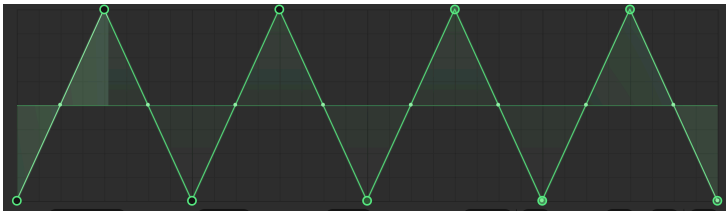


The **Shift** arrows will move the function forward or backward in time by one block along the horizontal axis of the grid.

Duplicate (the button labeled **x2**) basically doubles the speed of the function. For example, take a simple triangle wave that looks like this:



Click the **x2** button once, and it transforms into this:

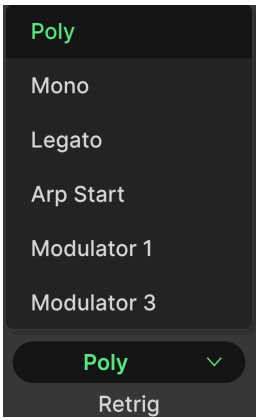


6.3.10. Function Polarity and Smooth

The **Polarity** field toggles whether the Function output sends positive values only (Unipolar) or positive and negative values (Bipolar).

Drag on the **Smooth** field to smooth out transitions at the breakpoints. This can help if you hear unwanted clicks in the sound as the Function plays.

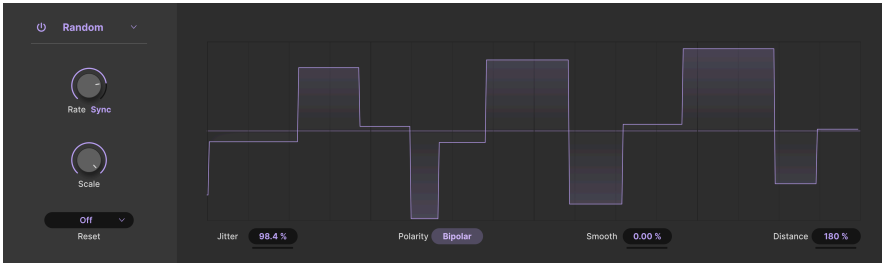
6.3.11. Function retrigger



Finally, you can decide which action restarts the Function from the beginning of its cycle, much like the ADSR.

- *Poly:* Each new note starts the cycle over only for that note, i.e. every note gets its own Function cycle
- *Mono* Each new note starts the cycle over for *all* currently held notes
- *Legato:* New notes played legato (before previous notes are released) will *not* retrigger the Function
- *Arp Start:* Function retriggers at the beginning of any Multi-Arp track affecting the same Layer
- *Modulator:* Function restarts when either of the Modulators in the other two slots restarts (there are always two of these options)

6.4. Random



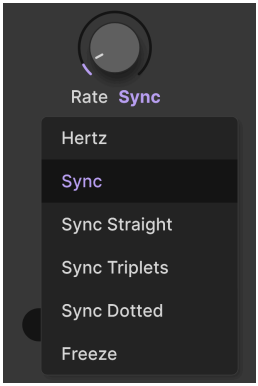
The Random modulator does exactly what its name implies: It generates a stream of random values that can then modulate any destination you assign. It's based on the similar modulation source in our flagship software synth Pigments, but streamlined to the most musically useful parameters.

- **Jitter:** Introduces further random variance in the timing when each new value is generated
- **Polarity:** Toggles whether positive and negative (Bipolar) or only positive (Unipolar) modulation output values are generated
- **Smooth:** Adds transition time between Random value changes, which can help smooth out unwanted clicks
- **Distance**: Sets the time between the current and upcoming value change; expressed as a percentage

6.4.1. Random Scale

The **Scale** button determines the maximum or "ceiling" modulation output generated by the Random engine (in both positive and negative directions if the Randomizer is set to Bipolar priority).

6.4.2. Random Rate and tempo sync

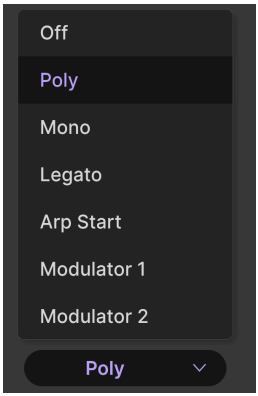


The rate of the Random generator can run free or be synced to project tempo via a drop-down menu accessed by clicking below the **Rate** knob.

The options are:

- *Hertz:* Free-running with no tempo sync
- *Sync:* Straight, triplet, and dotted ratios are all present serially when you turn the knob
- *Sync Straight:* Only even rhythmic values are represented
- *Sync Triplets:* Tempo is synced with a triplet feel; a quarter-note = three eight-notes played in the space of two
- *Sync Dotted:* Tempo is synced with a dotted feel; a quarter-note = a dotted eighth-note followed by a 16th-note
- *Freeze:* Stops Random value generation but preserves the current value

6.4.3. Random retrigger

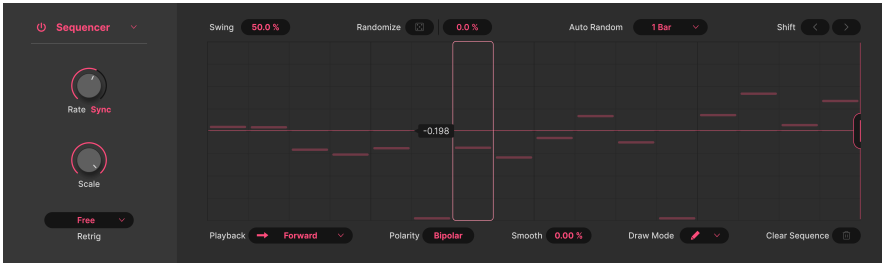


Finally, you can decide which action restarts Random value generation from the beginning of the cycle.

- *Off:* Random generator does not retrigger
- *Poly* Each new note starts the cycle over the current note only; i.e. each note gets its own cycle
- *Mono* Each new note starts the cycle over for *all* currently held notes
- *Legato:* New notes played legato (before previous notes are released) will *not* retrigger the Random generator
- *Arp Start:* Value generation retriggers at the beginning of any Multi-Arp track affecting the same Layer
- *Modulator:* Value generation restarts when either of the Modulators in the other two slots restarts (there are always two of these options)

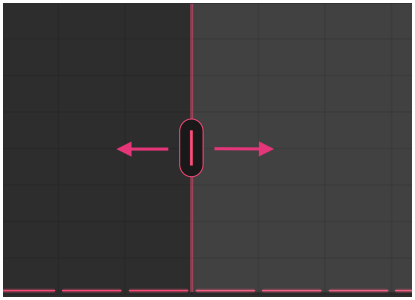
♪ Experiment with the *Freeze* tempo sync setting together with the different retrigger modes for some creative possibilities. For example, with the *Legato* setting and tempo sync frozen, the Random generator outputs a new value only upon receiving a non-legato MIDI note. Use *Arp Start* and the random value will change at the beginning of a Multi-Arp cycle. In this way, you can tie new modulation values to your playing, to musical phrases, and so on.

6.5. Step Sequencer



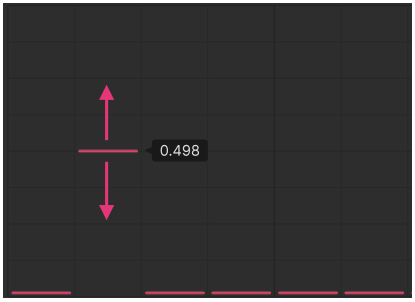
The Step Sequencer in Synthx V is much like one that could be used to play notes, only it's for sending modulation values to destinations. (You *could* play notes with it in a fashion – by assigning it to oscillator pitch!) It offers adjustable pattern lengths up to 16 steps, one-click random pattern generation, auto-randomization of pattern data, swing, four playback modes, and much more.

6.5.1. Setting the pattern length



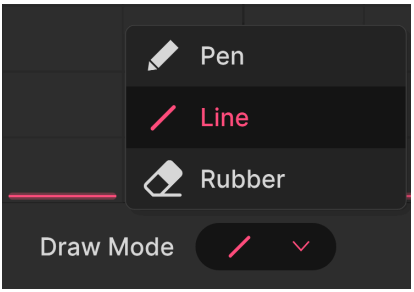
Grab the vertical magenta handle (usually found at the right side of the window) and slide it back and forth to adjust the overall length of the pattern.

6.5.2. Entering Data



To enter data at any step, click anywhere within a step on the grid to position the horizontal bar. You can then drag the bar up and down to fine-tune its value.

6.5.3. Drawing modes

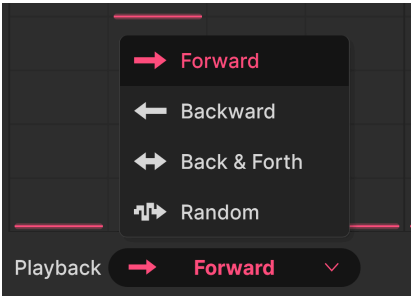


Similarly to the Functions, the Step Sequencer has drawing tools to speed up pattern creation. Click the **Draw Mode** icon to show the pop-up.

- *Pen:* Free-drawing; drag the cursor horizontally and vertically to enter a new value at each step
- *Line:* Creates an ascending or descending series of steps when you drag the cursor on the grid
- *Rubber:* Eraser tool; sets step values to zero as you drag

> To make successive slopes with the Line tool, release the mouse button once you are satisfied with your line. Then start at the next step and make a new line.

6.5.4. Sequencer Playback mode



In this pop-up menu, you can set how the sequencer runs through the pattern.

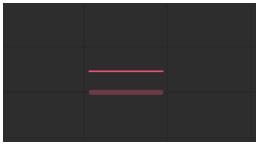
- *Forward:* Sequence only plays left to right
- *Backward:* Sequence only plays right to left
- *Back & Forth:* Sequence plays in one direction then reverses; first and last steps are repeated
- *Random:* Sequence jumps to random steps

6.5.5. Swing

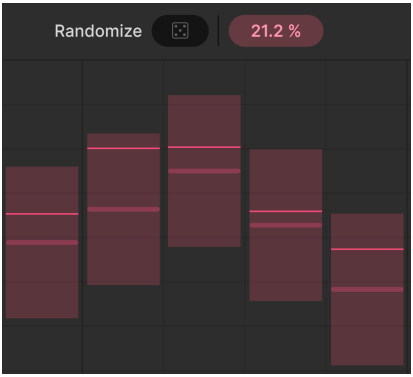
Swing is often described as a "behind the beat" rhythmic feel, and the Step Sequencer has a range of 50 to 75 percent, which you change by dragging up or down on the number. Fifty percent represents a "straight" feel, whereas 75 percent means that two eighth-notes are played as a dotted eighth plus a 16th-note. That is, the note durations between them are split 75/25.

