

USER'S MANUAL

prophet~v



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PROGRAMMING:

Robert Bocquier (v2.0)
Thomas Diligent (v 2.5)
Emilie de Fouchécour (v2.0)
Vincent Travaglini (v2.0)
Fabrice Bourgeois
Jean-Michel Blanchet
Nicolas Bronnec
Gavin Burke
Xavier Oudin

MANUAL:

Jean-Michel Blanchet (French version)
Antoine Back (French version)
Tomoya Fukuchi (Japanese version)
Houston Haynes (English version)

DESIGN:

Yannick Bonnefoy (Beautifulscreen)
Mickael Acoca

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30, Chemin du Vieux Chêne
38240 Meylan
FRANCE
<http://www.arturia.com>

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November 2014 edition

Thank you for purchasing the ARTURIA's PROPHET-V!

In this package you will find:

- This paper manual for the Prophet-
- One CD-ROM containing the Prophet-V installer for MAC OSX and Windows XP/Vista/7
- The Registration Card

Carefully store your card!

In order to be able to use the software, you have to register your product. By registering, you identify yourself as the legitimate owner and will be sure to receive the latest news and updates for your product. After registration, you will receive a user ID and password in order to access a protected area on our site. It also puts you on our user notification list, so that you can be the first to know when there are updates or new product offers.

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1 Introduction

1.1 Prophet History

Prophet 5

"In 1978 Sequential Circuits consisted of Dave Smith, former Bob Moog's company 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 1971 Bob Moog's monosynths in one box" the Prophet 5 literally stole the show as the first commercially available and viable polyphonic synthesizer. This comparison to the 1971 reference monosynth 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.

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.

1.2 TAE®

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

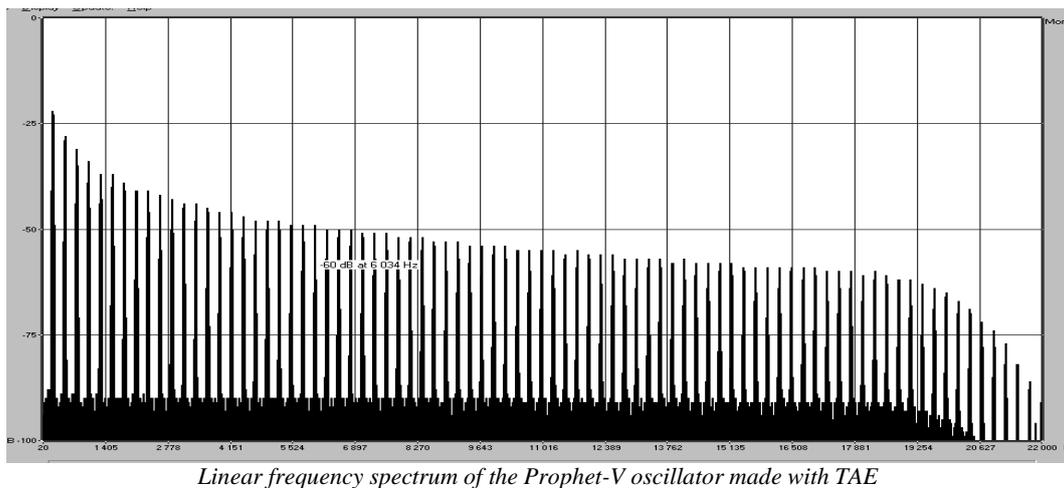
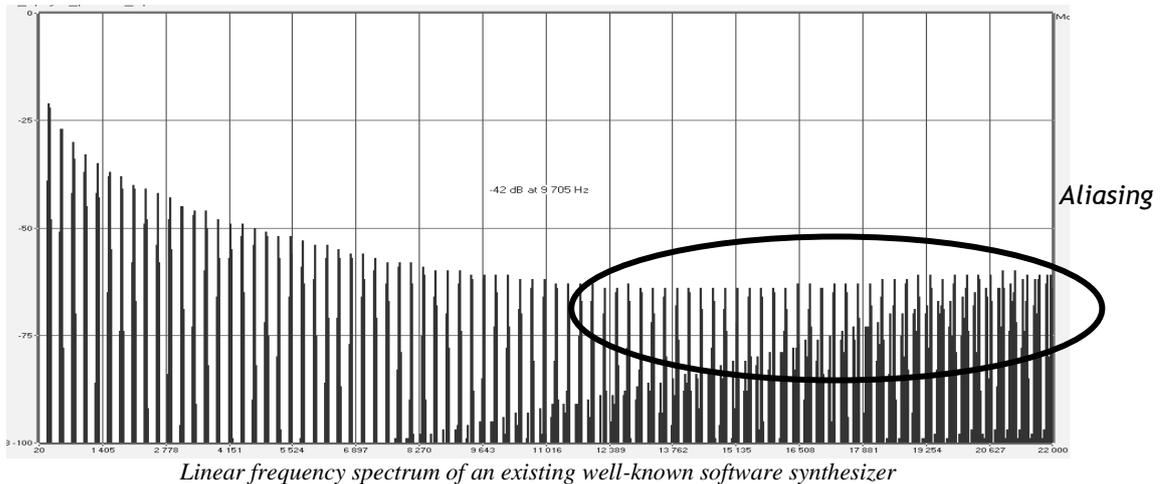
When implemented in software code, TAE®'s algorithms guarantee authentic emulation of hardware specifications. This is why the Prophet-V offers an unparalleled quality of sound.

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

1.2.1 Aliasing-free oscillators

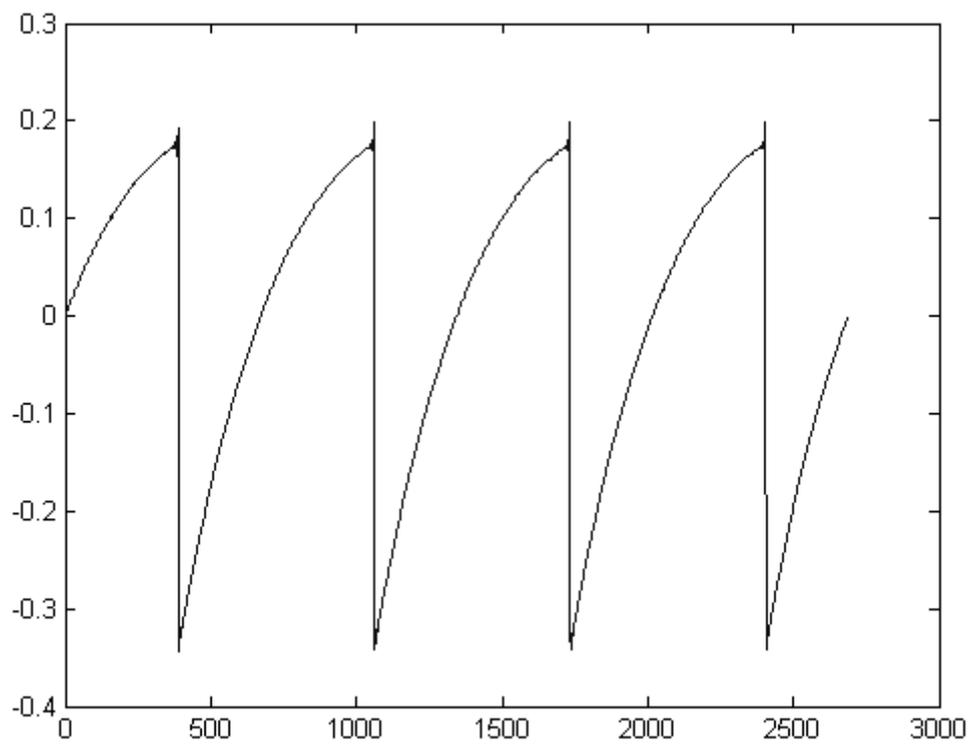
Standard digital synthesizers produce aliasing in high frequencies, and also when using Pulse Width Modulation or FM.

TAE® allows the production of totally aliasing-free oscillators in all contexts (PWM, FM...), and at no extra CPU cost.

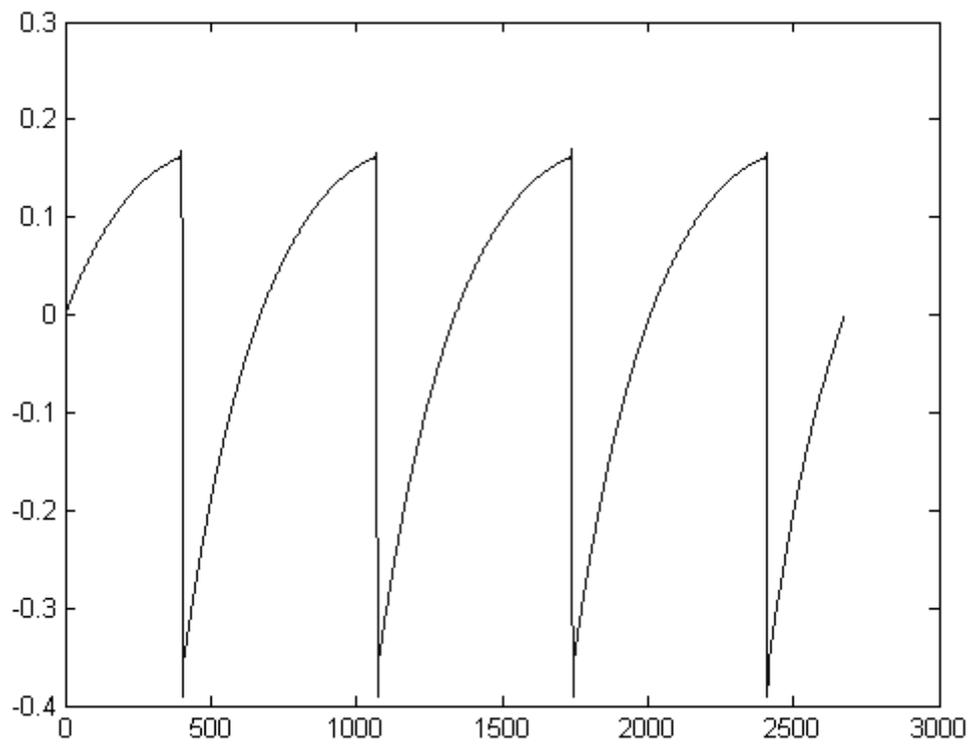


1.2.2 A better reproduction of analog oscillator waveforms

The waveforms produced by the oscillators in analog synthesizers are marked by the presence of a capacitor in the circuits. The discharge of the capacitor results in a light bend in the original waveform (notably for saw tooth, triangular and square waveforms). TAE® allows the reproduction of this capacitor discharge. This is the analysis of a waveform from the original Prophet 5, and that of the Prophet-. They are both equally deformed by the Prophet-V low-pass and high-pass filtering.



Temporal representation of a “saw tooth” waveform of the original Prophet 5



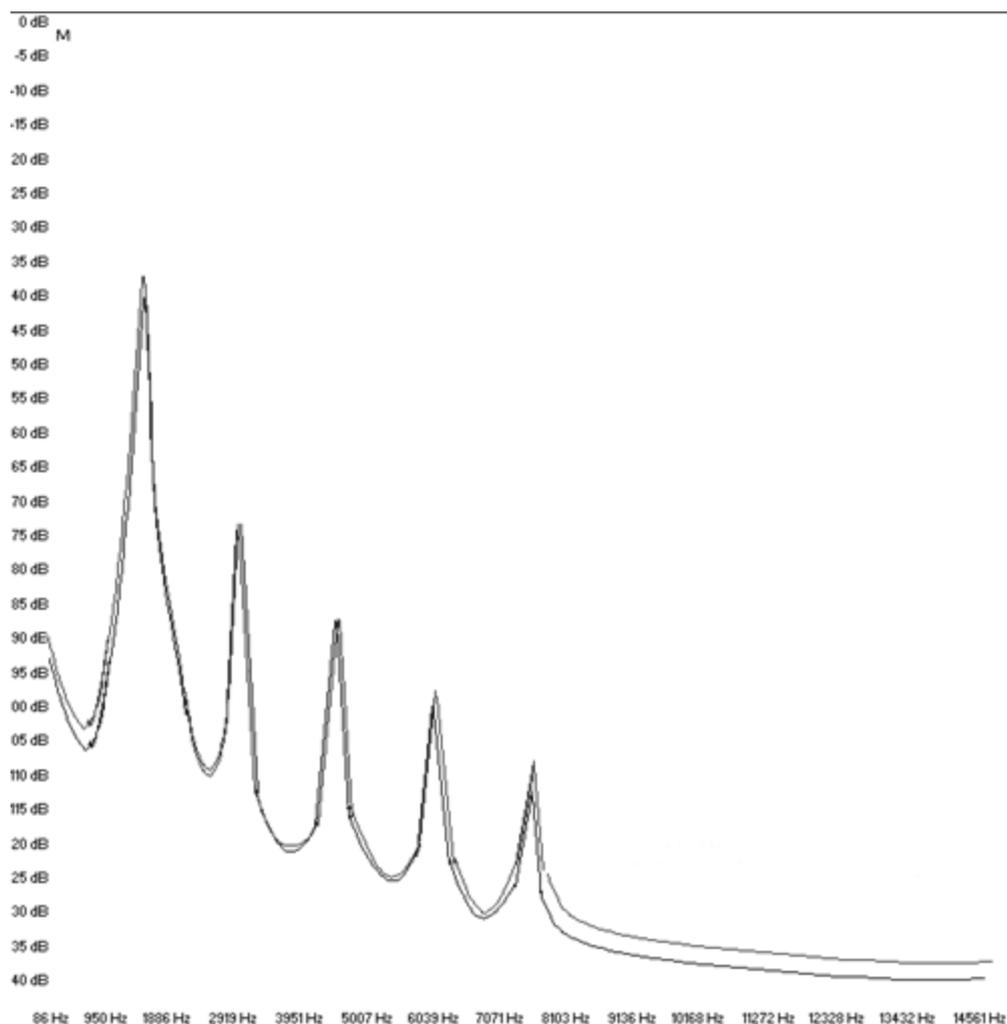
Temporal representation of a Prophet-V “saw tooth” waveform reproduced by TAE

What's more, the original analog oscillators were unstable. In fact, their waveform varied 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 find one of the characteristics that contributed to the typical sound of vintage synthesizers.

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

1.2.3 Direct Filter Circuit Modeling

Due to advances in computer processing power, the Prophet-V can now employ direct filter modeling techniques to achieve unprecedented accuracy in the emulation of the original's analog 4 pole low pass filter. By modeling the operation of the individual hardware components of the filter circuit, the warm nuances synonymous with the original's analog sounds are recreated. This graph is a frequency domain plot as just a single example of direct circuit modeling in action; it shows the generation of harmonics at multiples of the resonant frequency when the filter is in self oscillation mode, for both the virtual (blue) and original (red). These harmonics are characteristic of the Prophet 5's filter and are due to the non-linear behavior inherent in its analog circuitry. The harmonics generated add to the richness and warmth of the sound produced by the filter. As a result of the direct recreation of the analog circuitry in the Prophet-V, the same characteristics of the sound are present, thus giving the user a truly analog sound.



Comparison of Harmonics generated by the filter circuits of the Prophet-V and Prophet 5 when in self oscillation

This chapter will familiarize you with the general principles of the Prophet-V and how it works. In this chapter you will find basic examples of the different interfaces of the synthesizer meant for first time users. A precise and detailed description of all the parameters and controllers visible on the screen will be given in the following chapters.

Chapter 7, “A Few Elements of Sound Design,” is particularly useful for those who have not yet worked with a subtractive synthesizer and who wish to acquire a basic

2 Activation & first start

Prophet V2 works on computers equipped with Windows 7 or 8 and Mac OS X 10.7 or later. You can use the stand-alone version or use **Prophet V2** as an Audio Units, AAX, VST2 or VST3 instrument.



2.1 Register & Activate

Once the Prophet V2 has been installed, the next step is to register the software.

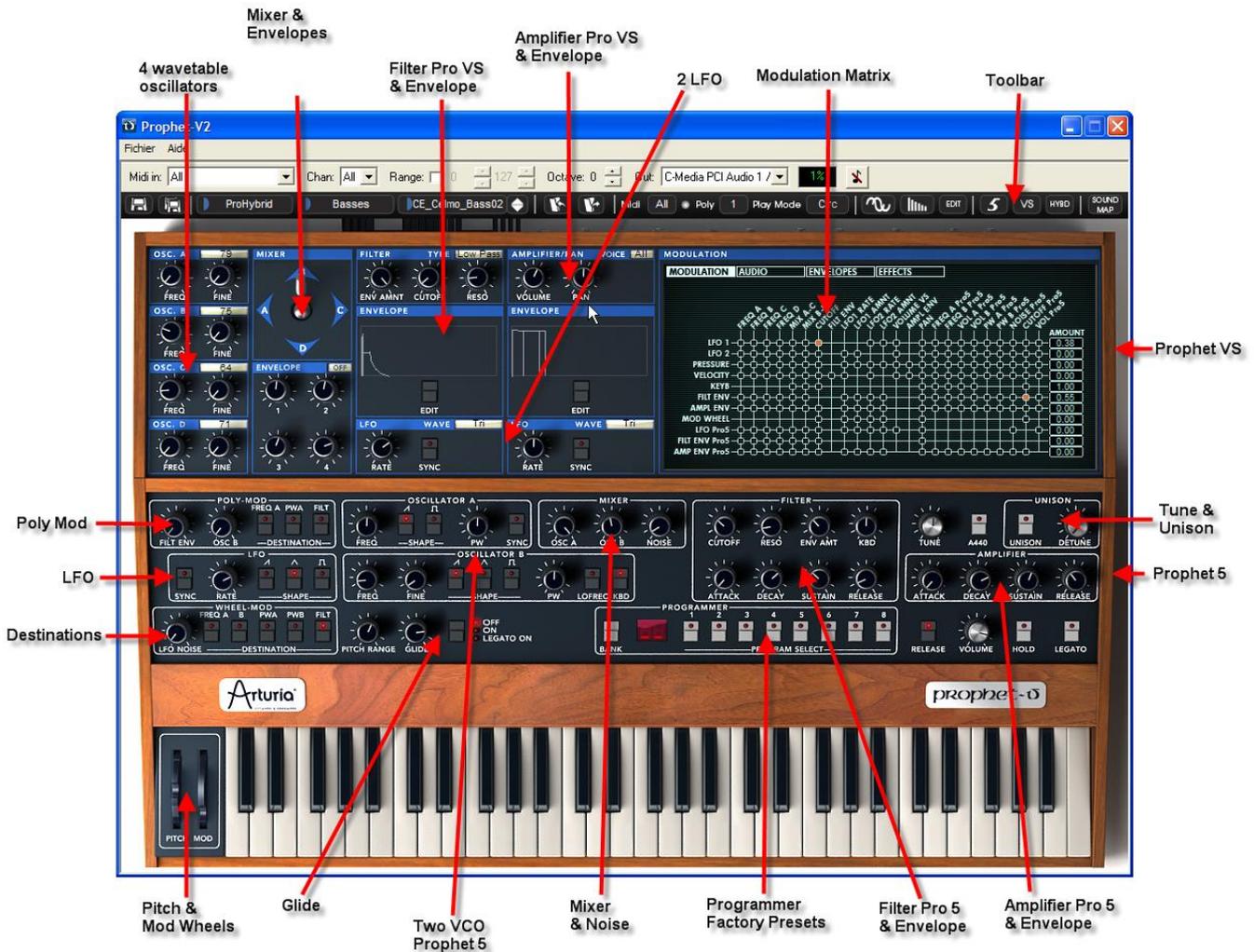
The registration process will require you to enter the serial number and the unlock code you received with the product.

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 e-mail address during the registration process.

