USER MANUAL

solina V

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1 INTRODUCTION

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

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 top it off with 21st century features the products might have had if the technology had been available at the time!

And if this is the first Arturia product you have owned, it is an excellent way to become acquainted with our stuff.

The instrument upon which this virtual model is based played an important part in many hit songs of the 1970s and early 1980s. And naturally it was a perfect fit for the various forms of symphonic rock that flourished in those days, filling the spot that had previously been held by the mercurial Mellotron.

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 History of the original instrument

1.1.1 String theories

In the early days of rock music there were very few options available to the keyboard player in a band. The nicer clubs would have a grand piano or a Hammond, the not-so-nice ones might have an upright piano (tuning optional), and the vast majority had nothing at all; if you wanted to play, you needed to bring something with you.

Unfortunately, the options were limited to electric pianos and portable organs (some more portable than others). And while those instruments were certainly capable of producing some great sounds, there was a hole they couldn't fill: the irreplaceable lushness of a room full of violins, violas, cellos and contrabasses. There's something about the sound of these instruments that can take a sweet love song and turn it into a heart-rending expression of the human condition.

And it was impractical for studios to hire a small orchestra except for the most important artists. The average musician could only dream that he might one day hear his music with something more than basic instrumentation.

So the stage was set for an instrument that would help fill these needs. Thankfully, certain technological innovations were just around the corner.

1.1.1.1 Chamberlin and Mellotron

One of the first attempts to solve this problem was a keyboard which traces its roots to the late 1940s, when a gentleman named Harry Chamberlin began experimenting with ways to trigger strips of magnetic recording tape from an organ-style keyboard. His first device played back pre-recorded drum loops, and he followed this with a series of keyboards that would play tapes of various orchestral instruments. The age of samplers began with analog tapes!

A bit of industrial drama led to an overlap between the Chamberlin products and their younger, more famous cousins, the Mellotrons. Suffice it to say that these products were used extensively by major artists such as the Beatles, the Moody Blues, King Crimson, Genesis, Led Zeppelin and Yes.

However, their size, unreliability and price tag made them unsuitable for many people. The need for another solution was building.

1.1.1.2 Ken Freeman: string synthesist

As a keyboard player in the mid-1960s, Ken Freeman saw first-hand the need for an instrument to help him reproduce the string arrangements of popular music when his band played live shows. But a Mellotron was out of the question for most of the reasons already cited.

He discovered through experiments with a Selmer Clavioline and a triple-head delay unit that a single voice with vibrato could be made to sound like an ensemble with the proper application of the delay unit's three LFOs. This discovery fueled his imagination and set in motion the development of the very first string synthesizer: the Freeman String Symphonizer.

Unfortunately for Mr. Freeman, the alternate skittishness and sluggishness of the companies he courted for mass-production of his invention actually prevented the Symphonizer from being the first string synthesizer to make it to marketplace. But he deserves our grateful thanks for his pioneering work in this area, which spurred the development of dozens of similar products.

1.1.1.3 Eminent

In 1972 a Dutch company by the name of Eminent Orgelbouw B.V. broadened their product line with the introduction of the Eminent 310 series of console organs. Their targets at the time were the home and theater organ markets, which had certainly been kind to them.

But perhaps unexpected was the impact the model 310 home organ would have on the worldwide music scene within a few years. Their novel approach to the string ensemble issue caught the attention of an artist by the name of Jean Michel Jarre, who used the Eminent 310 strings for his seminal albums Oxygène and Équinoxe, released in 1976 and 1978, respectively.

Prior to that Eminent must have recognized they had something special on their hands, something that could stand on its own as a product and also fill a need that had been simmering in an untapped marketplace for many years. And so in 1974,

two years after the initial introduction of the 310 series organs, the Eminent Solina was born.

The Solina had a 4-octave keyboard and only offered a handful of sounds. But they were *important* sounds, ones that had been missing in the minds of many musicians: warm, ensemble strings that could fill out the sound while the guitarist took a solo; high string lines that could soar above the song and make it sparkle. And perhaps most importantly, these sounds could be carried from gig to gig by one person, even though at nearly 50 pounds the Solina was quite heavy by today's standards.

But there was still one more step to be taken before the world would be introduced to perhaps one of the most sought-after vintage keyboards of all time: the ARP String Ensemble.

1.1.2   The ARP String Ensemble

It's no mistake that the Eminent Solina and ARP String Ensemble sound alike: they are the same keyboard with different labels. ARP had actually been in pursuit of an ensemble synthesizer of their own design for some time, and for various reasons discontinued their efforts and struck an agreement with Eminent to "rebadge" their Solina as an ARP product.

ARP was no "new kid on the block," though, which is probably why the much larger Eminent agreed to the deal; ARP had already established itself solidly within the synthesizer marketplace with several impressive products, including the now-legendary Odyssey. And so an unusual partnership was forged that proved to be a very wise move for both parties.

Note: the first production version of the ARP String Ensemble was actually named the "ARP Model 2100 String Ensemble SE-IV". But that's a bit unwieldy, so this manual will gradually transition from the name "ARP String Ensemble" to "Solina" to give credit where credit is due.

1.1.2.1 Arrival of the fittest

As mentioned previously, the ARP String Ensemble was not the first ensemble keyboard to reach the ready hands of keyboard players around the world. But at some point after its release in 1974 it became the standard-bearer for all that followed.

In fact, the String Ensemble has proven not only to be the most popular product ARP ever made, but also the one with the most identifiable sound. The average person might hear a synth lead and not know whether it was an ARP, a Bob Moog's creation or an Oberheim, but the ARP String Ensemble has always benefited from a strong sound identity, easily recognizable. Some other synths were even sometimes mistaken for a String Ensemble so much it was a sound reference. Case in point: Jean Michel Jarre's Oxygène and Équinoxe albums, which were released years after the ARP String Ensemble hit the streets, used the Eminent 310, not an ARP.

And even though its sound was obviously synthesized, as opposed to the "real" strings provided by the Mellotron tapes, it had certain advantages that made it the natural selection for keyboard players around the world: smaller size and weight, no tapes to tune or break, and it didn't cost as much as a house.

ARP drove the point home in their marketing materials with statements like "You can hold a chord until you drop from exhaustion. That certainly beats the eight-second limit found on other systems." This was true: the Mellotron tapes were not loops; when a key was pressed they played for about 8 seconds before reaching the end, and after that they needed to reset their position.

To put things in perspective, that's 2 bars of 4/4 time at 60 bpm. This forced the keyboard player to be mindful when voicing chords, so as not to have a crucial note drop out at a bad time. But the String Ensemble imposed no such limitation.

1.1.2.2 Form factor

Another great thing the Solina had in its favor were its dimensions, especially the width (38") and depth (14.5"). It stacked well on top of other "foundational" keyboards like the Rhodes, Wurlitzer and Hammond. It also had a sturdy, flat top, so it in turn could be used as a stackable surface for a smaller synth such as the Odyssey.

So by the time the Solina was packed into its flight case, it took up less room in the tour bus cargo bay than almost anything else in the keyboard player's rig. All things taken together, ARP and Eminent had produced a best-seller.

1.1.2.3 A string of spinoffs

It is said that imitation is the most sincere form of flattery. In the business world, though, it is an attempt to eat the other guy's lunch. The Solina and its siblings held their own for quite a few years against a slew of competitors, and it is amazing they did as well as they did. Take a look at just a small sample of what they were up against:

Year	ARP model	Competition
1973		Logan String Melody I
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
1976		Korg PE-2000
1977	Omni 2	Crumar Orchestrator, Hohner K4 / Stringer (USA) / String Performer (Europe)
1977	Omni 2	Elgam String Ensemble, Logan String Melody II, Multivox MX202
1977	Omni 2	*Oberheim Eight-voice*

1978	Quadra	Farfisa Soundmaker, Roland RS-505
		Oberheim OB-1
		Sequential Circuits Prophet 5
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*

Note the appearance of the first 8-voice programmable synthesizer in 1977, followed rapidly by others of varying polyphony but increasing popularity. By 1981 the competition was too fierce, the research and development costs were too high, and the public interest in ensemble synthesizers had waned. Sadly, ARP Instruments, Inc. was forced to close its doors.

But its legacy lives on in the 21st century, as synthesizer enthusiasts are once again paying top dollar for ARP synthesizers, including the Solina String Ensemble. And it is with the utmost respect for the history of the technology and the music it inspired that we offer to you the Arturia Solina V.

1.1.2.4 String songs: a selected discography

The Solina string sound has been used to great effect on many albums through the years. Here is a brief overview:

Dream Weaver – Gary Wright	*I'm In You* – Peter Frampton
The Grand Illusion – Styx	*Captain Fantastic* – Elton John
Come Get It! – Rick James	*Rumours* – Fleetwood Mac
Thrust – Herbie Hancock	*The Age of Plastic* – The Buggles
Wish You Were Here – Pink Floyd	*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 various waveforms together
- **Subtractive**, in which partials of an audio signal are attenuated by a filter to reduce the original harmonic content of the sound
- **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 used as the crossfade targets of 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 increasing the playback speed when different pitches are required
- **Granular**, which splits samples into very short "grains" and allows them to be manipulated through a myriad of playback options, and
- **Physical modeling**. In this method the output waveform is calculated according to a set of equations and algorithms derived through extensive analysis of a physical sound source.

1.2.1 Music and math: yet another link

A physical model attempts to codify the laws of physics that govern a particular form of sound generation. A model typically will have multiple parameters, some of which are constants that describe the physical materials and dimensions of the instrument, while others are time-dependent components representing the player´s interaction with the instrument, such as plucking a string, pressing a valve, or reducing the pressure of his embouchure, etc.

This idea 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 the physical models either didn't exist or were too expensive.

But if you've been watching the technological trajectories, you know those days are in the past. And we're just as happy about that as you are.

1.2.2 A computational conundrum

Here's an example of what must be taken into account while developing a physical model. 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. Among other things, the formula must incorporate:

- The properties of the striker: its rigidity, the velocity of the hit, the material, and how/where the strike happens
- The membrane: its mass density, elasticity, woven fabric vs. plastic vs. skin, etc.
- The sympathetic resonances of the membrane and the body of the drum
- The conditions at the membrane boundaries: is there a rigid termination to the drum´s body, or are there multiple, independently adjustable pressure points?
- The ancillary and perhaps lingering response of additional components, such as the snares under a snare drum.

Similar complexities can be found in instruments such as an acoustic guitar. A few years ago, a French scientist finally completed a comprehensive modeling of all acoustic guitar parameters. The calculations to produce the sound took three days!

The second-biggest challenge of physical modeling synthesis is to simplify the algorithms wherever possible without sacrificing the essential nature of the instrument being modeled. The goal is to achieve an efficient model which can be used interactively, in real time, without limiting the spontaneous paths a musician may take during a rush of creativity.

1.2.3   The endless revolution

There are several methods of physical modeling synthesis, including Karplus-Strong algorithms, digital waveguide synthesis, and formant synthesis. Each one uses a different paradigm to bring a modeled sound to its musical fruition.

