USER MANUAL

Synclavier V

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1 INTRODUCTION

Congratulations on purchasing Synclavier V! We are confident that it will give you many hours of synthesizing and playing unique sounds (or as we prefer to call them on the Synclavier V, Timbres).

Synclavier V is the newest addition to our extensive family of instruments that recreate hard-to-find synthesizers and classic keyboards.

1.1 What is Synclavier V?

The Synclavier V is a software recreation of the Synclavier Digital Synthesizer, combining Additive, FM (Frequency Modulation) and Timbre Frame synthesis. In addition to bringing the authentic and instantly recognizable timbres of the Synclavier to your studio or stage, we have expanded some of the features and added some 21st century features not available in the original Synclavier!

Developed by the original Synclavier software designer Cameron Jones, the DSP engine of Synclavier V authentically reproduces the sound of the FM 8-bit voice cards of the Synclavier right down to the noise floor! It runs both as a stand-alone instrument on Windows and Mac OS X and as a plug-in in all major formats inside your DAW (Digital Audio Workstation). It has easy MIDI learn functionality for hands-on control of many of its parameters and in plug-in mode supports automation for greater creative control.

1.2 1.2 History of the Original Instrument

The original Synclavier® (pronounced "sin-cla-veer" by its creators), is a digital music synthesizer workstation. The brain is an ABLE 16-bit minicomputer processor controlling 8-bit additive, FM (frequency modulation), and Timbre Frame synthesizer voices. The computer is connected to a separate organ type on/off 5-octave keyboard for live performance and recording into a 16-track "Memory Recorder" (a.k.a. sequencer).

A "**Green** screen" monitor was also used to enter and edit sounds, music events and computer files, all stored on 5.25" floppy disks and later, hard disk drives.



Synclavier I Keyboard Synclavier I



Processor and Monitor

Creation of the Synclavier I began in 1972 at Dartmouth College in Hanover, New Hampshire, U.S.A. by Music Professor Jon Appleton and Thayer School of Engineering Professor Frederick J. Hooven. Sydney A. Alonso was a research associate at the engineering school and was assigned to the project in 1972 along with student programmer Cameron Jones.



Sydney A. Alonso and Cameron Jones with Jon Appleton performing on the Synclavier I

In 1976 Alonso and Jones formed a new company, New England Digital Corporation (N.E.D.) in Norwich, Vermont U.S.A., producing and selling their first product, the ABLE computer but they had no capital. In 1978 they were approached by Burbank &

Company investment advisors. That finally yielded a substantial capital investment with the focus of expanding the computer division.



New England Digital Headquarters (White River Junction, Vermont USA)

Brad Naples, a Berklee College of Music graduate with a degree in music composition, was living in Boston and saw a Channel 4 TV spot on Jon Appleton with the Synclavier, immediately saw the potential, and came knocking on N.E.D.'s door. He was soon hired as business manager and would later take the Synclavier II to the Audio Engineering Society (AES) convention. Being the first time anyone other than Alonso or Jones had sold anything for the company, Brad Naples was promoted to Sales Manager and in 1982 became President.

Synthesist, sound designer, and composer Denny Jaeger convinced Alonso of the commercial potential for the musical instrument and with his major design contributions, development of the Synclavier II began.



Synclavier II Keyboard (ORK)



DEC VT-100/640 Monitor

Other features later added were monophonic **Sample-to-Disk** with 16-bit 50khz sampling rate, many software updates including **Resynthesis**, a method of converting a sampled sound into Timbre Frames of additive synthesis sound. These Timbre Frames

were chained together, similar to film frames, and could be edited. The **Music Printing Option** was one of the first and most advanced print music editors allowing note entry from the Memory Recorder or direct monitor screen entry and printing to either a dot-matrix printer, laser printer, or output to a digital typesetting format.

N.E.D. introduced the Digital Guitar option to give guitarists a way to perform with the Synclavier sounds and Memory Recorder (sequencer). The interface consisted of the Roland G-303 guitar, a custom controller that attached to the guitar, and a rack mount interface. Jazz guitarists Pat Metheny and John McLaughlin were early adopters.



Synclavier Guitar Interface



Synclavier Guitar Controller



Roland G-303 Guitar with Synclavier Controller

A larger 6-octave velocity-and-pressure-sensitive keyboard, referred to as the "VPK", was introduced in 1984 with a 32-track Memory Recorder, pitch bend and modulation wheels, and many more assignable buttons.



Velocity/Pressure Sensitive Keyboard (VPK)

In 1984 N.E.D. raised more capital and was able to develop the Polyphonic Sampling system, one of the largest hardware and software updates. The user could now playback multiple sampled sounds simultaneously directly from RAM (Random Access Memory) rather than a hard disk drive. The 2-foot tall rack grew into a mega tower named the PSMT (Polyphonic Sampling Memory Tower). A fully loaded system would have 32 sampling voices, 32 FM synthesizer voices, 32 megabytes of RAM, 32 multichannel outputs, Stereo 100khz sampling, MIDI 8 in/8 out module, SMPTE reader/generator interface card, Clock module, 2 320mb hard drives, and a 5-1/4" 1.4mb floppy disk drive (needed to install software and boot up the whole system).

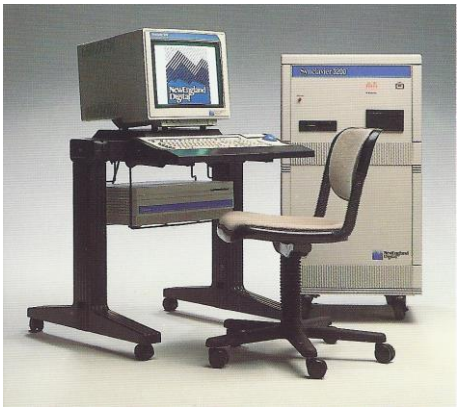
The Direct-to-Disk "option", available in 4, 8 or 16 tracks, introduced 100khz recording to hard disk and connected to the Synclavier tower.

The later models included a 9600 which offered up to 96 sampling voices, 32 FM synthesizer voices, and 96 megabytes of RAM and 16 multichannel outputs.

- 3200 - 32 sampling voices, 32mb RAM
- 6400 - 64 sampling voices, 64mb RAM
- 9600TS Tapeless Studio (9600 plus Direct-to Disk)
- PostPro - A stand-alone Direct-to-Disk
- PostPro SD (Sound Design) - A stand-alone
- Direct-to-Disk with Polyphonic Sampling voices



Synclavier II Processor with 5.25" Floppy Disk Drive



Synclavier 3200



Synclavier PSMT with Memory Expansion Bin



Synclavier PostPro



Synclavier 9600 TS (Tapeless Studio)

1.3 Appearances in Popular Music and Sound Design

One of the most recognizable sounds created from a Synclavier's FM synthesizer was the intro gong sound on Michael Jackson's "Beat It" on the Thriller album. You can find this sound, named "Phased Gong", in the presets for Synclavier V. The following is a partial list of Synclavier users, artists, sound designers and some of their credited works:

- Michael Jackson (Thriller & Bad albums)
- Christopher Currell (Michael Jackson's *Bad* album and tour)
- Pat Metheny (Offramp, First Circle, Still Life (Talking), Letter From Home albums)
- Stevie Wonder (sampled Clair Huxtable and the kids on *The Cosby Show*)
- Sting (Nothing Like the Sun album)
- Nile Rogers (Duran Duran's *The Reflex,* B-52s' *Roam,* Madonna's *Like a Virgin* & *Material Girl* and David Bowie's *Let's Dance*.
- Frank Zappa (Francesco Zappa, Jazz From Hell, Frank Zappa Meets the Mothers of Prevention)
- Alan Silvestri (Cat's Eye, Clan of the Cave Bear, Flight of the Navigator, & Predator scores)
- Mark Knopfler (*The Princess Bride* and *Last Exit to Brooklyn* scores all Synclavier sounds except guitar)
- Mark Snow (*X-Files* TV series)

- Tony Banks (Genesis' *Genesis* & *Invisible Touch* albums and tours)
- Suzanne Ciani: sound designer
- Chick Corea (*Elektric Band* albums and tours)
- Jean-Luc Ponty (*Fables* & *Storytelling* albums)
- John McLaughlin (Adventures in Radioland & Mahavishnu albums)
- Oscar Peterson
- Kashif
- *We Are The World* intro bells and fanfare (Kevin Maloney & Michael Omartian)
- Depeche Mode (Construction Time Again, Some Great Reward, & Black Celebration albums)
- Patrick Gleeson (*Apocalypse Now* score, *Knot's Landing* TV series)
- Michael Hoenig (*Xcept One* album, as guest artist on Wayne Shorter's *Atlantis* album)
- Trevor Horn (producer for Frankie Goes to Hollywood, Yes, Grace Jones)
- Mannheim Steamroller (most albums)
- Eddie Jobson (*Theme of Secrets* - 100% Synclavier)
- Mr. Mister (I Wear the Face, Welcome to the Real World albums)
- Pete Townshend (All the Best Cowboys Have Chinese Eyes and later albums)
- Men Without Hats (*Folk of the 80's Part III* album)
- Paul Simon, Shane Keister (*Ernest Goes to Camp* score)
- Peter Wolf (producer for Wang Chung)
- Jack Nitzsche (*Starman* score)
- Denny Jaeger (*The Hunger* score)
- Michel Rubini (The Hunger, Manhunter, & Nemesis scores, The Hitchhiker TV series)
- James Wolvington (sound designer for most *Star Trek* series and films)
- Gary Rydstrom (*Jurassic Park* sound design)
- Ken Lauber (*Tales From the Darkside* TV series)
- Sean Callery (24, Bones, Medium , & Elementary TV series)

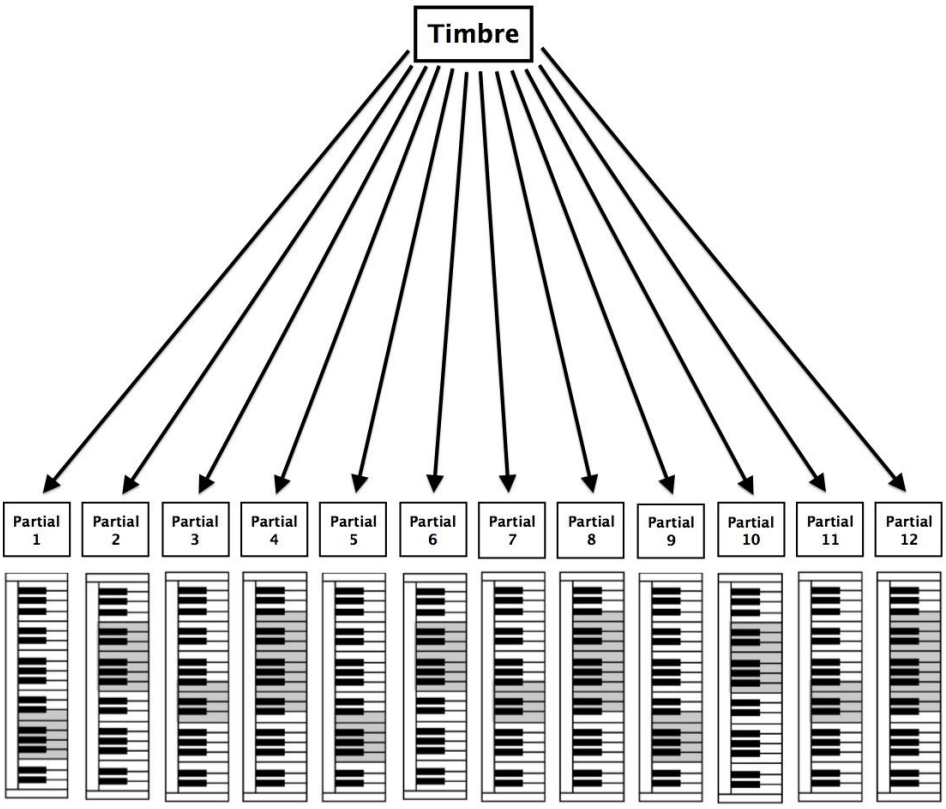
1.4 The Partial Timbre Method of Sound Design

The Partial Timbre Method of Sound Design was first described in US Patent 4,554,855. The intent of the Partial Timbre Method is to be able to design new complex musical sounds by easily creating and modifying acoustically identifiable subcomponents of the sound. The original Synclavier Digital Synthesizer used a custom button panel that gave the operator control over the soloing and design of each component when a note was performed; each subcomponent was referred to as a "**Partial Timbre**".

This Synclavier V instrument implementation expands the number of **Partial Timbres** to 12, from the original total of 4 Partial Timbres.

Each Partial of Synclavier V has a 24-harmonic **carrier** waveform with phase control for each harmonic. These harmonics in any combination, create a waveform that can be played and also viewed graphically. In addition, there is a 24-harmonic **modulator** waveform, FM (frequency modulation), which can modulate this **carrier** waveform. The FM modulator waveform can be a single sinusoidal (sine) wave, sawtooth wave, square wave, triangle wave, or any 24 harmonic waveform of your own design.

Now, imagine chaining up to 50 of these waveforms together to form a constantly evolving timbre. These **Timbre Slices** (the original Synclavier called them Timbre Frames) can have varying time lengths, crossfade times, and pitch and volumes. Just think about the infinite possibilities of 12 different continuously varying waveforms sounding at the same time! Add in some stereo placement and you'll have a huge soundscape.



Partials Mapped to Keyboard

1.5 What does Synclavier V add to the original?

- Control of Bit Depth from 4-bit to 24-bit resolution (the original are 8-bit synthesizers)
- What could be better than the original Synclavier's 4 **Partial Timbres**? More Partial Timbres of course! Synclavier V has a total of 12 **Partial Timbres**.
- Sawtooth, Square and Triangle FM modulator waveforms in addition to the original single Sine wave. Plus, you can build your own modulator waveform using 24 harmonics including phase control
- Graphical Waveform Screen of each Partial and FM modulator
- **Timbre Slices** (Timbre Frames) can each be assigned a separate FM modulator waveform
- Added Effects
    - Flanger
    - Delay
    - Chorus
    - Delay
    - Reverb
    - Analog Delay

2 ACTIVATION AND FIRST START UP

2.1 Register and Activate

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









Once Synclavier V has been installed, the next step is to register the software. The registration process will require you to enter the serial number and the unlock code you received with the product.

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

http://www.arturia.com/register

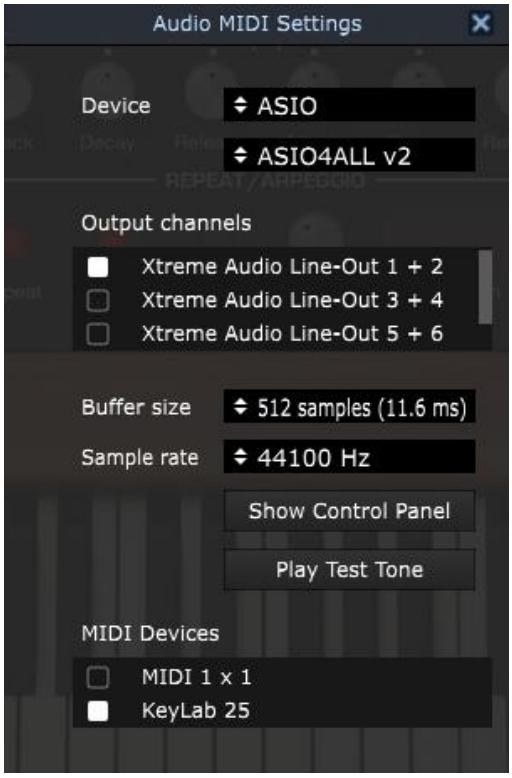
Note: If you don't have an Arturia account yet, you will need to create one. The process is quick, but it does require that you can access your email address during the registration process.

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

2.2 Initial setup

2.2.1 Audio and MIDI Settings (Windows OS)

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



Audio and MIDI settings window (Windows OS)

When you choose the **Audio Settings** option, you will see the **Audio MIDI Settings** window.

Starting from the top you have the following options:

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

- **Output Channels** lets you select which of the available outputs will be used to route audio out. If you only have two outputs, only two will appear as options. If you have more than two you can select a specific pair of outputs.

- **Buffer Size** lets you select the size of the audio buffer your computer uses to calculate sound. A smaller buffer means lower **latency** (delay) between pressing a key and hearing the note. A larger buffer means a lower CPU load as the computer has more time to think, but can result in a small **latency**. Find the optimum buffer size for your system. A fast, modern computer should easily be able to operate at 256 or 128 sample buffer size without creating pops or clicks in the sound. If you are getting clicks, try raising the buffer a little. The **latency** is displayed in milliseconds on the right hand side of this menu.

- **Sample Rate** allows you set the sample rate at which audio is sent out of the instrument. The options here will depend on the capability of your audio interface hardware, though most computers' own hardware can operate at up to 48kHz which is perfectly adequate. Higher sample rates use more CPU power so unless you have a good reason to go up to 96kHz, then 44.1kHz or 48kHz are fine. The **Show Control Panel** button here will jump to the system control panel for whatever audio device is selected.

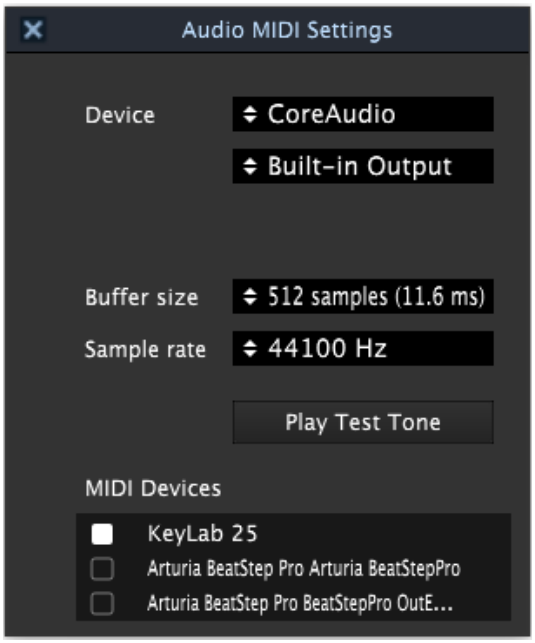
- **Play Test Tone** helps you troubleshoot audio issues by checking that sound can be heard through the correct device.

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

2.2.2 Audio and MIDI Settings (Mac OS X)

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

When you choose the **Audio Settings** option, you will see the **Audio MIDI Settings** window.



Audio MIDI Settings Window (Mac OS X)

Starting from the top you have the following options:

- **Device** lets you choose the audio driver you want to route sound out of the instrument. This will be either your Mac's own driver, **CoreAudio**, or another driver. If you are using another hardware interface it will appear in this field.

- **Output Channels** lets you select which of the available outputs will be used to route audio out. If you only have two outputs, only two will appear as options. If you have more than two you can select a specific pair of outputs.

- **Buffer Size** lets you select the size of the audio buffer your computer uses to calculate sound. A smaller buffer means lower **latency** (delay) between pressing a key and hearing the note. A larger buffer means a lower CPU load as the computer has more time to think, but can result in a small **latency**. Find the optimum buffer size for your system. A fast, modern computer should easily be able to operate at 256 or 128 sample buffer size without creating pops or clicks in the sound. If you are getting clicks, try raising the buffer a little. The **latency** is displayed in milliseconds on the right hand side of this menu.

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

2.2.3 Using Synclavier V in Plug-in Mode

Synclavier V comes in VST, AU and AAX plug-in formats for use in all major DAW software like Cubase, Logic, Pro Tools and so on. You load it as a plug-in instrument. Its interface and settings work in the same way as in stand-alone mode, with a couple of differences.

- The instrument will now synchronize to your DAW's host tempo/bpm rate, when tempo is a factor. When you activate the Sync buttons on the front panel, VIBRATO rate, STEREO pan rate, and REPEAT/ARPEGGIO controls will synchronize to the DAW tempo/bpm.

- You can automate numerous parameters using your DAW's automation system.
- You can use more than one instance of Synclavier V in a DAW project. In stand-alone mode you can only use one at a time.
- You can route Synclavier V's audio outputs more creatively inside your DAW using the DAW's own audio routing system.

3 USER INTERFACE

Synclavier V has many great features, and in this chapter we'll make sure you know what each one does. You will be amazed at how quickly Synclavier V provides you with sounds that are inspiring and perfect for all sorts of projects.

It's also really easy to work with: just a few tweaks here and there and suddenly you're in a new world of sound. That will always be the main focus of every Arturia product: unleashing your creativity while remaining easy to use.

3.1 The Virtual Keyboard



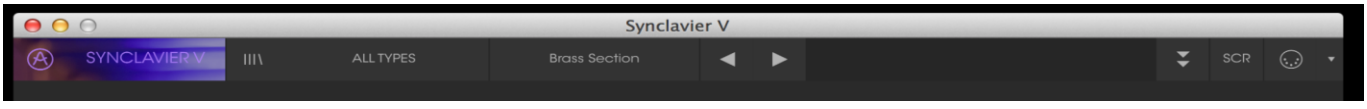
Virtual Keyboard

The **Virtual Keyboard** allows you to play a sound without the need for an external MIDI device. Simply click on a virtual key to hear the currently selected timbre. You can also drag the cursor across the keys to hear a glissando.

The Synclavier V can be velocity sensitive from an external MIDI keyboard or other MIDI device but the sound must be assigned a velocity value

3.2 The Upper Toolbar

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



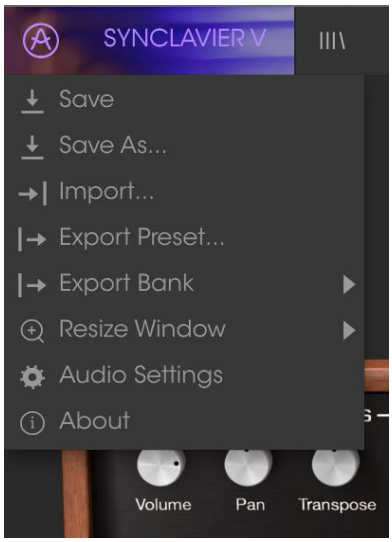
Upper Toolbar

3.2.1 Save

The first option lets you **Save** a preset timbre. If you have made a change to the timbre you are presented with a window to enter information about that timbre. You can **Name** the timbre, add an **Author** name, select a **Bank** and **Type** and select some **Characteristics** tags that describe the sound. This information can be read by the **Preset Browser** and is useful for searching presets later. You can also enter freeform text in the **Comments** field which is handy for providing a more detailed description of your timbre.