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

3 Quick Start



Complete View of the Prophet-V

3.1 Using presets

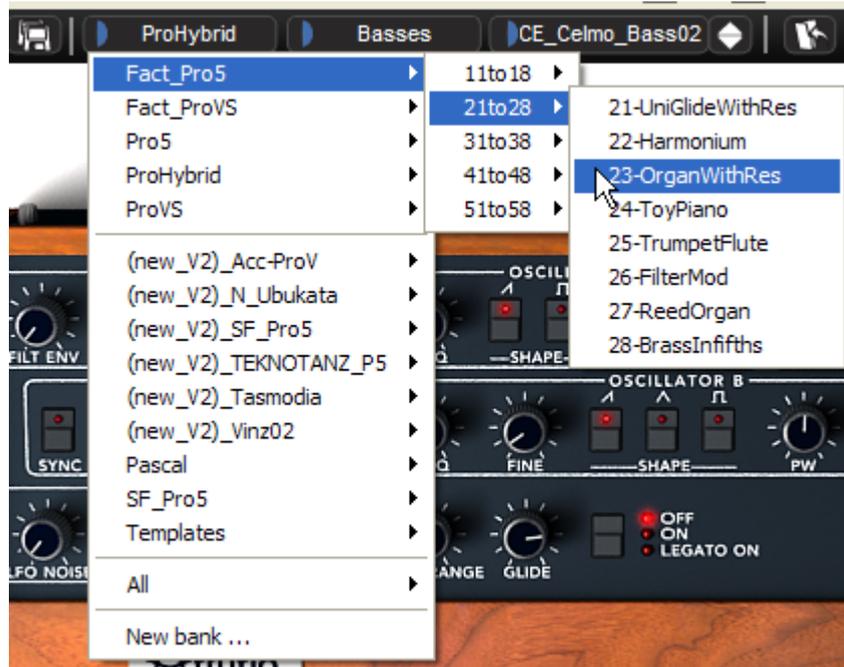
3.1.1 Selecting presets

Like on the original the Prophet 5 and the Prophet VS, the presets allow you to save all the synthesis parameters as well as the player settings ("Unison" mode on the Prophet 5 or Midi configuration on the Prophet VS).

In the Prophet-V, a preset contains all the parameter settings of the synthesizer and various real-time controllers (ex: velocity, aftertouch, pitch-bend) as well as the effects (delay, chorus) necessary to reproduce the sound.

To become more familiar with the various sounds offered in the Prophet-V, we are going to select the preset "23-OrganWithRes" in the bank "Fact_Pro5/ 21to28".

- ▶ To do this, click on the leftmost selection screen button (this screen represents the name of the bank being used). By clicking, you will see the drop down menu indicating the available banks appear. Choose the bank "Fact_Pro5" (the name of the preset is checked).
- ▶ When the menu is open, the sub menus are accessible. These submenus will allow you to access the "SUB BANK" and the "PRESETS" of a sound designer in a single click.
- ▶ Choose the "SUB BANK" "21to28" then select "23-OrganWithRes" among the "PRESETS". This sound is a very simple organ like played with the Prophet 5 emulation.



Select the preset

The Prophet-V is delivered with 400 presets that allow you to become acquainted with the sounds of the synthesizer. A bank named "Templates" offers a selection of presets giving the possibility to use a template to begin programming a sound. (The sound "1_Osc", for example, is presented with: an oscillator connected to the low pass filter, this signal then being routed to the VCA).

It is also possible to view all the presets corresponding to a type of sub-bank by choosing the "ALL" option in the bank. For example, to see the ensemble of Bass presets, click "ALL" in the selection of the bank then on "Pads".

3.1.2 Editing presets

To edit a preset, we are going to start really simply.

- ▶ Edit the brightness of the sound with a "CUTOFF" knob of the filter. To do this, turn the knob to the right or the left. The timbre of the sound will become more or less bright. Change the knob to your liking.



Change the brightness of the sound

- ▶ In the same way, you can increase the range of the oscillator A by an octave by turning "Frequency" knob to the right. Choose the +12 value.



Setting the Range of the oscillator ("Frequency")

By making just a few modifications, you have already edited the preset. You will now be able to save the sound that you just created.

- ▶ To choose another destination for the sound, simply click the "Save As" icon then choose its location. For example, select "new bank" among the choices. New bank and sub bank locations are immediately created along with the new preset. The names "new bank", "new sub bank" and "new presets" appear in their perspective places.
- ▶ Click on each of the names to rename them as you wish in the three sections.



Save a preset

- ▶ To save a “User” preset, click on the “Save” icon in the tools bar: the new settings will be saved in the preset currently selected without changing the name (if the preset being edited is part of the factory presets, the factory settings will not be deleted).

Attention! It is important to realize that changing the name of a preset does not create a new one! Only the name of the preset being edited will be modified.

3.2 Three Interfaces in the Prophet-V

The Prophet-V 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.

3.3 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.

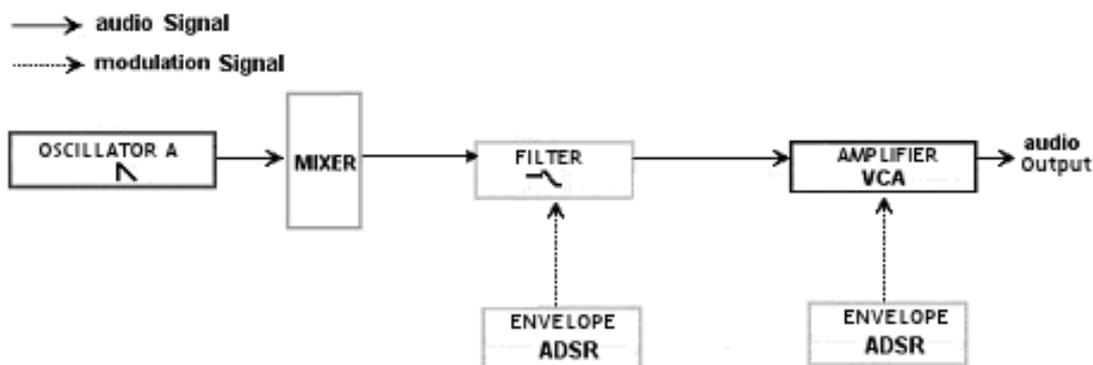


Prophet 5 synthesis Parameters

Here we will briefly see how to create a polyphonic sound with the Prophet 5:

- ▶ In order to understand the principal programming of the Prophet-V, we will start with a very simple sound. Select the preset "1_Osc" in the sub bank "Template/Temp_Synth". The synthesis structure of the sound is relatively simple: the square wave form of the oscillator 1 is active and the signal is directed through the low pass filter while passing by an intermediate mixer, then in the output of the amplifier. An ADSR envelope modulates the cut-off frequency of the filter and a second ADSR envelope modulates the volume of the amplifier.

Finally, the following synopsis resumes our example sound creation:



The sound path of a preset "1_Osc"

Begin by lowering the cut frequency of the low pass filter. This will slowly lower the sound.

- ▶ For this, set the "Cutoff" knob. (For an exact setting, right-click with the mouse in PC or shift+click in Mac)
- ▶ Note that the cut-off frequency is modulated by an ADSR envelope (attack, decay, sustain, and release).



Lower the filter cut-off frequency

- ▶ To better hear the effect that the ADSR envelope has on the cut frequency of the filter, increase the resonance value. This will amplify the cut-off point of the filtering effect and the sound will begin to whistle, also known as self-oscillation, and is an important feature in analog filter emulation.



Increase the resonance value

- ▶ Change the attack time of this envelope so that the brightness of the sound will increase as you press each note.



Decrease the attack width

- ▶ In the same way, change the decay time value. This too will diminish rather rapidly as you hold the note on the keyboard.



The “decay time” parameter of the filter envelope

Now, let's test a short modification in the second “ADSR” envelope editing the amplification.

- ▶ Increase the attack time of this envelope so that the sound volume increases progressively.



Increase the Attack time of the Amplifier Envelope

- ▶ Don't forget to save your work.

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

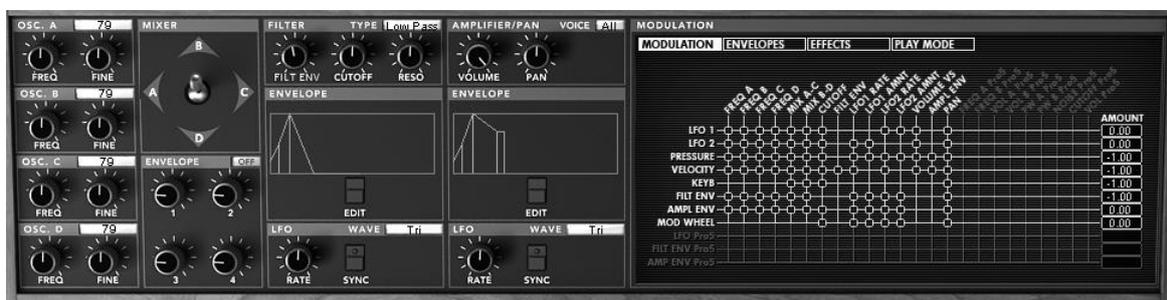
With the “Prophet VS” section, you have access to a wave-table synthesizer which offers several diverse functions extending the playing and synthesis possibilities. The functions in this section are all identical to the mythic synthesizer of the 80's.

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 wave-form 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 wave-forms
- 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

3.3.2 Quickly create evolving pad sounds with the Prophet VS:

- ▶ Click on the "ProVS" icon to load the Prophet VS interface



Click on the Pro.VS icon

- ▶ Begin by choosing a different wave-form for each of the 4 oscillators. To do this, click on the selection screen found on each of the oscillators then scroll the mouse up or down to choose a wave form. You can also scroll down more precisely by right clicking with the mouse (or "shift/click" on Mac)



Choosing a different wave-form

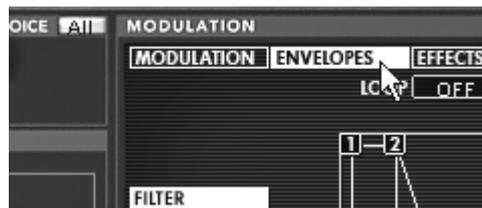
- ▶ Once the wave-forms are chosen, progressively move the joystick between four points (A, B, C, and D). You can hear the timbre changes in the sound in real-time.



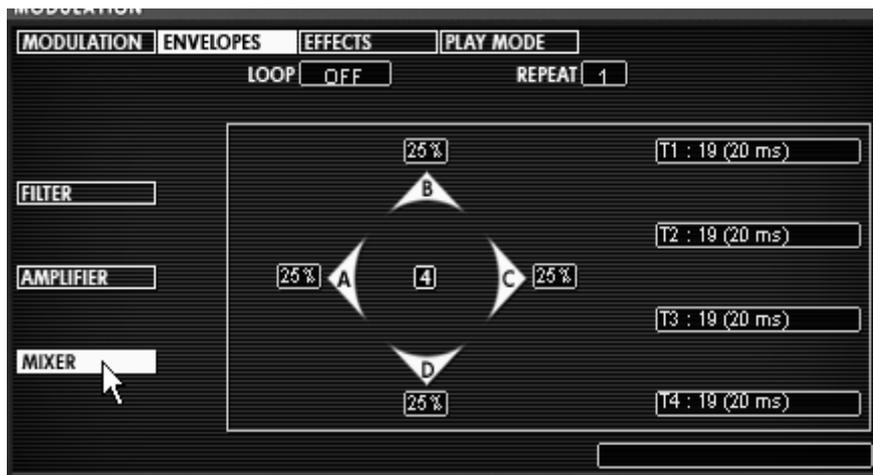
Move the joystick

Let's see how to apply an envelope to automate the movements of the joystick.

- ▶ Start by clicking on the "Envelopes" option in the LCD screen found on the right-hand side of the Prophet VS. Then, click on the "MIXER" option to open the editing interface of the mixer and its envelope.



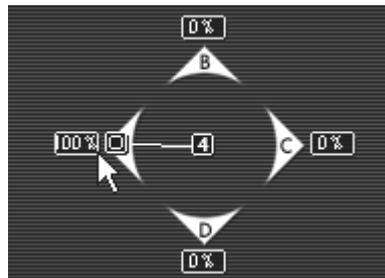
Click on the "Envelopes" option



Click on the "MIXER" option

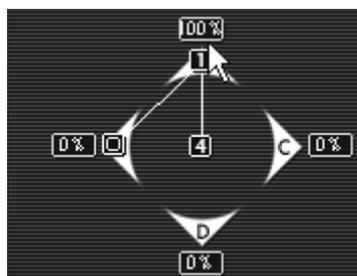
Before editing the four times of the mixing envelope of the oscillators, begin by placing the 5 positions that the joystick will move to at the moment of automation (points 0, 1, 2, 3, and 4):

- ▶ Place the joystick at point "A" corresponding to the A oscillator. This constitutes the starting point for the automation, called position "0". Point "A" should be at the 100 value, and the other points (B, C, and D) should be at the 0 value.



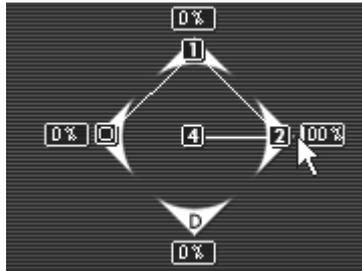
Place the joystick at point "A"

- ▶ In the same way, place the joystick to the "1" position. To do this, move it to point "B" corresponding to the B oscillator. Point "B" should be at the 100 value, and the other points (A, C, and D) should be at the 0 value.



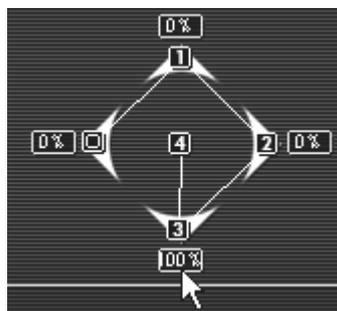
Place the joystick to the "1" position

- ▶ Next, move the joystick to the position "2". Move it to point "C" corresponding to the C oscillator. Point "C" should be at the 100 value, and the other points (A, B, and D) should be at the 0 value.



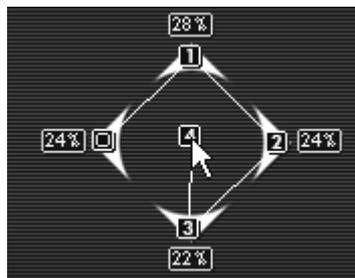
Move the joystick to the position "2"

- ▶ Now place the joystick at its third position (position "3"). Move it to point "D" corresponding to the D oscillator. You should have a value of 100 for point "D", and a value of "0" for points "A", "B", and "C".



Place the joystick at its position "3"

- ▶ Finally, place the joystick in its position "4". Move it, for example, to the central point corresponding to the mix of the 4 oscillators.



Place the joystick in its position "4"

The following section explains the settings corresponding to the four parameters of the mixing envelope of the 4 oscillators:

- ▶ Click on the "OFF/ON" panel found above the knob envelopes to put it in the "ON" position. This activates the envelope on the mixer.



Click on the "OFF/ON" panel

- ▶ Turn the "1" knob to control the time between the "0" point and the "1" point. Choose a value around 3000 ms, for example; for more precision, use the right click with the mouse or "Shift/Click" on Mac.



Turn the "1" knob

- ▶ Turn the "2" knob to control the time between the "1" and the "2" points. Choose, for example, a value around 1500 ms.



Turn the "2" knob

- ▶ Turn the "3" knob of the envelope to control the time between the "2" point and the "3" point. Choose a value around 2000ms for example.



Turn the "3" knob

- ▶ Turn the "4" knob to control the time between the "3" point and the "4" point. Choose a value around 800 ms. This path of the joystick will not be taking into account until after the note release.

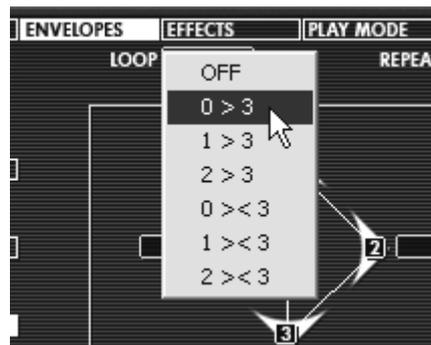


Turn the "4" knob

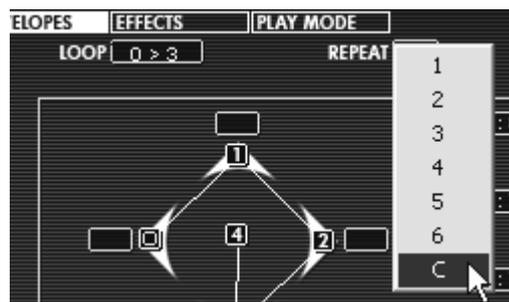
When you play a note, you can hear the effect that the automation has on the mixing of the four oscillators.

It is also possible to add a loop between the "0" point and the "3" point and to choose the number of repetitions between the different points.

- ▶ To do this, click on the zone "Loop" to choose the type of loop and the zone "repeat" to choose the number of repetitions.



Click on the zone "Loop"



Choose the type of loop and the zone "repeat"

Complete editing of the preset by setting the cutoff filter, the amplitude envelope, and a modulating the cut frequency of the filter by an LFO.

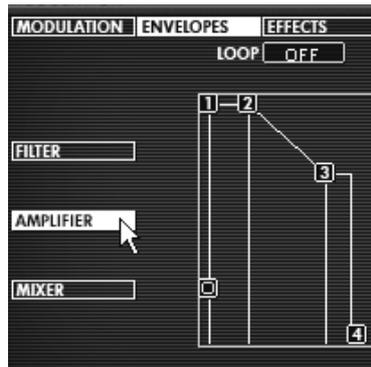
- ▶ Turn the cut frequency knob of the filter, "CUTOFF". Choose a value that gives the amount of brightness in the sound that you would like.



Turn the cut frequency knob

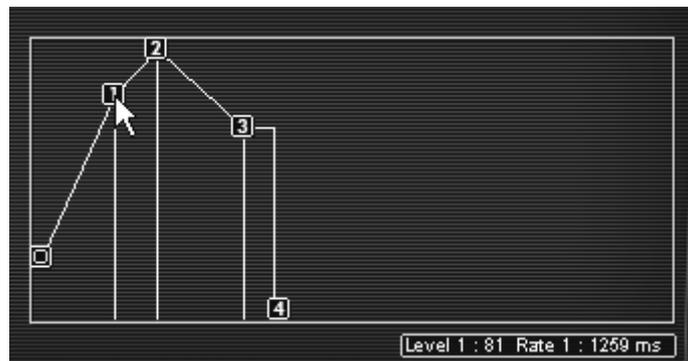
Proceed to the settings of the amplitude envelope:

- ▶ By clicking on the “Envelopes” button on the screen on the right of the Prophet VS. Choose the option “Amp” to make the envelope appear.



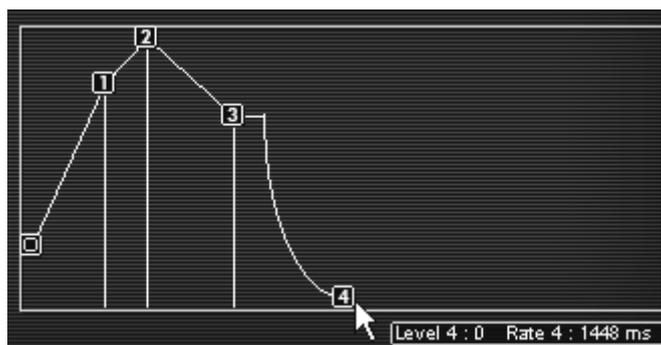
Click on the “Envelopes” button

- ▶ Leave the “0” point at its initial position (it corresponds to the initial level of the volume). Move the “1” point to the right corresponding to the attack time. Move this same point towards the top to obtain the attack level (volume).



Move the “1” point to the right corresponding to the attack time

- ▶ Stretch the release time of the note by moving the point “4” to the right. (Use, for example, a value of 1500 ms)



Stretch the release time of the note by moving the point "4"

To end, add a modulation of the filter cut frequency by one of the two LFOs of the Prophet VS.

- ▶ Click on the "Modulations" button on the right-hand screen of the Prophet VS to make the modulation matrix appear.



