USER MANUAL

_SOLINA V

ARTURIA

_The sound explorers

Special Thanks

DIRECTION

Frédéric Brun
Kevin Molcard

DEVELOPMENT

Pierre-Lin Laneyrie (project manager)
Theo Niessink (lead)
Alexandre Adam
Stefano D'Angelo
Kevin Arcas
Baptiste Aubry
Maxime Audfray
Arnaud Barbier
Timothée Béhéty
Yann Burrer
Corentin Comte
Simon Conan
Matthieu Courouble
Raynald Dantigny
Geoffrey Gormond
Baptiste Le Goff
Valentin Lepetit
Samuel Limier
Loris De Marco
Florian Marin
Germain Marzin
Mathieu Nocenti
Marie Pauli
Pierre Pfister
Benjamin Renard

DESIGN

Glen Darcey
Shaun Elwood
Morgan Perrier
Sebastien Rochard
Greg Vezon

SOUND DESIGN

Glen Darcey
Boele Gerkes
Randy Lee
Theo Niessink
Erik Norlander
Pierce Warnecke

MANUAL

Tomoya Fukuchi
Randy Lee
Mike Metlay
Jimmy Michon
Gala Khalife
Minoru Koike
Charlotte Métais
Holger Steinbrink

SPECIAL THANKS

Adrien Bardet
Clément Bastiat
Chuck Capsis
Jeffrey M. Cecil
Denis Efendic
Ben Eggehorn
David Farmer
Ruary Galbraith
Simon Gallifet
Jeff Haler
Marco Correia « Koshdukai »
Simon McDonnell
Lewyn Mitchell
Ken Flux Pierce
Fernando Manuel Rodrigues
Daniel Saban
Chad Wagner
Stephen Wey

26 avenue Jean Kuntzmann
38330 Montbonnot-Saint-Martin
FRANCE
www.arturia.com

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Thank you for purchasing Solina V!

This manual covers the features and operation of Arturia's **Solina V**, one of our many powerful virtual instruments.

Be sure to register your software as soon as possible! When you purchased Solina V, you were sent a serial number and an unlock code 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 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.

Introduction

Congratulations on your purchase of Arturia's Solina V!

We'd like to thank you for purchasing Solina V, a virtual instrument recreation of the famous Solina string ensemble keyboard (also known as the ARP String Ensemble), a signature sound of popular music in the 1970s.

We've carefully studied and modeled every nuance of the original Solina to fully recreate the rich sound of this legendary string ensemble. We then took things one step further, by adding expanded features for the modern studio, as well as entirely new sound programming options that take the Solina experience to a new level.

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. You can choose to focus on the Main Panel and get a (slightly improved) vintage Solina experience, or pop open the Advanced Panel and discover a universe of sounds that the original Solina engineers could only dream of.

Here's to a beautiful blend of the old and the new – and the beautiful music you'll make 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 SOLINA V

Arturia would like to thank you for purchasing our modeling synthesizer, Solina V. We're confident that it will become a valuable addition to your music production studio.

If this is the first Arturia product you have owned, we think you'll find it's an excellent way to become acquainted with our stuff. If you've purchased our products before, you know we take great pride in recreating the sound and feel of the original instruments – and then we add 21st Century features these products might have had, if only the technology had been available at the time!

The Solina, the original instrument upon which this virtual model is based, played an important part in many hit songs of the 1970s and early 1980s. It was a perfect fit for the various forms of symphonic rock and pop music that flourished in those days.

Since you obviously appreciate the Solina sound, we thought you might enjoy a brief look backward at what it took to bring this marvelous instrument to life.

1.1. A History of the Solina

1.1.1. A string section for everyone

In the early days of rock music, having a string ensemble play on your tracks was an impossible dream for any but the most famous musicians. While there's something about the sound of orchestral instruments that can take a sweet love song and turn it into a heart-rending expression of the human condition, the fact remains that hiring a string section isn't for everybody – and taking one out to bar gigs isn't for *anybody*.

Some venues might have a Hammond organ or a badly-beat-up piano, but most relied on the keyboardist to bring his own gear: an electric piano, a portable (or not so portable) organ, and maybe a monophonic synthesizer. There wasn't really room in the van or the budget for a string section.

But technology has a way of answering musicians' prayers, so various ways to give a keyboardist orchestral sounds had been in development for a while. The primary solution in the early 1970s was the **Mellotron**: a keyboard with a strip of recording tape under each key, that would play whatever was on the tape when the key was pressed. All manner of recorded sounds could be played back that way (sampling before digital audio!) but the Mellotron was big, heavy, unreliable, and expensive... a solution but not a great one.

1.1.1.1. From Freeman to Eminent – humble beginnings

The very first string machine was the **Freeman String Symphonizer**, invented by keyboardist Ken Freeman as a potential alternative to the Mellotron. Freeman experimented with a Clavioline (an electronic solo instrument available since the 1940s) and a 3-head delay with different LFOs for each head, and discovered that the delays could make a single voice sound like an ensemble. Unfortunately, the String Symphonizer never got off the ground for financial reasons.

The **Eminent 310 Unique** was an organ sold by the Dutch company Eminent Orgelbouw BV beginning in 1972. It was notable for containing a string ensemble section, somewhat similar to Freeman's concept, that could be added to the organ sound. This pioneering design was catapulted into worldwide fame as the foundation for French composer Jean Michel Jarre's multi-million-selling albums *Oxygène* and *Équinoxe*.

Even before *Oxygène* became a worldwide hit in 1976, Eminent realized that the 310's string section was something worthwhile on its own – it could be made into a standalone keyboard that could fill a potentially huge market. And so, in 1974, the **Eminent Solina** was born.

1.1.2. Meet the Solina (and its American siblings)

The Solina had a 4-octave keyboard and only offered a handful of sounds. But they were important sounds, ones that many musicians longed for: warm ensemble strings that could fill out the sound while the guitarist took a solo, or high string lines that could soar above the song and make it sparkle. Perhaps most importantly, these sounds could be carried from gig to gig by one person (even if the 50-pound Solina is a bit of a beast by modern standards).

The Solina's success was massively amplified by a sales and distribution agreement between Eminent and the thriving American synthesizer company ARP Instruments, Inc., who "rebadged" the Solina and sold it as the **ARP String Ensemble**.

> *Note*: the first production version of the ARP String Ensemble was actually named the "ARP Model 2100 String Ensemble SE-IV". After this historical introduction, we'll stick to the name "Solina" – both to reflect the name of our product and to give credit where credit is due.

1.1.2.1. Arrival of the fittest

The ARP String Ensemble became the most popular product ARP ever made, surpassing the famed ARP 2600 and Odyssey synthesizers. Its unique sound carried an instantly recognizable stamp of authenticity.

Even though the String Ensemble's sound was obviously synthesized, it beat out the Mellotron in many ways. It was lighter and easier to store and carry, it could be easily stacked on top of an organ or electric piano (and have another synthesizer stacked on its flat lid), it was comparatively maintenance-free, and – unlike the Mellotron, whose taped notes were only 8 seconds long and would stop abruptly at the end – it could sustain forever.

Added together, Ken Freeman's idea, Eminent's application, and ARP's worldwide reach created a world-beating success story.

1.1.2.2. A string of spinoffs

As is always the case in the business world, imitation is not only the sincerest form of flattery, it's also the easiest way to steal the other guy's lunch money. The Solina, the String Ensemble, and their successors held their own for quite a few years against a slew of competitors, and it is amazing they did as well as they did. Here's a partial listing of what they were up against:

Year	ARP Model	Competition
1973		Logan String Melody
1974	Solina/ SE-IV	Crumar Stringman, EKO Stradivarius
1975	Omni	Roland RS-101
1976		Godwin String Concert S249, Jen SM2007 String Machine, Roland RS-202, Korg PE-2000
1977	Omni 2	Crumar Orchestrator, Hohner K4 / Stringer (USA) / String Performer (Europe), Elgam String Ensemble, Logan String Melody II, Multivox MX202, Oberheim Eight-Voice
1978	Quadra	Farfisa Soundmaker, Roland RS-505
1979	Quartet*	Crumar Performer, Korg Lambda, Roland VP-330, Yamaha SK-10/20/30/50D, Siel Orchestra (*rebadged for ARP as the Quartet), Oberheim OB-X
1980		Godwin Model 749 String Concert, Korg Trident, Oberheim OB-Xa
1981		Roland Jupiter-8

With the rise of polyphonic synthesizers and the attendant waning of interest in string machines, as well as other technological and financial pressures, ARP Instruments, Inc. was forced to close its doors in 1981. Even so, the ARP legacy lives on in the 21st Century, as synthesizer enthusiasts are once again paying top dollar for ARP synthesizers, including the Solina and String Ensemble – and it is with the utmost respect for the history of the technology and the music it inspired that we now offer to you the Arturia Solina V.

1.1.3. String songs: a selected discography

The Solina string sound has been used to great effect on many albums through the years. Here's just a small sampling:

- *Dream Weaver* – Gary Wright
- *The Grand Illusion* – Styx
- *Come Get It!* – Rick James
- *Thrust* – Herbie Hancock
- *Wish You Were Here* – Pink Floyd
- *I'm In You* – Peter Frampton
- *Captain Fantastic* – Elton John
- *Rumours* – Fleetwood Mac
- *The Age of Plastic* – Buggles
- *Premiers Symptômes* – Air

We could go on and on; there are literally thousands of recordings where the Solina sound played a major role. And now, with Solina V, we hope to see many thousands more!

1.2. Physical modeling synthesis

When you want to create a sound, there are many methods of synthesis from which to choose:

- *Additive*, which creates a timbre by adding many simple waveforms together;
- *Subtractive*, in which a raw audio waveform is passed through a filter to remove frequencies and alter its harmonic content;
- *Frequency Modulation (FM)*, where waveforms are used in carrier/modulator relationships and tuned according to the harmonic series to produce overtones in the carrier waves;
- *Wavetable*, which offers a wide selection of digital waveforms and then allows them to be layered, filtered, and/or crossfaded with an X/Y controller or a looping envelope;
- *Sample Playback*, where recordings of a sound are triggered by a playback device, and can be transposed by changing the playback speed;
- *Granular*, which splits samples into very short "grains" and allows them to be manipulated through a myriad of playback options; and
- *Physical modeling*, where the output waveform is calculated according to a set of equations and algorithms derived through extensive analysis of a physical sound source or electrical circuit.

1.2.1. Music and math, issues and answers

A physical model attempts to codify the laws of physics that govern a particular form of sound generation. A model typically will have many different parameters.

In the acoustic world, some of these parameters are constants that describe the physical materials and dimensions of the instrument. Others are time-dependent components that represent the player´s interaction with the instrument, such as bowing a string, pressing a valve, changing breath pressure, etc.

In the electrical world, these parameters include the properties of different electrical components and circuits and how they interact in complex ways. This is the basis for Arturia's TAE® (True Analog Emulation) technology, which models the behavior of classic electronic instruments down to the finest details.

This concept has been around for a long time, but development has been hindered until recently, because processors that were powerful enough to handle the computational complexity of physical models either didn't exist or were too expensive. The first physical modeling synthesizers from the 1990s were quite costly, and could only play a single note at a time.

But that was then and this is now – if you've been watching the trajectory of computer tech, you know those days are long gone. And we're just as happy about that as you are.

The first big issue with physical modeling is that it involves a *ton* of math. To recreate the sound of a drum, for instance, a formula must be in place to represent all of the ways the collision between a drum stick and a drum head sends shockwaves through a two-dimensional membrane. To recreate the sound of a synthesizer, each component must be modeled, then they must be combined into subsystems, then into the full circuit board, taking into account all the different ways these thousands of components can interact with one another.

That's a huge challenge. A few years ago, a French scientist finally completed a comprehensive modeling of all of the parameters necessary to recreate the sound of an acoustic guitar – and the calculations took three days!

The second big challenge of physical modeling synthesis is to simplify user's interaction with the model wherever possible, without sacrificing the essential nature of the instrument being modeled. It has to sound authentic, but it should be fun and easy for the user to take on new creative paths through real-time interactivity – change a control setting, hear the result, without waiting three days!

1.2.2. The endless revolution

There are several methods of physical modeling synthesis, but the main point here is that physical modeling is capable of recreating the character of a "real" instrument during performance, including its subtle nuances of expression, while using a thousand times less hard drive space than a collection of sampled recordings of notes would use.

Not only that, but physical modeling algorithms don't have to strictly limit themselves to existing instruments. They can combine "mismatched" parameters to create instruments that have never existed, even instruments that couldn't exist in the real world. From playing a 50-foot piano to bowing a drum made of glass – There's no limit to the types of sounds physical modeling synthesis can produce!

So: when you gather a bunch of music fanatics who also possess a knowledge of the pertinent laws of physics and an in-depth understanding of the characteristics of electronic circuits, you wind up with Arturia.

And when Arturia decides to honor the history and beautiful sound of the string machine, you wind up with our brainchild: the Solina V.

May it help you weave your own musical dreams!

