

USER MANUAL

prophet δ

ARTURIA®
YOUR EXPERIENCE • YOUR SOUND

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1 INTRODUCTION

Arturia would like to thank you for purchasing our synthesizer model: the Prophet V. We are confident it will prove to be an extremely valuable addition to your music production studio. If you've purchased our products before, you know we pride ourselves in faithfully recreating the sound and feel of the original instruments, down to the smallest detail. Prophet V is no exception to this rule.

And if this is the first of our products you have owned, you are in for a treat! The synthesizer upon which this model is based was the absolute pinnacle of analog synthesizer technology at the time, light-years ahead of the competition.

1.1 Prophet History

1.1.1 Prophet 5

"In 1978 Sequential Circuits consisted of Dave Smith, former Moog clinician John Bowen, and businesswoman Barb Fairhurst. They were a self-funded outfit that started out in the confines of Smith's San Jose, California, garage selling a digital sequencer and a generic synth programmer. It was that year at the winter NAMM (National Association of Music Merchants) show that they introduced their Prophet-5, which was exactly the kind of instrument, with exactly the kind of sound and features that musicians needed."

(Excerpted with permission from the book *Vintage Synthesizers* by Mark Vail, Copyright Miller Freeman, Inc)

Described at the time as "5 Minimoogs in one box" the Prophet 5 literally stole the show as the first commercially available and viable polyphonic synthesizer. This comparison to the Minimoog probably came about more from its physical appearance than it did from its structure (which was closer to that of the ARP).

The Prophet-5 rocketed Smith's garage operation to stunning heights. Over the next five or six years, Sequential Circuits (who eventually just shortened their name to Sequential) would become the largest American manufacturer of Synths.

The Prophet 5 contained five individual voices. For its principal sound sources each voice contained two VCOs (voltage controlled oscillators), OSC A and OSC B, and a white noise source which could be mixed into a resonant low-pass VCF (voltage controlled filter). The filter modified the voice timbre under control of its four-stage envelope generator. The filter could also be driven to resonance and could serve as a sound source. Following each filter was a VCA (voltage controlled amplifier), controlled by a four-stage envelope generator, which shaped the voice amplitude. Supplementing the basic voices was polyphonic modulation (POLY-MOD) signal routings within each voice that allowed OSC B and the filter envelope generator to function as modulation sources applied to OSC A frequency/ pulse width, or the filter frequency. Finally, there was a single LFO (low-frequency

oscillator) and a pink noise source which could be mixed in to modulate all five voices, as adjusted by the MOD wheel. The keyboard was a 5 octave Pratt-Reid note on/note off affair with no touch response.

"The Prophet-5 sustained six revisions (or revs). Rev 1 was the original design. Rev 2 was a refinement of the original design and largely transparent. Rev 3, however, was a vastly different synthesizer than Revs 1 and 2. Introduced to Rev 3 were new voltage controlled IC's (CEM), an improved ADC, DAC, and a different control voltage distribution scheme. More sophisticated editing and tuning routines were designed, and to improve serviceability, voice trimmers were reduced from 80 to 45. Some believe that the Rev 3 synthesizers are slightly inferior (sonically) to their predecessors by revealing an absence in the lower frequencies. While this may be true, the majority of the Rev 3 synthesizers are far more operationally stable than their Rev 1 and Rev 2 counterparts."

(Courtesy Matt Bassett)

If there was a single feature that defined the Prophet sound, it was the poly-mod section, which enabled you to use the filter envelope and osc 2 to modulate the frequency of osc 1, the pulse-width of osc 1 and/or the filter cutoff frequency. These modulation routings, combined with osc 1's sync function, produced the trademark (and at one time hopelessly overused) oscillator sweeping sync sound, usually variations on what was originally factory preset 33.

The original price for a Prophet 5 was in between \$3,995 and \$4,495. Eventually a rack mounted conversion of a user-supplied Prophet-5 was available from Studio Electronics. Later, there was even the release of the Prophet 10 which is essentially two Prophet 5 circuits stacked together for 10 voices spanning two keyboard manuals.

The Prophet 5 has been notably used by Kraftwerk, Duran Duran, No Doubt, Depeche Mode, Vince Clarke, Talking Heads, Genesis, Gary Numan, Thomas Dolby, New Order, Prodigy, INXS, The Cars, Phil Collins, Richard Barbieri, , Jean-Michel Jarre, Steely Dan, Kitaro, Level 42, Peter Gabriel, the Eurythmics, Pet Shop Boys, filmmaker/composer John Carpenter and many more.

1.1.2 Prophet VS

The Prophet VS was made by Sequential Circuits Inc. between 1986 and 1987. It was an innovation in the sense that it was one of the first 'sample and synthesis' synthesizers. At the same time, it was the first synthesizer to bring two-dimensional cross-fading between waveforms into the mainstream. This interesting concept became known as vector synthesis.

The Prophet VS was primarily the invention of three people - Chris Meyer, Josh Jeffe, and Tony Dean. Chris Meyer came up with the basic algorithm of cross-fading between 4 oscillators (in essence, a 2-dimensional fade between timbres) and running that through the usual VCF/VCA chain. It was an extension of the instruments like the PPG and Fairlight that could scan in one dimension along a table of wave shapes or between two different wave shapes.

Another peculiarity that contributed to the success of this instrument was its modulation matrix. This allowed it to largely surpass the limitations of classic modulation (the envelopes attached to the filter and the amplifier, for example) by offering connection from all the modulation sources available in the machine (envelopes, LFO, etc..) to any modifiable parameter one might choose (oscillator frequencies, filter cut-off, amplifiers, panoramic, etc...).

The envelopes were also new to the scene because they were not structured like the usual ADSR envelopes. They were made up of 5 points (from 0 – initial level – to 4 – corresponding to the Release). Each of these points was associated to a parameter level and time; a loop function could even be added between two points. These special features allowed for modulations styles a lot more complex and creative than those of the classic ADSR envelopes.

In 1987, Sequential was sold to Yamaha, who introduced their vector-synthesis based SY22 in 1990. Other vector synthesizers were also to follow in later years, but the Prophet VS was then and is still today a sought after instrument due to its incredible range of sounds. You will hear it in recordings by Brian Eno, Trent Reznor, Apollo 440, Depeche Mode, Vince Clarke, Kraftwerk, Erasure and filmmaker/composer John Carpenter, among others.

Look for these products and more at tomoberheim.com.

1.2 Arturia's secret ingredient: TAE®

TAE® (True Analog Emulation) is Arturia's outstanding technology dedicated to the digital reproduction of the analog circuits used in vintage synthesizers.

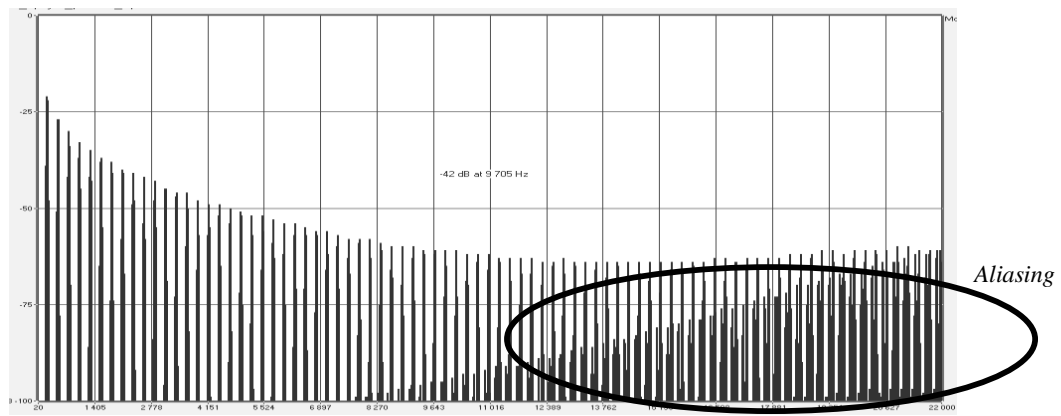
TAE®'s software algorithms result in spot-on emulation of analog hardware. This is why Prophet V offers an unparalleled quality of sound, as do all of Arturia's virtual synthesizers.

TAE® combines three major advances in the domain of synthesis:

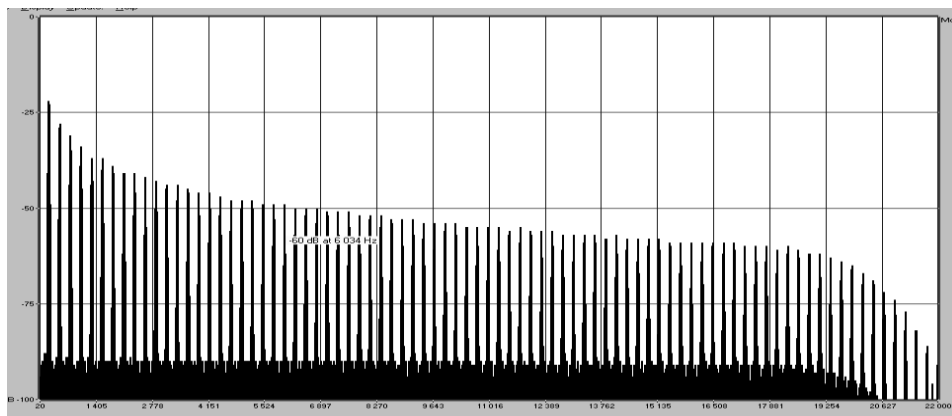
1.2.1 Aliasing-free oscillators

Standard digital synthesizers produce aliasing in high frequencies, especially when using Pulse Width Modulation (PWM) or Frequency Modulation (FM).

TAE® enables the generation of oscillators which are completely free of aliasing in all contexts (PWM, FM...), and at no extra CPU cost.



Linear frequency spectrum of a current well-known software synthesizer

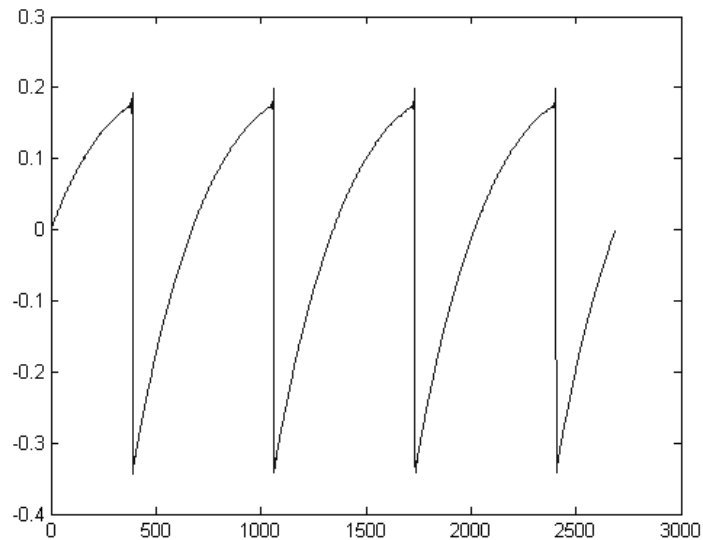


Linear frequency spectrum of an oscillator modeled with TAE®

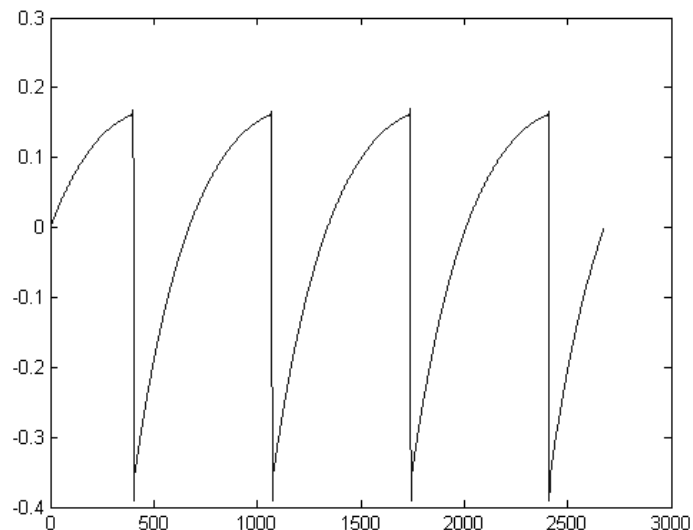
1.2.2 A better reproduction of analog oscillator waveforms

The waveforms produced by the oscillators in analog synthesizers are affected by the presence of a capacitor in the circuits. The discharge of a capacitor results in a slight 'bend' in the original waveform (most notably for sawtooth, triangular and square waveforms). TAE® reproduces the result of this capacitor discharge in software.

Below is the analysis of a waveform from one of the five original instruments Arturia's software emulates, followed by one made by TAE®. They are both equally deformed by the low-pass and high-pass filtering.



Temporal representation of the "sawtooth" waveform of a hardware synthesizer



Temporal representation of a "sawtooth" waveform reproduced by TAE®

What's more, the hardware analog oscillators were unstable. In fact, their waveforms vary slightly from one period to another. If we add to this the fact that the starting point for each period (in Trigger mode) can vary with the temperature and other environmental conditions, we see why vintage synthesizers have such a typical sound.

TAE® reproduces the instability of oscillators, resulting in a fatter and "bigger" sound.

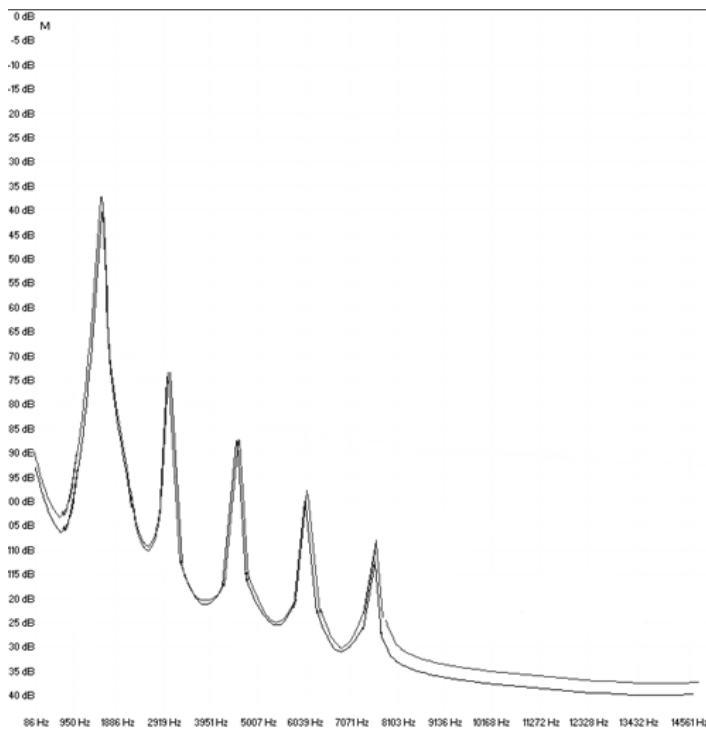
1.2.3 Direct Filter Circuit Modeling

Due to advances in computer processing power, TAE® can now employ direct filter modeling techniques to achieve unprecedented accuracy in the emulation of a hardware synthesizer's filter. By modeling the operation of the individual hardware

components of the filter circuit, the warm nuances synonymous with analog sounds are recreated.

The following graph shows a single example of direct circuit modeling in action. The peaks represent the generation of harmonics at multiples of the resonant frequency when a particular filter is in self oscillation mode. These harmonics are characteristic of hardware synthesizer filters and are due to the non-linear behavior inherent to their analog circuitry. Anomalies such as these add to the richness and warmth of the sound produced by the filter.

But you'll notice there are two lines on the graph: Those are the superimposed frequency domain plots for both one of Arturia's virtual instruments and the hardware filter being emulated. They are practically indistinguishable, both on the graph and to the human ear. The direct recreation of this analog circuitry causes the same characteristics of the sound to be present, thus giving the user a truly analog sound.



Comparison of harmonics generated by the filter circuits in self-oscillation of TAE® and a hardware synthesizer

So here's the bottom line: when you bring together a bunch of music lovers who also have a deep understanding of the characteristics of electronic circuits, you wind up with Arturia. And Arturia now offers you our most impressive software model yet, the Prophet V.

We take great satisfaction in knowing this great synthesizer will help you explore previously unknown musical territory.

2 ACTIVATION AND FIRST START

2.1 Register and Activate

Prophet 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 Prophet V as an Audio Units, AAX, VST2 or VST3 instrument.



Once Prophet 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>

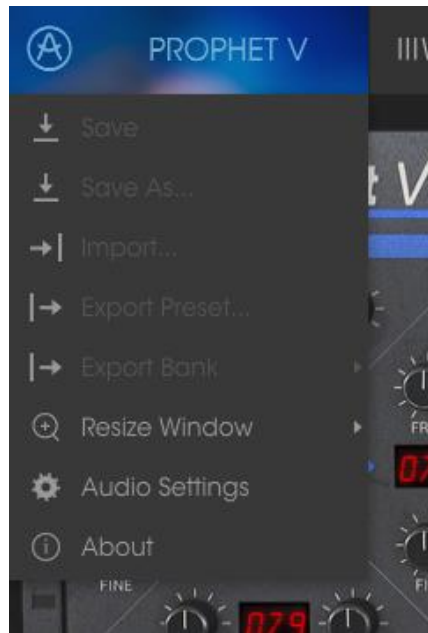
Note: If you don't have an Arturia account yet, you will need to create one. The process is quick, but it does require that you can access your email address during the registration process.

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

2.2 Initial setup

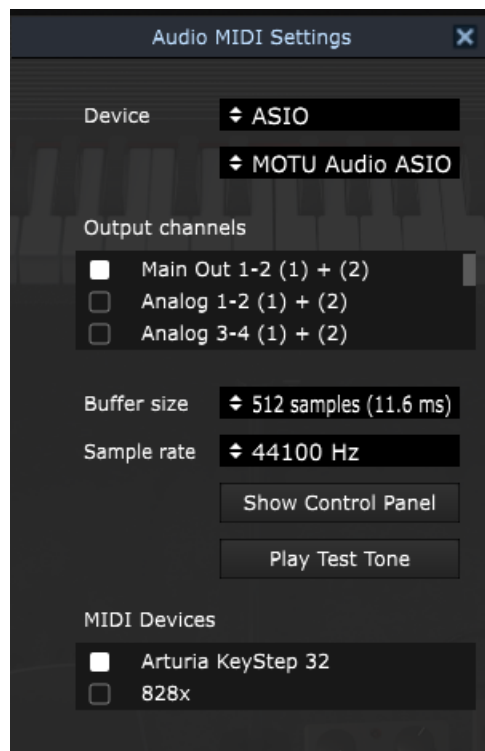
2.2.1 Audio and MIDI settings: Windows

At the top left of the Prophet 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.