3.2.2 Save As…

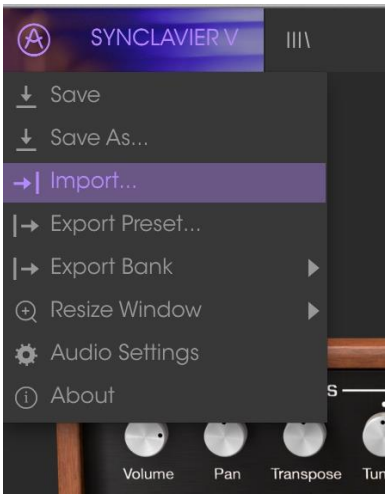
This works in the same way as the **Save** command, but lets you save a copy of the preset instead of saving over the original. It's useful for creating variations on patches but still keeping individual copies of each one.

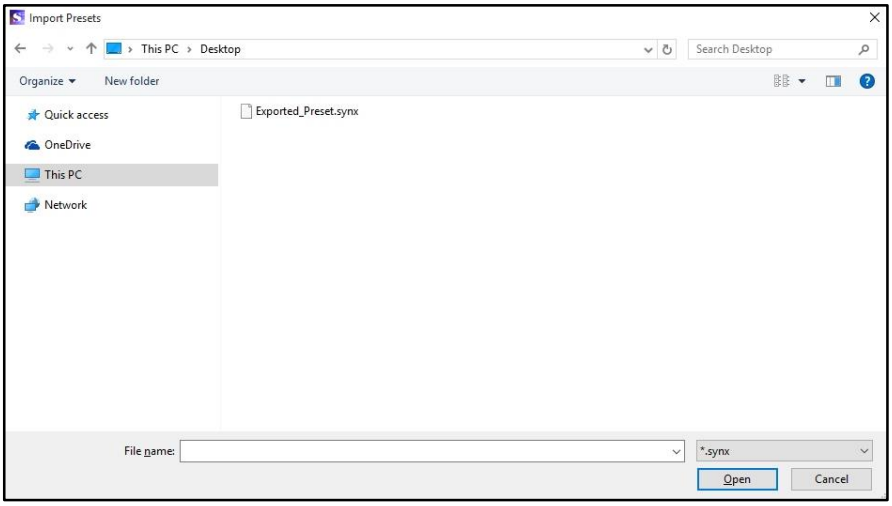


Synclavier V Menu

3.2.3 Import… (Preset or Bank)

This command lets you import a Preset or Bank file. Presets and Banks are stored in the .synx format.





3.2.3.1 Export Preset…

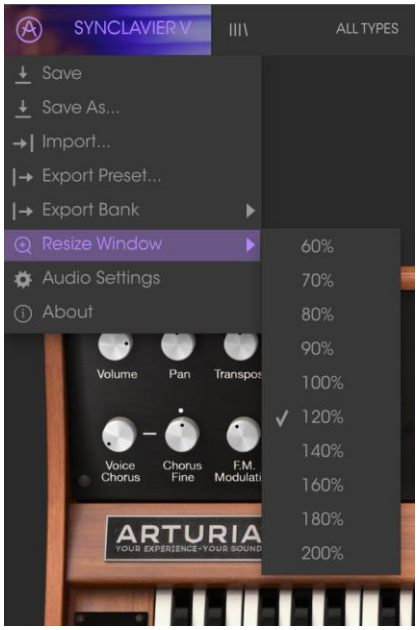
You can export any preset as a file using this command. Click **Export Preset (**and select a Preset) and a popup window will ask you where you want to save it on your computer. Presets and Banks are stored in the .synx format.

3.2.3.2 Export Bank

This option is used to export the entire bank of sounds from the instrument. This is useful for backing up or sharing presets. From the **Synclavier V** drop-down menu, click **Export Bank** and a popup window will ask you where you want to save it on your computer.

3.2.4 Resize Window

Synclavier V's window can be resized from 60% to 200% of its original size without any negative visual artifacts. On a smaller screen such as a laptop you might want to reduce the interface size so it doesn't dominate the display. On a larger screen, or a second monitor, you can increase its size to get a better view of the controls. The controls all work the same at any zoom level but the smaller ones can be harder to see if you have shrunk the window down.



Resize Window

3.2.5 Audio settings

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

3.2.6 About

Here you can view the Synclavier V software version, and designer credits.

3.2.7 Preset Browser Quick Look



Presets can be viewed by clicking on the **Preset Browser** button **III** on the left side of the **Toolbar** (See Section 4.3 of the manual for full details). The **All Types** name field and left & right arrows < > in the toolbar also are used for preset selection.

3.2.8 Display mode buttons

3.2.8.1 Standard Panel Mode

The **Standard Panel Mode** is a single panel of knobs and buttons above the Virtual Keyboard. TIMBRE SETTINGS, AMP ENV OFFSET, HARM ENV OFFSET, REPEAT/ARPEGGIO,

POLYPHONIC MODE, AND PORTAMENTO sections control the overall parameters of the current timbre selected. All Partial Timbres are affected with these controls.

(See **Section 5** of the manual for complete detail on these controls)



Standard Panel Mode

3.2.8.2 Extended Panel Mode

The **Extended Panel Mode** can be viewed by clicking on the **EXT** button at the top right of the **Upper Toolbar**. This lets you access the 2nd panel of knobs and buttons which control each Partial Timbre individually or in combinations. Click the **EXT** button again and you will return to **Standard Panel Mode**.

(See **Section 6** of the manual for more complete detail on these controls)



Extended Panel Mode

3.2.8.3 Graphic Screen Mode

The **Graphic Screen Mode** section can be viewed by clicking on the button showing two downward pointing arrows at the top right of the toolbar. This lets you access the more advanced features of the instrument like tuning of individual notes, user waves and envelopes.

(See **Section 7** of the manual for complete detail on these controls)



Graphic Screen Mode

3.2.9 MIDI Learn Mode



The MIDI plug icon at the right hand end of the toolbar places the instrument into **MIDI Learn Mode**. Parameters that can be assigned to MIDI controls will be shown in **Purple** and you can map physical MIDI dials, faders or pedals from your hardware units (like the Arturia **Beatstep** or **Keystep)** to specific destinations inside the instrument. A typical example might be to map a hardware MIDI expression pedal to the virtual Volume knob to control overall volume of an organ or string timbre; or assign a button on a hardware controller to the **Portamento** select switch so you can turn **Portamento** on/off of a synth lead timbre.



MIDI Learn Mode

When you click on a **Purple** knob or button you will put that control into **Listening Mode**. Move a hardware dial, fader, or push a hardware button and the target goes **Red** to show that a link has been made between the hardware control and the software parameter. To **un-assign** that parameter RIGHT-CLICK (2-finger Click on a Track Pad or Smart Mouse) on the **Red** knob or parameter and it will return to **Purple**.

There is a pop-up window called **MIDI Control Setup** that displays which two things are being linked and a button to un-assign the two from each other.



Timbre Volume knob selected and assigned

The **MIN** (minimum) and **MAX** (maximum) value slider is used to restrict the parameter change range to something other than 0%-100%. For example, you might want the instrument's Timbre Volume to be controllable via hardware from 30% to 90%. If you made this setting (Min set to 0.30 and Max set to 0.90), your physical dial would not alter the volume any lower than 30% or any higher than 90% no matter how far you turned it. This is very useful for making sure you can't accidentally make the sound too quiet or too loud when performing.

With buttons that have only two positions (up or down) you can still use minimum and maximum values in the **MIDI Control Setup** pop-up window, but in these cases the behavior is a little different.

It's about what values the controller sends and whether those are high or low enough to trigger the state change in a switch - which is always 0.5 or in the case of the three stage switch, 33.3/33.3/33.3 (or near enough). You can set the minimum and maximum values of the hardware MIDI control but whether it affects the software parameter depends on whether it crosses the threshold required to make the change.

Let's take an example. We want to control a 2-position button with a hardware fader. The fader value goes from 0.0 to 1.0 and the switch state will always change when 0.5 is crossed.

The **MIN** value in the **MIDI Control Setup** window corresponds with the value that will be sent (from the controller to the engine) when the fader is at its **minimum** position.

The **MAX** value in the **MIDI Control Setup** window corresponds with the value that will be sent (from the controller to the engine) when the fader is at its **maximum** position.

To explain this, try these 5 use cases:

- Set **MIN** value to 0.0 and **MAX** value to 0.49 => the switch cannot be switched on because the 0.5 value can never be crossed.
- Set **MIN** value to 0.51 and **MAX** value to 1.0 => the switch cannot be switched off because the 0.5 value can never be crossed.
- Set **MIN** value to 0.0 and **MAX** value to 1.0 => the switch state changes when the fader crosses its central position.
- Set **MIN** value to 0.49 and **MAX** value to 1.0 => the switch state changes when the fader is very low.
- Set **MIN** value to 0.0 and **MAX** value to 0.51 => the switch state changes when the fader is very high.

The final option in this window is a button labeled "**Is Relative**". It is required to use "**Is Relative**" when using a Relative controller, and to avoid using it with an Absolute controller.

Absolute and Relative controllers send Absolute and Relative data respectively. When you move a physical Relative controller, the parameter will start from its current position, sending either a "plus" or "minus" message. When you move a physical Relative controller, the controller sends a value between 0 (zero) and 127. The parameter will jump, not to 0 (zero), but will pick up the **current** value of the absolute controller.

3.2.9.1 Reserved MIDI CC numbers

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

- PitchBend
- Ctrl Mod Wheel (CC #1)
- Ctrl Expression (CC #11)
- AfterTouch
- Ctrl Sustain On/Off (CC #64)
- Ctrl All Notes Off (CC #123)
- Ctrl All Sounds Off (CC #120)

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

3.2.10 MIDI Controller Configs (Configurations)

MIDI Controller Configs are accessed at the far right hand side of the **Upper Toolbar** just to the right of a MIDI Plug icon. It's a small down-facing arrow drop-down menu. **MIDI Controller Configs** allow you to manage different sets of MIDI maps that you may have set up for controlling the instrument's parameters from MIDI hardware. You can copy the current MIDI assignment setup or delete it, import a configuration file or export the currently active one. This can be used to quickly set up different hardware MIDI keyboards or controllers with Synclavier V without having to build all the assignments from scratch each time you swap hardware.

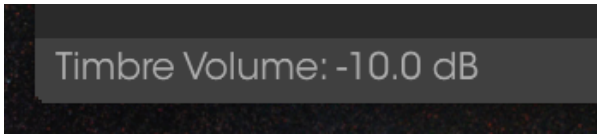


3.3 The Lower Toolbar

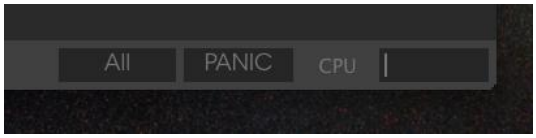
At the right hand side of the **Lower Toolbar** are 3 small items.

- The MIDI channel button is a drop-down menu that assigns a MIDI channel that Synclavier V responds to. The default shows the selection as **ALL** or you can select between MIDI channels #1-16.
- The **PANIC** button resets all MIDI signals in the event of stuck-on notes, and stops sounds from being generated.
- The **CPU** meter is used to monitor how much of your computer'

At the left hand side of the **Lower Toolbar** you will see a readout showing the parameter value of the control you are modifying.



Lower Toolbar (left)

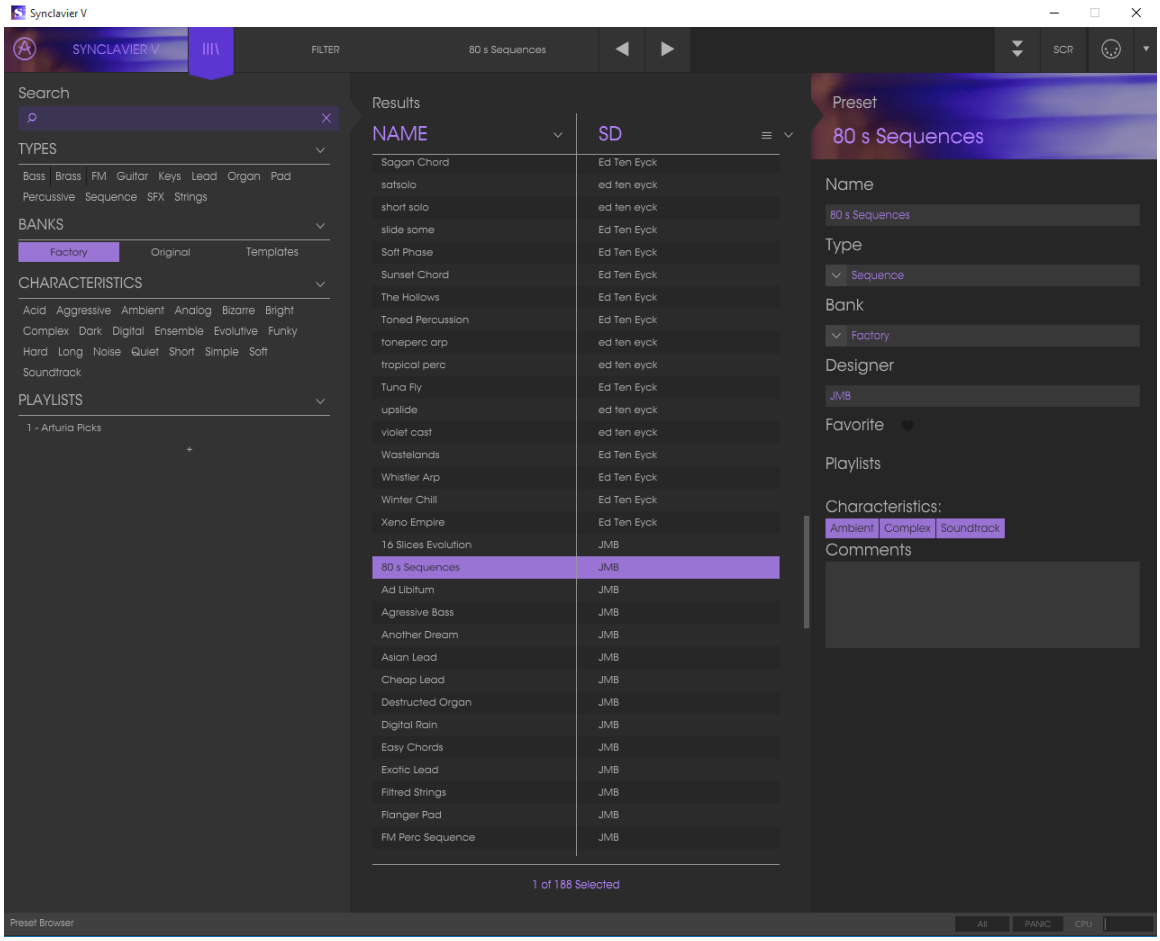


Lower Toolbar (right)

3.4 The Preset Browser

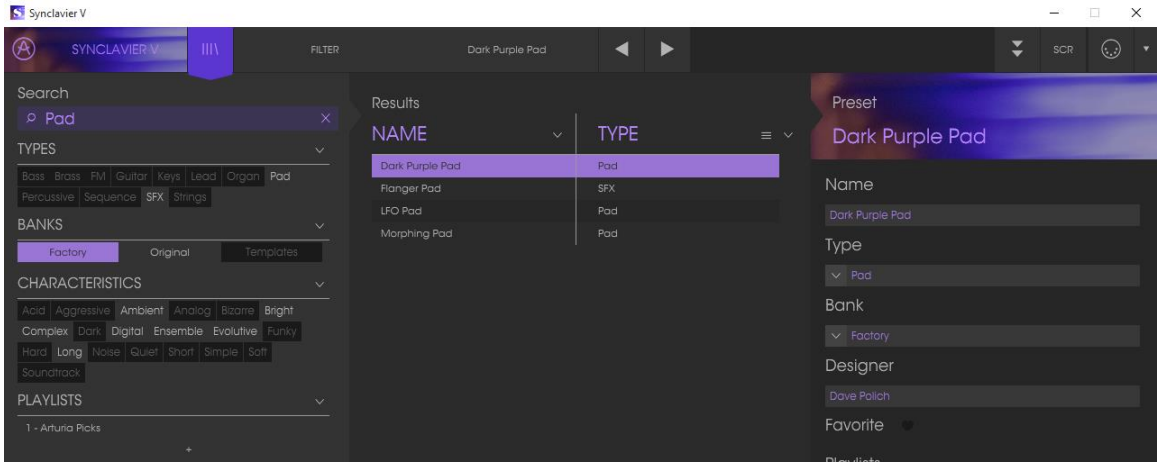


The **Preset Browser** is how you search, load and manage Timbres/Sounds in Synclavier V. It has a couple of different views but they all access the same banks of presets. Click on the browser button that looks like this III\ to access the search view.



Preset Browser

3.4.1 Searching Presets



Preset Search

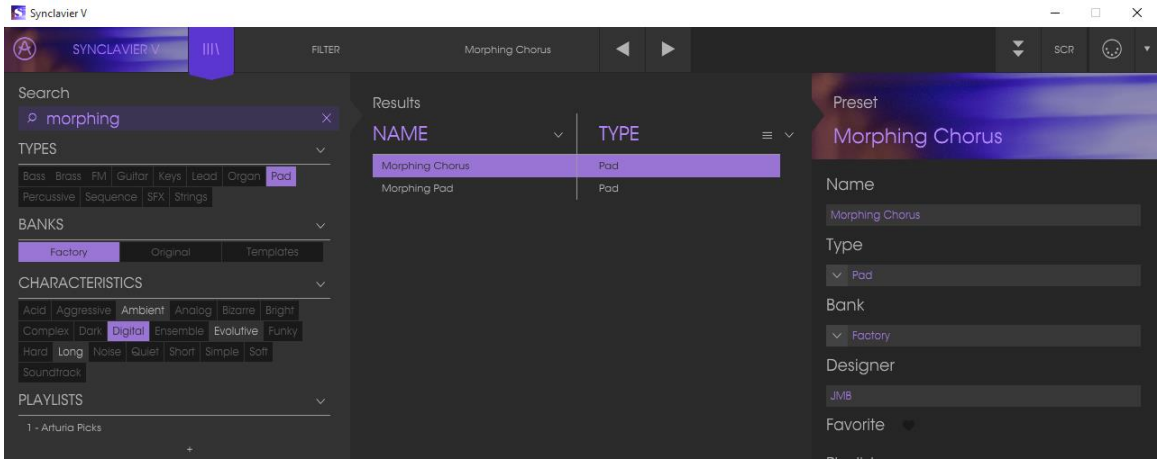
The **Search** display has a number of sections. By clicking on the **Search** field at the top left you can quickly enter any search term like "Pad" to filter the preset list by patch name. The Results column is updated to show the results of your search. Press the X button in the search field to clear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

3.4.2 Filtering Using Tags

You can also search using different tags. For example, by clicking on the **Lead** and **Organ** options in the **Types** field you can show only presets that match those tags. The tag fields can be shown or hidden by using the small down arrow buttons in their title fields. Results columns can be sorted by clicking the same arrow button in their own section.

You can use multiple search fields to perform narrower searches. So by entering a text search and also specifying **Types**, **Banks** and **Characteristics** options, you can see only the presets that match those exact criteria. Deselect any tag in any area to remove that criteria and widen the search without having to go back and start again. Using "Ctrl + click" (Windows) or "Cmd + click" (Mac) will allow you to select multiple elements in the same area.

The second **Results** column can be switched to show **Type**, **Bank**, or **Designer**, tags depending on how you like to search. Click on its options menu button just next to its sort arrow.

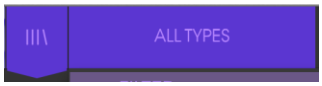


Preset Search by Tag

3.4.3 The Preset Info Section

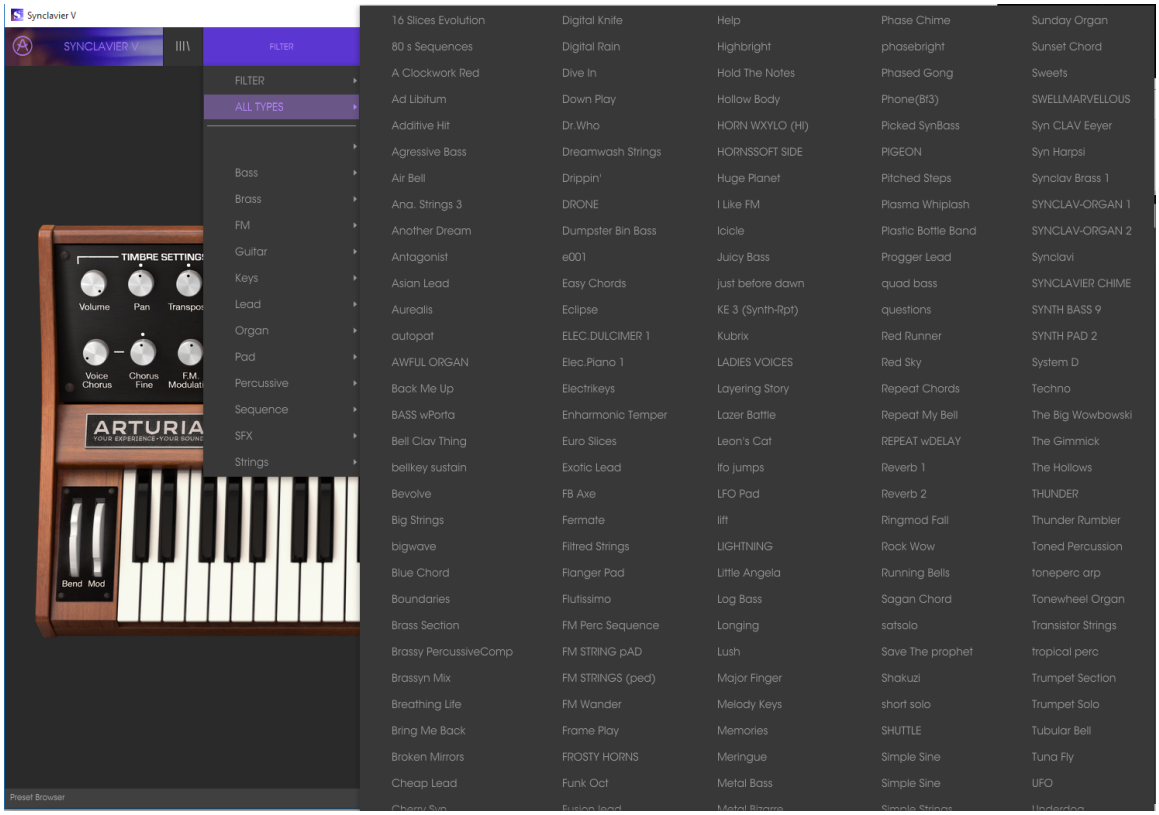
The **Preset Info** column on the right of the search field shows information about any preset. If you want to make changes to a factory preset such as changing its name, adding comments or tags, you have to re-save it as a user preset using the **Save As…** command in the main **Synclavier V Menu**. When you have done this, the Info section will gain Edit and Delete buttons that you can use to change the information stored inside the preset. Factory presets can't be overwritten.

