Access Music Virus Indigo
Plug-In Guide

Version 9.0

Documentation Feedback

At Avid, we are always looking for ways to improve our documentation. If you have comments, corrections, or suggestions regarding our documentation, email us at *techpubs@avid.com*.

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chapter 1

Introduction

Thank you for purchasing Access Music Virus Indigo, a real-time TDM plug-in version of Access Music's highly-acclaimed Virus Indigo synthesizer.

Virus Indigo creates its sounds through *analog modeling.* This technique uses DSP algorithms to reproduce the sound and performance characteristics of analog synthesizers. The sonic results are virtually indistinguishable from the classic ARP, Moog, and Oberheim synthesizers of the 70s. Virus Indigo for Pro Tools|HD® provides power and flexibility far beyond these instruments.

⚠️ *In this guide, references to Virus Indigo also include Virus IndigoV40. Differences between Virus Indigo and Virus IndigoV40 are noted where applicable. For more information, see "Virus Indigo and Virus IndigoV40" on page 2*

Virus Indigo Features

- Analog synthesis with FM (frequency modulation) and wave shaping
- Three oscillators per voice
- Sub oscillator
- Noise generator with white and pink noise
- Dual multimode filters (low-pass, high-pass, band-pass, and band-reject)
- Vocoder
- Arpeggiator
- Two ring modulators
- Matrix modulation
- Chorus, phaser, reverb, and delay effects
- External input processing
- Polyphonic
- Multitimbral (eight parts per DSP)

Virus Indigo and Virus IndigoV40

Access Music Virus Indigo is available in two modules, the standard Virus Indigo 20-voice module (all qualified Pro Tools|HD systems), and the Virus IndigoV40 40-voice module (Pro Tools|HD Accel systems only).

⚠ *Pro Tools|HD Accel systems provide 40 Virus IndigoV40 voices per plug-in at 44.1/48 kHz session sample rates, or 20 voices per plug-in at 88.2/96 kHz session sample rates.*

Pro Tools|HD (and Pro Tools|HD Accel) systems provide 20 Virus Indigo voices per plug-in at 44.1/48 kHz session sample rates, or 10 voices per plug-in at 88.2/96 kHz session sample rates.

For additional information, refer to Appendix A, "DSP Requirements."

⚠ *Virus IndigoV40 can read patches created with Virus Indigo, or the original Virus 1.0 plug-in. However, Virus Indigo and Virus 1.0 cannot read Virus IndigoV40 presets due to their expanded parameters, functionality, and format.*

System Requirements

To use Virus Indigo, you need the following:

• An iLok USB Smart Key

• An iLok.com account for managing iLok licenses

• A qualified Pro Tools|HD system.

To use Virus IndigoV40, you need the following:

• An iLok USB Smart Key

• An iLok.com account for managing iLok licenses

• A qualified Pro Tools|HD system, with one or more HD Accel cards.

Avid can only assure compatibility and provide support for hardware and software it has tested and approved.

For complete system requirements and a list of qualified computers, operating systems, hard drives, and third-party devices, visit:

www.avid.com/compatibility

Registering Plug-Ins

Your plug-in purchase is automatically registered when you activate your iLok license (see "Authorizing Plug-Ins" on page 6).

Registered users are eligible to receive software update and upgrade notices.

For information on technical support, visit www.avid.com.

Working with Plug-Ins

See the *Pro Tools Reference Guide* for general information on working with plug-ins in Pro Tools®, including:

- Inserting plug-ins on tracks
- Using clip indicators
- Navigating the Plug-In window
- Adjusting plug-in controls
- Automating plug-ins
- Monitoring and recording audio from instrument plug-ins
- Using plug-in presets

Conventions Used in This Guide

All Pro Tools guides use the following conventions to indicate menu choices and key commands:

Convention	Action
File > Save	Choose Save from the File menu
Control+N	Hold down the Control key and press the N key
Control-click	Hold down the Control key and click the mouse button
Right-click	Click with the right mouse button

The names of Commands, Options, and Settings that appear on-screen are in a different font.