6.5.6. Randomize

Click the "dice" icon to generate a completely random set of values for all steps. In any given step, the dimmer, slightly thicker bar represents the original set step value and the thinner, brighter bar the random one, like so:

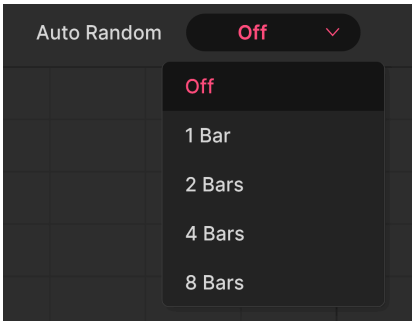


6.5.6.1. Random range



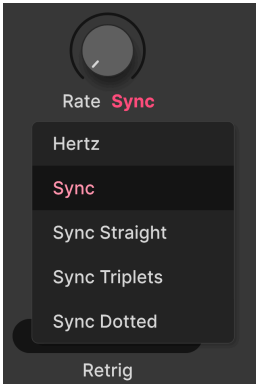
The percentage field to the right of the dice restricts the range within which a random value can be generated above and below the set value. Hover over it and the sequencer displays the ranges as vertical bars.

6.5.6.2. Auto-Random



You can also let the Step Sequencer to generate a new set of random step values every bar or every two, four, or eight bars using the above menu.

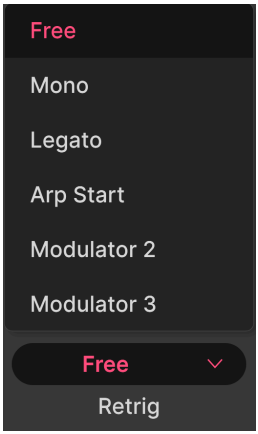
6.5.7. Sequencer Rate and tempo sync



Like the Functions and Random generator, the sequencer can free-run or sync to project tempo. Access these options by clicking beneath the **Rate** knob:

- *Hertz:* Free-running with no tempo sync
- *Sync:* Straight, triplet, and dotted ratios are all present serially when you turn the knob
- *Sync Straight:* Only even rhythmic values are represented
- *Sync Triplets:* Tempo is synced with a triplet feel; a quarter-note = three eight-notes played in the space of two
- *Sync Dotted:* Tempo is synced with a dotted feel; a quarter-note = a dotted eighth-note followed by a 16th-note

6.5.8. Sequencer retrigger



As with the other modulators, you can determine which events will cause the sequencer to start over from the beginning of the pattern, via the menu at the lower left of the window.

- *Free:* Sequence pattern does not retrigger
- *Mono* Each new note starts the pattern over for *all* currently held notes
- *Legato:* New notes played legato (before previous notes are released) will *not* retrigger the pattern
- *Arp Start:* Sequence pattern retriggers at the beginning of any Multi-Arp track affecting the same Layer
- *Modulator:* Pattern restarts when either of the Modulators in the other two slots restarts (there are always two of these options)

6.5.9. Other parameters

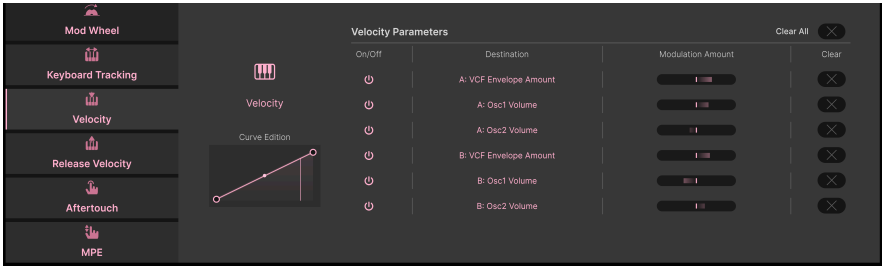
A handful of now-familiar parameters rounds out the Step Sequencer's utility.

- **Polarity:** Determines whether the Sequencer sends positive values only (Unipolar) or positive and negative values (Bipolar).

- **Smooth:** The higher **Smooth** is set, the more gradual the transition between steps becomes. At zero, the output is simply star-stepped as it appears onscreen. At 100 percent, it becomes a completely smooth curve that passes through all the step values.

- **Shift:** The Shift arrows move the sequence forwards or backwards one step at a time. For example, when shifting forward, the value in step 1 moves to step 2, and so on, until the final step in the pattern becomes step 1.

6.6. MIDI modulators

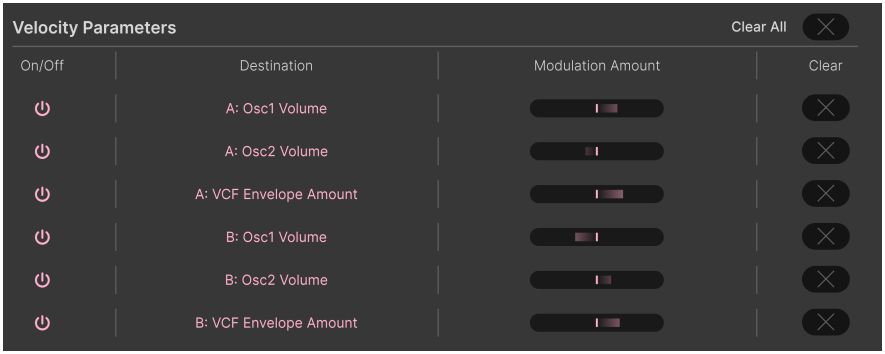


Color-coded pale pink, the MIDI modulators can all be found on the tab that displays the word "Keyboard" (unless you click on one of the other icons). This is because they all represent MIDI messages that come from a keyboard or other controller – and hence gestures that can make musical performance more expressive. There are six of them:

- **Mod Wheel:** Position of the modulation wheel
- **Keyboard Tracking:** MIDI note number
- **Velocity:** MIDI playing velocity assuming velocity-sensitive hardware
- **Release Velocity:** How quickly a note-off occurs assuming hardware that senses this
- **Aftertouch:** Channel after-pressure on supporting hardware
- **MPE Slide:** Finger position on the Y-axis of a key or other surface, on supporting MPE controllers [p.103]

All of these work more or less identically: They translate some form of kinetic motion (from a musical input device) into a MIDI continuous controller message that can in turn be applied as a modulation source. For that reason, we will take Velocity as the example for this section, because its parameters apply to all other MIDI modulators.

6.6.1. The parameter list



MIDI modulators can display all destinations in both Layers

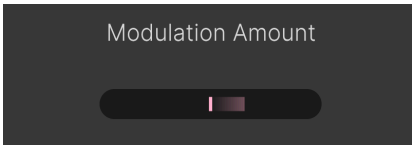
Once you have assigned some modulation routings [p.65] using the convenient drag-and-drop method, the destinations for a MIDI modulator appear here.

Notice that destinations for both Layers A and B are shown, like an expanded version of Source view [p.67]. In the above example, we have assigned velocity to both oscillators' volume as well as filter envelope amount, in both Layers, for illustration purposes.

6.6.1.1. On/Off buttons

Each destination has an on/off toggle that mutes the modulation without deleting the routing assignment.

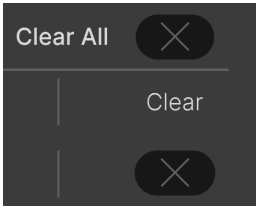
6.6.1.2. Modulation Amount



Horizontal mod amount sliders duplicate the Quick Edit knobs at the destinations

Each destination row also has a Modulation Amount slider. These mirror the actions of the Quick Edit knobs visible when hovering over [p.67] a destination. From here you can easily adjust the MIDI modulator's effect on all destinations.

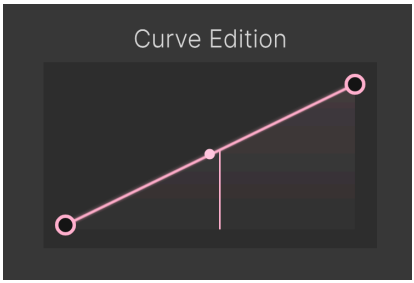
6.6.1.3. Clear buttons



You can quickly delete any modulation routing by clicking its X icon – or delete them all by clicking the **Clear All** X.

> Fear not! If you do this by accident, you can recover your routings with the Undo [p.100] button in the Lower Toolbar.

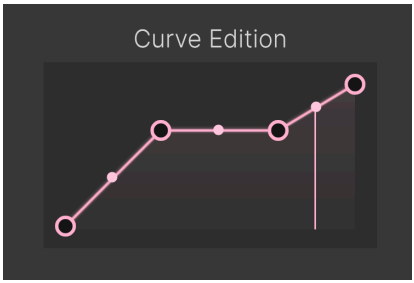
6.6.2. Control curves



A simple linear control curve; vertical line indicates last received value

You can also edit the controller curve for each MIDI modulator. That is, how it translates physical motion into MIDI. The default curve is shown above. The vertical line represents the last value received by the modulator: how hard you played a key in the case of velocity, what position the mod wheel was left in, and so on.

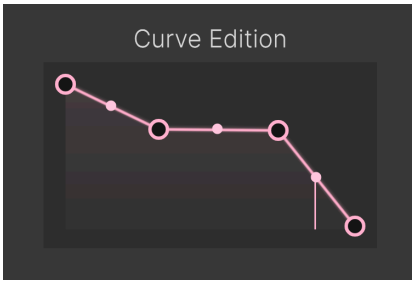
6.6.2.1. Custom curves



A custom control curve

You can edit the default curve for any MIDI modulator with a process very similar to editing Functions [p.73]: Click in the curve to add breakpoints, drag the grab handles to shape the curve segments, and right-click to remove breakpoints. The first and last breakpoints cannot be deleted.

6.6.2.2. Inverse curves

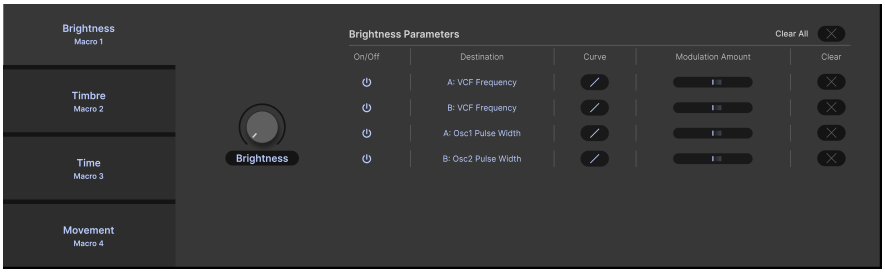


An inverse control curve

You can even program inverse curves! In the case of velocity, this would make the modulation value *lower* the harder you strike the keys.