2. ACTIVATION AND FIRST START

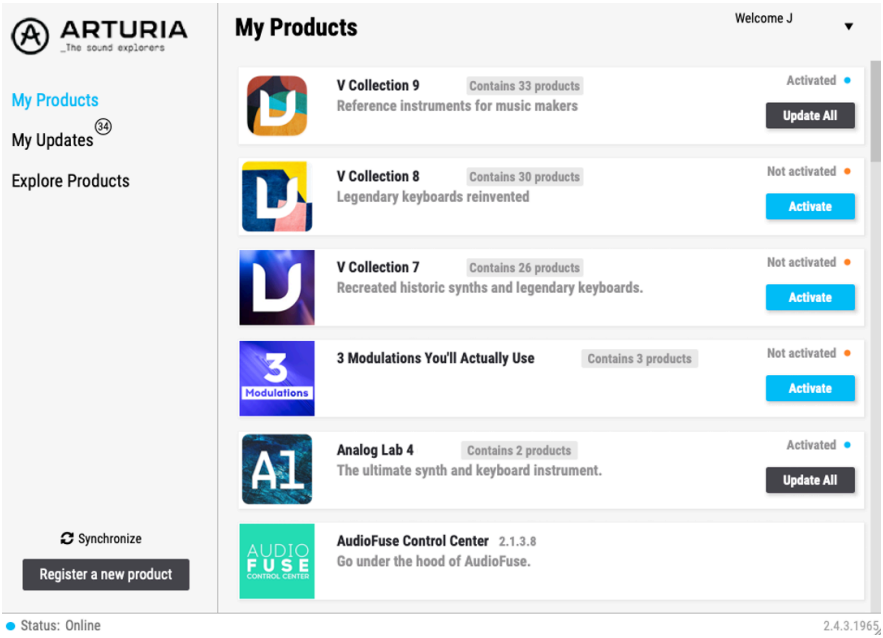
2.1. Register and Activate Solina V

Solina V works on computers equipped with Windows 8.1 or later and macOS 10.13 or later. You can use it as a standalone version or as a plug-in for your favorite DAW, 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 tabs on current versions.



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 Solina V, it's time to get it to talk to your computer.

2.2. Using Solina V as a plug-in

Solina V comes in VST, 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 Solina 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 Solina 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:

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

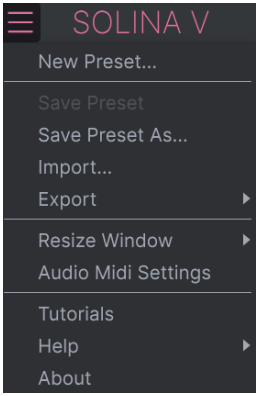
2.3. Initial setup for standalone use

If you would like to use Solina V in standalone mode, you will need to ensure that MIDI input and audio output 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.

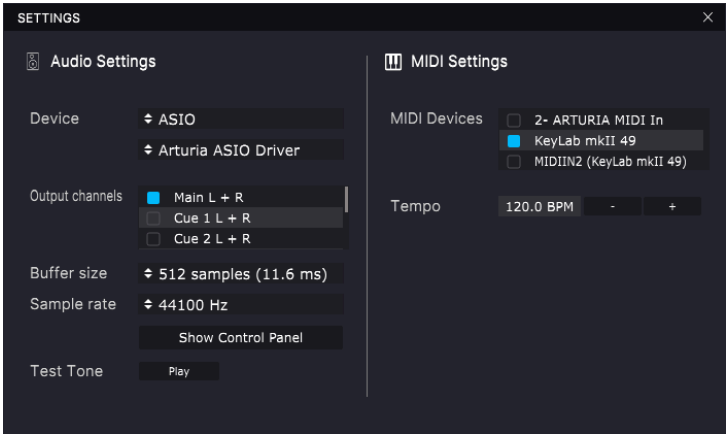
> ! This section only applies to readers that plan to use Solina V in standalone mode. If you are only going to use Solina V as a plug-in inside a host music software, you can safely ignore this section (your host music software handles these settings).

2.3.1. Audio and MIDI Settings: Windows

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



Click on **Audio Midi Settings** to open the following window. Remember, this option is only available (and needed) in the standalone version of Solina V.



Starting from the top, you have the following options:

- **Device** selects which audio driver and device will handle playback of Solina V. This can be your computer's internal driver, or an external soundcard driver. The name of your hardware interface may appear in the field below depending on your selection.
- **Output Channels** lets you select which of your device's 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.

! 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, but if you do get clicks, enlarge the buffer size until they stop. The latency in milliseconds is displayed after the buffer size setting.

- 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 44.1kHz or 48kHz, which will be perfectly fine for most applications. If you have a specific need to use a higher sample rate, up to 96kHz, Solina 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 standalone mode, Solina V listens for all MIDI channels, so there's no need to specify a channel.

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

2.3.2. Audio and MIDI Settings: 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 dropdown menu under **Device**, choose the audio device you wish to use.

2.4. Playing Solina V for the First Time

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

If you haven't done so already, launch Solina V as a plug-in or as a standalone instrument. If you have a MIDI controller set up, use it to play some notes on Solina V. If not, use your mouse to play the on-screen keyboard.

The up and down arrows at the top of the instrument let you step through all of Solina 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 freely with the controls – nothing is saved unless you specifically save a preset (described later in this User Guide), so there is no chance of messing up any of Solina 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 the Solina V features on a section-by-section basis. By the time you reach the end, we hope you'll understand all of Solina V's capabilities – and will be using this fantastic instrument to create equally fantastic music!

3. THE USER INTERFACE

Solina V combines the rich sound of the original Solina with a wide variety of extra features not available on the vintage hardware. They're not hard to use, but there are a lot of them – so in this chapter we'll make sure you know what each one does. We think you'll be amazed by the huge range of sounds that can be made with this instrument.

While Solina V is very flexible, there's nothing complicated about it. That will always be the main focus of every Arturia product: to unleash your creativity while remaining easy to use.

Before we do anything else, let's take a look at the whole picture: a bird's eye view of the Solina V interface.

3.1. Overview

The Solina V interface is dominated by the virtual instrument itself, but we also need to learn about the functions surrounding it:

1. The Upper Toolbar: This is where you access global settings, work with presets, access the Advanced features of Solina V, and open the Side Panel (see below).

2. The Main Panel: Here is where you will likely spend most of your time when playing with Solina V. It contains a detailed reproduction of the original Solina front panel, with all of the original hardware's controls (plus a few extras). We will go over this panel in the Main Panel [p.48] section of this guide. Clicking on the lid reveals many more features that we'll cover in the Advanced Panel [p.53] section later on.

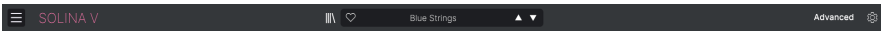
The **virtual keyboard** in the Main Panel lets you play a sound without an external MIDI device. Just click on a virtual key to hear the corresponding note, or drag the cursor across the keys to hear a glissando.

♪ Your computer's keyboard can also play Solina V. The top row of letters acts as the black keys on a piano keyboard, the next row of letters acts as the white keys, and the first two keys on the bottom row act as octave shift keys, down/up. Depending on your language, the actual keys may be different – for example, on an English QWERTY keyboard, the octave down key is Z, but on a French AZERTY keyboard it's W.

3. The Lower Toolbar: This section provides quick access to several useful functions and information displays, including CPU usage, Undo/Redo functions and history dropdown, Macro controls, and a MIDI Panic button.

4. The Side Panel is normally hidden, and pops out to the right of the main window when the **gear icon** in the Upper Toolbar is clicked. It contains four tabs to access low-level settings, MIDI control assignments, the four Macro controllers, and a set of tutorials.

3.2. The Upper Toolbar

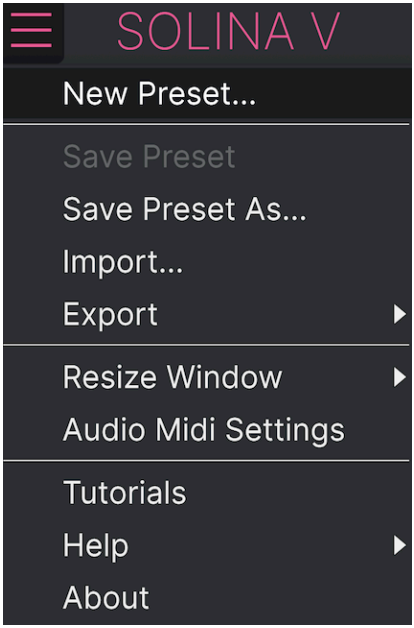


3.2.1. The Solina V menu

In the top left corner of the window, the icon of three horizontal lines labeled SOLINA V leads to a drop-down menu for important global operations.

3.2.1.1. New Preset...

The first option sets Solina V to a basic Default preset, a "blank slate" from which you can create your own sound. Note that if you haven't saved the previous preset first, any edits you have made to that preset will be lost.



3.2.1.2. Save Preset

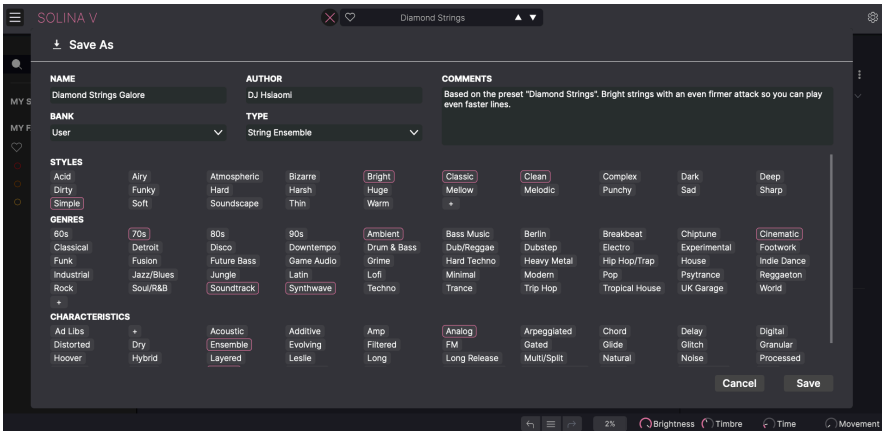
The next option lets you save a preset. If you select this option, you are presented with a window where you can enter information about the preset. In addition to naming it, you can enter the author name, select a bank where it will be stored, give it a general preset type, and select one or more tags that describe the sound.

> Note that tags are read and filtered by the Preset Browser, so a wide selection of tags is vital for effective searches later. You can click as many tags as you want, and when in doubt, click more rather than less. If you skimp on tags, your patch might never come up in a search!

You can also enter your own notes in the Comments field, which is handy for more detailed descriptions or performance notes.

3.2.1.3. Save Preset As…

This works in the same way as the Save command, but lets you save a copy of the preset instead of saving over the original. It's useful for creating variations on patches while keeping individual copies of each one.



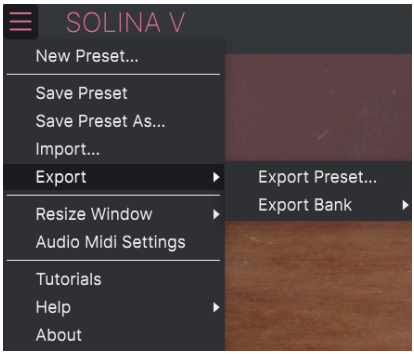
3.2.1.4. Import...

This command lets you import a preset file, which can be either a single preset or an entire bank of presets. Both types are stored in the .solx format.

After selecting this option, the default path to these files will appear in the window, but you can navigate to another folder if needed.

3.2.1.5. Export

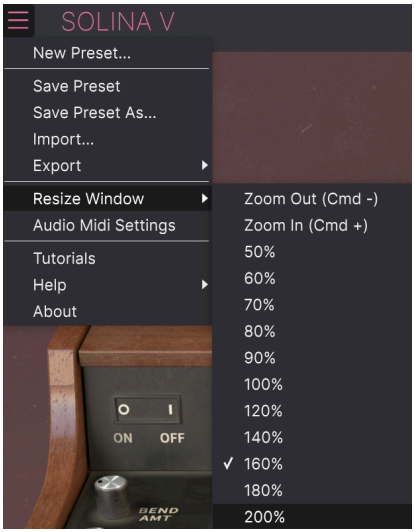
You can export and share a single preset, or an entire preset bank, using this command.



- **Export Preset**: Exporting a single preset is handy when you want to share a preset with someone else. The default path to these files will appear in the "save" window, but you can create a folder at another location if you like. The saved preset can be reloaded using the *Import Preset* menu option.
- **Export Bank**: This option can be used to export an entire bank of sounds from the instrument, which is useful for backing up or sharing presets. Saved banks can be reloaded using the **Import Preset** menu option.

3.2.1.6. Resize Window

The Solina V window can be resized from 60% to 200% of its default size without any visual artifacts. On a smaller screen, such as a laptop's, you might want to reduce the interface size so it doesn't dominate the display, although some smaller controls might be harder to see and click/drag. On a larger screen or a second monitor, you can increase the size to get a better view of the controls. The controls will work the same at any zoom level.



While working with Solina V, you can also use keyboard shortcuts to quickly adjust the window size. **Ctrl** + and **Ctrl** - (Windows) and **Cmd** + and **Cmd** - (macOS) change the size by one step larger or smaller. Note that in some DAWs, the same key commands may be used for zoom. In this case, the DAW takes priority.

3.2.1.7. Audio Midi settings

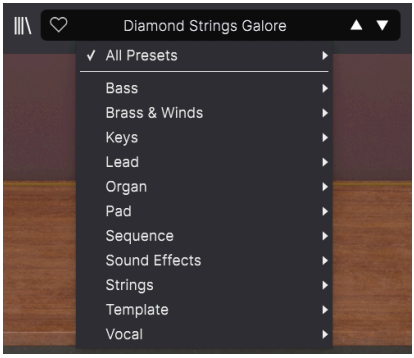
This is where you manage the way the instrument transmits sound and receives MIDI. This menu item only appears in the standalone version, as the plug-in's audio and MIDI settings are handled by its host application. See section 2.2 of the manual for full details on this.

3.2.1.8. Tutorials / Help / About

The Tutorials control opens the Settings Panel (see section 3.x) and displays a set of tutorials to help you learn how to use Solina V. The Help button lets you open this User Manual or access Arturia's online FAQ. And if you're curious about who's responsible for this beautiful instrument, click the **About** button. (It will also show you the software version you're currently running.)

3.2.2. Preset Browser

Solina V comes packed with lots of useful factory presets, and of course you'll create many more of your own. To help you search through this large preset library, the Preset Browser is designed to help you catalog, filter, and search for the perfect preset in just a few clicks.



This part of the Upper Toolbar (shown above) includes:

1. The **Preset Browser Button** (four-lines icon) opens and closes the preset browser. This is covered in detail in the next chapter, The Preset Browser [p.31].