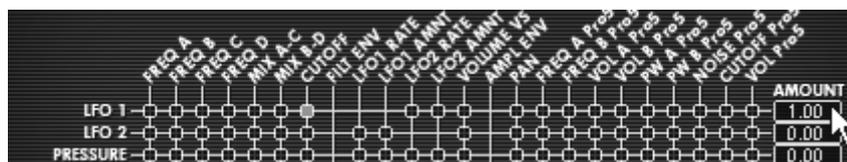
Click on the "Modulations" button

- ▶ Click on the modulation point linking the LFO1 source and the "Cutoff" destination of the filter.



Click on the modulation point linking the LFO1 source and the "Cutoff"

- ▶ To the right of the matrix grill, you can find a setting for the modulation rate for each source. Set it as you like by clicking and holding on the amount panel then, scrolling up or down with your mouse. An end setting is also available by right-clicking (or "shift/click" on Mac)



Click and holding on the amount panel

The envelopes for the filter and the amplitude are automatically connected to the modules that are available to them. Thus, it is not necessary to change to the modulation matrix to activate them. However, the modulation matrix will be indispensable for all other types of connections as well as for the settings for the amount of modulation.

3.4 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.

To familiarize you with how the sound works, let's start by opening the Hybrid interface. Click on the button entitled Hybrid in the tool bar.

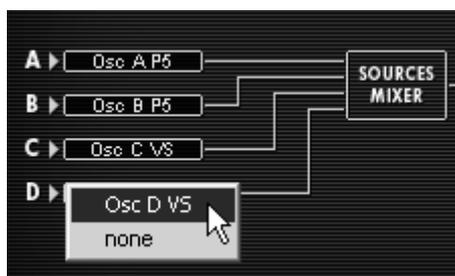
- ▶ Choose the preset "Prophet 5/Pad/Full_Pad" in the list of presets.
- ▶ Now, to enrich the sound, add a fourth oscillator. Open the audio connection matrix by clicking on the option "Audio" situated on the screen you find at the right-hand section of the Prophet VS interface.



Open the audio connection matrix

This matrix allows you to select and connect to the oscillators, route the audio signal to the Pro5 or ProVS filters, route the sound of the Prophet 5 in one of the two filters, etc.

- ▶ Click in the LCD viewer to select the C oscillator and choose the option "Osc VS C".



Select the C oscillator and choose the option "Osc VS C"

- ▶ Lightly detune it in relation to the C oscillator already in place by slightly increasing the "FINE" knob. This will add a bit of life to the sound.



Detune it in relation to the C oscillator

- ▶ If you wish to, you can also change the wave-form of this oscillator.



Change the wave-form of this oscillator

Careful! Only four oscillator sources are available in the "Hybrid" interface. This means that it will not be possible to activate the four oscillators of the Prophet VS if one of the oscillators of the Prophet 5 is active.

- ▶ Change the timbre of your sound by changing the type of filter of the Prophet VS. Click on the filter viewer and choose the "Band pass" filter.



Change the type of filter of the Prophet VS

- ▶ Add a cutoff modulation of the filter with the LFO1 of the Prophet VS. To do this, open the modulation matrix by clicking on the option "MODULATION" accessible on the right of the Prophet VS interface.
- ▶ Click on the bullet situated at the intersection of the source "LFO1" (horizontal line) and the destination "Cutoff" (vertical line).
- ▶ Set the modulation rate with the panel found to the right of the horizontal line LFO1. Click and hold the value shown then scroll your mouse up or down to either increase or decrease the value. For more precision, right click with your mouse (shift/click on MAC). It is also possible to double click on the value to modify it with a numeric keypad.
- ▶ Set the speed of the LFO1 to your convenience by turning the "RATE" knob (a slower setting will be appropriate for this type of sound).



Set the speed of the LFO1

3.5 The Effects Section

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

To open it, push on the "Effects" button found on the tool bar, in the upper right-hand corner of the Prophet VS interface.



Push the "open Effects" button

3.5.1 Chorus

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 found in the right-hand section of the tool bar.



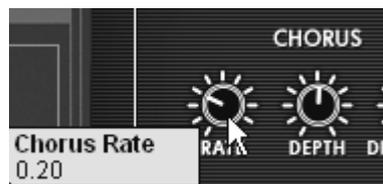
Activate the ON/OFF button of the Chorus

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



Set the "Dry/Wet" knob of the chorus

- ▶ Turn the "Rate" knob of the Chorus to set the speed of the oscillations.



Turn the "Rate" knob of the Chorus

- ▶ Finally, set the depth of the chorus by turning the "Depth" knob.



Set the depth of the chorus

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.



Chorus types

3.5.2 The Delay

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 "Delay" button on the tool bar. The effect is activated.
- ▶ 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.



Turn the two "Time" knobs

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

Real time Controllers and assigning them to MIDI The Prophet-V is particularly adapted to playing in real time. One of the greatest evolutions compared to the original is the ability to assign any knob parameter of the Prophet-V you wish to an external MIDI controller.

For example:

- ▶ Click on "MIDI Learn" button of the toolbar
- ▶ Click on the "Cutoff" knob in the filter. The dialogue box for assigning MIDI controllers will appear.
- ▶ Move the MIDI controller of your choice (the modulation wheel for example). The knob of the Prophet-V will be assigned to that controller and move in time with it.

- ▶ Next, you can automate the movements of your MIDI controller in your MIDI sequencer or simply make it evolve in real time when you are playing live.



Assigning Midi to the “Cutoff frequency” parameter

To save the settings that you have just made during this chapter, click the button “Save” found on the tool bar.

The Prophet-V provides a new type of control: the NRPN mode. With this mode you will be able to affect a nearly infinite number of controls. To do this, configure your MIDI controlling device to send NRPN messages (some controllers do not offer this mode, Check your specific controllers owner manual) and click to display the MIDI assign dialog box. The Prophet-V will immediately recognize NRPN messages by ticking the ‘Use NRPN’ box (see above). If you have difficulty with the NRPN setup, please contact the technical support of your MIDI device.

4 Principal Elements of the Interface

4.1 Tool Bar

The tool bar consists of an ensemble of essential icons for the Prophet-V organized from left to right allowing you to:

- Save your presets
- Access drop menus offering choices of banks/sub-banks and presets.
- Importing and exporting of presets
- MIDI activity light
- Choice of MIDI channels: All, 1 to 16
- The number of polyphonic voices
- Playing Modes: Poly/Mono Low (in the context of a legato between two notes, low note gets priority) Mono high (in the context of a legato between two notes, high note gets the priority) and Mono last (in the context of a legato between two notes, last note played gets the priority)
- Synthesizer choice: Prophet 5/ Prophet VS/ Hybrid
- Activation of Chorus and Delay effects
- Editing of effects

Example: to load a specific synthesizer interface, click on the buttons "PROPHET 5", "PROPHET VS" or "Hybrid".



Tool Bar

4.2 Using Presets

Presets allow you to save specific sounds on the Prophet-V. A preset contains all the settings information of the different controllers necessary to reproduce a sound. In the software, the presets are classed in the "banks" and "sub-banks". The original banks or factory presets present a filing of sounds allowing you to find a preset based on the synthesizer chosen: "Prophet 5", "Prophet VS" et "Hybrid". Each bank holds a certain number of sub-banks determining the general type of sound: bass, sonic effects, etc. Each sub-bank holds a number of presets.

The Prophet-V is shipped with several "factory" banks. But it is possible to create new "user" banks of sounds, each containing a number of sub-banks and presets. For security, the "factory" banks cannot be directly modified. It is nonetheless possible to create a sound based on a factory preset by saving it as a "user" preset.

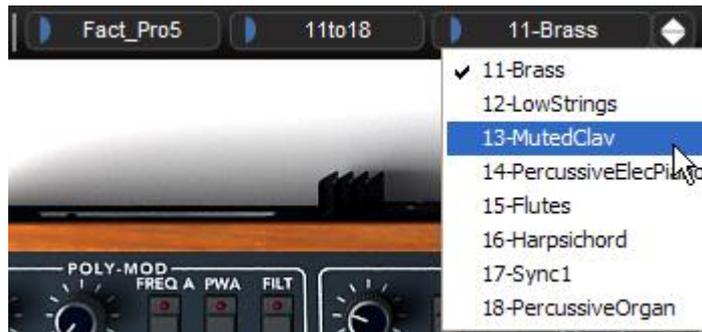
4.2.1 Choice of a bank, sub-bank, preset

The bank, sub-bank and preset in use by the Prophet-V are permanently displayed in the synthesizer tool bar.



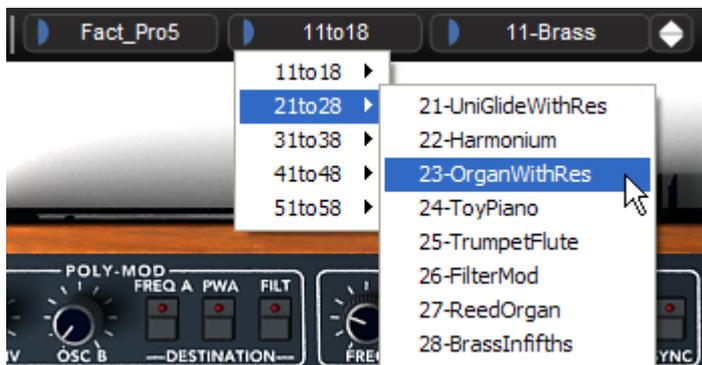
Display of current bank, sub-bank and preset

To choose a preset in the current sub-bank, click on the  button next to the preset field, and a drop-down menu appears with a list of the presets of the same sub-bank. You can choose another preset by selecting the corresponding line in the drop-down menu. As soon as the preset has been chosen, you can play the new sound on your MIDI keyboard or from your sequencer.



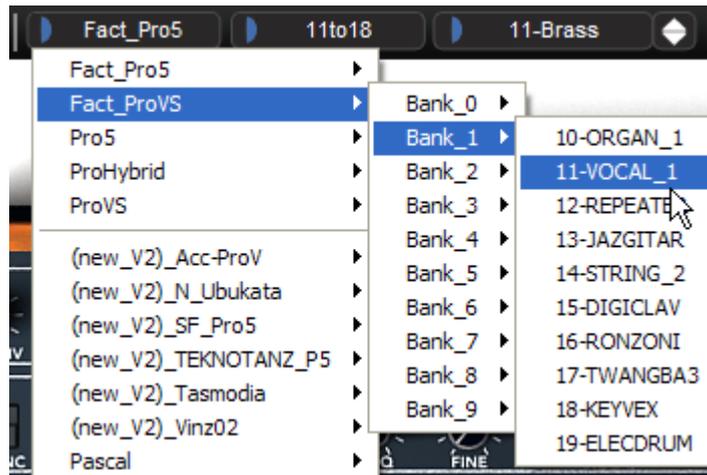
Choice of a preset in the same sub-bank

To choose a preset in the same main bank, but a different sub-bank, click on the  button next to the sub-bank field, and a drop-down menu appears with a list of the sub-banks contained in the same main bank. Each sub-bank listed in the menu allows you to open a sub-menu containing its presets. A click on a preset allows you to directly choose a preset in the new sub-bank.



Choice of a preset in another sub-bank

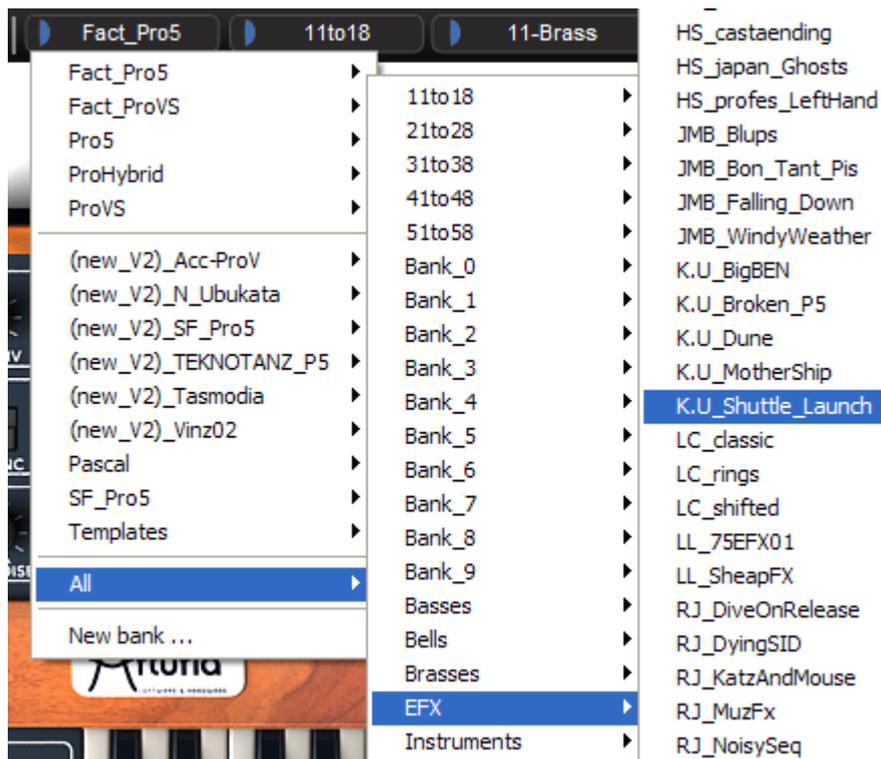
To choose a preset in another main bank, click on the  button next to the bank field. A dropdown menu appears with a list of the main banks available with the sub-banks corresponding to the sub-banks defined in each main bank and to the presets contained in each sub-bank. You can thus freely choose a preset by clicking on its name.



Choice of a preset in another main bank

In the “BANK” drop-down menu, the “All” option allows you to open a sub-list with all of the sub-banks available in all of the banks. This gives you access directly to all of the presets of a given type, for example all of the basses, no matter which bank they are in.

This function is particularly useful to quickly see all of the presets of the same type.



Choice of preset regardless of bank

When a preset has been modified an asterisk appears next to its name in the tool bar.

4.2.2 Creation of a bank, sub-bank, preset

To create a new bank, click on the  button next to the bank field. The drop-down menu displays the names of all of the existing banks of sounds, and a line called “New bank...”.

Click on "New bank..." to create a new bank of sounds. You can then change the name of this bank by clicking on its name in the tool bar and entering the new name.

To create a new sub-bank, just click on the  button next to the sub-bank field, and select "New subbank...". You can also change the name of the new sub-bank.

Finally, to create a new preset, click on the  button next to the preset field, and select "New preset...". The new preset is created, recording the current settings of the Prophet-V. You can thus work on the settings of a sound, and save the sound again with the same preset name by clicking on the save button (see the following paragraph). You can also change the title of the new preset by clicking on its name.

4.2.3 Saving a user preset

To save your setting modifications in the current preset, click on the "Save" button in the tool bar of the Prophet-V.



"Save" button in the tool bar

If you want to save your settings under another preset name, click on the "Save As" button in the tool bar. A drop-down menu appears and lets you choose an existing preset (in this case, the contents of the existing preset will be replaced with the current settings), or to save your settings as a new preset (in this case, click on "New preset..." in the sub-bank of your choice).



"Save As" button and save menu in the tool bar

When you are working from a factory preset, which cannot be deleted, clicking on the "Save" button will not replace the current factory preset, but will instead automatically open the "Save As" menu to save the current settings as a user preset.

4.2.4 Import/ Export of a bank of presets

It is possible to import new banks of presets conceived for the Prophet-V. To import a new bank of presets, click on the preset bank import button on the tool bar:



Preset bank import button on the tool bar

When you click on this button, a window will appear allowing you to choose the preset bank file for the Prophet-V (.probank extension). Choose the file that you want to import, and click on "Open". The new bank of presets will automatically appear among the available banks.

The Prophet-V equally offers the option to export your own sounds to save them, to use them on another machine, or to make them available to other users.

It is possible to export a preset, a sub-bank, or a complete bank.

To export the current bank, sub-bank, or preset, click on preset bank export button in the tool bar of the program:



Current preset bank export button in the tool bar

Select the type of export that you want to perform (bank, sub-bank or preset) and a window will appear, giving you access to a choice of destination folder and file name for the bank that you are exporting.

4.3 The sound map

The sound map is an innovative preset explorer which offers an easy and funky way to locate and choose a preset on a map area to simplify the preset management and to quickly find the appropriate sounds.

The sound map also offers brand new interface for creating new sounds thanks to a morphing feature between four presets.

The Sound Map offers three views:

The **MAP** main interface: the sound map classifies the presets thanks to statistical methods in order to organize the sounds on a map from their own audio characteristics.

The **LIST** presets list: this page offers a more classical interface to classify the presets using lists and filters to find the desired sound.

The **COMPASS** morphing interface: this page allows creating new sounds in real time thanks to a morphing result with up to 4 presets.

- ▶ To open the main Sound Map interface, click on the SOUND MAP button located on the tool bar. A new window appears over the Prophet-V main interface.



Open the main Sound Map interface

- ▶ To open the preset list page, click on the LIST button, on the top right of the sound map interface



Open the List interface

- ▶ To open the preset morphing page, click on the COMPASS button.



Open the Morphing interface

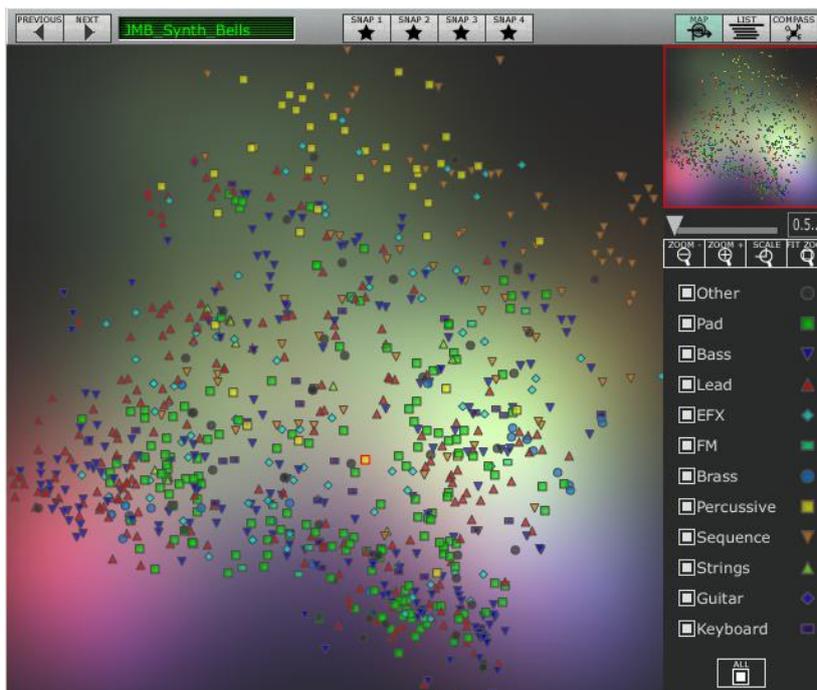
- ▶ To return back on the main sound map interface, click on the MAP button



Return back on the map interface

4.3.1 The MAP main interface

The sound map interface shows a map where are shared out all the presets of the Prophet-V organized for their types of sound and their own audio characteristics.