The following symbols are used to highlight important information:

☀️ *User Tips are helpful hints for getting the most from your Pro Tools system.*

⚠️ *Important Notices include information that could affect your Pro Tools session data or the performance of your Pro Tools system.*

⌨️ *Shortcuts show you useful keyboard or mouse shortcuts.*

📘 *Cross References point to related sections in this guide and other Pro Tools guides.*

About www.avid.com

The Avid website (www.avid.com) is your best online source for information to help you get the most out of your Pro Tools system. The following are just a few of the services and features available.

Product Registration Register your purchase online.

Support and Downloads Contact Avid Customer Success (technical support); download software updates and the latest online manuals; browse the Compatibility documents for system requirements; search the online Knowledge Base or join the worldwide Pro Tools community on the User Conference.

Training and Education Study on your own using courses available online or find out how you can learn in a classroom setting at a certified Pro Tools training center.

Products and Developers Learn about Avid products; download demo software or learn about our Development Partners and their plug-ins, applications, and hardware.

News and Events Get the latest news from Avid or sign up for a Pro Tools demo.

chapter 2

Installation and Authorization

Installing Plug-Ins for Pro Tools

Installers for your plug-ins can be downloaded from the Avid Store (http://shop.avid.com) or can be found on the plug-in installer disc (included with boxed versions of plug-ins).

An installer may also be available on the Pro Tools installer disc or on a software bundle installer disc.

To install a plug-in:

1 Do one of the following:

- Download the installer for your computer platform from www.avid.com. After downloading, make sure the installer is uncompressed (.dmg on Mac or .ZIP on Windows).

– or –

- Insert the Installer disc into your computer.

2 Double-click the plug-in installer application.

3 Follow the on-screen instructions to complete the installation.

4 When installation is complete, click Finish (Windows) or Quit (Mac).

When you launch Pro Tools, you are prompted to authorize your new plug-in.

Authorizing Plug-Ins

Software is authorized using the iLok USB Smart Key (iLok), manufactured by PACE Anti-Piracy.

iLok USB Smart Key

An iLok can hold hundreds of licenses for all of your iLok-enabled software. Once a license for a given piece of software is placed on an iLok, you can use the iLok to authorize that software on any computer.

⚠ *An iLok USB Smart Key is not supplied with plug-ins or software options. You can use the iLok included with certain Pro Tools systems (such as Pro Tools|HD-series systems), or purchase one separately.*

Authorizing Downloaded Software

If you downloaded software from the Avid Store (http://shop.avid.com), you authorize it by downloading a license from iLok.com to an iLok.

📄 *For more information, visit the iLok website (www.iLok.com).*

Authorizing Boxed Versions of Software

If you purchased a boxed version of software, it comes with an Activation Code (on the included Activation Card).

To authorize software using an Activation Code:

1 If you do not have an iLok.com account, visit www.iLok.com and sign up for an account.

2 Transfer the license for your software to your iLok.com account by doing the following:

- Visit www.avid.com/activation.

– and –

- Input your Activation Code (listed on your Activation Card) and your iLok.com User ID. Your iLok.com User ID is the name you create for your iLok.com account.

3 Transfer the licenses from your iLok.com account to your iLok USB Smart Key by doing the following:

- Insert the iLok into an available USB port on your computer.
- Go to www.iLok.com and log in.
- Follow the on-screen instructions for transferring your licences to your iLok.

📄 *For more information, visit the iLok website (www.iLok.com).*

4 Launch Pro Tools.

5 If you have any unauthorized software installed, you are prompted to authorize it. Follow the on-screen instructions to complete the authorization process.

Removing Plug-Ins

If you need to remove a plug-in from your Pro Tools system, follow the instructions below for your computer platform.

Mac OS X

To remove a plug-in:

1 Locate and open the Plug-Ins folder on your Startup drive (Library/Application Support /Digidesign/Plug-Ins).

2 Do one of the following:

• Drag the plug-in to the Trash and empty the Trash.

– or –

• Drag the plug-in to the Plug-Ins (Unused) folder.