> ♪ One application for inverse curves would be to crossfade two signals – such as two oscillators or the volume of Layers A and B – by using a positive curve on one and an inverse curve from the same modulation source on the other.

6.7. Macros



Macros are a longtime staple of Arturia instruments. They let you assign a virtual knob to multiple other parameters. You can then MIDI-learn the Macro to a physical knob or fader. Synthx V features four Macros, and they work a lot like the MIDI modulators, with a few small differences.

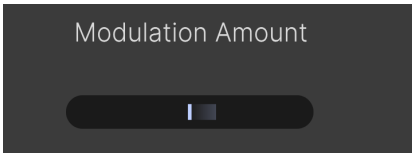
Macro knobs are mirrored in both the Lower Toolbar [p.98] and Preset Browser [p.122].

> Macros are called Brightness, Timbre, Time, and Movement by default. This does not restrict where you can assign them. They work identically, and can be freely renamed [p.90].

6.7.1. Macros parameter list

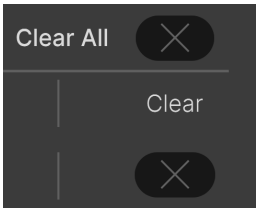
As with the MIDI modulators, the parameter list for any Macro shows destinations in both layers at once.

6.7.1.1. Macro modulation amounts



The horizontal sliders mirror the Quick Edit knobs at the various destinations [p.67], giving you a "mission control" center over all modulation amounts.

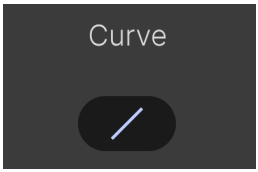
6.7.1.2. Clear icons



You can quickly delete any Macro routing by clicking its X icon – or delete them all by clicking the **Clear All** X.

> Fear not! If you do this by accident, you can recover your routings with the Undo [p.100] button in the Lower Toolbar.

6.7.1.3. Macro curves



You can change the shape of each Macro's curve by dragging on the small Curve icon. Unlike with MIDI modulators, there is no breakpoint editing or inverse capability here.

6.7.2. Macro master knob

Finally, each Macro has a master knob for sending modulation values to all the Macro's destinations. This knob can be MIDI-learned, but it cannot be a modulation destination itself.

6.7.2.1. Renaming the Macro

Click in the name field below the knob to type in a new name for the Macro.

7. USER INTERFACE

This chapter covers everything that is not in the main panel and advanced views – all the utilitarian functions that make Synthx V a pleasure to use in a modern music production environment.

The toolbars above and below the main panel [p.15] of Synthx V contain a number of important functions for Preset selection, housekeeping, and other utility settings.

Then there's the side panel, where you make important global and MIDI settings, and explore Synthx V via interactive tutorials.

The Upper Toolbar includes:

- The Main Menu [p.92]
- The Preset Name Pane and Preset Browser [p.110] access button
- Buttons to switch between layers A and B
- An overall output volume [p.19] knob
- The button to open the Advanced Views [p.97], which include the Multi-Arp [p.31], Effects [p.42], and Modulators [p.64]
- A gear-shaped icon that opens the side panel [p.102]

The Lower Toolbar includes:

- The parameter description area [p.16] that shows info when you hover over any control
- The Poly Mode [p.99] menu, which also displays voice allocation information
- Undo, Redo, and History [p.100]
- The CPU Meter [p.100] and Panic [p.101] functions
- Duplicate knobs for the Macros [p.101] found in the Modulation strip and Preset Browser
- A corner grab handle [p.101] for resizing the Synthx V window

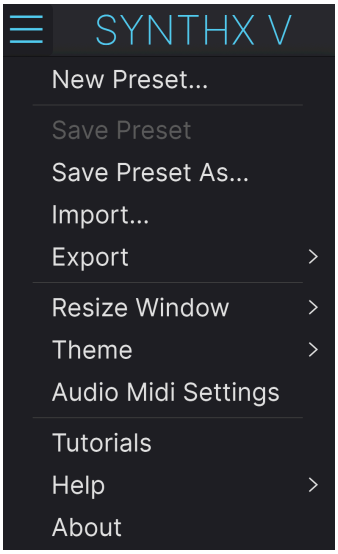
The side panel includes:

- Settings [p.102]
- MIDI [p.104]
- Tutorials [p.95]

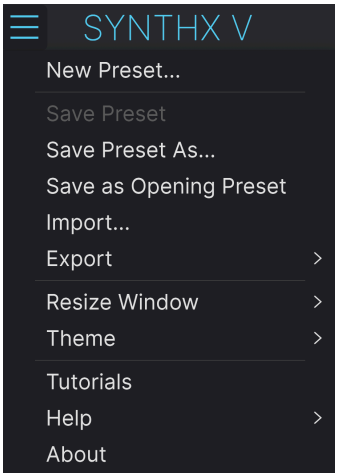
7.1. Upper Toolbar

Let's start with the Upper Toolbar, covering its functions from left to right.

7.1.1. Main Menu



The main menu when Synthx V is in stand-alone mode



The main menu when Synthx V is run as a plug-in

Clicking the "hamburger" icon (three horizontal lines) in the top left corner of the upper toolbar opens the Main Menu, a drop-down menu that lets you access a number of useful functions related to Preset management and more.

7.1.1.1. New Preset

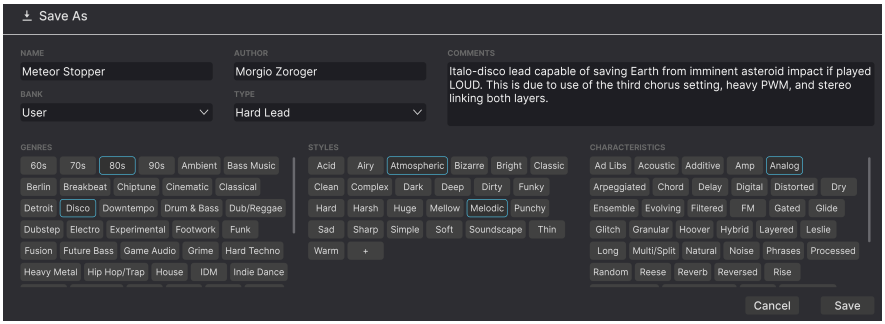
Creates a new Default Preset with initialized settings for all parameters.

7.1.1.2. Save Preset

Overwrites the current Preset with any changes you have made. This applies only to user presets, so this option is greyed-out for factory presets.

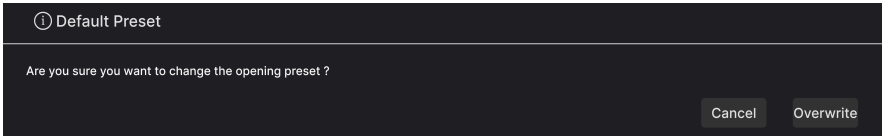
7.1.1.3. Save Preset As...

This option saves the current settings of Synthx V under a new Preset name. Clicking this option reveals a window where you can name your Preset and enter more detailed information about it:



> ♪ The Bank, Author, and Type fields are all useful when searching for Presets in the Preset Browser [p.110]. All of the words in boxes you see below that are tags [p.111], which can further help refine searches in the Preset Browser.

7.1.1.4. Save as Opening Preset



Available when Synthx V is used as a plug-in, this option makes the current Preset the default with which Synthx V opens whenever you create a new instance of it on a track.

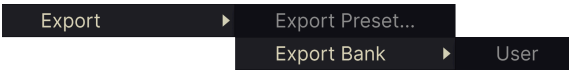
> This option does not appear in Avid Pro Tools, which already has a feature to set opening plug-in presets.

7.1.1.5. Import ...

This command lets you import a Preset file or an entire Bank stored on your computer. It opens a navigation window in your computer's OS to find the proper files. Importing a Preset will place it into the User bank.

7.1.1.6. Export

You can export Presets to your computer in two ways: as a single Preset, or as a Bank. In either case, an OS-level navigation window lets you specify where to save the file(s). Both individual Presets and Banks have the filename extension *.snthx*.



- **Export Preset:** Exporting a single Preset is handy for sharing a preset with someone else. The saved preset can be reloaded using the **Import** menu option.
- **Export Bank:** This option exports an entire Bank of Presets, which is useful for backing up or sharing many Presets at once. Saved Banks can be reloaded using the **Import** menu option.

7.1.1.7. Resize Window

Synthx V can be resized from 50% to 200% of its default size (100%) without any visual artifacts. On a smaller screen, such as a laptop, you may want to reduce the interface size so it doesn't dominate the display. On a larger screen or a second monitor, you can increase the size to get a better view of the controls and graphics.

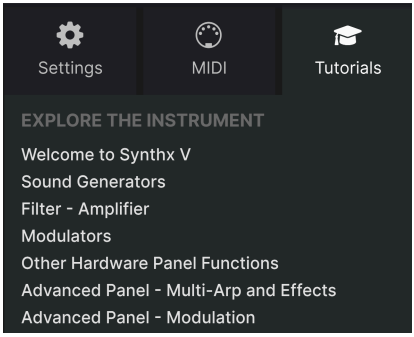
You can also do this using keyboard shortcuts: every time you press CTRL- (Windows) or CMD- (macOS), the window will shrink by one size increment, and every time you press CTRL+ (Windows) or CMD+ (macOS), the window will grow by one size increment.

In addition, you can click-drag the resize handle [p.101] at the right of the lower toolbar to make the Synthx V window any size.

7.1.1.8. Audio MIDI Settings

These appear only if Synthx V is working in stand-alone mode. Used as a plug-in, these are handled in the context of your DAW or host software. Refer to the chapter on Activation [p.9] for details on the settings for both Windows and macOS. They work in much the same way in stand-alone mode.

7.1.1.9. Tutorials



Synthx V comes with interactive tutorials that walk you through different features of the plug-in. Clicking this option opens a pane on the right side of the window where the tutorials appear. Select one to access step-by-step descriptions that highlight the relevant controls and walk you through the process.

7.1.1.10. Help

Get more help by visiting links to this user manual and Frequently Asked Questions pages on Arturia's website. You will need an internet connection to access these pages.