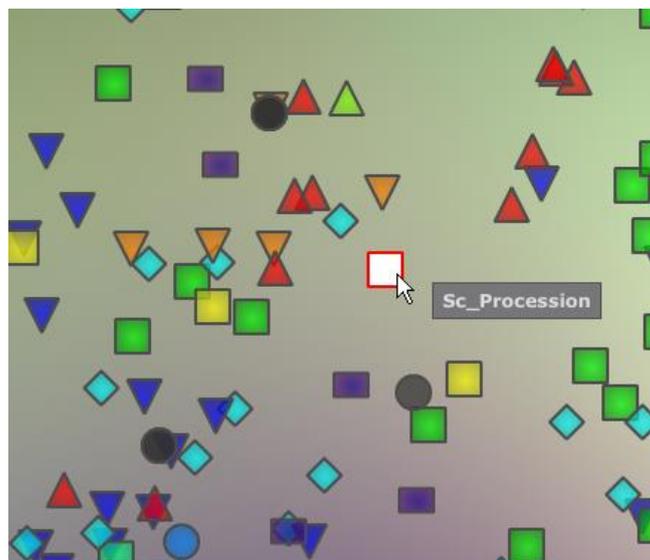


The Map interface

The types of presets are represented by different geometrical characters and colors for an easy way to locate them:

- ▼ “Bass” sounds
- “Brass” sounds
- ◊ “EFX” sounds
- “FM” sounds
- ◆ “Guitar” sounds
- “Keyboard” sounds
- ▲ “Lead” sounds
- “Pad” sounds
- “Percussive” sounds
- ▼ “Sequence” sounds
- ▲ “Strings” sounds
- “Others” sounds

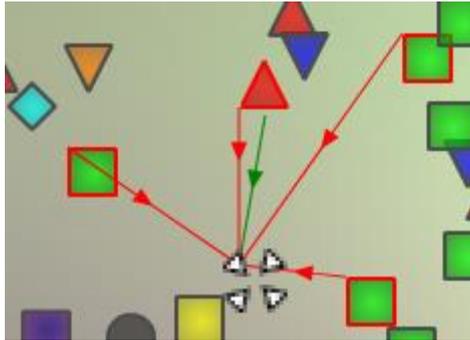
- ▶ To select and to listen a preset, directly click on one of the icons, anywhere you want on the map area. The icon is now highlighted in red. If you hold a few seconds on the selected preset, a popup appears and indicates the name of the preset.



Select a preset

You can create new presets thanks to an exclusive real time morphing feature:

- ▶ Click between a group of presets and hold the left button of the mouse on this point. Four red arrows drawing a cross appear linking the group of four presets.



Morphing between a group of presets

- ▶ You can now drag your mouse between those presets. The green arrow shows you the starting point of your motion.
- ▶ When you release the left mouse button, you can play the resulted sound and, if you wish, you can save it on an Prophet-V user bank.

By this way it is very easy to quickly get some new and exciting sounds without programming anything on the synthesizer interface.

4.3.2 The Sound Map overview

On the top right of the Sound Map main interface, you can see an overview of this map.

You can use the map overview for navigating into the map and to zoom in or out inside of the map area.



The map overview interface

- ▶ To navigate into the map, click inside of the red square and drag it on the map area to view other sections of the Sound map.
- ▶ To zoom in the view on the sound map, click on the Zoom slider, under the overview window, and drag it on the right to increase the size of the map.
- ▶ To zoom out the view on the sound map, click on the Zoom slider, and drag it on the left to decrease the size of the map.



The zoom slider

⚠ You can also use the "ZOOM +" or "ZOOM -" buttons, under the slider, to increase or decrease the map size step by step (by a factor of 1).

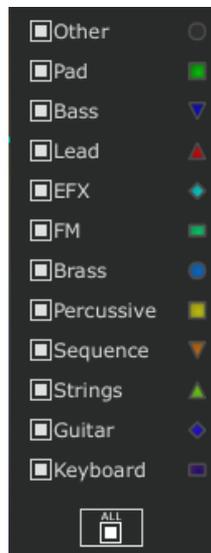
- ▶ Click on the FIT ZOOM button allows resizing the map to its global size.



The FIT ZOOM button

4.3.2.1 The instrument type filter window

On the right of the map main interface, an instrument type filter window allows you to choose which type of preset you want to see (or to hide) on the map. By default, all types of presets are selected.



The instrument type filter

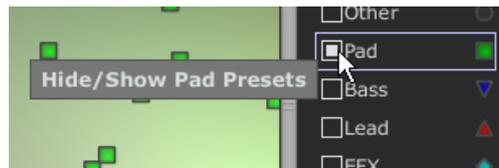
To select an individual or a group of instrument types:

- ▶ First click on the All button, on the bottom of the type filter window: this will hide all the instrument types from the sound map.



The ALL button

- ▶ Then, select the type(s) you want to see by clicking on the corresponding square box(es). A notch appears on the selected box(es) and the type(s) of presets appears on the map interface.



Show pad presets

This is a good way to simplify and to refine the preset search.

- ▶ If you click again on the All button, all types of presets will be displayed on the map.

4.3.2.2 Preset snapshot memories

You can select up to four presets, anywhere on the map interface, and save them on up to four snapshot memories. You will be able to use those four presets on the *COMPASS* view to create new sounds by morphing feature (see below for more details on this feature).

Of course, you can save any kind of type of presets on these four snap memories.



Select a snap memory

To save a preset on a snap memory:

- ▶ Select a preset on the sound map main interface.
- ▶ Hold the [Shift] key and select one of the four snap memory button. The snap memory button is now highlighted in red.
- ▶ Repeat the same actions if you wish to save presets on the three other snap memories.
- ▶ When all memories already contain a saved preset, you can replace them with other presets.
- ▶ Select another preset anywhere on the Sound Map interface, click on any of the 4 snapshot buttons while pressing the [Ctrl] key.

4.3.3 The LIST preset manager

The list preset manager offers a more classical way to explore the presets using a list interface in which the presets are classified and filtered in order to simplify preset management.

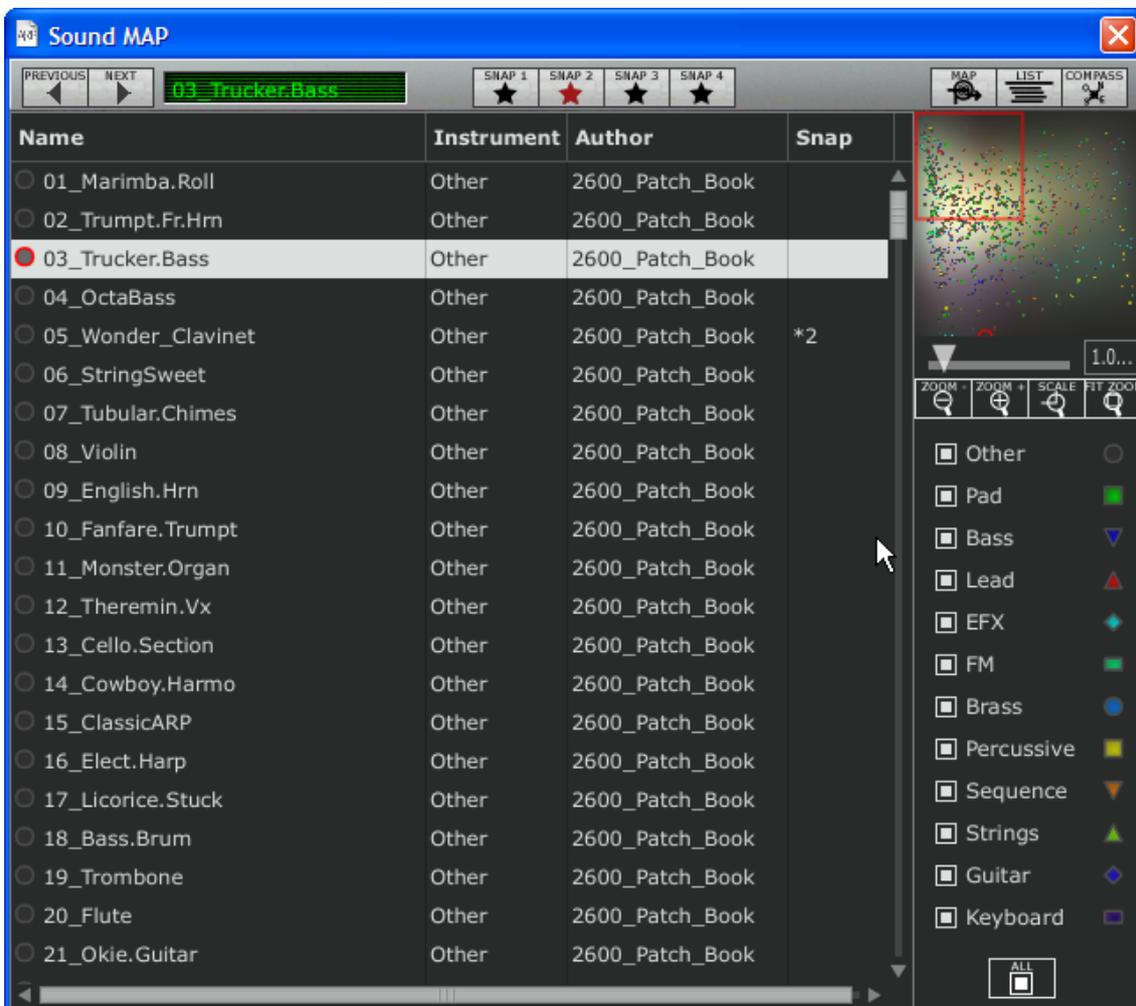
- ▶ To open the list interface, click on the LIST button located on the toolbar of the Sound Map.



Click on the LIST button

The list preset interface is very simple; you can see four columns showing, from left to right:

- The preset names
- The instrument type
- The name of the sound designers
- A reminder of the presets added to a snap memory



Preset list interface

All those data are classified by alphabetical order.

- ▶ To select a preset, simply browse the list and click on the name of a desired preset.

- ▶ You can reverse the order (from A to Z or from Z to A) by clicking on the column title: an ascendant or descendant arrow shows you the order type.

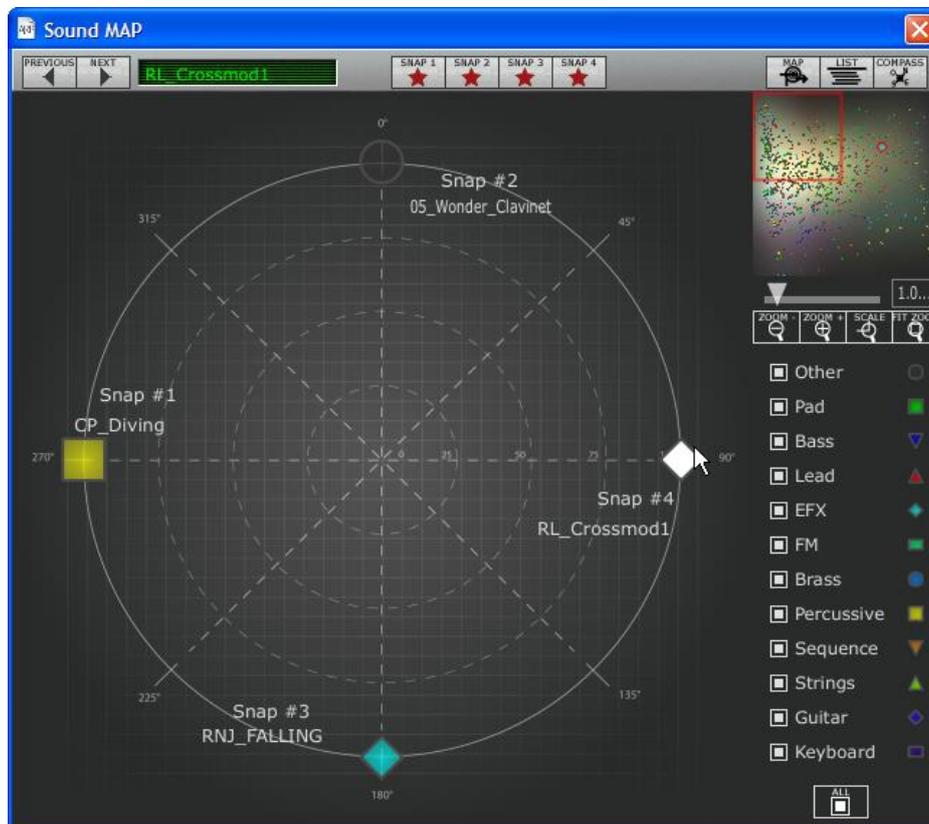
Instrument	Author
Bass	C.Duncan

Inverse the order of the instrument types

4.3.4 The COMPASS morphing interface

The Morphing page is an independent module allowing you to quickly create some new sounds thanks to a real time morphing from the four selected presets saved on the snap memories.

The four presets are placed on the four cardinal points of the compass.

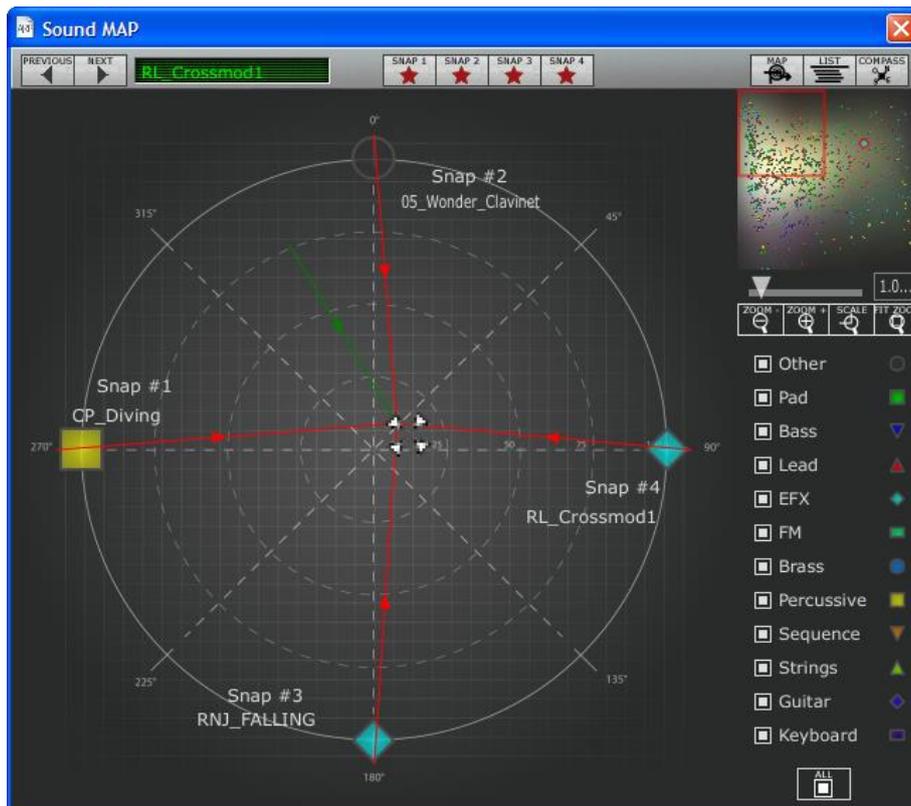


The Morphing interface

- ▶ To open the Morphing page, click on the COMPASS button, located on the toolbar of the Sound map.

To create a new morphed sound from those presets:

- ▶ Click anywhere on the centre of the compass area (four red arrows appear converging to the group of presets)
- ▶ Hold the left button of your mouse and drag the convergence point until you have found the right sound. The green arrow shows you the starting point of your motion.



Create a new sound

- ▶ If you wish, you can save it on a User bank of the Prophet-V memory.

4.4 Use of controllers

4.4.1 Knobs

Generally sequencers allow several knob control modes.

The default mode of control for knobs with the mouse is the circular mode: click on the knob and turn around it in order to change the value of the controller. The circular mode gives high precision in the manipulation of controls: The further the mouse goes from the knob, the higher the precision of the setting.



Knobs

In linear mode, the knob can be set only by vertically moving the mouse, not going around it. Like the sliders, it is possible to obtain a higher precision by right clicking or Shift+Click on the knob concerned.

The linear mode can sometimes be simpler to use than the circular mode, although we can lose in precision (the precision is limited by the number of vertical pixels on the screen on which the mouse movements are being evaluated). Movement to linear mode is available in the options of your sequencer. In Cubase™, for example, this choice can be found via the "Edit/Preferences" menu, and is found in the "General" tab of the window.

4.4.2 Switches

There are several types of switches on the Prophet-V. Certain ones activate/deactivate a parameter (activation of a waveform on the Prophet 5 for example). A red led indicator on the switch shows that the parameter is active.

Others present a choice between parameter of the same type (type of release of the Glide : "OFF", "ON", "LEGATO ON", for example). These do not have a led indicator.

You must simply click the switch to change its state.



Switches

4.4.3 Pitch Bend and Modulation wheel

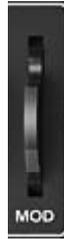
The Pitch bend controls the frequency/pitch of the synthesizer oscillators. Simply click on the wheel while playing a note on the master keyboard or in a sequencer, then move the mouse vertically to modify the pitch. The wheel comes back to its initial position at the release of the note.



Pitch Bend Wheel

The modulation wheel sets the modulation rate of the Prophet 5's LFO or the connections made on the modulation matrix of the Prophet VS or Hybrid.

The manipulation of this wheel is as easy as the pitch bend; the only difference is that the modulation wheel does not come back into its initial position.



Modulation Wheel

4.4.4 Virtual keyboard

The keyboard lets you listen to the synthesizer sounds without the need for an external master MIDI keyboard, and without programming a melody in the sequencer. Just click on a virtual key to hear the corresponding sound.



Click on a virtual key to hear the corresponding sound

4.4.5 Selection screens

There are certain selection screens that appear in the Prophet VS (choice of waveforms for the oscillators or the LFO for example). These are found on the title bar of each module ("OSCILLATORS", "FILTER", for example).

To change the selection being used, several types of manipulations exist following the context of the screen:

- ▶ **Drop menu offering a number of choices** (Types of filters, waveforms of LFO 1 and 2, number of polyphonic voices): click on the screen. The menu appears allowing you to select the parameter wished.



Screen for choosing filter types

- ▶ **Drop menu offering a large range of choices** (choice of wave forms for the oscillators): click on the screen then move the mouse to modify your choice (the spectrum of the current waveforms appears to give you an idea of the sounds produced)



Screen for choosing the waveforms of the oscillators

- ▶ **Interrupter Panel:** On the mixer envelope, click on the interrupter panel to activate (ON) or deactivate (OFF) the envelope.

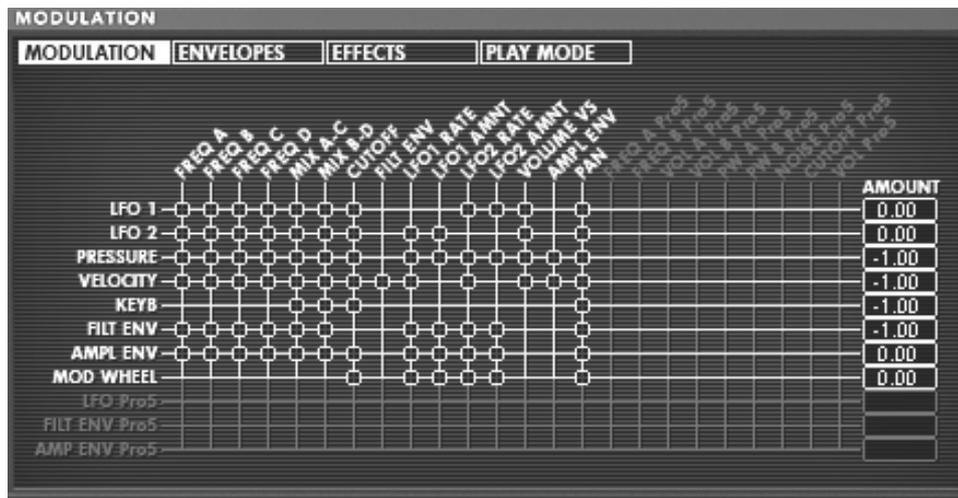


Interrupter Panel of the mixer envelope

4.4.6 LCD Screen

The LCD screen, found to the right of the Prophet VS interface, gives access to graphic edition of the three envelopes, the modulation matrix, playing mode (Prophet VS only), and the effects. For Hybrid mode the screen also gives access to audio routing selection.

To choose the interface to edit, click on one of the buttons found at the top of the LCD screen ("ENVELOPE" for example). The "ENVELOPE" editing screen also has 2 shortcuts outside of the LCD screen. These shortcuts are located in the filter and amplifier envelope and give access directly to the LCD envelope editing screen of the two envelopes.