3.4.4 The Second Preset View



The menu next to the Search menu shows you a different view. The default view is **ALL TYPES**. The first option in this menu is called **FILTER** and will hold a record of whatever you have currently searched for in the Search field. So if you searched for Jazz in the main search area, those results will appear here.

Selecting the **ALL TYPES** option in this column on the other hand will provide a list of all patches. The Categories shown beneath group sounds based on their Type like keys, pads, bass and so on.



Preset Browser 2nd View

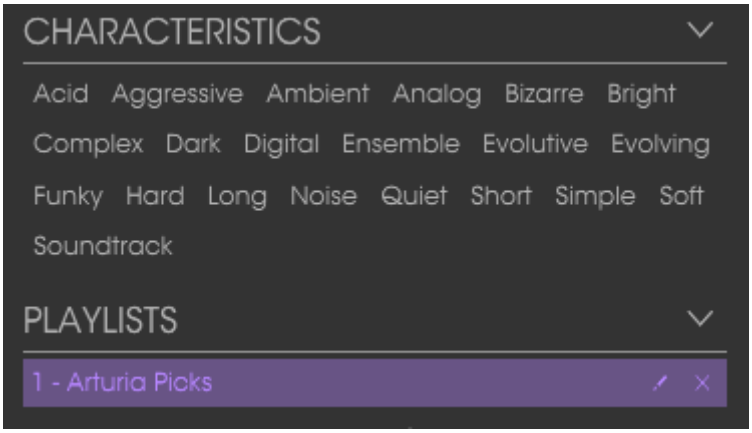
Clicking on the name field in the center of the Toolbar will show you a list of all available presets and will also change based on what you have entered in the **Search** field. So again if you have searched for "Jazz", this shortcut menu will only show you patches that match that tag. The left and right arrows in the **Toolbar** cycle up and down through the preset list as either the full list, or the filtered list if you have entered a search term.

3.4.1 Playlists

In the lower left corner of the Preset Browser window is a feature titled Playlists. This is used to collect presets into different groups for different purposes, such as a set list for a particular performance or a batch of presets related to a particular studio project.

3.4.1.1 *Add a playlist*

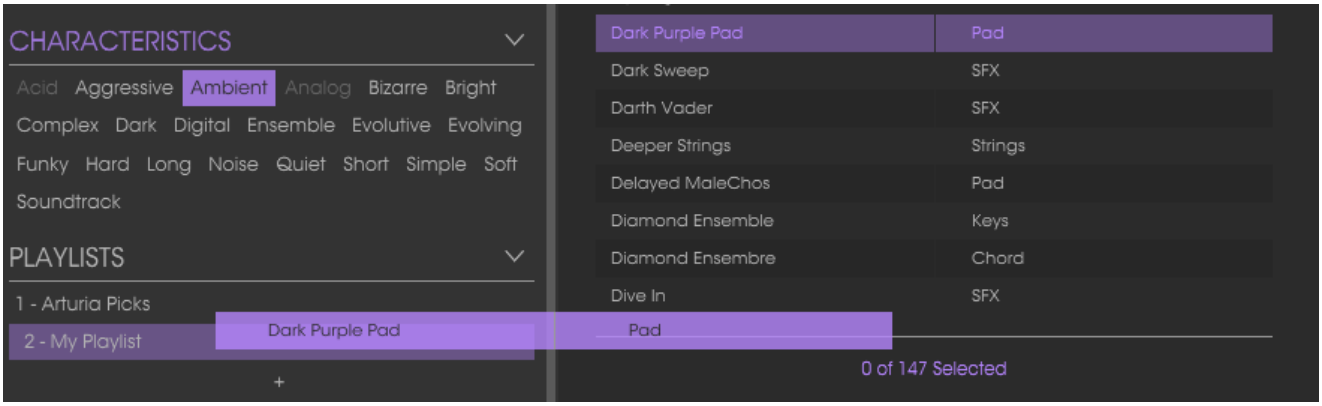
To create a playlist, click the plus sign at the bottom:



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

3.4.1.2 *Add a preset*

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



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

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

3.4.1.3 *Re-order the presets*

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

This will move the preset into the new location.

3.4.1.4 Remove a preset

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

Click the X to remove a preset from a playlist

3.4.1.5 Delete a playlist

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

Click the X to delete a playlist.

4 STANDARD PANEL MODE CONTROLS

4.1 TIMBRE SETTINGS

All of the TIMBRE SETTINGS controls are **global** and affect all of the Partials, but relative to the Partials' individual settings. For example, if a the PAN in PARTIAL SETTINGS is panned far right for one Partial, it will only have a range of far right to center when setting the PAN in the TIMBRE SETTINGS section full left.



Timbre Settings

4.1.1 Volume

The **Volume** knob is the overall loudness of the Timbre/Sound affecting all Partials. Its range is from 0.0db at full gain up to -50db (OFF) in increments of .1dB.

4.1.2 Pan

The **Pan** knob globally moves the Partials stereo positioning left/right. Setting the knob straight up is **center**. The range is from -63 (hard left) to +63 (hard right). After turning the knob left or right you can return to **center** position by double-clicking on the knob.

4.1.3 Transpose

The **Transpose** knob sets the pitch of your overall Timbre/Sound up or down in **semitone** increments. At the knob's center position there is **No Transposition**. You can view the semitone value in the **Lower Toolbar** at the lower left side while you are turning the knob or placing your cursor over the knob. Double clicking the knob returns the knob to center or **No Transposition**. The range is from -24 to +24 semitones.

4.1.4 Tuning

The **Tuning** knob fine tunes the pitch of your overall Timbre/Sound up or down in individual **Cents** (100ths of a semitone). At the knob's center position there is no pitch change. The parameter value is displayed in **Cents** in the **Lower Toolbar** at the lower left. The range is from -125 to +125 Cents below and above the setting of the **Transpose** knob.

4.1.5 Voice Chorus

The **Voice Chorus** creates a duplicate voice of all of the Partials with a different pitch of your overall Timbre/Sound. At the knob's center position there is no added voice, a value of 1.000. You can view the Chorus value in the **Lower Toolbar** at the lower left side while you are turning the knob or by placing your cursor over the knob. The range is from 0.000 to 16.000 in steps of .100. Double clicking on the knob returns the value to 1.000 or NO **Voice Chorus**.

Chorus: Relationship of added voice

Setting: to fundamental frequency

0.500: One octave below

1.000: Unison (no added Voice Chorus)

1.500: Perfect fifth above

2.000: Second harmonic (one octave above)

3.000: Third harmonic (one octave plus a perfect fifth above)

4.000: Fourth harmonic (two octaves above)

5.000: Fifth harmonic (two octaves plus a major third above)

6.000: Sixth harmonic (two octaves plus a perfect fifth above)

7.000: Seventh harmonic (two octaves plus a minor seventh above)

8.000: Eighth harmonic (three octaves above)

9.000: Ninth harmonic (three octaves plus a major second above)

10.000: Tenth harmonic (three octaves plus a major third above)

11.000: Eleventh harmonic (three octaves plus an augmented fourth above)

12.000: Twelfth harmonic (three octaves plus a perfect fifth above)

13.000: Thirteenth harmonic (three octaves plus a perfect sixth above)

14.000: Fourteenth harmonic (three octaves plus a minor seventh above)

15.000: Fifteenth harmonic (three octaves plus a major seventh above)

16.000: Sixteenth harmonic (four octaves above)

4.1.6 Chorus Fine

The **Chorus Fine** knob is a much smaller tuning adjustment of the **Voice Chorus**. Range is from -.100 to +.100 and are between the **Voice Chorus** steps of .100. These values read out in the **Lower Toolbar** left side as well.

Double clicking on the knob returns it to its center position 0.000.

4.1.7 F.M. Modulation

The **F.M. Modulation** knob controls the overall amount of F.M. modulation for all the Partials in the current Timbre. The parameter range is from 0.000 to 1.000.

Important: For this control to have ANY effect on the Timbre:

- There must be a **CARRIER** wave AND a **MODULATOR** wave assigned to one or more Partials under the **TIME SLICES** Tab (**Graphic Screen Mode**).
- The **F.M. Amount** control in **Partial Settings** (**Extended Panel Mode**) must be greater than
- 0.000
- The Modulation value in SLICE SETTINGS for one or more Partials under the **TIME SLICES** Tab (**Graphic Screen Mode**) must be greater than 0.00

4.1.8 Bit Depth

Bit Depth controls the digital resolution of the current timbre. The original Synclavier voices were 8-bit but Synclavier V has added a range from 4-bit all the way up to 24-bit resolution in increments of 2. On the lower end, you will hear a digital noise or aliasing causing a grittiness to the sound. As you increase the **Bit Depth** knob, the sound will sound "smoother" with no noise.

4.2 AMP ENV OFFSET

All of the **AMP ENV OFFSET** controls are **global** and affect all of the Partials in the current Timbre, but relative to the Partials' individual settings. For example, if one Partial #1 has a slow attack and Partial #2 has a fast attack, decreasing the value will only affect the attack of Partial #1.



4.2.1 Attack

The **Attack** knob increases or decreases volume envelope ramp up time of all Partials in the current Timbre. The volume envelope, or how fast the sound ramps up in volume from the note-on, is affected. The default is a value of 0.00 and the range is -1.00 to +1.00.

(See also section **6.3.2 Attack** of an individual Partial)

4.2.2 Decay

The **Decay** knob increases or decreases values of all Partials' Decay in the current Timbre.

- When the Peak level is greater than 0.00, **Decay** controls how fast the sound ramps down from the **Peak** volume to the Sustain volume.
- When the Peak level is 0.00, **Decay** controls how fast the sound ramps up to the Sustain volume.
- The default is a value of 0.00 and the range is -1.00 to +1.00.

(See also section **6.3.4 Decay** of an individual Partial)

4.2.3 Release

The **Release** knob increases or decreases values of all Partials' Release in the current Timbre. Release is the time for the sound to decay to zero after the key on the keyboard is let go.

(See also section **6.3.6 Release** of an individual Partial)

4.3 HARM ENV OFFSET

All of the **HARM ENV OFFSET** controls are **global** and affect all of the Partials in the current Timbre, but relative to the Partials' individual settings. For example, if one Partial #1 has a slow harmonic (F.M.) attack and Partial #2 has a fast harmonic (F.M.) attack, decreasing the value will only affect the attack of Partial #1.

4.3.1 Attack

The **Attack** knob increases or decreases values of all the Partials' harmonic (F.M.) envelope in the current Timbre. The harmonic (F.M.) envelope, or how fast the F.M. amount ramps up in volume from the beginning, is affected. The default is a value of 0.00 and the range is -1.00 to +1.00.

(See also section **6.3.2** harmonic **Attack** of an individual Partial).

4.3.2 Decay

The **Decay** knob increases or decreases values of all the Partials' harmonic Decay of the current Timbre.

- When the Peak level is greater than 0.00, **Decay** controls how fast the harmonic envelope ramps down from the **Peak** volume to the harmonic Sustain level.
- When the Peak level is 0.00, **Decay** controls how fast the harmonic envelope ramps up to the harmonic Sustain level.
- The default is a value of 0.00 and the range is -1.00 to +1.00.

(See also section **6.4.4** harmonic **Decay** of an individual Partial)

4.3.3 Release

The **Release** knob increases or decreases values of all the Partials' harmonic (F.M.) Release in the current Timbre. Release is the time for the sound to decay to zero after the key on the keyboard is let go.

(See also section **6.4.6** harmonic **Release** of an individual Partial)

4.4 5.4 REPEAT/ARPEGGIO

The **REPEAT/ARPEGGIO** section of Synclavier V is a **global** control affecting all of the Partials in your current Timbre.

4.4.1 5.4.1 Repeat

When the **Repeat** button is turned on, all of the notes being played on your keyboard will repeat while a key is being depressed. When multiple keys are depressed, any delay between notes will remain. The repeat rate will be determined by the **Rate** knob.

4.4.2 5.4.2 Arpeggio

When the **Arpeggio** button is turned on, any notes simultaneously performed on your keyboard will sound independently in an arpeggio pattern. If the **Repeat** button is also turned on, the selected notes held down will continue to arpeggiate at the tempo set by the **Rate** knob.

4.4.3 Sync

When using Synclavier V as an instrument plug-in in your DAW project, the **Sync** button allows both the **Repeat** and **Arpeggio** functions to synchronize with the tempo of your DAW project. The tempo is set by the **Rate** knob.

4.4.4 Rate

The **Rate** knob determines the speed of your repeating notes or arpeggios. When the **Sync** button is OFF the **Rate** value reads in Hz (Hertz or cycles per second) in the **Lower Toolbar**. The range is 0.00 to 50.0Hz.

When the **Sync** button is ON the **Rate** value reads as Timbre BPM Multiplier in the **Lower Toolbar.**

When Synclavier V is used as an instrument plug-in in your DAW project and the **Sync** button is turned ON, the speed will synchronize to the tempo of your DAW project. The **Rate** adjustment is a BPM Multiplier (Beats Per Minute). Values are:

BPM/8: 1/8 speed of your tempo

BPM/6: 1/6 speed of your tempo

BPM/5: 1/8 speed of your tempo

BPM/4: 1/4 speed of your tempo

BPM/3: 1/3 speed of your tempo

BPM/2: 1/2 speed of your tempo

BPMx1: Exact speed of your tempo

BPMx2: 2x speed of your tempo

BPMx3: 3x speed of your tempo

BPMx4: 4x speed of your tempo

BPMx5: 5x speed of your tempo

BPMx6: 6x speed of your tempo

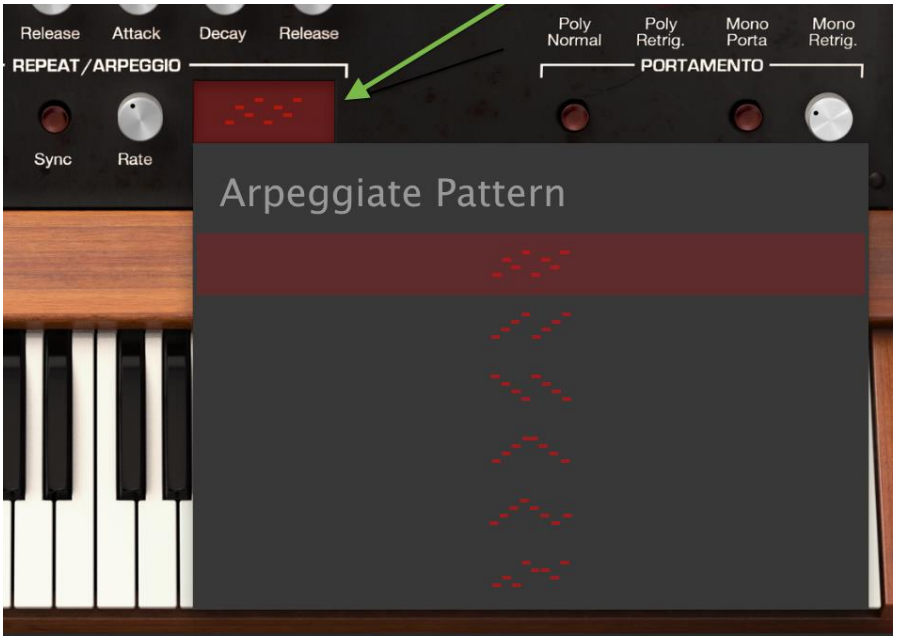
BPMx8: 8x speed of your tempo

4.4.5 Pattern

Pattern is a drop-down menu with 6 different arpeggio styles

(top to bottom order):

- Performance order: the notes will play in the order in which you perform them on the keyboard **RATE** Sets the speed of the sweep
- Keyboard Up: Notes play from the lowest to the highest continuously
- Keyboard Down: Notes play from the highest to the lowest continuously
- Keyboard Up/Down (Repeat): Notes play up, down and repeat the top and bottom notes
- Keyboard Up/Down (No Repeat): Notes play up, down without repeating the top and bottom notes
- Random: Notes play in a continuously random pattern



Arpeggiate Pattern Selector Window

4.5 POLYPHONIC MODE

The **POLYPHONIC MODE** section contains **global** functions that affect all Partials in the current Timbre.



4.5.1 Poly Normal

The **Poly Normal** mode provides for full polyphony. When a Note On event is received (either keyboard or sequencer) a new voice is activated for the desired sound in all cases. Earlier notes of the same pitch that are in the Final **Decay** state are not affected; their decay continues without interruption. With very long final decay settings this can lead to undesirable phase cancellations or overloading the audio output.

4.5.2 Poly Retrig.

Poly Retrig. mode allows for full polyphony, however if a Note On event is received that matches a note that is currently in the Final **Decay** state, the envelope generators for the matching note are retriggered. The **Poly Retrig.** mode is very natural for sounds with a long final decay such as bells or gongs. **Polyphonic Retrig.** is the default polyphony mode.

4.5.3 Mono Porta

Mono Porta mode restricts the audio output to one note of the current Timbre at a time. The effect is a legato phrase similar to the tonguing and slurring technique of a

wind or brass instrument. The monophonic settings are also useful for recreating the sounds of early analog and digital synthesizers that were monophonic by design.

In this mode, when a new note is played while an earlier note is being held, the previous note ends and the result is a "slur" to the new note. The envelope generators are NOT retriggered. Synthesists refer to this as "Single Triggering".

4.5.4 Mono Retrig.

Mono Retrig. mode also restricts the audio output to one note of the current Timbre at a time. When a new note is received while an earlier note is being held, the pitch of the earlier note is adjusted to match the new note and the envelope generators ARE retriggered. The effect is a more percussive sound from every note. Synthesists refer to this as "Multi-Triggering".

4.6 PORTAMENTO

PORTAMENTO is a global parameter affecting all Partials in the current Timbre. It makes the pitch "glide" between the notes you play, rather than changing the pitch instantly as soon as you hit another key or keys on your keyboard. The effect works on Polyphonic or Monophonic Timbres.

4.6.1 On

The **On** button turns the **PORTAMENTO** function ON or OFF.

4.6.2 Log/Lin

Log/Line button switches between a Linear or a Logarithmic curve for the **PORTAMENTO** "glide" effect. OFF is Linear and ON is Logarithmic.

4.6.3 Rate

Rate knob controls the speed at which the sound glides from one pitch to the next. The range is from 0.0 milliseconds to 30 seconds.

4.7 BEND WHEEL & MOD WHEEL

The **BEND WHEEL** & **MOD WHEEL** are located on the left hand side of the Virtual Keyboard and can also be controlled from a MIDI keyboard or other MIDI controller.

The **BEND WHEEL** raises or lowers the pitch of your current Timbre up or down gradually. The default **Pitch bend Depth** is 2 (two) semitones but can be increased or decreased,

from 0 (zero) semitones to 25 (twenty five) semitones, under the **SETTINGS** tab of the **Graphic Screen Mode.**

The **BEND WHEEL** is "spring loaded" and comes to rest in the center position. It can also be routed to control other Partial parameters in the **MODS** section of the **Graphic Screen Mode**. See section **7.5.1** for further details on routing.

The **MOD WHEEL** can also be routed to many Partial parameters. Not "spring loaded" like the **BEND WHEEL,** it operates like a slider down and up. Its range is from 0.000 to 1.000. A common routing is to control vibrato depth.



Bend & Mod Wheels

5 EXTENDED PANEL MODE CONTROLS



The **Extended Panel Mode** can be viewed by clicking on the button showing two downward pointing arrows at the top right of the **Toolbar**. The controls are used to enter parameter settings for individual Partials ANY number of **grouped** Partials. Clicking on this button returns you to Standard Panel Mode.

5.1 PARTIAL SELECT

The **PARTIAL SELECT** section is located at the top left of the **Extended Panel Mode.** There are 12 Partial buttons, a **Solo** button, a **Mute** button, a **Copy** button (with icon), and a **Paste** button (with icon).

5.1.1 PARTIAL SELECT #1-12

At the top left of the **Extended Panel Mode** are the **PARTIAL SELECT #1-12 Red** buttons. While listening to any preset Timbre you will be hearing the combined sound of anywhere from 1 to 12 Partial timbres simultaneously.

To change any parameter setting for an individual Partial, click on that **PARTIAL SELECT** button number. While that Partial button is on (bright **Red**), any parameter you change on the **Extended Panel Mode** will affect ONLY that Partial.

To make changes to 2 or more Partials at a time, hold down the **<shift>** key and click any range of Partial buttons from #1 to 12. For instance, if you want to select #1 through #6, hold down the **<shift>** key and click on #1 and #6. If you'd rather just select, only #1, #4, and #6, hold down the **<command>** key (**<ctrl>** key for Windows users) and then click on #1, #4 and #6. You will see the first **Red** button selected and the other selected Partial buttons darkened out slightly.

5.1.2 Copy & Paste

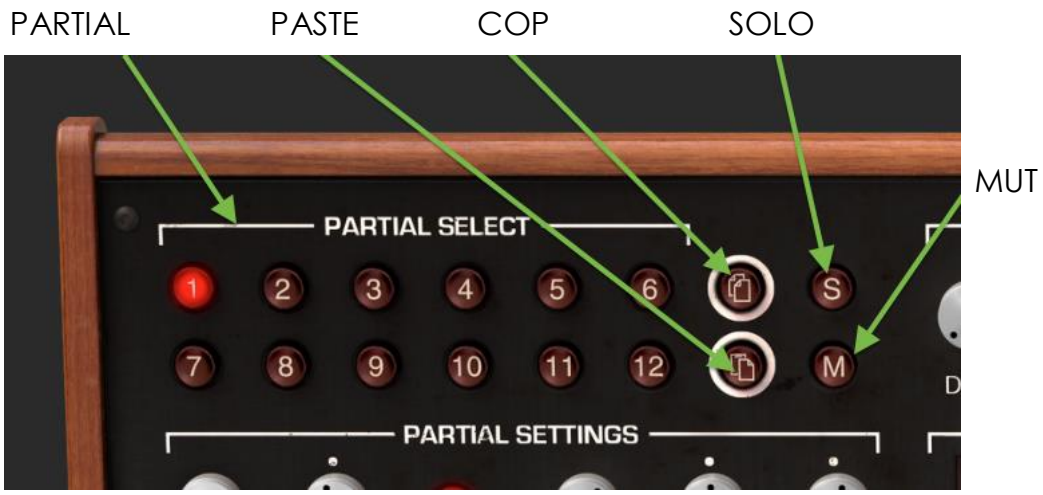
To **Copy** all of the parameters of one Partial to another, select the Partial button number (#1-12) you want to copy "**from**" and then click once on the top **copy icon** button. This copies the parameters to a clipboard. To then Paste those Partial parameters to another Partial, select the Partial button number (#1-12) you would like to copy **"to"** and then click once on the bottom **paste icon** button. You have now copied one Partial's parameters to the other.