The salient point here is that physical modeling synthesis 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 the "sampling" method would take to produce an inferior result.

Not to rub it in, but we really should mention the ability of physical modeling algorithms to combine parameters into instruments that have never existed. There is no limit to the types of sounds physical modeling synthesis can produce!

And 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 Arturia now offers you our latest brainchild, the Solina V.

May it light the fires of creativity for you!

2 ACTIVATION AND FIRST START

2.1 Register and Activate

Solina V works on computers equipped with Windows 7 or later and Mac OS X 10.8 or later. You can use the stand-alone version or use Solina V as an Audio Units, AAX, VST2 or VST3 instrument.

Once Solina V has been installed, the next step is to register the software.

The registration process will require you to enter the serial number and the unlock code you received with the product.

In order to proceed, go to this web page and follow the instructions:

http://www.arturia.com/register

Note: If you don't have an Arturia account yet, you will need to create one. The process is quick, but it does require that you can access your email address during the registration process.

Once you have acquired an Arturia account you will be able to register the product.

2.2 Initial setup

2.2.1 Audio and MIDI settings: Windows

At the top left of the Solina V application is a pull-down menu. It contains various setup options. Initially you will need to go to the menu and choose the Audio Settings option to get sound and MIDI flowing in and out.
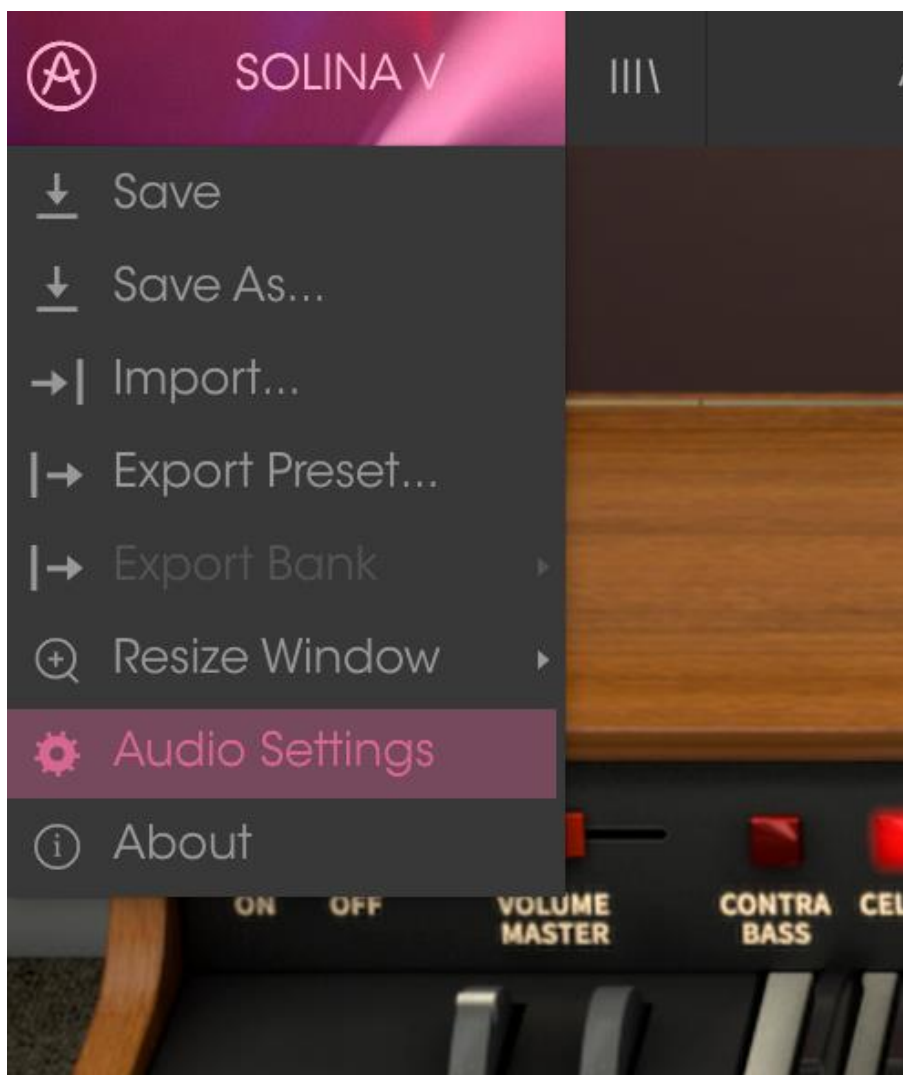
Solina V main menu

You will then see the Audio MIDI settings window. This works in the same way on both Windows and Mac OS X, although the names of the devices available to you will depend on the hardware you are using.
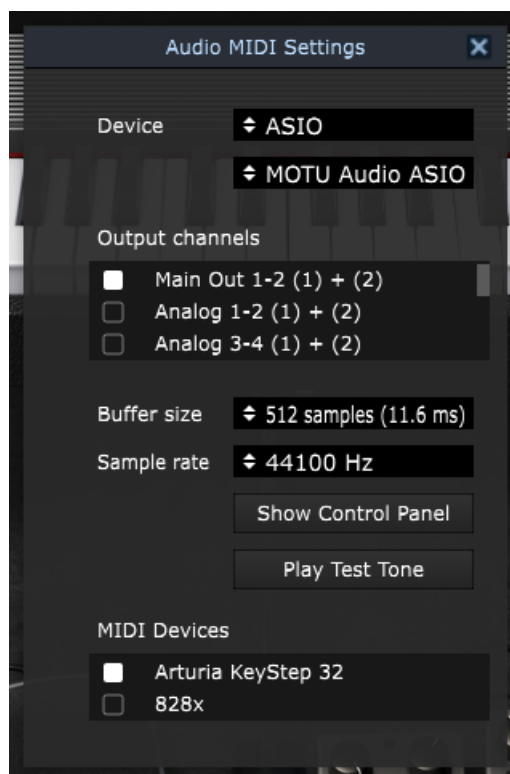
Audio and MIDI settings window

Starting from the top you have the following options:

- **Device** lets you choose which audio driver you want to use to route sound out of the instrument. This might be your computer's own driver like Windows Audio, or an ASIO driver. The name of your hardware interface may appear in this field.

- **Output Channels** lets you select which of the available outputs will be used to route audio out. If you only have two outputs, only two will appear as options. 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 between pressing a key and hearing the note. A larger buffer means a lower CPU load as the computer has more time to think, but can result in a small latency. Find the optimum buffer size for your system. A fast, modern computer should easily be able to operate at 256 or 128 sample buffer size without creating pops or clicks in the sound. If you are getting clicks, try raising the buffer a little. The latency is displayed on the right hand side of this menu.

- 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 the capability of your audio interface hardware though even most computers' own hardware can operate at up to 48kHz which is perfectly fine. Higher sample rates use more CPU power so unless you have a good reason to

go up to 96kHz, then 44.1k or 48k is usually fine. The **Show Control Panel** button will jump to the system control panel for whatever audio device is selected.

- **Play Test Tone** helps you to troubleshoot audio issues by confirming whether sound can be heard through the correct device.

- Your connected MIDI devices will appear in the **MIDI Devices** area. Click the check box to accept MIDI from the device you want to use to trigger the instrument. In standalone mode, Solina V listens for all MIDI channels so there's no need to specify a channel. You can specify more than one MIDI device at once.

2.2.2   Audio and MIDI settings: Mac OS X

The process is very similar to initial setup for Windows and the menu is accessed in the same way. The difference is that OS X uses CoreAudio to handle audio routing and the audio device selection is made in the second dropdown menu. Apart from that, the options work the same way as described in the Windows section.
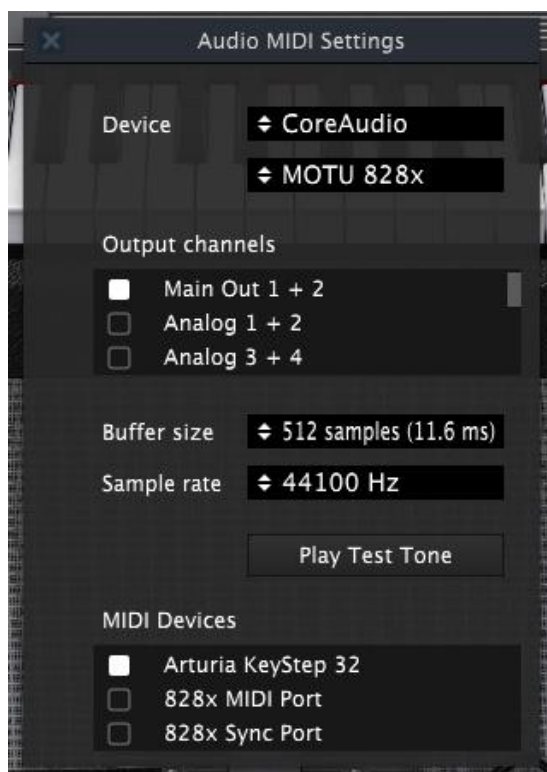
2.2.3   Using Solina V in plug-in mode
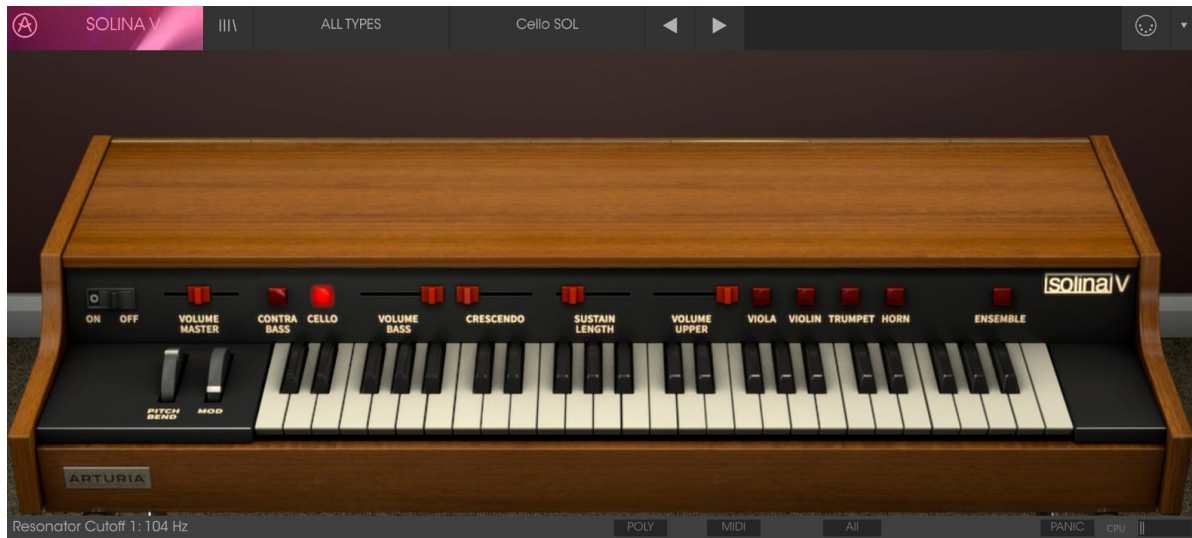
Solina V comes in VST, AU and AAX plug-in formats for use in all major DAW software such as Cubase, Logic, Pro Tools and so on. You can load it as a plug-in instrument and its interface and settings work the same way as in standalone mode, with a couple of differences.