Prophet 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.



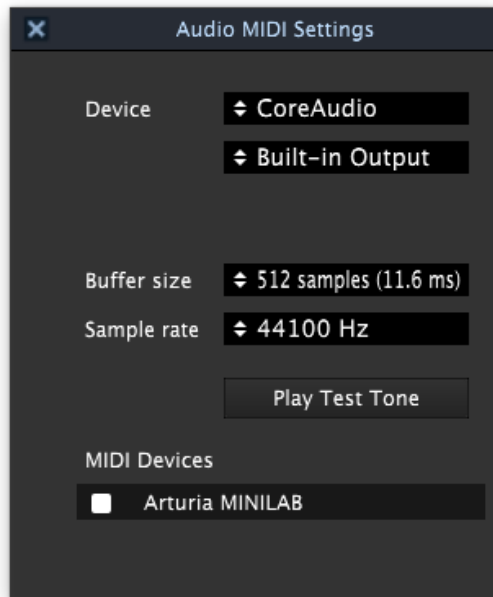
Audio and MIDI settings window

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, Prophet 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 Prophet V in plug-in mode

Prophet 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 Prophet V in a DAW project. In standalone mode you can only use one at once.
- You can route Prophet V's audio outputs more creatively inside your DAW using the DAW's own audio routing system.

3 USER INTERFACE

In this chapter we will give an overview of the features available to you with Prophet V. As with every Arturia product, we have gone to great lengths to make the use of this software instrument as simple and as much fun as possible, while also striving to make sure you never run out of new things to do with it as your knowledge expands. After reading this chapter you should be ready to delve as deeply into the workings of Prophet V as you would like.

3.1 The virtual keyboard

The virtual keyboard lets you play a sound without connecting an external MIDI device; just click a key to hear the active Voice. Drag the cursor across the keys to hear a glissando.



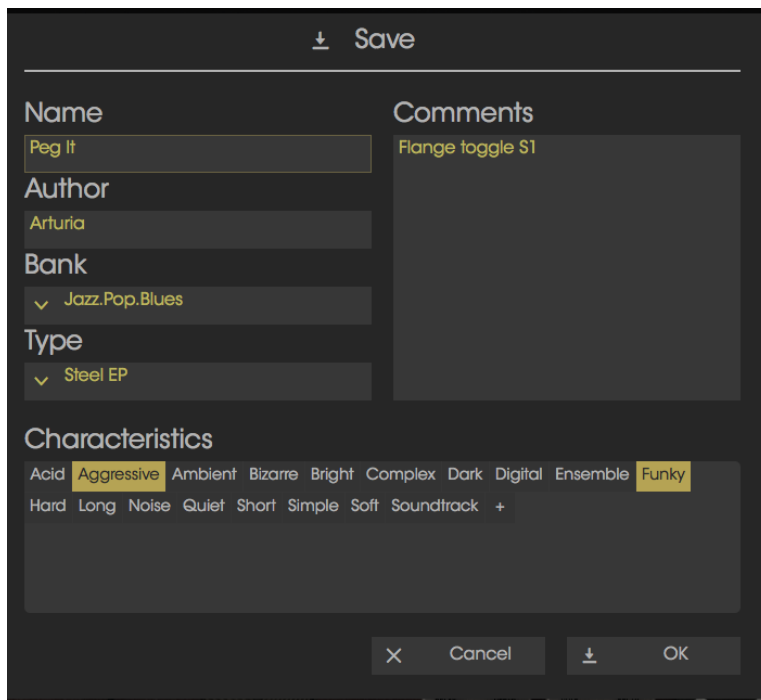
The Prophet V virtual keyboard

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 Prophet 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 .prox 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 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.

3.2.6 Resize window options

The Prophet 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.



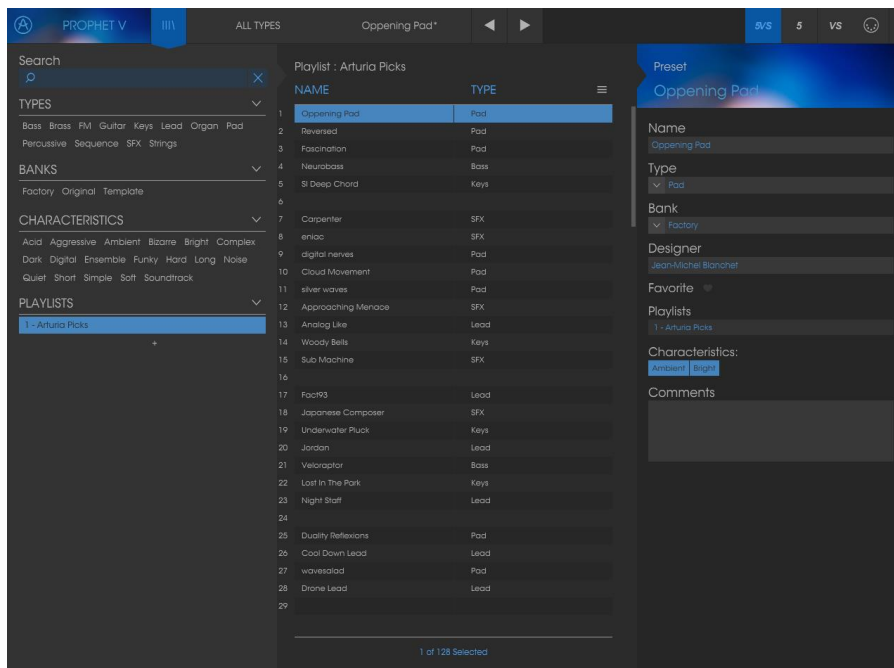
The Resize Window menu

3.2.7 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.

3.2.8 Preset browser overview

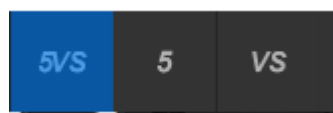
The Preset browser is invoked by clicking the toolbar button that has four vertical lines. See section 3.3 of the manual for full details on this. The Filter, name field and left / right arrows in the toolbar all assist with preset selection.



The Preset Browser

3.2.9 Switching between Prophet 5, Prophet VS and Hybrid

The Prophet V2V is composed of three parts: the Prophet 5 interface, the Prophet VS interface, and a combination of the two called Hybrid. You can switch between them by using the button in the right of the upper toolbar.



3.2.10 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

3.2.10.1 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 cutoff knob selected and assigned

3.2.10.2 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.

3.2.10.3 *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.

3.2.10.4 *Reserved MIDI CC numbers*

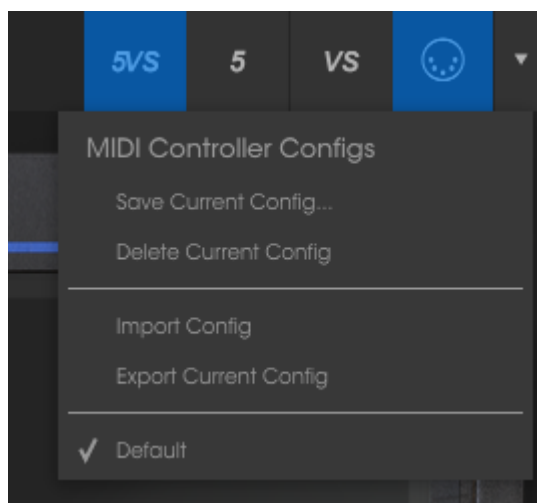
Certain MIDI Continuous Controller (MIDI CC) numbers are reserved and cannot be reassigned to other controls. These are:

- PitchBend
- Ctrl Mod Wheel (CC #1)
- AfterTouch
- Ctrl Sustain On/Off (CC #64)
- Ctrl All Notes Off (CC #123)
- Ctrl Omni Mode Off (CC #124)
- Ctrl Omni Mode On (CC #125)
- Ctrl Poly Mode Off (CC #126)
- Ctrl Poly Mode On (CC #127)

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

3.2.11 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 Prophet V without having to build all the assignments from scratch each time you swap hardware.



3.2.12 The lower toolbar

3.2.12.1 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.



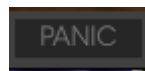
3.2.12.2 *Midi Channel Setting*

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).

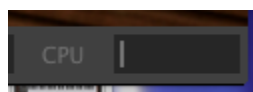


3.2.12.3 *Panic button and CPU meter*

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.

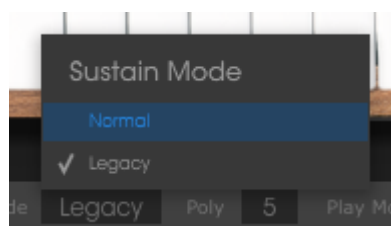


The CPU meter is used to monitor how much of your computer's CPU is being used by the instrument.



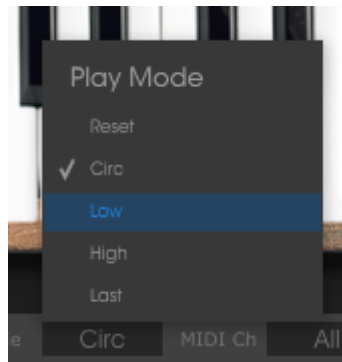
3.2.12.4 *Sustain mode*

Define if the sustain is cut or maintained if a note is re-triggered while being already in sustain phase.



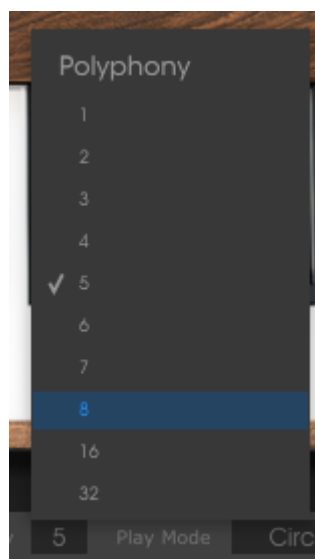
3.2.12.5 Play mode

The play mode allows to select how the available voices are allocated to new notes and which already used voices can be reallocated to new notes that are played.



3.2.12.6 Maximum Polyphony

By clicking this button, you will be able to adjust the upper limit for the number of voices played the Prophet V. It can be set from 1 to 32. Having lower setting will result in less CPU being used. Setting the number too low can create situation where the voices cut off and create unnatural sustains. The key is to find a balance that you and your computer can both live with.



3.3 The Preset Browser

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

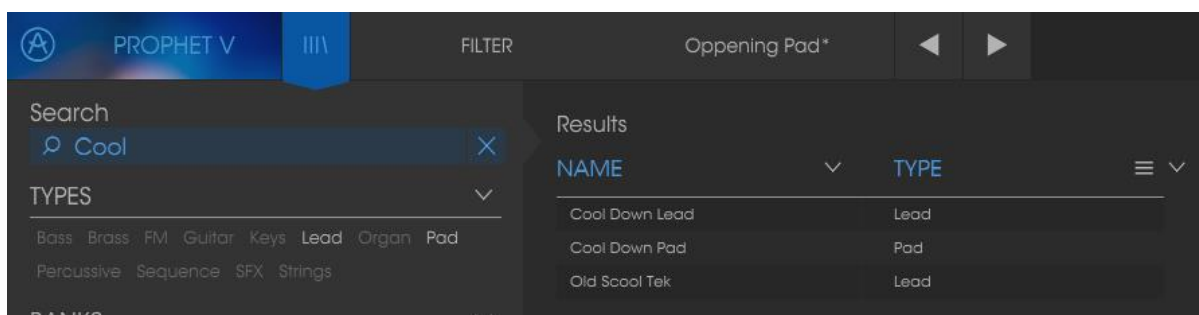
To access the search view, click on the browser button (the icon looks a bit like books on a library shelf).



The Preset Browser button

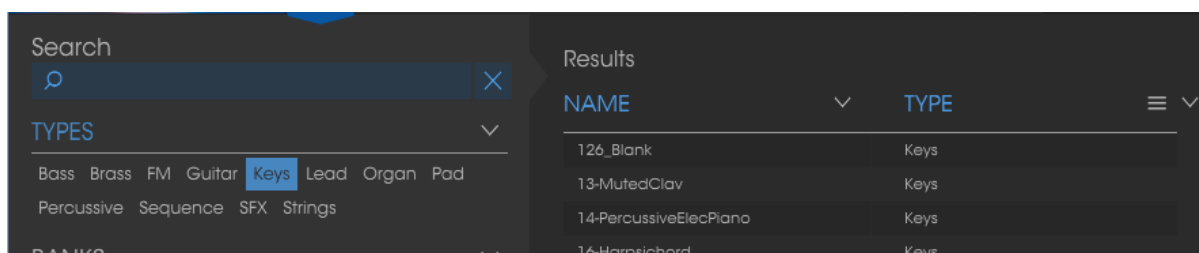
3.3.1 Searching presets

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.

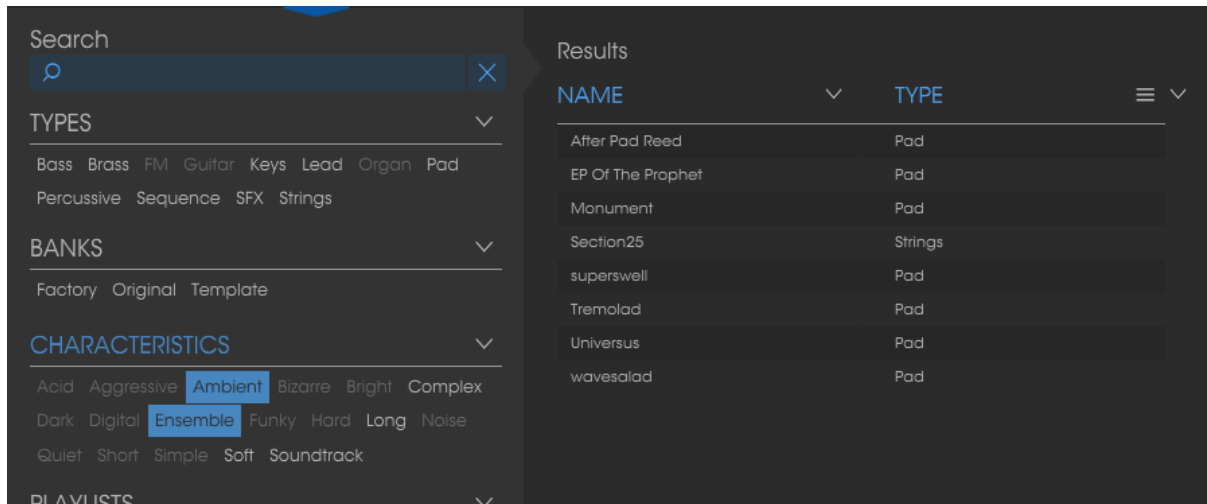


3.3.2 Using tags as a filter

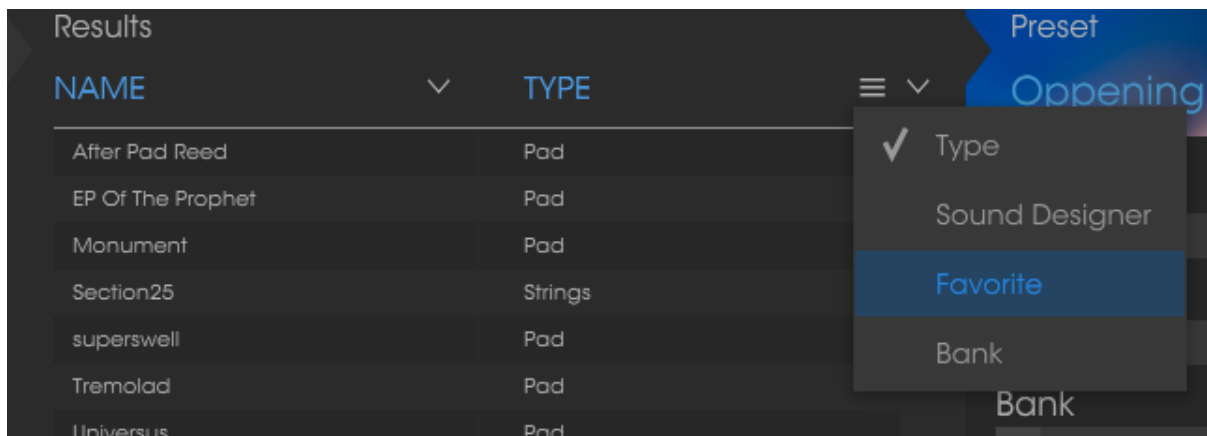
You can also search using different tags. Clicking on a Type field shows only presets that match that tag. The tag fields can be shown or hidden by using the small down arrow buttons in their title fields. Results columns can be sorted by clicking the same arrow button in their own section.



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.

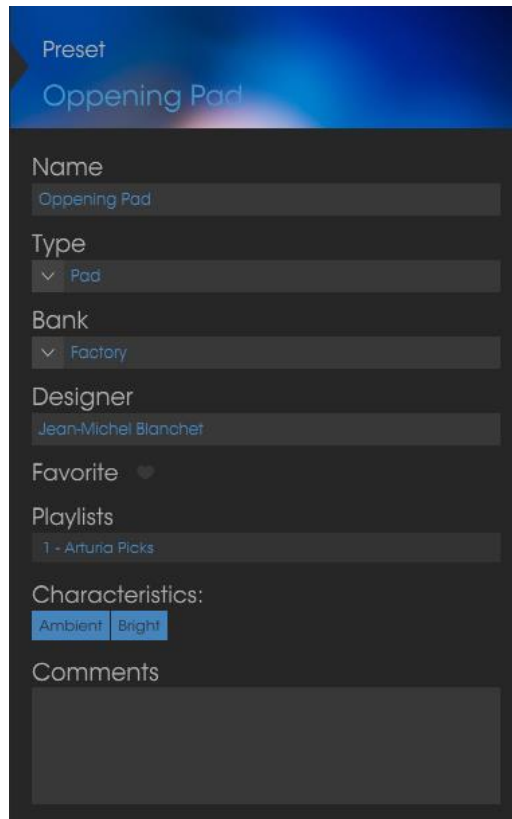


3.3.3 The Preset Info section

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.