2. The **Like** button has a heart icon; just click it to instantly mark the current preset as a Liked Preset for easy access later.

3. The **Preset Name** is listed next in the toolbar. Clicking on the name opens the Preset Filter. If an asterisk* appears next to the Preset Name, it means that the settings of Solina V have been changed so the sound no longer matches the saved preset. It's a reminder to save the edited version if you like it, overwriting the original (**Save**) or with a new name (**Save As...**).

4. The **Preset Filter** (set to "All Presets" in the image above) helps you narrow down your preset search quickly – for example, looking only for presets tagged with *Keys*, *Lead*, or *Pad* . To use this feature, click the Preset Name to open a drop-down menu of various Types (Keys, Lead, Pad, etc.). Hold your mouse over any Type to pop up an alphabetical list of presets; click the one you want or mouse away to close the pop-up. Selecting a preset will load it, and set the Preset filter to focus on sounds of that Type. You can now use the Arrow Icons to step through the filtered options. To reset the filter and show you all available patches, open the menu and select any preset from the *All Presets* pop-up list.

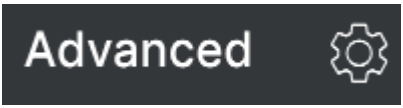
5. The **Arrow Icons** select the previous or next preset in the filtered list. This is the same as clicking on the Preset Name and selecting the next option in the list, but does it with only one click.

> The Previous and Next arrows can be MIDI mapped. This means you can use buttons on your MIDI Controller to easily step through the available presets without having to use the mouse at all.

3.2.3. Advanced Panel Access

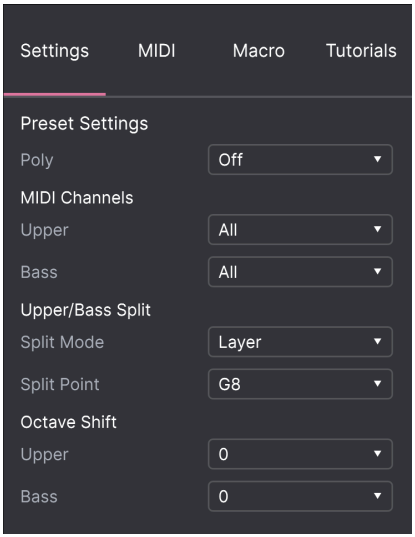
Solina V takes the sound of the original string synth and massively updates it with a bunch of modern features – everything from an LFO and tuned resonators to an entire effects chain. Since the front panel of the original Solina doesn't have room for all these extra controls, they've been hidden away under the lid of the virtual keyboard.

Just click on the lid, or press the **Advanced** button in the Upper Toolbar, to access these functions. This section is covered in detail later in this manual, in the Advanced Panel [p.53] chapter.



3.2.4. Side Panel Settings

At the far right of the Toolbar next to the **Advanced** button is the **Side Panel Button (gear icon)**, a gear-shaped icon that opens and closes the side panel on the right side, containing four tabs:



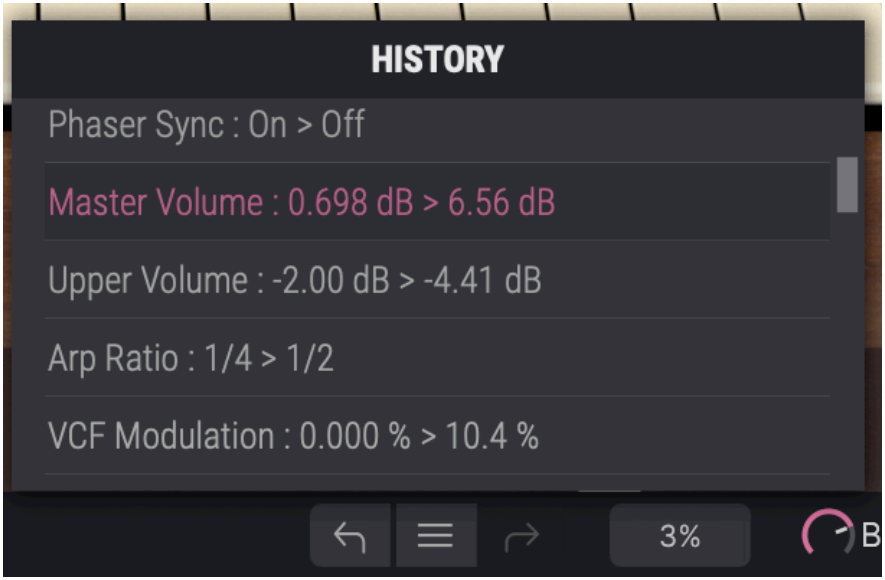
- **Settings**: Global settings such as MIDI receive channels, splits, octave shift, and Poly mode.
- **MIDI**: MIDI Learn functions for use with external controllers.
- **Macro**: Assignments for four Macros that control multiple parameters with a single knob twist.
- **Tutorials**: In-app interactive tutorials, also accessible from the main menu.

These topics are covered in the Side Panel [p.21] section later in this chapter.

3.3. The Lower Toolbar

The Lower Toolbar runs along the bottom of the Solina V user interface and provides quick access to several important parameters and useful bits of information.

- **1. Parameter Name:** Displays the name of the parameter being edited as you adjust or hover over controls. The current value of the control is listed in a pop-up tool tip that appears next to the control.
- **2. Undo/Redo:** Keeps track of your edits and changes.
    - **Undo (left arrow):** Undoes the last edit.
    - **Redo (right arrow):** Redoes the last edit.
    - **Undo History (center menu icon):** Displays a pop-up list of recent changes. Click on a change to restore the patch to that state. This will be useful in the event that you've pushed your sound design one or two steps too far, and want to revert to an earlier version.



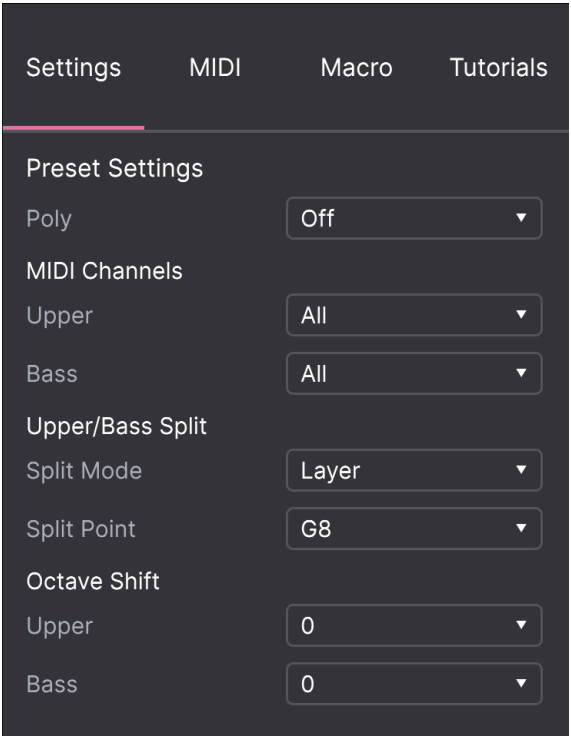
- **3. CPU Meter and Panic Button:** Displays the current CPU usage of the instrument. Clicking on the CPU meter window will send a MIDI **Panic** message, silencing all currently playing notes and resetting MIDI Control Change values in the event of stuck notes or other issues.
- **4. Macro Knobs:** These four knobs control multiple parameters with a single turn. Assigning parameters to them is covered in the Macros section of the Side Panel.

3.4. The Side Panel

The **gear icon** at the top right of the Upper Toolbar opens the Side Panel, which in turn contains four tabs covering important subsystems that you won't have to access quickly when you're playing or editing sounds on Solina V. Let's look at them from left to right.

3.4.1. Settings Tab

This tab covers settings to control how a Preset responds to incoming MIDI.



- **Poly:** Turns Poly mode on or off. One of the most powerful advancements that Solina V enjoys in comparison to its vintage ancestor is that while the original hardware was paraphonic, Solina V can in fact be used as a true polyphonic synthesizer.

When Poly is off, the Upper instrument is *paraphonic*, which means that all notes you play are run through a single filter and amplitude envelope.

That means that if you play one note, the filter and amplitude envelopes open up and shape that note... but every other note you play while holding down that first note has no articulation of its own. They just jump in wherever that first envelope happens to be, and follow along.

When Poly is on, the Upper instrument is *polyphonic*, which means that every note you play has its own filter and amplitude envelope and therefore its own articulation.

Here's an easy way to hear how this works:

Use the *New Preset...* selector in the Solina V menu to call up the Default patch. Slide the Crescendo control and the Sustain level control all the way to the right. Open the Side Panel, select Settings Tab, and turn Poly off.

Play a note, hold it for a while, and release it. You'll hear the filter and amplitude envelope open up slowly, sustain, and then die away, as you might expect.

Now play a note, release it, and immediately play another note. Can you hear how the first note's envelope chops off abruptly when the second note plays?

Now play a note, hold it, and play a few other notes while holding the first one down. Can you hear how each of the new notes starts instantly with no articulation, "underneath" the original note?

That's paraphonic behavior. There's only one envelope, so there's only one articulation; rapid playing or chords can sound artificial.

Now turn Poly to on, and do the same things. You'll hear that now every note you play has the fully articulated envelope – Solina V is now a polyphonic synthesizer of a sort no one dreamed of in the early 197Os! Pretty cool, right?

From now on in this manual, we'll call these settings "Poly-On" and "Poly-Off".

Oh, and if you're wondering why these settings don't work on the Bass instrument... it's because the Bass is always monophonic. The more you know...

- **MIDI Channels:** Selects the MIDI channel(s) on which Solina V will receive MIDI input. You can set the Upper and Bass instruments to independent channels, or set one or both to "All".
- **Upper/Bass Split:**
    - **Split Mode:** The *Layer* setting spreads the Upper instrument across the full keyboard range, regardless of the Bass instrument or Split Point settings. The *Split* setting keeps the two instruments separated at the Split Point.
    - **Split Point:** Determines the boundary between the Upper and Bass instruments when the Split mode is set to *Split*. When set to *Layer*, it sets the upper key limit for the bass instrument.
- **Octave Shift:** Transposes the selected instrument in octave increments, up or down by up to 2 octaves.

3.4.1.1. How Solina V responds to MIDI Channels

In order to give maximum flexibility, Solina V's MIDI Channel and Split settings can result in a variety of responses. Let's break them down.

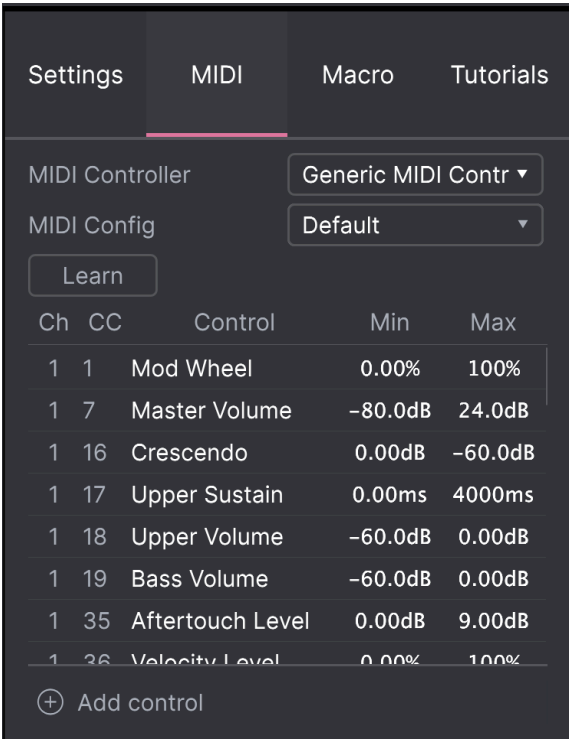
- If both instruments (Upper *and* Bass) are set to All, or to the *same* channel, then the Split Mode and Split Point settings take effect.
- If the instruments are set to two *different* MIDI Channels, data on those channels will play each instrument throughout the entire note range and the Split Mode and Split point settings are ignored.

- If one instrument is set to a specific MIDI Channel and the other is set to All, both will play throughout the entire note range and the Split Mode and Split point settings are ignored... but one instrument will only respond to MIDI messages on its selected channel and the other will respond to all MIDI data.

Put all these channel settings together, and Solina V should be able to deliver any MIDI setup you might need.

3.4.2. MIDI Tab

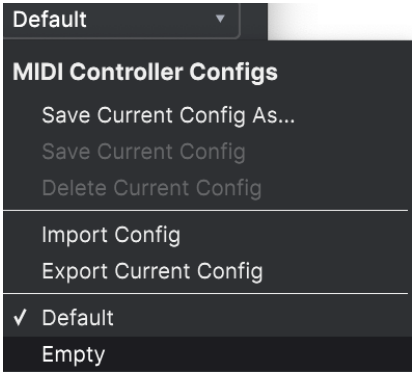
This is where Solina V may be placed in MIDI Learn mode. In this mode, all MIDI-assignable parameters on the main panel are highlighted and you can map physical controls on your MIDI controller to them. A typical example might be to map a real expression pedal to the Master Volume control, or a physical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



3.4.2.1. MIDI Controller Menu

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

3.4.2.2. MIDI Config Menu



Another drop-down lets you manage different sets of MIDI maps for controlling Solina 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 Solina 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.

3.4.2.3. Assigning and Unassigning Controls

Click the **Learn** button in the MIDI tab to put Solina 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 below shows the assigned and unassigned controls for Solina 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.27] described below.