- 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. In standalone mode you can only use one at once.

- You can route Solina V's audio outputs more creatively inside your DAW using the DAW's own audio routing system.

3   USER INTERFACE

Solina V is packed with great features, and 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.

And 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.

3.1   The virtual keyboard

The virtual keyboards in the main Solina V window allow you to play a sound without the need for an external MIDI device. Just click on a virtual key to hear the corresponding sound. Drag the cursor across the keys to hear a glissando.


3.2   Toolbar

The toolbar that runs along the top edge of the instrument both in standalone and plug-in mode provides access to many useful features. Let's look at them in detail. The first seven of these options can be found by clicking on the Solina V section at the very top left hand corner of the instrument window.

3.2.1   Save Preset

The first option lets you save a preset. If you select this 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 and type and select some tags that describe the sound. This information can be read by the preset browser and is useful for searching the preset banks later. You can also enter freeform text comments in the Comments field, which is handy for providing a more detailed description.
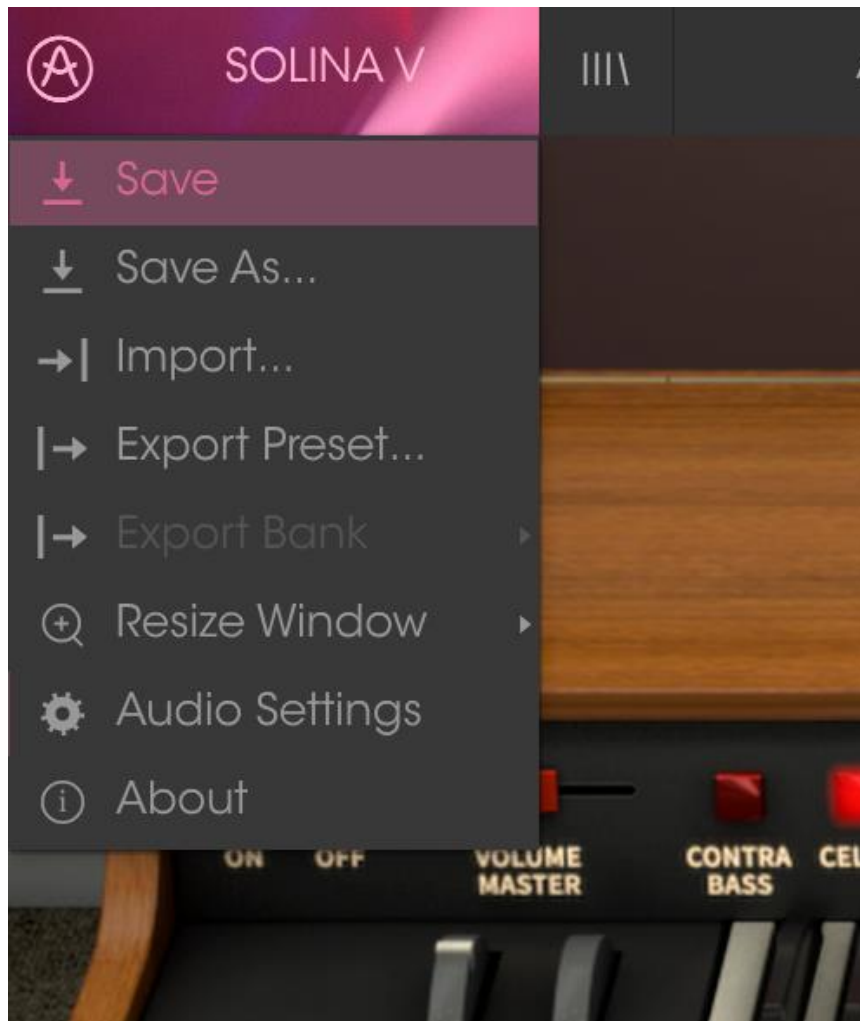
The Save Preset window

3.2.2 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 but still keeping individual copies of each one.

3.2.3 Import preset

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 whichever folder you are using.
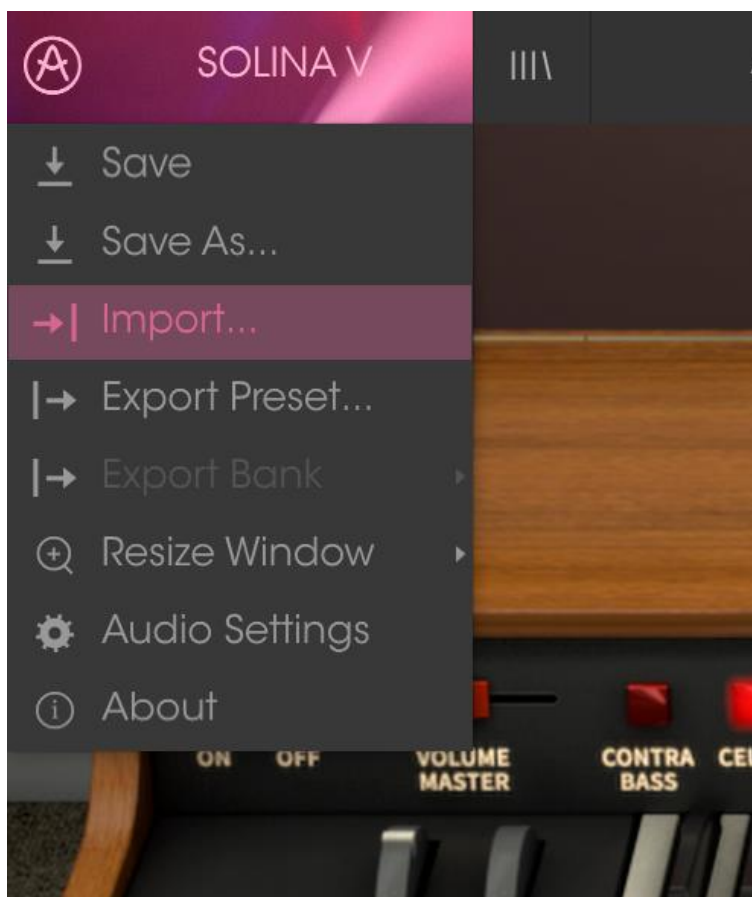
3.2.4 Export preset

You can export and share a single preset using this command. The default path to these files will appear in the window, but you can create a folder at another location if you like.

3.2.5 Resize window options

The Solina V window can be resized from 60% to 200% of its original size without any visual artifacts. On a smaller screen such as a laptop you might want to reduce the interface size so it doesn't dominate the display. On a larger screen or a second monitor you can increase the size to get a better view of the controls. The controls work the same at any zoom level but the smaller ones can be harder to see at the smaller magnification values.
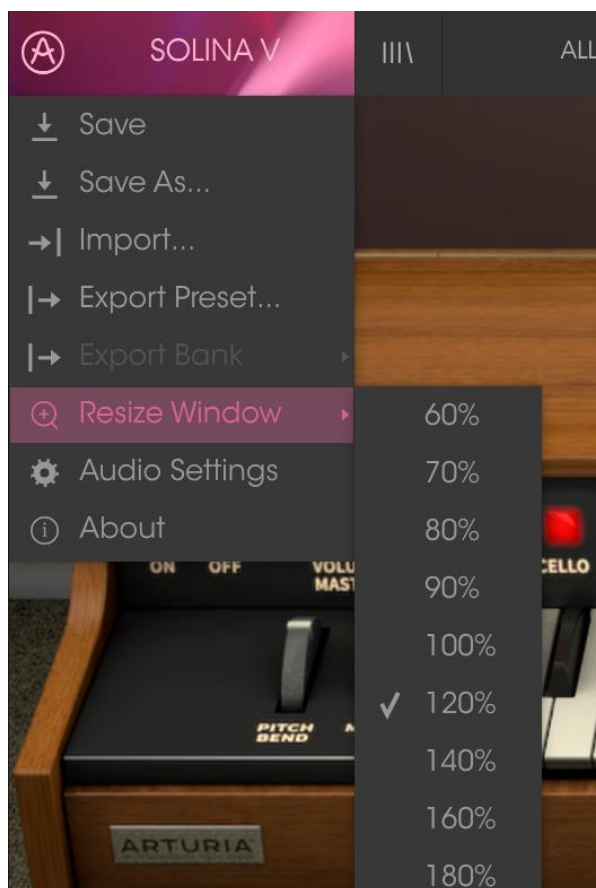
The Resize Window menu

3.2.6   Audio settings

Here you manage the way the instrument transmits sound and receives MIDI. See section 2.2 of the manual for full details on this.

3.2.7   Preset browser overview

The Preset browser is invoked by clicking the toolbar button that has four vertical lines. See section 3.3 of the manual for full details on this. The Filter, name field and left / right arrows in the toolbar all assist with preset selection.
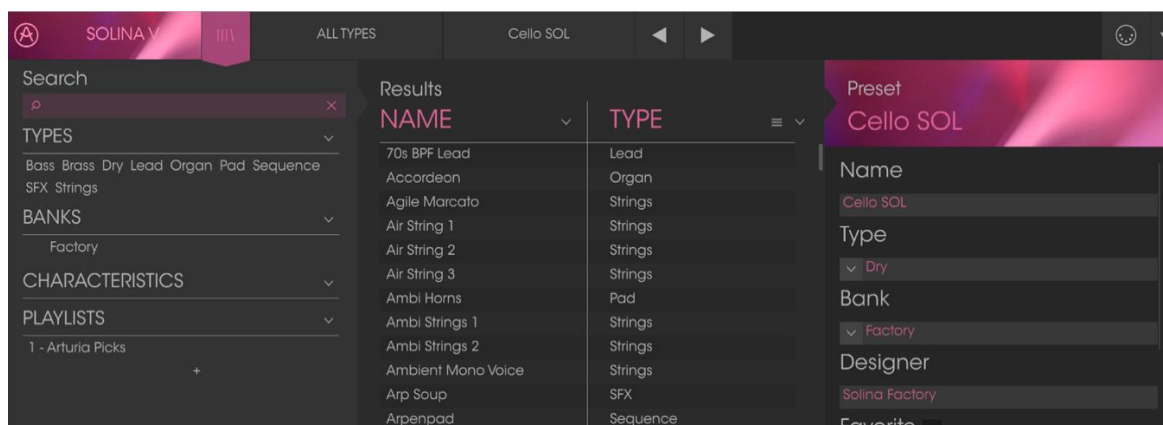
The Preset Browser

3.2.8 Open and Close Advanced section

The Advanced section can be revealed by clicking on the button with the two downward arrows at the right of the toolbar. This lets you access the more advanced features of the instrument like. Click this button once to reveal the advanced section of the instrument and again to hide it. You can also click on the frame of the instrument to open and close it.