The LCD screen

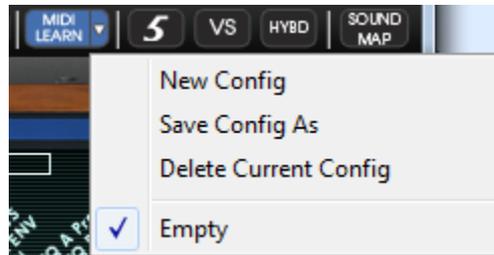
4.4.7 MIDI control

Most of the knobs, sliders and switches on the Prophet-V can be manipulated with external MIDI controllers. Before anything else, make sure that the MIDI device that you wish to use is correctly connected to the computer, and that the sequencer or the Prophet-V application is correctly configured to receive MIDI events coming from the device.

4.4.7.1 Learn Menu

A new button and menu have been introduced in Prophet-V. The button and menu provide access to MIDI assign functionalities.

The left part of the button activates the MIDI learn mode, while the right part (small down arrow) opens the control management menu.



"Learn" Menu



"Learn Mode" Button

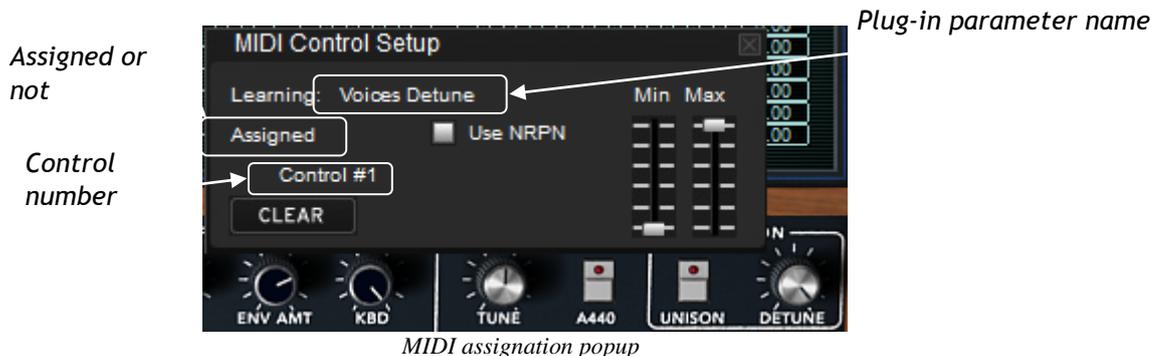
The "Learn" Menu is composed of 2 sections:

- First section provides:
 - "New Config" creates a new controller set
 - "Save Config As" saves current configuration to a new one
 - "Delete Current Config" removes current configuration from list
- The second section contains the list of existing configurations:
 - The checked one is the currently selected MIDI map
 - Click on a configuration to load it

4.4.7.2 Assigning MIDI Controls

In order to start assigning MIDI controls, click the "Midi Learn" button (left part). The button remains highlighted to indicate that the "learn mode" is ON.

Click on a knob or button in the GUI to open the MIDI assignment popup.



MIDI assignment popup

- Learn assignment

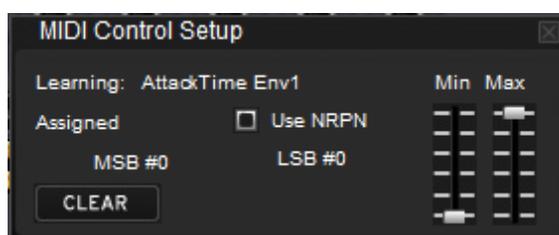
The fastest and easiest way to assign a control is to move the fader, knob or button for it to be recognized by Prophet-V.

- Manual assignment

It is also possible to change the assigned MIDI control number by clicking on Control#xx and select a specific value.

- Support for NRPN

In addition to MIDI Control Change messages, NRPN messages are now supported: either send NRPN MIDI control messages to Prophet-V, or check NRPN, then manually select LSB# and MSB# numbers:



MIDI assignation popup, NRPN activated

- Remove assignment

Assignments can be removed by clicking the "Clear" button. The message "Unassigned" will then be displayed.

Continue selecting the parameters you want to map to create a complete configuration.

4.4.7.3 Manages Configurations

New in Prophet-V: the possibility to maintain multiple configurations.

- Default configuration

By default, Prophet-V loads the configuration for Arturia Analog Experience keyboards.

- Select one configuration

A configuration is loaded by clicking the corresponding entry in bottom part of "Learn menu".

- Create a new configuration

A new configuration can be created by clicking on the "Learn menu", "New Config" entry. This will open a popup: enter the name you want to call your configuration and click on the "SAVE" button. A new entry for your configuration now exists in the list of available configurations.

You may now fill in this initially empty configuration by performing the assignment operations described in the previous section.

- Copy a configuration

It is possible to copy a configuration by loading it and then clicking on "Save Config As".

A popup opens: enter the name of your configuration. A new entry for your configuration now exists in the list of available configurations.

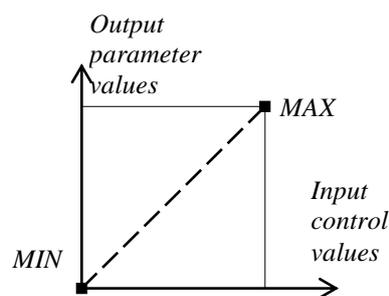
- Remove a configuration

It is possible to remove a configuration by first loading it and then clicking on "Delete Current Config".

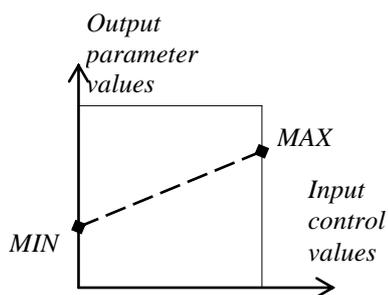
4.4.7.4 Minimum and Maximum Ranges

For each assignment, a minimum range value and a maximum range value can be set. This allows you to limit how much the controller will affect the parameter on Prophet-V.

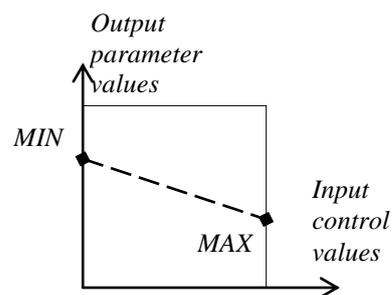
- The assigned parameter will have the configured minimum value when the controller will be at its lowest position
- The assigned parameter will only reach the configured maximum value when the controller will be at its highest position
- You can invert (Negative Slope) the Min and Max so that parameter will have minimum value when control has the highest value, and parameter will have maximum value when control has the lowest value



DEFAULT



POSITIVE SLOPE



NEGATIVE SLOPE

$$\text{parameter_value} = \text{MIN} + (\text{MAX} - \text{MIN}) * \text{control_value}$$

4.4.7.5 Multiple Assigned Parameters

It is possible to assign multiple parameters to a single control. This allows you to change many parameters with one fader or knob.

- Activate "Learn" mode, select a parameter (GUI control)

- Tweak control to assign it (optionally setup minimum and maximum)
- Select a second parameter
- And tweak the same control
- Deactivate “Learn” mode

Tweaking assigned control should modify both parameters with regards to assignation setup (Min, Max).

4.4.7.6 Tricks

- The filter/amplifier envelope control points have two parameters: Level and Time. If “Learn” mode is ON, clicking on control point provides access to the assignment of the Level parameter, shift+clicking on control point provides access to assignment of the Time parameter.

4.4.8 The Preferences Screen

On this screen you can:

- Read the version of the software
- Read the credits
- Activate or deactivate the animations when switching between playing modes

You can also activate or deactivate the pop up indications when scrolling over or selecting a parameter. “Show control popup when”:

- Mouse Clicks on Control
- Mouse Rests on Control

To open this window click on the plaque of the “PROPHET V” found just above the virtual keyboard. To close this window, simply re-click on the same plaque.



5 The Modules

The Prophet-V 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-V, giving you the chance to create sounds that are both rich and original.

5.1 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 (these cannot be deleted).



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

5.1.1 Oscillators

There are two oscillators.

The oscillator controls the basic frequencies and timbres of the Prophet 5 with the frequency settings, choice of wave-form, and the pulse width associated to the square wave-form. 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 wave-forms can be used simultaneously. Whether tuned separately or when using several mixed wave-forms, the two oscillators allow you to quickly obtain large variety of sounds.



Two Oscillators

5.1.1.1 Oscillator A

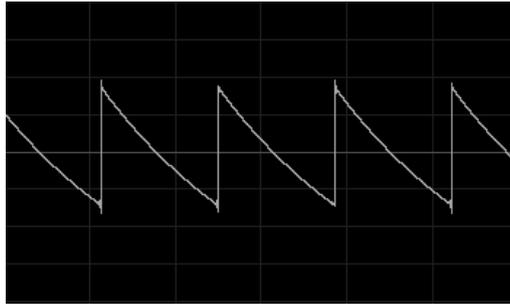
- FREQ** Tuning knob by semitone (Initial Oscillator Frequency), on approximately two octaves
- SHAPE** Selection buttons of the two wave forms:
- Saw tooth
 - Square
- PW** Knob which sets the pulse width of the square signal
- SYNC** Button which activates the synchronization of the A and B oscillators

5.1.1.2 Oscillator B

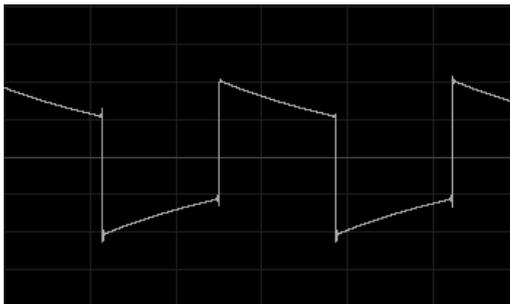
- FREQ** Tuning knob for semitones on approximately two octaves
- FINE** Fine tuning knob on approximately 1 semitone
- SHAPE** Selection buttons of three wave-forms:
- Saw tooth
 - Triangle
 - Square
- PW** Knob setting the pulse width signals for the saw, square, and triangle wave-forms

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.

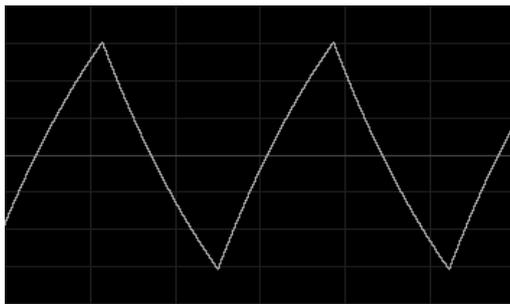
- ▶ Here are the representations of the different wave-forms used by the oscillators of the Prophet 5:



Saw tooth



Square



Triangle

5.1.2 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

5.1.3 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).

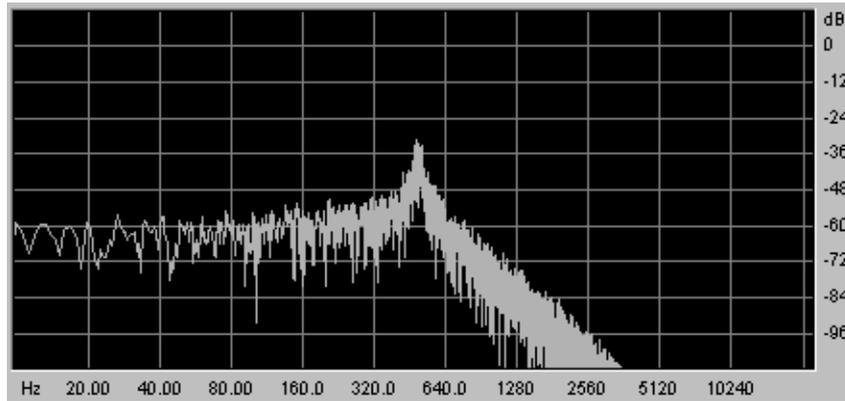
The filter possesses its own ADSR envelope (see following chapter) to edit its cut-off frequency. However, these can also be modulated by the LFO (section "WHEEL-MOD" for "wha wha" type effects), or by oscillator B (section "POLY MOD" for modulation effects in high frequencies or special effects).

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

5.1.4 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

5.1.5 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

5.1.6 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

5.1.7 Wheel Mod

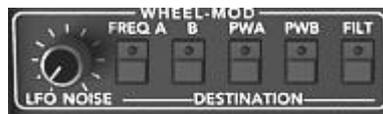
This section offers the necessary connections to select the parameters edited by the LFO.

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

5.1.8 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: <ul style="list-style-type: none"> • The filter envelope("FILT ENV") • Oscillator B ("OSC B") |
| DESTINATION | Selection buttons for modulation destinations: <ul style="list-style-type: none"> • Frequency of oscillator A ("FREQ A") • Squared width of oscillator A ("PW A") • Cut-off filter frequency ("FILTER") |



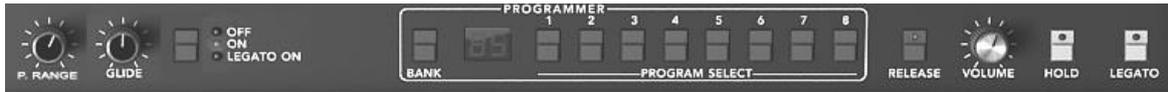
The FM polyphonic modulation section

5.1.9 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). |
| B 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

5.1.10 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).*

5.1.11 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.

5.2 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

5.2.1 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 wave-form, click on the button found on the title bar of the oscillator (the graphics of the wave-form being used appear to the right) then slide the mouse up or down to view the various wave-forms.

- FREQ** Tuning knob by semitones on two octaves
- FINE** Tuning knob for fine tuning (one about a semitone)
- SHAPE** Selection screen for wave-forms



Oscillators



Choice of Wave-forms

5.2.2 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.

5.2.3 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".

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 (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 two 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

5.2.4 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".

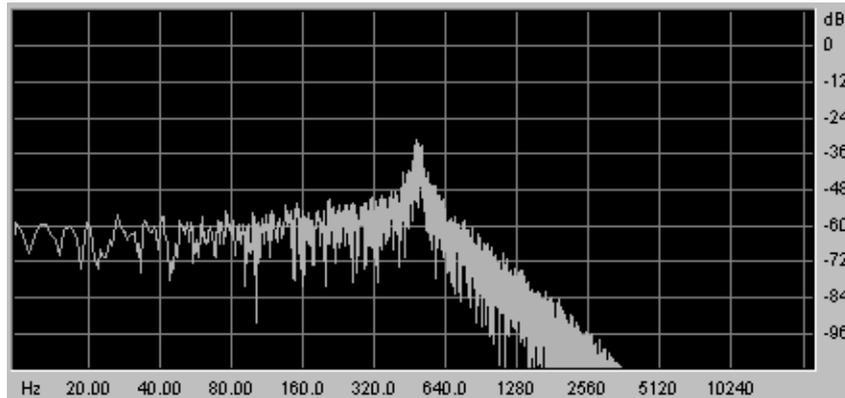
- FILT ENV** Manual setting for the amount of modulation by the filter envelope.
- CUTOFF** Frequency setting of the cutoff filter, tuning at 10 Hz to 25 kHz
- RESO** Knob setting the filter resonance



Filter Module

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.

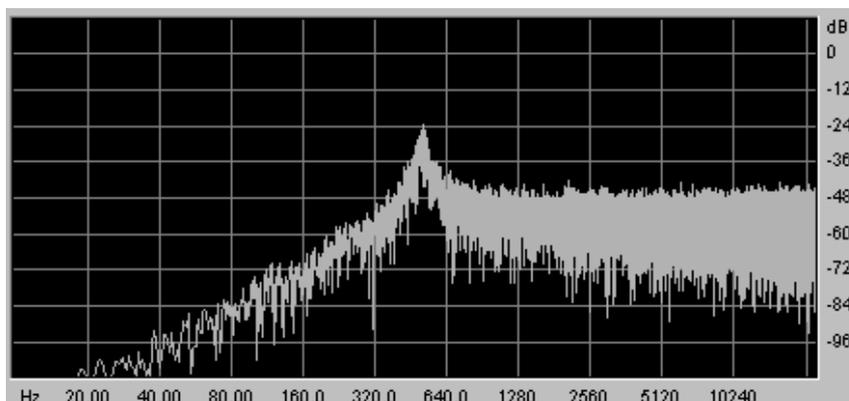


Low Pass Resonant Filter

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.

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.

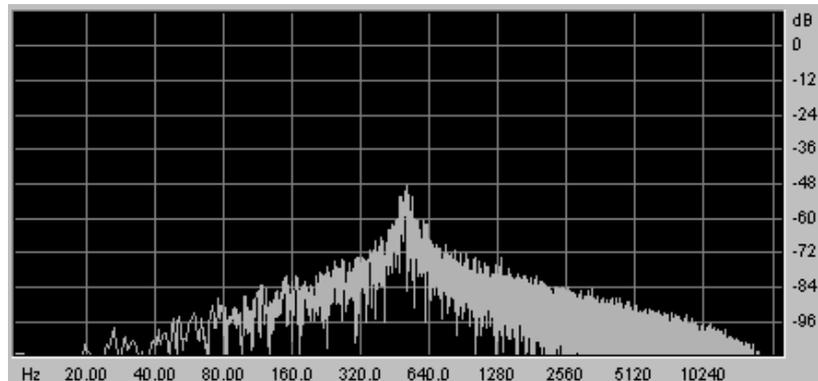


High Pass Resonant Filter

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”.

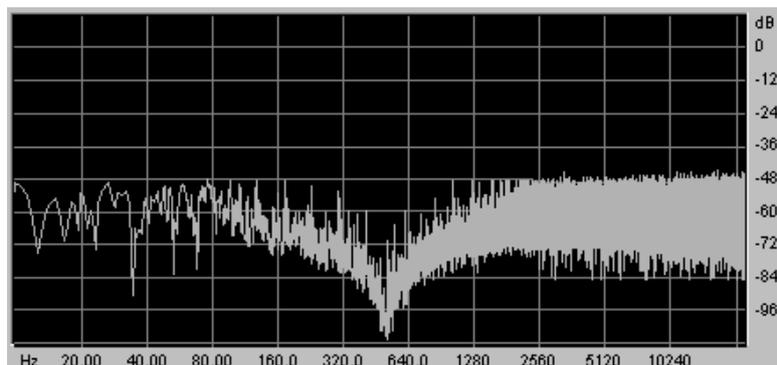


Band Pass Filter

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.

5.2.5 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

5.2.6 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 choose on of active voices, click on the selection screen found to the right of the name "Voice".

- 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

5.2.7 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

5.2.8 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

5.2.9 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:

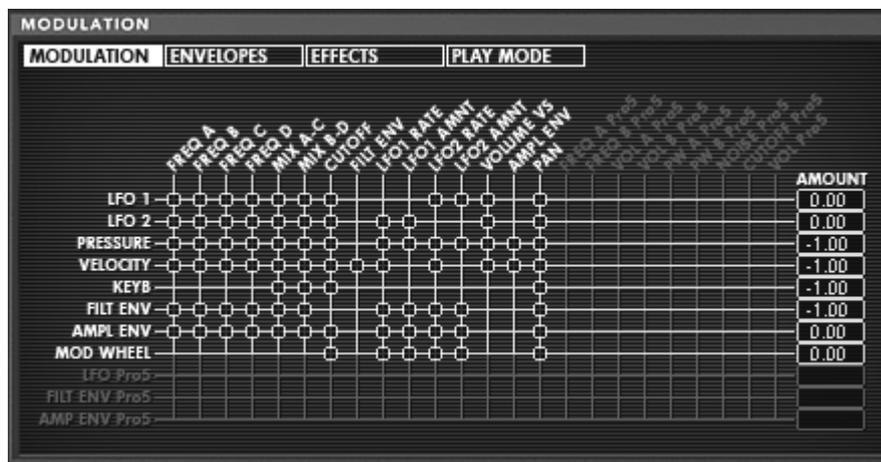
- LFO1
- LFO2
- PRESSURE
- VELOCITY
- KEYBOARD
- FILT ENVELOPE
- AMPL ENVELOPE
- MODULATION WHEEL
- JOYSTICK X
- JOYSTICK Y

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



Click on the white points to add a modulation connection

5.2.10 Chorus and Delay Effects

The Prophet-V 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 found in the tool bar.

5.2.10.1 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

5.2.10.2 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

5.2.11 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.