3.4.2.4. Min and Max Values

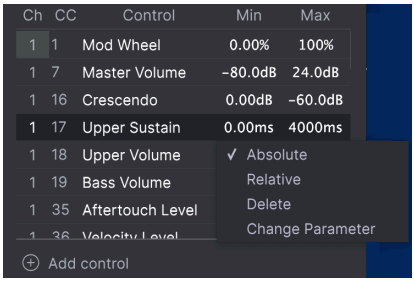
The **Min** and **Max** value columns for each parameter in the list let you scale the amount by which a parameter in Solina V changes in response to a physical control movement. For example, you may wish to limit the range of a filter sweep, even though you're probably going to turn the knob all the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

Drag up or down on a value to change it. Values for some parameters are expressed as percentages from 0.00% to 100%, while other parameters have values in appropriate units (dB for levels, ms for times, etc.) 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.

3.4.2.5. MIDI Parameter Menu

Control-clicking or right-clicking on any item in the list of assigned parameters brings up a convenient menu with the following options, which can be different for each parameter.



- **Absolute:** The assigned parameter in Solina V tracks the literal value your physical controller is sending out.
- **Relative:** The assigned parameter in Solina 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 Solina 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.

3.4.2.6. Reserved MIDI CC numbers

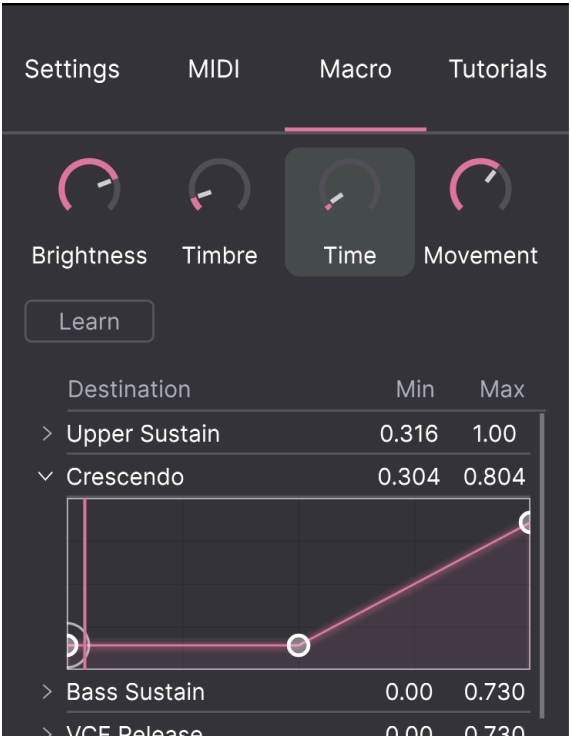
Certain MIDI Continuous Controller (CC) numbers are reserved and cannot be reassigned to other controls. These are:

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

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

3.4.3. Macro Tab

This tab handles assignments for the four Macro knobs on the right side of the Lower Toolbar. You can assign multiple parameters to each one, then use MIDI Learn [p.23] to assign the Macro itself to a physical control if you want.



Macros are saved at the Preset level.

3.4.3.1. Macro Slots

Click one of the Macro knobs to select which Macros you want to work with. The default names are *Brightness*, *Timbre*, *Time*, and *Movement*, but you can rename them by double-clicking the name field. The knob above the name corresponds to the knob of the same name in the Lower Toolbar.

3.4.3.2. Making Macros

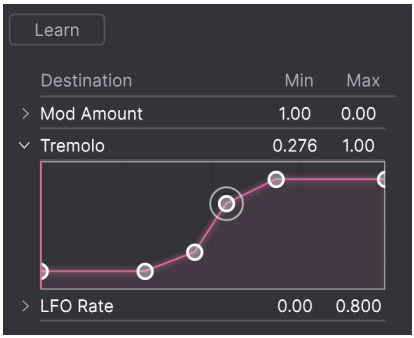
Click the **Learn** button in the Macro tab and you will see that the process works much like MIDI assignments – available destinations turn purple and ones already assigned turn red. Click on a purple control onscreen and its name will appear on the list.

To remove a parameter from the Macro, right-click its name in the list and select **Delete**. Parameters under Macro control have **Min** and **Max** values and may be scaled by dragging up or down directly on the number, just as is done with MIDI assignments. To reverse the polarity of a parameter (i.e. have it go down when you turn the Macro knob up and vice-versa), set the minimum value higher than the maximum.

> There are no rules for naming and assigning parameters to Macros. Keep in mind, though, that while it may seem funny to name a Macro "Chartreuse", that might not be terribly useful when you're playing the patch in a recording session next year. When in doubt, go for clarity!

3.4.3.3. Macro Curves

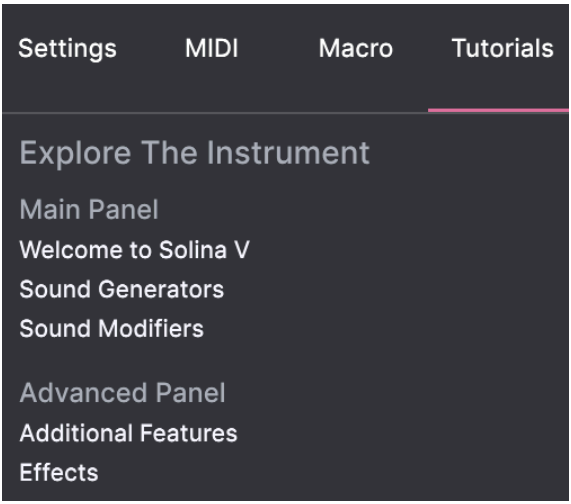
Beyond simple scaling, you can customize a curve that determines how each parameter under the Macro's control proceeds from its minimum to maximum value and back when you turn the Macro knob. Click the > icon next to the parameter name to open the curve window.



Click on the curve to add a breakpoint, represented by a small circle. You can then drag the point and the curve segments between it and its nearest neighbors will change accordingly. Right- or control-click on a point to remove it. The first and last breakpoints cannot be removed.

> ♪ A simple diagonal line would produce a linear curve, but the potential fun here is to make things non-linear.

3.4.4. Tutorials



In this tab, which can also be opened by selecting **Tutorials** from the Solina V menu, you can click on titles for the individual chapters, which in turn will take you through different areas of Solina 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.

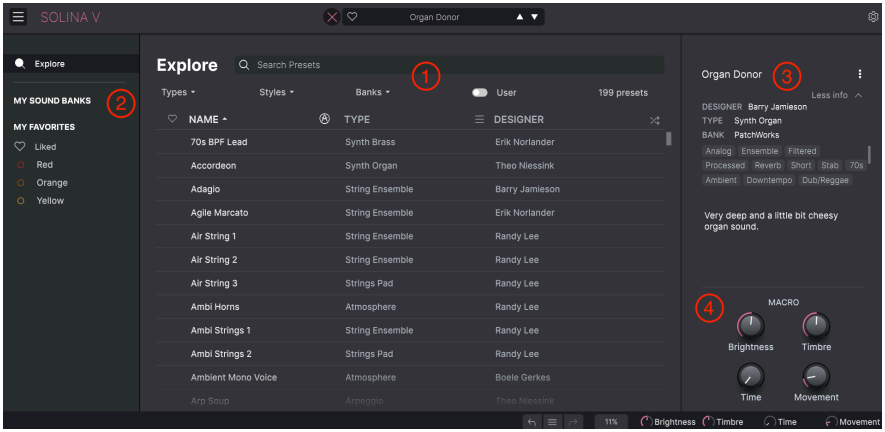
Now that we've figured out what all the controls around the edges do, you're probably eager to get to the main event – the controls we use for sound creation on Solina V, both original and modern. Before we do that, though, it's worth our time to understand Arturia's powerful Preset Browser and all the ways it can help us store, organize, search, and select from hundreds of different sounds.

4. THE PRESET BROWSER

The Preset Browser is how you search, load, and manage sounds in Solina V. It has different views but they all access the same banks of Presets.

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

The browser has four main areas:



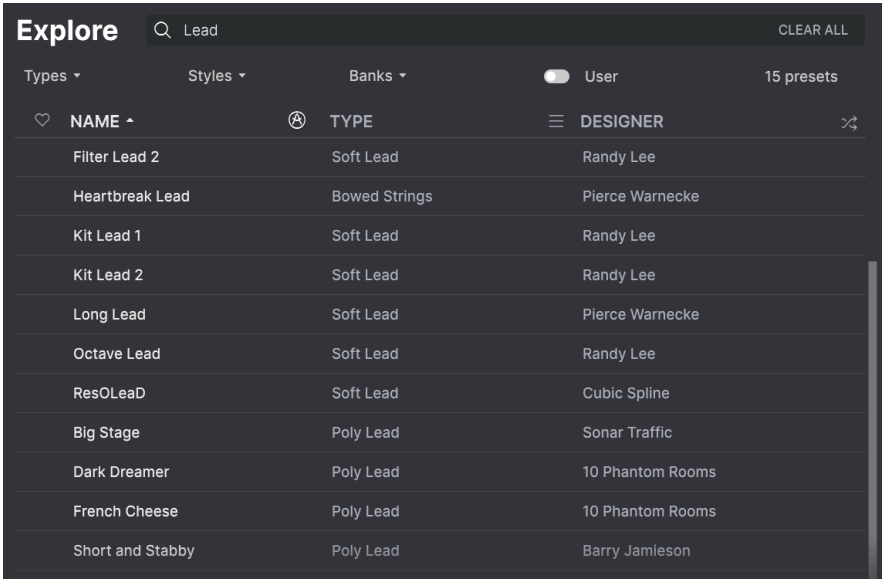
The full Preset Browser window

Number	Area	Description
1.	Search and Results [p.32]	Search Presets with text strings, and by tags for Type and Style.
2.	Sidebar [p.37]	Manage Banks, Favorites, and Playlists.
3.	Preset Info [p.40]	Summary of Bank and Tags, Designer name, and description info for current Preset.
4.	Macro Knobs [p.43]	Large size duplicates of Macro knobs in Lower Toolbar.

4.1. 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.33] 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.



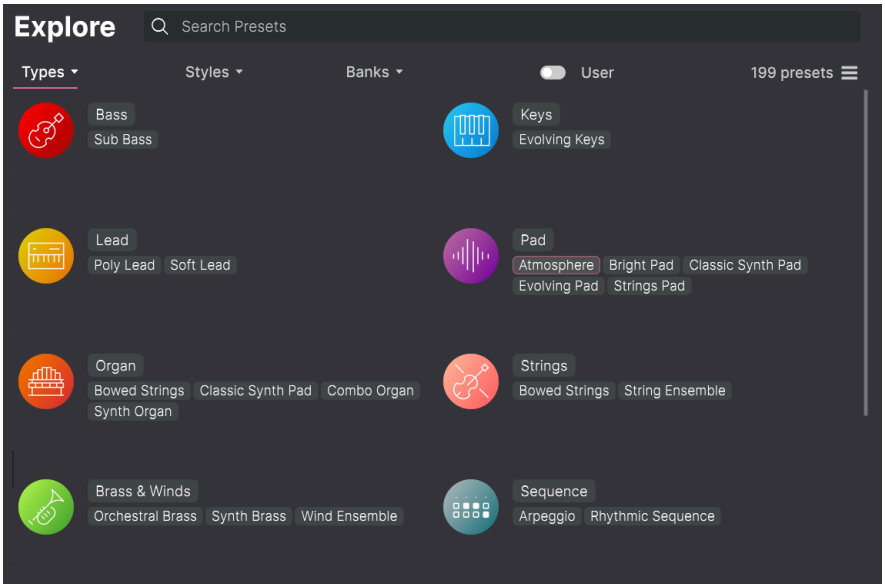
Filter by typing text in the Search field

4.2. 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.

4.2.1. Types

Types are categories of instruments and musical roles: bass, leads, strings, pads, organs, and more. With a clear search bar, click the **Types** button to bring up a list of types. Notice that each type also has several sub-types:



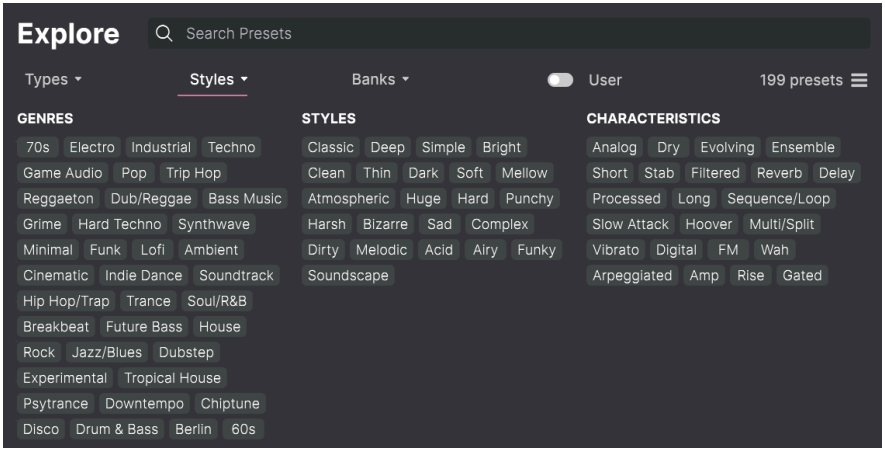
Click any one of them, and the results will show only Presets that match that tag. You can also select multiple Types using Cmd-click (macOS) or Ctrl-click (Windows). For example, if you aren't sure whether the Preset you're looking for was tagged with Keys or Pad, select both to broaden the search.

Results columns can be inverted by clicking the arrow buttons to the right of their titles (Name, Type, Designer).

4.2.2. 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 decades, Trance, Techno, Synthwave, Disco, etc.
- *Styles*: General "vibe" such as Atmospheric, Dirty, Clean, Complex, Mellow, etc.
- *Characteristics*: Sonic attributes such as Analog, Evolving, Distorted, Dry, Rise, 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 usually disappear. 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.

4.2.3. Banks

Next to the **Types** and **Styles** buttons is the **Banks** button, which lets you do your search (using all the methods above) within the factory bank or user banks.

4.3. 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.

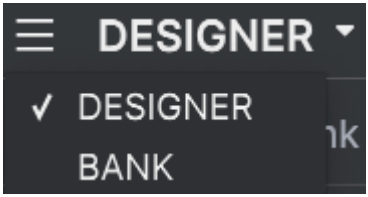
4.3.1. Sorting the Preset Order

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.36].