3.2.9 MIDI Learn assignment

The MIDI plug icon at the far right side of the toolbar places the instrument into MIDI learn mode. Parameters that can be assigned to MIDI controls will be shown in purple, and the idea is that you map physical buttons, knobs, faders or pedals from hardware MIDI controllers to specific destinations inside the instrument. A typical example might be to map a real expression pedal to the virtual volume pedal, or buttons on a controller to the effect switches so you can change the sound from your hardware keyboard.
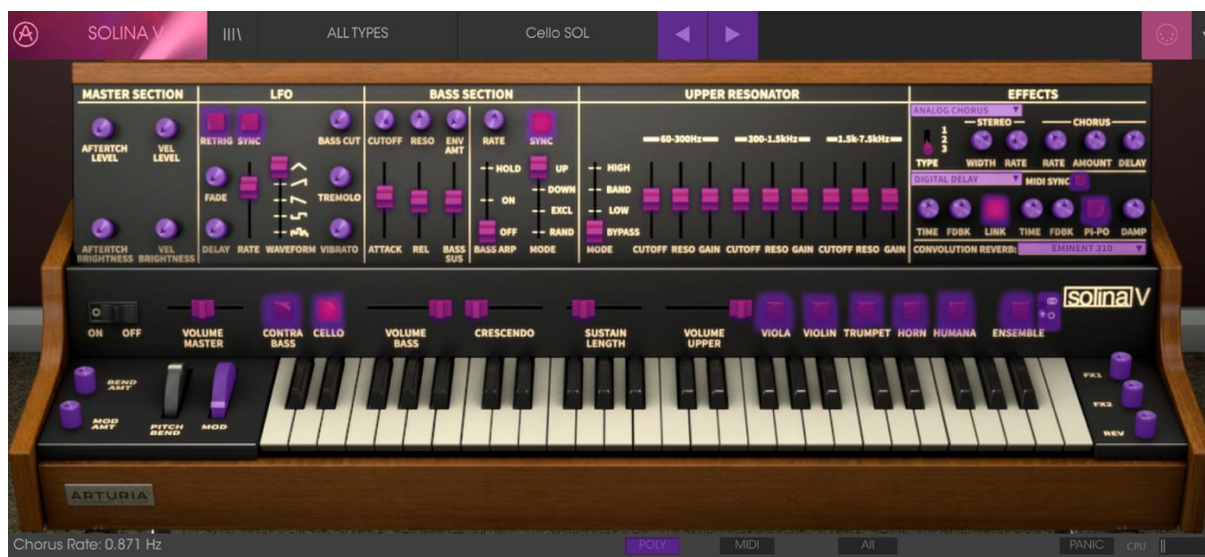
MIDI Learn mode

3.2.9.1 Assigning / unassigning controls

If you click on a purple area you'll put that control into learning mode. Move a physical knob or fader and the target goes red, indicating that a link has been made between the hardware control and the software parameter. There's a popup window that displays which two things are being linked and a button to unassign the two from each other.

Filter attack slider selected and assigned

3.2.9.2 Min / Max value sliders

There are also minimum and maximum value sliders that you can use to restrict the parameter change range to something other than 0%-100%. For example, you might want the filter cut-off be controllable via hardware from 30% to 90%. If you made this setting (Min set to 0.30 and Max set to 0.90) your physical knob would be unable to alter the volume lower than 30% or higher than 90%, no matter how far you turned it. This is very useful for making sure you can't accidentally make the sound too quiet or too loud when performing.

In the case of switches which only have two positions (on or off), those would normally be assigned to buttons on your controller. But it is possible to toggle those with a fader or other control if you like.

3.2.9.3 Relative control option

The final option in this window is a button labelled "Is Relative". It is optimized for use with a specific type of control: one which sends only a few values to indicate the direction and speed at which a knob is turning, as opposed to sending a full range of values in a linear fashion (0-127, for example).

To be specific, a "relative" knob will send values 61-63 when turned in a negative direction and values 65-67 when turned in a positive direction. The turn speed determines the parameter response. Refer to the documentation of your hardware controller to see if it has this capability. If so, be sure to switch this parameter on when setting up its MIDI assignments.

When configured this way, movements of the physical control (usually a knob) will change the software parameter by starting at its current setting, rather than being an "absolute" control and snapping it to some other value as soon as you start to move it.

This can be a great feature when controlling things like volume, filter, or effect controls, since you won't usually want them to jump massively out of their current setting as soon as you start to modify them.

3.2.9.4 Reserved MIDI CC numbers

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

- PitchBend
- AfterTouch
- Ctrl All Notes Off (CC #123)

All other MIDI CC numbers may be used to control any assignable parameter in Solina V.

3.2.10 MIDI controller configuration

There's a small arrow at the far right hand side of the toolbar that deals with MIDI controller configurations. This allows you to manage the different sets of MIDI maps you may have set up for controlling the instrument's parameters from MIDI hardware. You can copy the current MIDI assignment setup or 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.

3.2.11 The lower toolbar

3.2.11.1 Current control value

At the left hand side of the lower toolbar you will see a readout showing the value or state of whatever control you are modifying. It will also display the current value of a parameter without editing it: just hover the cursor over the related control and the value will appear as pictured below.
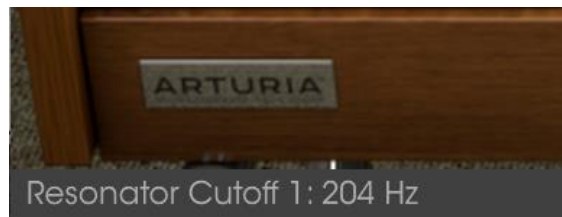
Displaying the current control's value

3.2.11.2 MIDI Channel setting

At the right hand side of the lower toolbar are three small windows. The first one on the left indicates the current MIDI Channel setting. Click on it and it will expand to show the full range of values you can select (All, 1-16).
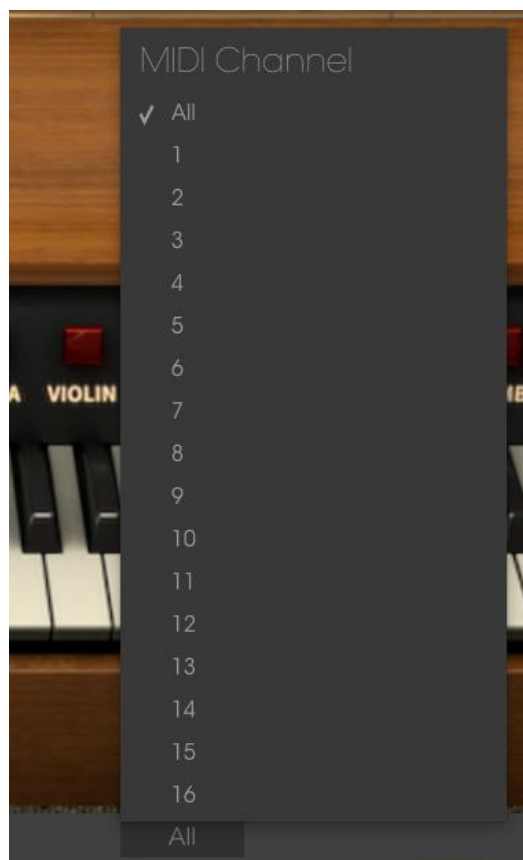
3.2.11.3 MIDI preferences: the PREF button

The original Solina allowed you to play two parts on its keyboard at the same time: the upper instrument and the bass instrument. Not to be outdone, Arturia enabled the Solina V software to do this too.

But we also allowed for other possibilities, such as those times when you just want to plug a keyboard controller into your computer and jam. So it's also possible to access both instruments (Upper and Bass) from a single incoming MIDI channel, shift their octave ranges to spread them across the controller's keys, and then specify the split point between them.

To access these great features, press the PREF button in the tool bar:
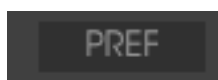
The MIDI Preferences menu will appear in the middle of the Solina V window. From here you can set all of the parameters we've discussed in this section so far and then some.
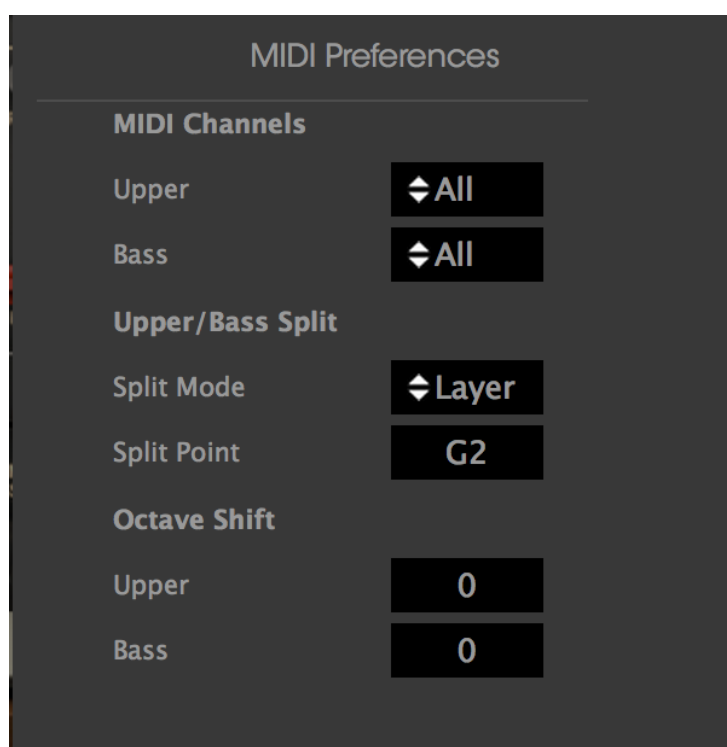
The MIDI Preferences window

To change any of the parameters you see in this window, click in the value field next to its name and make a selection from the drop-down menu that appears.

Here's a description of what these parameters do:

- **MIDI Channels**: Set the upper and bass instruments to independent channels, or set one or both to "All".
- **Split Mode**: The "Layer" setting spreads the upper instrument across the full keyboard range regardless of the bass instrument or Split Point settings, and the "Split" setting keeps the two instruments separated at the split point.
- **Split Point**: Determines the boundaries between each instrument when the Split mode = Split. When set to "Layer" it sets the upper key limit for the bass instrument.
- **Octave Shift**: Transposes the selected instrument in octave increments.

To close the MIDI Preferences window, click on the small 'x' in the upper right-hand corner. These settings are saved with each preset so each one will respond the way you want.

Omni mode vs. "MIDI Channel = All"

Technically, Omni mode means "listens to all 16 MIDI channels." So in the interest of accuracy we gave our "most inclusive" MIDI Channel setting the label "All". This reflects the hierarchy of MIDI channel assignments in Solina V, starting with the Global MIDI channel and ending with the individual MIDI channel assignment of each instrument.