5.1.3 Solo

To **Solo** (isolate and listen to) an individual Partial, click on the **S** button just to the right of the **copy icon** button. When you play the keyboard, you will only be hearing the selected or **Solo**'d Partial.

5.1.4 Mute

To **Mute** (turn off) one of the Partials, click on the **M** button just to the right of the **paste icon** button.



5.2 PARTIAL SETTINGS

The PARTIAL SETTINGS section is located at the left of the Extended Panel Mode just below the PARTIAL SELECT section.

5.2.1 Volume

The **Volume** knob is the overall loudness of the Partial or **grouped** Partials selected. Its range is from 0.0db at full gain up to -50.0db (OFF) in .1dB increments.

5.2.2 Pan

The **Pan** knob globally moves the selected Partial or **grouped** Partials stereo positioning left/right. Setting the knob straight up is **center**. The range is from -63 (hard left) to +63 (hard right). After turning the knob left or right you can return to **center** position by double-clicking on the knob.

5.2.3 Pitch Track

The **Pitch Track** button On/Off determines if the selected Partial or **grouped** Partials track the **Virtual Keyboard** or external MIDI keyboard/controller. When turned OFF, the pitch will be constant (A-440 Note MIDI note #69) with any note depressed.

5.2.4 Octave

The **Octave** knob controls the octave placement of the A-440 Hz (MIDI key #69) of the selected Partial or **grouped** Partials. It can be set to 1 of 9 discrete values from 6.875 Hz. to 1760 Hz. Double clicking will return it to the default value of 440.0 Hz.

Tip: Values in the extreme low range can be useful for unusual sound effects. Select the Preset "Syn Harpsi"(a 1-Partial Timbre), lower the Octave button to 13.75 Hz and play notes in the lowest octave on the **Virtual Keyboard**. At the default 8-bit **Bit Depth** setting you will hear digital aliasing noise added to the original Timbre/Sound.

5.2.5 Transpose

The **Transpose** knob sets the pitch of the selected Partial or **grouped** Partials up or down in **semitone** increments. At the knob's center position there is **No Transposition**. You can view the semitone value in the **Lower Toolbar** at the lower left side while you are turning the knob or placing your cursor over the knob. Double clicking the knob returns the knob to center or **No Transposition**. The range is from -24 to +24 semitones.

5.2.6 Tuning

The **Tuning** knob fine tunes the pitch of selected Partial or **grouped** Partials up or down in individual **Cents** (100ths of a semitone). At the knob's center position there is no pitch change. The parameter value is displayed in Cents in the **Lower Toolbar** at the lower left. Double clicking the knob returns the knob to center or **0.00** Cents. The range is from -125 to +125 Cents below and above the setting of the **Transpose** knob.

5.2.7 Voice Chorus

The **Voice Chorus** knob creates a duplicate voice of the selected Partial or **grouped** Partials with a different pitch of your Partial or Partials. At the knob's center position there is no added voice, a value of 1.000. You can view the Chorus value in the **Lower Toolbar** at the lower left side while you are turning the knob or by placing your cursor over the knob. The range is from 0.000 to 16.000 in steps of .100. Double clicking on the knob returns the value to 1.000 or NO **Voice Chorus**.

Chorus: Relationship of added voice

Setting: to fundamental frequency

0.500: One octave below

1.000: Unison (no added Voice Chorus)

1.500: Perfect fifth above

2.000: Second harmonic (one octave above)

3.000: Third harmonic (one octave plus a perfect fifth above)

4.000: Fourth harmonic (two octaves above)

5.000: Fifth harmonic (two octaves plus a major third above)

6.000: Sixth harmonic (two octaves plus a perfect fifth above)

7.000: Seventh harmonic (two octaves plus a minor seventh above)

8.000: Eighth harmonic (three octaves above)

9.000: Ninth harmonic (three octaves plus a major second above)

10.000: Tenth harmonic (three octaves plus a major third above)

11.000: Eleventh harmonic (three octaves plus an augmented fourth above)

12.000: Twelfth harmonic (three octaves plus a perfect fifth above)

13.000: Thirteenth harmonic (three octaves plus a perfect sixth above)

14.000: Fourteenth harmonic (three octaves plus a minor seventh above)

15.000: Fifteenth harmonic (three octaves plus a major seventh above)

16.000: Sixteenth harmonic (four octaves above)

5.2.8 Chorus Fine

The **Chorus Fine** knob is a much smaller tuning adjustment of the **Voice Chorus** for the selected Partial or **grouped** Partials. Range is from -.100 to +.100 in increments of .100. These values read out in the **Lower Toolbar** left side as well. Double clicking on the knob returns it to its center position 0.000.

5.2.9 F.M. Ratio

The **F.M. Ratio** knob controls the ratio of the F.M. Modulator frequency to the F.M. Carrier frequency for the selected Partial or **grouped** Partials. There must be a **CARRIER** wave AND a **MODULATOR** wave assigned to a Partial on the **Time Slices** page in **Graphic Screen Mode** for this control to have any effect on the Partial. The Range is from 0.000 to 16.000 in increments of .100.

5.2.10 F.M. Fine

The **F.M. Fine** knob is a much smaller adjustment to the **F.M. Ratio** (ratio of the F.M. Modulator frequency to the F.M. Carrier frequency) for the selected Partial or **grouped** Partials. There must be a **CARRIER** wave AND a **MODULATOR** wave assigned to a Partial on the **Time Slices** page in **Graphic Screen Mode** for this control to have any effect on the Partial. The Range is from -0.100 to +0.100 in very small increments of .001.

5.2.11 F.M. Amount

The **F.M. Amount** knob controls the overall amount of F.M. modulation for the selected Partial or **grouped** Partials. There must be a **CARRIER** wave AND a **MODULATOR** wave assigned to a Partial on the **Time Slices** page in **Graphic Screen Mode** for this control to have any effect on the timbre. The Range is from 0.000 to 1.000.

5.2.12 Frame Speed

The **Frame Speed** knob increases or decreases the overall time that **Timbre Slice** Frames crossfade into one another for the selected Partial or **grouped** Partials. Parameter range is from 0.00 to 2.50 in increments of .01. The default value is 1.00 which is the original **Frame Speed** of the **Timbre Slice** Timbre.



5.3 AMPLITUDE ENVELOPE

The **AMPLITUDE ENVELOPE** section is located at the top center section of the **Extended Panel Mode**. It controls the volume shape of the selected Partial or **grouped** Partials from the first note-on event.

A simple comparison would be the Volume Envelope ADSR in an Analog subtractive synthesizer.

5.3.1 Delay

The **Delay** knob increases the time for the selected Partial or **grouped** Partials to be heard after the initial note-on (key depression)**.** The default value is 0 MSec (milliseconds) and the range is 0 MSec to 30.0 Secs (seconds) in 1 millisecond increments.

5.3.2 Attack

The **Attack** knob adjusts how fast or slow the Timbre/Sound ramps UP in volume from the note-on (key depression) to the **Peak** setting for the selected Partial or **grouped** Partials. The default is a value of 3 MSecs (milliseconds) and the range is 0 MSec to 30 Secs (seconds).

The actual **Attack** "time" will vary depending on the **Peak** level. At the maximum **Peak** level of 100.0, the **Attack** time will be as read. As the **Peak** level is reduced, the **Attack** "time" will decrease, as it takes less time to reach the lower **Peak** level.

5.3.3 Peak

The **Peak** knob adjusts the next volume level point in the Timbre/Sound after the initial **Attack** of the selected Partial or **grouped** Partials. The level ranges from 0.00 to 100.0.

5.3.4 Decay

The **Decay** knob adjusts how fast or slow the Timbre/Sound ramps DOWN in volume from the **Peak** setting to the **Sustain** level setting of the selected Partial or **grouped** Partials. The default is a value of 3 MSecs (milliseconds) and the time range is from 0 MSec to 30 Secs (seconds).

The actual **Decay** "time" will vary depending on the **Sustain** level. At the minimum **Sustain** level of 0.0, the **Decay** time will be as read. As the **Sustain** level is increased, the **Decay** "time" will decrease, as it takes less time to reach the lower **Sustain** level.

5.3.5 Sustain

The **Sustain** knob adjusts sound volume level after the **Decay** portion of the envelope. The level ranges from 0.00 to 100.0.

5.3.6 Release

The **Release** knob adjusts the final decay time after the note-off (key release) for the selected Partial or **grouped** Partials. The time range is from 0 MSec (milliseconds) to 30 Secs (seconds).



5.4 HARMONIC ENVELOPE

The **HARMONIC ENVELOPE** section is located at the top right section of the **Extended Panel Mode**. It controls the **F.M.** (Frequency Modulator) volume shape of the selected Partial or **grouped** Partials from the first note-on (key depression).

A simple comparison would be the Filter Envelope ADSR in an Analog subtractive synthesizer.

5.4.1 Delay

The **Delay** knob increases the time for the selected Partial or **grouped** Partials' **F.M**. (Frequency Modulator) to be heard after the initial note-on (key depression)**.** Any **AMPLITUDE Delay** value will add to the total **Delay** time for the **F.M**. to be heard after the initial note-on. The default delay value is 0 MSec (milliseconds) and the range is 0 MSec to 30.0 Secs (seconds) in 1 millisecond increments.

5.4.2 Attack

The **Attack** knob adjusts how fast or slow the **F.M.** (Frequency Modulator) ramps UP in volume of the selected Partial or **grouped** Partials from the note-on (key depression) to the **Peak** setting. The default is a value of 3 MSecs (milliseconds) and the range is 0 MSec to 30 Secs (seconds).

5.4.3 Peak

The **Peak** knob adjusts the next level point in the **F.M.** (Frequency Modulator) after the initial **Attack** of the selected Partial or **grouped** Partials. The level ranges from 0.00 to 100.0.

5.4.4 Decay

The **Decay** knob adjusts how fast or slow the **F.M.** (Frequency Modulator) ramps DOWN in volume from the **Peak** setting to the **Sustain** level setting of the selected Partial or **grouped** Partials. The default is a value of 3 MSecs (milliseconds) and the time range is from 0 MSec to 30 Secs (seconds).

5.4.5 Sustain

The **Sustain** knob adjusts **F.M.** (Frequency Modulator) level of the selected Partial or **grouped** Partials after the **Decay** portion of the envelope. The level ranges from 0.00 to 100.0.

5.4.6 Release

The **Release** knob adjusts the final decay time of the **F.M.** (Frequency Modulator) after the note-off (key release) for the selected Partial or **grouped** Partials. The time range is from 0 MSec (milliseconds) to 30 Secs (seconds).



5.5 VIBRATO

The **VIBRATO** section is located at the middle/center section of the **Extended Panel Mode**. It provides a wide range of vibrato effects similar to the LFO (Low Frequency Oscillator) of an Analog synthesizer which modulates the selected Partial or **grouped** Partials. The pitch fluctuates equally above and below the pitch of the key played.

A sine wave vibrato of 5.00 to 6.00 Herz is typically used to create the style of vibrato associated with vocalists, and traditional string and wind instruments. The other digital waveshapes are particularly useful for other musical and special effects.

5.5.1 Wave

Wave is a drop-down menu to select the Shape of waveform modulator controlling the Vibrato effects. Choose from **Sine**, **Triangle**, **Ramp** (Sawtooth), **Inverted Ramp**, **Square**, and **Random** waves.



Vibrato Wave Selector *Window*

5.5.2 Sync

When using Synclavier V as an instrument plug-in in your DAW project, the **Sync** button allows the **Vibrato** functions to synchronize with the tempo of your DAW project. The tempo is set by the **Rate** knob.

5.5.3 Rate

The **Rate** knob determines the speed of your **Vibrato**. When the **Sync** button is OFF the **Rate** value reads in Hz (Hertz or cycles per second) in the **Lower Toolbar**. The range is 0.00Hz to 50.0Hz. Double clicking on the knob returns the rate to the default value of 5.00Hz. When the **Sync** button is ON the **Rate** value reads as Vibrato BPM Multiplier also in the **Lower Toolbar.**

5.5.4 Carrier

The **Carrier** knob controls the Depth of the **Vibrato.** The pitch fluctuates equally above and below the pitch of the key played. The range is 0 semitones to 25 semitones.

5.5.5 Link

The **Link** button allows the **Modulator** (F.M.) to be simultaneously affected by the Vibrato **Carrier** (depth of the Vibrato effect). When the **Link** button is ON you will notice the **Modulator** knob will match the position of the **Carrier** knob as you turn it. With the Link button OFF, you can get quite different vibrato effects but adjusting the knobs independently.

5.5.6 Modulator

The **Modulator** knob controls the amount of F.M. modulation (Harmonic variation) or Depth affected by the Vibrato **Carrier**. The range is 0 semitones to 25 semitones. When the **Link** button is ON, the **Modulator** (depth) is connected to the Carrier (depth).

5.5.7 Attack

The **Attack** knob adjusts the amount of delay before the **Vibrato** effect begins after the note-on. The range is 0 MSecs to 30 seconds.

5.5.8 Bias

Normally when vibrato is added to a Partial Timbre, the pitch of each note fluctuates an equal amount above and below the pitch of the key played. When the **Bias** button is turned ON, the lowest point of pitch fluctuation is the pitch of the note played. The highest point is twice the number of semitones set for the vibrato **Depth**.

5.5.9 S-Curve

When the **S-Curve** button is OFF and **Vibrato** begins, the attack ramps in a straight line (Linear) to the carrier and modulator depths. When the **S-curve** button is turned ON, there is a more gently start to the **Vibrato** attack.

5.5.10 Quantize

The **Quantize** button steps the **Vibrato** curve to the nearest semitone. This feature is only useful with large Vibrato depths greater than 1.00 semitone. This quantization function observes the current scale tuning parameters.

(See Section 7.8.6 Timbre Octave Ratio and 7.8.7 Tuning (Scale))

5.5.11 Invert

The **Invert** button changes the direction that the **Vibrato** wave starts. When the button is OFF, the pitch rises first, above the original pitch. When the button is ON, the pitch falls first, below the original pitch.



5.6 STEREO

The **STEREO** section is located at the middle/center section of the **Extended Panel Mode** just below the **Vibrato** section. These controls offer a wide variety of Left and Right placement (Panning) in the sound field as well as animated motion between Left and Right positions of the selected Partial or **grouped** Partials.

Tremolo (Amplitude Modulation) effects are also available when the periodic modulator wave is "in phase" by setting the **Phase** control to 0° or 360°. When the **Phase** control is set to 0° or 360° the Left/Right position is not affected.

5.6.1 Wave

Wave is a drop-down menu to select the shape of waveform modulator controlling the **Stereo** and Tremolo effects. Choose from **Sine**, **Triangle** and **Square** waves.

5.6.2 Sync

When using Synclavier V as an instrument plug-in in your DAW project, the **Sync** button allows the **Stereo** functions to synchronize with the tempo of your DAW project. The tempo is set by the **Rate** knob.

5.6.3 Rate

The **Rate** knob determines the speed of your **Stereo** panning effects and Tremolo non-panning effects. When the **Sync** button is OFF the **Rate** value reads in Hz (Hertz or cycles per second) in the **Lower Toolbar**. The range is 0.00Hz to 50.0Hz. Double clicking on the knob returns the rate to the default value of 5.00Hz. When the **Sync** button is ON the **Rate** value reads as Tremolo BPM Multiplier also in the **Lower Toolbar.**

5.6.4 Depth

The **Depth** knob controls the width of the **Stereo** panning effects or the depth of the Tremelo effects. The range is 0.0% to 100% and displays at the left side of the **Lower Toolbar**.

5.6.5 Attack

The **Attack** knob adjusts the amount of delay before the **Stereo** effect begins after the note-on. The range is 0 MSecs to 30 seconds and displayed at the left side of the **Lower Toolbar**

5.6.6 Phase

The **Phase** knob defaults to 180° which allow full Left/Right Stereo panning effects. Turning the knob full down to 0° or full up to 360° will allow Tremolo (Amplitude Modulation) effects with NO Left/Right Stereo panning. Other settings between 0° and 360° will display varying degrees of Left/Right panning depth.

5.6.7 S-Curve

When the **S-Curve** button is OFF and **Stereo** modulation effects begins, the attack ramps in a straight line (Linear) to the carrier and modulator depths. When the **S-curve** button is turned ON, there is a more gently start to the **Stereo** attack.

5.6.8 Alternate

The **Alternate** button turns on a function that alternates the starting Left/Right side of a Left/Right Pan for every new MIDI note-on event. The **Depth** control sets the range of the Left/Right Pan for the **Alternate** effect.

5.6.9 Invert

The **Invert** button changes the direction that the **Wave** starts. When the button is OFF, the stereo position moves to the LEFT first, from the original stereo position. When the button is ON, the stereo position moves to the RIGHT first, from the original stereo position. If the **Alternate** button is ON, the Left/Right position of the sound is switched.

This function is useful to vary the Left/Right position of multiple Partials occurring at the same note-on event.



6 7. GRAPHIC SCREEN MODE CONTROLS



The **Graphic Screen Mode** provides visual and spacial representation and manipulation of all control parameters for each and all Partials of the current Timbre/Sound including **ENVELOPES** of the Partials, **KEY DYNAMICS** (which keys each Partial starts and stops), **TIME SLICES**, a **MIXER**, and **MODS** (Controller routings).

To view the **Graphic Screen Mode** click on the **SCR** button at the top right of the **Toolbar**. Click the **SCR** button again to return to Standard Panel Mode or Extended Panel Mode.

Two (2) sections have functions also available in **Standard Panel** and **Extended Panel Modes**: **ENVELOPES** and **MIXER**.

Five (5) additional sections have functions not available in Standard Panel or Extended Panel Modes: KEY DYNAMICS, TIME SLICES, MODS, FX, and SETTINGS.



Graphic Screen Mode

6.1 ENVELOPES

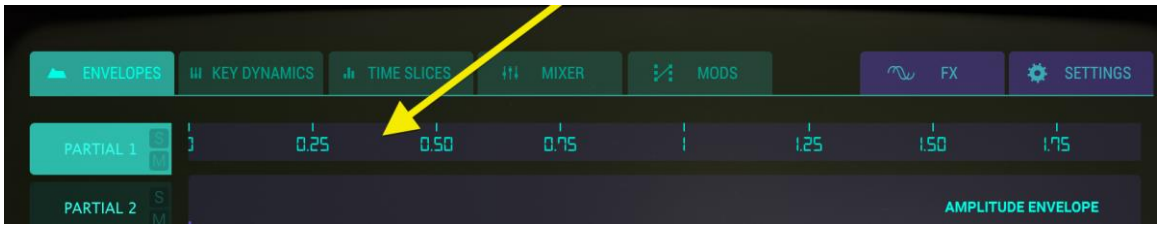
The **ENVELOPES** Tab is located at the top left of the **Graphic Screen Mode**. In this display, controls are available for both the **AMPLITUDE** (volume) and **HARMONIC** (FM) evolution of the selected Partial or **grouped** Partials over time.



ENVELOPES Tab (Graphic Screen Mode)

To change a parameter, click on one of the Graphic's 4 (four) tiny **Green** squares on the light **Green** line, and drag them forward, and back in time, or up and down in volume, and visually see the shape change of your Partial Timbre(s). While you are adjusting your Envelope visually, the parameter's numerical value is displayed in a small rectangle box directly below the Graphic Screen. You may also click on the numerical value rectangle box and drag the value up or down.

The **Timeline & Zoom** window is located just to the RIGHT of **PARTIAL 1** and determines the time range of view. It looks a bit like a ruler. To **zoom IN** (decrease the viewing range) click/drag DOWN in the window. To **zoom OUT** (increase the viewing range) click/drag UP. To move forward or back along the timeline, click/drag LEFT or RIGHT in the window. The smallest window range is .450 (450 milliseconds). The largest window range is 120 seconds.



As you play your Timbre from an external MIDI keyboard, controller or sequencer, you will notice a small **Purple** circle follow the Amplitude and Harmonic Envelopes as they evolve over time.

Each of 12 **PARTIAL**s are available on the LEFT hand side of the display. You can make changes to one Partial at a time or multiple Partials.



- To select a **PARTIAL**, simply click on the PARTIAL number you'd like to change. It will be highlighted in **light Green**.
- To select multiple **PARTIAL**s in succession, hold <shift> and click on the first PARTIAL you'd like to change. Then click on the last PARTIAL you'd like to change in the succession. The first PARTIAL will be highlighted in light **Green** and the successive PARTIALs will be highlighted in a **slightly darker Green**. Any changes to the Graphic will now affect all PARTIALs selected.
- To select multiple Partials one by one, hold **<command>** (**<ctrl>** for Windows users) and click on each of the Partials you'd like to change. The first PARTIAL will be highlighted in **light Green** and the next selected PARTIALs will be highlighted in a **slightly darker Green**. Any changes to the Graphic will now affect all PARTIALs selected. To go back to a single Partial, simply click on one PARTIAL only, NOT holding down either <shift> or <command>.
- To listen to a PARTIAL individually, click on the small **S** (**Solo**) button just to the right of the PARTIAL number.
- To turn off the sound of an individual Partial, click on the small **M** (**Mute**) button, just to the right of the Partial number.

6.1.1 Delay (AMPLITUDE)

The **Delay** function adjusts the start time for the selected Partial or **grouped** Partials after the initial note-on (key depression)**.** The default value is 0 MSec (milliseconds) and the range is 0 MSec to 30.0 Secs (seconds) in 1 millisecond increments.

To change the **Delay** time of the current Partial or **grouped** Partials,

click/drag on the 1st (first) small **light Green** square on the **light Green** straight line most likely very near the 0 (Zero) line just above the

Delay numerical parameter rectangle box located just to the right of **PARTIAL 6**. You can also click/drag this **Delay** numerical value up/down to increase/decrease the value.

6.1.2 Attack (AMPLITUDE)

The **Attack** function adjusts how fast or slow the Timbre/Sound ramps UP in volume from the note-on (key depression) to the **Peak** setting for the selected Partial or **grouped** Partials. The default is a value of 3 MSecs (milliseconds) and the range is 0 MSec to 30 Secs (seconds).