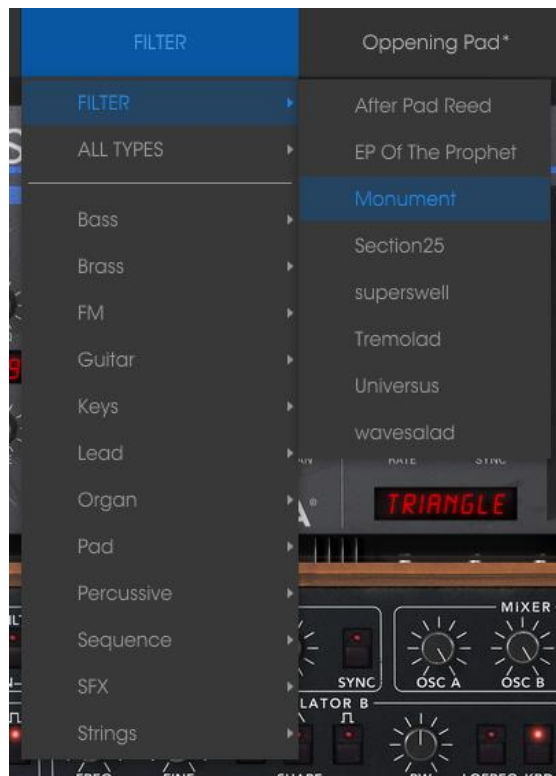
Click Edit and then make the desired changes, either by typing in one of the fields or by using a pull-down menu to change the Bank or Type. You can even add new Characteristics by clicking the + sign at the end of that list. Click Save when you are done.



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.

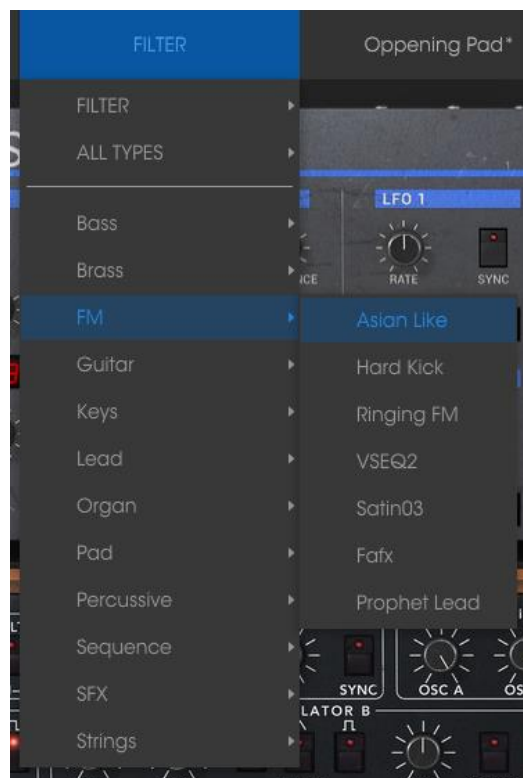
Similarly, if you previously selected a Type in the Search field you would see the results of that search in this area instead.



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.

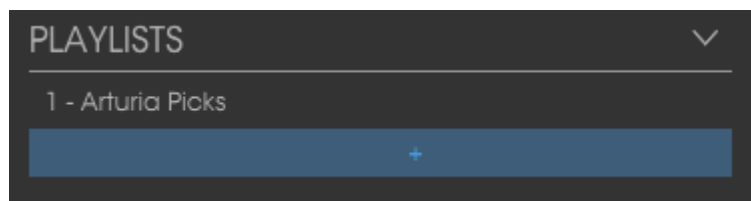
The left and right arrows in the toolbar cycle up and down through the preset list: either the full list, or the filtered list that resulted from the use of one or more search terms.

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*

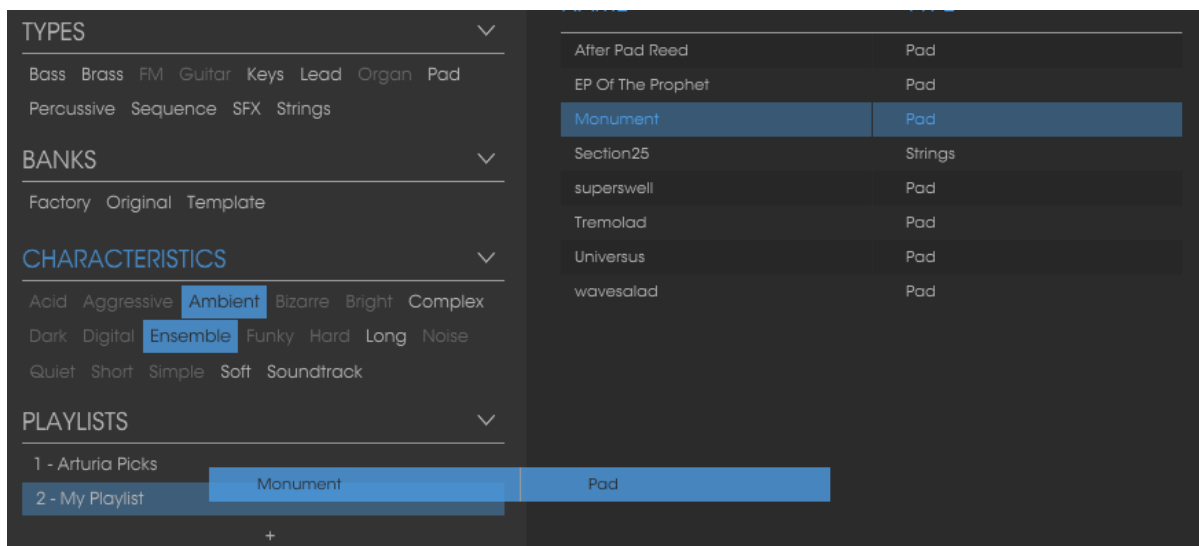
To create a playlist, click the plus sign at the bottom:



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 Overview of the modules

The Prophet V2V offers three principal interfaces:

In the first interface, the Prophet 5, you can find all the features of the original Prophet 5. The second interface is the Prophet VS interface: as with the first interface, you will find all the features of the original synthesizer. The third interface is special because it offers both synthesizers in a single interface stacked one on top of the other.

To access the different interfaces, click one of the three shortcut buttons "Prophet 5", "Prophet VS", or "Hybrid" located in the tool bar:

- The "Prophet 5" shortcut gives you access to just the Prophet 5 synthesizer.

- The “Prophet VS” shortcut gives you access to the just the Prophet VS.
- The “Hybrid” shortcut gives you access to both synthesizers at the same time.

3.4.1 Brief Tour of the “Prophet 5”

The Prophet 5 interface consists of 54 synthesis parameters as well as preset selection buttons that allow you to quickly find 44 presets that were found on the original machine. With the knobs and switches associated to these parameters, you will be able to create an infinite number of sounds.

These parameters are distributed as follows:

- **2 oscillators (VCO)** that delivers the base audio signal with various wave forms (triangle, saw tooth, and square) and that allow you to control the pitch of the sound (frequency).
- **A mixer** which permits you to mix the signals coming from the oscillators and from the white noise module.
- **1 low pass filter** with 24 dB/octave slope.
- **1 amplifier (VCA)** that amplifies the output signal of the filter in order to direct it to the stereo output.
- **Two envelopes (ADSR)** modulating the low pass filter and the amplifier.



Prophet 5 synthesis Parameters

3.4.2 Prophet VS and the concept of Vector Synthesis (VS)

With the “Prophet VS” section, you have access to a wave-table synthesizer which offers several diverse functions extending the playing and synthesis possibilities. The functions in this section are all identical to the mythic synthesizer of the 80's.

The Prophet VS interface can be accessed by clicking on the icon “Prophet VS”, which opens the VS interface alone. By clicking “Hybrid” you will be able to use both synthesizers at the same time. You can also select any of these modes by starting with one of three bank selections: “Pro5”, “Hybrid”, and “ProVS”, respectively in the bank selection menu. For now, we will work in Prophet VS mode.

The Parameters of the Prophet VS are as follows:

- **4 oscillators** that are chosen in a bank of 96 waveform samples.
- **A mixer** to mix the signals coming from the 4 oscillators.
- **A multi-mode resonant filter** with 24 dB/octave slope.
- **Two LFOs** allowing 5 waveforms

- **1 VCA amplifier**
- **Three 5 point envelopes** for modulating the mixer, the filter and the amplifier. A loop function is available on each of the envelopes.
- **Modulation Matrix**



Prophet VS synthesis Parameters

Wave-table synthesis offers sonic possibilities that have been little explored in a software format. It permits you to create sounds that are very different from the classic analogic synthesizer due to a bank of 96 samples. The Prophet VS can use up to 4 oscillators simultaneously. These oscillators can be mixed in real time with a joystick or 5-point envelope. The Prophet VS can create strongly evolving sounds that are both independent from and complementary to those that you would create with the Prophet 5.



The Prophet VS oscillators and the mixing joystick

3.4.3 The Hybrid Interface

The Hybrid interface offers a combination of the two synthesizers stacked one on top of the other. It permits you to create a large variety of sounds never before heard thanks to the mix of subtractive synthesis of the Prophet 5 and the wave-table synthesis of the Prophet VS.

3.4.4 The Effects Section

The effects section allows you to add the stereo delay and the chorus to your sound.

The location of the effect section varies according to the interface mode in which you are. In Prophet 5 mode, it is displayed as an external module above the synthesizer. In Prophet VS and Hybrid mode it can be displayed in the screen part by clicking on the Audio/Effect tab.



The Prophet VS / Hybrid effect tab

3.4.4.1 Chorus



Prophet 5 Chorus section

The Chorus permits you to double and detune your sound in order to make it deeper and livelier. Three types of stereo chorus are available, from the simplest to the densest.

Activate the ON/OFF button of the Chorus in the effects section.

Set the “Dry/Wet” knob of the chorus in order to balance the “raw” sound and the return of the effect.

Turn the “Rate” knob of the Chorus to set the speed of the oscillations.

Finally, set the depth of the chorus by turning the “Depth” knob.

You have the choice between three types of chorus : Chorus 1, 2, and 3. These three styles of chorus vary from the simplest – and less charge on your CPU – to sounds more pronounced for various de-tuning effects.

3.4.4.2 The Delay



Prophet 5 Delay section

The delay carries a stereo echo effect that gives space to your sound. It holds independent settings for the speed and number of the repetitions from left to right. It is therefore possible to create a large number of rhythmic combinations between the repetitions. The speed of the delay can also be synchronized to MIDI tempo.

Take, for example, the preset “Full_Pad” and you will see how to use the sound effects:

Activate the switch on the pedal.

Set the “Dry/Wet” knob of the Delay in order to balance the “raw” sound of the bass and of the delay.

Turn the two “Time” knobs to set the speed of the repetitions: Time Right and Time Left.

It is also possible to set the number of repetitions for each side (“Feedb. Right” and “Feedb. Left”)

4 THE MODULES IN DETAILS

The Prophet V2V is composed of three parts: the Prophet 5 interface, the Prophet VS, and a combination of the two called Hybrid.

The Prophet 5 uses a classic subtractive synthesis structure while the Prophet VS employs a less used synthesis technique called wave-table or vector synthesis. These two types of synthesis meet in the Prophet V2V, giving you the chance to create sounds that are both rich and original.

4.1 Prophet 5

The Prophet 5 interface takes on all of the parameters and characteristics of the original synthesizer. The interface is so much like the original that only playing functions in monophonic mode (LEGATO) and the sustain of a note (HOLD) were added. You will even find a preset bank which offers the 40 factory presets of the original machine



Prophet 5

The PROPHET 5 consists of:

- **2 oscillators** ("OSCILLATORS A and B") in which the second can equally be used as a source of modulation
- **1 mixer** for the volume of the 2 oscillators and the white noise module
- **1 low pass resonant filter** 24dB/oct
- **1 amplifier**
- **2 envelopes** dedicated to filter modulations and amplitude

- **1 LFO** (low frequency oscillator)
- **1 polyphonic modulation section** (Poly MOD) dedicated to high frequency modulation (FM)
- **1 monophonic modulation section** (WHEEL MOD) dedicated to the LFO

4.1.1 Oscillators

There are two oscillators.

The oscillator controls the basic frequencies and timbres of the Prophet 5 with the frequency settings, choice of waveform, and the pulse width associated to the square waveform. These settings are made either with various knobs (static settings) or by the means of the modulation sections. These can be activated in the WHEEL-MOD (monophonic modulation by the LFO) or the POLY MOD (polyphonic modulation by the frequency of oscillator B or the output of the filter envelope).

The oscillators can be tuned and edited separately. They supply up to 2 wave forms on oscillator A and 3 on oscillator B. These waveforms can be used simultaneously. Whether tuned separately or when using several mixed waveforms, the two oscillators allow you to quickly obtain large variety of sounds.



Two Oscillators

4.1.1.1 Oscillator A

FREQ: Tuning knob by semitone (Initial Oscillator Frequency), on approximately two octaves

SHAPE: Selection buttons of the two wave forms: Saw tooth, Square.

PW: Knob which sets the pulse width of the square signal

SYNC: Button which activates the synchronization of the A and B oscillators

4.1.1.2 Oscillator B

FREQ: Tuning knob for semitones on approximately two octaves

FINE: Fine tuning knob on approximately 1 semitone

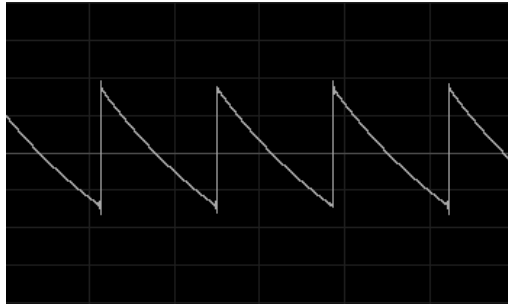
SHAPE: Selection buttons of three waveforms: Saw tooth, Triangle, Square.

PW: Knob setting the pulse width signals for the saw, square, and triangle waveforms

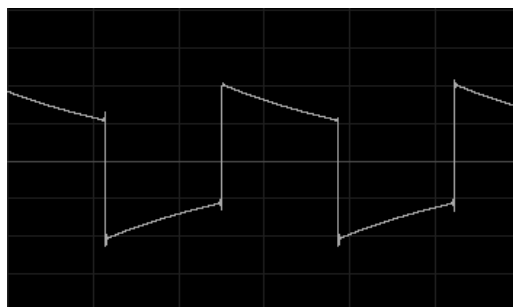
KBD: Connection buttons activating the keyboard

Notice: by turning on the "LO FREQ" button, the oscillator B will ask less CPU power of your computer. A weaker oscillation frequency will allow you to use it as an LFO for modulating oscillator A or the filter in the "POLY MOD" section.

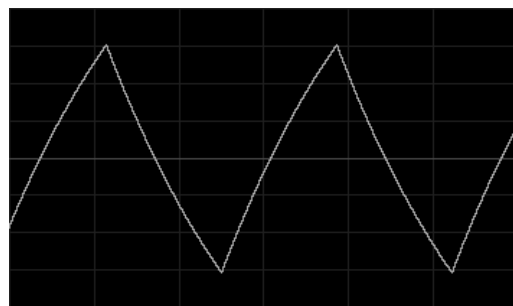
Here are the representations of the different waveforms used by the oscillators of the Prophet 5:



Saw tooth



Square



Triangle

4.1.2 Mixer

The mixer allows you to set and mix the volume of oscillators A and B as well as the volume of the white noise module.

The white noise module brings an interesting attribute to sound production. It is notably useful to create breath effects (in a flute sound for example) or for special effects as in the sound of wind.

OSC A: Volume setting for oscillator A

OSC B: Volume setting for oscillator B

NOISE: Volume setting for the white noise



Mixer

4.1.3 Filter

The Prophet 5 emulation possesses a low pass filter module identical to that of the original Prophet 5. You'll find all the sonic characteristics that made the original the "must have" of analogue synthesis!



Filter settings

CUTOFF: Setting for the filter cut frequency, tuned from 10 Hz to 25 KHz

RESO: Setting for the filter resonance

KBD: Manual setting for the keyboard following

ENV AMT: Manual setting for the amount of modulation by the filter envelope.

Notice: To set the conventional keyboard following (in relation to the tempered scale) place the knob at its middle value (1.00).

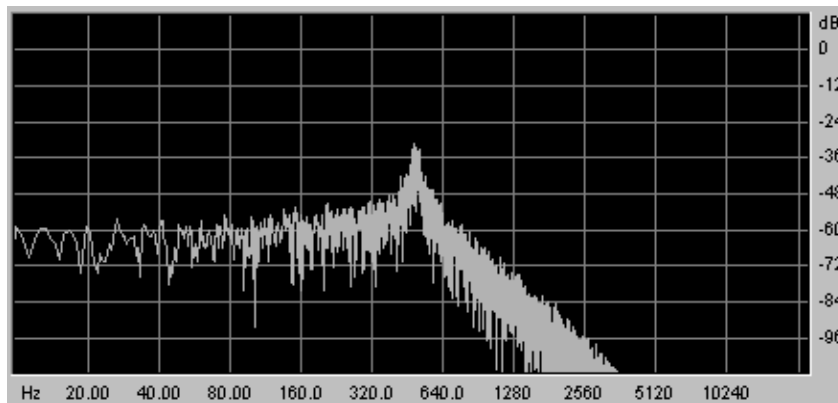
The filter possesses its own ADSR envelope (see following chapter) to edit its cut-off frequency. However, these can also be modulated by the LFO (section “WHEEL-MOD” for “wha wha” type effects), or by oscillator B (section “POLY MOD” for modulation effects in high frequencies or special effects).

4.1.3.1 Low pass filter 24dB/octave slope

The Prophet 5 employs a low pass 24dB filter. It eliminates the frequencies found above the cut-off frequency.

The resonance amplifies the frequencies close to the cut-off frequency. The amount of resonance is altered by adjusting the resonance knob. When you turn the knob to the right, the filter becomes more selective; the frequencies found around the cut-off frequency will be amplified and the sound begins to whistle.

Attention! For more precision when setting the cut-off frequency of the filter or the resonance rate, right click on PC or CTRL + Click on MAC. This can be useful when you wish to set the level of the cut-off frequency.



Low pass resonant filter

4.1.4 Amplifier

The amplifier is the last step in sound creation. It allows you to set the general volume of the Prophet 5.



Amplifier

VOLUME: General volume control of the synthesizer

4.1.5 Envelopes

The two ADSR envelopes allow you to develop one or several time function parameters.

You will find two envelopes on the Prophet 5: one controlling the cut-off frequency of the filter (as well as the frequency of oscillator B) and the other controls the volume amplitude.

The ADSR envelope is composed of four successive sequential periods: Attack time, Decay time, Sustain voltage, and the release time. When you send the signal for the note (by pressing the key on the keyboard) the envelope begins the sequence beginning with "Attack", then "Decay", and stays in the "Sustain" as long as the note is active. When the note is released the envelope finishes with the "Release" parameter.



"ADSR" envelope of the filter

ATTACK: Setting controlling the attack time

DECAY: Setting controlling the decay time

SUSTAIN: Setting controlling the sustain

RELEASE: Setting controlling the release

4.1.6 LFO

The low frequency oscillator (LFO) is used as a modulation source. It allows you to create variations in a sound parameter in a cyclical manner to generate effects such as a vibrato effect (when the LFO modulates the oscillator frequency) or "wahwah" effect (when it modulates the cut-off frequency).