Here's how it works:

- The Global MIDI channel setting acts as a filter, either passing all channels to the instruments or allowing only one specific channel to pass.
- Next come the Upper and Bass MIDI channels. If the Global channel is set to All and one of the instruments is also set to All, that instrument will respond to any data Solina V receives. Both instruments will receive all MIDI notes on their channels regardless of the Split settings.
- If both instruments are set to the same MIDI channel or to All, the Split Mode/Split Point settings take effect.
- As mentioned earlier, if the Global MIDI channel value is something other than All and that value matches one of the two instruments, that instrument will play across the full note range. If that value matches neither instrument, neither will receive MIDI data.

Here's an example using some actual MIDI channel numbers. We'll assume the Global MIDI channel is set to "All":

1 When Upper is set to 1 and Bass is set to All, the two instruments play together on MIDI channel 1 across the full range. On MIDI channels 2-16, though, only the Bass instrument will play.
2 When Upper is set to All and Bass is set to 1, the two instruments play together on MIDI channel 1 across the full range. On MIDI channels 2-16, though, only the Upper instrument will play.

Between the various Global and Instrument channel settings Solina V should be able to handle any MIDI scenario you encounter.

3.2.11.4   Panic button and CPU meter

The Panic button can be pressed to reset all MIDI signals in the event of stuck notes or other issues. The Panic button is also MIDI-assignable.

The CPU meter is used to monitor how much of your computer's CPU is being used by the instrument.

3.2.11.5   Poly

Without even trying it you probably knew the Poly button adds polyphonic capability to Solina V. (Actually, it only affects the upper instrument; the bass instrument is always monophonic.)

But the opposite of "poly" is not "mono" in this case. When the Poly button is disabled the upper instrument actually becomes **paraphonic**, which is a strange word that means "has lots of voices that share one filter and amplitude generator." In practical terms, it means the first note you play will open the filter and amplitude envelopes, and as long as you keep holding the first note, every other note will enter at whatever stage in those envelopes the first note happens to be.

To see this in action, select the Viola (this may be easier to find when the tool bar buttons read "All Banks" and "All Types"). Make sure Solina V is not in Poly mode (i.e., the Poly button is off), and then follow these steps:

- Play a note and hold it
- Play other notes one after the other for a few seconds.

At this point each additional note should have the same attack; they will all come in right away.

- Move the Crescendo slider on the front panel all the way to the right. (We'll explain what that does in section 3.5)
- Play one note and notice that it takes a couple of seconds to fade in.
- Release that note
- Play other notes one after the other, releasing each one before playing the next.

You should be hearing each note you play fade in like the first one did. Now release all keys.

- Play another note and hold it until it fades in completely
- Play other notes one after the other for a few seconds.

Aside from the fade-in of the first note, this is the same thing that happened the first time: every other note had a quick attack. The Crescendo slider has no effect on any of the notes except the very first one when Solina V is not in Poly mode.

Now click the Poly button in the tool bar and repeat all of the experiments in this section. When you get to the final stage you will notice that all of the notes fade in, regardless of whether the first note is held or not.

From this point forward we will refer to the two conditions as "Poly mode" and "non-poly mode" wherever they appear in the manual.

Note that the Poly button has no effect on the bass instrument; it is always monophonic.

3.3   The Preset Browser

The preset browser is how you search, load and manage sounds in Solina V. It has a couple of different views but they all access the same banks of presets.

To access the search view, click on the browser button (the icon looks a bit like books on a library shelf).
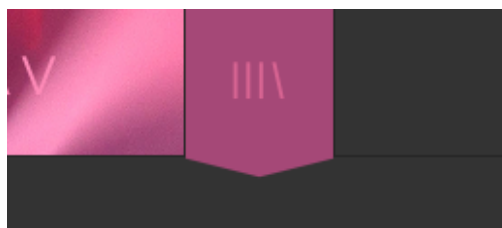
The Preset Browser button

3.3.1   Searching presets

The Search screen has a number of sections. By clicking on the Search field at the top left you can quickly enter any search term to filter the preset list by patch name. The Results column is updated to show the results of your search. Press the X button in the search field to clear the search.
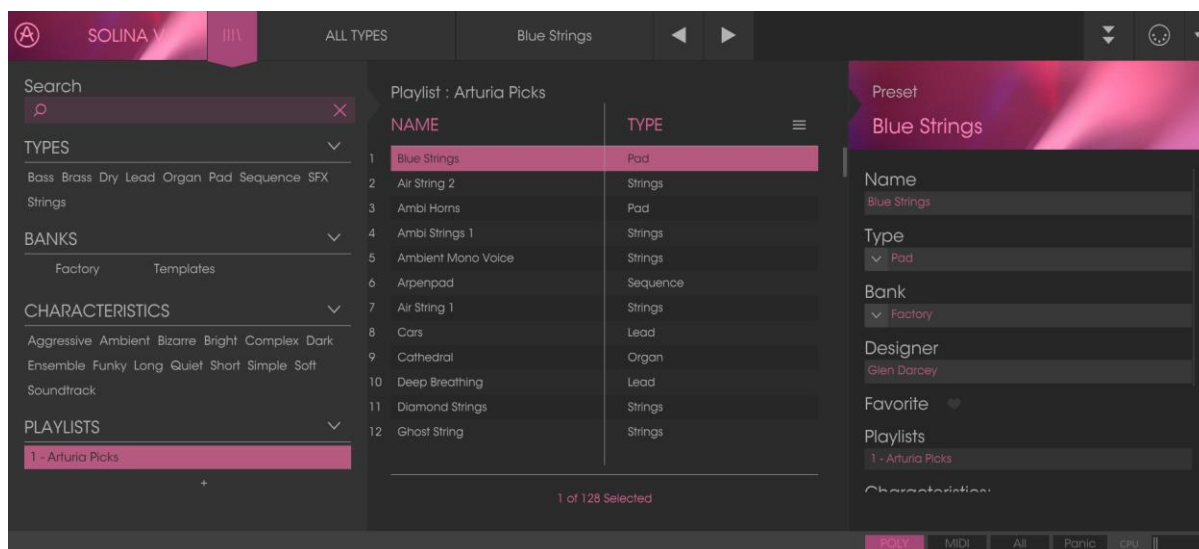
3.3.2 Using tags as a filter

You can also search using different tags. Clicking on a Type field shows only presets that match that tag. The tag fields can be shown or hidden by using the small down arrow buttons in their title fields. Results columns can be sorted by clicking the same arrow button in their own section.

You can use multiple search fields to perform narrower searches. So by entering a text search and also specifying type, bank and characteristics options you 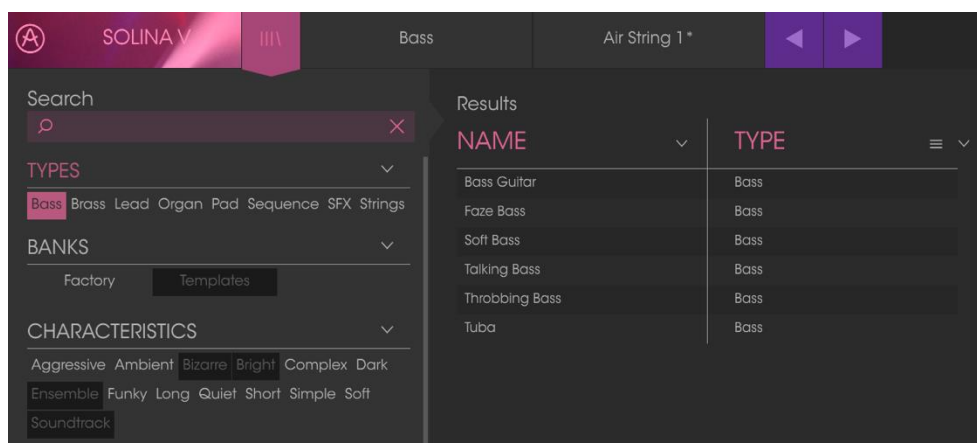could see only the presets that match those exact criteria. Deselect any tag in any area to remove that criteria and widen the search without having to go back and start again. Using "Ctrl + click" (Windows) or "Cmd + click" (Mac) will allow you to select multiple elements in the same area.
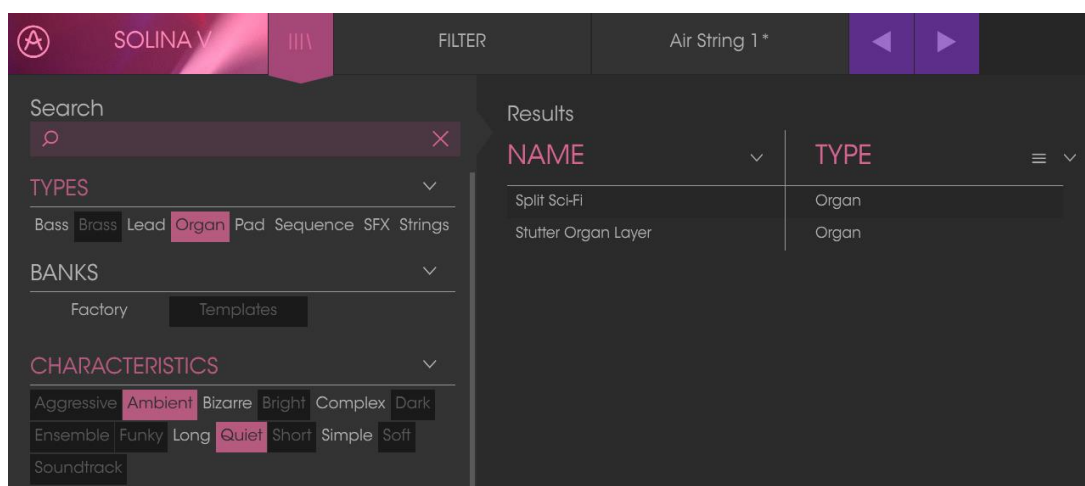
The second Results column can be switched to show Type, Sound Designer, Favorite or Bank tags depending on how you like to search. Click on its options menu button just next to its sort arrow.
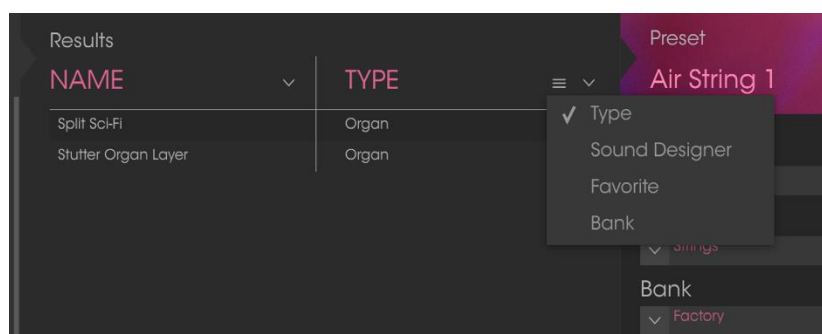
3.3.3   The Preset Info section

The Info column on the right of the search field shows you information about any preset. The information for User presets may be changed here: Name, Type, Favorite, etc.

However, 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.