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 – This is active only in monophonic playing mode



Playing Modes

5.2.12 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.

5.3 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

5.3.1 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. A orange insert appears at these points when the channels are connected.

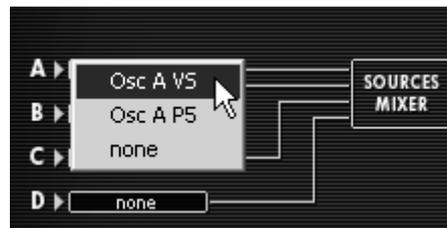
5.3.1.1 Types of oscillators

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.

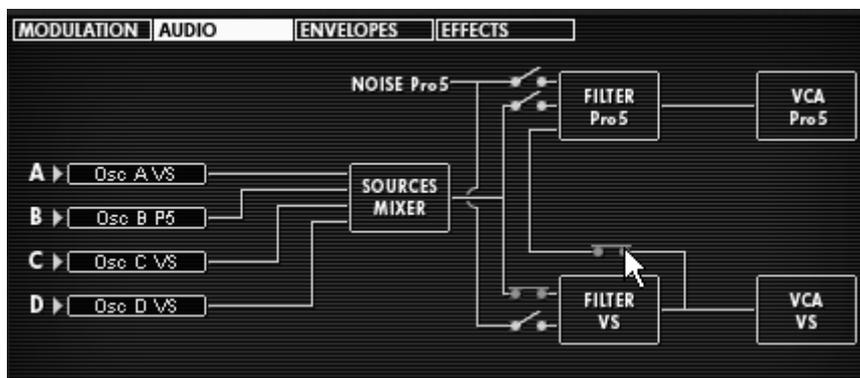


Connection to the Oscillator to source A

5.3.1.2 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

5.3.1.3 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

5.3.1.4 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.

5.3.2 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

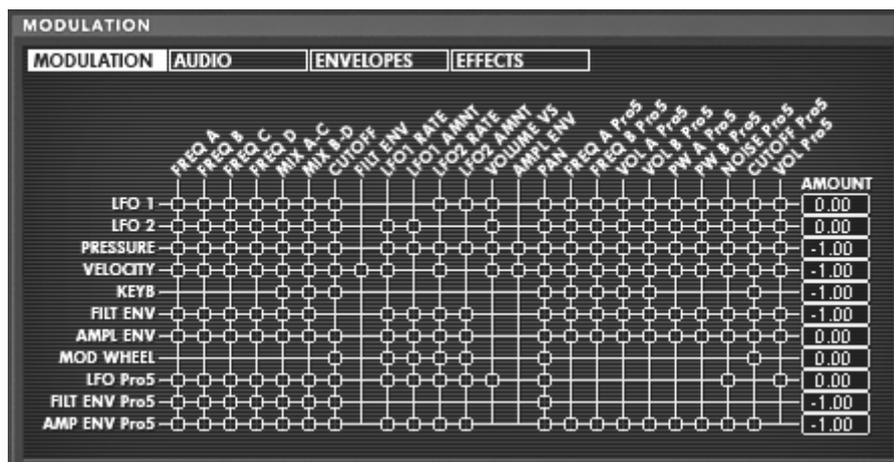
The DESTINATIONS (horizontally) are:

- 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

6 The basics of subtractive synthesis

Subtractive synthesis appeared at the end of the 1960's, giving birth to the first analog synthesizers: Bob Moog's ones, 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-V, 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.

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!

6.1 THE THREE MAIN ELEMENTS

6.1.1 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.



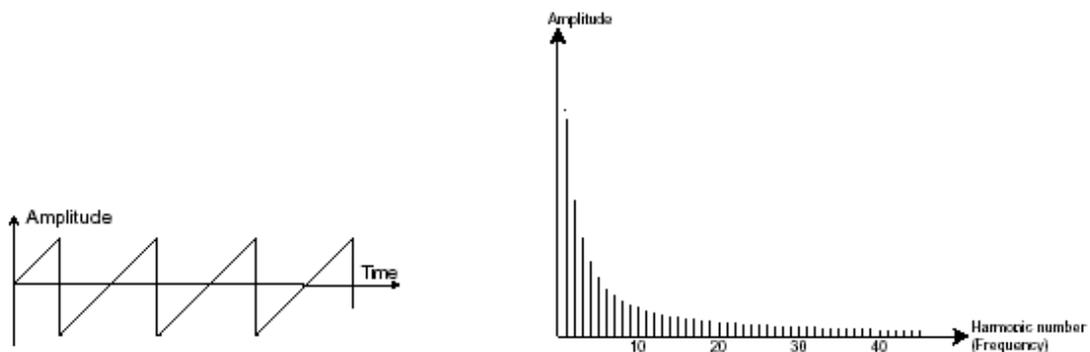
Oscillator Section on the Prophet 5



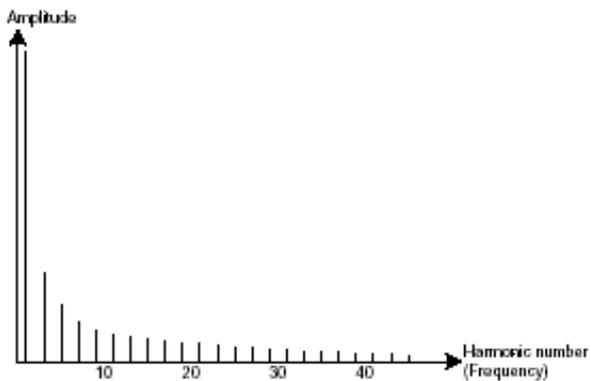
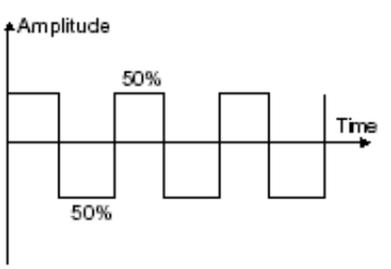
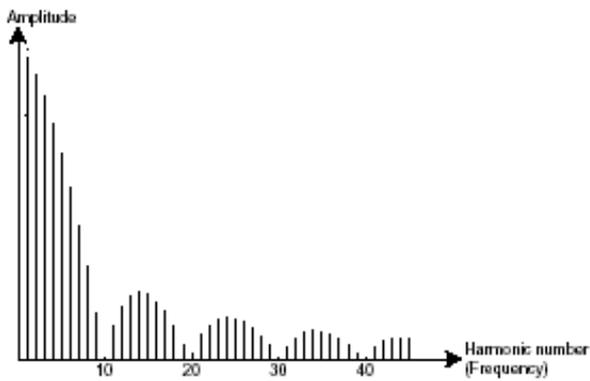
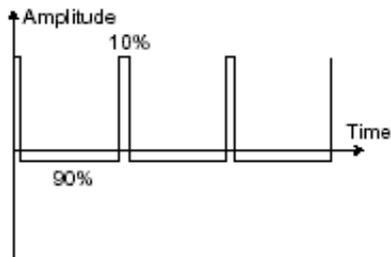
Oscillator Section on the Prophet VS

The main oscillator settings are:

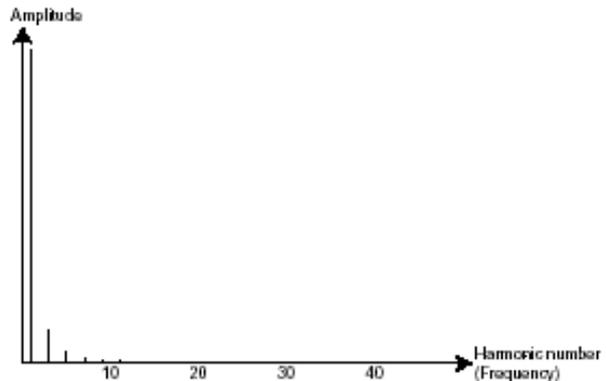
- ▶ **The pitch** determined by the oscillation frequency. You can set the frequency of the oscillator with 2 controllers:
 - The tuning parameter ("FREQUENCY") allows you to tune the oscillator by semi-tones on range of 5 octaves.
 - The fine tuning parameter ("FINE") finely tunes the oscillator upwards 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-V, 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....

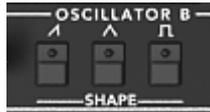


- The triangle can be considered like a very filtered (and soft) square signal. It is very low in harmonics (odd only) and will be very useful for creating sub basses, flute sounds, etc....



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.

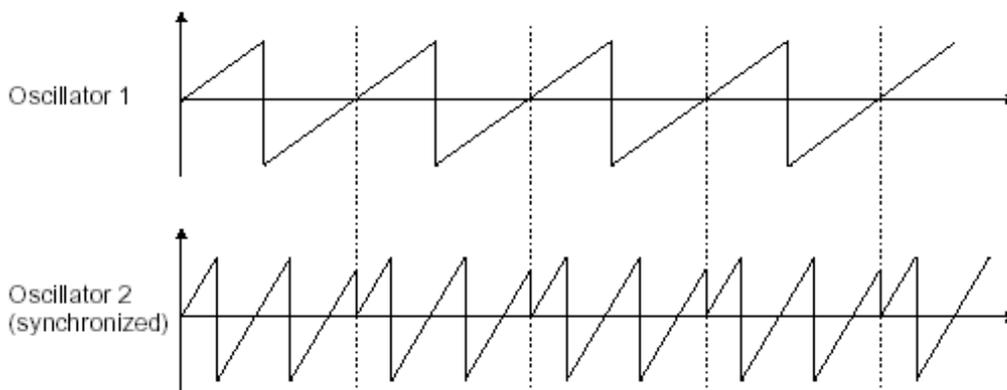
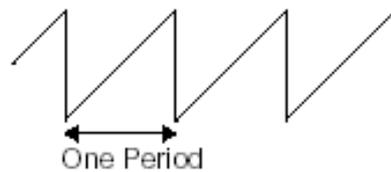


Waveforms of the PROPHET 5



An example of a PROPHET VS waveform

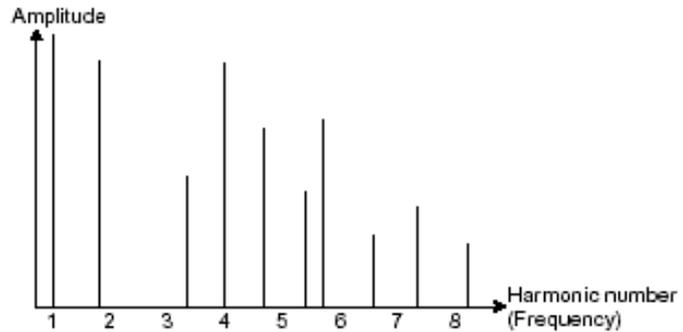
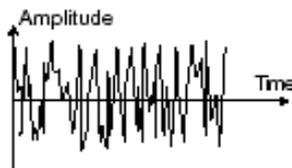
The **synchronization** of an oscillator with another creates more complex waveforms. If for example, you synchronize oscillator2 with oscillator1, oscillator2 will restart a new period every time the first oscillator completes its period, even if oscillator2 has not fully completed its current cycle (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-V, 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



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

6.1.2 The Mixer

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

The Prophet-V 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”).



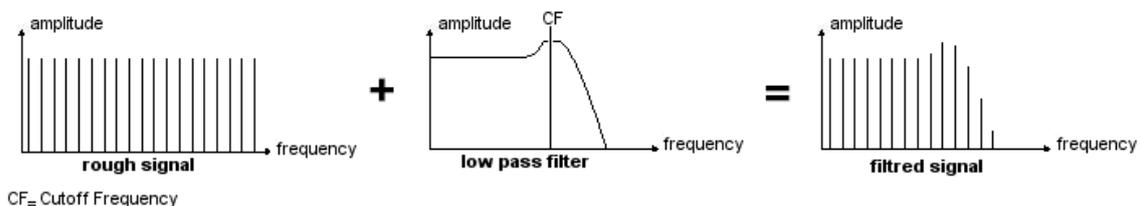
The Mixer of the Prophet VS and its envelope

6.1.3 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-V offers several types of slope:



The removal of undesirable frequencies at the cut-off frequency

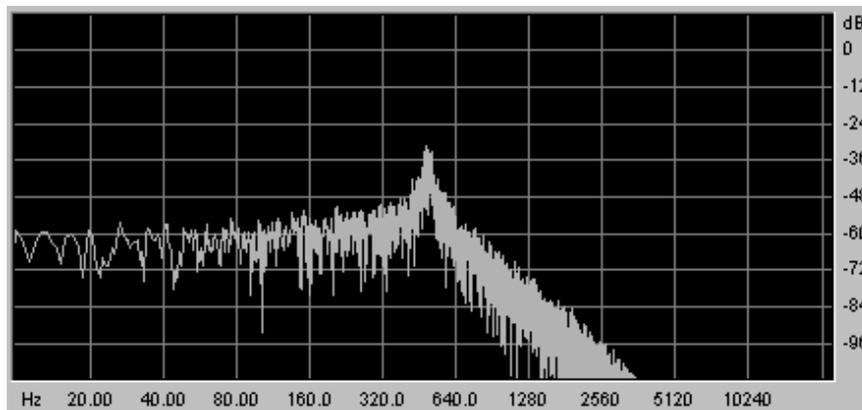
On the Prophet 5 and VS, you have access to a type of filtering with a 24 dB/Oct slope. Let's have a look at some of its properties:

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.

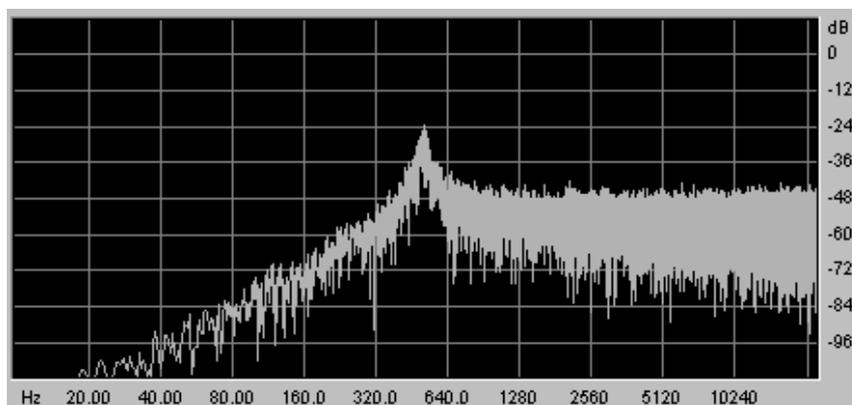


Low Pass Filter

The Prophet VS proposes other types of complementary filtering:

High Pass Filter (HP Filter)

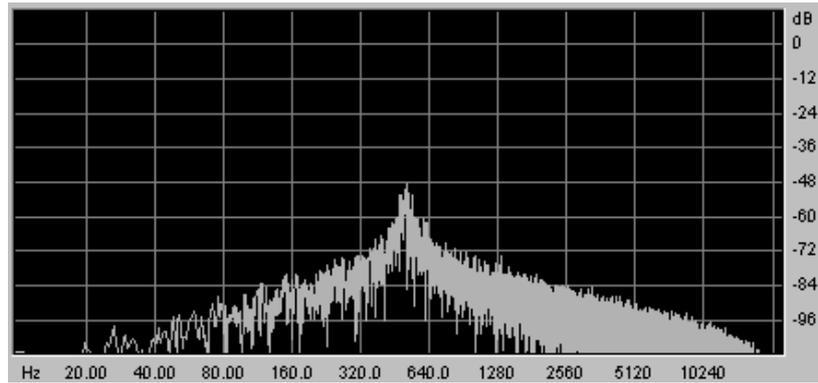
The high-pass filter acts symmetrically to that of the low pass filter. It eliminates frequencies below the cut-off frequency.



High Pass Resonant Filter

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".

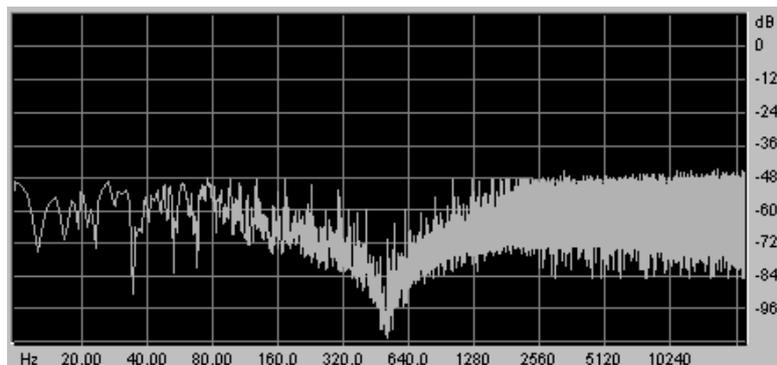


Band Pass Filter

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.



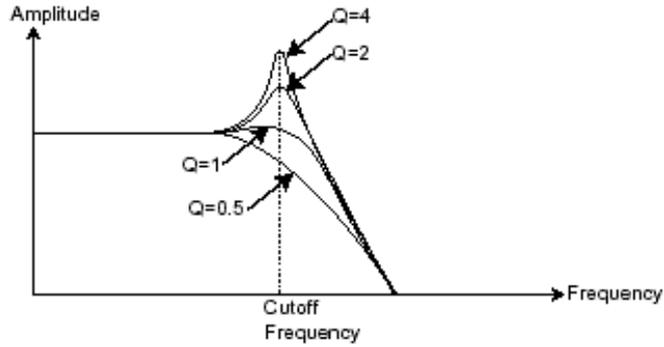
The Filter notch

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-V, 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”.



Q = resonance
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

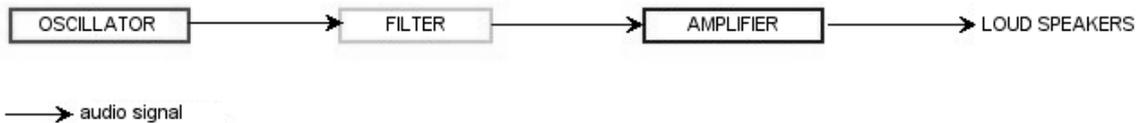
6.1.4 The amplifier or VCA

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:



6.2 Other modules

6.2.1 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 1volt/octave control present on most analogic synthesizers).

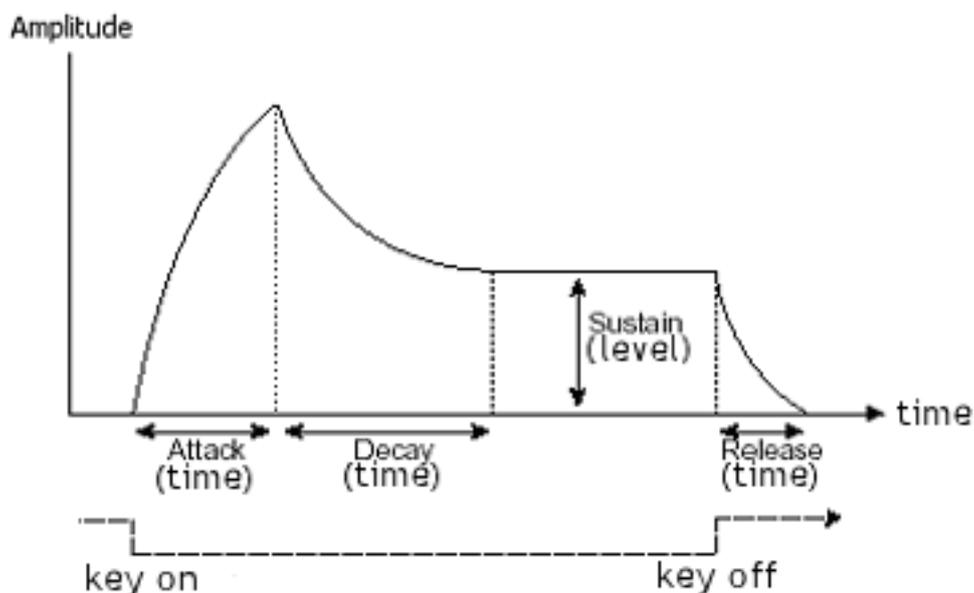
If you do not use a MIDI keyboard, you can also play on the virtual keyboard of the Prophet-V, but your sequencer will not record those actions, it is for auditioning presets and programming only.