RATE: Setting parameter for LFO frequency

SHAPE: Connection buttons for the audio output of the three wave forms: Saw tooth, Triangle, Square



LFO

4.1.7 Wheel Mod

This section offers the necessary connections to select the parameters edited by the LFO.

A knob is also present to mix the volume of the LFO output and the pink noise modulator. You can thus mix the two signals to add a random effect to your modulation.

LFO/ NOISE: Mixing knob of the LFO and pink noise

DESTINATION: Selection buttons determining the destinations of LFO modulation:

- Frequency of oscillator A ("FREQ A")
- Frequency of oscillator B ("FREQ B")
- Squared width of oscillator A ("PW A")
- Squared width of oscillator B ("PW B")
- Frequency of cut-off filter ("FILTER")



Destination Connection

4.1.8 Poly Mod

This section offers the necessary connection for high frequency modulations (FM).

These modulations are made by polyphonically played modules: oscillator B and the envelope of the filter.

With "Poly Mod" you can modulate the frequency and the pulse width of oscillator A as well as the cut-off frequency of the filter. This allows you to create metallic sounds, similar to bell sounds, or very particular special effects (notably by modulating the cut-off frequency of oscillator B).

Notice! If you use oscillator B as a modulation source, you can apply a modulation in which the speed will be proportional to the note played on the keyboard. This gives you some interesting effects when oscillator B will be used in the lower frequencies (LO FREQ).

SOURCE AMOUNT: Setting for the modulation rate of:

- The filter envelope ("FILT ENV")
- Oscillator B ("OSC B")

DESTINATION: Selection buttons for modulation destinations:

- Frequency of oscillator A ("FREQ A")
- Squared width of oscillator A ("PW A")

- Cut-off filter frequency (“FILTER”)



The FM polyphonic modulation section

4.1.9 Section modes for the keyboard

This section allows you to:

- To deactivate the note release (“RELEASE”). When a key on the keyboard is released, the sound is immediately interrupted and does not follow the release phase that is programmed.
- To release the hold continuing the note (“HOLD”). Even when the key on the keyboard is released, the sound is maintained.
- To activate the “LEGATO” playing mode. In this case, the envelopes are not released when you link two notes by playing them on your keyboard.
- To activate and set the “GLIDE” mode. This permits you to progressively change the oscillator frequency when a new note is activated. This function imitates the glissando of violins, for example.

RELEASE: Connection button for the release

HOLD: Connection button for holding a note

LEGATO: Connection button for the Legato mode (uniquely available in monophonic mode).

Pitch RANGE: Set the range of the pitch bend wheel

GLIDE: Setting for the glide time

Glide Modes: The various modes for the glide (“OFF/ ON/ LEGATO”)



Playing Mode section

CAREFUL! Only the volume envelope will be taken into account by the HOLD function. This permits you to make the sound “lively” while keeping the envelope available

4.1.10 General Parameters section

Among the parameters you will find: the general volume, the general tuning of the PROPHET 5, the activation of the A440, and the parameters belonging to playing in unison.



General Parameters

TUNE: Setting for the general tuning of the synthesizer

A 440: Button releasing the A at 440Hz

UNISON: Selection button for “UNISON” mode

DETUNE: Setting for detuning the voices of polyphony

Notice! The detuning knob for polyphonic voices is very useful for detuning the notes in “Unison” mode. This spreads the effect of the sound (a bit like the chorus does). When “UNISON” mode is inactive, this parameter gives a bit of instability to tuning of the oscillators (an instability that was typical in older hardware synths).

4.1.11 The Wheels

The wheels found on the side of the virtual keyboard, give you control of the frequency of the oscillators (“PITCH”) or the modulation rate of the LFO (“MOD”).

PITCH: Wheel controlling the pitch of the four oscillators

MOD: Wheel controlling modulation



Wheels

Attention! None of the modulation made by the LFO will be audible if the Mod Wheel is positioned at 0 (at the bottom). Also notice that the position of the wheel is stored in a preset.

4.2 Prophet VS

The Prophet VS brings you a unique sound that has the strength to stand on its own, but at the same time is complementary to that of the Prophet 5.

The Prophet VS uses vector or wave table synthesis for sound generation. This allows for a wide variety of varied timbres to be produced, due to the 96 user selectable wave forms that can be chosen as an oscillator. The mixing mode for the oscillators is also quite unique in that it moves between four points representing the maximal gain of the four oscillators present in the synthesizer.



Prophet VS

The Prophet VS is made up of:

- **4 oscillators** ("OSCILLATORS A, B, C et D") using wave table synthesis
- **1 mixer and sound envelope** for automation movements of the joystick for the volume of the four oscillators
- **1 multimode resonant filter**
- **1 amplifier**
- **5 point envelopes** dedicated to modulations of the filter and amplitude
- **LFO** (low frequency oscillator)
- **1 modulation matrix**
- **Effects section** for chorus and delays

4.2.1 Oscillators

There are four oscillators.

The oscillator allows you to control the frequency (the tuning) and the basic timbres of the Prophet VS. The difference between the VS and the Prophet 5 is that the oscillators of the VS use sample wave forms from diverse sources: acoustic instruments, voice, and assorted sound effects. These wave forms give you access to a sound palette much greater than that of most analog synthesizers.

To choose a waveform, click on the button found on the title bar of the oscillator (the graphics of the waveform being used appear to the right) then slide the mouse up or down to view the various waveforms.

FREQ: Tuning knob by semitones on two octaves

FINE: Tuning knob for fine tuning (one about a semitone)

SHAPE (Three digits LCD): Select the waveforms of the oscillators. Waveforms of the oscillators can also be selected in the Wavetable section in the screen display.



Oscillators

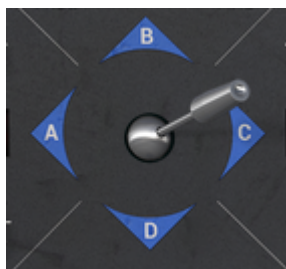


Wavetable section

4.2.2 Mixer Joystick

The mixer lets you mix the four oscillators in order to enrich and develop the sound. This mix is done with a joystick moving between four points (A, B, C, and D) representing the maximum volume of each of the oscillators.

Joystick: The joystick mixes the four oscillators in real time



The Mixer

Double clicking on the joystick will reset it to the center position.

4.2.3 Mixer Envelope

The mix can also be dynamically automated by an envelope defining four periods, each of which corresponds to a position to which the joystick can be programmed.

To activate this envelope, push the “Envelopes” button in the right-hand part of the synthesizer, then select “Mixer”. In the top left corner of the Mixer Envelope editing area you will find an on/off button to toggle the animation of the Joystick.

The mixer envelope is composed of four editable points, numbered 1, 2, 3, and 4, the point 0 being considered as a starting point for the joystick.

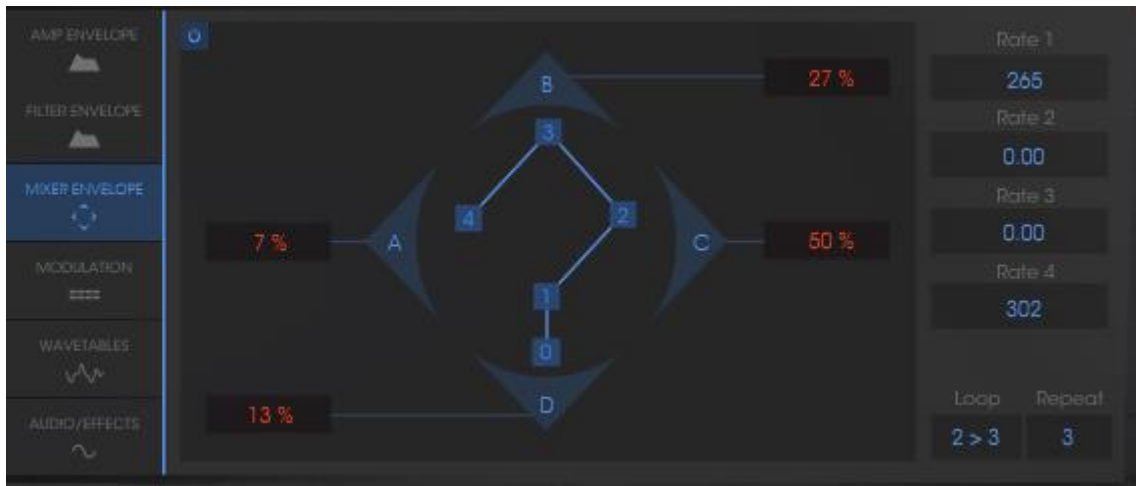
To position the four points, click on the center of the joystick representation (the value “4” is indicated at first) and slide the mouse. From there, the only modifiable parameters are the durations of the movements of the joystick between each point.

The settings are created by turning one of the four knobs situated in the “ENVELOPE” zone, above the joystick. The corresponding value appears in one of the four fields found to the right of the page “ENVELOPE/ MIXER”. You can equally click on the number and slide the mouse up or down.

ENVELOPE: The envelope automates the movements of the joystick designating a time to each of the four movements (points 0 to 4) and during the length of a note.

LOOP: The LOOP function applies a loop between to points of the envelope (OFF, 0>3; 1>3; 2>3 or 0<>3; 1<>3; 2<>3). When the key is released, the loop is interrupted and the movement cycle of the joystick is finished.

REPEAT: The “REPEAT” function repeats the movement cycle of the joystick (OFF, de 1 to 6 and indefinitely – C-)



Envelope of the Mixer

4.2.4 Types of Filters

The filter of the Prophet VS offers a “multimode” filter. You will find the low pass filter 24dB/octave slope of the original Prophet VS but also a high pass filter, band pass, and “Notch”.

FILT ENV: Manual setting for the amount of modulation by the filter envelope.

CUTOFF: Frequency setting of the cutoff filter, tuning at 10 Hz to 25 kHz

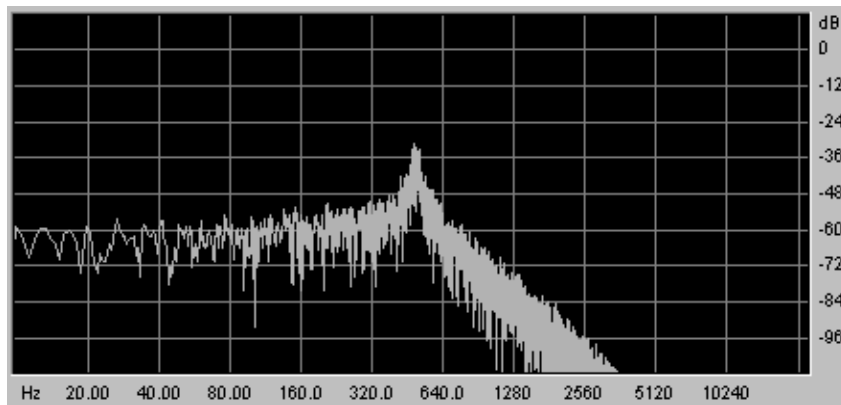
RESO: Knob setting the filter resonance



Filter Module

4.2.4.1 Low Pass Filter 24dB /octave slope (LP Filter)

The low pass filter 24 dB native to the Prophet VS. It eliminates the frequencies found above the cut-off frequency.

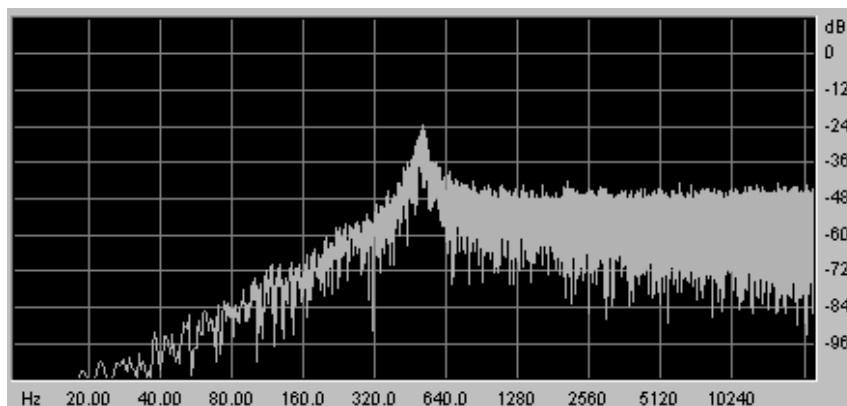


Low Pass Resonant Filter

The other four modes of filtration did not exist on the original Prophet VS but they are present on a number of other digital and analog synthesizers. They all use a slope of 12 dB/octave. These modes were added to increase the sonic possibilities of the Prophet V.

4.2.4.2 High Pass Filter (HP Filter)

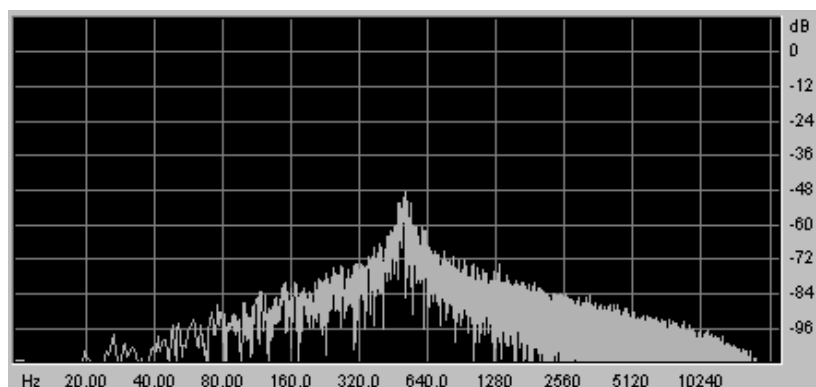
The high-pass filter acts symmetrically to that of the low pass filter. It eliminates frequencies below the cut-off frequency.



High Pass Resonant Filter

4.2.4.3 Band Pass Filter (BP Filter)

The band pass filter is the combination of a 12 dB/octave low pass filter and a high pass filter: it eliminates the frequencies found on either side of the cut-off frequency. Use it to make a certain band of frequencies that you wish to emphasize appear. This will make the sound more “pinched”.

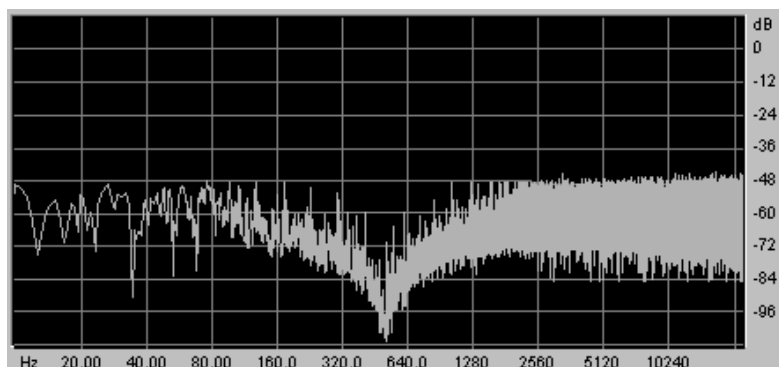


Band Pass Filter

4.2.4.4 Notch

The “Notch” is opposite to that of the pass band filter. It eliminates the frequencies inside a band of frequencies.

The resonance allows you to accentuate the sag of a band of frequencies.



The Filter notch

Attention! Setting the resonance of the notch filter to a large amount causes the effect of the notch filtering to be cancelled.

4.2.5 Filter Envelope

The filter envelope can be accessed by the “Edit” option found in the “Envelope” zone under the filter module.

The graphic editing appears on the LCD screen found to the right of the Prophet VS.

The filter envelope is composed of 5 points ranging from 0 (initial level) to 4 (end of the release).

A single parameter is offered for point 0 (Level). Points 1 to 4 allow you to set the “Level” and the “Time” between two points set from 0.00 to 10000ms.

Editing this envelope can be done graphically by clicking on one of the points (0 to 4) and then sliding the mouse vertically (Level) or horizontally (Time).

The "ENVELOPE" page can be accessed by a tab found on the right of the Prophet VS. Once you have accessed this page, click on the "FILTER" option.

5 point FILTER: The envelope modulates the cut-off frequency by allocating a Level and Time to each of the 5 points of the active envelopes during the hold (points 0 to 3) and the note release (point 4).

LOOP: The Loop function allows you to define a segment found between two points of the envelope which is meant to be repeated (OFF, 0>3 : 1>3 ; 2>3 or 0<>3 ; 1<>3 ; 2<>3).

REPEAT: The Repeat function repeats the loop a certain number of times (OFF, de 1 to 6 and indefinitely – C-)



Filter Envelope

4.2.6 Amplifier/Pan

The Amplifier/Pan controls the general volume of the Prophet VS.

A panoramic knob allows you to set the stereophonic placement of a voice (one voice equivalent to a note played). To set the pan separately for each voice of polyphony, drag on the selection screen found to the right of the name "Voice". Use "All" to set the pan of all voices simultaneously.

VOLUME: Setting for the volume of the Prophet VS' output signal

PAN: Panoramic setting of the selected voice

VOICE: Selection screen for the voice



Amplifier

4.2.7 Amplifier Envelope

The amplitude envelope can be edited by the “Edit” button found in the Envelope zone found under the Amplifier module.

The editing graphics appear on the LCD screen found to the right of the Prophet VS.

The amplitude envelope is also composed of 5 points but the fourth (the release) has only the Time parameter set from 0.00 to 10000ms (the Level remaining in any case at zero).

Only the Level parameter can be set on the 0 point. The points 1 to 3 set the Level and the Time between two points set from 0.00 to 10000ms. The 4 point can only be set by the “Time” parameter.

The “Envelope” page can be accessed by a tab found on the right-hand side of the Prophet VS interface. Once you have opened the “Envelope” tab, choose the “Amplifier” option.

AMPLIFIER: This envelope modulates the cut-off frequency by allocating the “Level” and the “Time” to each of the 5 active points of the envelope during the interval between points 0 and 3 and the release of the note (point 4)

LOOP: The loop function allows you to define a loop between two of the envelope points (OFF, 0>3; 1>3; 2>3 or 0<>3; 1<>3; 2<>3).

REPEAT: The repeat function repeats the loop a certain number of times (OFF, de 1 to 6 and indefinitely – C-).



Amplification Envelope

4.2.8 Low Frequency Oscillator (LFO)

The two LFOs are often used as modulations sources. They allow you to develop one or several parameters cyclically.

The connections for the LFOs to the parameters that they modulate are made on the modulation matrix found on the LCD screen (right-hand side of Prophet VS). Select the modulation tab.