Click Edit and then make the desired changes, either by typing in one of the fields or by using a pull-down menu to change the Bank or Type. You can even add new Characteristics by clicking the + sign at the end of that list. Click Save when you are done.
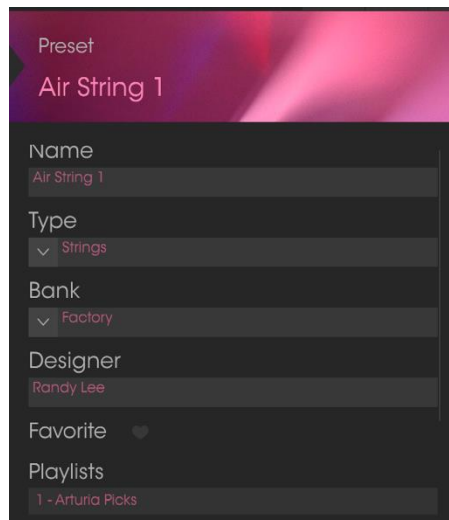
3.3.4 Preset selection: other methods

The pull-down menu to the right of the Search menu provides a different way to select presets. The first option in this menu is called Filter, and it will display the presets that fit the search terms you used in the Search field. So if you searched for "Love" in the main search area, the results of that search will appear here.

Similarly, if you previously selected a Type in the Search field you would see the results of that search in this area instead.
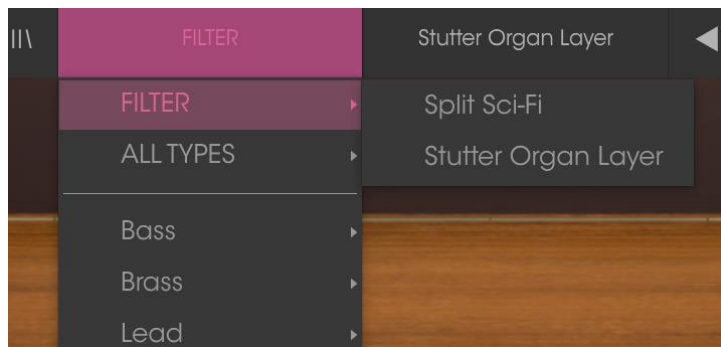
Filter results may differ based on Search criteria

Selecting the All Types option in the pull-down menu will bypass the Search criteria and show the entire list of presets.

The Categories below the line also ignore the Search criteria and display the presets based on their Type.
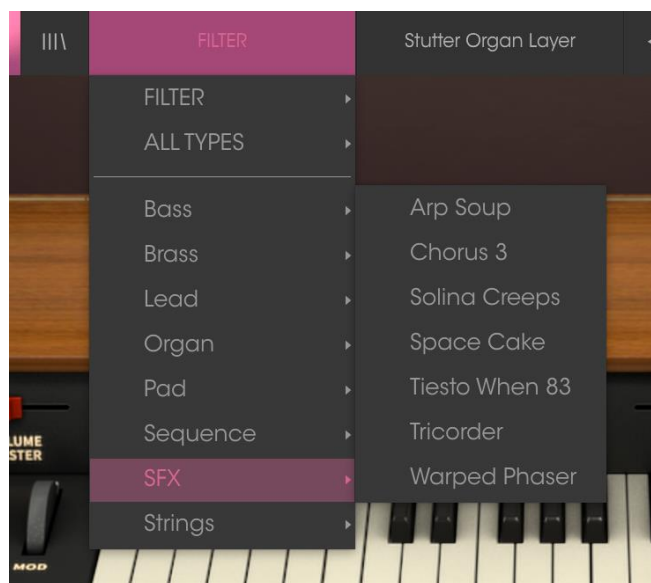
3.3.4.1 Selecting a preset by its Type

Clicking on the name field in the center of the toolbar will show you a list of all available presets. The list will also take into account any selections you have made in the Search field. So if you have pre-selected a Characteristic such as "Funky" this shortcut menu will only show you presets that match that tag.

The left and right arrows in the toolbar cycle up and down through the preset list: either the full list, or the filtered list that resulted from the use of one or more search terms.

3.3.5 Playlists

In the lower left corner of the Preset Browser window is a feature titled Playlists. This is used 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.

3.3.5.1 Add a playlist

To create a playlist, click the plus sign at the bottom:
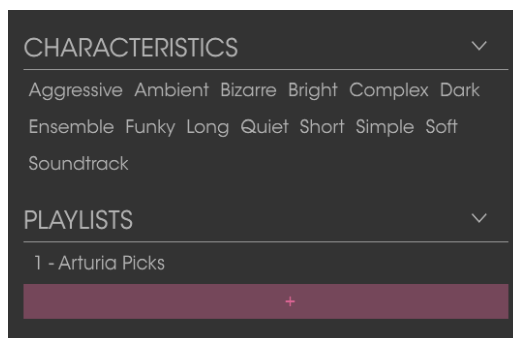
Give the playlist a name and it will appear in the Playlists menu. You can rename the playlist at any time; just click the pencil icon at the end of its row.

3.3.5.2 Add a preset

You can use all of the options in the Search window to locate the presets you want to have in your playlist. Once you have found the right preset, click and drag it onto the playlist name.
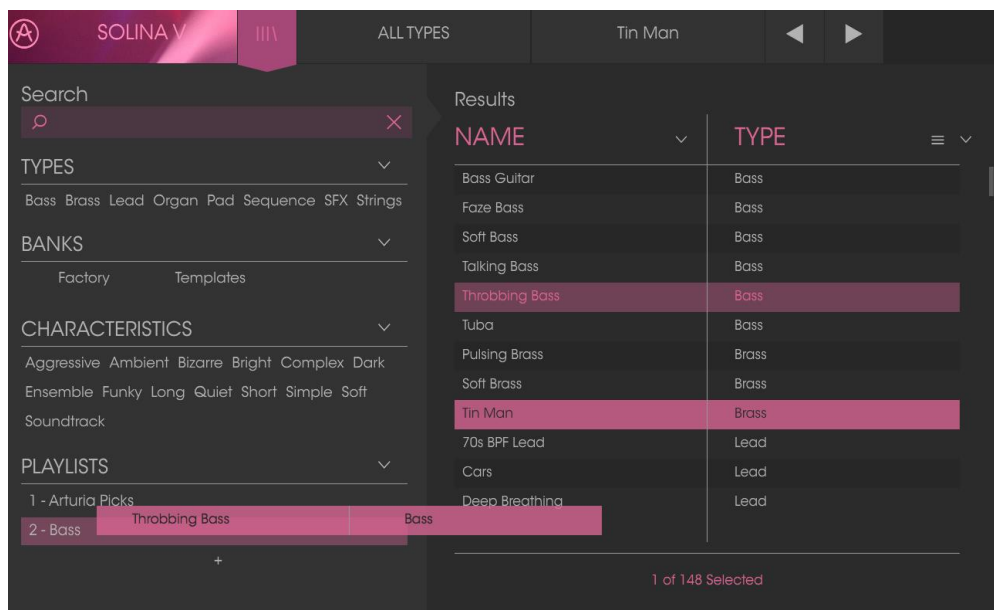
Click and drag from the Search Results list onto one of the playlists

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

3.3.5.3 Re-order the presets

Presets may be reorganized within a playlist. For example, to move a preset from slot 2 to slot 4, drag and drop the preset to the desired location.

This will move the preset into the new location.

3.3.5.4 Remove a preset

To delete a preset from a playlist, click the x at the end of the preset row.

Click the X to remove a preset from a playlist

3.3.5.5 Delete a playlist

To delete a playlist, click the x directly to the right of the playlist name.

Click the X to delete a playlist.

3.4   Main controls

First we'll talk about the controls that are common to both editing modes. The easiest way to do this is to be in Closed mode, so if it isn't already, close the lid by clicking the OPEN button. You should see only the row of controls closest to the keys:

The basic Solina V controls

There is a difference in the number of controls in this area between Open and Closed modes. So if you see knobs to the left of the Pitch Bend wheel, you are in Open mode and need to close the lid. We will discuss those controls in section 3.6.

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

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

Pitch bend: This spring-loaded wheel will snap back to center after being released. It is dedicated to pitch bend purposes and is the only control that is not assignable to another MIDI controller 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.

Volume Master: Controls the entire Solina V output, tapering or boosting the upper and bass instrument levels at the same time.

Bass sounds: The Contrabass and Cello buttons enable and disable these sounds for the Bass instrument. The Contrabass is an octave lower than the Cello. Both may be enabled at the same time. If they're both off and you want them on (or vice versa), click and drag across both buttons.

Volume Bass: This slider will adjust the Bass instrument level independently of the Upper instrument.

Crescendo: Controls whether notes fade in when played. The response is different for the Bass and Upper instruments, and is also affected by whether the preset is in Poly mode or non-poly mode. See section 3.2.12.4 for additional information.

Sustain Length: Adjusts the amount of time it takes the Upper instrument to fade out after a key is released, with a maximum time of 4 seconds. The Bass instrument has a separate Sustain control; we'll cover that when we go through the Open mode parameters.

Volume Upper: This slider will adjust the Upper instrument level independently of the Bass instrument.

Upper sounds: The Viola and Violin buttons toggle their sounds for the Upper instrument, as do the Trumpet and Horn buttons. The Violin is an octave higher than the other three sounds. All four buttons may be lit at once, but the Horn and Trumpet can't be heard at the same time; the Horn will override the Trumpet. In this case, whether the Trumpet is lit or not will have no impact on the sound; but having it lit means it will appear when the Horn sound is disabled.
If you want to enable or disable more than one adjacent sound, click and drag across those buttons.

Ensemble effect: Toggles the Ensemble effect on and off.

Those are the controls you will always see whether the lid is open or closed. Now we'll take a look at the other controls that exist in Open mode.

3.4.1   Ensemble

There's an inauspicious button nestled among the Basic controls in both Open and Closed modes. It's sort of like the MSG of the string machine world: it makes everything sound really tasty. You'll find it to the right of the Upper instrument buttons:
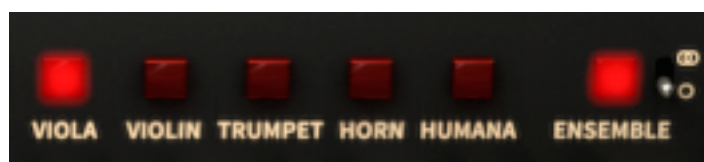
The Ensemble effect in Open mode

As the name implies, the concept behind the Ensemble effect was to take a single string instrument and make it sound like dozens of performers, each with a slightly different idea of what "in tune" means. It is the difference between the sound of one person playing, however beautifully, and the impossibly huge sound of fundamentals and harmonics moving slightly in and out of tune and phase with one another in a gloriously hopeless attempt at conformity.

This is achieved in electronic terms through the use of a "bucket brigade" circuit. It splits the original signal, passing one half through a series of capacitors, each timed to delay the signal a bit and then release it to the next capacitor, etc. There is a slight degradation of the signal at each stage, sort of

like the classic game of "telephone" where what the first person says and what the last person hears has undergone more than a bit of revision.

LFOs are used to vary the delay times, adding to the diversity of the output. Finally the delayed, degraded signal is recombined with the original, resulting in a very lush combination of harmonic discrepancies. In that sense it is somewhat like the magic unleashed by an instrumental ensemble, if you will.