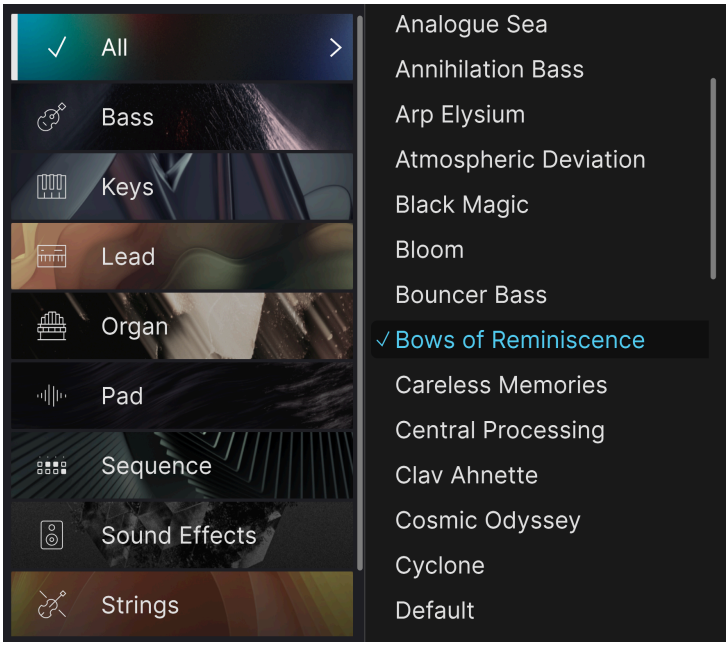
7.1.1.11. About

Here you can view the software version and developer credits. Click again anywhere on the screen (outside the About window but inside the plug-in) to make this pop-up window disappear.

7.1.2. Preset Browser access and Name Pane

The Preset Name Pane

Clicking the "books on a shelf" button opens the Preset Browser [p.110], which offers a myriad of ways to browse, sort, and organize Presets in Synthx V.



Preset types are shown on the left; individual Presets on the right

Clicking on the Preset name also opens up quick drop-down menus for selecting Presets outside of the Browser, as shown above. You can select to look at lists of Presets organized by Type, as shown above, or look at All Presets at once.

Everything you need to know about managing Presets is covered in detail in the next chapter [p.110]. This includes working with Favorites, which are tagged by clicking the heart icon.

> An asterisk just after the name in the Preset Name Pane (*) indicates that you've edited that Preset.

7.1.3. Layer switches

The Layer A/B switches here select which layer the main panel knobs and other controls affect. They mirror the Select buttons in the Layer Control [p.17] section of the main panel.

7.1.4. Advanced Button

Near the upper right corner of the top toolbar is the **Advanced Button**. This changes the lower area of the main panel (where the onscreen keyboard is usually seen) into the tabbed views for the Multi-Arp, Modulators, and Effects.

7.1.5. Output volume

This knob simply controls the main output level of Synthx V.

7.1.6. Gear icon

This opens the side panel [p.102] where settings, Macros, and tutorials reside.

7.2. Lower Toolbar

The Lower Toolbar of the Synthx V interface can be thought of in terms of left and right halves. On the left is the parameter description display, and on the right are controls and pop-up menus for several useful utility functions.

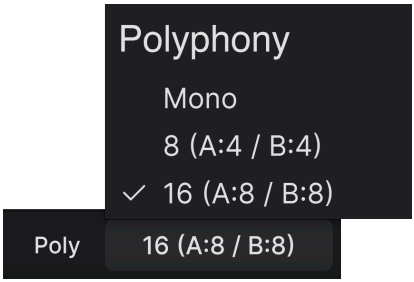
7.2.1. Parameter descriptions

This Control Description pops up when you mouse over the Speed knob in the Main Panel

Operate or hover on any knob, button, icon, or other control, and a brief description of what it does appears in the lower left-hand corner. That is the only item on the left side.

If a description is too long to fit in the space, it will scroll horizontally after hovering on the control for three seconds.

7.2.2. Polyphony

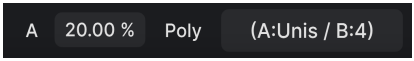


The Poly menu shows the voices allocated to each layer

Here you can choose the maximum number of voices Synthx V plays. Notice that voices are allocated evenly between layers (unless Unison is used), as shown by the A and B values. This is to reduce CPU demand, but also a nod to how important the Synthex's bi-timbral design was.

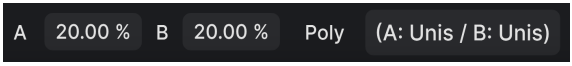
> The options here can change based whether Unison [p.27] is turned on. Specifically, if both layers have unison, there are no menu options because assigning a stacked monophonic voice to each layer is the only way to do this.

7.2.2.1. Unison detune



Drag on the percentage field to adjust unison detune

If Unison is active on either or both layers, a percentage field appears to the left of the Polyphony menu. Drag up and down on it to adjust the tuning spread between the unison voices. The letter A or B to its left indicates which layer has the unison. If both layers do, two percentage fields will appear, like so:



7.2.3. Undo, Redo, and History

Synthx V remembers every control move you have made

When editing a virtual instrument, it's all too easy to overshoot the sweet spot for one or more controls, and then wonder how to get back to where you were. Like all Arturia plug-ins, Synthx V offers comprehensive Undo, Redo, and History functions so that you always have a safe way back.

7.2.3.1. Undo

Click the left arrow to revert to the state before the most recent edit you made. You may click repeatedly to undo several edits in reverse time order.

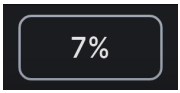
7.2.3.2. Redo

Click the right arrow to redo the most recent edit you undid. If you have undone several, you may click repeatedly to redo them in forward time order.

7.2.3.3. History

Click the center "hamburger" (three lines) button to open the History window, as shown above. This provides a step-by-step account of every move you have made in Synthx V. Clicking on an item in the list not only re-executes that move – it returns the plug-in to the overall state it was in when you first made that move.

7.2.4. CPU Meter



At far right is the **CPU Meter**, which displays the overall load Synthx V is placing on your computer CPU. Since it deals only with this plug-in, it is not a substitute for the resource metering tools in your DAW.

7.2.4.1. Panic

Mousing over the CPU Meter accesses the PANIC function

Mouse over the CPU Meter, and it will display the word PANIC. Click to send an all-sounds-off command that silences any sound processed through Synthx V. This is a momentary command, so sound will resume if your DAW is still playing.

In the event of serious runaway audio (say, from an unrelated delay effect that has gone into a feedback loop), stop your DAW playback and disable the plug-in causing the problem.

7.2.5. Macro controls

These controls can affect multiple parameters by turning just one of them, and mirror the actions of the knobs found in the Preset Browser. What they do can be assigned in the Modulators [p.64] Advanced view. Factory Presets are pre-programmed with useful Macros.

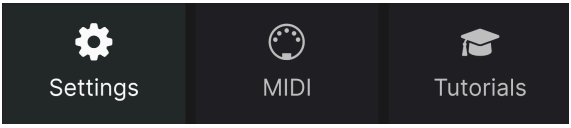
7.2.6. Resize handle

Grab and drag the diagonal lines to the right of the Macro controls to resize the Synthx V window. This lets you get achieve sizes in between increments in the Resize Window [p.94] menu if that better suits your screen layout.

7.2.7. Max View button

Sometimes, you may see the above button with two diagonal arrows appear over the resize handle. This happens when, for some reason, the window size is not displaying all of the controls of Synthx V. Click it to restore a full view of the open controls.

7.3. The Side Panel



The Side Panel's Settings tab

The gear-shaped icon at the top right of the Upper Toolbar opens the **Side Panel**, which in turn contains three tabs covering important subsystems that you won't have to access quickly when you're playing or editing sounds in Synthx V:

• **Settings**: Global settings such as MIDI receive channels, splits, octave shift, and Poly mode

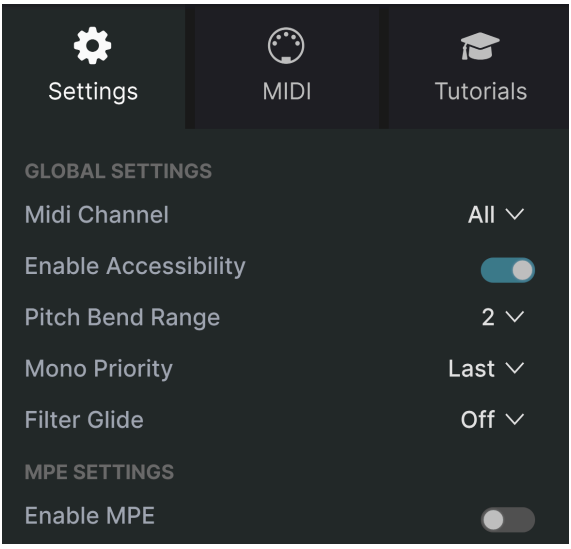
• **MIDI**: MIDI Learn functions for use with MIDI CC messages sent from a controller or DAW

• **Tutorials**: In-app interactive tutorials, also accessible from the main menu

Let's look at them from left to right.

7.3.1. Settings Tab

This tab covers settings to control how Synthx V responds to incoming MIDI.



The Side Panel's Settings tab

7.3.1.1. MIDI Channel

Selects the MIDI channel(s) on which Synthx V will receive MIDI input. You can select a particular channel, or choose "All" for Omni Mode.

7.3.1.2. Enable Accessibility

This gives your computer's system-level accessibility tools for differently abled persons access to Synthx V.

7.3.1.3. Pitch Bend Range

This menu selects the range of Synthx V's pitch-bend wheel, from 1 to 12 semitones. The bend amount is the same both up and down.

7.3.1.4. Mono Priority

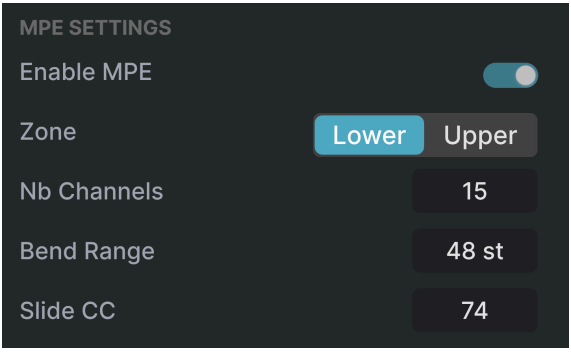
Priority refers to which note is heard when two or more keys are played on a monophonic synth. This drop-down menu selects lowest, highest, or last-note priority for when Synthx V is in Mono Retrig or Mono Legato modes [p.99].

7.3.1.5. Filter Glide

If this is turned on, and Glide mode [p.26] is active on the main panel, the frequency of the Multimode Filter will "slide" up or down to its correct value according to the Glide settings.

7.3.1.6. MPE Settings

Synthx V supports MIDI Polyphonic Expression (MPE). This exciting application of the MIDI protocol allows a multi-dimensional controller to send polyphonic expressive controls (like pitch-bend, aftertouch, or your finger location on the Y axis of a key) on a per-note basis. This is done by using separate MIDI channels to carry each note's expressive data separately. This data is then interpreted by synthesizers like Synthx V.



The MPE controls are:

- **Enable MPE:** Turns MIDI Polyphonic Expression mode on and off.
- **Zone:** If an MPE-capable controller can be split into lower and upper zones, this selects which zone sends the MPE messages.