6.2.2 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.

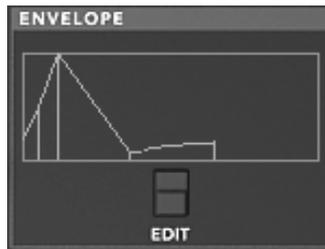


The ADSR Envelope

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

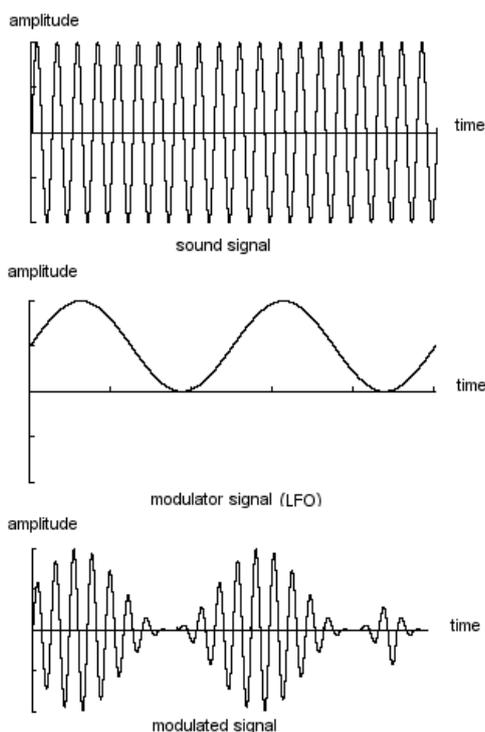
6.2.3 The low frequency oscillator

The LFO (*Low Frequency Oscillator – or LFO on the Prophet-V*) 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.

6.3 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.

6.4 Modules of Prophet-V

The essential elements of the Prophet-V 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 for the Prophet VS)
- Modulation Matrix (Prophet VS)

7 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.

7.1 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 wave-form 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".

7.2 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)
- Le 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 wave-form 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 this, click on the button "Chorus" then "Effect Edit" both found in the utility bar. This contains the settings of the two effects.



Click on the button "Chorus" then "Effect Edit"

- ▶ 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.



Chorus Settings

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

7.3 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 "PRO VS" button found in the utility bar.



Open the Prophet VS interface

- ▶ Choose the Preset "ProVS/Templates/4_Osc_Saw" 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 wave-form 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

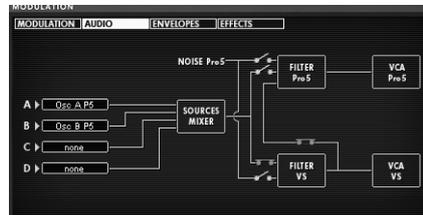
- ▶ Lower the value of the filter's cutoff frequency. Place it in the central position at around "45".



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.



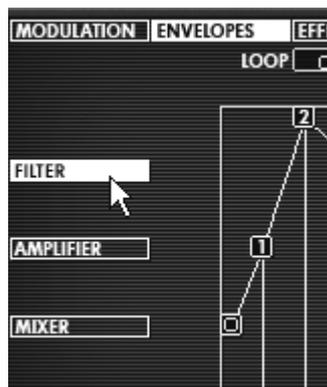
The filter settings

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 "EDIT" button found just underneath it. The editing interface appears on the LDC screen at the right hand side of the screen; you also have access to this interface by clicking directly on the menu "ENVELOPE"/"FILTER" in the same screen.



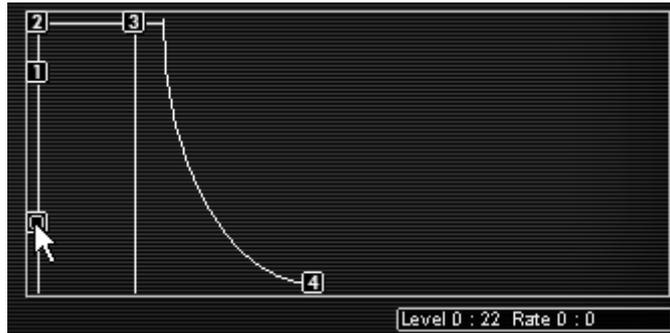
Click on the "EDIT" button



Click on the menu "ENVELOPE" / "FILTER"

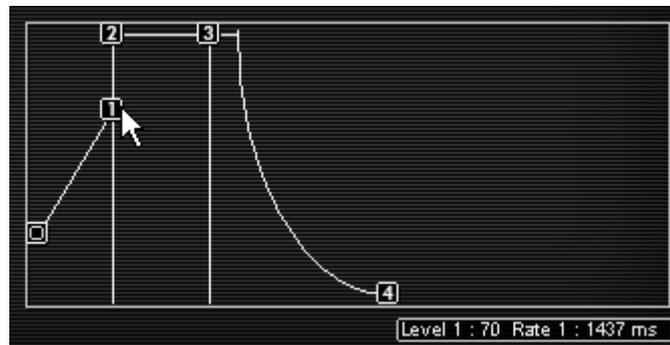
Editing the filter envelope:

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



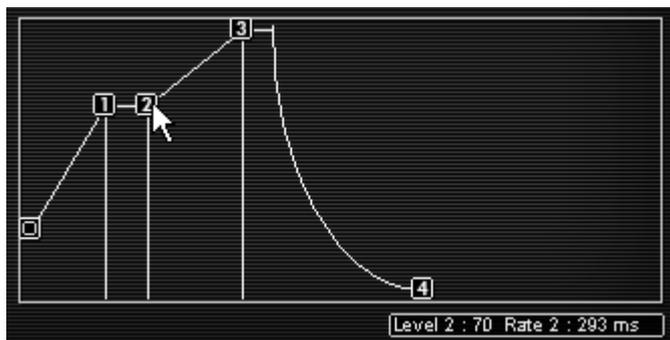
Increase the LEVEL of point "0"

- ▶ 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.



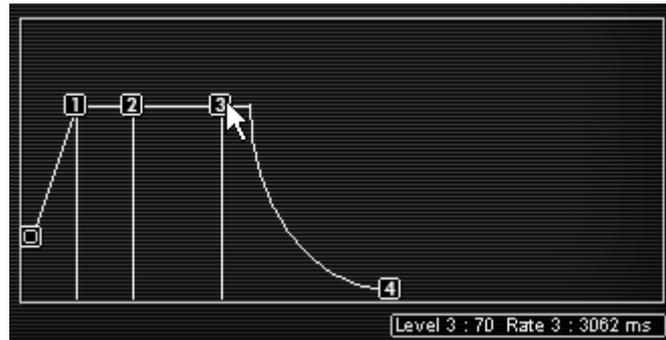
Adjust the settings associated to point "1"

- ▶ 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.



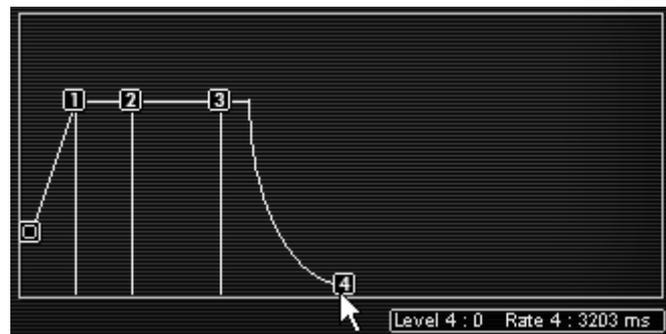
Set point "2"

- ▶ 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 menu "ENVELOPE" / "AMPLIFIER"

- ▶ Point "0" must be set at the maximum initial level (Value = 99) to have a maximum volume at the beginning of the note.



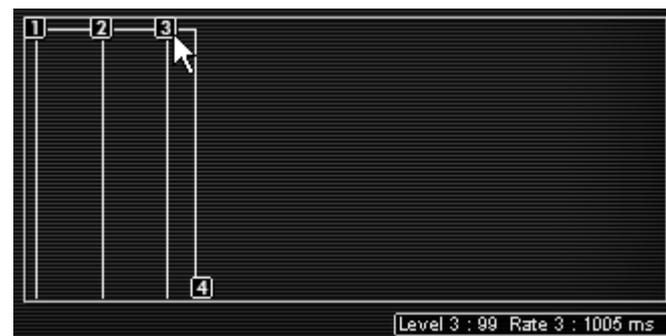
Set the point "0"

- ▶ Set point "1" at the maximum level and a RATE at 0. The attack of the note will be very short.



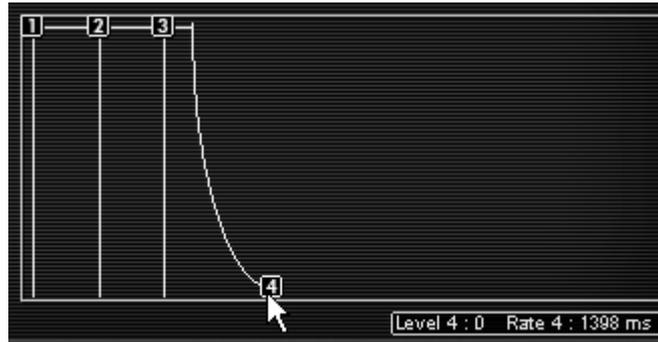
Set point "1"

- ▶ Define the values associated to points 2 and 3: level = 99 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!

7.4 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 "ProVS/Templates/4_Osc_Saw" as the starting point of your new sound.

Choose new wave-forms 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.

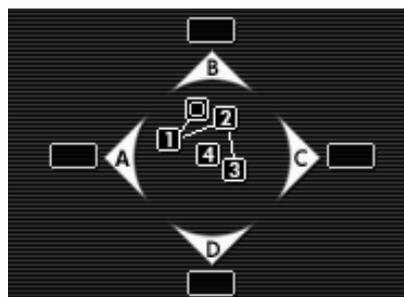
7.4.1 Choose the placement of the five points defining the path of the joystick

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

7.4.2 Mixer envelope

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

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

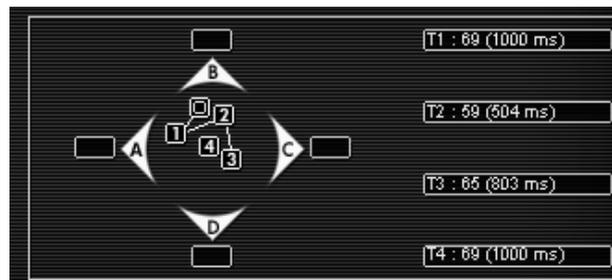
- From 0 to 1 (Knob 1)
- From 1 to 2 (Knob 2)
- From 2 to 3 (Knob 3)
- From 3 to 4 (Knob 4)

Setting the Knobs:

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



Setting the Knobs of the mixer's envelope



Final setting of the mixer's envelope

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

1=>3

2=>3

Or

0<=>3

1<=>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

7.4.3 Modulation Matrix

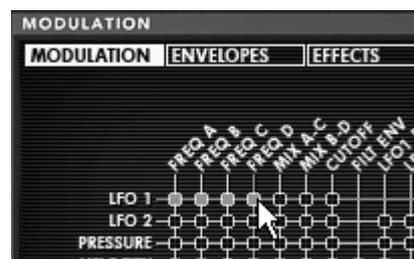
In this section we will see how to use the modulation matrix. It is with this matrix that the different modulations to enrich your sound can be programmed.

- ▶ Open the modulation matrix found on the LCD screen to the right of the Prophet VS interface. Click on the "MODULATION" option to open the matrix.



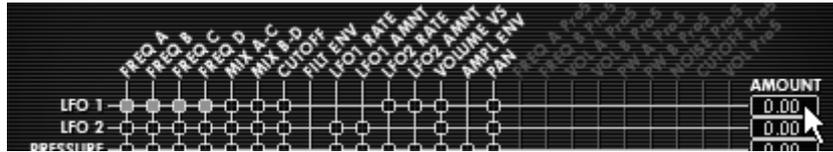
Open the Modulation Matrix

- ▶ 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.



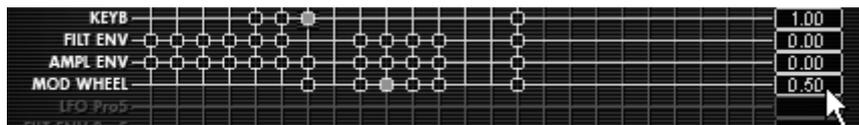
Select the Modulation Points

- ▶ 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.

7.4.4 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!

- ▶ Open the choice window of the "PLAY MODE" by clicking on the button located on the LCD screen.



Open Play mode

- ▶ Click on the "UNISON" button to activate this mode (turns white 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!

7.5 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.



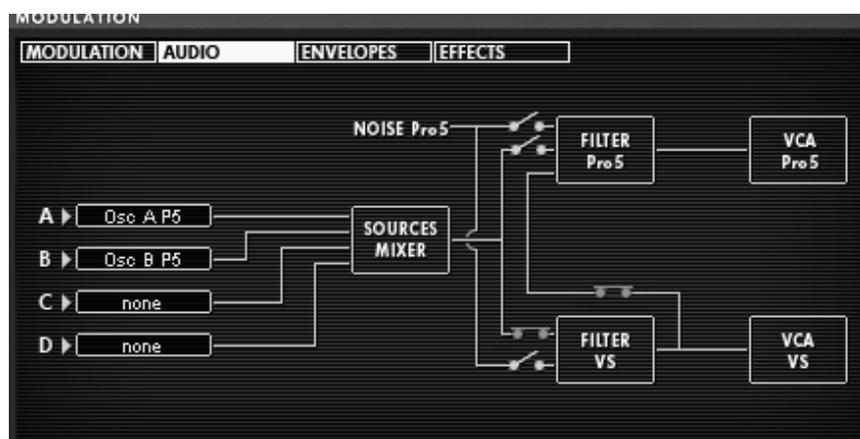
Open the "Hybrid" interface

7.5.1 Audio Matrix

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

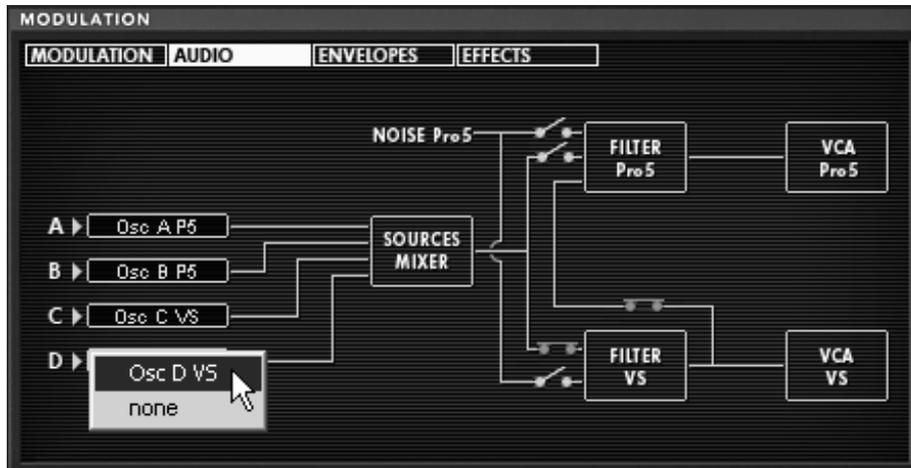
It is on this page that you can connect the filters of the both Prophets either in a series or in parallel. In doing so, you will discover the large difference in sound between the two.

- ▶ 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 orange 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.

7.5.2 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").

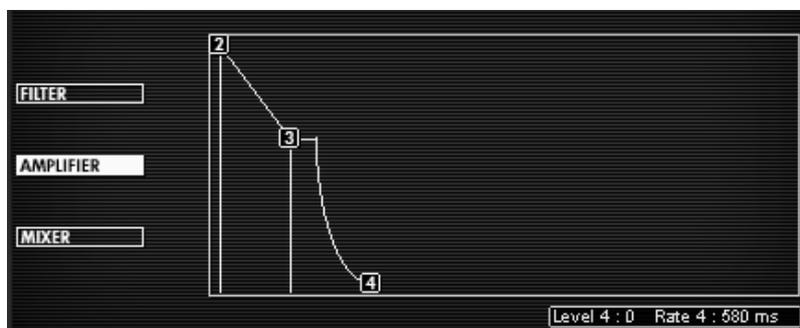


Wave forms of oscillator C and D

Editing the FILTER and the AMPLIFIER:

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

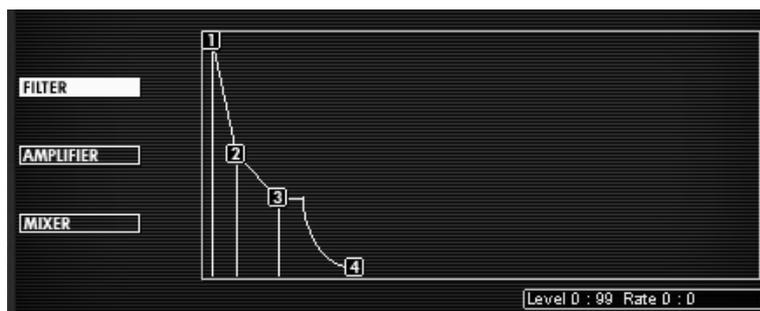
- ▶ Point "0" must be set on the maximum initial level (value = 99) to have the maximum value at the beginning of the note.
- ▶ Set Point "1" at a LEVEL of 99 and a RATE of 0. The attack of this note will be really short on the filter.
- ▶ Set point "2" at a LEVEL around 48 and a RATE relatively short (144). The cutoff frequency falls rapidly toward the intermediate point.
- ▶ Set point "3" with a LEVEL a bit lower (about 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 (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 = 99) to have the maximum value at the beginning of the note.
- ▶ Set Point "1" at a LEVEL of 99 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 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.

- ▶ Choose the “EFFECTS” option 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-V 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.

8 Modes of operation

8.1 Standalone

The Prophet V can be used as an instrument independently from a sequencer software (Standalone mode).

This allows you launch the application as a single instrument, and to play it using an external MIDI keyboard.

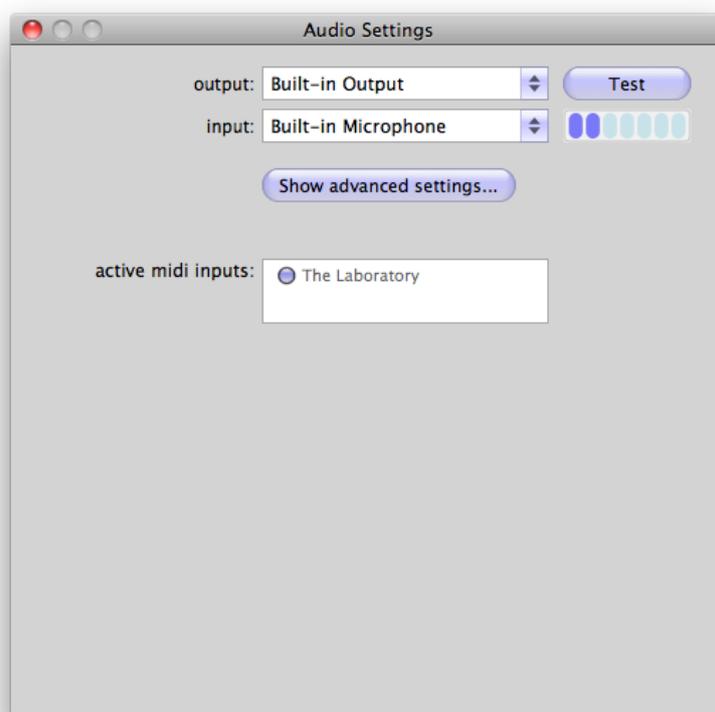
8.1.1 Launch the application

To launch the Prophet V application,

- on Windows, go to the menu Start > Programs > Arturia > Prophet-V2, and choose "Prophet-V2".
- on Macintosh, open the finder > Applications > Arturia and double-click on the Prophet-V2 application icon.