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.

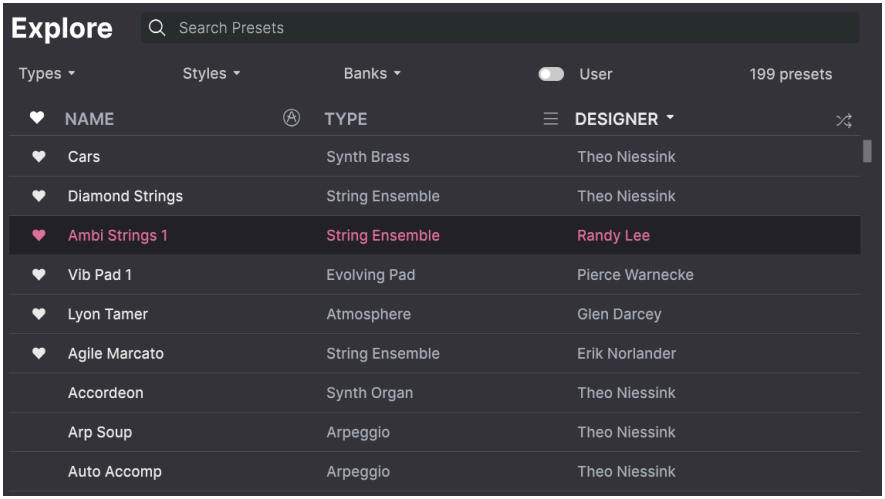


4.3.2. Clearing Tags

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.

4.3.3. Liking Presets

As you explore and create Presets you can mark them as Liked by clicking the **heart** next to their names. later, click on the heart icon to put all of your favorites at the top of the Results list.

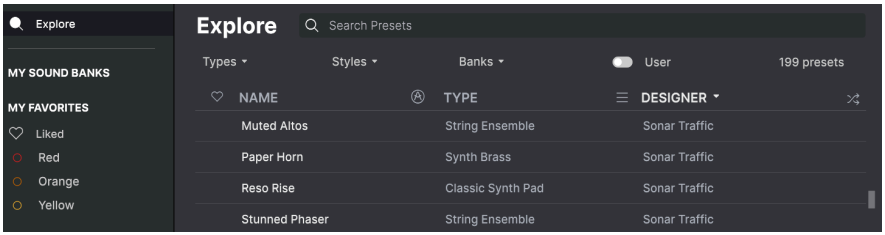


Use as many of the sorting and filtering features as you need and you will find the exact sound you want every time.

4.4. Sidebar

The leftmost section of the Preset Browser determines what is displayed in the Search and Results [p.32] section.

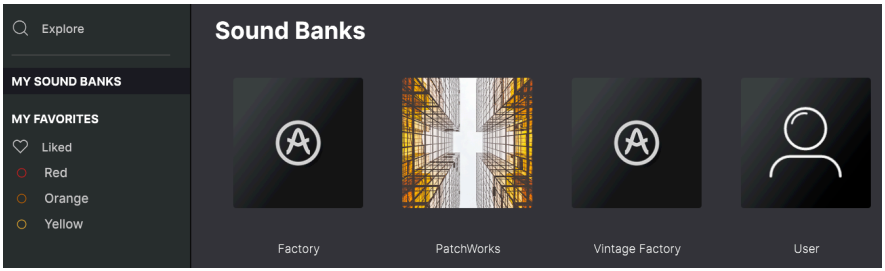
The topmost option is:



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

4.4.1. My Sound Banks

Clicking **My Sound Banks** brings up a window with all of the currently available Sound Banks, starting with the Factory bank. User banks appear next to it, and can be deleted, renamed, or exported by right-clicking them.

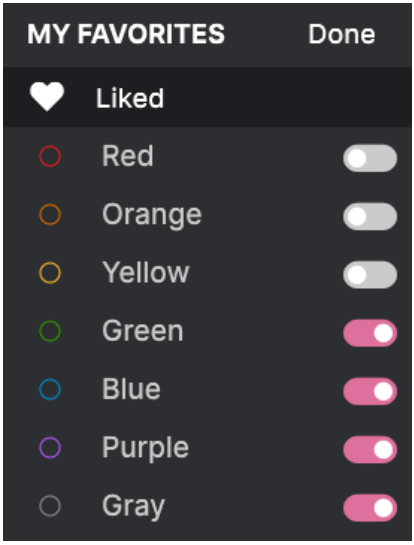


4.4.2. My Favorites

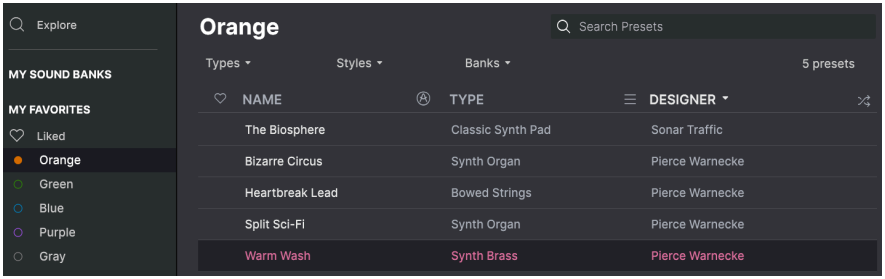
The middle part of the Sidebar has a menu called **My Favorites**, which allows you to color-code certain groups of Presets for easy access. It also includes the **Liked** group, so you can quickly find Presets you've marked with the heart icon.

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

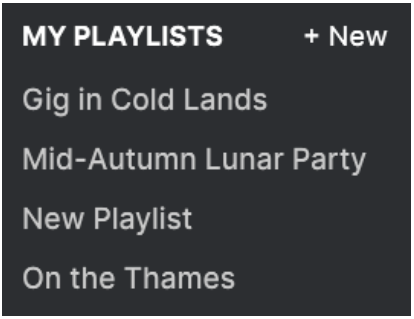
Please note, that you can also rename these favorites into Bass, Leads, et cetera. Just right-click on the favorite and enter a new name.



To add Presets to a particular set of Favorites, simply drag and drop them over the appropriate color. Then click on the color itself to display your grouping.



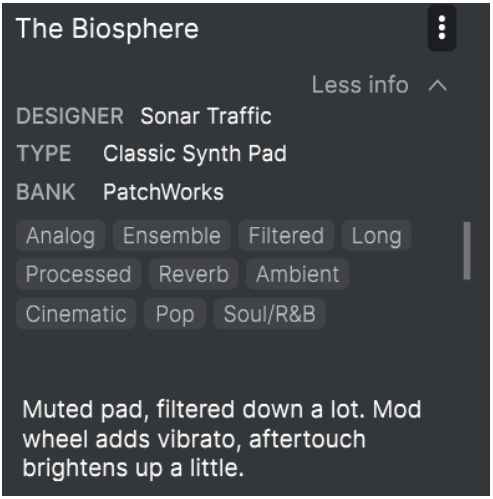
4.4.3. My Playlists



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.44] below.

4.5. Preset Info Section

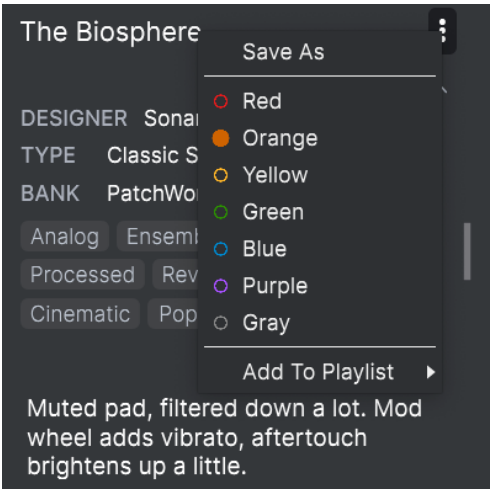
The right side of the browser window shows specific information about each Preset. The information for User Presets (but not Factory ones) may be changed here: Name, Type, Favorite, etc.



To make the desired changes, you can type in the text fields, use one of the pull-down menus to change the Bank or Type, and click the + sign to add or delete Styles.

Types and Styles changes you make here are reflected in searches. For example, if you remove the "Funky" Style tag and then save that Preset, it will not show up in future searches for Funky sounds.

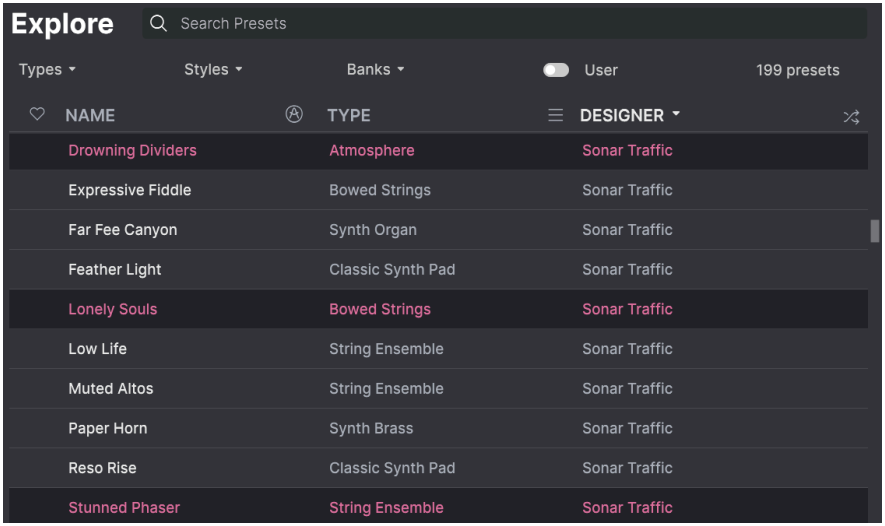
Clicking on the three-dots icon at the top right pops up a menu with organizational options for the Preset.



Options include **Save Preset**, **Save Preset As**, **Delete Preset**, and **Add to Playlist**, complete with an option to create a new Playlist. The lines with color icons allow you to add the Preset to a particular group of Favorites, which is described above.

4.5.1. Editing Info for Multiple Presets

If you'd 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.



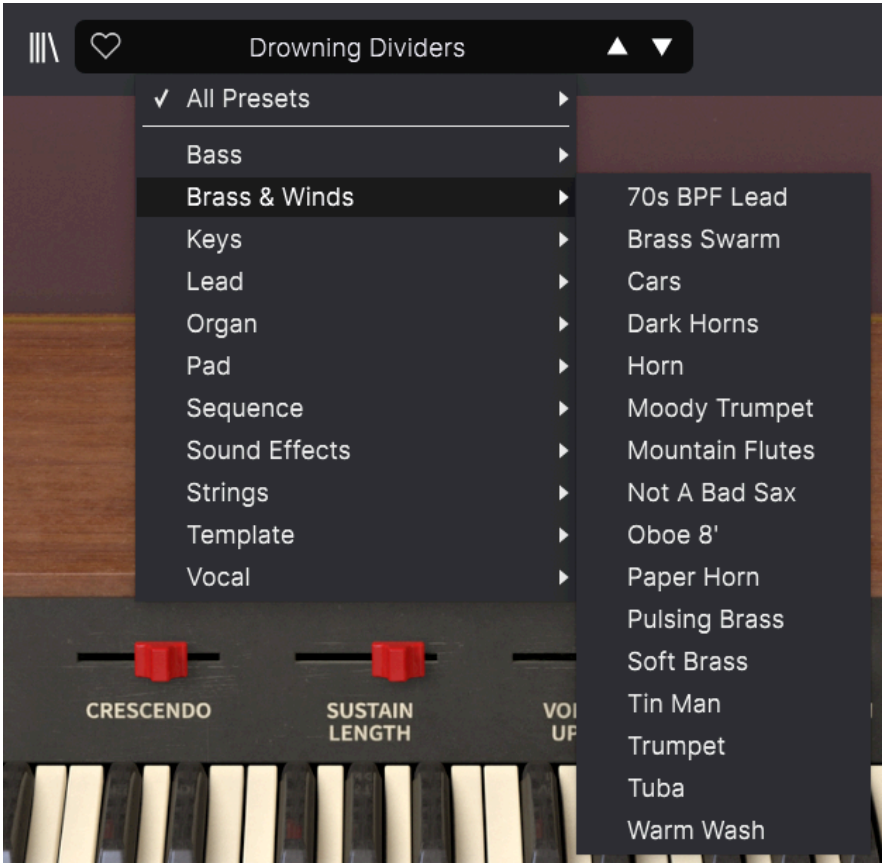
♪ If you want to alter the information for a Factory Preset you must first use the *Save As* command to re-save it as a User Preset. After this the Info section will gain Edit and Delete buttons at the bottom of the window.

4.6. 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 this menu is **All Presets**, and it brings up a submenu of literally every Preset in the current bank.

Below this are options that correspond to the Type tags. Each of these brings up a submenu of all Presets of its 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.

4.7. Macro Knobs

These are simply larger duplicates of the Macro knobs in the Lower Toolbar. Move one and its partner moves with it.

Assigning parameters to Macros is covered in the Macro Tab [p.28] section of Chapter 3.

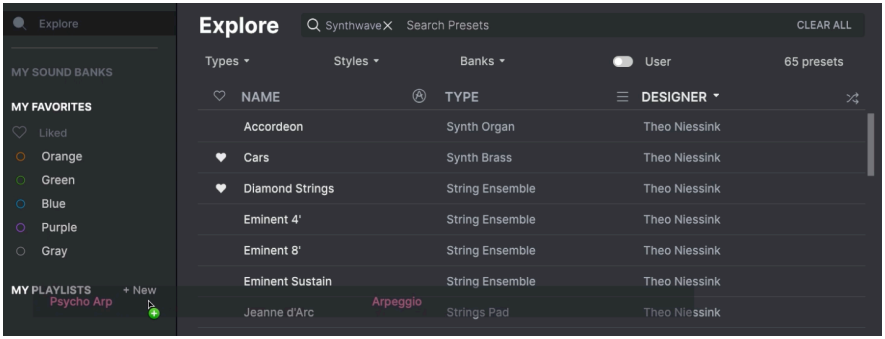
4.8. Playlists

Playlists are a 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 reordered and grouped into Songs, a handy addition to a set list.