The actual **Attack** "time" will vary depending on the **Peak** level. At the maximum **Peak** level of 100.0, the **Attack** time will be as read. As the **Peak** level is reduced, the **Attack** "time" will decrease, as it takes less time to reach the lower **Peak** level.

To change the **Attack** time of the current Partial or **grouped** Partials, click/drag left/right on the 2nd (second) small light green square on the **light Green** straight line. You can also increase/decrease the value by click/dragging the **Attack** numerical value box located just to the RIGHT of the **Delay** numerical value box.

6.1.3 Peak (AMPLITUDE)

The **Peak** function adjusts the next volume level point after the initial **Attack** of the selected Partial or **grouped** Partials. The level ranges from 0.00 to 100.0.

To change the **Peak** volume level of the current Partial or **grouped** Partials,

click/drag up/down on the 2nd (second) small **light Green** square on the **light Green** straight line. (This is the same square used to change the **Attack)**. You can also click/drag, up/down, the **Peak** numerical parameter rectangle box located just to the RIGHT of the **Attack** numerical value box.

6.1.4 Decay (AMPLITUDE)

The **Decay** function adjusts how fast or slow the volume level ramps DOWN in volume from the **Peak** setting to the **Sustain** level setting of the selected Partial or **grouped**

Partials. The default is a value of 3 MSecs (milliseconds) and the time range is from 0 MSec to 30 Secs (seconds).

The actual **Decay** "time" will vary depending on the **Sustain** level. At the minimum **Sustain** level of 0.0, the **Decay** time will be as read. As the **Sustain** level is increased, the **Decay** "time" will decrease, as it takes less time to reach the lower **Sustain** level.

To change the **Decay** time of the current Partial or **grouped** Partials,

click/drag LEFT/RIGHT on the 3rd (third) small **light Green** square on the **light Green** straight line. You can also click/drag LEFT/RIGHT the **Decay** numerical parameter rectangle box located just to the RIGHT of the **Peak** numerical value box.

6.1.5 Sustain (AMPLITUDE)

The **Sustain** function adjusts volume level after the **Decay** portion of the envelope. The level ranges from 0.00 to 100.0.

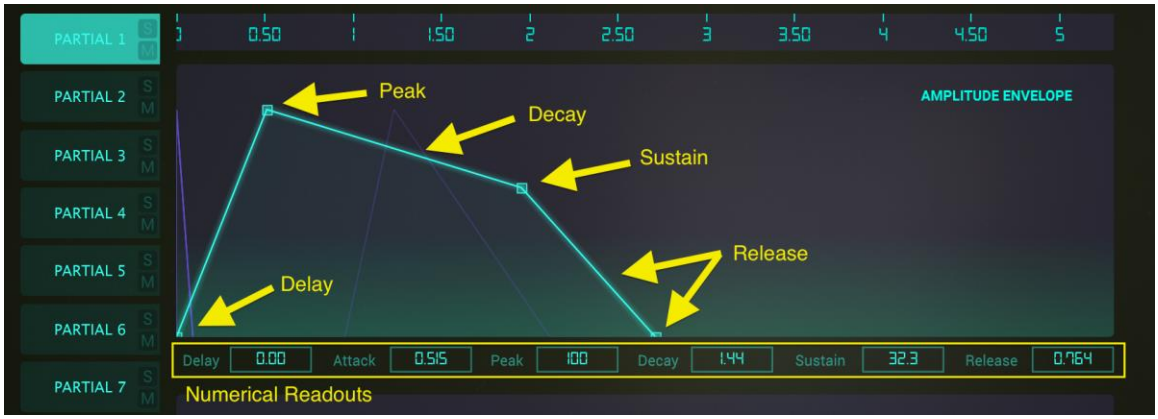
To change the **Sustain** volume level of the current Partial or **grouped** Partials, click/drag UP/DOWN on the 3rd (third) small **light Green** square on the **light Green** straight line on the Graphic after the **Peak** square. You can also click/drag, UP/DOWN, the **Sustain** numerical value rectangle box located just to the RIGHT of the **Decay** numerical value box.

6.1.6 Release (AMPLITUDE)

The **Release** function adjusts the final decay time to the end of the

Timbre/Sound after the note-off (key release) for the selected Partial or **grouped** Partials. The time range is from 0 MSec (milliseconds) to 30 Secs (seconds).

To change the **Release** time of the current Partial or **grouped** Partials, click/drag LEFT/RIGHT on the 4th (FOURTH) small light green square on the **light Green** straight line after the **Peak** square. You can also click/drag, LEFT/RIGHT, the **Release** numerical value rectangle box located just to the RIGHT of the **Decay** numerical value box.



Amplitude Envelope

6.1.7 Delay (HARMONIC)

The **Delay** knob increases the time for the selected Partial or **grouped** Partials' **F.M**. (Frequency Modulator) to be heard after the initial note-on (key depression)**.** Any **AMPLITUDE Delay** value will add to the total **Delay** time for the **F.M**. to be heard after the initial note-on. The default value is 0 MSec (milliseconds) and the range is 0 MSec to 30.0 Secs (seconds) in 1 millisecond increments.

To change the FM **Delay** start time of the current Partial or **grouped** Partials, click/drag on the 1st (first) small **light Green** square on the **light Green** straight line most likely very near the 0 (Zero) line just above the **Delay** numerical value rectangle box located just to the right of **PARTIAL 6**. You can also click/drag this **Delay** numerical value up/down to increase/decrease the value.

6.1.8 Attack (HARMONIC)

The **Attack** function adjusts how fast or slow the FM Modulation ramps UP in level from the note-on (key depression) to the **Peak** setting for the selected Partial or **grouped** Partials. The default is a value of 3 MSecs (milliseconds) and the range is 0 MSec to 30 Secs (seconds).

To change the FM **Attack** time of the current Partial, click/drag left/right on the 2nd (second) small **light Green** square on the **light Green** straight line. You can also increase/decrease the value by click/dragging the **Attack** numerical value box located just to the RIGHT of the **Delay** numerical value box.

6.1.9 Peak (HARMONIC)

The **Peak** function adjusts the next FM Modulation level point after the initial FM **Attack** of the selected Partial or **grouped** Partials. The level ranges from 0.00 to 100.0.

To change the FM **Peak** time of the current Partial or **grouped** Partials,

click/drag up/down on the 2nd (second) small **light Green** square on the **light Green** straight line. (This is the same square used to change the FM **Attack)**. You can also click/drag, up/down, the **Peak** numerical parameter rectangle box located just to the RIGHT of the **Attack** numerical value box.

6.1.10 Decay (HARMONIC)

The **Decay** function adjusts how fast or slow the FM Modulator ramps DOWN in level from the FM **Peak** setting to the FM **Sustain** level setting of the selected Partial or **grouped** Partials. The default is a value of 3 MSecs (milliseconds) and the time range is from 0 MSec to 30 Secs (seconds).

To change the FM **Decay** time of the current Partial or **grouped** Partials,

click/drag LEFT/RIGHT on the 3rd (third) small **light Green** square on the **light Green** straight line. You can also click/drag LEFT/RIGHT the **Decay** numerical parameter rectangle box located just to the RIGHT of the **Peak** numerical value box.

6.1.11 Sustain (HARMONIC)

The **Sustain** function adjusts FM level after the FM **Decay** portion of the envelope. The level ranges from 0.00 to 100.0.

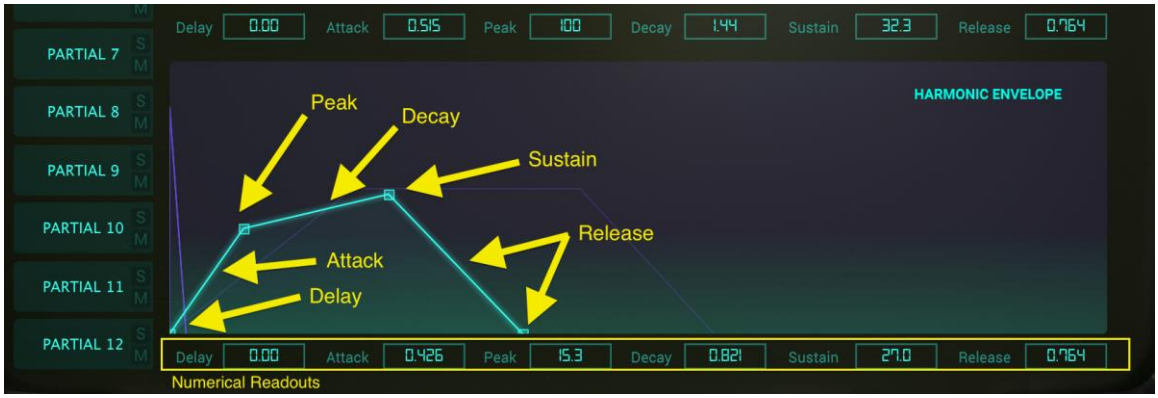
To change the FM **Sustain** level of the current Partial or **grouped** Partials, click/drag UP/DOWN on the 3rd (third) small light green square on the **light Green** straight line on the Graphic after the **Peak** square. You can also click/drag, UP/DOWN, the **Sustain** numerical value rectangle box located just to the RIGHT of the **Decay** numerical value box.

6.1.12 Release (HARMONIC)

The **Release** function adjusts the FM final decay time to the end of the

Timbre/Sound after the note-off (key release) for the selected Partial or **grouped** Partials. The time range is from 0 MSec (milliseconds) to 30 Secs (seconds).

To change the **Release** time of the current Partial or **grouped** Partials, click/drag LEFT/RIGHT on the 4th (FOURTH) small light green square on the **light Green** straight line after the **Peak** square. You can also click/drag, LEFT/RIGHT, the **Release** numerical value rectangle box located just to the RIGHT of the **Decay** numerical value box.



Harmonic Envelope

6.2 KEY DYNAMICS

The **KEY DYNAMICS** Tab is located at the top left of the **Graphic Screen Mode.** With it you can establish a keyboard range (MIDI note number range) for each Partial or set of **grouped** Partials. A keyboard at the bottom of the screen shows you which keys you assign to begin and end your Partial Timbre. This allows each Partial to have it's own location on the keyboard.



KEY DYNAMICS Tab (Graphic Screen Mode)

6.2.1 Key Range

On each PARTIAL there is a bar that has 2 vertical **light Green** lines corresponding to the starting and ending keys (or MIDI note number) able to be heard while playing on the **Virtual Keyboard**, external MIDI keyboard or controller, or notes played from a sequencer.

To **establish** a STARTING key of a selected Partial or set of **grouped** Partials, click on the LEFT most vertical **Green** line towards the BOTTOM (the little HAND icon will pop up)

and drag it LEFT or RIGHT to the ENDING key you choose. As you drag the bar/line you will see the keyboard at the bottom illuminate a light BLUE.

To **establish** an ENDING key or a selected Partial or set of **grouped** Partials, click on the RIGHT most vertical **Green** line towards the bottom and drag it LEFT or RIGHT to the ENDING key you choose. As you drag the bar/line you will see the corresponding key on the keyboard at the bottom illuminate to a light BLUE.



Key Dynamics for Partial #1-5

6.2.2 Key Range Fade Up & Down

The **Key Range Fade Up & Down** is a gradual volume shift over a number of keys allowing crossfading between sounds on different Partials. The volume of each Partial can start at a low volume and increase/decrease as you play up/down the keyboard.

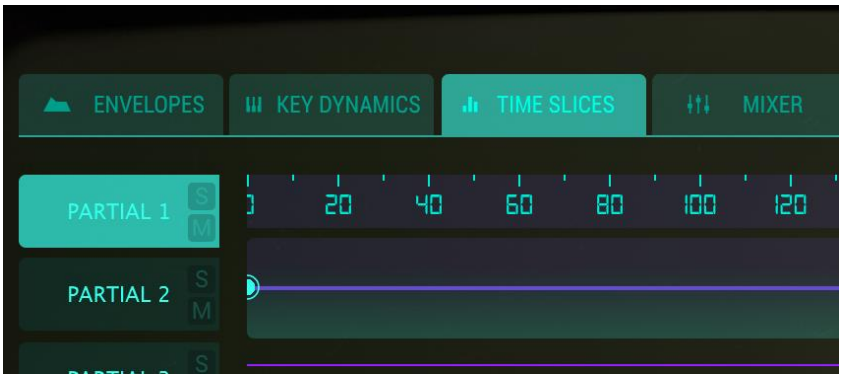
To **determine** a **Fade Up** range for a selected Partial or set of **grouped** Partials, click on the LEFT most vertical **Green** line towards the TOP (the little HAND icon will pop up) and drag it RIGHT to the key you choose to end the **Fade Up**. The vertical line will become diagonal as you drag it. You will also see the corresponding key on the keyboard at the bottom illuminate to a light BLUE.

To **determine** a **Fade Down** range for a selected Partial or set of **grouped** Partials, click on the RIGHT most vertical **Green** line towards the TOP and drag it LEFT to the key you choose to begin the **Fade Down**. The vertical line will become diagonal as you drag

it. You will also see the corresponding key on the keyboard at the bottom illuminate to a light BLUE.

6.3 TIME SLICES

The **TIME SLICES** Tab is located at the top left of the **Graphic Screen Mode**, just to the RIGHT of the **KEY DYNAMICS** Tab.



TIME SLICES Tab (Graphic Screen Mode)

The **TIME SLICES** section allows Graphic and Numeric parameter control for ONLY the selected **Partial**. This is where you enter 24 Harmonic Coefficients for both Carrier and Modulator waves (or choose a preset waveform) for both Carrier and Modulator waves, and create **TIME SLICE FRAMES**. A **FRAME**, similar to a **film** frame, can contain up to 24 harmonic coefficients, with individual phases for each, for both the FM Carrier and FM Modulator waveforms.

TIME SLICE FRAMES are then "chained" together and evolve over time. Beginning with the **BASIC PARTIAL**, a total of 50 **TIME SLICE FRAMES** can be created.

6.3.1 Anatomy of a TIMBRE SLICE FRAME Event

Synclavier V creates sound in response to MIDI Note-On events. The 12 Partial Timbres occur simultaneously; each Partial Timbre is independent.

The precise point in time when the MIDI Note-On event is received establishes the precise timing for the entire note. Scientifically speaking, this point in time is referred to as Time T = 0.

At Time T = 0 Synclavier V begins by creating the **Delay** segment of the Volume Envelope (if any). During the **Delay** segment no audio is created for the Partial Timbre.

The creation of audible audio starts at the end of the **Delay** segment. Scientifically speaking, this point in time is referenced as Time T = D (where D is the Delay Time). At the end of the **Delay** segment is when Synclavier V begins the **Attack** segment.

Both the **TIME SLICE FRAME** splicing and the Index Envelope begin precisely at the start of the Volume Envelope attack. Of course, both functions can be delayed by setting their own **Delay** parameter appropriately.

The parameters associated with **FRAME 0** are applied to the audio at the very start of the note (that is, at the end of the Volume Envelope **Delay** segment). After the **FRAME 0** Frame Delay Time the waveform will begin a **CROSSFADE** to the waveform associated with the next "enabled" FRAME, typically **FRAME 1**. Additionally, the volume, modulation or pitch will begin moving towards the setting associated with **FRAME 1**.

Each of 12 **PARTIAL**s are available on the LEFT hand side of the screen. You can make changes to one Partial at a time.

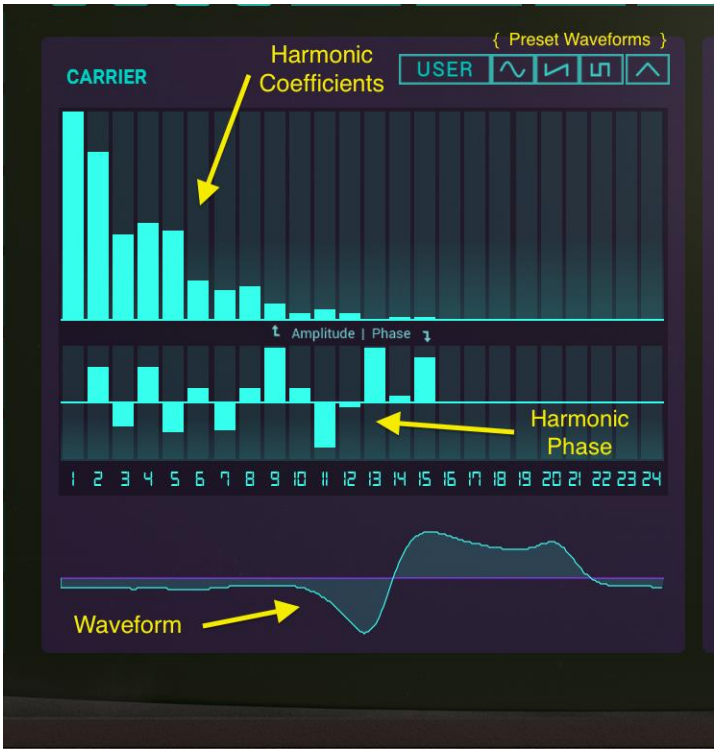
- To select a **PARTIAL**, simply click on the PARTIAL (#1-12) you'd like to change. It will be highlighted in **light Green**.
- To listen to a PARTIAL individually, click on the small **S** (**Solo**) button just to the right of the PARTIAL number.
- To turn off the sound of an individual Partial, click on the small **M** (**Mute**) button, just to the right of the Partial number.

6.3.2 CARRIER & MODULATOR

To create or modify a waveform, **t**he **CARRIER** & **MODULATOR** sections allow entry and modifying of 24 harmonic coefficients using vertical **light Green** columns. You may also choose a preset waveform **CARRIER** or **MODULATOR** wave.

6.3.2.1 Adding Harmonics (CARRIER)

Select the **PARTIAL** on the LEFT side of the Graphic Screen**.** In the **Time Slice** rectangle box the **BASIC PARTIAL** is **FRAME** 0 (zero). If there are additional **FRAMES** in your selected preset Timbre, click/dragging UP/DOWN in the **Time Slice** box will select through them. (For more on creating and modifying additional FRAMES, see Section 7.3.3.5 below)

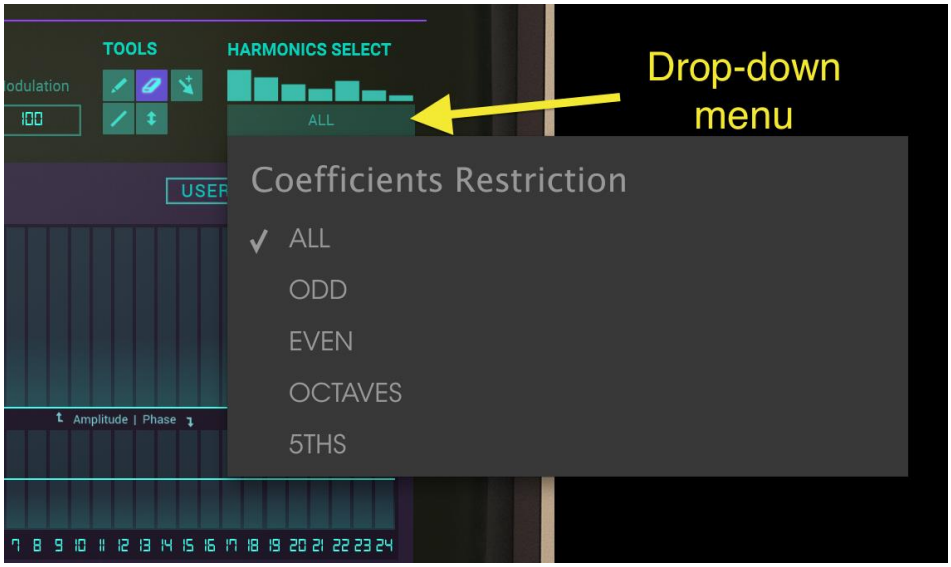


CARRIER WAVE Harmonics and Phase

To add or delete Harmonics, simply click on any of the LONG vertical **Green** columns under **CARRIER**. Click/dragging the **Green** column VERTICALLY changes the volume level of the chosen Harmonic. If you click/drag in a sweeping motion HORIZONTALLY, multiple Harmonics can be added or modified at once. A little experimentation and you will quickly catch on.

The **HARMONICS SELECT** (just to the RIGHT of the **TOOLS** selector) is a drop-down menu allowing you to choose a Coefficients Restriction option when editing the 24 Harmonics. You can limit your harmonic being edited to either ALL, ODD, EVEN, OCTAVES, or FIFTHS.

As you add Harmonics you will see the corresponding **CARRIER Waveform** you are designing directly under the Harmonics columns and Phase controls.



HARMONICS SELECT Coefficients Restriction

6.3.2.2 Changing Phase of Harmonics (CARRIER)

To change the Phase of the Harmonics, simply click on any of the SHORTER vertical **green** columns directly UNDER the longer Harmonics columns of the **CARRIER**. Click/dragging the SHORTER **Green** column vertically UP shifts the Phase +180° of the chosen Harmonic while click/dragging it vertically DOWN shifts the Phase -180° of the chosen Harmonic. If you click/drag in a sweeping motion HORIZONTALLY, the Phase of multiple Harmonics can be modified at once. Again, a little experimentation and you will quickly catch on.

6.3.2.3 Selecting a Preset Waveform (CARRIER)

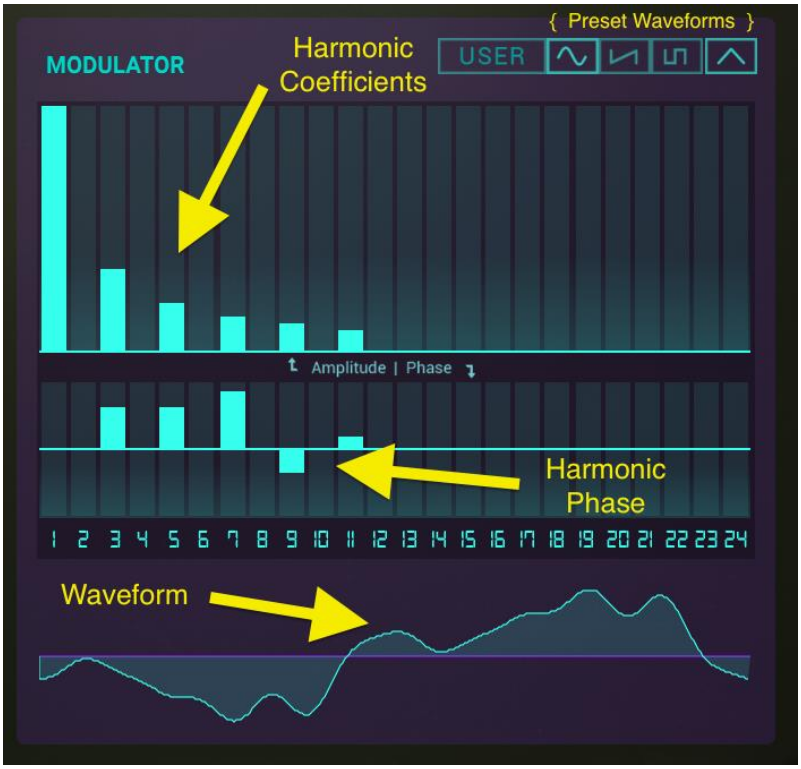
There are 4 (four) Preset Waveforms you may choose from: **USER**, **Sine**, **Ramp** (Sawtooth), **Square**, and **Triangle**. The **CARRIER** Preset Waveforms are located just above the Harmonics columns to the right. When you choose one of these Preset Waveforms you will see the corresponding Harmonics automatically added. After you have chosen a Preset Waveform, you may also modify it, using the Harmonics columns and Phase columns.