- **No. Channels:** Sets the maximum number of MIDI channels (and therefore simultaneous notes) on which MPE messages may be sent.
- **Bend Range:** Sets the maximum pitch bend range of each note, up to 96 semitones (48 by default). This should be set to the same value as on your hardware MPE controller.
- **Slide CC:** Determines the MIDI continuous controller message that *slide* (moving your finger toward or away from you along the Y axis of a key) sends. The default is CC 74 (filter cutoff).

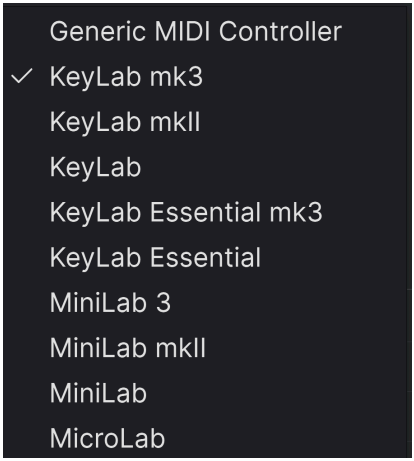
♪ Examples of MPE controllers include the Haken Continuum, ROLI Seaboard series, and Keith McMillen Instruments KBoard Pro.

7.3.2. MIDI Tab

The Side Panel's MIDI tab

This is where Synthx V may be placed in MIDI Learn mode. In this mode, all MIDI-assignable parameters on the Hardware Panel are highlighted and you can map physical controls on your MIDI controller to them. A typical example might be to map a real expression pedal to the Master Volume control, or a physical knob on the MIDI controller to the Frequency knob of the Filter section.

7.3.2.1. MIDI Controller menu



The MIDI Controller menu

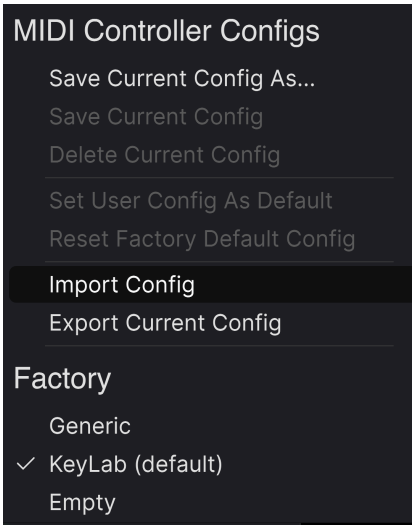
At the top right of the MIDI tab is the **MIDI Controller** drop-down menu, where you can select templates for many Arturia MIDI controllers. These map physical controls to many "most wanted" parameters in Synthx V for a plug-and-play experience. A Generic template is also provided for third-party MIDI controllers.

7.3.2.2. Fader Mode

This menu sets how Synthx V responds to fader movements received from your MIDI controller. (We did not include knobs, as most controllers have endless rotary encoders these days.)

- **None:** Synthx V leaves it up to your hardware settings
- **Hook:** Synthx V begins receiving the CC once the fader passes the stored value
- **Scale:** Synthx V receives the CC as soon as you move the fader, and moves the onscreen fader proportionally

7.3.2.3. MIDI Config menu



The MIDI Config menu

The **MIDI Config** drop-down lets you manage different sets of MIDI maps for controlling Synthx V from MIDI hardware. You can Save/Save As the current MIDI assignment setup, Delete it, Import a configuration file, or Export the currently active one.

This is a quick way to set up different hardware MIDI keyboards or controllers with Synthx V, without having to build all the assignments from scratch each time you swap hardware.

For example, if you have multiple hardware controllers (small live keyboard, large studio keyboard, pad controller, etc.), you can create a profile for each of them, save them, and then quickly load them here. This saves you from having to redo the MIDI mapping assignments from scratch each time you swap hardware.

Two options in this menu are especially powerful:

- **Default:** Gives you a starting point with predetermined controller assignments.
- **Empty:** Removes the assignments of all controls.

7.3.2.4. Assigning and unassigning controls

When MIDI Learn is active, available parameters are purple and already-assigned parameters are red.

Click the **Learn** button in the MIDI tab to put Synthx V into Learn mode. Controls available for assignment are purple. Controls that are already assigned are red, but can be reassigned if desired. The screenshot above shows the assigned and unassigned controls for Synthx V's Default configuration.

Click any purple control and its name will appear in the list. Now, move a control or operate a switch on your MIDI controller. The corresponding control onscreen will turn red and the assigned MIDI CC number will appear in the list to the left of the parameter name.

To unassign a control onscreen, control-click or right-click it. Alternative methods of assignment are available in the MIDI Parameter Menu [p.108] described below.

> Remember that Synthx V has two Layers, for which MIDI control assignments are independent. You may need to switch between Layers to assign all your desired controls. Likewise, look beyond the main panel: the Multi-Arp, Effects, and Modulators in the Advanced view all contain many parameters eligible for MIDI-learning!

7.3.2.5. MIDI channel, CC, and min and max values

The first two columns in every MIDI assignment list the MIDI Channel (**Ch**) and MIDI Continuous Control Change number (**CC**) for the assignment. Up to 16 Channels are available on any MIDI stream, and the 127 possible MIDI Control Change numbers, while freely assignable, follow certain conventions on most instruments. For example, Modulation Wheel is almost always MIDI CC 1, Master Volume is CC 7, and Sustain Pedal is CC 64.

You can click on any number in the channel column to change the value in a pop-up menu. You can click on a number in the CC column to type in a new CC directly.

The **Min** and **Max** value columns for each parameter in the list let you scale the amount by which a parameter in Synthx V changes in response to a physical control movement. For example, you may wish to limit the range of a filter sweep, even though you're probably going to turn the knob all the way during a live performance.

Drag up or down on a value to change it. Setting the maximum lower than the minimum reverses the polarity of the physical controller, i.e. turning it *up* will turn the assigned parameter *down*.

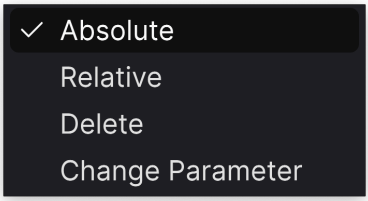
Switches that only have two positions (On/Off, etc.) would normally be assigned to buttons on your controller, but it's possible to toggle those with a fader or another control if you like.

> ♪ Don't forget that many settings in the Advanced views (Multi-Arp, Effects, and Modulators), not just settings on the main panel, may be MIDI Learned.

You can also add a destination parameter to the list manually by clicking the *Add control* (+ sign) at the bottom of the list. This will bring up a *huge* menu of literally every MIDI-addressable parameter in Synthx V.

7.3.2.6. MIDI Parameter Menu

Control-clicking or right-clicking on any item in the list - only the list, not the main interface - of assigned parameters brings up a convenient menu with the following options, which can be different for each parameter.



Right-clicking a parameter gives you these options

- **Absolute:** The assigned parameter in Synthx V tracks the literal value your physical controller is sending out.
- **Relative:** The assigned parameter in Synthx V will go up or down from its current value in response to physical controller movements. This is often useful when using endless 360-degree encoders that don't have physical motion limits.
- **Delete:** Removes the assignment and turns the corresponding onscreen control purple again.
- **Change Parameter:** Brings up a large sub-menu of every assignable parameter in Synthx V. This lets you change the assignment of the current CC/physical control manually, and is useful when you know exactly the destination you're looking for.

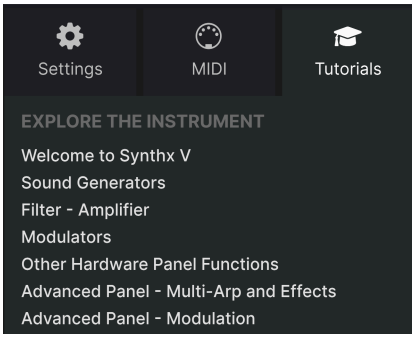
7.3.2.7. Reserved MIDI CC numbers

Certain MIDI Continuous Controller (CC) numbers are reserved and cannot be reassigned to other controls. These are:

- Pitch Bend
- Aftertouch (Channel Pressure)
- All Notes Off (CC #123)

All other MIDI CC numbers may be freely assigned to control any parameter in Synthx V.

7.3.3. Tutorials



In this tab, which can also be opened by selecting **Tutorials** from the Synthx V main menu [p.92], you can click on titles for the individual chapters, which in turn will take you through different areas of Synthx V in steps. The parts of the panel to focus on are highlighted as you go.

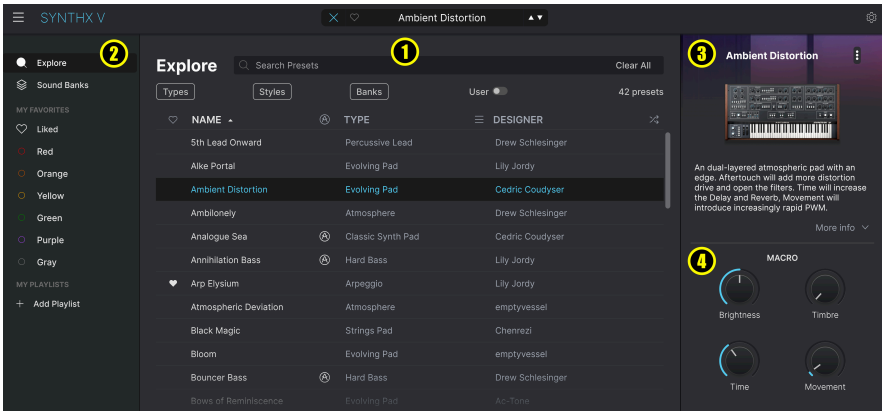
> If you're editing a Preset, make sure to save it before opening the Tutorials, because doing so will load a new Preset and overwrite your changes. The Tutorials also take over the Side Panel space when in use.

8. THE PRESET BROWSER

The Preset Browser is how you search, load, and manage sounds in Synthx V. It can display different views but they all access the same Presets and subgroups of Presets.

To access the browser, click the browser button (the icon looks like books on a library shelf). To close the browser, click the **X** that appears in its place.