The subheading **My Playlists** appears under **My Favorites** in the Sidebar. However, when you first start using Solina V, you'll have no Playlists yet, and **My Playlists** won't be there yet. To make it appear, you'll have to create your first Playlist.

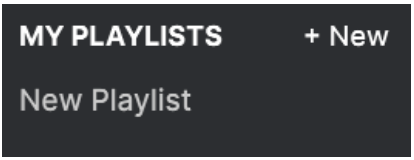
4.8.1. Create your first Playlist

To get started, drag any Preset to the Sidebar. The **My Playlists** heading will appear, along with a **+ New** icon. Drop the Preset onto the **+ New** icon, and you will then be given a pop-up to name your first Playlist. Once you've created one Playlist, the **My Playlists** heading will become a permanent part of the Sidebar.



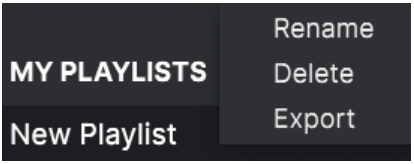
4.8.2. Add a Playlist

To add a Playlist, hover your mouse over the **My Playlists** heading and click the **+ New** icon when it appears.



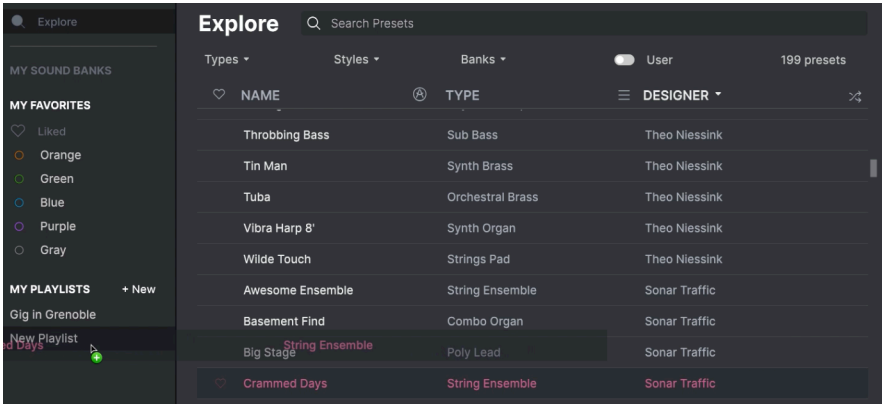
Give the Playlist a name and it will appear in the Playlists menu in the Sidebar.

Once you've created some Playlists, right-clicking on a Playlist name will pop up a set of options – you can **Rename**, **Delete**, or **Export** the Playlist to your computer, as a file with the .aplst extension.



4.8.3. Add a Preset

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

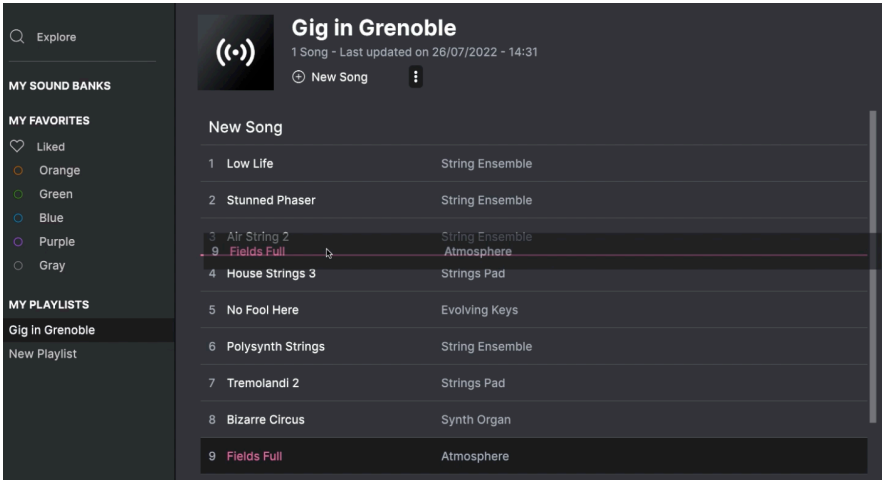


Click and drag from the Search Results list onto one of the playlists

To view the contents of a playlist, click on the playlist name.

4.8.4. Re-order the Presets

Presets may be reorganized within a Playlist. For example, to move a Preset from slot 3 to slot 4, drag and drop the Preset to the desired location.

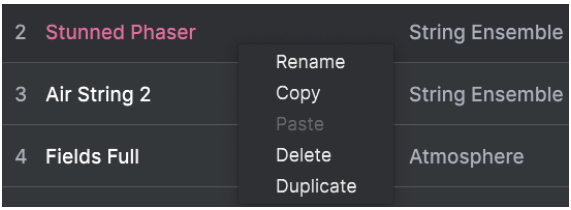


The yellow line indicates the final destination of the Preset you're dragging.

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

4.8.5. Remove a Preset

To delete a Preset from a playlist, right-click on its name to bring up a pop-up menu.

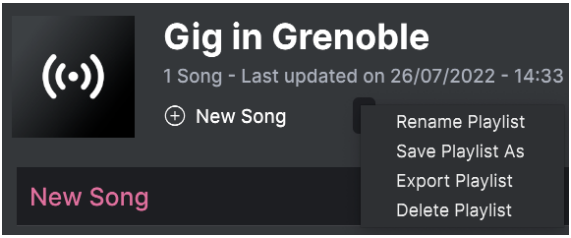


This menu also includes **Rename**, **Copy**, **Paste**, and **Duplicate** options. More management options are described below.

4.8.6. New Song and Playlist Management

The **New Song** button creates a new Song at the bottom of the Playlist. You can name it, then click and drag it to position it in the Playlist and add Presets to it in the desired order.

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.

5. THE MAIN PANEL

Now that we have all of the setup and housekeeping out of the way, it's time to dive into actually creating and modifying presets in Solina V. We'll divide this exploration of the instrument's features into two chapters, to reflect the two levels of programming detail available to us.

In this chapter, we'll learn about the features on the **Main Panel,** the front panel of the instrument that looks quite similar to the original Solina (although with several extra controls). This gives access to the basic control options the original hardware had – meaning that you can recreate lots of great sounds, just the way they were made in the 1970s.

However, there's a lot more to this modern software version than just an accurate modeling of the original machine. (This shouldn't come as a surprise. After all, we're Arturia, and adding cool new functions to these beasts is what we do.)

If you click on the **Advanced** button in the Upper Toolbar, or just click the lid of the Solina V case, it will flip open to reveal the **Advanced Panel**. This is where you'll find all of the special additions that make Solina V a 21st-Century update to a 20th-Century classic. We'll discuss those in the next chapter.

To close the lid, click the **Advanced** button again, or click the top edge of the lid above the controls.

5.1. Using the Onscreen Controls

Operating the onscreen controls is fairly simple: if it's a button or a switch, click it to change it from on to off (or vice versa); if it's a wheel or slider, click and drag it to edit its value.

If you want to fine-tune a parameter rather than moving it coarsely, you can do it by right-clicking before you drag the cursor. Double-clicking will return a parameter to its default setting, if it has one.

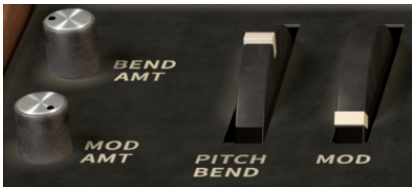
Of course, if fiddling with a mouse all the time isn't your idea of creativity, remember that you can assign all of these controls to your MIDI controller using the MIDI Tab [p.23] settings in the Side Panel.

5.2. The Main Panel and its Controls

We'll start with the virtual lid closed, so we can focus on the Main Panel – the row of controls above (and on either side of) the keyboard.

Here's a description of each control, moving from left to right.

5.2.1. Left of the keyboard



Bend Amt: Controls the range of Pitch Bend information sent to Solina V. It ranges from 0 cents (no bend) to 1200 cents (one octave).

Mod Amt: Controls the amount of effect the Mod wheel will have on the sound, from 0% (no effect) to 100% (full effect).

Pitch Bend: This spring-loaded wheel will snap back to center after being released. It is dedicated to MIDI Pitch Bend data, and it's the only onscreen control that can't be reassigned to another MIDI Control Change number.

Mod wheel: Used to introduce programmable amounts of vibrato and/or tremolo to the sound. This wheel responds to MIDI CC #1 by default, but can be reassigned to any MIDI controller. How much effect it has on the sound is set by the **Mod Amt** knob.

5.2.2. Above the keyboard

Volume Master: Controls the entire Solina V output level. It changes the volume of the Upper and Bass instruments at the same time.

Contrabass and **Cello**: Enable and disable the two available sounds for the Bass instrument. Cello is one octave higher than Contrabass.

Both sounds can be enabled at once – just click them one at a time, or click one and drag across the other.

Volume Bass: Adjusts the volume of the Bass instrument, independently of the Upper Instrument's volume.

Crescendo: Controls whether notes fade in when played. The control sets the initial level of the sound when the key is pressed, from OdB (instantly on at full volume) to -60dB (starting from near-silence). The closest equivalent on a conventional synthesizer would be the VCA envelope's Attack Time.

The response is different for the Bass and Upper instruments, and is also affected by whether the preset has Poly mode on or off.

Sustain Length: Adjusts the amount of time it takes the Upper instrument to fade out after a key is released, ranging from O to 4 seconds. This would be equivalent to a conventional synthesizer's VCA envelope Release Time.

The Bass instrument has a separate Sustain control, which we'll discuss when we get to the Advanced Panel.

Volume Upper: Adjusts the volume of the Upper instrument, independently of the Bass instrument's volume.

Viola, **Violin**, **Trumpet**, **Horn**, and **Humana**: Enable and disable the five available sounds for the Upper Instrument. Violin is one octave higher than the other four sounds.

All five sounds can be enabled at once; however, Trumpet and Horn can't make sound at the same time. If both buttons are on, you'll only hear Horn – but Trumpet will immediately start playing if you turn off Horn.

As with the Bass sounds, clicking on one button and dragging across others turns them all on or off.

Ensemble: Toggles the Ensemble effect on and off. The switch beside it chooses between Mono and Stereo mode.

5.2.3. Right of the keyboard

FX1, **FX2**, and **Rev**: control the relative levels of the two FX processors and the Reverb, which are otherwise accessible from the Advanced Panel.

5.3. Beyond the Solina

If you were to compare the Main Panel of Solina V to the front panel of an original Solina, you'd notice some small differences. The original had a fine-tuning knob but no pitch bend or mod wheels; it didn't have a master volume control; and Solina V adds three extra switches – one for the Humana voice and two for the Ensemble. It's worth talking about these extra features a bit more, so you can understand why they're so important to Solina V.

5.3.1. Humana

In the mid-197Os, several companies were rushing to create the world's first *polyphonic synthesizer* – a synth that could play chords, with each voice being a complete audio chain of oscillator, filter, and amplifier, with its own envelopes for brightness and volume. Paraphonic synthesizers like the Solina had only one volume envelope, and technically no filter at all; they had 49 notes of polyphony, but no real articulation. In the process of trying to get from paraphonic synthesis to "true" polyphony, a variety of unusual machines were built using various new designs... and the most famous (or infamous) was the **Polymoog**.

Created in 1975, the Polymoog was an analog synthesizer with 71 keys (which were velocity-sensitive, a first for any analog synth), and each key had its own voice card and audio path. Technically it was a fully polyphonic analog synthesizer that could be played like an electric piano, and it garnered a lot of interest when it came out. However, its sound was subject to some disappointing "paraphonic" limitations, and it was incredibly expensive and failure-prone – it had (and has) its fans, but it was a disaster for Moog.

In 1978, Moog Music shipped a simplified version called the Polymoog Keyboard, which gave the user 14 preset voicings instead of the original nine. One of these new voicings was called *Vox Humana*, and it put the Polymoog in the history books as something more than an expensive flop, thanks to its pervasive use by rising star Gary Numan on his third album *The Pleasure Principle*, including the worldwide Number One hit "Cars". His musical arrangement style, which was drenched in Vox Humana, became so popular and so recognizable that it was often dubbed "Vox Numana".

Gary Numan used the Polymoog Keyboard as a modern string ensemble, and the Vox Humana sound serves as an excellent basis for the sorts of thick orchestrations that keyboards like the Solina can do so well. That makes Humana a great fit as an extra – and quite different-sounding – Upper instrument voice for Solina V. It takes the instrument in a completely new (and very cool) direction – give it a try!

5.3.2. Ensemble

It's easy to describe what the Ensemble effect does for the Solina, and for many other string machines. Basically, it's the 'magic spice': everything you put it on goes from bland to delicious!

What precisely is Ensemble? It's an effect used to turn the sound of the oscillators in a string machine into a much more lush and thick timbre. This is important, because as you'll hear if you turn **Ensemble** off (and turn **FX1**, **FX2**, and **Rev** all the way down), the sound of the plain Solina voices isn't all that exciting. What's going on here?

String machines get their polyphony from a technique called *top octave divide-down synthesis*. There are 12 simple oscillators that play the notes on the top octave of the keyboard (C, C#, D, D#, etc.), and simple circuits called *frequency dividers* cut the frequencies in half, in quarters etc., to fill in the notes in the lower octaves.

This has the huge advantage of giving the string machine *full polyphony*, meaning it can play a note for every key held down, up to 49 in the case of the Solina. However, it has a huge disadvantage as well: because all notes are generated from the same set of oscillators, their waveforms are always perfectly in phase and tuning – and phase and tuning differences are what give a real string section its richness. No two people can play at exactly the same pitch and phase, but they can get close, and the tiny differences are what we hear as "richness" when many string players try to hit the same note in unison.