3.5   Open mode

3.5.1   Overview

While checking out the factory presets you may have reached the conclusion that there are things happening that aren't represented by the basic controls (arpeggios, for one).

And you'd be right! Click the OPEN button or the lid and the simple Solina will transform into a sound-sculpting powerhouse. As the lid folds upward a host of new parameter controls emerge, not the least of which are some really great effects modules.

Open mode uncovers a bunch of hidden parameters that enhance the power of Solina V. Here you will find a selection of effects, velocity and aftertouch controls, a resonator, and even an arpeggiator for the bass section.

Solina V controls in Open mode

There are other changes, too: three knobs appear to the right of the keyboard and two more appear to the left. The two on the left set the ranges for the pitch bend and mod wheels...
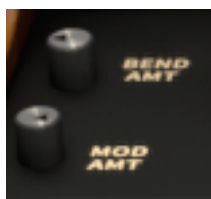
Amount controls

…while the three on the right are the effect sends:

Effect sends

A new sound button has materialized for the Upper instrument: Humana. It adds the complex texture of a Vox Humana preset that some paraphonic synthesizers offered in the 1970s.
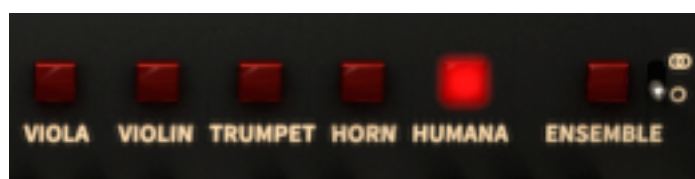
The Humana button in Open mode

The Humana sound can be active at the same time as the others, with the previously noted exception of the Horn overriding the Trumpet.

There's one tinier control that makes a huge difference, and it would be easy to miss: a switch appears that changes the Ensemble effect from a great mono effect into a glorious stereo effect:
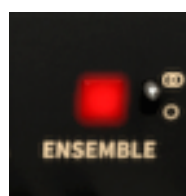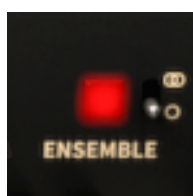
Mono and stereo Ensemble effect settings

As you can see, Open mode unveils a lot of what's been making Solina V sound so great. And the settings of each of these previously hidden

parameters will continue to affect the sound of the preset even when the lid is closed.

We'll start at the top and work our way down, moving left to right as before, and skipping the basic controls:

Master section: These set the amount of velocity and aftertouch response for the volume and the filter.

LFO: "LFO" means "Low Frequency Oscillator", a common term in synthesis. Tweak the vibrato, tremolo, and bass filter mod settings here.

Bass section: Two sub-sections: Filter/level envelope settings and arpeggiator controls.

Upper Resonator: Provides a highly configurable filter section for the Upper instrument.

Effects: Five essential FX modules, with up to three active at once. The convolution reverb is not to be missed, but you might if you don't look closely.

Amount controls: To the left of the pitch bend and mod wheels are two knobs that govern their range.

Humana: Toggles the Humana sound in and out for the Upper instrument. It has a bit of motion even without effects, and sounds even nicer when effects are added.

Ensemble width: Toggles the Ensemble effect between stereo and mono operation.

Effect sends: One knob each for FX1, FX2 and the Reverb. The combined output of the Bass and Upper instruments can be sent to any or all of the effects.

3.5.1.1 Coarse vs. Fine adjustments

Normally controls will make coarse adjustments to parameter values. However, they can also make fine adjustments, allowing for greater precision. This is possible by dragging the cursor while holding the **Control** key, or by using the **right click** first and then dragging the cursor.

To reset a parameter to its default value, double-click that control.

3.5.2   Master section

In the days of the Solina it was very rare for the keys on an electronic keyboard to do anything other than turn a sound on and off. In that regard they were basically switches. Velocity sensitivity and aftertouch were many years off into the future.

However, Solina V has been endowed by Arturia with the ability to respond to both velocity and aftertouch. The implementation is simple but very effective:

The Master section of Open mode

There are four controls, two routed to the overall volume (level) and two routed to the filter (brightness). So for example, you could configure a preset so that velocity affects both the level and the filter while aftertouch only affects the filter frequency, or vice versa.

The way this works for both filter and level is to reduce their "base level", or starting point, so there's some headroom.

For example, with Vel Brightness set to zero the filter will be wide open and unaffected by velocity. But with this parameter set to a non-zero value such as 30.0%, the notes played at the softest velocities will be that much less bright. The brilliance will increase along with the velocity values.

The same holds true for aftertouch, and also for the Level parameters.

Pro tip: if you want a darker overall sound, a quick way to do it is to increase the Vel Brightness parameter and set your controller keyboard to a fixed velocity curve. Note that this will affect the Bass and Upper instruments equally.

If you only want to darken the Upper instrument, though, there's another way that offers even more control: the Upper Resonator. We'll unveil the secrets of this powerful processing tool in section 3.5.6.

3.5.3 LFO

The Mod wheel can bring in several types of modulation, most of which affect the Upper and Bass instruments simultaneously. There's also an independent routing that affects only the Bass instrument. Vibrato and Tremolo are the global modulation types, and the LFO also can be routed to the filter frequency of the Bass instrument.

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 LFO section of Open mode

We're going to jump around with these parameters a bit, since you might simply want to know how to introduce vibrato to the sound. We'll ignore the Mod wheel settings for now and cover them in .

Rate: Controls the mod speed. The values shown when you click and drag the slider will be different depending on the status of the Sync switch: they will be displayed either as a **Rate** when Sync = Off (range: 0.010 - 13.0 Hz) or as a **Ratio** when Sync = On (range: 1/32 to 16x).

Waveform: Five options: Random, Square, Saw Down, Saw Up, or Triangle.

Vibrato: This will add or remove pitch modulation. If the Mod wheel is not configured to control the modulation, the vibrato will remain constant.

Tremolo: This will add or remove amplitude modulation. If the Mod wheel is not configured to control the modulation, the tremolo will remain constant.

Bass Cut: This will add or remove filter modulation for the Bass instrument. If the Mod wheel is not configured to control the modulation, the filter will remain constant. Also a factor is whether the Bass Section Cutoff frequency is low enough to make sufficient headroom for the filter modulation to happen.

Delay: If you don't want the LFO to affect the sound immediately after the note is played, the delay parameter will keep the LFO at bay for up to 3 full seconds. However, when the modulation comes in it will jump immediately to the amounts specified by the Vibrato, Tremolo and Bass Cut parameters. So the Delay parameter is most effective when used in conjunction with the Fade parameter, described below.

Fade: Allows the LFO amount to increase gradually over time, rather than coming in all at once. Range: 0-3000 milliseconds.

Retrig: When disabled the LFO is a "free-run" state; when enabled the LFO will always start at the beginning of its cycle. The "Random" waveform is not affected by this parameter.

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.

As you can see, for all its simple appearance the LFO section of Solina V is really quite powerful. In that regard it's sort of a microcosm of Solina V itself, which looks like a happy little piece of furniture until you open the lid and see its inner workings!

3.5.4 Bass section: Filter, FENV and Sustain

The Bass section has so many interesting features we'll need to discuss it in two parts. Here we will look at the parameters related to the filter envelope (i.e., FENV), the filter settings themselves, and the Bass Sustain parameter. We'll cover the Bass section arpeggiator features in section 3.6.5.

As you've seen from some of the presets, the Bass instrument has a fair amount of independence from the Upper instrument. The parameters we're about to describe are a major reason why.
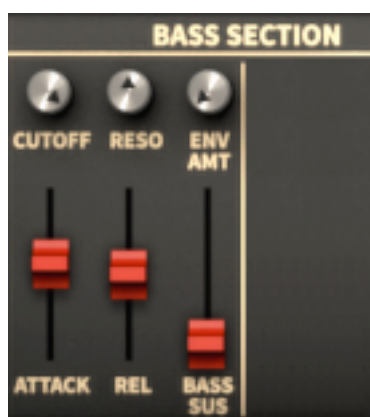
The Bass filter section of Open mode

Attack: Controls the FENV attack time, working in conjunction with the Env Amt and Cutoff parameters. Range: 0-3000 milliseconds.

Release: Controls the FENV release time, and also interacts with the Env Amt and Cutoff parameters. Range: 0-3000 milliseconds.

Bass Sustain: This is the only parameter dedicated to the Bass instrument's amplitude envelope (Crescendo affects the Upper instrument as well.) With higher values the Bass instrument will take longer to fade out after its note is released. The maximum value is 4000 milliseconds.

Cutoff: Controls the filter cutoff frequency, and when set to a low value allows the cutoff frequency to be swept through the FENV stages. Range: 20 - 20kHz.

Resonance: Will emphasize certain frequencies as the filter is swept from minimum to maximum and back down. It can cause the filter to self-oscillate, so be careful when setting the value.

Env Amount: Enables the Attack and Release parameters to affect the filter. Lower Cutoff values tend to make the overall FENV settings more effective.

Those six parameters offer quite a bit of sound designing flexibility for the Bass instrument.

3.5.5 Bass section: Arpeggiator

It is not an overstatement to say that arpeggios have become a mainstay of modern music. Of course the original string machines didn't have them, but the blending of the old and the new has become a mainstay of Arturia! So we've included an arpeggiator as an enhancement of the Bass instrument, and we think you'll be glad we did.

The Bass arpeggiator section of Open mode

Beautiful in its simplicity, here's what the arpeggiator offers:

Bass Arp mode: "On" and "Off" are obvious; "Hold" will latch the arpeggiator and incorporate every note you play until all keys are released, at which point the arpeggio you have defined will continue on its own. The next note you play will clear the arpeggiator and it will begin to capture notes again, starting with the new note.

Mode: Determines the playback order for the notes in the arpeggio. Up, Down and Random are self-explanatory. "Excl" stands for "Exclusive," which is a combination of the Up and Down modes that plays the notes in a circle without repeating the highest and lowest notes (i.e. it "excludes" them from being counted twice).

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: they will be displayed either as a **Rate** when Sync = Off (range: 0.010 - 50.0 Hz) or as a **Ratio** when Sync = On (range: 1/256 to 2x).

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

While experimenting, don't forget: the Bass and Upper instruments can be transposed +/- 2 octaves and the split point can be moved quite a bit; so it's possible to have a high arpeggio in the left hand and a medium-range pad in the right, for example. Also an option: set each instrument to a different MIDI channel for independent control.

And as many of the presets demonstrate, the Bass section arpeggiator can remain active even when Solina V is not in Open mode. It can still "pull strings" from behind the scenes (or in this case, push them).

3.5.6   Upper Resonator

If you have used a three-band parametric EQ you will recognize its similarity to this area of the Bonus control panel. The terms are familiar: Cutoff represents the frequency, Resonance is similar to Q, and Gain will boost or cut the level of the selected band.

However, most EQs do not also behave like the filters on a synthesizer, with Low Pass, High Pass, and Band Pass options. All told, the Upper Resonator is really what you would call a three-band *formant filter*, capable of superimposing fixed peaks and valleys that maintain their characteristics regardless of the input frequency. These qualities make the Upper Resonator a unique tool for sculpting the sound of a preset into your own.