The browser has four main areas:

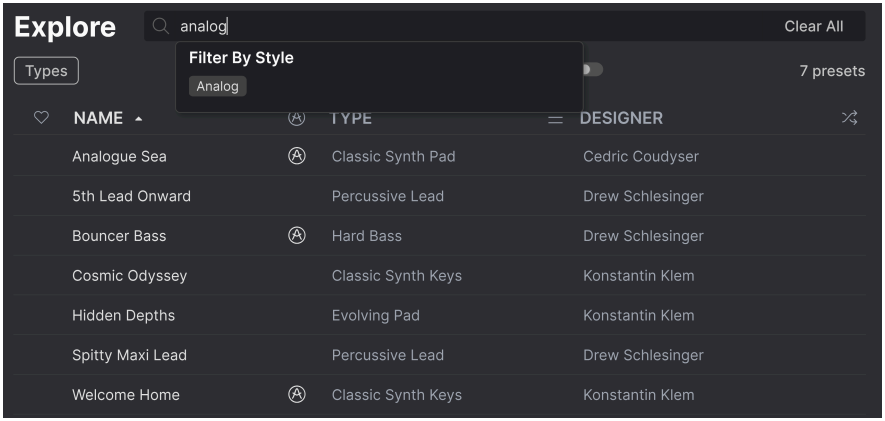


Number	Area	Description
1.	Search and Results [p.111]	Search Presets with text strings, and by tags for Type and Style.
2.	Sidebar [p.116]	Manage Banks, Favorites, and Playlists.
3.	Preset Info [p.119]	Summary of Bank and Tags, Designer name, and description info for current Preset.
4.	Macro Knobs [p.122]	Large size duplicates of Macro knobs in Lower Toolbar and the Macros tab.

8.1. Search and Results

Click on the Search field at the top and enter any search term. The browser will filter your search in two ways: First, by matching letters in the Preset name. Then, if your search term is close to that of a Type or Style [p.111] it will include results fitting those tags as well.

The Results list beneath shows all Presets that fit your search. Click the X icon at right to clear your search terms.



If search results include a tag pop-up, it means your search term corresponds to one or more tags

8.1.1. "Filter by" pop-up

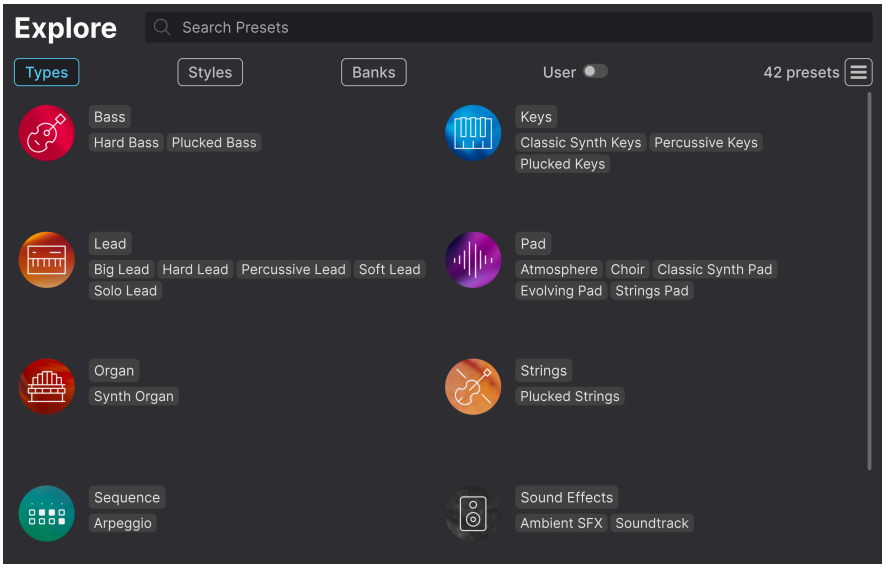
In the above image, note the pop-up beneath the search bar. This appears when your search text ("analog" in this example) corresponds to Presets' tags as well as to letters in the preset name. One or more tag groups may appear. Click on any tag to limit your search results to Presets that have that tag.

8.2. Using tags as a filter

You can narrow (and sometimes expand) your search using different tags. There are two kinds of tags: *Types* and *Styles*. You can filter by one, the other, or both. Our extensive range of MIDI controller keyboards also allows you to browse sounds directly from the MIDI keyboard.

8.2.1. Types

Types are categories of instruments. In Synthx V, Types include Bass, Keys, Lead, Pad, Strings, Organ, and more – most with subtypes that further define the kind of instrument or sound. The final Type is a Template Type for designing your own Presets. With a clear search bar, click the **Types** button to bring up this list.



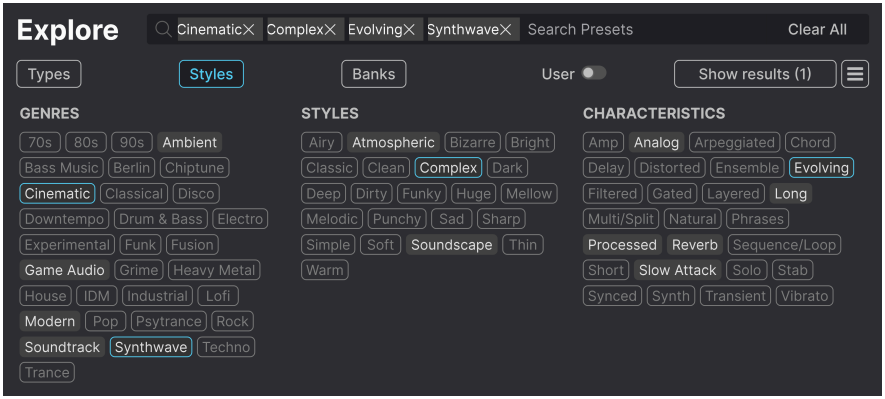
Click any one of them, and the results will show only Presets that match that tag. You can also select multiple Types using Cmd-click (macOS) or Ctrl-click (Windows). For example, if you aren't sure whether the Leads Preset you're looking for was tagged with the subtype "Poly Lead" or "Solo Lead", select both to broaden the search.

Results columns can be sorted and reverse-ordered by clicking the arrow buttons to the right of their titles (Name, Type, Designer).

8.2.2. Styles

Styles refine your search according to further musical attributes. Accessed by the **Styles** button, this area has three further subdivisions:

- *Genres*: Identifiable musical genres such as 80s, Cinematic, Fusion, Synthwave, etc.
- *Styles*: General "vibe" such as Atmospheric, Complex, Dark, Punchy, etc.
- *Characteristics*: Even more detailed sonic attributes such as Analog, Evolving, Layered, Transient, etc.



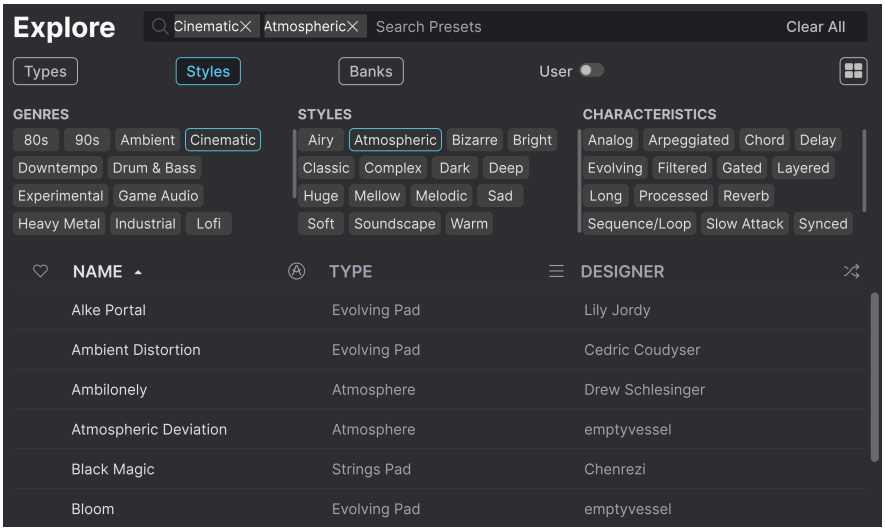
Click on any tag to select it. Click again (or right-click) on any selected tag to de-select it. Notice that when you select a tag, several other tags become unavailable. This is because the browser is narrowing your search by a process of elimination. De-select any tag to remove that criterion and widen the search without having to start all over again.

8.2.3. Banks

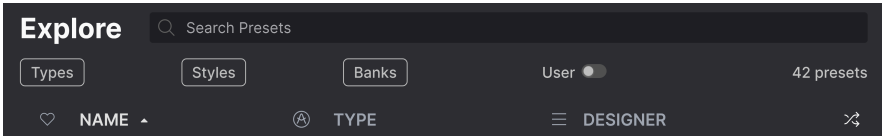
Next to the **Types** and **Styles** buttons is the **Banks** button, which lets you perform your search (using all the methods above) within the factory bank or user banks, as well as anything you've purchased from the Arturia Sound Store.

8.3. Search results window

Click the **Show Results** button if you cannot already see your list of results. Click the sort arrow to reverse the alphabetical order of any column. You can also click the "hamburger" (three lines) icon next to **Show Results**. The icon will change to four panes, and you will be able to see the Presets that fit your selected tags below groupings of Genre, Style, and Characteristic tags, like so:



8.3.1. Sorting the Preset order



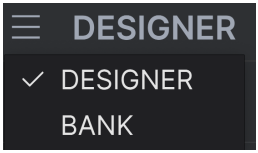
Click the **NAME** header in first column of the Results list to sort Presets in ascending or descending alphabetical order.

Click the **TYPE** header in the second column to do the same thing by Type.

Click the **Arturia logo** to the left of **TYPE** to bring factory-featured Presets to the top of the list. These will appear just under any Presets you have liked [p.115].

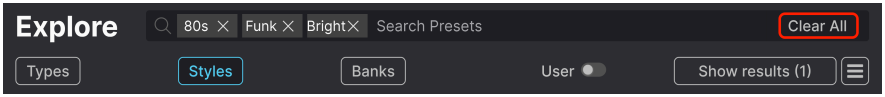
Click the **User** toggle switch to restrict your search to Presets in user banks.

The third column has two header options: **DESIGNER** and **BANK**. Click the icon with three lines to choose between the two. Then click either header name as with the other two columns to switch the alphabetical order.



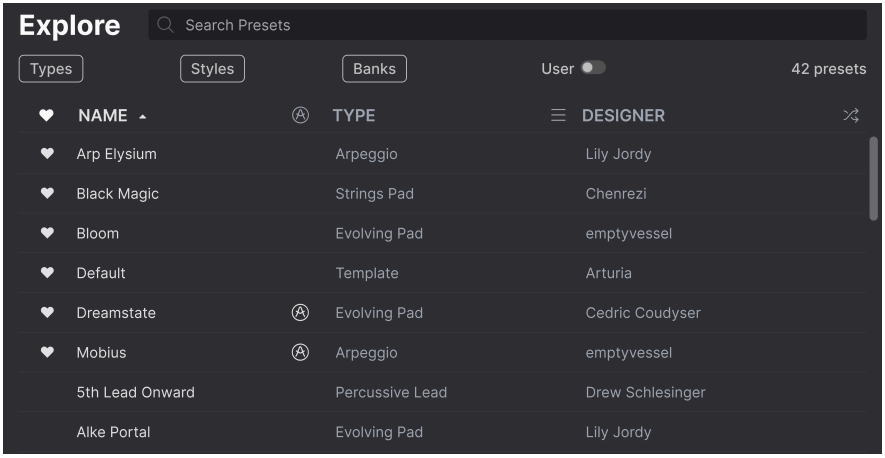
8.3.2. Clearing tags

Just above the Types, Styles, and Banks buttons, you will see labels for all the active tags in a search. Click the X next to any one to remove it (and thus broaden the results). Click **CLEAR ALL** to remove all tags.