Windows

To remove a plug-in:

1 Choose Start > Control Panel.

2 Under Programs, click Uninstall a program.

3 Select the plug-in from the list of installed applications.

4 Click Uninstall.

5 Follow the on-screen instructions to remove the plug-in.

Configuring MIDI

To play Virus Indigo using a MIDI keyboard controller, or to adjust its controls using a MIDI control surface, you must first configure Pro Tools for MIDI.

📄 *See your Pro Tools|HD User Guide for more information on configuring MIDI interfaces, MIDI devices, and your operating system (Mac or Windows) for MIDI operation.*

chapter 3

Virus Indigo Controls

Virus Indigo has over 180 different controls for generating and modifying sounds. This chapter explains each of these and their use.

A Synthesis Overview

Analog synthesis is often referred to as *subtractive* synthesis because of the way that sounds are created and modified.

Typically, a waveform generated by an oscillator is fed through a series of modules that change the waveform's frequency, harmonic content, and amplitude, and thus its sound character. Much of the modification is done by filtering the sound, hence the term subtractive.

The sounds themselves are often referred to as *patches* because the earliest synthesizers used patch cords to interconnect the various sound processing modules.

The most common modules or sonic building blocks in a synthesizer are:

Oscillators These produce the raw waveform material of a sound, which can then be modified. The most common waveforms are sine, triangle, sawtooth, and square waves. Virus Indigo generates many other types of waveforms as well. (See Appendix C, "Virus Indigo Oscillator Waveforms"for a list of Virus Indigo waveforms.)

Filters Remove or emphasize certain frequencies or *harmonics* in the waveform. The most common filter type is a low-pass filter. This removes high frequencies and passes lower frequencies. Other filter types are high-pass, band-pass, and band reject (or *notch filter*). Virus Indigo provides all of these.

Envelope Generators Give shape to the volume, pitch, filter cut-off, and other parameters of a sound each time a note is played. Envelope generators typically provide control over attack, decay, sustain, and release.

LFOs (Low Frequency Oscillators) Generate low frequency waveforms that can be used to change or *modulate* pitch, filter cutoff, volume, and many other parameters. The most common LFO waveforms are sine, triangle, and square waves.

Viewing Pages

Virus Indigo controls are grouped by function onto seven different *pages:*

Easy Has controls for some of the most commonly edited synthesizer parameters including oscillator volume, filter frequency and resonance, amplifier envelope attack and decay, and effects.

Osc Has controls for the oscillators, noise generator, frequency modulator, and ring modulator.

Filters/Env Has controls for the filters and envelope generators.

LFO Has controls for the low frequency oscillators (LFOs).

FX-1 Has controls for the phaser, chorus, delay, reverb, distortion, and ring modulation.

FX-2/Global Has controls for the vocoder, arpeggiator, envelope follower, audio input, and global controls for tuning, key mode, pitch bend, unison, and input mode.

ModMatrix Has controls for routing the sources, destinations, and amount of modulation in a patch.

To view a particular Virus Indigo page:

1 Open the Inserts/Send Editor for Virus Indigo.

2 At the upper left of the Virus Indigo plug-in, click the name of the page you want to view.

Selecting a page

Adjusting Plug-In Parameters

You can adjust plug-in controls by dragging the control's slider or knob, or by typing a value into the control's text box. Additionally, some plug-ins have switches that can be enabled by clicking on them.

To adjust a plug-in control:

1 Begin audio playback so that you can hear the control changes in real time.

2 Adjust the controls of the plug-in for the effect you want. Refer to "Editing Parameters Using a Mouse" on page 10 and "Editing Parameters Using a Computer Keyboard" on page 11.

Closing the plug-in will save the most recent changes.

Editing Parameters Using a Mouse

You can adjust rotary controls by dragging horizontally or vertically. Parameter values increase as you drag upward or to the right, and decrease as you drag downward or to the left.

Dragging a knob vertically

Dragging a knob horizontally

Keyboard Shortcuts

◆ For finer adjustments, Command-drag (Mac) or Control-drag (Windows) the control.

◆ To return a control to its default value, Option-click (Mac) or Alt-click (Windows) the control.

Editing Parameters Using a Computer Keyboard

Some controls have text boxes that display the current value of the parameter. You can edit the numeric value of a parameter with your computer keyboard.