The Upper Resonator section of Open mode

We'll define controls with similar functions only once, keeping in mind that what they do between 60-300 Hz is the same thing they do between 300-1.5 kHz, etc.

Mode: Four settings which affect all three bands:

- *Bypass*, which of course makes the other controls do nothing (sometimes "nothing" is OK!). You can use an external MIDI controller to switch to/from the other modes, which can be a great effect.
- *Low* (Low Pass), which attenuates the higher frequencies in each band and favors the lower ones.
- *Band* (Band Pass), which affects the high and low frequencies in each band and allows the ones in the middle to pass.

- *High* (High Pass), which attenuates the lower frequencies in each band and favors the higher ones.

Cutoff: Sets the value for the corner frequency of the filter. The range varies depending on the selected band: 60 - 300 Hz, 300 - 1.5 kHz, or 1.5k - 7.5 kHz.

Resonance: Will focus the impact of the Gain amount on selected filter frequency with a variable width ranging from 0.5 (broad) to 10 (narrow).

Gain: This will cut or boost the frequencies encompassed by the Cutoff and Reso parameters. Range: +6 to -72 decibels (dB).

Don't forget: each of those parameters is MIDI-assignable, which opens up a lot of possibilities. For example, with three adjacent sliders on your controller assigned to your choice of the Upper Resonator's Cutoff frequencies, the on-the-spot edits could be loads of fun.

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 trust you never to use this superpower for evil purposes.

3.5.7 Effects

Solina V is equipped with a set of highly useful effect units, and you will have no problem creating new sounds with them or recreating the sounds of yesteryear.

To edit the effects in a preset, first make sure Solina V is in Open mode. The simplest way to do this is to click on the lid, which will open to reveal the hidden parameters. If you don't see the lid, you're already there.

The Solina V Effects section

There are three independent signal processors in this section of the Bonus control panel: FX 1, FX 2, and Convolution Reverb. FX 1 gives you a choice of two "pitch-based" effects (Phaser and Analog Chorus), FX 2 contains two "time-based" effects (Analog Delay and Digital Delay), and the Convolution

Reverb offers over 20 different presets modeled after reverb units of all sorts (spring, plate, and digital).

The selections are made through pull-down menus, which are circled in this picture:

There's a fourth effect too: the Ensemble effect, which is excellent. A string machine wouldn't be complete without it. But there's no editing involved with that effect; it's either on or it's off. We'll cover it in section 3.7.6.

Right now we're going to take each of the other effect units one at a time, starting from the top. And as we do, keep this in mind: All FX parameters are MIDI-assignable, which means they can be linked to the controllers on your external USB MIDI device. For information about this process, refer to section 3.2.10.

Selection pull-down menus

In each case, all you have to do is click the arrow next to the label and a list of available effects will appear. In the case of FX 1 and FX, it looks like this:
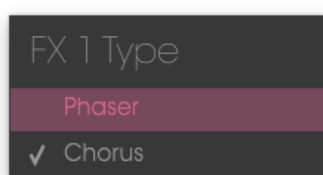
The FX 1 menu options   *The FX 2 menu options*

There's nothing complicated about using the various effects, but for a description of each one and its parameters, please refer to section 3.5.7.3.

3.5.7.1 Amount controls

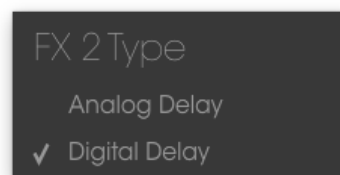When Open mode is engaged two new knobs appear to the left of the wheels: Bend Amount and Mod Amount. Their function is to set the operational limits for their respective wheels. So when one of the wheels is moved from zero to 100%, for example, that wheel can only respond within the range allocated to it by its Amount control.

The Amount controls

In the case of the Pitch Bend wheel, the range can be anything from 0 cents to 1200 cents, which is an entire octave of pitch bend in either direction. The default range is 200 cents, or +/- two whole steps.

The function of the Mod wheel is not as simple. It is tied to the LFO section, which in turn may be controlling up to three different types of modulation for the Upper and/or Bass instruments. The Mod Amount puts a limit on how much of those modulations the Mod wheel can add. Its range is from 0-100%.

3.5.7.2 Effect sends

Open mode also adds three knobs to the right of the virtual keyboard: FX1, FX2, and REV. They control the amount of the Solina V output that will be sent to each of the effects. The range of each control is 0-100%.

The Effect sends

The resultant sound also depends on the active effects, of course.

3.5.7.3 FX 1: Phaser

The phase shifter effect in Solina V is actually a *dual-stage* phaser. If you look closely you can see that on either side of the big red button the controls are the same: those on the left adjust Stage 1 and those on the right adjust Stage 2.

The following parameters are independent for Stage 1 and Stage 2:

Rate: Sets the speed of the phase shifting effect

Feedback: Controls the amount of phaser resonance

Depth: Sets the depth of the phaser activity

Stages 1 and 2 share these parameters:

Sync: Locks both phaser stages to the current tempo and to the rate of other Sync-equipped Solina V features, such as the LFO.

Dual Mode: When disabled, Stage 1 is on the left side and Stage 2 is on the right. When enabled (i.e., the button is lit), both stages process both sides. The phaser output is mono in this case.

Phase shifting has been one of the most popular effects to use with electric instruments since the 1970s. It works by splitting the incoming signal, changing the phase of one side, and recombining it with the unaffected signal. This creates a notch-comb filter that sweeps through the frequency spectrum.

You can then modulate the phase of the affected half with an oscillator, with the frequency determined by the **Rate** control. The **Depth** knob sets the amplitude for the action of the filtering, while **Feedback** amplifies certain harmonics. Phase shifting is easily identified by a characteristic "whooshing" sound that sweeps through the frequency spectrum.

3.5.7.4 FX 1: Analog Chorus

Type: Select one of three chorus types

Stereo Width: Controls the width of the stereo effect

Stereo Rate: Sets the speed of the stereo effect

Chorus Rate: Adjusts the speed of the chorus

Chorus Amount: Controls the depth of the chorus

Chorus Delay: Sets the amount of delay applied to the input signal

A chorus module recreates the sound of multiple takes of an instrument being combined in a mix. Even with the best of performances there are always differences in tuning or timing, and when taken to either extreme the results can range from slow and lush to a warbling, frenetic vibrato.

The speed of the effect is set by the **Rate** knob, while its depth and width are controlled by the **Amount** and **Delay** knobs, respectively. The resulting "frequency blur" is different for the left and right halves of the signal, which allows us to derive a stereo signal from a mono signal. The difference between the two halves then can be set with the **Stereo width,** with the speed of the left-right rotation under the control of the **Stereo rate** knob.

The **Type** switch selects between three different chorus models: simple, medium, and complex.

3.5.7.5 FX 2: Analog Delay

Time: Sets the delay time. (The delay is mono for authenticity.)

Feedback Tone: Changes feedback filtering

Feedback Amount: Adjusts feedback level

LFO Rate: Controls modulation of the delay time through use of a sine wave

LFO Depth: Sets the amount of delay time modulation

A delay repeats a sound, like an echo, giving it more space and depth. This analog delay reproduces the sound of the old solid state units that used analog bucket brigade circuits. The **Delay** knob allows you to select a time between 12ms and 1000ms for the delay. The **Feedback** knob sets the feedback level. The **FB Tone** knob controls a feedback filtering effect: low-pass to the left, high-pass to the right. You can set the delay modulation by changing the **LFO rate** and **LFO depth** values.

3.5.7.6 FX 2: Digital Delay

The Digital Delay also takes the input signal and repeats it, but has a slightly different set of parameters than the Analog Delay:

MIDI Sync: Locks the delay to MIDI clock and also to the Phaser and the LFO, if their Sync buttons are enabled.

Time: A clockwise turn increases the delay time for the left side; a turn in the opposite direction shortens it. Range: 9.07 ms - 1000ms

Feedback: Adjusts the Feedback amount of the left delay. Larger values cause the delay to be heard longer.

Link: Makes the delay mono, after which the first set of Time and Feedback controls are used to adjust the effect.

Time: A clockwise turn increases the delay time for the right side; a turn in the opposite direction shortens it. Range: 9.07 ms - 1000ms

Feedback: Adjusts the Feedback amount of the right delay. Larger values cause the delay to fade out more slowly.

PiPo: Short for "Ping Pong". Hard-pans the effected signals so they "bounce" from left to right.

Damping: Higher settings will roll off the high-frequency content of the delayed signal more quickly.

3.5.7.7 Convolution Reverb

The creation of a convolution reverb is a fascinating process. The idea is to recreate the characteristics of a particular physical space or electronic device by means of a computer model. An extremely brief burst of noise called an *impulse* is fed into the device or concert hall, for example, while recording the response to the impulse. Then an extensive computer analysis of the recording is made to determine an algorithm that will react to any input signal in the same manner that the original space or device would react.

Solina V provides almost 25 different convolution reverbs modeled after the presets of a half-dozen devices. Some are the actual reverb units that were paired with string machines of the time.

To select one of the convolution reverbs, look at the lower right corner of the Effects area of the Bonus control panel. There's a narrow strip that looks like this:

Solina V Reverb location

When you click on the pull-down menu arrow a lengthy list of options will unfold.
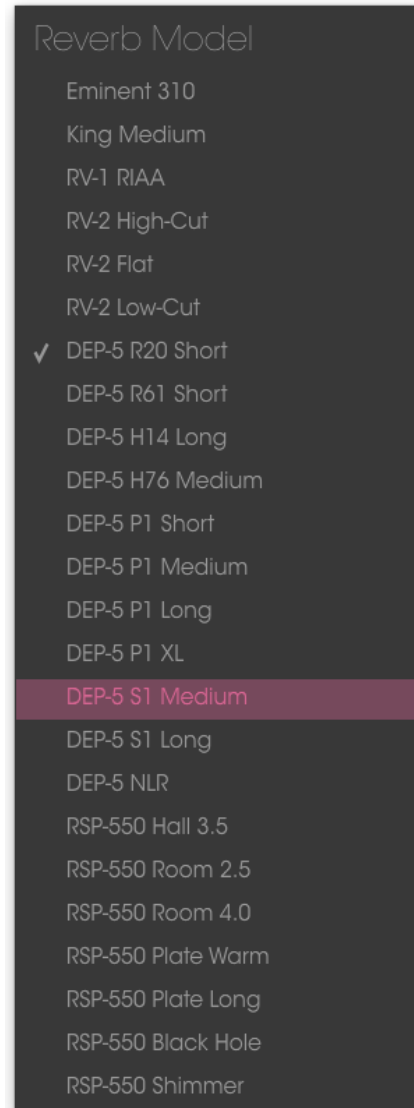
Solina V Reverb presets

There are no parameters within the reverb presets for you to adjust, but you can set the balance between the dry signal and the effected signal by using the Rev knob on the right side of the keyboard in Open mode.

The REV knob

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