RATE: Knob setting the LFO rate

WAVE: Screen for choosing the 5 wave forms: Triangle, Square, Saw Tooth, Inversed Saw tooth, Random



The LFOs

4.2.9 Modulation Matrix

The modulation matrix allows you to connect the different modulation sources (LFO, Envelopes...) to the synthesis parameters (Cutoff, Frequency, PW...) of the Prophet VS.

The "Modulation" page is accessible by clicking on the tab found in the screen on the right hand side of the Prophet VS. It allows you to set:

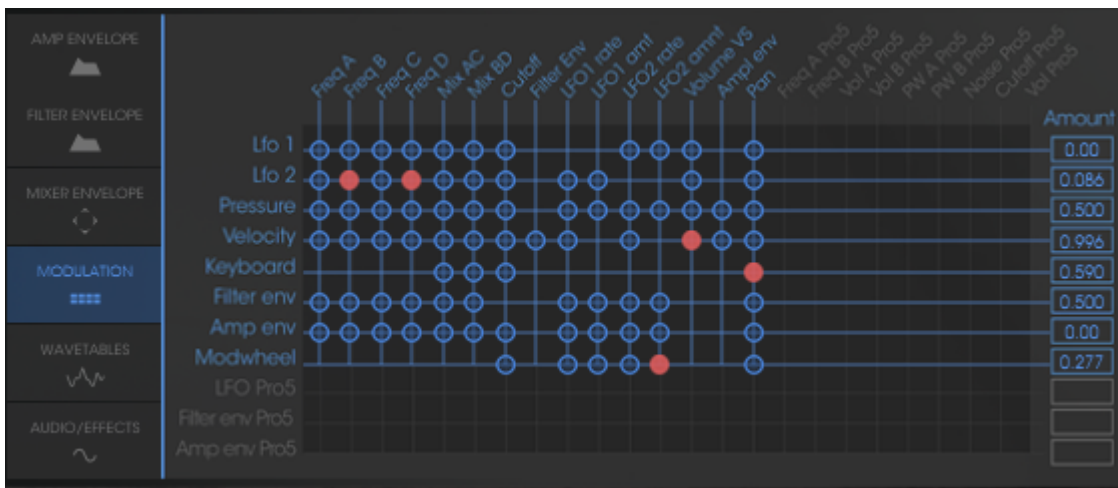
The SOURCES vertically are:

- LFO1
- LFO2
- PRESSURE
- VELOCITY
- KEYBOARD
- FILT ENVELOPE
- AMPL ENVELOPE
- MODULATION WHEEL
- JOYSTICK X
- JOYSTICK Y

The DESTINATIONS (horizontally) are:

- FREQ VS OSC A
- FREQ VS OSC B
- FREQ VS OSC C
- FREQ VS OSC D
- MIX A/C
- Mix B/D
- CUTOFF
- FILT ENVELOPPE
- LFO1 RATE
- LFO1 AMOUNT
- LFO2 RATE
- LFO2 AMOUNT
- VS VOLUME
- AMPL ENVELOPPE
- PANORAMIC

Modulation connections are made by clicking on the white points placed at the intersections between a source and a destination. An orange insert appears in their place when the connection is made.



Matrix Modulation

4.2.10 Chorus and Delay Effects

The Prophet V2V offers two additional effects: a chorus and stereo delay that permit you to add color and space to your sound.

The effects can be accessed by clicking on the “EFFECTS” tab found in the right hand section of the **Prophet VS**. The can be activated or deactivated by clicking on the “Chorus” or “Delay” buttons.

4.2.10.1 The Chorus

The chorus module has three knobs: “Rate”, “Depth”, and “Dry/Wet” which sets the speed, depth and relation between the signal of origin and the signal modified.

Three selection buttons allow you to choose a variation of chorus types, from simplest to the densest, in the “Ensemble” style that is often present on analog machines.

RATE: Setting knob for the chorus frequency

DEPTH: Setting for the modulation of depth

DRY/WET: Balance between the sound with and without effect

TYPE: Selection buttons for the three types of chorus



The chorus

4.2.10.2 The Delay

The Delay module has:

- Two knobs, "Time Left" and "Time Right" to set the duration of the repetition on the left and right channels.
- Two knobs, "FeedB Left" and "FeedB Right" to set the gain and return on the left and right channels
- "Dry/Wet" knob to set the relation between the signal of origin and the modified signal
- The "Sync" interrupter synchronizes the delay return time on the host tempo application in MIDI

Time L/R: Setting for repetition time of the Left (L) and Right (R)

Feedback L/R: Setting for the number of repetitions for the Left (L) and (Right) sides

DRY/WET: Balance between the sound with and without effects

SYNC: Selection button to synchronize MIDI tempo



The delay

4.2.11 Playing controls

This page gives access to global settings of the Prophet VS (general volume, general tuning, glide, unison...). You can access it on the screen to the right of the synthesizer by clicking on the "Play MODES" tab. Note that these are not available in Prophet Hybrid mode. These controls are on the Prophet 5 interface instead.

The "GLIDE" mode progressively changes the oscillator frequencies each time a new note is activated.

VOLUME: Setting for the general volume of the Prophet VS

TUNE: Setting for the general tuning of the synthesizer

UNISON: Starts "unison" mode

V. DETUNE: Setting to detune the polyphonic voices

HOLD: Button to start the hold mode

LEGATO: Allows one to play in a legato style (can be activated only in the monophonic playing mode)

GLIDE: Setting for the glide time

Glide Modes: Positions for the glide mode: OFF, ON, LEGATO ON (This is active only in monophonic playing mode)



Playing Modes

4.2.12 Wheels

PITCH: Control wheel for the pitch of the four oscillators

MOD: Control wheel for modulation

Remember, no modulation will be audible with a modulation wheel if this is not connected to a destination in the modulation matrix. However, the position of the wheel is kept in the memory of the preset.

4.3 Prophet “Hybrid”

This interface uses both synthesizers at the same time in order to create diverse and unheard sounds. It can be opened by clicking on the “Hybrid” button found on the tool bar.

You will find all the parameters included on both of the synthesizers and described in the paragraphs below.

In this chapter, we will concentrate primarily on the additional parameters. These are found on the LCD screen found to the right of the Prophet VS interface.



Hybrid interface

4.3.1 Audio Connection Matrix

The audio connection matrix, as its name indicates, routes the sound signal between different modules of the two synthesizers (oscillators to the filters, filters to the audio output).

The different connections are made by clicking on the white points placed at the intersections between a source and a destination.



4.3.1.1 Types of oscillators

To select the oscillators, click on the panel corresponding to one of the four sources – A, B, C, and D – to make the menu offering oscillator choices appear.

The different “Sources” available:

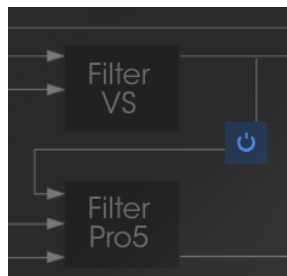
- **SOURCE A:** “OSC. A VS” or “OSC. A P5”
- **SOURCE B:** “OSC. B VS” or “OSC. B P5”
- **SOURCE C:** “OSC. C VS” or nothing (“NONE”)
- **SOURCE D:** “OSC. D VS” or nothing (“NONE”)

Remember that it is not possible to connect more than 4 oscillators simultaneously.

4.3.1.2 Connection of the two types of filters:

The output sources of oscillators A, B, C, and D can be connected to the two available filters. Three connections will be possible:

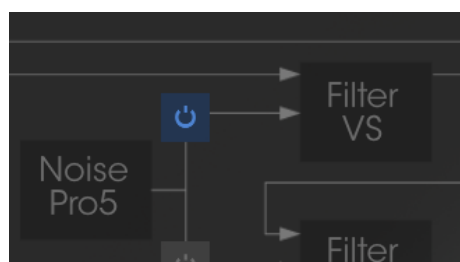
- SOURCES A, B, C and D to FILTER VS
- SOURCES A, B, C and D to FILTER 5
- SOURCES A, B, C and D to FILTER VS serial connection to that of FILTER 5



Serial Connection of the filter Pro VS to the filter Pro 5

4.3.1.3 Connection of noise of the Prophet 5 to the filters

The noise module of the Prophet 5 can be routed to the Prophet VS filter, the Prophet 5 filter, or to the two serial connections.



Noise Module connection to the Pro VS filter

4.3.1.4 Audio Output connection to the Prophet 5 and VS filters

These connections can be used without an active oscillator (with only auto filters oscillating as a sonic source, for example, generating a sinusoidal wave form). It is possible to connect the filters of the two synthesizers together or the two in a series.

4.3.2 Modulation Matrix

Contrary to the modulation matrix of the Prophet VS that we have previously seen, here all the individual connections of the Prophet 5 will be equally available and connectable to the parameters of the Prophet VS.

This allows you to add modulation sources theoretically inaccessible with the Prophet 5 when it is alone such as the velocity, after-touch, or numerous other sources of modulation present on the Prophet VS!

Here is a complete list of sources and modulation destinations present in this matrix:

The SOURCES (vertically) are:

- LFO1 (Pro VS)
- LFO2 (Pro VS)
- PRESSURE (Pro VS)
- VELOCITY (Pro VS)
- KEYBOARD (Pro VS)
- FILT ENVELOPE (Pro VS)
- AMPL ENVELOPE (Pro VS)
- MODULATION WHEEL (Pro VS)
- JOYSTICK X (Pro VS)
- JOYSTICK Y (Pro VS)
- LFO PROPHET 5
- FILT ENV PROPHET 5
- AMPL ENV PROPHET 5

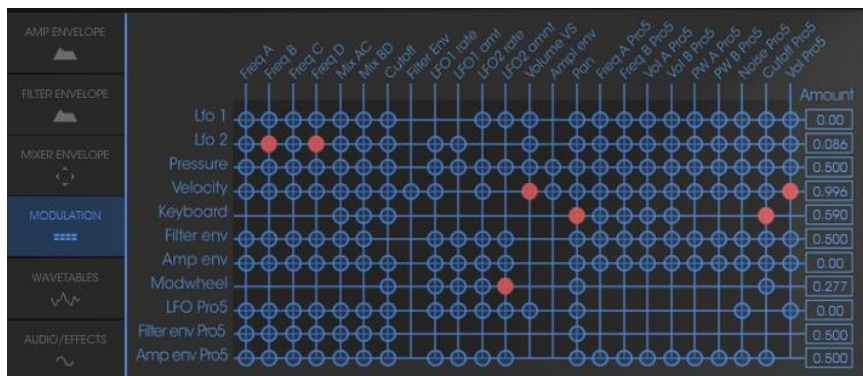
The DESTINATIONS (horizontally) are:

- FREQ VS OSC A (Pro VS)
- FREQ VS OSC B (Pro VS)
- FREQ VS OSC C (Pro VS)
- FREQ VS OSC D (Pro VS)
- CUTOFF (Pro VS)
- FILT ENVELOPPE (Pro VS)
- LFO1 RATE (Pro VS)
- LFO1 AMOUNT (Pro VS)
- LFO2 RATE (Pro VS)
- LFO2 AMOUNT (Pro VS)
- VS VOLUME (Pro VS)
- AMPL ENVELOPPE (Pro VS)
- PANORAMIC (Pro VS)
- FREQ PRO 5 OSC A
- FREQ PRO 5 OSC B
- VOL PRO 5 OSC A
- VOL PRO 5 OSC B
- PW A PROPHET 5
- PW B PROPHET 5

- NOISE PROPHET 5
- CUTOFF PROPHET 5
- VOLUME PROPHET 5

Careful! When you pass from one synthesizer to another – from the “Hybrid” to Prophet 5 alone for example – the settings of the audio connection matrix will change radically! You will no longer hear the Prophet VS because its audio connection will be automatically cut. However, it will be reactivated when you pass from the Prophet 5 alone to the “5 +VS”.

When it returns, you will find the parameters of the Prophet VS that you left still intact in the Hybrid Interface.



The modulation Matrix of the Hybrid interface

5 THE BASICS OF SUBTRACTIVE SYNTHESIS

Subtractive synthesis appeared at the end of the 1960's, giving birth to the first analog synthesizers: Moog, Sequential Circuits (the Prophet Series), ARP, EMS, Oberheim, Roland (SH or Jupiter series), Yamaha (CS series) and Korg (MS and PS series). During the 1980's, the purely analog additive synthesis model of the first keyboards was progressively replaced by wave table oscillators (Prophet VS) or sample based instruments.

As an owner of the Prophet V2V, you now have access to a synthesizer with immense sonic generation possibilities, where subtractive synthesis is coupled with the analog oscillators of the Prophet 5 and the wave table sounds of the Prophet VS.

5.1 THE BASICS

Of all the forms of audio synthesis, subtractive is one of the oldest, and to this day, the most frequently employed by sound designers and musicians alike. This is due to the simplicity with which complex sounds can be created, over the more unwieldy forms of synthesis techniques, such as additive or granular, to name but two. As a basic overview to subtractive synthesis, one may consider any sound created either in nature or on your synthesizer of choice, as consisting of a number of sine waves, or harmonics grouped together. In subtractive synthesis, we start with a harmonically rich sound such as a saw wave, and through filtering, we remove the sine waves (or harmonics) that we do not want. This as you can imagine is a lot more complex than turning a filter control knob!

5.2 THE THREE MAIN ELEMENTS

5.2.1 The Oscillator or VCO

The oscillator or VCO (**Voltage Controlled Oscillator**) is the starting module (with the noise module which is often classed among the oscillators) for the creation of a sound on an analog system.

It will generate the initial sound signal. We can think of the oscillator like a violin string that once stroked or plucked, vibrates to create its sound.



Oscillator Section on the Prophet 5



Oscillator Section on the Prophet VS

The main oscillator settings are:

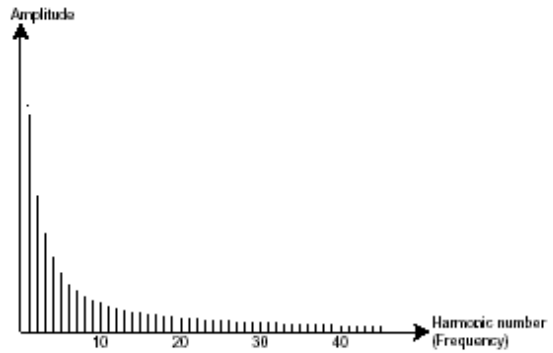
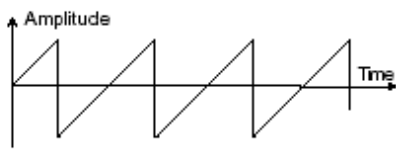
- **The pitch** determined by the oscillation frequency. You can set the frequency of the oscillator with 2 controllers:

The tuning parameter ("FREQUENCY") allows you to tune the oscillator by semi-tones on range of 5 octaves.

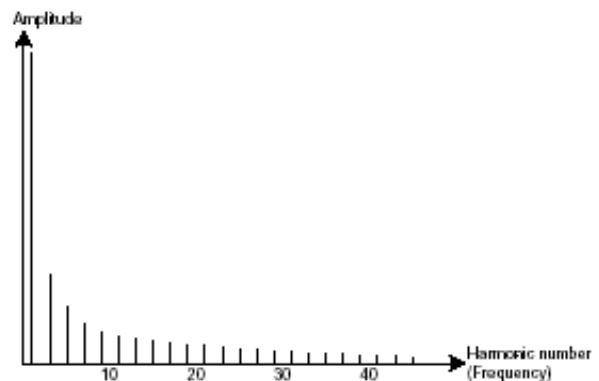
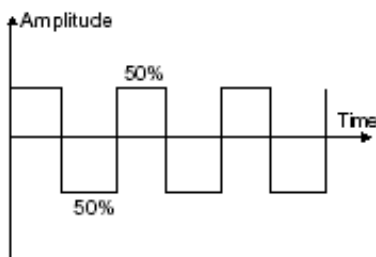
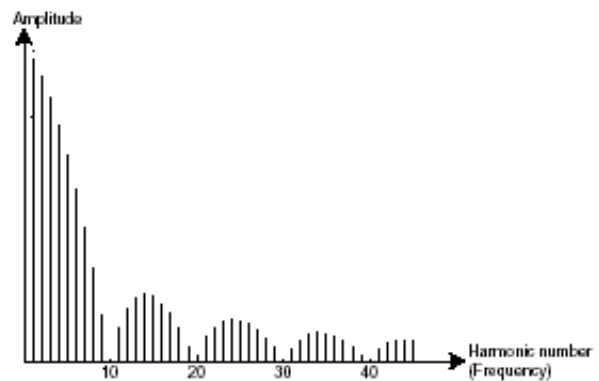
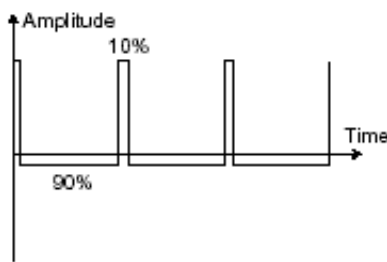
The fine tuning parameter ("FINE") finely tunes the oscillator upwards by a semi-tone. This parameter gives a bit more life to your sound when you use several oscillators simultaneously, due to difference in frequencies between the oscillators.

- **The waveform** which determines the harmonic richness of the audio signal. On the Prophet V2V, 6 waveforms are available:

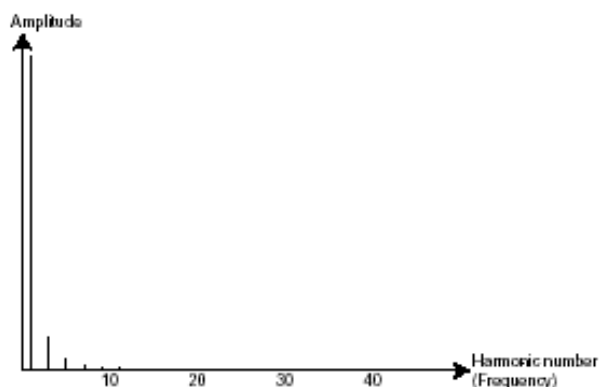
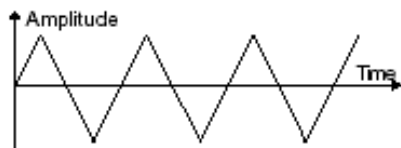
The saw tooth presents the richest audio signal of the 3 waveforms (it contains all of the harmonics at decreasing volume levels in high frequencies). Its sound is ideal for brass sounds, percussive bass sounds or rich accompaniments.



The square possesses a more “hollow” sound than the saw tooth (it only contains odd harmonics) but none the less, its rich sound (notably in low frequencies) can be used for sub-bass sounds that will come out well in the mix (the square oscillator is often set an octave below that of the saw tooth), wood sounds (clarinet, if the square signal is a little filtered), etc....