If multiple plug-in windows are open, Tab and keyboard entry remain focused on the plug-in that is the target window.

To change control values with a computer keyboard:

1 Click the text box corresponding to the control that you want to adjust.

Selecting a text box for editing

2 Change the value by doing the following:

• To increase a value, press the Up Arrow on your keyboard. To decrease a value, press the Down Arrow on your keyboard.

– or –

• Type the desired value.

💡 *In fields that support values in kilohertz, typing "k" after a number value will multiply the value by 1,000. For example, type "8k" to enter a value of 8,000.*

3 Do one of the following:

• Press Enter on the numeric keyboard to input the value and remain in keyboard editing mode.

– or –

• Press Return on the alpha keyboard (Mac) or Enter (Windows) to enter the value and leave keyboard editing mode.

💡 *To move forward through the different control fields, press the Tab key. To move backward, press Shift+Tab.*

Editing Parameters Using a Scroll Wheel

Some controls have text boxes that display the current value of the parameter. You can edit the numeric value of a parameter using a scroll wheel.

To change control values using a scroll wheel:

1 Click the text box corresponding to the control that you want to adjust.

2 To increase a value, scroll up with the scroll wheel. To decrease a value, scroll down with the scroll wheel.

Toggling Switches

To toggle a switch:

▪ Click the switch.

The Easy Page

The Easy page gives you quick access to the most commonly edited synthesizer parameters, including oscillator volume, filter frequency and resonance, amplifier envelope attack and decay, and effects. Use this page when you want to quickly tweak a sound without getting in too deep with more subtle parameters.

Easy page

Osc Volume Controls the overall volume of oscillators 1, 2, and 3.

Sub Volume Controls the overall volume of the sub oscillator.

Ring Modulator Controls the overall volume of the ring modulator (Osc page).

Amp Attack Controls how long it takes for the amplitude (volume) envelope to reach its maximum level when a note is first played. Higher values produce softer, slower attacks.

Amp Decay Controls how long it takes for the amplitude envelope to fall from its peak level to the sustain level.

Chorus Mix Controls how much chorus effect is mixed with the patch.

Phaser Mix Controls how much phase shifter effect is mixed with the patch.

Send Controls how much delay and reverb effects are mixed with the patch.

Cutoff Specifies the filter cutoff frequency of both filter 1 and filter 2. Depending on the filter mode, frequencies that are above, below, above and below, or around the cutoff frequency are removed.

Resonance Controls how much frequencies near the cutoff of filter 1 and 2 are emphasized, and how much those that are farther away are suppressed. Higher resonance settings add a characteristically ringing, nasal quality to sounds.

The Osc Page

The Osc page has controls for the various tone generators of the Virus Indigo, including the oscillators, noise generator, frequency modulator, and ring modulator.

Osc page

Osc 1

Use the controls in the Osc 1 section to select the waveshape and other parameters of oscillator 1.

Shape Modifies the waveshape selected with the Wave Select control. At a Shape setting of 0, the oscillator produces purely the waveshape selected with Wave Select.

Increasing the Shape value from 1–63 adds progressively more sawtooth to the selected waveshape until, at a setting of 64, the oscillator produces a pure sawtooth wave.

Increasing the Shape value from 65–126 adds progressively more square wave to the sawtooth wave until, at a setting of 127, the oscillator produces a pure square wave.

Wave Sel Selects among 64 preset waveshapes, including sine, triangle, and many more complex waveshapes.

📖 *See Appendix C, "Virus Indigo Oscillator Waveforms"for a list of the 64 preset oscillator waveshapes.*

PW When a square wave is produced by the oscillator, the PW (pulse width) knob determines the pulse width, and thus sound character of the square wave.

The control range is from 0–127. At 0, the pulse width is 50% (perfectly square). At 127, the pulse width is 0% (inaudible).

Semitone Transposes the pitch of the oscillator up or down in semitones (half-steps). The control range is from –48 to +48 (four octaves up or down). Use this feature to tune the oscillator to an interval such as a perfect fifth for interesting tonal effects.

Key Follow Controls how MIDI notes affect oscillator pitch. At its default setting of +32, playing a 1-octave scale on a MIDI keyboard controller produces a normal 1-octave pitch change.