6.3.2.4 Adding Harmonics (MODULATOR)

Select the **PARTIAL** on the LEFT side of the Graphic**.** In the **Time Slice** box the **BASIC PARTIAL** is **FRAME** 0 (zero). If there are additional **FRAMES** in your selected preset Timbre, click/dragging UP/DOWN in the **Time Slice** box will select through them. (For more on creating and modifying additional FRAMES, see Section 7.3.3.5 below)

To add or delete Harmonics, simply click on any of the LONG vertical **Green** columns under **MODULATOR**. Click/dragging the **Green** column VERTICALLY changes the

volume level of the chosen Harmonic. If you click/drag in a sweeping motion HORIZONTALLY, multiple Harmonics can be added or modified at once. A little experimentation and you will quickly catch on.



MODULATOR WAVE Harmonics and Phase

The **HARMONICS SELECT** (just to the RIGHT of the **TOOLS** selector) is a drop-down menu allowing you to choose a Coefficients Restriction option when editing the 24 Harmonics. You can limit your harmonic being edited to either ALL, ODD, EVEN, OCTAVES, or FIFTHS.

As you add Harmonics you will see the corresponding **MODULATOR** W**aveform** you are designing directly under the Harmonics bars and Phase controls.

6.3.2.5 Changing Harmonics' Phase (MODULATOR)

To change the Phase of the Harmonics, simply click on any of the SHORTER vertical **Green** columns directly under the longer Harmonics columns of the **MODULATOR**. Click/dragging the SHORTER **Green** column vertically UP shifts the Phase +180° of the chosen Harmonic while click/dragging it vertically DOWN shifts the Phase -180° of the chosen Harmonic If you click/drag in a sweeping motion HORIZONTALLY, the Phase of multiple Harmonics can be modified at once. Again, a little experimentation and you will quickly catch on.

6.3.2.6 Selecting a Preset Waveform (MODULATOR)

There are 4 (four) Preset Waveforms for the **MODULATOR** you may choose from: **USER**, **Sine**, **Ramp** (Sawtooth), **Square**, and **Triangle**. The **MODULATOR** Preset Waveforms are located just above the Harmonics bars to the right. When you choose one of these Preset Waveforms you will see the corresponding Harmonics automatically added. After you have chosen a Preset Waveform, you may also modify it, using the Harmonics bars and Phase bars.

6.3.3 Adding & Deleting TIME SLICE FRAMES

TIME SLICE FRAMES occur along a horizontal **Purple** timeline located just to the RIGHT of PARTIAL 2.

Just above the **Purple** timeline is the **Zoom** window and determines the time range of view. It looks a bit like a ruler. To zoom IN (decrease the viewing range) click/drag DOWN in the window. To zoom OUT (increase the viewing range) click/drag UP in the window. To move forward or back along the timeline, click/drag LEFT or RIGHT in the window.



Timeline

To Add a **TIME SLICE FRAME** to your current **PARTIAL**, simply click anywhere on the horizontal **Purple** timeline located just to the RIGHT of PARTIAL 2. You will place a small **Green** circle on the timeline and can drag it to any location along the timeline. Also notice that under SLICE SETTINGS in the **Time Slice** box, the FRAME number will display. By clicking on each FRAME you add, the FRAME number will display in the **Time Slice** box.

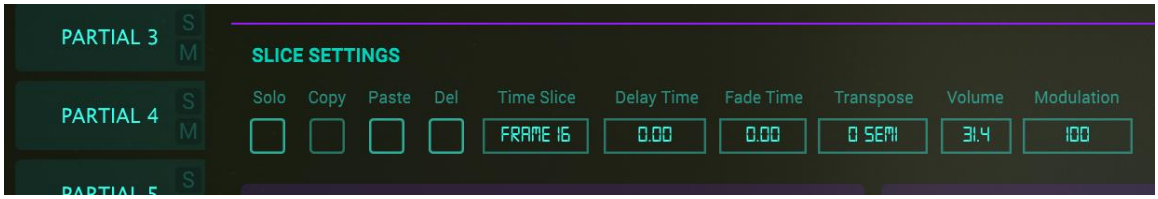
Each FRAME you create uses the harmonics of the nearest Frame to the right on the timeline, or defaults to a single SINE WAVE CARRIER (1st Harmonic) and single SINE WAVE MODULATOR (1st Harmonic) if there are NO Frames to the right on the timeline. A total of 50 **TIME SLICE FRAMES** can be created.

To Delete a **TIME SLICE FRAME** from your current **PARTIAL**, click on the FRAME's **Green circle** on the horizontal **Purple** timeline and click the **Del** box under SLICE SETTINGS. This will remove the FRAME from the timeline.



6.3.4 7.3.3 SLICE SETTINGS

SLICE SETTINGS are located directly to the RIGHT of PARTIAL 4. They affect only the selected **TIME SLICE FRAME** of the **Partial**. These settings allow detailed control of each **TIME SLICE FRAME** individually.



SLICE SETTINGS

6.3.4.1 Solo

To listen to only 1 (one) of your **TIME SLICE FRAMES**, click on the *square* **Solo** box (it will turn **Purple**). Next, click on the FRAME's **Green circle** on the horizontal **Purple** timeline. When you play your Timbre/Sound you will only hear the **Solo**'d FRAME.

6.3.4.2 Copy

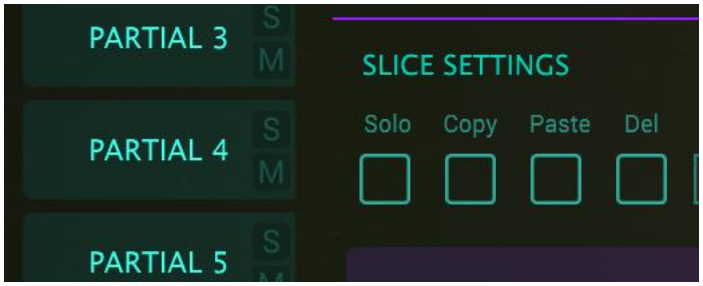
Copy creates a duplicate **TIME SLICE FRAME** of your currently selected FRAME (of your currently selected Partial or **grouped** Partials) and places it in a clipboard. To **Copy** a FRAME, first click on the FRAME's **Green circle** on the horizontal **Purple** timeline. Next, click the *square* **Copy** box (it will briefly turn **Purple**). Now you are ready to **Paste** it into another **TIME SLICE FRAME** on the timeline.

6.3.4.3 Paste

After you **Copy** your **TIME SLICE FRAME** to a clipboard, you are ready to **Paste** it's settings into another FRAME on the timeline. If you do NOT yet have another **TIME SLICE FRAME** on the timeline, go ahead on click anywhere on the timeline to create a NEW FRAME. Now, click on the FRAME (**Green circle** on the horizontal **Purple** timeline) and click the *square* **Paste** box (it will briefly turn **Purple**). You have now made a duplicate **TIME SLICE FRAME**.

6.3.4.4 Del (Delete)

To Delete any **TIME SLICE FRAME**, first click on the FRAME (**Green circle** on the horizontal **Purple** timeline). Next, simply click on the *square* **Del** box. The FRAME will now be deleted.



Slice Settings

7.3.3.5 Time Slice

The **Time Slice** box is the first *rectangle* **light Green** box located under SLICE SETTINGS. It displays the current **TIME SLICE FRAME**. You can also click/drag UP/DOWN in the **Time Slice** box to select a FRAME number. The default is **BASIC PARTIAL** (FRAME 0).

The **Time Slice** box displays the current **TIME SLICE FRAME**. You can also click/drag UP/DOWN in the **Time Slice** box to select a FRAME number.

6.3.4.5 Delay Time

The **Delay Time** *rectangle* **light Green** box (numerical readout) is located under SLICE SETTINGS and displays the amount of time "paused" before the currently selected **TIME SLICE FRAME** audio begins. You can click/drag UP/DOWN in the **Delay Time** box to increase or decrease the **Delay Time**.

Delay Time does NOT affect BASIC PARTIAL (FRAME 0). To delay the BASIC PARTIAL, refer to the AMPLITUDE ENVELOPE Delay in **Extended Panel Mode** (**Section 6.3.1**), or Delay in **Graphic Screen Mode** ENVELOPES (**Section 7.1.1**).

When viewing the **TIME SLICE FRAME** **Purple** timeline, you will see the **Delay Time** represented by a **Purple** square on the timeline. When the **Purple** square becomes visible you can click/drag it left/right along the timeline and will notice the numerical changes in the **Delay Time** *rectangle* **light Green** box. The range is from 0MSECS (zero milliseconds) to 30.0SECS (30 seconds), in 1 millisecond increments.

6.3.4.6 *Fade Time*

The **Fade Time** rectangle **light Green** box (numerical readout) is located under SLICE SETTINGS and displays the Crossfade time between your currently selected **TIME SLICE FRAME** and the previous **TIME SLICE FRAME** on the **Purple** timeline. The **BASIC PARTIAL** (**Frame 0**) is not affected. You can click/drag UP/DOWN in the **Fade Time** box to increase or decrease the numerical **Fade Time setting** and will see the changes occur on the **Purple** timeline.

You may also click on the FRAME (**Green circle** on the horizontal **Purple** timeline) and drag it left/right along the timeline, increasing/decreasing the FRAME's **Fade Time.** The range is from 0MSECS (zero milliseconds) to 30.0SECS (30 seconds), in 1 millisecond increments.

6.3.4.7 *Pitch*

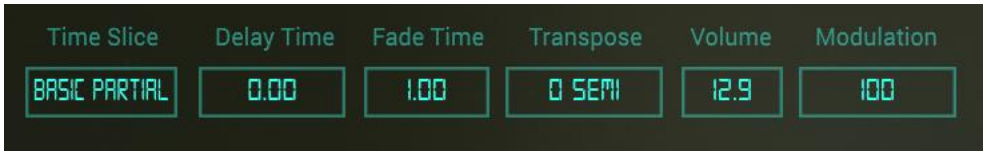
The **Pitch** rectangle **light Green** box is located under SLICE SETTINGS and displays the Pitch Transposition for the currently selected **TIME SLICE FRAME**. Each FRAME over time can have it's own pitch offset in semitones. The default setting is NO TRANSPOSITION and the range is ±48 SEMITONES in 1 (one) SEMITONE steps.

6.3.4.8 *Volume*

The **Volume** rectangle **light Green** box (numerical value) is located under SLICE SETTINGS and sets the loudness level of the currently selected **TIME SLICE FRAME**. Click/drag UP/DOWN in the **Volume** box to increase/decrease the loudness level from 0.00 to 100 in .1 increments.

6.3.4.9 *Modulation*

The **Modulation** rectangle **light Green** box (numerical value) is located under SLICE SETTINGS. **Modulation** controls the amount of the **FM CARRIER** waveform applied to the currently selected **TIME SLICE FRAME.** The range is 0.00 to 100 in increments of 1.00.



6.3.5 TOOLS

TOOLS are located in between SLICE SETTINGS and HARMONICS SELECT. **TOOLS** are a selection of buttons to help in entering the CARRIER and MODULATOR 24 Harmonics and Phase **light Green** columns.



6.3.5.1 Pencil Tool (default)



When the **Pencil** tool is selected, you can use your cursor to draw Harmonics volume or Phase data across the Harmonics in a **non-linear** fashion. You can also use your cursor to edit the data in a single column. Click on an empty Harmonic column in the CARRIER or MODULATOR window and you add that Harmonic. Click/Hold and you can raise or lower the Harmonic volume level.

6.3.5.2 Line Tool



The **Line** tool allows you to click/drag your cursor, drawing in a **straight line** across the Harmonics or Phase windows. Values will be entered or adjusted automatically. Click/dragging left to right, when you have reached your highest Harmonic, keep your finger pressed down and then slide the "end of the line" up and down. This will illustrate the ability of a line to be drawn in a positive or negative direction.

6.3.5.3 Eraser Tool



The **Eraser** tool is used to zero out individual Harmonics or an entire group of Harmonics from the CARRIER or MODULATOR window. To erase only one Harmonic, click on that

Harmonic column. To erase a range of Harmonics, click the first Harmonic you want to erase and swipe your finger to the right. Alternatively, you could tap the last Harmonic you want to erase and swipe your finger to the left.

6.3.5.4 Offset Tool



Select the **Offset** tool to adjust ALL of the values of the selected CARRIER or MODULATOR Harmonics and Phases **proportionately**. You will be able to move them up/down with your cursor.

6.3.5.5 Multi Tool



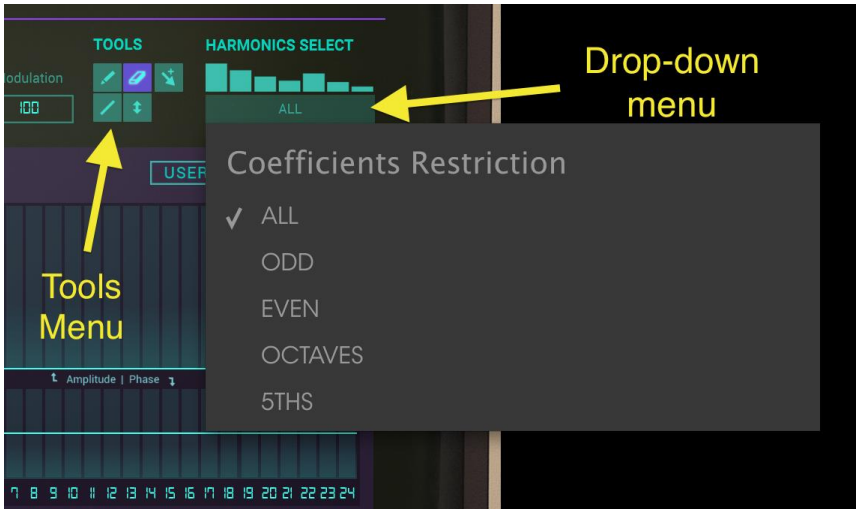
Selecting this button will allow you to switch between tools using Shift/click, Alt/Click, or Right/click.

- **Shift/click** = Line tool
- **Alt/click** (Mac & Windows users) = Offset tool
- **Right/click** = Eraser tool

6.3.6 HARMONICS SELECT

The **HARMONICS SELECT** (just to the RIGHT of the **TOOLS** selector) is a drop-down menu allowing you to choose a **Coefficients Restriction** option when editing the 24 Harmonics or Phases. You can limit your harmonics being edited to either ALL (default), ODD, EVEN, OCTAVES, or FIFTHS.

(See also Section **7.3.1 CARRIER** & **MODULATOR** for more details on adding & editing the 24 Harmonics & Phases)



Harmonics Select Menu & Tools Menu)

6.4 MIXER

The **MIXER** Tab is located at the top/center of the **Graphic Screen Mode**.

The **MIXER** allows you to graphically see and edit many of the Partials' functions that are also accessible in **Standard Panel Mode** and **Extended Panel Mode**.

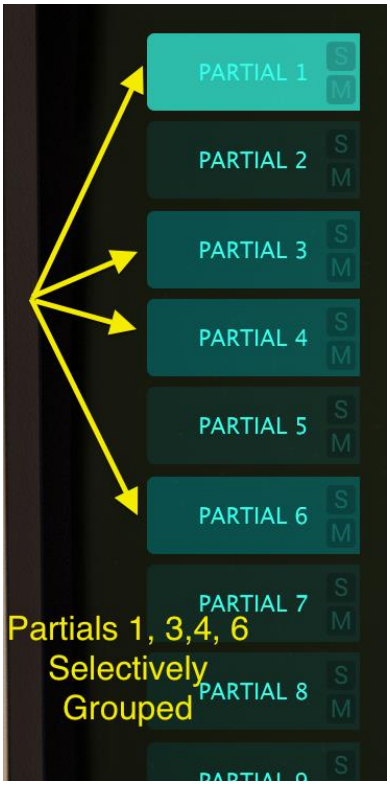


MIXER Tab (Graphic Screen Mode)



MIXER

Each of 12 **PARTIAL**s are available on the LEFT hand side of the Screen. You can make changes to one Partial at a time or multiple Partials.



- To select a **PARTIAL**, simply click on the PARTIAL number you'd like to change. It will be highlighted in **light Green**.
- To select multiple **PARTIAL**s in succession, hold **<shift>** and click on the first PARTIAL you'd like to change. Then click on the last PARTIAL you'd like to change in the succession. The first PARTIAL will be highlighted in **light Green** and the successive PARTIALs will be highlighted in a slightly **darker Green**. Any changes to the Graphic will now affect all PARTIALs selected.
- To select multiple Partials one by one, hold **<command>** (**<ctrl>** for Windows users) and click on each of the Partials you'd like to change. The first PARTIAL will be highlighted in **light Green** and the next selected PARTIALs will be highlighted in a slightly **darker Green**. Any changes to the Graphic will now affect all PARTIALs selected. To go back to a single Partial, simply click on one PARTIAL only, NOT holding down either **<shift>** or **<command>** (or **<ctrl>** for Windows users).
- To listen to a PARTIAL individually, click on the small **S** (**Solo**) button just to the right of the PARTIAL number.
- To turn off the sound of an individual Partial, click on the small **M** (**Mute**) button, just to the right of the Partial number.



MIXER Controls

6.4.1 VOLUME

The **VOLUME** left/right slider is the overall loudness of the Partial or **grouped** Partials selected. Its range is from 0db at full gain (slider full RIGHT) to 0db (OFF slider full LEFT) in .1dB increments.

6.4.2 PAN

The **PAN** knob globally moves the selected Partial or **grouped** Partials stereo positioning left/right. Setting the knob straight up is **center**. The range is from -62 (hard left) to +62 (hard right). After turning the knob left or right you can return to **center** position by double-clicking on the knob.

6.4.3 TUNING

The **TUNING** knob fine tunes the pitch of selected Partial or **grouped** Partials up or down in individual **Cents** (100ths of a semitone). At the knob's center position there is no pitch change. The parameter value is displayed in Cents in the **Lower Toolbar** at the lower left. Double clicking the knob returns the knob to center or **0.00** Cents. The range is from -125 to +125 Cents below and above the setting of the **Transpose** knob.

6.4.4 TRANSPOSE

The **TRANSPOSE** knob sets the pitch of the selected Partial or **grouped** Partials up or down in **semitone** increments. At the knob's center position there is **No Transposition**. You can view the semitone value in the **Lower Toolbar** at the lower left side while you are turning the knob or placing your cursor over the knob. Double clicking the knob returns the knob to center or **No Transposition**. The range is from -24 to +24 semitones.

6.4.5 OCTAVE

The **OCTAVE** setting window controls the octave placement of the A-440 Hz (MIDI key #69) of the selected Partial or **grouped** Partials. Click/Drag in the window Up/Down to Increase/Decrease the setting. It can be set to 1 of 9 discrete values from 6.875 Hz. to 1760 Hz. Double clicking will return it to the default value of 440.0 Hz.

6.4.6 CHORUS

The **CHORUS** knob creates a duplicate voice of the selected Partial or **grouped** Partials with a different pitch of your Partial or Partials. At the knob's center position there is no added voice, a value of 1.000. You can view the Chorus value in the **Lower Toolbar** at the lower left side while you are turning the knob or by placing your cursor over the knob. The range is from 0.000 to 16.000 in steps of .100. Double clicking on the knob returns the value to 1.000 or NO **CHORUS**.

Chorus: Relationship of added voice

Setting: to fundamental frequency

0.500: One octave below

1.000: Unison (no added Voice Chorus)

1.500: Perfect fifth above

2.000: Second harmonic (one octave above)

3.000: Third harmonic (one octave plus a perfect fifth above)

4.000: Fourth harmonic (two octaves above)

5.000: Fifth harmonic (two octaves plus a major third above)

6.000: Sixth harmonic (two octaves plus a perfect fifth above)

7.000: Seventh harmonic (two octaves plus a minor seventh above)

8.000: Eighth harmonic (three octaves above)

9.000: Ninth harmonic (three octaves plus a major second above)

10.000: Tenth harmonic (three octaves plus a major third above)

11.000: Eleventh harmonic (three octaves plus an augmented fourth above)

12.000: Twelfth harmonic (three octaves plus a perfect fifth above)

13.000: Thirteenth harmonic (three octaves plus a perfect sixth above)

14.000: Fourteenth harmonic (three octaves plus a minor seventh above)

15.000: Fifteenth harmonic (three octaves plus a major seventh above)

16.000: Sixteenth harmonic (four octaves above)

6.4.7 FINE (Chorus)

The **FINE** knob is a much smaller tuning adjustment of the **CHORUS** for the selected Partial or **grouped** Partials. Range is from -.100 to +.100 in increments of .100. These

values read out in the **Lower Toolbar** left side as well. Double clicking on the knob returns it to its center position 0.000.

6.4.8 FM MOD

The **FM MOD** knob controls the overall amount of F.M. modulation for the selected Partial or **grouped** Partials. There must be a **CARRIER** wave AND a **MODULATOR** wave assigned to a Partial on the **Time Slices** page in **Graphic Screen Mode** for this control to have any effect on the timbre. The Range is from 0.000 to 1.000.

6.4.9 FM RATIO

The **FM RATIO** knob controls the ratio of the F.M. Modulator frequency to the FM Carrier frequency for the selected Partial or **grouped** Partials. There must be a **CARRIER** wave AND a **MODULATOR** wave assigned to a Partial on the **Time Slices** page in **Graphic Screen Mode** for this control to have any effect on the Partial. The Range is from 0.000 to 16.000 in increments of .100.