> Note that Humana is the one voice in Solina V that has some thickness to it even without the Ensemble effect. That's because it's modeled from a very different circuit than the Solina's.

How does the Ensemble effect fix this problem? It splits the signal and sends part of it through a series of capacitors, which not only delay it a little bit but introduce a tiny bit of signal degradation with each step. (This kind of circuit is called a *bucket brigade delay* because the signal is passed from one component to the next, like a bucket brigade carrying water to a fire.)

In the Solina, there are three such delay lines, each with a slightly different delay time that's varied a tiny bit by its own LFO. When you bring them together, the result is a constantly shifting harmonic structure that lends some of the richness of a real string section to the Solina's sound. It's interesting to note that unlike a conventional modern chorus effect, the Solina Ensemble's three delayed signals are mixed together without any dry signal. This design dates back to the original Orbitone triple-chorus effect on the Solina's direct ancestor, the Eminent 310. The result is lush, thick, and inviting, as you can hear for yourself.

What about that extra switch next to the **Ensemble** button? It reproduces the two different kinds of Ensemble that the Solina could produce. Early Solinas were mono, and later ones were stereo, with the resulting Ensemble sounds being quite different. The stereo Ensemble has a wider soundstage, but a timbre that is a bit less in-your-face than the mono version. Now you can choose either one to suit your needs.

Don't feel guilty if you find yourself using Ensemble almost all the time; original Solina players did, too. In fact, on the very earliest Solinas, you couldn't turn it off!

When you start playing with Solina V and really learning what it can do rather than simply enjoying its presets, it might be a good idea to start out with the lid closed. By working exclusively with the Main Panel controls, you'll develop a solid foundation for what Solina V can do for you – and you'll be following in the footsteps of all the famous keyboardists whose hits in the 1970s relied on it.

Of course, that's not going to be enough to satisfy you once you get the urge to dive deeper, and that's what we'll do in the next chapter, as we open the lid and see what's waiting for us...

6. THE ADVANCED PANEL

Now that we've mastered the Main Panel, it's time to go as deep as Solina V will take us. Click the **Advanced** button in the Upper Toolbar, or click on the lid, to open the Advanced Panel, and let's check out all of the new features that take this classic string machine to the next level!

6.1. The Advanced Panel and its Controls

The Advanced Panel is neatly laid out in several sections from left to right.

The sections are:

- **Master Section**: These knobs set the amount of velocity and aftertouch response for **Level** and **Brightness**.
- **LFO**: A *Low-Frequency Oscillator*, a common means of adding movement to sounds in various ways.
- **Bass Section**: These controls turn the Bass instrument into a more full-featured monophonic synthesizer, complete with its own arpeggiator.
- **Upper Resonator**: A set of three resonant filters that can shape the tone of the Upper instrument.
- **Effects**: Three effects processors with a total of five effect types.

6.1.1. Master Section

Unlike the original Solina, whose keyboard was nothing more than a row of 49 on/off switches, Solina V takes advantage of modern keyboard designs that provide velocity and aftertouch sensitivity. This implementation, which is simple yet flexible, is controlled in the **Master Section**.

There are four knobs: two routed to the overall volume (**Level**), and two routed to the filter cutoff (**Brightness**). This lets you configure a preset where (for example) velocity affects both the Level and Brightness but aftertouch only affects Level.

Because we don't want to overload our output signal, leaving ourself some *headroom*, three of these four controls don't boost what's already there – they *reduce* the Level and/or Brightness by a certain amount, so that applying velocity and/or aftertouch brings them *up* to their programmed settings.

For example, if Vel Level is set to 0%, then the programmed level will be heard no matter how hard you strike the keys. However, if you turn up Vel Level to 50%, then you'll only hear the programmed level if you hit the keys hard, and you'll hear a reduced level if you play softly.

Similarly, Aftertouch Brightness reduces the brightness for lower amounts of pressure, so you have to press harder to hear the full effect.

The one exception to this rule is Aftertouch Level, which actually does produce a volume boost – the control ranges from 0dB to 9dB.

> A quick way to create a darker overall sound is to set your keyboard to output a low, fixed velocity, and then adjust the Vel Level control to get the tone you want. A fixed velocity simulates the original Solina's behavior, so this is often a fair trade-off for losing dynamically sensitive keys.

6.1.2. LFO

A Low-Frequency Oscillator (**LFO**) is just what it sounds like: an oscillator that runs at a very low frequency, perhaps as low as one cycle per minute or more. If an LFO is routed to modulate the frequency of an audible oscillator, it will cause the pitch to rise and fall (**Vibrato**). If it's routed to the overall level, it causes a "pulsating" volume change (**Tremolo**).

Solina V can use the Mod wheel to add vibrato and tremolo on the Upper and Bass instruments simultaneously. However, it can also control **Bass Cut**, an independent filter brightness control for the Bass instrument. The **LFO** section controls these various forms of modulation.

Another thing you can do is program in a certain amount of constant modulation, which can then be increased by the Mod wheel as needed. Whatever form of modulation control you're after, the LFO section is where these decisions are made.

The controls are laid out with the most important ones at the center, so we'll jump around a little bit in introducing them.

Rate: This slider controls the LFO speed. Its range of values will depend on whether or not you've turned on Sync.

- If Sync is off, then the rate is displayed in Hz (cycles per second) and ranges from 0.010 Hz (one cycle every 100 seconds) to 13.0 Hz (13 cycles per second, almost but not quite fast enough to be heard as a tone).
- If Sync is on, then the Rate is displayed in musical bars and beats, ranging from 1/64 all the way up to 8/1 (one cycle per 8 bars).

Waveform: This slider (which is actually a 5-position switch) lets you choose the LFO waveform from among five different types. From bottom to top, these are Random, Square, Saw Down, Saw Up, and Triangle.

Vibrato: This knob controls the amount of pitch modulation. The Vibrato amount ranges from 0.00 to 50 cents (±1/2 semitone).

Tremolo: This knob controls the amount of level modulation. The Tremolo amount ranges from 0.00 to -12.0 dB.

Bass Cut: This knob controls the amount of filter modulation for the Bass instrument. It can be set from 0% to 100%.

Bass Cut only has an effect if the Cutoff in the Bass Section (see below) is set low enough to leave room for the modulation to be audible. You can hear this relationship for yourself by turning Bass Cut all the way up and playing with the Cutoff.

By default, Vibrato, Tremolo, and Bass Cut all change from 0 to their programmed values by moving the Mod wheel. However, if you'd prefer to set any of these parameters to a constant value that's independent of the Mod wheel, just turn the **Mod Amt** knob (next to the Pitch Bend and Mod wheels) down to 0.

Note that the Mod Amt knob sets the Mod wheel's effect on all three types of LFO modulation at once. If you turn it down to 0, the Mod wheel won't affect anything at all. However, you can independently map Vibrato, Tremolo, and/or Bass Cut to their own MIDI controllers using MIDI Learn [p.23].

Delay: This knob controls how long it takes between pressing a key and having the modulation start to work. Its range is from 0.00 to 3000ms (3 seconds).

Fade: This knob controls a gradual increase in modulation strength from 0 to the programmed level over a time range from 0.00 to 3000ms.

Use these knobs in combination to produce the desired effect of gradually increasing modulation. Experiment with their interactions so their behavior works as you think it should. When in doubt, start by setting Delay and Fade to the same time.

Retrig: This switch determines whether the LFO "runs free," cycling without regard to pressing keys, or if the LFO *retriggers* (starts its waveform cycle over again) every time a key is pressed.

To hear this effect, set up something obvious-sounding like a very strong Tremolo using a Square waveform. If you play keys at random, you'll hear the LFO in a different part of its cycle with every keypress. With Retrig on, you'll hear quite clearly how the LFO starts over with every keypress.

Note that Retrig is tied to the first note played and held; if you play other notes without releasing the first one, they will follow the same LFO cycle as the first note held. Retrig won't work until you release all of the keys and then play a new one.

Sync: Locks the LFO to the master MIDI clock, which puts it in sync with any other Solina V effects that also have their Sync parameters enabled.

There's a lot going on here! These controls are as full-featured as the ones on many analog synths' LFO sections, and they add a lot of power to Solina V, letting you step beyond basic string machine effects in many ways.

6.1.3. Bass Section: Filter and Envelope controls

The Bass Section, on its own or combined with the LFO Section, adds so many features to the Bass instrument that it effectively becomes a full-on monophonic synthesizer. (This is a nice nod to the **Solina String Synthesizer**, a later-model Solina that included a built-in **ARP Explorer I** monophonic synth.) It's laid out in two parts with different functions, which we'll cover one at a time.

The left side of the Bass section adds controls for a resonant filter with simple envelope parameters for cutoff frequency and level.

Cutoff: Controls the filter cutoff frequency. When it's set to a low enough value, the Attack and Release stages of the envelope will be audible (similarly to the Bass Cut control). The cutoff frequency can be set anywhere from 20Hz to 20kHz.

Resonance: Will emphasize frequencies near the cutoff frequency, producing tonal sweeps as the Cutoff is changed.

> At very high Resonance, the filter can start to *self-oscillate*, meaning it generates its own tonality in addition to the other sound sources. Watch your output levels when you set Resonance to its highest values!

Env Amount: This knob sets how much the Attack and Release will affect the Cutoff. Their effect will be most audible if the Cutoff is set fairly low.

Attack: When a key is pressed, the filter frequency will start at the Cutoff value and sweep upward by an amount determined by the Env Amount knob. Attack is the amount of time this rise will take, and can be set from 0 to 3000ms.

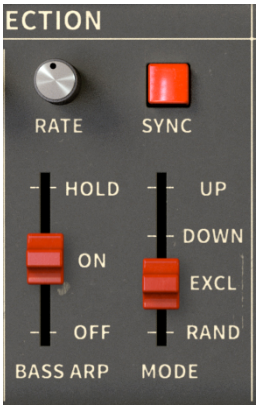
Release: When a key is released, the filter frequency will drop back down to the Cutoff once more. Release is the amount of time the return will take, and can be set from 0 to 4000ms.

Bass Sustain: This slider controls how long the Bass instrument will take to fade to silence after a key is released. It can be set from 0 to 4000ms, and is the equivalent of the Upper instrument's Sustain Length control on the Main Panel.

> Remember that Crescendo affects both the Bass and Upper instruments.

6.1.4. Bass Section: Arpeggiator

One of the most fun ways to use a monophonic synthesizer is to control it with an arpeggiator, to play cycling cascades of notes. Solina V includes a simple and elegant **Arpeggiator** that can add motion and groove to your tracks.



The controls are straightforward:

Bass Arp: This slider sets the Arpeggiator to Off, On, or Hold status.

When On, the Arpeggiator will cycle through any notes held down, and will stop playing any notes that are released.

With Hold, notes can be added and will continue to play when released, as long as one note remains held down. When *all* notes are released, the entire arpeggio will stop and "forget" the notes that were playing. Playing a new note starts the process over again.

Mode: Determines the playback order for the notes in the arpeggio. Up, Down, and Random are self-explanatory. "Excl" stands for "Exclusive," a mode where the arpeggio plays up and down, but the highest and lowest notes are only played once rather than twice (they are *excluded* from repeating).

> Great wars have been fought over whether repeating the top and bottom notes in an Up/Down arpeggiation is the "proper" way to do things. Many famous synths throughout history have been on both sides of this great battle... and now we've chosen a side as well.

Rate: Controls the speed of the arpeggio. The values shown when you click and drag the knob will be different depending on the status of the Sync switch.

When Sync is off, the Rate knob ranges from 0.010Hz (one cycle per 100 seconds) to 50 Hz (50 cycles per second – fast enough to produce an audible tone!).

When Sync is on, the Rate knob ranges from 2 measures at the current master Tempo, down to 1/256 note (again, fast enough to produce an audible tone).

Sync: Locks the arpeggiator to the master MIDI clock, which also puts it in sync with any other parameters that also have Sync enabled, such as the LFO and some of the Effects.

While experimenting, don't forget: the Bass and Upper instruments can be transposed by ±2 octaves independently and the Split point on the keyboard can be put anywhere. That means it's possible to have a left-hand arpeggio playing high notes, while the right-hand pad plays in a lower range. You can also set each instrument to its own MIDI channel for independent controls.

Remember: the Arpeggiator's status, including whether it's set On/Off/Hold, can be stored as part of a preset. You can call up a preset, start playing, and the Arpeggiator will do its thing, even if the Advanced Panel is closed.

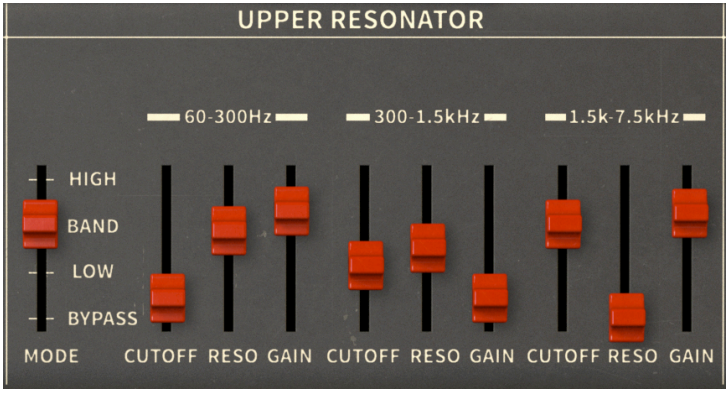
6.1.5. Upper Resonator

The idea of tuned resonators has been around almost as long as analog synthesizers have. The very first Moog modular systems had a module called the 907 Fixed Filter Bank, which allowed for eight specific frequencies to be cut, producing complex overlapping filter curves. The 907 (and its 12-band successor, the 914) are among the most-imitated synthesizer modules in history.