At a setting of +63, playing a 1-octave scale transposes the pitch upwards by two octaves (producing a *whole tone* scale).

At +16, playing a 2-octave scale transposes the pitch upwards by one octave (producing a *quarter tone* scale). Negative values transpose pitch downward. At a setting of 0, MIDI notes do not affect pitch.

C3 (MIDI note number 60) is the starting point or base note.

Osc 2

Use the controls in the Osc 2 section to select the waveshape and other parameters of oscillator 2.

Shape *See the description for Osc 1.*

Wave Sel *See the description for Osc 1.*

PW *See the description for Osc 1.*

Semitone *See the description for Osc 1.*

Detune Detunes the pitch of oscillator 2 relative to oscillator 1 and 3. Detuning helps animate and thicken sounds.

Key Follow *See the description for Osc 1.*

Sync Switches phase synchronization of oscillator 2 to oscillator 1 on or off. Turning Sync on and varying the pitch of oscillator 2 creates unique, hard-edged timbral effects.

FM Amount Controls how much oscillator 2 is frequency-modulated by oscillator 1. Depending on the interval between the oscillators and the amount of frequency modulation applied, you can greatly increase the harmonic complexity of a sound with FM. Use this with the Sync control to enhance harmonic complexity even more.

FM Mode Selects the modulator for oscillator 2. Choices are:

- PosTri: frequency modulates oscillator 2 with a positive triangle waveform generated by oscillator 1.

- Tri: frequency modulates oscillator 2 with a triangle waveform generated by oscillator 1.

- Wave: frequency modulates oscillator 2 with the waveform currently selected on oscillator 1.

- Noise: frequency modulates oscillator 2 with the noise generator.

- Input: frequency modulates oscillator 2 with the audio of the track on which the Indigo plug-in is currently inserted. If the audio is a stereo signal, only the left channel is used. If there is no audio signal on the track, no modulation is applied.

Env FM Controls how much the filter envelope affects frequency modulation. Use this to create FM-based timbre-change effects that vary over time.

Env Osc 2 Controls how much oscillator 2 is pitch-modulated by the filter envelope. Use this to create pitch-change effects that vary over time.

Phase Init Changes the initial phase relationship between oscillator 1 and oscillator 2 at the start of a note. Set to 0, both oscillators oscillate freely, as in a conventional analog synthesizer.

Set to 1 and higher, oscillator 1 maintains a phase angle of 0, while the phase of oscillator 2 shifts increasingly at higher values. Use this to enhance drum and percussion sounds.

Osc 3

Use the controls in the Osc 3 section to select the waveshape and other parameters of oscillator 3.

Mode Selects among 64 preset waveshapes, including sine, triangle, and many more complex waveshapes.

📖 *See Appendix C, "Virus Indigo Oscillator Waveforms" for a list of the 64 preset oscillator waveshapes.*

Semitone Transposes the pitch of the oscillator up or down in semitones (half-steps). The control range is from –48 to +48 (four octaves up or down). Use this feature to tune the oscillator to an interval such as a perfect fifth for interesting tonal effects.

Detune Detunes the pitch of oscillator 3 relative to oscillator 1 and 2. Detuning helps animate and thicken sounds.

Sub/Noise

Use the sub oscillator to increase the weight of a sound by adding a tone an octave below the pitch of oscillator 1.

Use the noise generator to add unpitched white or pink noise to a sound.

Sub Shape Selects the waveshape of the sub-oscillator, triangle or square.

Noise Color Varies the color of the noise produced by the noise generator from a high-frequency "white noise" effect at higher values to a darker low-frequency "pink noise" effect at lower values.

Velocity Mod

Use the controls in the Velocity Mod section to add touch-sensitive control over the timbre of a Virus Indigo patch. Control waveshape, pulse width, FM amount, volume, and panning by playing harder or softer.

Osc 1 Controls how much MIDI note velocity affects the waveshape of oscillator 1. With positive values, the harder a note is played, the more the waveshape varies from the current setting of the Shape parameter. With negative values, the harder a note is played, the less the waveshape varies from the current setting of the Shape parameter.