The triangle can be considered like a very filtered (and soft) square signal. It is very low in harmonics (odd only) and will be very useful for creating sub basses, flute sounds, etc....



Triangle

PWM (Pulse Width Modulation) is a setting that allows you to modify the waveform cycle (or wave length). This can be done manually with the help of a knob “**PW**” or by modulation (with an envelope or LFO). This pulse width variation translates to a spectrum modification, resembling a waveform change.

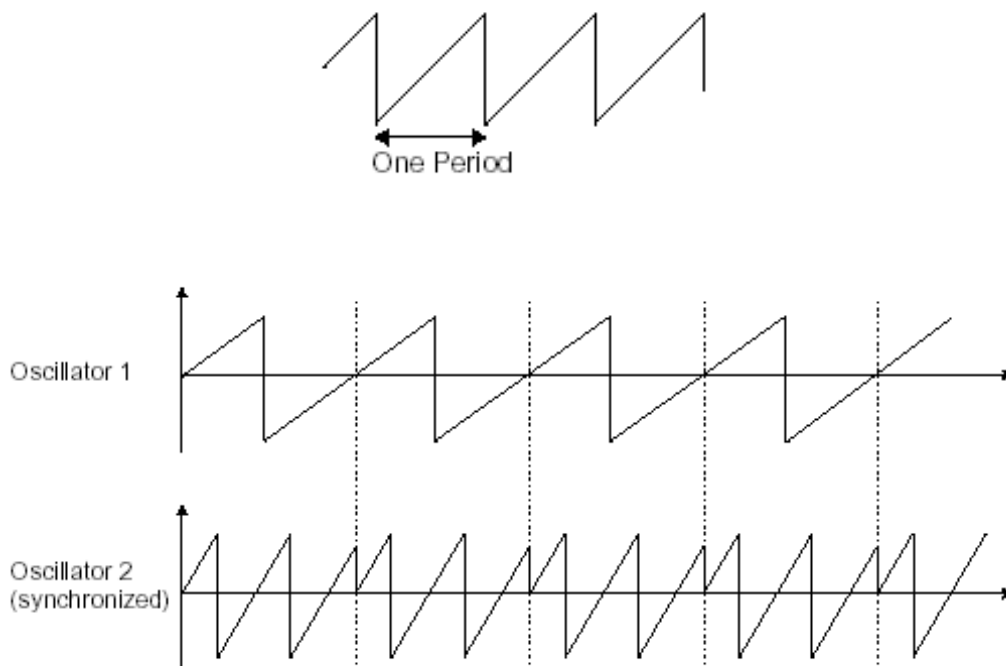


Waveforms of the PROPHET 5



An example of a Prophet VS waveform

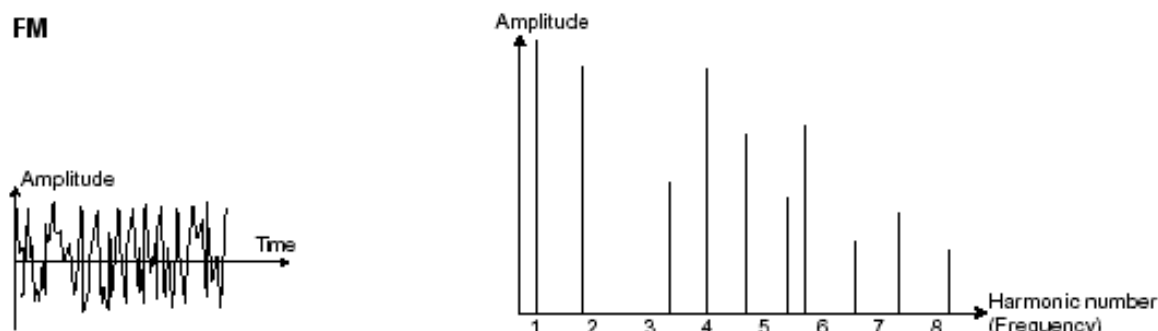
The **synchronization** of an oscillator with another creates more complex waveforms. If for example, you synchronize oscillator2 with oscillator1, oscillator2 will restart a new period every time the first oscillator completes its period, even if oscillator2 has not fully completed its current cycle (this signifies that it is not tuned to the same tonality!) The more you tune oscillator2 upwards, the more you will encounter composite waveforms.



In the above image, oscillator2 is synchronized with the first and tuned to with double the tonality. The resulting waveform is unique in that it cannot be created by standard synthesis techniques such as layering or filtering.

Frequency modulation (FM) can be created between 2 oscillators by connecting the audio output from a first sinusoidal oscillator to the modulation input of a second oscillator. On the Prophet V2V, if you turn the modulation rate ring, you will obtain a sound richer in harmonics. If you introduce a square or sawtooth signal, the result can be quickly distorted... but interesting for enharmonic sonorities like bell sounds or special effects for example.

FM



5.2.2 The Noise Module

The noise signal spectrum has all frequencies at an equal volume level, often referred to as “white noise”. For this reason, the noise module is used to create different noises like the imitation of wind or special effects. White noise is the richest

of noises. Pink noise is also regularly present on synthesizers. It is less rich in the high frequencies than white noise.

Also note that the audio output of noise can also be used as a modulation signal (especially when strongly filtered) to create random cyclic variations.

On hard-wired synthesizers, the noise module is either integrated into the oscillator (its audio output being placed to compliment the waveform outputs), or within the mixer directing the signals towards the filter.

In the Prophet 5 section, you will find the noise generator among the volume settings of the "mixer".



The Prophet 5 noise generator

5.2.3 The Mixer

The audio signal generated by an oscillator (the waveform) is generally directed towards a filter module (**Voltage Controlled Filter**).

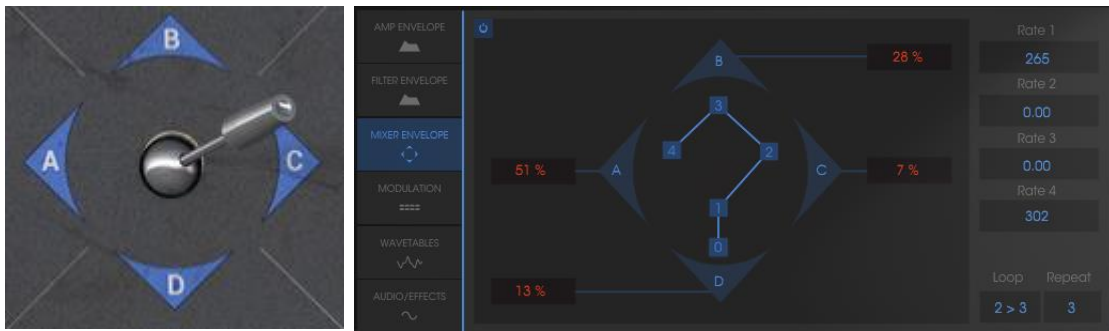
The Prophet V2V contains two types of mixers:

The Mixer of the Prophet 5: you can individually set the volume of both oscillator A and B and of the noise generator. The mixer doesn't have a modulation input so the settings are done manually.



The Mixer of the Prophet 5

The Mixer of the Prophet VS: as in the Prophet 5, this mixer sets the volume of the four oscillators of the Prophet VS. The mix is done with a joystick which moves between four points within a diamond shape. Each point (A, B, C or D) corresponds to the maximum volume of each oscillator. The Prophet VS mixer can also be automated by a four parameter envelope (see chap. 4 "Modules/ Mixer Envelope") or by other modulation sources which can be connected in the modulation matrix (see chap. 4 "Modulation Matrix").



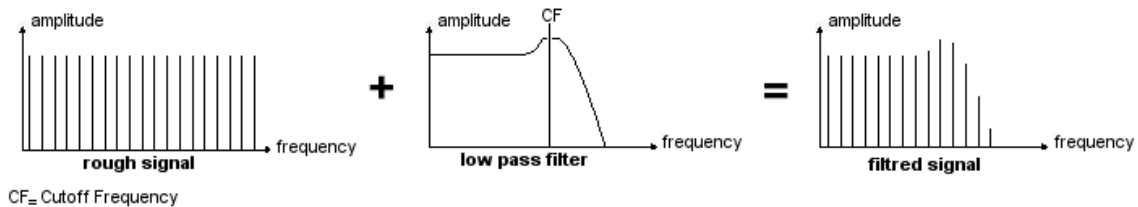
The Mixer of the Prophet VS and its envelope

5.2.4 The filter or VCF

The audio signal generated by an oscillator (the waveform) is next generally directed to a filter module or VCF (**Voltage Controlled Filter**). It is this module that we use to control the sound by filtering (by removing or subtracting certain frequencies, which explains the name given to this type of synthesis) the harmonics situated around a cut-off frequency. It can be considered to be a sophisticated equalizer that reduces, depending on the filter type, the high or low frequencies of a sound.

The removal of undesirable frequencies at the cut-off frequency is not done suddenly but progressively, depending on the filtering slope. This filtering slope is expressed in decibels per octave (or dB/Oct). The filters used in classic analog synthesizers have 24 dB/Oct or 12 dB/Oct slopes.

The Prophet V2V offers several types of slope:



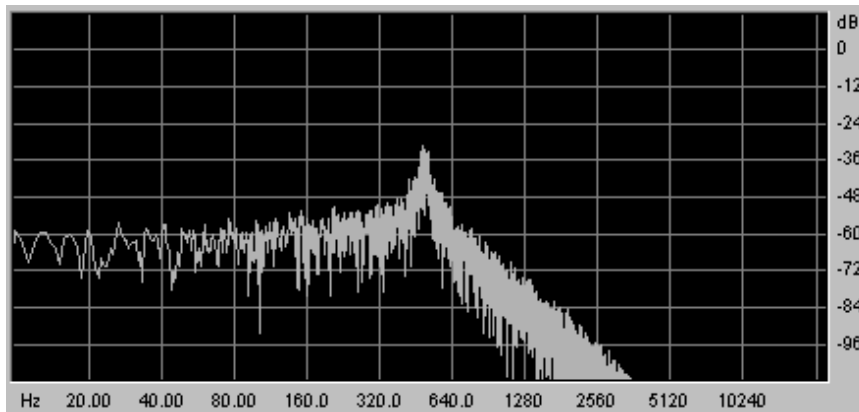
The removal of undesirable frequencies at the cut-off frequency

On the Prophet 5 and VS, you have access to a type of filtering with a 24 dB/Oct slope. Let's have a look at some of its properties:

5.2.4.1 The low-pass filter (LPF)

The low-pass filter (LPF) progressively removes high frequencies above the assigned frequency limit (the cut-off frequency) and allows the sound below the cut-off to pass through unchanged. Depending on the setting we will hear the sound becoming more or less “brilliant”, more or less “dampened”.

This is the type of filtering that you will find more often than not on synthesizers that use subtractive synthesis. It can be found on most of the recent analog and digital synthesizers.

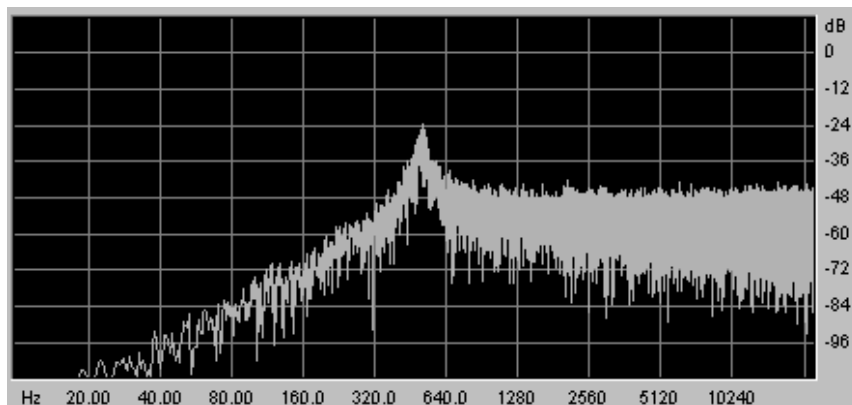


Low Pass Filter

The Prophet VS proposes other types of complementary filtering:

5.2.4.2 High Pass Filter (HP Filter)

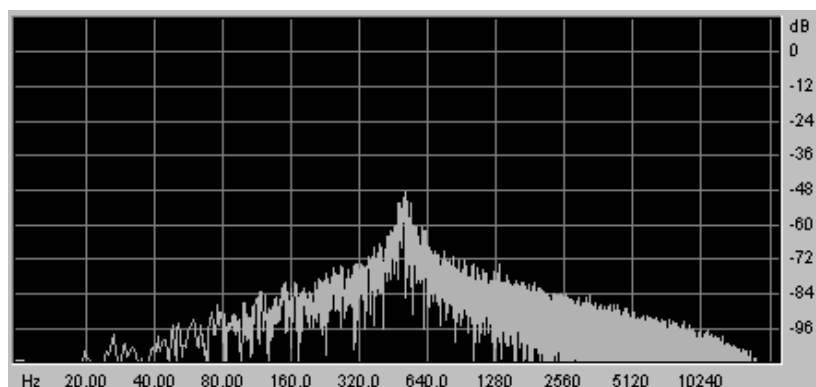
The high-pass filter acts symmetrically to that of the low pass filter. It eliminates frequencies below the cut-off frequency.



High Pass Resonant Filter

5.2.4.3 Band Pass Filter (BP Filter)

The band pass filter is the combination of a low pass filter and a high pass filter: it eliminates the frequencies found on either side of the cut-off frequency. Use it to make a certain band of frequencies that you wish to emphasize appear. This will make the sound more “pinched”.

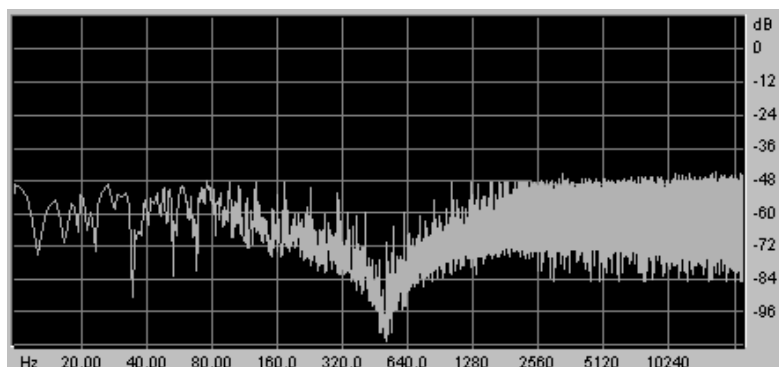


Band Pass Filter

5.2.4.4 Notch Filter

The “Notch” is opposite to that of the pass band filter. It eliminates the frequencies inside a band of frequencies.

The resonance allows you to accentuate the sag of a band of frequencies.



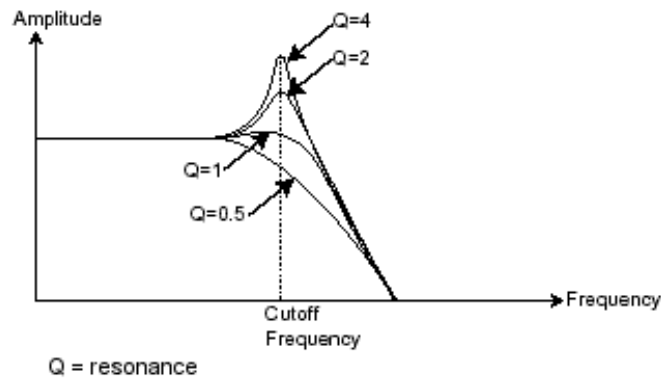
The Filter notch

A second setting to compliment the cut-off frequency: the resonance (you will also find it called “emphasis” or “Q” – for Quality of filtering).

The resonance amplifies frequencies close to the cut-off frequency. The other frequencies remaining are either unchanged (below the cut-off frequency) or reduced (above the cut-off frequency).

On the Prophet V2V, you can increase the rate of resonance through the “emphasis” knob.

When you increase the resonance, the filter becomes more selective, the cut-off frequency is amplified, and the sound begins to “whistle”.



The resonance amplifies frequencies close to the cut-off frequency

With a high resonance level, the filter will begin to produce a sound close to a sine waveform. At this stage, the use of a key follow is very important as you can create a melody by tuning the cut-off frequency of the filter with the frequency of the oscillators.



The filter settings of the Prophet 5

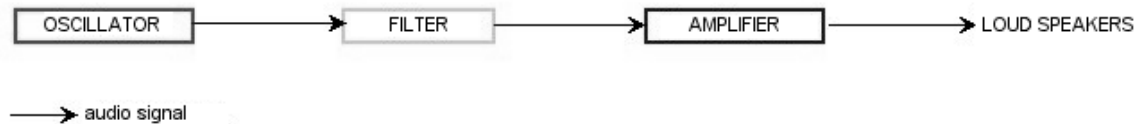
5.2.5 The amplifier or VCA

The amplifier (**Voltage Controlled Amplifier**) receives the audio signal coming from the filter (or directly from the oscillator if it is not being filtered) to be adjusted before the volume is sent to the speakers.



The Prophet 5 VCA

In conclusion, here is a diagram that should help you to understand the composition of a basic sound:



5.3 Other modules

5.3.1 The keyboard

If we stop here, the sound that you will obtain will be uniform, without life and without an end!! The oscillator delivers a sound signal (the audio output of a waveform) of a fixed pitch in a continuous manner. In the diagram above, the only way to stop this quickly unpleasant sound is to lower the filter cut-off frequency so that it becomes more and more damp until it finally disappears; or simpler yet, lower the volume of the amplifier!

- To start and stop the sound, and this at the tone that we require, we use a keyboard that is connected both to the VCA through a gate and to the frequency of the oscillators. This will “play” the sound as soon as a key is pressed, and mute it when released. Of course, this connection is made through MIDI (it replaces the “gate” type of connections on analog synthesizers, which trigger the note when a key is pressed and stop it when released).
- Secondly, for the notes to tune correctly to the notes of the keyboard, you must apply a keyboard following modulation (replacing the 1 volt/octave control present on most analogic synthesizers).