> Moog revisited these modules' capabilities in the Polymoog, which derived a lot of its character from a similar set of fixed filters. (Combined with Humana, that's *two* Polymoog elements added to Solina V!)

These modules are often called *formant filters* because the frequency responses they create are similar to the formant structure of the human voice, which tells us if a speaker is young or old, male or female, and so on.

The **Upper Resonator** appears as a sort of a cross between a set of three synthesizer filters and a 3-band parametric equalizer. Each band has its own parameters for frequency, bandwidth, and boost/cut, like a parametric EQ; however, the bandwidth control produces resonance like a synth filter would. Deceptively simple, the Upper Resonator packs a lot of power into ten sliders.



First, there's the **Mode** switch. This determines if the three resonators work as Lowpass, Bandpass, or Highpass filters. The important thing to realize here is that each filter works within its own range, so three Lowpass filters in adjoining frequency ranges will potentially produce a very unusual frequency response!

There's also a Bypass setting if you don't want the Upper Resonator in the audio path; this is important because the Upper Resonator can affect your sound even if it seems like it's set to do nothing at all. (It's the nature of the beast!)

> It can be fun to switch Mode on the fly using a MIDI controller. Try it!

Each resonator band is dedicated to a particular frequency range:

- 60Hz to 300Hz
- 300Hz to 1.5kHz
- 1.5kHz to 7.5kHz

Aside from the different ranges, all three resonators have identical controls:

Cutoff: Sets the value for the center frequency of the filter. The range for each band is given by the range listings above: 60Hz to 300 Hz, 300Hz to 1.5 kHz, and 1.5kHz to 7.5 kHz.

Resonance: Equivalent to the bandwidth (Q) control on a parametric EQ, this adjusts the width of the band's effect around the center frequency. The control ranges from Q = 0.5 (a relatively broad peak, about two octaves) to Q = 10 (a very sharp and resonant peak).

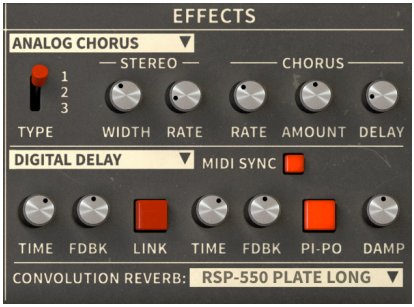
Gain: The amount of gain boost or cut at the Cutoff. The control's default value is 0dB (no gain change), but can range from a +6dB boost to a -72 dB cut (effectively silence).

> Don't forget: each of these parameters is MIDI-assignable, which opens up a lot of possibilities. For example, three adjacent sliders on your controller assigned to the Upper Resonator's Cutoff frequencies will allow for very direct and intuitive play.

> The Upper Resonator can turn the Solina V into a dark, brooding ambient pad generator: add a dash of LFO, a hint of chorus, wash it out with your favorite convolution reverb, and just about any chord you play will make people listen. We're trusting you to never use this superpower for evil purposes.

6.1.6. Effects

There's one last section in the Advanced Panel, another musical fusion between the 1970s and the 2020s. Like most modern synthesizers, Solina V polishes its sounds to a gleaming shine before they reach your ears, using a set of carefully chosen **Effects**.



This section features a series of three different signal processors:

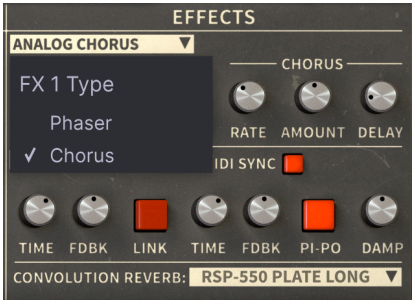
- FX1 is a *modulation* effect that thickens the sound: the two types are **Phaser** and **Analog Chorus**.
- FX2 is a *delay* effect that produces various types of echo: the two types are **Analog Delay** and **Digital Delay**.
- The **Convolution Reverb** places your sound in a virtual space to give it a sense of dimension and depth.

The wet/dry mix of each effect is set by the three knobs to the right of the keyboard: **FX1**, **FX2**, and **Rev**.

> ! The order of the processors can't be changed from FX1 to FX2 to Reverb), but turning any effect all the way down will bypass it. Don't forget Ensemble [p.51] on the Main Panel. It also thickens the sound, but with a very different, more "old-school" feel. This was the only effect on the original Solina, and the one you should focus on if you're going for authentic vintage tone.

6.1.6.1. FX1

First, select whether you want to use the Phaser or Analog Chorus. Click on the name, then click your choice in the pop-up menu:



So, what's the difference between these two effects? They both make the sound thicker and richer, but they use different electronics to get there, resulting in two different timbres.

Be careful when switching between the two effect types. Let's say you get a good sound set up in the Phaser, but you're curious as to how the Analog Chorus sounds. If you haven't saved the preset yet, switching to the Analog Chorus and back again will have replaced your edits with the saved values, and you've lost your great Phaser sound. So make it a point to save often! (By the way, this applies to FX2 as well.)

Note: if you save your preset with one effect type active, the settings for the other type will not be saved. If you can't decide which effect type you like better, save a copy of the preset for each type.

6.1.6.2. Phaser

Phase shifting has been popular since the 1970s. It takes advantage of the fact that a filter will change the *phase* of its input – moving where every wave cycle starts and ends – even when no frequencies are being filtered out. An *all-pass filter* doesn't change the frequency content of the input, but moves its wave cycles a tiny bit in time.

If you split the input signal into two copies, then phase-shift one and leave the other alone, their wave cycles will no longer align. If you then mix them back together, the offset in phase will cause them to cancel each other out at various frequencies. This produces a tone with frequency notches of varying sizes. Used this way, this effect is effectively a fancy EQ, albeit one that can sound really cool sometimes.

But if you then use an LFO to modulate the phase shift, the notches move back and forth, and the sound will change character drastically as they do. This produces the deep, thick "whoosh" that phasers are known for. This sounds incredible on a string machine; for example, putting a phaser on an Eminent 310 is how Jean-Michel Jarre created the famous pad sound for his earliest albums.

The Phaser on Solina V is actually two separate phasers, each with its own controls:

Rate: Controls the speed of the sweep. If the MIDI Sync button is pressed, the Rate amount is expressed in fractions of the tempo (from Tempo/15 to Tempo/2) or note values (1/8 or 1/4). Both kinds of settings are accessed with the same knob – turn to the left for tempo divisions, to the right for notes.

Feedback: Passes a bit of the output back into the input. When turned up, this produces a distinctive resonant tone that works for some sounds but not for others.

> ♪ While you'll of course want to play with all of these parameters, take your time to fine-tune the Feedback by Ctrl-clicking or right-clicking the knob. Small changes can make differences.

Depth: Controls the strength of the phasing effect.

MIDI Sync: Locks both phasers to the current tempo, synchronizing them with other features like the LFO, Arpeggiator, etc.

Dual Mode: Creates a mono effect where both phasers, each with its own settings, process the signal together, creating a mono output. When it's turned off, one phaser outputs to the left and the other to the right, in a stereo output that is wider in soundstage but less intense.

6.1.6.3. Analog Chorus

The first successful chorus pedal was the Roland CE-1 Chorus Ensemble, and it served as the basis for hundreds of other chorus effects. A chorus does its thing by splitting the input signal, running one part through an analog delay, and recombining them. Once again, the combined signals produce notches in the frequency spectrum, and once again, an LFO modulates the delay time to produce a moving texture that makes one instrument sound like several playing at once.

Using delay instead of phase shifting produces a very different type of notch filter distribution and relative strength, and therefore a very different timbre. Changing the delay time and LFO rate can create everything from a lush and slow thickening to rapid vibrato.

The Solina V Analog Chorus has a controllable stereo effect (where the delays for the left and right channels are offset) and a choice of three distinct sonic characters, as well as the usual chorus controls:

Type: Selects one of three chorus types. Play with them to find the one that best suits your preset.

Stereo Width: Controls the width of the stereo effect, from 0% (mono) to 100% (hard-panned Left/Right stereo).

Stereo Rate: Sets the speed of the stereo effect, from 0.00Hz to 1.50 Hz. When set to 0.00, the stereo modulation stops.

Chorus Rate: Adjusts the speed of the LFO modulation of the delay time, from 0.040Hz to 8.50Hz. Slower rates create the thick ensemble effect, and faster rates produce the particular vibrato characteristic to a chorus.

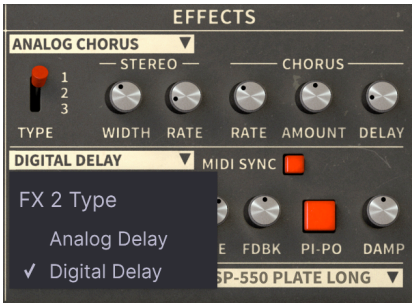
Chorus Amount: Controls the depth of the chorus.

Chorus Delay: Sets the amount of delay applied to the input signal, from 0.0 to 25.0 ms. This changes the base frequency response of the effect and creates more distinct "copies" of the input sound as it increases.

Turning either Rate or Amount down to 0 effectively turns off the chorus effect.

6.1.6.4. FX2

As with FX1, click on the name, then click your choice of Analog Delay or Digital Delay in the pop-up menu:



6.1.6.5. Analog Delay

The Analog Delay reproduces the sound of vintage solid-state units that used analog bucket brigade circuits. As you'll recall from the explanation of the Ensemble [p.51] effect, passing a signal through many stages of bucket brigade delay not only increases the delay time, but also degrades the signal in a way that's pleasing to the ear. While modern digital delays are more true to the original sound, many artists feel that they lack the character of a proper analog circuit – which is why so many guitar pedal manufacturers still make analog delay stompboxes.

The Solina V Analog Delay operates in mono and has the following parameters:

Time: Sets the delay time. The range is 12ms to 1000ms (1 second).

Feedback Tone: Changes feedback filtering. Sometimes it's nice to alter the tonality of the echoes over time, so this knob controls a filter patched into the feedback loop. If the knob is set to 50%, no filtering occurs; if turned to the left, lowpass filtering is applied so subsequent echoes become warmer and darker; if turned to the right, highpass filtering is applied so subsequent echoes become brighter and thinner.

Feedback Amount: Adjusts how much feedback from the output is sent to the input. When Feedback is set to 0, only one repeat is heard, as in vintage "slapback" echoes. Unlike some real analog delays, the Solina V's delay can't be set to "runaway" levels, where each succeeding repeat is louder than the last one, until something either overloads or catches fire.

LFO Rate: Controls the delay time modulation rate. A sine wave LFO is available to cause tiny pitch variations by subtly making the delay longer (dropping the pitch) and shorter (raising the pitch). The LFO Rate can be adjusted from 0.5Hz to 10Hz.

LFO Depth: Sets the amount of delay time modulation.

6.1.6.6. Digital Delay

With the arrival of affordable digital signal processing (DSP) in the 1980s, a new type of echo effect was created: the **Digital Delay**, where input audio is converted to digital data, delayed, converted back to analog, and output. This creates echoes that don't degrade unless they're externally filtered, but also allows for some neat tricks that an analog delay can't do.

This is a dual digital delay that operates in stereo. The left and right delays have two controls each:

Time: Sets the delay time for that side. Delay time ranges from 9.07ms to 1000ms (1 second). If MIDI Sync is turned on, delay times range from 1/128 note to one bar at the current tempo.

Feedback: Adjusts the Feedback amount for that side. Unlike the Analog Delay, the Digital Delay's Feedback can be set to run away, with each successive echo getting louder and more distorted. Use with care!

The rest of the controls work on both sides of the delay at once:

Link: Makes the delay mono. Time and Feedback are set for both sides at once; it doesn't matter which knobs you turn, the corresponding knobs on the other side will mirror your adjustments by themselves.

Pi-Po: Short for "Ping Pong". Hard-pans the delayed signals so they alternate between the left and right output channels.

Damping: Rolls off the high-frequency content of the delayed signal. This knob controls how quickly the highs are removed.

MIDI Sync: Locks the Delay to MIDI clock and also synchronizes it with other Sync-enabled functions like the LFO and the Phaser Rate.

6.1.6.7. Convolution Reverb

The Convolution Reverb finishes out the sound of Solina V by placing it in an artificial space, whose dimensions dictate how the sound dies away. Unlike an *algorithmic* reverb, where individual parameters like Reverb Time and Room Size are adjusted, a convolution reverb creates its sound from a modeled "snapshot" of a space.

Let's say we want to create the sound of a particular concert hall for someone sitting in the audience listening to someone on stage. We set up a speaker on stage and a microphone in the audience, and play an *impulse* over the speaker: a burst of white noise or a sine wave sweep. We record the impulse on the mic, and then analyze it to remove the impulse while leaving the reverb behind.

From now on, any sound we feed into the reverb will sound as if it's being played on that concert hall stage and heard in the audience. Pretty slick!

These models, called *impulse responses*, can be stored and read back by many different convolution reverb plug-ins. Impulse responses don't have to be created in halls or rooms, though: they can be recorded in phone booths, stairwells, tunnels, studio echo chambers... and even by putting an impulse through an algorithmic reverb box or analog plate reverb to recreate one of its settings.

Solina V provides 24 different convolution reverbs modeled, after the presets of five different reverb devices, a couple of which are the actual reverb units that were paired with string machines in the 1970s.

Using the Convolution Reverb couldn't be simpler: you choose a reverb and set its mix with the **Rev** knob next to the keyboard. There are no other controls; the emphasis here is on immediacy and musicality.

To select one of the impulse responses, click on the name of the current impulse response to bring up a menu of all your choices:

Which impulse response is best? That depends entirely on your ears. Try some on your sound and see which one – small room or large hall, filtered or flat, spring or plate or sci-fi special effect – is most musical to you.

And that's really the core of Solina V in the end: musicality. Once you've mastered these features, let your ears be your guide in creating the vintage (and not-so-vintage) string and bass sounds that best fit your music.

Above all, remember to have fun – and if it sounds good, it *is* good!

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