Osc 2 Controls how much MIDI note velocity affects the waveshape of oscillator 2. With positive values, the harder a note is played, the more the waveshape varies from the current setting of the Shape parameter. With negative values, the harder a note is played, the less the waveshape varies from the current setting of the Shape parameter.

PW Controls how much MIDI note velocity affects pulse width of square waves produced by oscillator 1 or 2. With positive values, the harder a note is played, the more the pulse width varies from the current pulse width setting. With negative values, the harder a note is played, the less pulse width varies from the current pulse width setting.

FM Controls how much MIDI note velocity affects frequency modulation. With positive values, the harder a note is played, the more frequency modulation occurs. With negative values, the harder a note is played, the less frequency modulation occurs.

Vol Controls how much MIDI note velocity affects volume. With positive values, the harder a note is played, the louder it is. With negative values, the harder a note is played, the softer it is. The Patch Vol parameter sets the maximum volume value.

Pan Controls how much MIDI note velocity affects panning. To use this feature, you must use Virus Indigo as a stereo insert.

With positive values, the harder a note is played, the more it is panned to the right in relation to its current pan position as set by the Pan control. With negative values, the harder a note is played, the wider it is panned to the left in relation to its current pan position as set by the Pan control.

Unison

In Unison mode, two or more voices can be combined or *stacked* for each note played. This produces a much thicker, wider sound, particularly when stereo separation of the voices is increased using the Pan Spread control.

⚠ *Because Unison uses two or more voices for each note played, polyphony is significantly reduced.*

Mode Turns unison mode on or off, and also specifies the number of voices that can be used. Up to 16 voices can be stacked together to thicken or add weight to a patch.

Detune Detunes the unison voices to further thicken their sound.

Pan Spread Sets the spread of unison voices in the stereo field. Virus Indigo must be used in stereo for this to have an effect.

LFO Phase Shifts the phase of the LFOs applied to unison voices. This greatly enlivens modulation effects. A setting of –64 is equal to –180 degrees of LFO phase offset. A setting of +63 is equal to +177 degrees of LFO phase offset.

Punch

Intensity Adds a percussive snap effect to sounds with short attack envelopes.

Mixer

Use the controls in the Mixer section to balance the different tone generators in a Virus Indigo patch.

Osc 1/2 Bal Controls the volume of the two oscillators in relation to each other. At –64 only oscillator 1 is audible. At +63, only oscillator 2 is audible. At 0, both are equally audible.

Osc 3 Vol Controls the overall volume of oscillator 3. Use it to adjust oscillator 3 volume in relation to the oscillator 1 and 2 as well as the noise generator or ring modulator. This also controls the oscillator's input level to the Vocoder and filter Saturation intensity.

Sub Vol Controls the volume of the sub-oscillator. Use the sub-oscillator to add weight to a sound.

Osc Vol Controls the overall volume of both oscillators and the sub-oscillator. Use it to adjust oscillator volume in relation to the noise generator or ring modulator. This also controls the oscillator's input level to the Vocoder and filter Saturation intensity. If Virus Indigo is set to Input mode, Osc Vol controls the audio signal's input level.

Noise Vol Controls the volume of the white noise generator. Use the noise generator to create non-pitched sounds such as drums and wind, or to add texture to percussive timbres.

Pan When Virus Indigo is used as a stereo insert, this determines the position of a sound in the stereo field.

Patch Vol Controls the overall volume level of a sound. Use it to boost the level of sounds that lack volume or to reduce the level of sounds that are too loud.

Ring Vol Controls the volume of the ring modulator. The ring modulator multiplies the amplitudes of the two oscillators to create complex enharmonic overtones. Use the ring modulator to create timbres with a unique metallic character. Set both oscillators to a sine wave for bell-like timbres.

FX Send Controls the send level that is fed into the delay or reverb effect. Available signal level is determined by the Patch Vol control, making this a post-fader control. Set from 0–99, it functions as a send level control. Set from 100–127, it acts as a direct/effect control. At 127 the signal is 100% wet.

The Filter/Env Page

The Filter/Envelope page has controls for the two filters and two envelope generators. To a large degree, these determine the overall sound of a Virus Indigo patch.