8.3.3. Liking Presets

As you explore and create Presets you can mark them as Liked by clicking the **heart** that appears to the left when you hover the mouse over a preset name. Later, click on the heart icon at the top to put all of your favorites at the top of the Results list.



8.3.3.1. Shuffle Presets

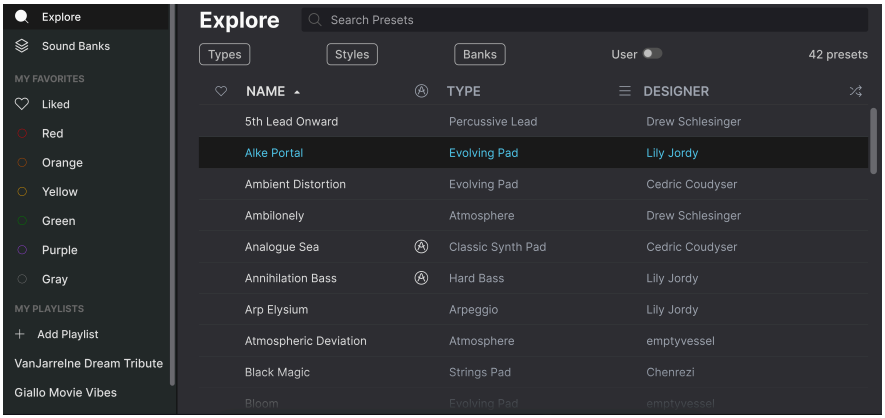
Clicking the "crossed arrows" button randomly reorders the Presets. This can be useful for finding something you like when your search results are a long list that takes time to scroll through – it might bring a killer Preset to the top. Shuffle mode is a toggle, so clicking it again will restore your search results to however they were previously sorted (by name, type, etc.).

Use as many of the sorting and filtering features as you need and you will find the exact sound you want every time.

8.4. Sidebar

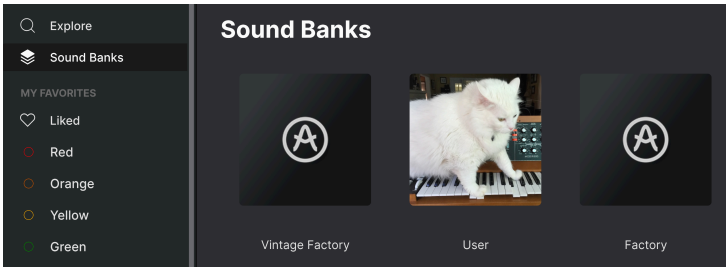
The leftmost section of the Preset Browser determines what is displayed in the Search and Results [p.111] section.

The topmost option is **Explore**:



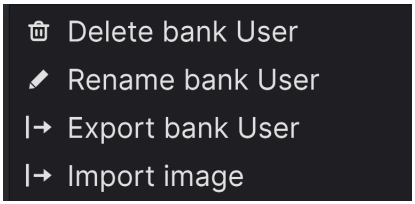
The **Explore** section is the default, letting you search the current bank of Presets loaded into Synthx V as we did in the previous section.

8.4.1. Sound Banks



> The **Vintage Factory** bank replicates the original factory presets of the Elka Synthex. Preset names reference the bank and program numbers. When reconstructing these sounds, we noticed that some of the names in the Synthex manual did not describe sounds accurately – for example, "3 5 Clavinet" sounds more like strings. For historical authenticity, we chose to duplicate the names as originally printed, mistakes and all.

Clicking **Sound Banks** brings up a window with all of the currently available Sound Banks. Right click on the image or name of a User bank (not the Factory banks) to bring up this menu:



You can import a custom bank icon image in PNG format

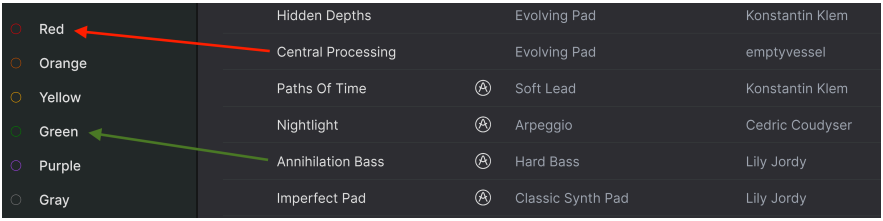
From here, you can delete, rename, or export the bank. You can also import custom user images in PNG format, as shown above.

8.4.2. My Favorites

The middle part of the Sidebar has a menu called **My Favorites**, which allows you to color-code certain groups of Presets for easy access. It also includes the **Liked** group, so you can quickly find Presets you've marked with the heart icon.

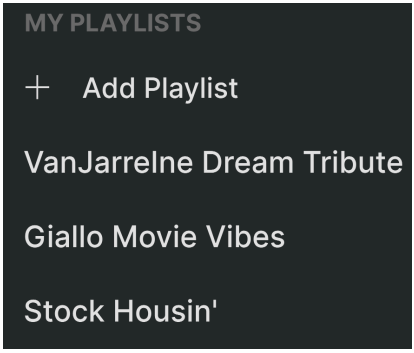
To decide which colors you'd like to display, hover over **My Favorites** and click **Edit**. Then use the toggle switches to select which colors you'd like to see or hide, and then click **Done**.

Please note that you can also rename these favorites as desired. Just right-click on the color name in the sidebar and enter a new name.



To add Presets to a particular set of Favorites, simply drag-and-drop them onto the appropriate color, or right-click the Preset name and select the color. Then click on the color itself to display your grouping.

8.4.3. My Playlists

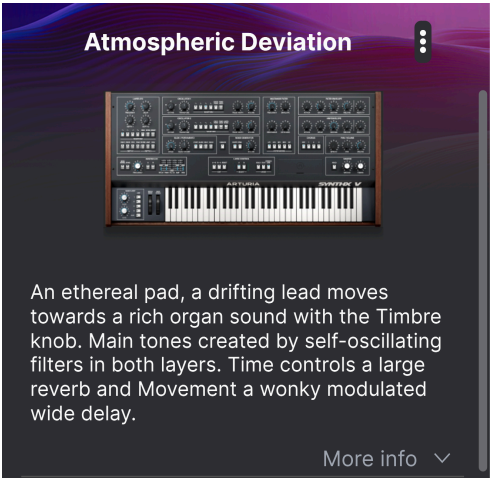


The bottom part of the sidebar displays any Playlists you have created or imported. Playlists are a very powerful management tool for set lists for gigs. Learn more about them in the Playlists section [p.123] below.

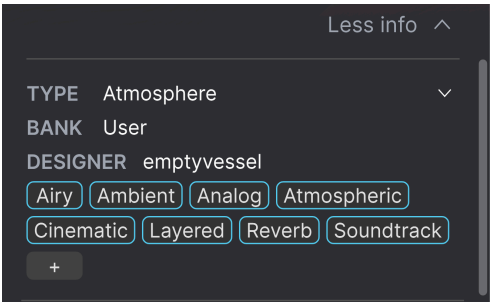
> If you don't see anything here, it is because you haven't created any Playlists yet. Head to the Playlists [p.123] section at the end of this chapter to find out how.

8.5. Preset Info section

The right side of the browser window gives a brief description of each Preset.



For user Presets (not factory Presets) you can edit this description by simply clicking in it and typing. Click "More info" at the bottom right of this pane to open up an area you can scroll down to:

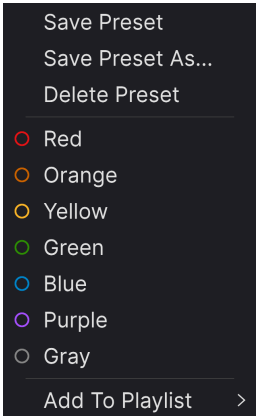


Here, you can change the Type and Bank via pull-down menus, enter a Designer name, and click the + sign to add or delete Style tags. When you click this icon, the results area is occupied by an edit list in which you can select and deselect Styles, Genres, and Characteristics:

Notice that each group has its own + icon at the end. Clicking this lets you create your own Styles, Genres, or Characteristics. Click the **X** at upper right when finished editing.

Type and Style changes you make here are reflected in searches. For example, if you remove the "Complex" Style tag and then save that Preset, it will not show up in future searches for Complex sounds. Again, all of this is possible only with *user Presets*.

Clicking on the three-dots icon at the top right pops up a management menu for the Preset.

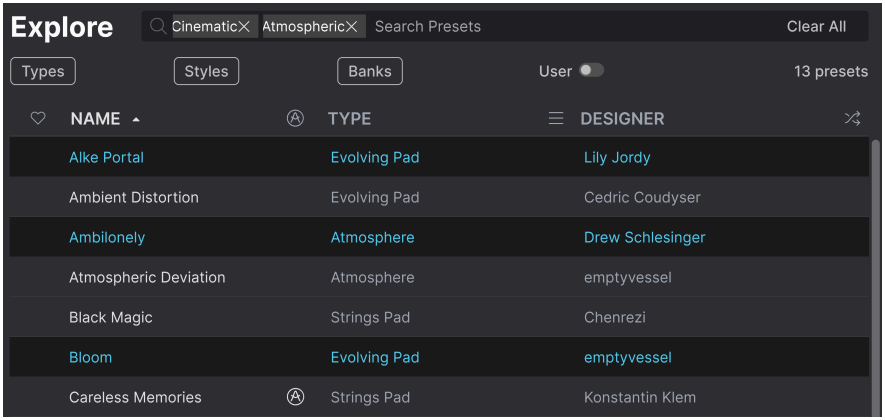


Options include *Save Preset*, *Save Preset As*, *Delete Preset*, and *Add to Playlist*, complete with an option to create a new Playlist [p.123]. (You cannot overwrite or delete factory Presets, so the Save and Delete options appear for user Presets only.)

The dots with color icons allow you to add the Preset to a particular group of color-coded Favorites, as described above [p.117].