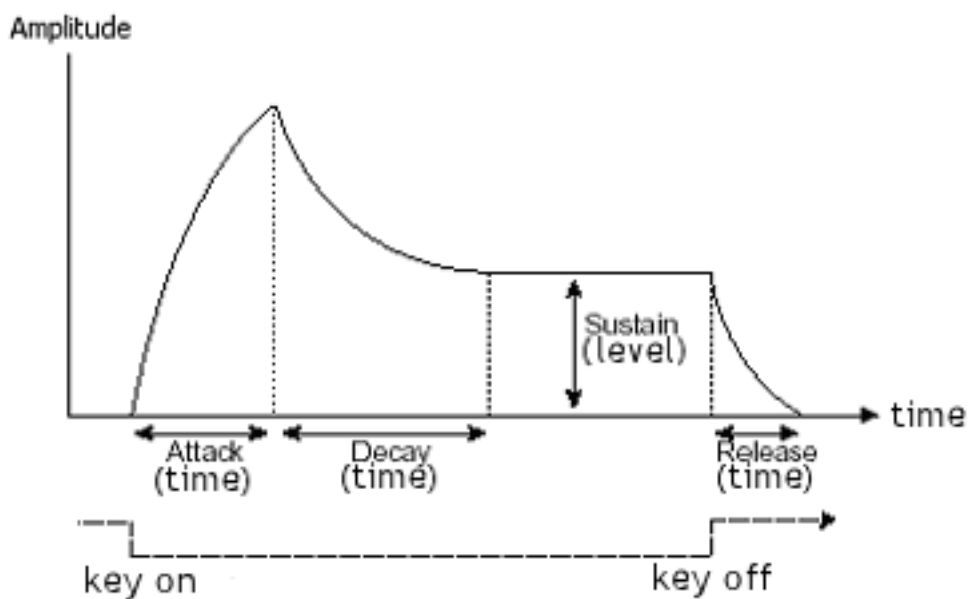
If you do not use a MIDI keyboard, you can also play on the virtual keyboard of the Prophet V2V, but your sequencer will not record those actions, it is for auditioning presets and programming only.

5.3.2 The envelope generator

The envelope generator, connected to the amplifier, is used to “sculpt” the volume of the sound when we press a key on the keyboard and ends after the note is released.

The most common modules developed use 4 settings that we can vary:

- The **A**ttack is the sound that the sound will take to reach its maximum volume once we have pressed a key on the keyboard.
- The **D**ecay (fall) is the time that the sound will take to diminish after the attack portion is complete.
- The **S**ustain (hold) is the maximum volume level that the sound will reach after the decay is complete.
- The **R**elease is the time that the sound will take to diminish once the key has been released.



The ADSR Envelope

Both envelopes of the Prophet VS contain 5 points numbered 0 to 4. The 0 corresponds to the initial level of the parameter associated to the envelope. The Release corresponds to point 4. Points 1 through 4 contain two parameters (filter envelope only): the LEVEL and the RATE. Point 0 only has the LEVEL parameter.



ADSR envelope of the Prophet 5



The Prophet VS envelope

5.3.3 The low frequency oscillator

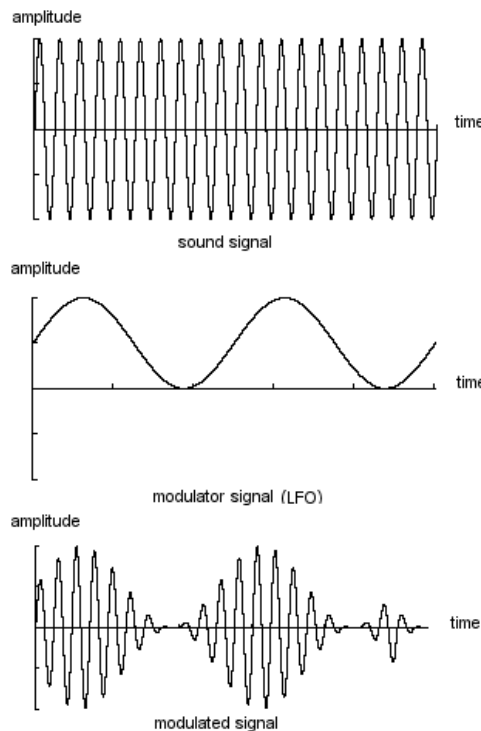
The LFO (*Low Frequency Oscillator – or LFO on the Prophet V2V*) possesses more or less the same characteristics of the classic oscillator but it only produces frequencies lower than 20 Hz. In other words, you won't hear the pitch of its sound. It will create a cyclic modulation on the setting to which it is connected.

For example:

If the sine waveform of an LFO modulates the volume of an amplifier, the sound will increase in volume then disappear in a varying manner following the speed (the frequency) of this LFO. This will produce a tremolo effect.

A sine waveform on an LFO modulating the frequency of an oscillator would produce a vibrato effect.

With an LFO sinusoid wave modulating the cut-off frequency of a lightly resonant low-pass filter, you will obtain a “wah wah” effect.



The LFO in tremolo mode



The LFO module of the Prophet 5

The original Prophet 5 could also use the second oscillator for low frequencies (“LOFREQ” position) to modulate the frequency of oscillator A or the cutoff frequency of the filter, which we have also provided.

The connections of these modulations are available in the “POLY MOD” module.

5.4 Complements to Wavetable Synthesis

Wave table synthesis functions on the same principles as subtractive synthesis. The difference resides in the type of oscillators used: the Prophet VS using sonic samples saved and stocked in memory, and the older synthesizers using generators of the saw tooth, sine, and square waved form. These samples of the VS were saved from different acoustic (instruments, voice) or electronic (noise, atonal sounds, basic wave forms) sources and allow you to enrich the sonic pallet offered in the Prophet 5 while remaining complementary.

5.5 Modules of Prophet V2V

The essential elements of the Prophet V2V consist of:

- **6 oscillators** (two for the Prophet 5 and four for the Prophet VS)
- **1 noise module**
- **1 mixer** (mixing the 4 oscillators and the noise module to the filters of the Prophet 5 and VS)
- **2 filters** (one low-pass for the Prophet 5 and one multimode for the Prophet VS)
- **2 output amplifiers** (VCA)
- **4 envelopes** (two for the Prophet 5 and two for the Prophet VS)
- **3 LFO** (one for the Prophet 5 and two fro the Prophet VS)
- **Modulation Matrix** (Prophet VS)

6 A FEW ELEMENTS OF SOUND DESIGN

Here are 5 examples meant to guide you with your sound design in the Prophet V. These sounds are classed from the simplest to the most complex, and are organized in three parts:

The First section will help you understand the synthesis of the Prophet 5. By starting with a basic preset you will develop a polyphonic brass sound. Then, you will discover how to develop richer timbres (several oscillator sources, filter, amplifier, envelopes, complex modulations...) with bell sounds.

In the Second section we will explore the wave-table synthesis of the Prophet VS. Here, as with the PROPHET 5, you will begin with a basic preset. In this example, the secrets of the modulation matrix and mixing the oscillators will be revealed.

The third section allows you to create a rich and evolving sound from the association between the two synthesizers.

6.1 Brass Preset with the Prophet 5

To begin, we will learn how to program a basic polyphonic sound. It is composed of four primary elements:

- two oscillators (VCO1 et 2)
- one low pass filter (VCF)
- ADSR envelope connected to the filter
- ADSR envelope connected to the amplifier

Thus, you will have a basic preset offering brass sounds.

Figure 1 shows you the position of the different knobs:



Primary elements

To begin, choose the preset "Temp/ Blank" in the bank "Prophet 5"/ "Temp_Synth". As you may have noticed, no sound can be heard when you play a note. Don't worry, this is normal! Only the volume amplifier is open.

Click on the button of oscillator A. This represents the saw tooth waveform of oscillator A. When you hold a note, the sound appears strong and bright.



Click the “saw tooth button” of oscillator A

Do the same thing with the (Insert Saw button image) button of oscillator B. You can also lightly detune oscillator A to attain a bigger and livelier sound



Lightly detune oscillator 2

Lower the cut-off frequency of the filter (“Frequency” knob) by turning the knob to the center value (use a value around 200.00). This will make the sound softer and allow you to better hear the effect that the envelope has on the filter.

On the ADSR envelope found below the filter, increase the attack time to about “40ms”. Lower the Decay value to about 200ms and the sustain to around 0.25. The duration becomes shorter.



Settings of the filter envelope

Save the sound under the name “brass1”. You can reuse it later.

To do that, click on the “Save as” button then choose the option “new bank” (at the bottom of the menu). Give a name to the bank (for example “brass”) then to the preset (“brass1”). You can also simply add a new preset in the current “Pro5” bank and sub-bank “Brass”. Then just rename your preset using the option “New Preset”.

6.2 Pad sound with the Frequency Modulation using the Prophet 5

Let's take the "brass1" sound that we just made to make the next preset.

We're going to see how to surpass the programming limitations of the classic Prophet 5 (those with which we just created the "brass1" preset) by using the "Poly modulation" section and the LFO.

This preset consists of:

- 2 oscillators (the second being in low frequencies)
- The mixer
- The low pass resonating filter
- The ADSR envelope connected to the filter
- The AR envelope connected to the amplifier
- The LFO connected to the pulse width of the square wave form of oscillator A.
- The frequency of oscillator B modulating the cutoff frequency
- The chorus effect

Proceed to the mixer located between the oscillators and the filter sections, and lower the volume of oscillator B completely by turning the level knob fully anti-clockwise. Oscillator B will be used in low frequency mode to modulate the cutoff frequency of the filter, and we do not want it to produce a sound through the audio mixer.



Lower the volume of oscillator B on the mixer

On oscillator A, choose the square wave form.

Choose the same form for oscillator B

Click on the "LO FREQ" button in order to place oscillator B in the low frequency position.



Click on the "LO FREQ" button

Now, on the filter, increase the cut off frequency to about 600.00. The sound becomes brighter.



Increase the cut off frequency

Increase the resonance of the same filter (choose a value around 3.50). This will cause the filter to resonate almost to the point of auto-oscillation.



Increase the resonance filter

In the “Poly Mod” module found to the left of the interface of the Prophet 5, modulate the filter's cut off frequency through the frequency of oscillator B. To do this, click on the button “FILT”. Increase the “OSC B” knob (to around .30) in order to set the level of this modulation. The cut off frequency of the filter adjusts in a cyclical manner due to the frequency of oscillator B.



Settings of the Poly Mod

You'll notice that the oscillation frequency varies following the note played. This is due to the fact the frequency of oscillator B follows the keyboard. The lower the note played the slower the oscillation (and inversely, the sharper the note the faster the oscillation). If you do not wish to have this variation, deactivate the keyboard following by clicking on the button “KBD”.



Deactivate the keyboard following

Apply a modulation to the square width of oscillator A through the LFO. To do this, click on the PWA button found in the “WHEEL-MOD” section in the bottom left hand side of the interface (just above the virtual keyboard).



Activate the PWA button

Choose a triangular waveform on the LFO

Increase the virtual modulation wheel of the Prophet 5 to set the modulation rate (around 0.50).

Set the speed of the modulation with the “RATE” knob of the LFO. Choose a value around 3.00Hz.



LFO Settings

If you wish to give space to your sound, add a chorus effect. To do turn on the chorus effect with the switch.



The Chorus effect

Choose the "EFFECTS" button to edit the chorus

Set the "Dry/Wet" knob of the chorus in order to balance the "Dry" sound and the return effect.



Set the "Dry/Wet" knob of the chorus

Next turn the "Rate" knob of the chorus to set the speed of the oscillations.

Finally, set the "Depth" of the chorus.

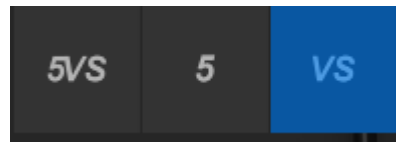
You have the choice between three types of chorus: Chorus 1, 2, and 3. These three variations give the chorus a range between the simplest – and less demanding on your CPU – to the most pronounced for stronger detuning effects.

You can now save your preset so that you can use it later.

6.3 Basic Preset with the Prophet VS (Sweet Pad)

In this example you will discover the basics of sound programming on the Prophet VS. This section is thus an initiation to wave-table synthesis – the objective being to create a pad sound using the different timbres of the 4 oscillators.

Open the Prophet VS interface by clicking on the "VS" button found in the utility bar.



Open the Prophet VS interface

Choose the Preset “Pro VS 4 Osc” from the bank “Templates” as a starting point.

This Preset constitutes:

- 4 oscillators using the No 33 wave form -saw tooth
- 1 low pass filter
- 1 amplifier
- The envelope associated to the filter
- The envelope associated to the amplifier
- The mix joystick of the oscillator volume

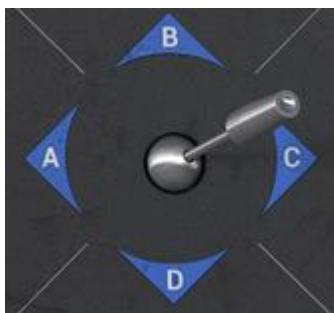
To start, we're going to select a different waveform for each oscillator.

Choose wave form No 35 “VS1” for oscillator A. Choose wave form n°39 “VS 38” for oscillator B and n°63 for oscillator C. Finally, keep the wave form n° 33 “Saw” for oscillator D. You can briefly review the different wave forms to give yourself an idea of the differences between the sounds they produce.



Wave form choices of the four oscillators

In order to better hear the difference between the timbres produced, you can move the joystick between points A, B, C, and D. This will give you a good perception of the richness of wave table synthesis.



Move the joystick between points A, B, C, and D

Lower the value of the filter's cutoff frequency. Place it in the central position at around "45".



Lower the value of the filter's cutoff frequency to 45

Most of the values and envelope points of the Prophet VS range from 0 to 99. A few of the values are "doubled" with the values indicated in Hertz (frequency parameters) or in milliseconds (time parameters of the envelope).

Increase the filter resonance to about 70 in order to add a bit of brightness to the sound.



The filter settings

Let's look at the settings of the envelopes. These settings will bring the sound of your preset to life by modifying the cutoff frequency of the filter and the volume of the amplifier.

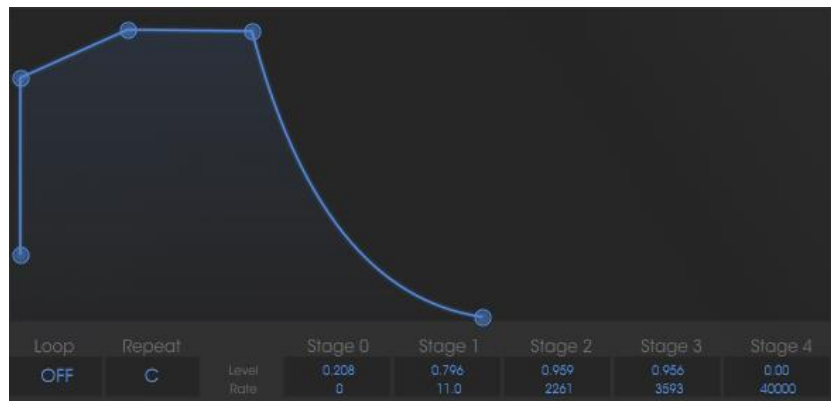
To edit the filter envelope, click on the Filter envelope tab in the screen display.



Click on the menu "ENVELOPE" / "FILTER"

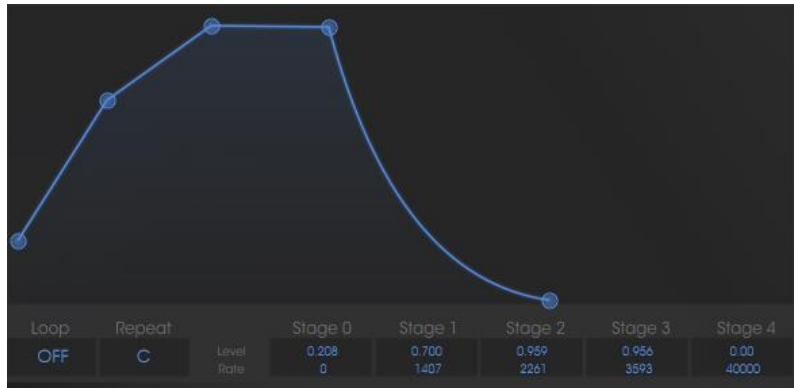
Editing the filter envelope:

Increase the LEVEL of point "0" to a value around 22; this will be the initial LEVEL setting.



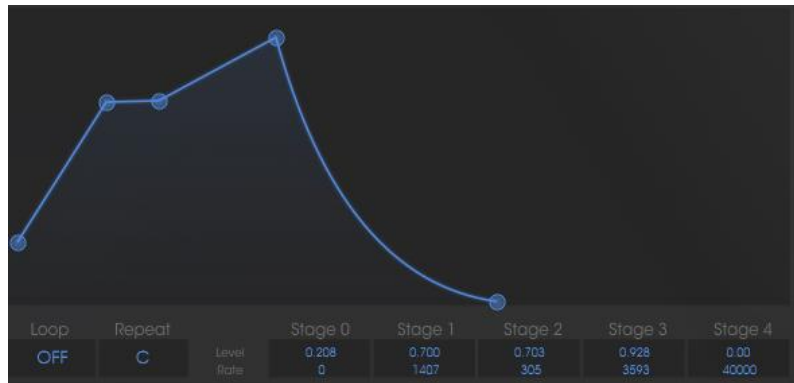
Increase the LEVEL of point "0"

Adjust the settings associated to point "1": Increase the LEVEL to about 70 and set the RATE to about 1400ms. The cutoff frequency will softly evolve creating a brighter sound after three seconds. The phase between points "0" and "1" corresponds to the ATTACK of the ADSR envelope.



Adjust the settings associated to point "1"

Set point "2" by increasing the LEVEL to a value around 70 and the RATE to about 300ms. This phase corresponds to the DECAY period of the ADSR envelope.



Set point "2"

Set point "3" by increasing the LEVEL to 70 and the RATE to about 3000ms. Points 2 and 3 correspond to the level of stabilization of the cutoff frequency during the time a note is held. This is called the SUSTAIN of the ADSR envelop.



Set point "3"

Finally, adjust the settings to point "4": place the LEVEL to 0 and the RATE to about 3000ms. The cutoff frequency is going to fall progressively to about 0 at the note release. The phase between points "3" and "4" is called the RELEASE on the ADSR envelope.



Set point "4"

Now, let's work with the amplitude envelope:



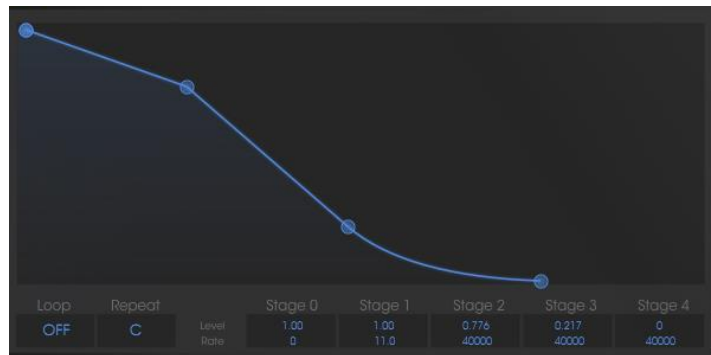
Click on the Amplifier Envelope tab

Point "0" must be set at the maximum initial level (Value = 1) to have a maximum volume at the beginning of the note.