6.4.10 FINE (FM Ratio)

The **FM Fine** knob is a much smaller adjustment to the **FM Ratio** (ratio of the F.M. Modulator frequency to the F.M. Carrier frequency) for the selected Partial or **grouped** Partials. There must be a **CARRIER** wave AND a **MODULATOR** wave assigned to a Partial on the **Time Slices** page in **Graphic Screen Mode** for this control to have any effect on the Partial. The Range is from -0.100 to +0.100 in very small increments of .001.

6.4.11 PITCH TRACK

The **TRACK** button On/Off determines if the selected Partial or **grouped** Partials track the **Virtual Keyboard** or external MIDI keyboard/controller.

When turned **ON** (bright **Green)**, the pitch tracks the notes on the keyboard. When turned **OFF**, the pitch will be constant (A-440 MIDI note #69) with any note depressed.

6.5 MODS (SOURCES)

The **MODS** Tab is located at the top/center of the **Graphic Panel Screen** just to the right of the **MIXER** Tab. The **MODS** section provides extensive source and destination **modulator** routings not available in **Standard Panel** or **Extended Panel Modes**. Routings are assignable to the selected Partial or **grouped** Partials.



MODS Tab



MODS Controls

Below the **MODS** Tab at the TOP of a series of "columns" are **16** drop-down menus in 2 groups, **1-8** and **9-16**. To select between **1-8** or **9-16** there is a **Green arrow** at the far top right of the screen.

Each drop-down menu is a **MOD SOURCE** assignment. There are 8 Source controllers and 30 Destination parameters that can be assigned.

Example #1: One possibility would be to assign each of 8 **MOD SOURCE** controllers to 2 **MOD DESTINATIONS** each.

Example #2: Another possibility would be to assign only 1 **MOD SOURCE** to 16 different **MOD DESTINATIONS** simultaneously.

Each **MOD SOURCE** uses 1 **slider** (per PARTIAL) to adjust the amount of the controller sent to the **MOD DESTINATION**. The range is from -1.00 to +1.00.



MODS Sources

6.5.1 PITCH BEND

The **PITCH BEND** wheel can be assigned to 1 (or as many as 16) of the 30 **MOD DESTINATIONS**. In other words, the **PITCH BEND** wheel is not just for **TUNING**, but **TUNING** is the default.

To assign a **MOD SOURCE** to be **PITCH BEND**, click on any one of the 16 **MOD SOURCE** drop-down menus at the TOP of the "column" and select **PITCH BEND**.

To adjust the RANGE assigned to the DESTINATION, click/drag the **slider** of the Partial or **grouped** Partials.

To assign **PITCH** to a **MOD DESTINATION**, click on any one of the 16 **MOD DESTINATION** drop-down menus at the BOTTOM of the "column" and select any of 30 **MOD DESTINATIONS**.

By default, MOD SOURCE **PITCH BEND** is assigned to MOD DESTINATION **TUNING.**

Important Note: The maximum range of **PITCH BEND** TUNING is set on the **SETTINGS** page. The slider range from full RIGHT (1.00) to center position will reduce the **TUNING** range set by the **PITCH BEND** on the **SETTINGS** page. The slider range from CENTER position to full LEFT (-1.00) will increase the TUNING range set by the **PITCH BEND** on the **SETTINGS** page but the direction of the pitch change will be reversed.

6.5.2 SUSTAIN (Sustain Pedal)

The **SUSTAIN** pedal can be assigned to 1 (or as many as 16) of the 30 **MOD DESTINATIONS**.

To assign a **MOD SOURCE** to be the **SUSTAIN Pedal**, click on any one of the 16 **MOD SOURCE** drop-down menus at the TOP of the "column" and select **SUSTAIN**.

To adjust the amount to be sent to the DESTINATION, click/drag the **slider** of the Partial or **grouped** Partials.

To assign the **SUSTAIN** pedal to a **MOD DESTINATION**, click on any one of the 16 **MOD DESTINATION** drop-down menus at the BOTTOM of the "column" and select any of 30 **MOD DESTINATIONS**.

6.5.3 VELOCITY

VELOCITY can be assigned to 1 (or as many as 16) of the 30 **MOD DESTINATIONS**.

To assign a **MOD SOURCE** to be **VELOCITY**, click on any one of the 16 **MOD SOURCE** drop-down menus at the TOP of the "column" and select **VELOCITY**.

To adjust the amount to be sent to the DESTINATION, click/drag the **slider** of the Partial or **grouped** Partials.

To assign **VELOCITY** to a **MOD DESTINATION**, click on any one of the 16 **MOD DESTINATION** drop-down menus at the BOTTOM of the "column" and select any of 30 **MOD DESTINATIONS**.

6.5.4 MODWHEEL

The **MODWHEEL** can be assigned to 1 (or as many as 16) of the 30 **MOD DESTINATIONS**.

To assign a **MOD SOURCE** to be the **MODWHEEL**, click on any one of the 16 **MOD SOURCE** drop-down menus at the TOP of the "column" and select **MODWHEEL**.

To adjust the amount to be sent to the DESTINATION, click/drag the **slider** of the Partial or **grouped** Partials.

To assign the **MODWHEEL** to a **MOD DESTINATION**, click on any one of the 16 **MOD DESTINATION** drop-down menus at the BOTTOM of the "column" and select any of 30 **MOD DESTINATIONS**.

6.5.5 AFTERTOUCH

AFTERTOUCH can be assigned to 1 (or as many as 16) of the 30 **MOD DESTINATIONS**.

To assign a **MOD SOURCE** to be **AFTERTOUCH**, click on any one of the 16 **MOD SOURCE** drop-down menus at the TOP of the "column" and select **AFTERTOUCH**.

To adjust the amount to be sent to the DESTINATION, click/drag the **slider** of the Partial or **grouped** Partials.

To assign **AFTERTOUCH** to a **MOD DESTINATION**, click on any one of the 16 **MOD DESTINATION** drop-down menus at the BOTTOM of the "column" and select any of 30 **MOD DESTINATIONS**.

6.5.6 EXPR (Expression Pedal)

EXPR (Expression Pedal) can be assigned to 1 (or as many as 16) of the 30 **MOD DESTINATIONS**.

To assign a **MOD SOURCE** to be **EXPR (Expression Pedal)**, click on any one of the 16 **MOD SOURCE** drop-down menus at the TOP of the "column" and select **EXPR (Expression Pedal)**.

To adjust the amount to be sent to the DESTINATION, click/drag the **slider** of the Partial or **grouped** Partials.

To assign **EXPR (Expression Pedal)** to a **MOD DESTINATION**, click on any one of the 16 **MOD DESTINATION** drop-down menus at the BOTTOM of the "column" and select any of 30 **MOD DESTINATIONS**.

6.5.7 RELEASE (Release Velocity)

RELEASE (Release Velocity) can be assigned to 1 (or as many as 16) of the 30 **MOD DESTINATIONS**.

To assign a **MOD SOURCE** to be **RELEASE (Release Velocity)**, click on any one of the 16 **MOD SOURCE** drop-down menus at the TOP of the "column" and select **RELEASE (Release Velocity)**.

To adjust the amount to be sent to the DESTINATION, click/drag the **slider** of the Partial or **grouped** Partials.

To assign **RELEASE (Release Velocity)** to a **MOD DESTINATION**, click on any one of the 16 **MOD DESTINATION** drop-down menus at the BOTTOM of the "column" and select any of 30 **MOD DESTINATIONS**.

6.5.8 KEYBOARD (Keyboard Envelope)

KEYBOARD (Keyboard Envelope) can be assigned to 1 (or as many as 16) of the 30 **MOD DESTINATIONS**.

To assign a **MOD SOURCE** to be **KEYBOARD (Keyboard Envelope)**, click on any one of the 16 **MOD SOURCE** drop-down menus at the TOP of the "column" and select **KEYBOARD (Keyboard Envelope)**.

To adjust the amount to be sent to the DESTINATION, click/drag the **slider** of the Partial or **grouped** Partials.

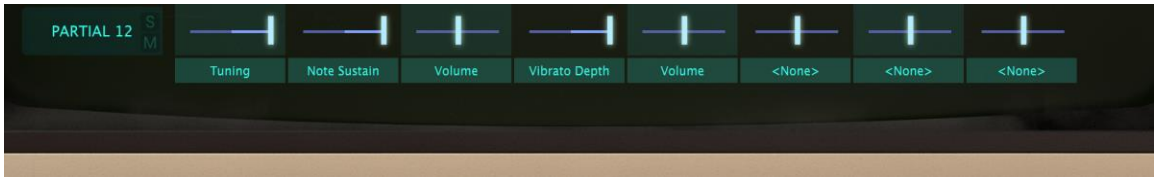
To assign the **KEYBOARD (Keyboard Envelope)** to a **MOD DESTINATION**, click on any one of the 16 **MOD DESTINATION** drop-down menus at the BOTTOM of the "column" and select any of 30 **MOD DESTINATIONS**.

6.6 MODS (DESTINATIONS)

The **MODS** Tab is located at the top/center of the **Graphic Panel Screen** just to the right of the **MIXER** Tab. The **MODS** section provides extensive source and destination modulator routings not available in **Standard Panel** or **Extended Panel Modes**. Routings are assignable to the selected Partial or **grouped** Partials.



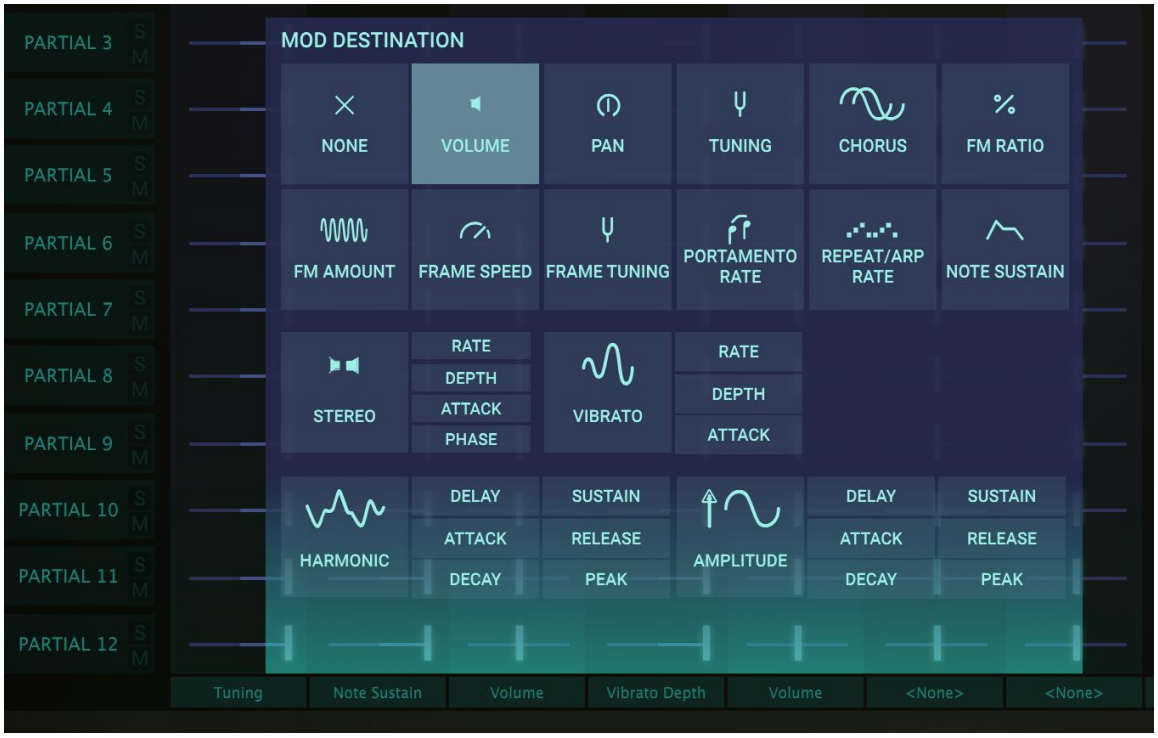
MODS Tab



MODS Controls

Below the **MODS** Tab at the BOTTOM of a series of "columns" are 16 drop-down menus in 2 groups, **1-8** and **9-16**. To select between **1-8** or **9-16** there is a **Green arrow** at the far top right of the screen.

There are 30 MOD DESTINATIONS.



MODS Destinations

6.6.1 VOLUME

VOLUME is the overall loudness of the Partial or **grouped** Partials selected.

To assign a **MOD DESTINATION** to be **VOLUME** of a Partial or **grouped** Partials, click on any one of the 16 **MOD DESTINATION** drop-down menus at the BOTTOM of the "column" and select **VOLUME**.

To adjust the amount to be sent to that DESTINATION, click/drag the **slider** of the Partial or **grouped** Partials.

6.6.2 PAN

PAN moves the selected Partial or **grouped** Partials stereo positioning left/right.

To assign a **MOD DESTINATION** to be **PAN** of a Partial or **grouped** Partials, click on any one of the 16 **MOD DESTINATION** drop-down menus at the BOTTOM of the "column" and select **PAN**.

To adjust the amount to be sent to that DESTINATION, click/drag the **slider** of the Partial or **grouped** Partials.

6.6.3 TUNING

TUNING fine tunes the pitch of selected Partial or **grouped** Partials up or down in individual **Cents** (100ths of a semitone).

To assign a **MOD DESTINATION** to be **TUNING** of a Partial or **grouped** Partials, click on any one of the 16 **MOD DESTINATION** drop-down menus at the BOTTOM of the "column" and select **TUNING**.

To adjust the amount to be sent to that DESTINATION, click/drag the **slider** of the Partial or **grouped** Partials.

6.6.4 CHORUS

CHORUS creates a duplicate voice of the selected Partial or **grouped** Partials with a different pitch of your Partial or Partials.

To assign a **MOD DESTINATION** to be **CHORUS** of a Partial or **grouped** Partials, click on any one of the 16 **MOD DESTINATION** drop-down menus at the BOTTOM of the "column" and select **CHORUS**.

To adjust the amount to be sent to that DESTINATION, click/drag the **slider** of the Partial or **grouped** Partials.

6.6.5 FM RATIO

FM Ratio controls the ratio of the FM Modulator frequency to the FM Carrier frequency for the selected Partial or **grouped** Partials. There must be a **CARRIER** wave AND a **MODULATOR** wave assigned to a Partial on the **Time Slices** page in **Graphic Screen Mode** for this control to have any effect on the Partial.

To assign a **MOD DESTINATION** to be **FM RATIO** of a Partial or **grouped** Partials, click on any one of the 16 **MOD DESTINATION** drop-down menus at the BOTTOM of the "column" and select **FM RATIO**.

To adjust the amount to be sent to that DESTINATION, click/drag the **slider** of the Partial or **grouped** Partials.

6.6.6 FM AMOUNT

FM AMOUNT controls the overall amount of FM modulation for the selected Partial or **grouped** Partials. There must be a **CARRIER** wave AND a **MODULATOR** wave assigned to a Partial on the **Time Slices** page in **Graphic Screen Mode** for this control to have any effect on the timbre.

To assign a **MOD DESTINATION** to be **FM AMOUNT** of a Partial or **grouped** Partials, click on any one of the 16 **MOD DESTINATION** drop-down menus at the BOTTOM of the "column" and select **FM AMOUNT**.

To adjust the amount to be sent to that DESTINATION, click/drag the **slider** of the Partial or **grouped** Partials.

6.6.7 FRAME SPEED

FRAME SPEED increases or decreases the overall time that **Timbre Slice** Frames crossfade into one another for the selected Partial or **grouped** Partials.

To assign a **MOD DESTINATION** to be **FRAME SPEED** of a Partial or **grouped** Partials, click on any one of the 16 **MOD DESTINATION** drop-down menus at the BOTTOM of the "column" and select **FRAME SPEED**.

To adjust the amount to be sent to that DESTINATION, click/drag the **slider** of the Partial or **grouped** Partials.

6.6.8 FRAME TUNING

FRAME TUNING increases or decreases the overall Pitch offset for **Timbre Slice** Frames for the selected Partial or **grouped** Partials.

To assign a **MOD DESTINATION** to **FRAME TUNING** of a Partial or **grouped** Partials, click on any one of the 16 **MOD DESTINATION** drop-down menus at the BOTTOM of the "column" and select **FRAME TUNING**.

To adjust the amount to be sent to that DESTINATION, click/drag the **slider** of the Partial or **grouped** Partials.

6.6.9 PORTAMENTO RATE

PORTAMENTO is a a global parameter affecting all Partials in the current Timbre. It makes the pitch "glide" between the notes you play, rather than changing the pitch instantly as soon as you hit another key or keys on your keyboard. The effect works on Polyphonic or Monophonic Timbres.

PORTAMENTO RATE controls the speed at which the sound glides from one pitch to the next.

To assign a **MOD DESTINATION** to **PORTAMENTO RATE** of a Partial or **grouped** Partials, click on any one of the 16 **MOD DESTINATION** drop-down menus at the BOTTOM of the "column" and select **PORTAMENTO RATE**. *(See Figure #22 above)*

To adjust the amount to be sent to that DESTINATION, click/drag the **slider** of the Partial or **grouped** Partials.

6.6.10 REPEAT/ARP RATE (Repeat/Arpeggiate)

REPEAT/ARP RATE is a a global parameter affecting all Partials in the current Timbre. **REPEAT/ARP RATE** determines the speed of your repeating notes or arpeggios.

To assign a **MOD DESTINATION** to **REPEAT/ARP RATE** of a Partial or **grouped** Partials, click on any one of the 16 **MOD DESTINATION** drop-down menus at the BOTTOM of the "column" and select **REPEAT/ARP RATE**.

To adjust the amount to be sent to that DESTINATION, click/drag the **slider** of the Partial or **grouped** Partials.

6.6.11 NOTE SUSTAIN

NOTE SUSTAIN holds the MIDI Note-on event ON for the selected Partial or **grouped** Partials.

To assign a **MOD DESTINATION** to **NOTE SUSTAIN** of a Partial or **grouped** Partials, click on any one of the 16 **MOD DESTINATION** drop-down menus at the BOTTOM of the "column" and select **NOTE SUSTAIN**.

(The most common **MOD SOURCE** for this destination would be **SUSTAIN PEDAL**.)

Click/dragging the **slider** of the Partial or **grouped** Partials RIGHT to the positive side will set the **NOTE SUSTAIN** ON.

6.6.12 STEREO:RATE

STEREO:RATE determines the speed of your Stereo panning effects and Tremolo non-panning effects for the selected Partial or grouped Partials.

To assign a **MOD DESTINATION** to **STEREO:RATE** of a Partial or **grouped** Partials, click on any one of the 16 **MOD DESTINATION** drop-down menus at the BOTTOM of the "column" and select **STEREO:RATE**.

To adjust the amount to be sent to that DESTINATION, click/drag the **slider** of the Partial or **grouped** Partials.

6.6.13 STEREO:DEPTH

STEREO:DEPTH controls the width of the **Stereo** panning effects or the depth of the Tremelo effects.

To assign a **MOD DESTINATION** to **STEREO:DEPTH** of a Partial or **grouped** Partials, click on any one of the 16 **MOD DESTINATION** drop-down menus at the BOTTOM of the "column" and select **STEREO:DEPTH**.

To adjust the amount to be sent to that DESTINATION, click/drag the **slider** of the Partial or **grouped** Partials.

6.6.14 STEREO:ATTACK

STEREO:ATTACK adjusts the amount of delay before the **Stereo** effect begins after the note-on.

To assign a **MOD DESTINATION** to **STEREO:ATTACK** of a Partial or **grouped** Partials, click on any one of the 16 **MOD DESTINATION** drop-down menus at the BOTTOM of the "column" and select **STEREO:ATTACK**.

To adjust the amount to be sent to that DESTINATION, click/drag the **slider** of the Partial or **grouped** Partials.

6.6.15 STEREO:PHASE

STEREO:PHASE defaults to 180° which allow full Left/Right Stereo panning effects. Turning the knob full down to 0° or full up to 360° will allow Tremelo (Amplitude Modulation) effects with NO Left/Right Stereo panning.

Other settings between 0° and 360° will display varying degrees of Left/Right panning depth.

To assign a **MOD DESTINATION** to **STEREO:PHASE** of a Partial or **grouped** Partials, click on any one of the 16 **MOD DESTINATION** drop-down menus at the BOTTOM of the "column" and select **STEREO:PHASE**.

To adjust the amount to be sent to that DESTINATION, click/drag the **slider** of the Partial or **grouped** Partials.

6.6.16 VIBRATO:RATE

VIBRATO:RATE determines the speed of your **Modulator**. The **Rate** is in Hz (Hertz or cycles per second). The range is 0.00Hz to 50.0Hz.

To assign a **MOD DESTINATION** to **STEREO:PHASE** of a Partial or **grouped** Partials, click on any one of the 16 **MOD DESTINATION** drop-down menus at the BOTTOM of the "column" and select **STEREO:PHASE**.

To adjust the amount to be sent to that DESTINATION, click/drag the **slider** of the Partial or **grouped** Partials.

6.6.17 VIBRATO:DEPTH

VIBRATO:DEPTH controls the level of the **Carrier** creating Vibrato. The pitch fluctuates equally above and below the pitch of the key played. The range is 0 semitones to 25 semitones.

To assign a **MOD DESTINATION** to **VIBRATO:DEPTH** of a Partial or **grouped** Partials, click on any one of the 16 **MOD DESTINATION** drop-down menus at the BOTTOM of the "column" and select **VIBRATO:DEPTH**.

To adjust the amount to be sent to that DESTINATION, click/drag the **slider** of the Partial or **grouped** Partials.

6.6.18 VIBRATO:ATTACK

VIBRATO:ATTACK adjusts the amount of delay before the **Vibrato** effect begins after the note-on. The range is 0 MSecs to 30 seconds.

To assign a **MOD DESTINATION** to **VIBRATO:ATTACK** of a Partial or **grouped** Partials, click on any one of the 16 **MOD DESTINATION** drop-down menus at the BOTTOM of the "column" and select **VIBRATO:ATTACK**.

To adjust the amount to be sent to that DESTINATION, click/drag the **slider** of the Partial or **grouped** Partials.

6.6.19 HARMONIC:DELAY

HARMONIC:DELAY increases the time for the selected Partial or **grouped** Partials' **F.M**. (Frequency Modulator) to be heard after the initial note-on (key depression)**.** The default value is 0 MSec (milliseconds) and the range is 0 MSec to 30.0 Secs (seconds) in 1 millisecond increments.

To assign a **MOD DESTINATION** to **HARMONIC:DELAY** of a Partial or **grouped** Partials, click on any one of the 16 **MOD DESTINATION** drop-down menus at the BOTTOM of the "column" and select **HARMONIC:DELAY**.