8.5.1. Editing info for multiple presets

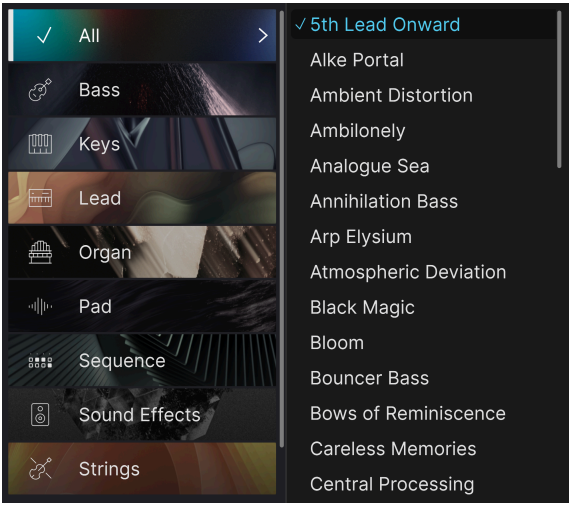
If you would like to move several Presets to a different bank while preparing for a performance, or enter a single comment for several Presets at the same time, it's easy to do. Simply hold command (macOS) or ctrl (Windows) and click the names of the Presets you want to change in the Results list. Then enter the comments, change the Bank or Type, etc., and save the Preset.



> ♪ If you want to alter the information for a Factory Preset you must first use the *Save As* command to re-save it as a User Preset.

8.6. Preset selection: other methods

Click on the Preset name in the center of the Upper Toolbar to bring up a drop-down menu. The first option in the left column of this menu is *All*, and it brings up a submenu of literally every Preset in the current bank, in alphabetical order.



Below this are categories that correspond to Types. Each of these brings up a submenu of all Presets of the selected Type.

If you have an active search by Type and/or Style, the up/down arrows to the right of the Preset name will step through only the results that conform to your search.

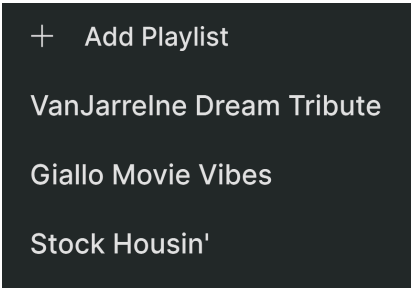
However, *All Presets* in the drop-down menu always ignores those criteria. Likewise for the Type choices below the line – they always include all Presets within that Type.

8.7. Macro knobs

These are simply larger duplicates of the Macro knobs in the Lower Toolbar and on the Macros tab. Macros let you control multiple other settings in Synthx V with a single knob twist, and Arturia virtual instruments typically provide four of them.

You can assign Macros to parameters in the Modulators [p.64] section of the Advanced view. We describe how to do this, and how to rename the knobs themselves, in the Macros [p.88] portion of Chapter 6.

8.8. Playlists



Playlists offer a powerful way to collect Presets into different groups for different purposes, such as a set list for a particular performance or a batch of Presets related to a particular studio project. Within a Playlist, Presets can be further grouped into Songs, a handy addition to a set list.

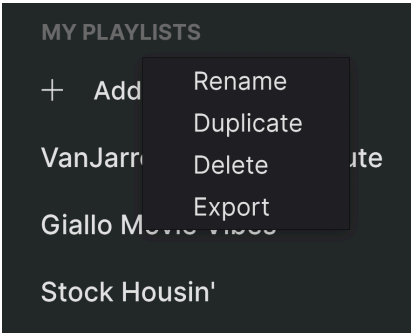
The subheading *My Playlists* appears under **My Favorites** towards the bottom of the Sidebar. When you first start using Synthx V, you'll have no Playlists yet – but it's very easy to create one!

8.8.1. Create your first Playlist

To get started, click **Add Playlist**. The following pop-up will appear, prompting you to name your Playlist.

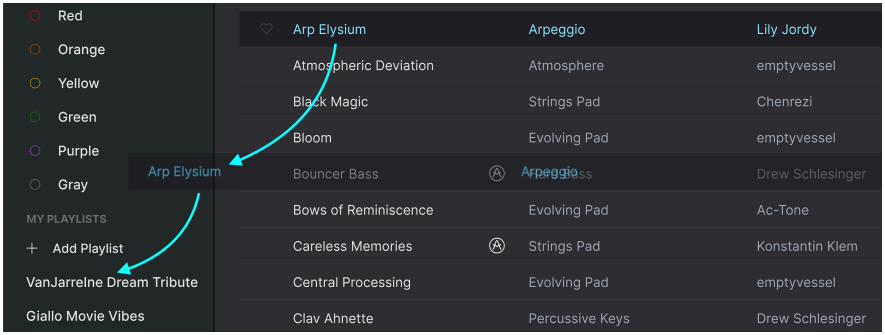
Once you've entered a name, that Playlist will now appear in the **My Playlists** section of the sidebar. You can create as many Playlists as you like.

Right-clicking on a Playlist name will pop up a set of options – you can *Rename*, *Duplicate*, *Delete*, or *Export* the Playlist to your computer, as a file with the extension *.aplst*.



8.8.2. Add a Preset

You can use all of the options in the Explore view to locate Presets for your Playlist. When you find a desired Preset, click-drag it onto the Playlist name.

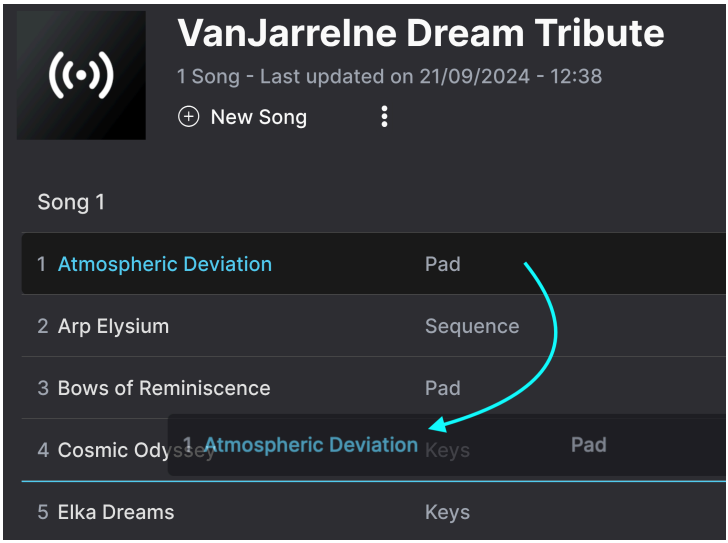


Dragging a preset to a Playlist

To view the contents of a Playlist, click on the Playlist name. By default, Presets dragged into a new Playlist will appear under "New Song" inside the Playlist. More about Songs [p.125] is below.

8.8.3. Re-order the Presets

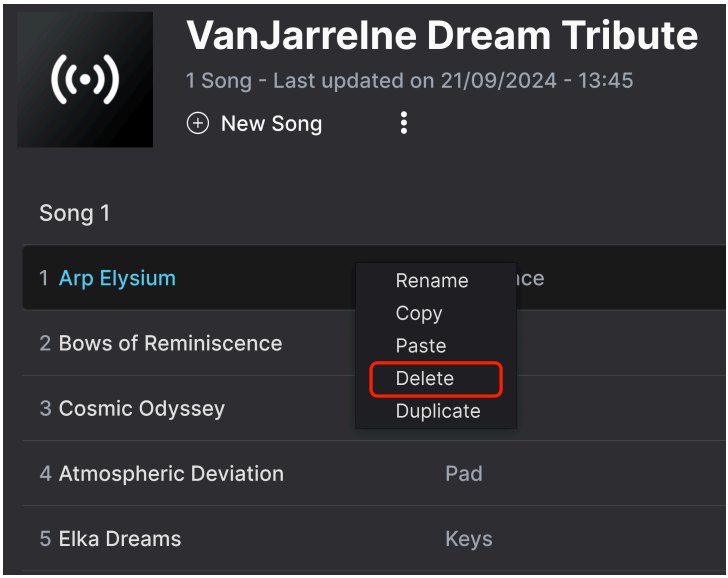
Presets may be reorganized within a Playlist. For example, to move a Preset from slot 1 to slot 4, drag and drop the Preset to the desired location.



This will move other Presets up in the list to accommodate the new location of the Preset you just moved. A light blue line will briefly appear at the "insert point."

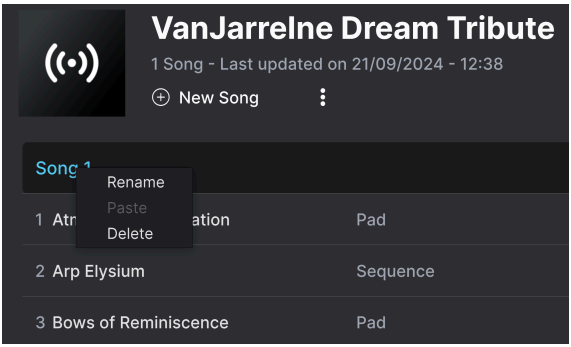
8.8.4. Remove a Preset

To delete a Preset from a playlist, select the Playlist, then right-click on the Preset's name in the Results Pane to bring up a pop-up menu. This will only delete the Preset **from the Playlist**, not delete the Preset from the Synthx V browser!



This menu also includes **Rename**, **Copy**, **Paste**, and **Duplicate** options. More management options are described below.

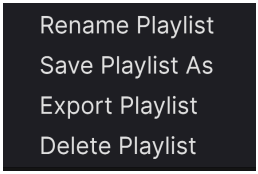
8.8.5. Song and Playlist management



Any Playlist can be further divided into *Songs*, an ideal tool for managing set lists for a live show. The **New Song** button creates a new Song at the bottom of the Playlist. You can name it (right-click on the song name), then click and drag it to position it in the Playlist and add Presets to it in the desired order. You can have multiple songs in each Playlist, and when dragging a song by its title, it brings all its Playlists with it, in order.

Song names don't have numbers by default (Preset names in a Playlist do), but of course you can begin a song name with a number.

To access other Playlist management options, click on the three-dots icon next to the **New Song** button. This brings up a pull-down menu:



- **Rename Playlist**: Renames the current Playlist without making a copy.
- **Save Playlist As**: Creates a duplicate of the playlist with "Copy" appended to the name. You can change the name before saving.
- **Export Playlist**: Exports your Playlist to a location on your computer, with the filename extension "aplst."
- **Delete Playlist**: Deletes the current Playlist but does *not* delete any of the Presets in it.

8.8.6. MIDI control of Playlists

Since Playlists are ideal for live performance, you do not need to mouse around on a screen to use them. Instead, you can select Playlists, Songs, and Presets by sending values on the following MIDI continuous controllers:

- *CC OO:* Selects a Playlist
- *CC 32:* Selects a Song within the current Playlist
- *MIDI Program Change:* Selects Presets within the current Song

Ideally, you could program buttons to send value-up and value-down increments on each of these CCs if your MIDI controller has this capability.

That's all there is to the Preset Browser! We hope you will enjoy many hours exploring the factory Presets and creating your own.

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