Each filter normally operates with 2 poles, but filter 1 can also operate with 4 poles for a combined slope of 36 dB per octave. This gives Virus Indigo a uniquely punchy sound.

The two Virus Indigo filters can be used:

◆ In series, where sound is processed first by filter 1, then by filter 2.

◆ In parallel, where sound is processed by each filter independently.

◆ Split, where the filters operate in parallel and receive independent input signals whose stereo spread can adjusted with the Pan Spread control (in the Unison section of the Misc page).

Filter/Env page

Global

Use the controls in the Global section to control the signal routing through the filters (series or parallel) and the amount of saturation (the amount of overtones) applied between the filters.

Saturation Saturation selects the amount of overtones added to the filtered signal through the use of distortion. Choices are: Off, Light Soft, Mid, Hard, Digital, and Shaper.
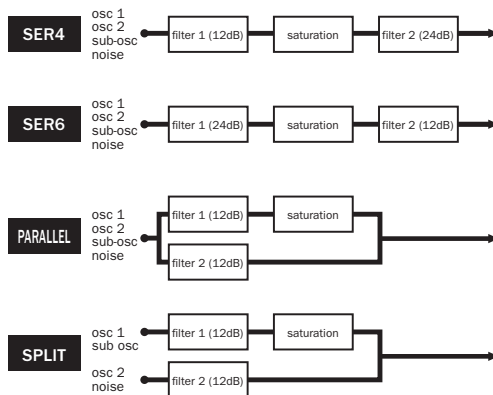
Because saturation is added *between* the two filter stages, a saturated sound can be filtered by filter 2.

Saturation character is strongly influenced by oscillator volume, waveshape, and filter resonance.

Osc Vol Controls the output level of oscillators 1 and 2 fed into the filter. Values above zero let you add up to 12 dB of additional gain to the saturation, without increasing the overall patch volume.

Filter Routing Selects one of four different filter routing options for operating the filters in series or parallel:

◆ SER4: The filters operate in series with two poles each, for a total of four poles and a 24 dB per octave slope.

◆ SER6: The filters operate in series. Filter 1 has four poles and filter 2 has two poles, for a total of six poles and a 36 dB per octave slope.

◆ PAR4: The filters operate in parallel with two poles each.

◆ SPLIT: The filters operate in parallel with two poles each. They receive independent input signals whose stereo spread can be specified with the Pan Spread control.

Virus Indigo filter routing choices

Filter Balance Controls the balance between the output levels of filter 1 and 2.

Filter 1

Use the controls in the filter 1 section to select the filter type and other characteristics of filter 1.

Mode Selects one of 4 different filter types:

- low-pass: removes frequencies above the cutoff frequency
- high-pass: removes frequencies below the cutoff frequency
- band-pass: removes frequencies above and below the cutoff frequency, leaving a narrow band of mid-range frequencies
- band-stop: removes a narrow band of frequencies at the cutoff frequency

Cutoff Specifies the filter cutoff frequency. Depending on the filter mode, frequencies that are above, below, above and below, or around the cutoff frequency are removed.

Link (Cutoff) When enabled, links the Cutoff control of filter 2 to filter 1 so that both can be adjusted in tandem. The Cutoff control of filter 2 then controls the offset to filter one.

Resonance Controls how much frequencies near the cutoff are emphasized, and how much those that are farther away are suppressed. Higher resonance settings add a characteristically ringing, nasal quality to sounds.

Env Amt Controls how much the filter envelope affects the cutoff frequency. Higher envelope settings cause the filter to open wider.

Key Follow Controls how much MIDI note numbers affect filter cutoff frequency. Positive values cause the filter to open wider the higher the note played. Negative values have the opposite effect.

Reso Vel Controls how MIDI key velocity affects filter resonance. With positive values, the harder a key is played, the greater the amount of filter resonance applied. Negative values have the opposite effect.

Env Vel Controls how MIDI key velocity affects filter envelope. With positive values, the harder a key is played, the wider the filter envelope open the filter. Negative values have the opposite effect.

Env Polarity Selects a positive or negative polarity for the Envelope Amount parameter. Use this to create unique filter envelope effects.