To adjust the amount to be sent to that DESTINATION, click/drag the **slider** of the Partial or **grouped** Partials.

6.6.20 HARMONIC:ATTACK

HARMONIC:ATTACK adjusts how fast or slow the **F.M.** (Frequency Modulator) ramps UP in volume of the selected Partial or **grouped** Partials from the note-on (key depression) to the **Peak** setting. The default is a value of 3 MSecs (milliseconds) and the range is 0 MSec to 30 Secs (seconds).

To assign a **MOD DESTINATION** to **HARMONIC:ATTACK** of a Partial or **grouped** Partials, click on any one of the 16 **MOD DESTINATION** drop-down menus at the BOTTOM of the "column" and select **HARMONIC:ATTACK**.

To adjust the amount to be sent to that DESTINATION, click/drag the **slider** of the Partial or **grouped** Partials.

6.6.21 HARMONIC:DECAY

HARMONIC:DECAY adjusts how fast or slow the **F.M.** (Frequency Modulator) ramps DOWN in volume from the **Peak** setting to the **Sustain** level setting of the selected Partial or **grouped** Partials. The default is a value of 3 MSecs (milliseconds) and the time range is from 0 MSec to 30 Secs (seconds).

To assign a **MOD DESTINATION** to **HARMONIC:DECAY** of a Partial or **grouped** Partials, click on any one of the 16 **MOD DESTINATION** drop-down menus at the BOTTOM of the "column" and select **HARMONIC:DECAY**.

To adjust the amount to be sent to that DESTINATION, click/drag the **slider** of the Partial or **grouped** Partials.

6.6.22 HARMONIC:SUSTAIN

HARMONIC:SUSTAIN adjusts **F.M.** (Frequency Modulator) level of the selected Partial or **grouped** Partials after the **Decay** portion of the envelope. The level ranges from 0.00 to 100.0.

To assign a **MOD DESTINATION** to **HARMONIC:SUSTAIN** of a Partial or **grouped** Partials, click on any one of the 16 **MOD DESTINATION**

drop-down menus at the BOTTOM of the "column" and select **HARMONIC:SUSTAIN**.

To adjust the amount to be sent to that DESTINATION, click/drag the **slider** of the Partial or **grouped** Partials.

6.6.23 HARMONIC:RELEASE

HARMONIC:RELEASE adjusts the final decay time of the **F.M.** (Frequency Modulator) after the note-off (key release) for the selected Partial or **grouped** Partials. The time range is from 0 MSec (milliseconds) to 30 Secs (seconds).

To assign a **MOD DESTINATION** to **HARMONIC:RELEASE** of a Partial or **grouped** Partials, click on any one of the 16 **MOD DESTINATION** drop-down menus at the BOTTOM of the "column" and select **HARMONIC:RELEASE**.

To adjust the amount to be sent to that DESTINATION, click/drag the **slider** of the Partial or **grouped** Partials.

6.6.24 HARMONIC:PEAK

HARMONIC:PEAK adjusts the next level point in the **F.M.** (Frequency Modulator) after the initial **Attack** of the selected Partial or **grouped** Partials. The level ranges from 0.00 to 100.0.

To assign a **MOD DESTINATION** to **HARMONIC:PEAK** of a Partial or **grouped** Partials, click on any one of the 16 **MOD DESTINATION** drop-down menus at the BOTTOM of the "column" and select **HARMONIC:PEAK**.

To adjust the amount to be sent to that DESTINATION, click/drag the **slider** of the Partial or **grouped** Partials.

6.6.25 AMPLITUDE:DELAY

AMPLITUDE:DELAY increases the time for the selected Partial or **grouped** Partials to be heard after the initial note-on (key depression)**.** The default value is 0 MSec (milliseconds) and the range is 0 MSec to 30.0 Secs (seconds) in 1 millisecond increments.

To assign a **MOD DESTINATION** to **AMPLITUDE:DELAY** of a Partial or **grouped** Partials, click on any one of the 16 **MOD DESTINATION** drop-down menus at the BOTTOM of the "column" and select **AMPLITUDE:DELAY**.

To adjust the amount to be sent to that DESTINATION, click/drag the **slider** of the Partial or **grouped** Partials.

6.6.26 AMPLITUDE:ATTACK

AMPLITUDE:ATTACK adjusts how fast or slow the Timbre/Sound ramps UP in volume from the note-on (key depression) to the **Peak** setting for the selected Partial or **grouped** Partials. The default is a value of 3 MSecs (milliseconds) and the range is 0 MSec to 30 Secs (seconds).

To assign a **MOD DESTINATION** to **AMPLITUDE:ATTACK** of a Partial or **grouped** Partials, click on any one of the 16 **MOD DESTINATION** drop-down menus at the BOTTOM of the "column" and select **AMPLITUDE:ATTACK**.

To adjust the amount to be sent to that DESTINATION, click/drag the **slider** of the Partial or **grouped** Partials.

6.6.27 AMPLITUDE:DECAY

AMPLITUDE:DECAY adjusts how fast or slow the Timbre/Sound ramps DOWN in volume from the **Peak** setting to the **Sustain** level setting of the selected Partial or **grouped** Partials. The default is a value of 3 MSecs (milliseconds) and the time range is from 0 MSec to 30 Secs (seconds).

To assign a **MOD DESTINATION** to **AMPLITUDE:DECAY** of a Partial or **grouped** Partials, click on any one of the 16 **MOD DESTINATION** drop-down menus at the BOTTOM of the "column" and select **AMPLITUDE:DECAY**.

To adjust the amount to be sent to that DESTINATION, click/drag the **slider** of the Partial or **grouped** Partials.

6.6.28 AMPLITUDE:SUSTAIN

AMPLITUDE:SUSTAIN adjusts sound volume level after the **Decay** portion of the envelope. The level ranges from 0.00 to 100.0.

To assign a **MOD DESTINATION** to **AMPLITUDE:SUSTAIN** of a Partial or **grouped** Partials, click on any one of the 16 **MOD DESTINATION** drop-down menus at the BOTTOM of the "column" and select **AMPLITUDE:SUSTAIN**.

To adjust the amount to be sent to that DESTINATION, click/drag the **slider** of the Partial or **grouped** Partials.

6.6.29 AMPLITUDE:RELEASE

AMPLITUDE:RELEASE adjusts the final decay time after the note-off (key release) for the selected Partial or **grouped** Partials. The time range is from 0 MSec (milliseconds) to 30 Secs (seconds)

To assign a **MOD DESTINATION** to **AMPLITUDE:RELEASE** of a Partial or **grouped** Partials, click on any one of the 16 **MOD DESTINATION** drop-down menus at the BOTTOM of the "column" and select **AMPLITUDE:RELEASE**.

To adjust the amount to be sent to that DESTINATION, click/drag the **slider** of the Partial or **grouped** Partials.

6.6.30 AMPLITUDE:PEAK

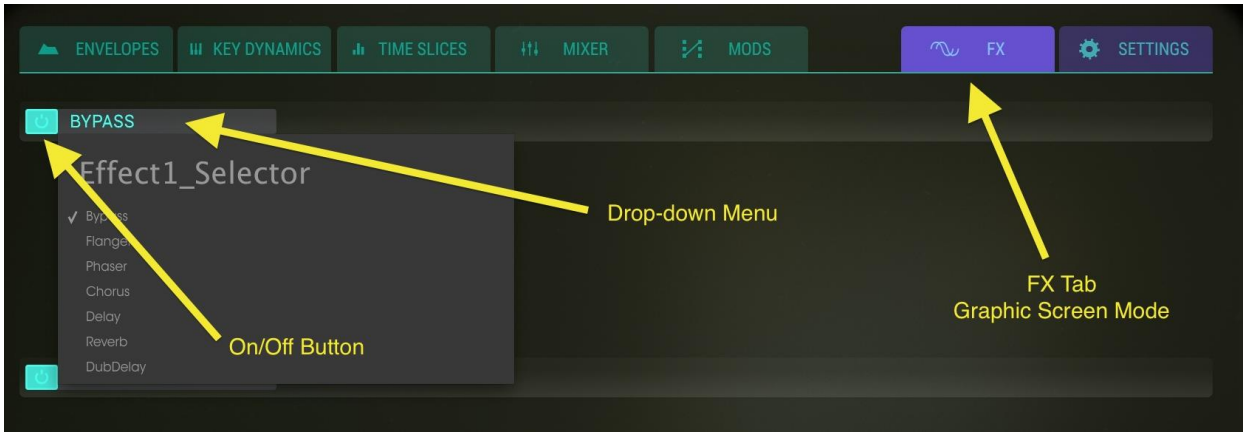
AMPLITUDE:PEAK adjusts the next volume level point in the Timbre/Sound after the initial **Attack** of the selected Partial or **grouped** Partials. The level ranges from 0.00 to 100.0.

To assign a **MOD DESTINATION** to **AMPLITUDE:PEAK** of a Partial or **grouped** Partials, click on any one of the 16 **MOD DESTINATION** drop-down menus at the BOTTOM of the "column" and select **AMPLITUDE:PEAK**.

To adjust the amount to be sent to that DESTINATION, click/drag the **slider** of the Partial or **grouped** Partials.

6.7 FX (Effects)

The **FX** **Purple** Tab is located at the top right side of the **Graphic Screen Mode**. The **FX** section contains 3 (three) channels with 6 (six) different **FX** each, and all three channels are simultaneously available. These are **Global** effects for the current Timbre (all Partials affected) and are not available in the **Standard Panel** or **Extended Panel Modes**. **FX** can be saved with the Timbre/Sound.



FX Tab

The 3 (three) channels of **FX** are located on the left side of the **FX** screen. Each channel has an on/off button with the default selection as ON but in **BYPASS** (no effect) mode. To select an **FX** type, click on the drop-down menu just to the right of the ON/OFF button.

6.7.1 Flanger

The **Flanger** effect works by by mixing two identical signals together, one signal delayed by a small and gradually changing time period. This produces a swept comb filter effect. The controls are:

- **DELAY TIME** Sets amount of time offset applied to the affected signal
- **DEPTH** Sets modulation amount
- **RATE** Sets modulation speed
- **FEEDBACK** Sets positive or negative resonance
- **WET/DRY Mix** Sets how much effect is added to the input signal



Flanger

6.7.2 Phaser

The **Phaser** effect is the psychedelic swooshing sound that became popular in the 1960s and 70s and adds a sense of movement and swirling to your sound. The effect filters your audio signal by creating a series of peaks and troughs in the frequency spectrum and then modulated over time

There are 2 STAGES for the effect. The controls for each STAGE are:

- **SINE/NOISE** Sets modulation waveform
- **RATE** Sets the speed of the sweep
- **FEEDBACK** Sets the phaser resonance
- **DEPTH** Sets the amount/richness of the effect
- **SYNC**
- **DUAL MODE**
- **WET/DRY Mix** Sets how much effect is added to the input signal



Phaser

6.7.3 Chorus

The **Chorus** effect works by adding a second voice to the signal and modulating the timing of that voice. The result is a harmonically richer sound and adds a sense of movement. The controls are:

- **TYPE** Switch Selects 1 of 3 chorus types
- **STEREO WIDTH** Sets spread of the stereo field
- **STEREO RATE** Sets speed of stereo panning
- **CHORUS RATE** Sets modulation rate
- **CHORUS AMOUNT** Sets depth of the effect
- **DELAY** Sets amount of time offset applied to the affected signal
- **WET/DRY Mix** Sets how much effect is added to the input signal



Chorus

6.7.4 Delay

The **Delay** effect creates an exact duplicate echo or repeating echo of the original Timbre/Sound. The controls are:

- DELAY TIME (Channel 1/Left) Sets time to the first echo
- DELAY TIME (Channel 2/Right) Sets time to the first echo
- FEEDBACK (Channel 1/Left) Sets amount of repeating echoes
- FEEDBACK (Channel 2/Right) Sets amount of repeating echoes
- PING PONG Sets alternating stereo repeats
- PING PONG (decaying filter) Filters stereo repeats
- WET/DRY Mix Sets how much effect is added to the input signal



Delay

6.7.5 Reverb

The **Reverb** effect is the persistence of a sound after its source has stopped, caused by multiple reflections (echoes) of the sound within a closed space. The controls are:

- **GAIN (input level)** Sets volume of the source Timbre/Sound
- **MATERIAL**
  - **HF DAMPING** Sets amount of high frequency reduction of reverb
  - **BRIGHTNESS** Sets high frequency level of reverb

- **SHAPE**
    - **DIFFUSION** Sets density of reflections
    - **DECAY TIME** Sets time for reverb tail to reach 0 (zero) gain
- **PRE-DELAY**
    - **FEEDBACK** Sets positive and negative resonance
    - **TIME** Sets time offset before reverb begins after input signal
- **WET/DRY Mix Slider** Sets how much effect is added to the input signal

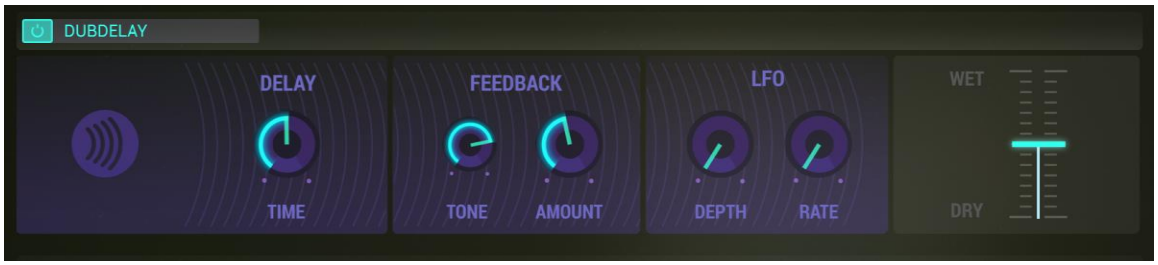


Reverb

6.7.6 Dub Delay

The **Dub Delay** effect, a model of an Analog Delay, creates an echo or repeating echo of the original Timbre/Sound. The sound of the delay is closer to the sound of a tape echo than a Digital Delay and the fidelity decays gradually with each repeat. The controls are:

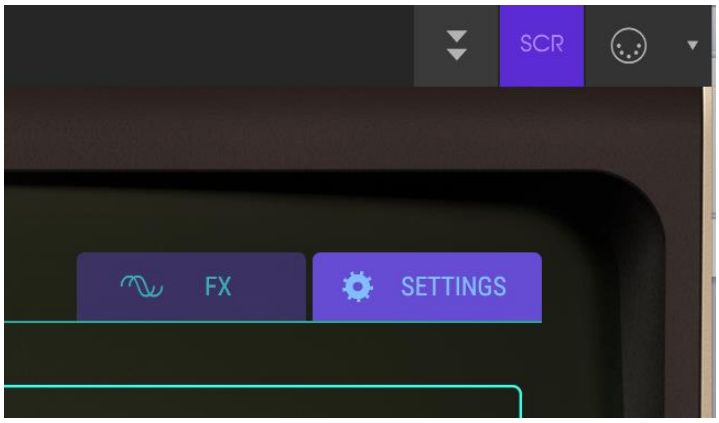
- **DELAY TIME** Sets time to the first echo
- **FEEDBACK TONE** Sets high frequency reduction for repeats
- **FEEDBACK AMOUNT** Sets number of echo repeats
- **LFO DEPTH** Sets amount of pitch modulation of the echoes
- **LFO RATE** Sets speed of pitch modulation of the echoes
- **WET/DRY Mix Slider** Sets how much effect is added to the input signal



Dub Delay

6.8 SETTINGS

SETTINGS are **Global** for the current Timbre (all Partials affected) and are not available in the **Standard Panel** or **Extended Panel Modes.** They are saved when saving a user preset Timbre.

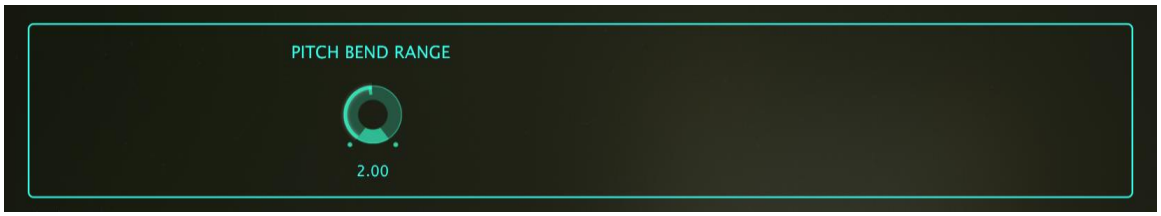


SETTINGS Tab

6.8.1 PITCH BEND RANGE

The **PITCH BEND RANGE** sets the range that the **BEND WHEEL** raises or lowers the pitch of your current Timbre. The default **Pitch bend Depth** is 2 (two) semitones but can be increased or decreased, from 0 (zero) semitones to ±25 (twenty five) semitones.

The **Pitch Bend** controller slider under the **MODS** tab in **Graphic Screen Mode** can also reduce the overall range of individual Partials in addition to **inverting** the pitch bend direction. This can give each Partial pitch bend a different semitone range and varying pitch directions.



6.8.2 TIMBRE NORMALIZE

The **TIMBRE NORMALIZE** button is located in the SYSTEM PARAMETER Section under the **SETTINGS** Tab and adjusts the current Timbre to avoid clipping as additional Partial Timbres are added to the Timbre. When Timbre Normalize is ON, the volume of the Timbre is reduced if the sum of the partials would produce a volume level greater than

unity gain (0.0 dB). You may wish to turn off **TIMBRE NORMALIZE** for certain mixing applications.



System Parameter

6.8.3 NOISE FLOOR

The **NOISE FLOOR** knob is located in the SYSTEM PARAMETER Section under the **SETTINGS** Tab and increases or decreases the steady state noise floor even when there is no Timbre/Sound is being produced. This steady state noise floor recreates the original Synclavier FM synthesizer hardware. It adds a nice ambience to the sounds at the default level of -90dB. The noise setting can be set to levels from OFF to -20dB and is adjustable in 1dB increments.

For techies: The noise floor of Synclavier V is modeled as a filtered pink-noise source with a very flat low level white-noise component. The left and right outputs are modeled independently as well

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6.8.4 ANIMATIONS

The **ANIMATIONS** button turns ON/OFF the animation effect while switching between **Standard Panel Mode**, **Extended Panel Mode** and **Graphic Screen Mode**. The default is setting is ON.

6.8.5 OVERSAMPLING

OVERSAMPLING provides an additional level of interpolation between the waveform samples exactly like an oversampling D/A converter.

The **OVERSAMPLING** knob is located in the SYSTEM PARAMETER Section under the **SETTINGS** Tab and has range settings of 1X, 2X, 4X, 8X, 16X, 32X, and 64X oversampling. The default setting is 4X.

6.8.6 BIT DEPTH

The **BIT DEPTH** knob is located in the SYSTEM PARAMETER Section under the **SETTINGS** Tab and controls the numerical precision that is used for the creation of digital audio.

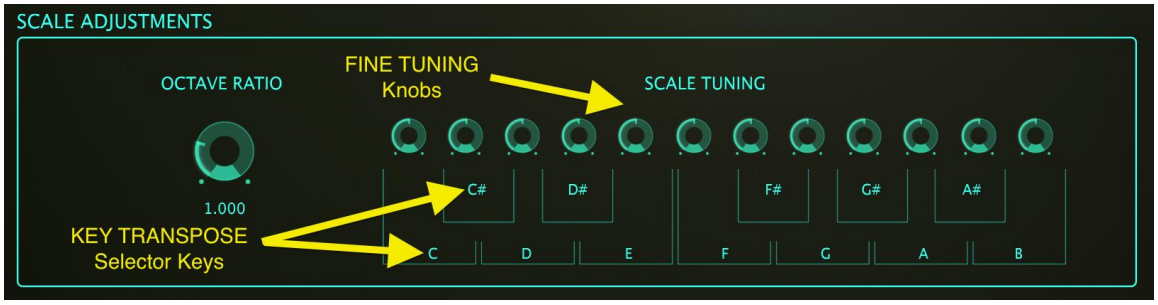
Small bit depths (such as 4 or 6 bits) produce an interesting distortion effect similar to a guitar effects processor. The original Synclavier FM hardware had an internal precision of 8 bits. Larger bit depths eliminate the quantization distortion that is perceived in the smaller bits depths. The **BIT DEPTH** setting ranges from 4 to 24 bits in 2 bit increments. The **BIT DEPTH** is applied to all Timbres and Partial Timbres whose custom **BIT DEPTH** setting in **Standard Panel Mode** is "**Default**".

6.8.7 OCTAVE RATIO

Typically a modern day keyboard produces pitches in a 12 semitone Western scale over a one octave range. The **OCTAVE RATIO** knob is located in the SCALE ADJUSTMENT Section under the **SETTINGS** Tab and controls the pitch spacing between keys of the keyboard.

- An **OCTAVE RATIO** of 1.000 provides the default 12-tone Western scale tuning.
- An **OCTAVE RATIO** of .500 provides quarter-tone steps for each half step on the keyboard. One octave on the keyboard now covers 1/2 (one half) of an octave.
- An **OCTAVE RATIO of** 2.000 provides whole-tone steps. One octave on the keyboard now cover two octaves.
- An **OCTAVE RATIO** of 3.000 provides three semitones (or minor third steps) so each half step on the keyboard now plays a diminished scale. One octave on the keyboard now covers 3 (three) octaves.
- An **OCTAVE RATIO** maximum of 4.000 provides 4 (four) semitones (or major third steps) so each half step on the keyboard now plays an augmented scale. One octave on the keyboard now covers 4 (four) octaves.
- An **OCTAVE RATIO** minimum of 0.000 tunes each key to Middle A (A-440Hz).

Additional non-standard tunings are possible between whole number values in .100 step increments.



Scale Adjustments

6.8.8 SCALE TUNING

The **SCALE TUNING** is located in the SCALE ADJUSTMENT Section under the **SETTINGS** Tab. The **SCALE TUNING (FINE TUNE) knobs** (**C**, **C#**, **D**, **D#**, **E**, **F**, **F#**, **G**, **G#**, **A**, **A#**, and **B**) adjust the pitch of each note of the 12-tone scale independently, ±125 cents above and below the default tuning. To **FINE TUNE** the pitch of a note, click on a **SCALE TUNING** knob and drag it UP/DOWN to INCREASE/DECREASE the pitch. Double clicking on the knob returns the function to its default value **0 CENTS**.

The **KEY TRANSPOSE** function raises or lowers any key of the scale in single **semitone** steps. Click/drag up/down on any of the letters below the knobs to raise/lower the pitch of that key. Double clicking on the knob returns the function to its default pitch.

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