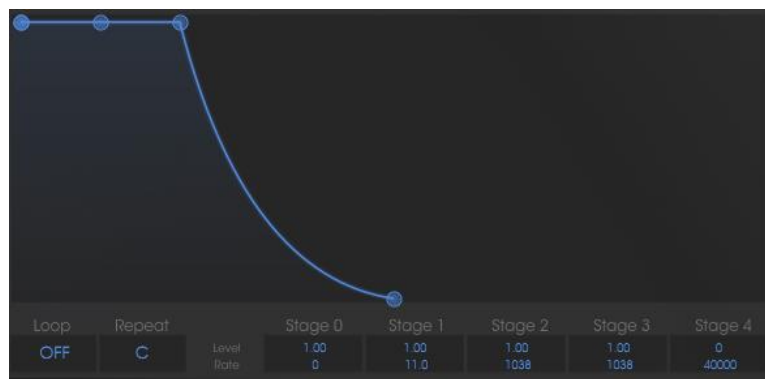
Set the point "0"

Set point "1" at the maximum level and a RATE as close as possible to 0. The attack of the note will be very short.



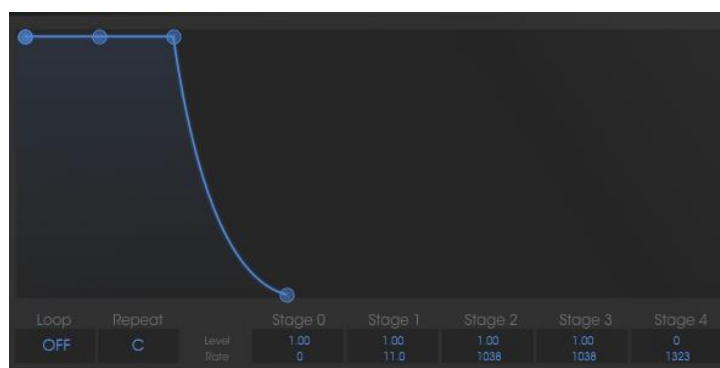
Set point "1"

Define the values associated to points 2 and 3: level = 1 and rate = 1000 ms. This corresponds to a maximum Sustain level for the duration of the note.



Define the values associated to points 2 and 3

Finally, adjust the setting of point 4: the LEVEL remains at the 0 value. Set the RATE to about 1300ms. The sound volume is going to fall progressively at the note release.



Adjust the setting of point 4

To give more stereo space to your sound, it is possible to set a panoramic value to each of the notes played.

Click on the "VOICE" panel (found to the right the "AMPLIFIER" title) to select the polyphonic voice 1. Set the "PAN" knob on 0. This voice will be placed to the extreme left.



The settings of the voice 1

Choose the second voice and set it to 99. This will be placed to the extreme right.



The settings of the voice 2

Set the other three voices at your convenience by repeating the same steps.

By doing this, your sound will have a lot of stereo space without using as many effects and save you some CPU charge!

6.4 Preset using the modulation matrix and the dynamic mixing

The following example will permit you to familiarize yourself with using the modulation matrix and mixing the 4 oscillators. You will create a powerful monophonic lead preset with a kind of 80's spirit.

Choose the preset "Pro VS 4 Osc" from the bank "Templates" as the starting point of your new sound.

Choose new waveforms for the four oscillators:

Choose wave form number 39 ("VS38") for oscillator A, wave form 40 (Junk 19) for B, wave form 36 ("VS25") for C, and wave form 34 ("Square") for oscillator D.

Set the frequency knob of oscillator A on "+12 semi-tons". This oscillator will play an octave higher than the other 3.

Leave the cutoff frequency on its maximum position and the sound will be brighter.

Now we will review the envelopes:

We are going to modify point 4 of the FILTER and AMPLITUDE envelopes without touching the other four points.

For the filter envelope, choose a RATE setting around 5000ms. The filter cutoff frequency will cease really softly at the release of the note.

For the amplitude envelope, choose a RATE around 2500ms. This will be the "release" period.

Mixing the four oscillators happens in two steps:

Choose the position of the 5 points constituting the path the joystick will follow: from 0 –the beginning of the note – to 4 – final point of the movement and release of the note.

Setting of the four movement times between the different points of the mixer envelope.

6.4.1 Choose the placement of the five points defining the path of the joystick

To edit the 5 points of the mixer as well as its envelope, click on the button "ENVELOPE" found on the LCD screen, then on the "MIXER" option.

When you begin, the five points will be in the diamond shaped space where the mixing takes place: click on the central point and move it in the position desired. You can view the mixed values of the four oscillators in the boxes corresponding to the four angles: A, B, C and D (which are found to the bottom right of the screen).

In this example, we suggest the following positions:

- Point 0 (Osc A= 21%, Osc B= 55%, Osc C= 17%, Osc D= 6%)
- Point 1 (Osc A= 50%, Osc B= 30%, Osc C= 7%, Osc D= 12%)
- Point 2 (Osc A= 9%, Osc B= 43%, Osc C= 38%, Osc D= 8%)
- Point 3 (Osc A= 12%, Osc B= 16%, Osc C= 39%, Osc D= 30%)
- Point 4 (Osc A= 23%, Osc B= 28%, Osc C= 25%, Osc D= 22%)



Positioning of the four points of the mixer

6.4.2 Mixer envelope

This envelope is completely new since it only shows the duration setting of each phase of the mix.

Each of the four boxes found at the right of the joystick is used to set the rate at which the joystick will go from one point to another in the mix:

- From 0 to 1 (Knob 1)
- From 1 to 2 (Knob 2)
- From 2 to 3 (Knob 3)
- From 3 to 4 (Knob 4)

Setting the rates:

- For the first, choose 1000ms.
- For the second, 500ms
- For the third, 800ms
- For the fourth, 1000ms

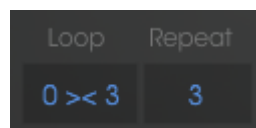
In order to hear the effect that the envelope has on the mix when you play a note, click on the ON button found in the envelope.

Now, we will define the LOOP mode of the mix envelope.

The LOOP function applies a loop between 2 points of the envelope either repeating the loop in one direction (2 to 3) or in both directions (2 to 3 then 3 to 2). This option allows you to create a cyclical variation of the mix between the oscillators a bit like an LFO would do it.

0 > 3		0 >< 3
1 > 3	Or	1 >< 3
2 > 3		2 >< 3

In this example, select the mode "0 >< 3" in the LOOP tab found in the LCD screen. Repeat the loop by clicking in the REPEAT tab and choosing the C option (infinite loop)

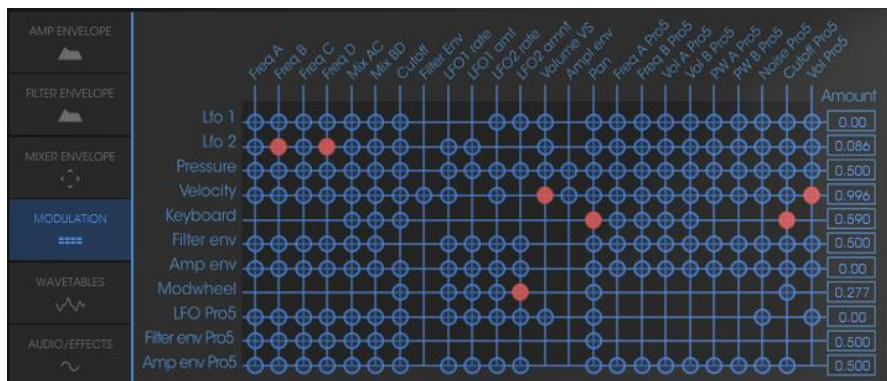


The loop settings

6.4.3 Modulation Matrix

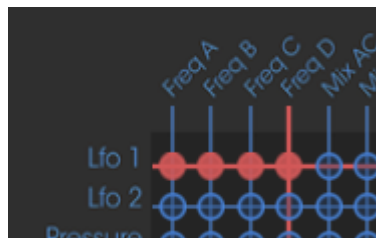
In this section we will see how to use the modulation matrix. It is with this matrix that the different modulations to enrich your sound can be programmed.

Click on the modulation tab in the screen display to open the matrix.



Open the Modulation Matrix

Choose the source of the LFO1 on the A, B, C and D oscillator frequencies by clicking on the points forming the intersection between the source ("LFO1") and the four destinations ("FREQ A, FREQ B, FREQ C and FREQ D"). An orange point appears to confirm the connection.



Select the Modulation Points

Set the modulation rate in the AMOUNT panel corresponding to this first horizontal line. Click in the panel and scroll the mouse up for the minimum value (0).



Set the modulation rate in the AMOUNT panel

Connect the modulation wheel (source "MOD WHEEL") to the modulation rate of the LFO1 (destination "LFO1 AMNT"). This allows you to make the LFO activity appear progressively by increasing the modulation wheel. Set the rate of this modulation at 50.



The modulation wheel settings

The keyboard following (source "KEYBD") is already connected to the FILTER cutoff frequency. Thus, the sound will become brighter and brighter, eventually making it sharp. Decrease the cutoff frequency to half of the knob value.

6.4.4 Playing mode in Unison

To give more intensity to your sound, we will apply the monophonic playing mode "UNISON". This allows you to play all the polyphonic voices on a single note.

You will have, for example, a sound having up to 20 oscillators "stacked" on a single note, if you use 5 voice polyphony!

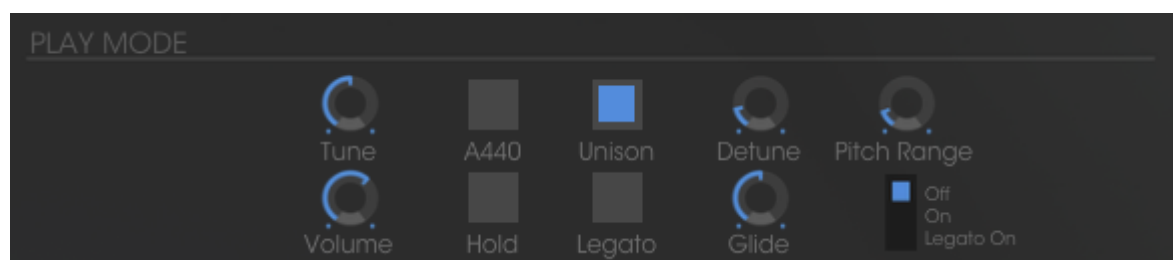
Display the window of the "PLAY MODE" by clicking on the Audio / Effect tab located on the left of the LCD screen.



Open Play mode

Click on the "UNISON" button to activate this mode (turns blue upon activation)

Detune the different voices to give "fatness" to your sound. This manipulation will produce an effect similar to that of a chorus! For this, turn the "V. DETUNE" knob to 80.



Settings of Unison Mode

At this point, you can also give stereo space to this preset by placing each of the polyphonic voices to the right and then to the left, in an alternating pattern.

Click on the "VOICE" panel (found to the right of the name "AMPLIFIER") to select the polyphonic voice 1. Set the "PAN" knob on 0. This voice will be placed to the extreme left.

Choose the second voice and set it at 99. This will be placed to the extreme right.

Set the other voices as you like them by doing the same thing.

By doing this, you will have a lot of stereo space without using as much effect!

6.5 Preset using the Prophet 5 and the Prophet VS

The goal of this last section is to familiarize yourself with sound creation using both the Prophet 5 and Prophet VS in Hybrid mode.

Take 1.2 for example (Pad sound with FM on the Prophet 5). You will use this as a base for the following preset.

Open the "Hybrid" interface to have both synthesizers one on top of the other.



Open the "Hybrid" interface

6.5.1 Audio Matrix

The audio matrix activates or deactivates the audio module outputs of the two synthesizers (oscillators, filters, noise of the Prophet 5...).

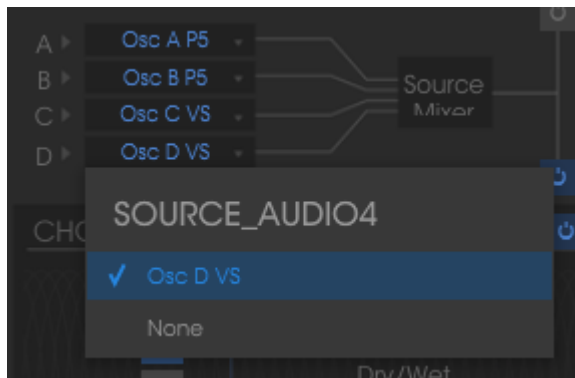
It is on this page that you can connect the filters of the both Prophets either in a series or in parallel. In doing so, you will discover the large difference in sound between the two.

For this example, you will connect the audio paths of the two filters in a series. To do this, click on the switch found at the interception of the mixer source output of the two oscillators ("SOURCE MIXER") and of the VS filter ("FILTER VS"). The switch will release and become blue to confirm the connection.



Connection of the two filters

Activate oscillators C and D of the Prophet VS in sources C and D of the mixer. Click in the corresponding panels and choose "OSC C VS" for the C source and "OSC D VS" for source D.



Activate oscillators C and D of the Prophet VS in the mixer

Notice! It is not possible to connect more than 4 oscillators simultaneously. For example, you can only use 2 oscillators of the Prophet VS if the 2 oscillators of the Prophet 5 are already active.

Play a note on your keyboard; you can hear the two synthesizers simultaneously.

6.5.2 Editing sound on the Prophet VS

The sound of the Prophet 5 remains unchanged on this preset so we will go on directly to editing the Prophet VS:

Begin by changing the type of filter. Choose the BAND PASS to better complement the low pass filter of the Prophet 5.

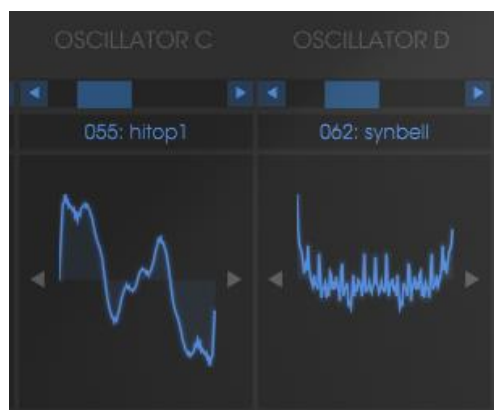
Lightly decrease the cutoff frequency of the filter to about 35 in order to have a less aggressive sound.

Completely decrease the resonance (turn the knob to the extreme left - 0)



Filter Settings

Change the wave form of oscillator C ("055 hitop1") and D ("062 synbell 31").



Wave forms of oscillator C and D

Editing the FILTER and the AMPLIFIER:

To edit the filter envelope, click on the "EDIT" button found in the graphic representation of the envelope.

Point "0" must be set on the maximum initial level (value = 1) to have the maximum value at the beginning of the note.

Set Point "1" at a LEVEL of 1 and a RATE of 0. The attack of this note will be really short on the filter.

Set point "2" at a LEVEL around 0.48 and a RATE relatively short (144). The cutoff frequency falls rapidly toward the intermediate point.

Set point "3" with a LEVEL a bit lower (about 0.30) and a RATE a bit longer (479). The cutoff frequency falls again towards the intermediate point before coming to the "SUSTAIN" phase.

Finally, set point “4” with a level slightly higher than before (0.63) and a RATE a bit longer (600). The cutoff frequency will increase slowly at the release of the note.



Settings of the Filter envelope

Now we'll set the amplifier envelope:

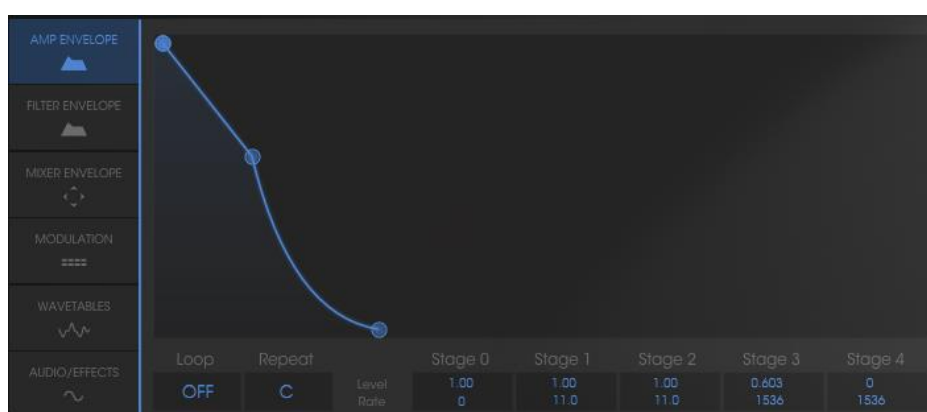
Point “0” must be set on the maximum initial level (value = 1) to have the maximum value at the beginning of the note.

Set Point “1” at a LEVEL of 1 and a RATE of 0. The attack of this note will be really short on the filter.

Make the same adjustments to point “2” as you did to point “1”.

The settings of point “3” will define both the Decay phase and the sustain: set the LEVEL to around 0.60 and the fall time to about 1500 ms (which is relatively long).

Finally, set point “4”: the LEVEL will remain at 0 and you will set the RATE to about 1500ms. The sound volume will fall progressively at the release of the note.



Settings of the Amplifier envelope

At this point, the Prophet VS will load the attack of your sound, with a timbre close to the sound of a sitar. The “body” of the sound is composed principally of the Prophet 5 which carries all the warmth and roundness of analog.

You now have an example of what these two synthesizers can do when combined together!

If you wish to give space to your sound, add a delay effect. To do this, click on the “DELAY” button found in the utility bar to activate it and open the “EFFECTS” by clicking on the button found in the LCD screen.

The Delay gives a type of stereo echo which adds space to your sound.

It has independent settings for the speed and the number of repetitions on the right and left side. It is thus possible to create a large range of rhythmic combinations between the repetitions. The speed of the Delay can also be synchronized with the MIDI tempo.

Open the Audio / Effect window in the screen display to edit the delay.



Choose the “EFFECTS” option

Adjust the “Dry/Wet” setting of the Delay in order to balance the noise sound of the bass and the delay.

Next, turn the 2 “Speed” knobs to set the speed of the repetitions on the right (Time Right) and left (Time Left).

It is also possible to set the number of repetitions for each side (“Feedb. Right” and “Feedb. Left”).



Delay Effect

These diverse sonic examples, as you may have noticed, present very different levels of difficulty. We hope that they permit you to discover a portion of the possibilities that the Prophet V2V offer. Don't hesitate to experiment on your own; it is in this way that you will make the most progression and that you will create the most original of sounds.

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