8.1.2 Configuration of the instrument

Click on the "Settings" button on the application menu bar. It will show the following "Audio MIDI Settings" dialog box.



In this option menu you can:

- Set the audio output port
- Choose the audio interface
- Choose memory buffer size (smaller size will increase the load on the CPU but will reduce latency, and reciprocally)
- Choose sample rate between 44100 Hz and 96000 Hz
- Choose one or several active MIDI input port(s)

8.2 VST 2

VST (Virtual Studio Technology) is a plug-in standard created by Steinberg. It allows you to integrate software audio synthesizers and effect plug-ins with audio DAWs and host software. VST is supported by a large number of audio applications like Cubase, Nuendo, Wavelab, FL Studio, Audacity, Samplitude, Sonar, Audition, Live, etc.

The VST interface was updated to version 2 in 1999. One of the additions was the ability for plug-ins to receive MIDI data. This allowed for the introduction of VSTi (Virtual Studio Technology Instrument) format plug-ins.

8.3 VST 3

VST3 is a new update of VST audio plugins protocol. It was updated in 2008. This has improved performance over previous versions of VST and has many new features as well. Cubase 6 and Nuendo 5 are using this new protocol.

With VST3 on Windows, users do not have to choose a folder path to install the plug-in. The installer will put VST3 files automatically into the appropriate directory on your hard drive.

8.4 RTAS

RTAS, short for Real-Time AudioSuite is an audio plug-in developed by Digidesign (AVID technology) for their Pro Tools systems.

8.5 AU

AU for Audio Units is a plug-in protocol developed by Apple Computer. It used by Apple applications such as GarageBand, Soundtrack Pro, Logic Express, Logic Audio, Final Cut Pro, Mainstage, Ardour, Ableton Live, REAPER and Digital Performer.

8.6 64 bit compatibility

The Prophet V is optimized for both 32-bit and 64-bit modes. If you have a 64-bit operating system and a 64-bit digital audio workstation, you should use 64-bit version of the plug-in (for Windows).

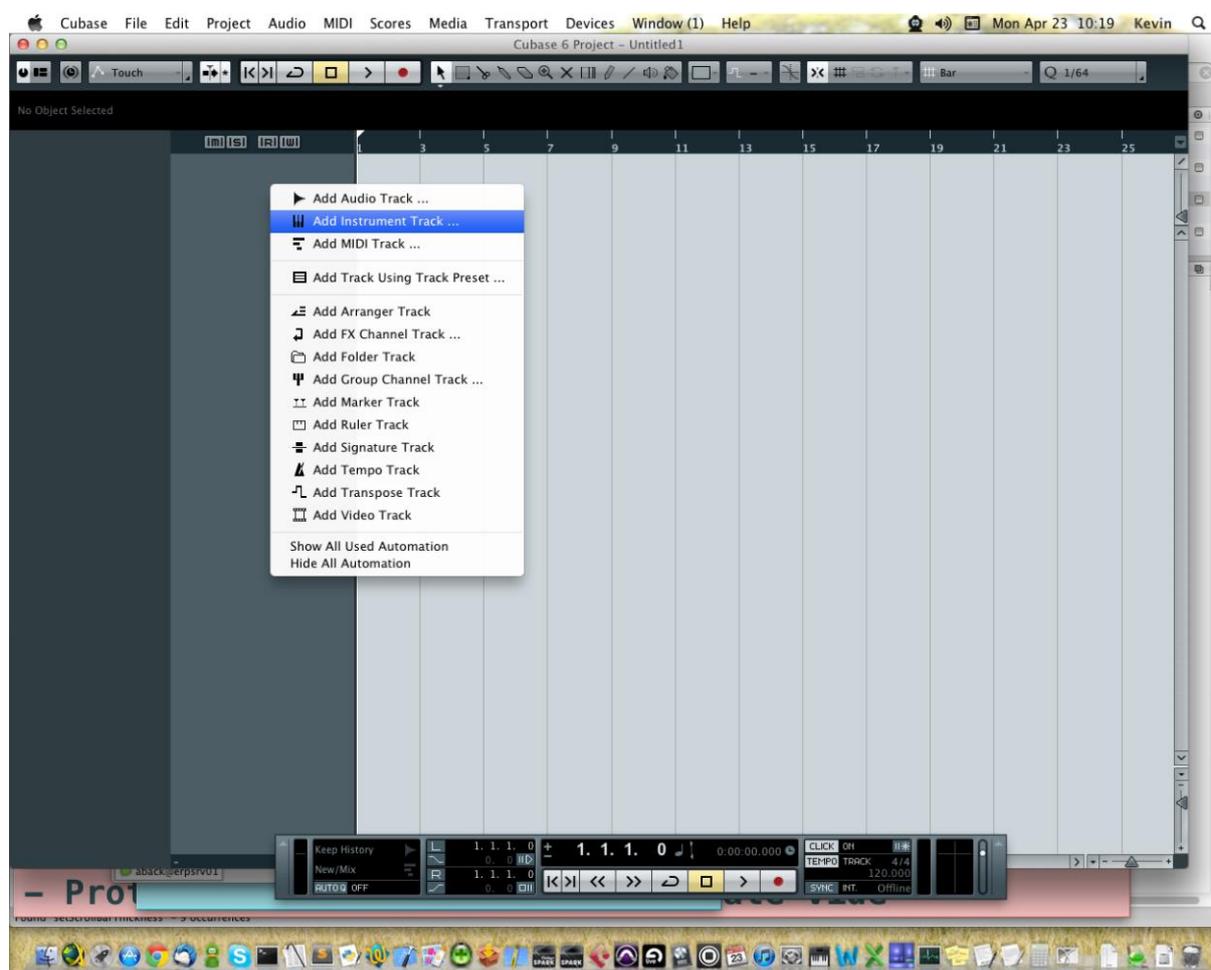
Usually on 32-bit Windows, all 32-bit programs are installed in C:\Program Files. However on 64-bit Windows, you can find the 64-bit programs in C:\Program Files\ and the 32-bit programs in C:\Program Files (x86)\.

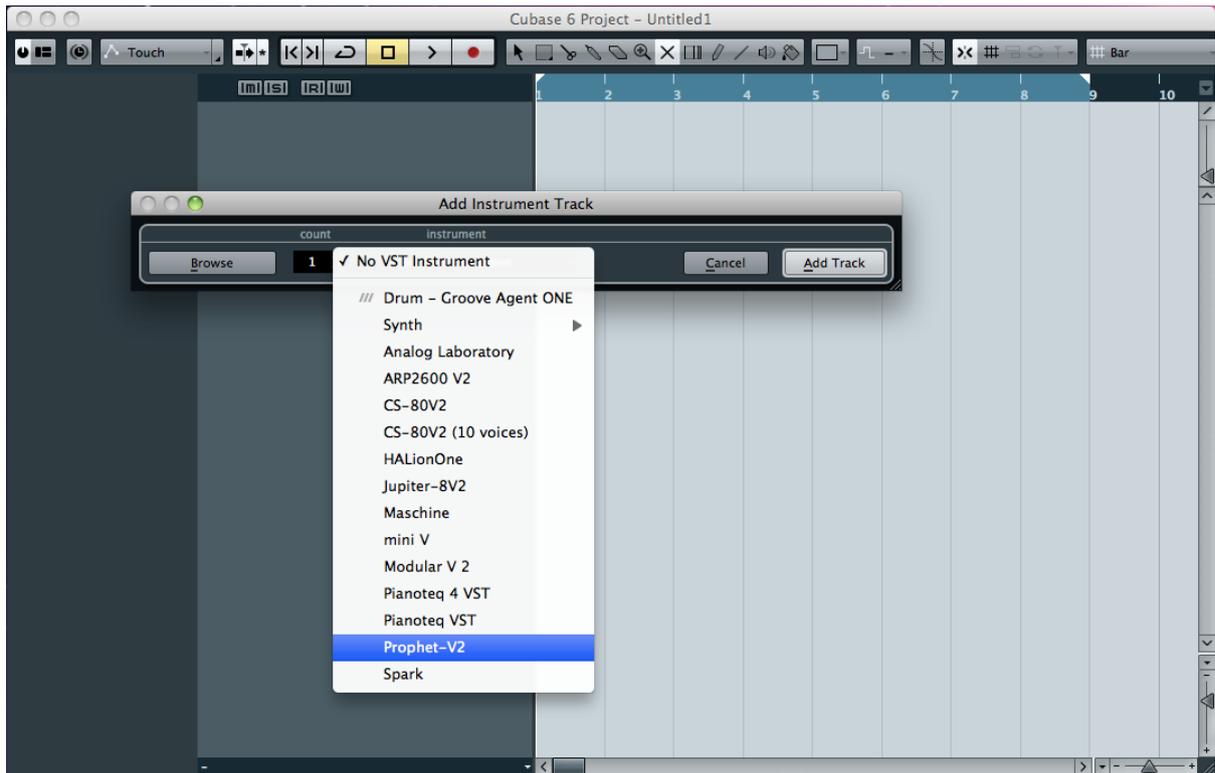
Mac users don't have to bother with this, because the same plug-in file contains both the 32-bit and the 64-bit versions, and the host automatically chooses the better one.

8.7 Use in Cubase/Nuendo (VST)

8.7.1 Instrument use in VST mode

The opening of a Prophet V VST plug-in is the same as opening all other VST plug-ins. Please consult the instruction manual of your host sequencer for more specific information. Under Cubase/Nuendo, create a new "Instrument" track, and choose Prophet-V2 in the rack.





8.7.2 Rescan the plug-in directory in Cubase

If the Prophet-V2 does not appear in the list of VST plug-ins, you can perform a "rescan" of the plug-in directory.

8.7.3 Saving of presets

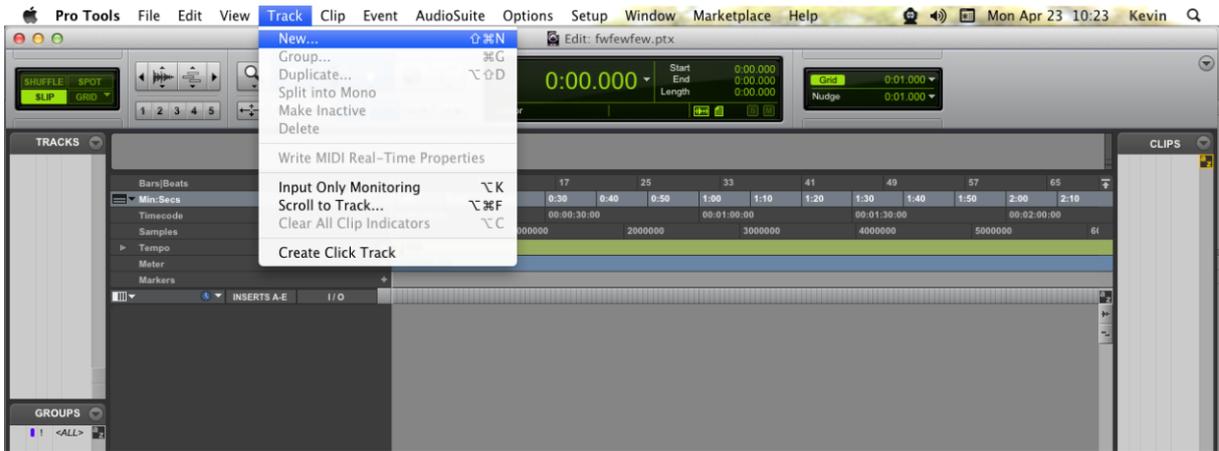
When the session/project is saved, the Prophet-V2 is saved in its last mode of operation, with all modifications intact. For instance, if you were working on a "P1" preset in which you had modified parameters (without saving them as a separate preset within the plug-in itself), the next time you open the project, the Prophet-V2 will load the "P1" preset plus the modifications you made previously.

The drop-down menu in which the VST sequencer allows you to save a new preset is of course usable with the Prophet-V2. However, it is highly advised to use the Prophet-V2 internal menu: the presets saved in this way are usable in any other mode (standalone or with other sequencers), they can be exported and exchanged more easily, and they will remain compatible with the Prophet-V2 future versions.

8.8 Using in Pro Tools (RTAS)

8.8.1 Opening of the plug-in

Access to the Prophet V plug-in is like all other plug-ins in Pro Tools, via a new Instrument Track creation:



The Prophet-V2 must be loaded on an instrument stereo track. We can now make Prophet-V2 sound by playing with the mouse on the virtual keyboard.

8.8.2 Saving the presets

When the session is saved, the status of the Prophet-V2 is saved as it is, even if its programming does not correspond to the preset. For example, if you are working on a preset "P1" in which you have modified the parameters (without saving them in the plug-in itself), the next time you open the session, the Prophet-V2 will load the "P1" preset plus the modifications you made to it. The "Librarian Menu" of Pro Tools can be used with the Prophet-V2 like with all other plug-ins.

Nevertheless it is highly recommended to use the internal Prophet-V2 menu: with the presets saved like this, they are usable no matter which mode is chosen (standalone or other sequencer), and they can be exported, exchanged more easily, and will stay compatible with future versions of the Prophet-V2.

8.8.3 Automation under Pro Tools

The automation function with the Prophet-V2 functions like with all RTAS/HTDM plug-ins (check the Pro Tools documentation for more details on plug-in automations).

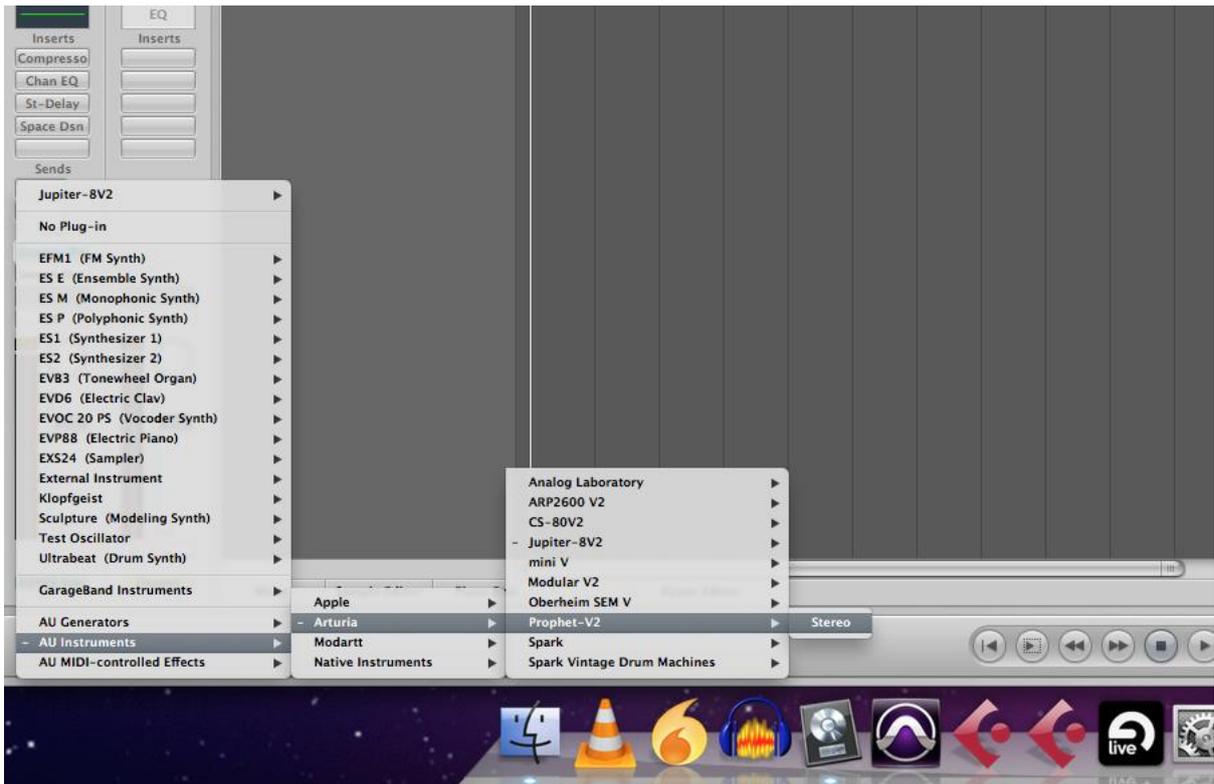
8.9 Using in Logic, Mac OS X (AU)

Make sure the plug-in has been tested OK in the Logic Audio Units Manager. To launch it, click on the menu "Preferences > Start Logic AU Manager".

Create a new Software Instrument track.

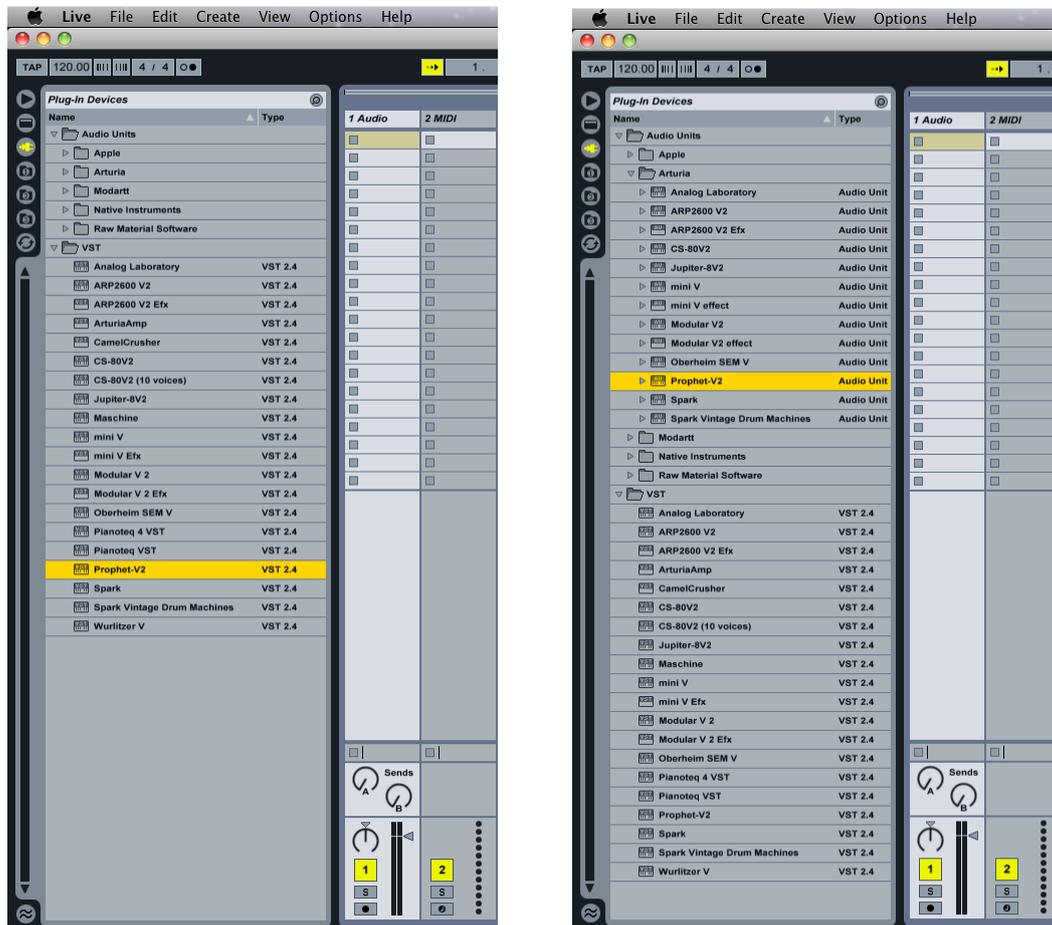


On the channel of the mixer corresponding to the selected track, click on the button "I/O" to list the available plug-ins, then select "AU Instruments > Arturia > Prophet-V2 > Stereo".



8.10 Using in Ableton Live (AU and VST)

From the plug-ins tab, simply double click on the Prophet-V2 VST or AU icon, or drag-and-drop the plug-in into a MIDI track:



If necessary, you can perform a rescan of the plug-in directory in the Preferences, "File Folder" tab: press the "Scan" button, or press "Scan" while holding the [Alt] key for a full rescan.

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