Link (Resonance, Envelope Amount, Key Follow)

When enabled, links the Resonance, Envelope, and Key Follow controls of filter 2 to filter 1 so that both can be adjusted in tandem.

Key Base Sets the key base or starting point for the Key Follow parameter. Filter tracking occurs in relation to the MIDI note number selected here. Set the Key Base by typing a MIDI note number in the text box or by clicking the button and playing a key on the on-screen keyboard or a MIDI keyboard controller.

Filter 2

Use the controls in the filter 2 section to select the type and other characteristics of filter 2.

Mode *See the description for filter 1.*

Cutoff *See the description for filter 1.*

Resonance *See the description for filter 1.*

Envelope *See the description for filter 1.*

Key Follow *See the description for filter 1.*

Reso Vel *See the description for filter 1.*

Env Vel *See the description for filter 1.*

Env Pol *See the description for filter 1.*

Filter Envelope

Use the filter envelope to control how the filter responds when you play and release notes.

Attack Controls how long it takes for the envelope to reach its maximum level when a note is first played. Higher values produce softer, slower attacks.

Decay Controls how long it takes for the envelope to fall from its peak level to the sustain level.

Sustain Controls the level at which the envelope remains after the end of the decay phase. The duration of the sustain phase is set with the Time parameter.

Time Controls the duration of the sustain phase. When set to 0, the sustain level remains constant as long as a note is held.

Negative values cause the sustain level to drop off toward zero. The higher the negative value, the faster the drop off.

Positive values cause the sustain level to rise toward its maximum. The higher the positive value, the faster the rise.

Release Controls the rate at which the volume of the envelope decreases after a note is released. The higher the Release value, the longer it takes for the envelope to fall from the sustain level to zero.

Amplifier Envelope

Use the amplifier envelope to control how the volume characteristics of a patch respond when you play and release notes.

Attack *See the description for Filter Envelope.*

Decay *See the description for Filter Envelope.*

Sustain *See the description for Filter Envelope.*

Time *See the description for Filter Envelope.*

Release *See the description for Filter Envelope*

The LFO Page

The LFO page has controls for the 3 low frequency oscillators. These are typically used to modulate oscillator pitch, filter cutoff frequency, pulse width, and many other parameters.

LFO page

LFO 1

Use the controls in the LFO 1 section to select the waveshape, rate, characteristics, and routing of LFO 1.

Rate Selects the rate of the LFO. Using the Clock control overrides this control.

Clock Selects a beat-based LFO rate. Choices range from 1/64 to 4/1. Using the Clock control overrides the Rate control. The LFO clock can be synchronized to MIDI Beat Clock. See "Synchronizing LFO Clock to MIDI Beat Clock" on page 47 for more information.

Shape Selects the waveshape of the low frequency oscillator. Each produces a uniquely different effect. Choices are:

- sine
- triangle
- sawtooth
- square
- sample & hold (random)
- sample & glide (random with portamento)
- oscillator waveform number. This selects one of the many different waveshapes (3–64) produced by the main oscillators.

Contour Controls the phase of the triangle wave by adjusting the ratio of length between its up ramp and down ramp. When set to 0, the triangle wave goes through its full wave cycle. At –64, only the downward half of the wave cycle is generated, producing a downward sawtooth wave. At +63, only the upward half of the wave cycle is generated, producing an upward sawtooth wave.

Env Mode When enabled, the LFO generates a single wave cycle at the start of a note only, then stops. Use this to generate a one-time modulation envelope in the selected waveshape.

Key Follow Controls how much LFO speed is affected by MIDI note number. Playing higher notes increases LFO speed. Playing lower notes decreases LFO speed.

Key Trig Controls the initial phase of the LFO wave cycle when a key is played. When set to Off, the LFO is not triggered.

LFO Mode When enabled, each voice played triggers the LFO individually. When disabled, all voices have the same LFO phase, making modulation effects more pronounced.

Osc 1 Controls how much the LFO affects the pitch of oscillator 1. Negative values invert the LFO waveform's effect.

Osc 2 Controls how much the LFO affects the pitch of oscillator 2. Negative values invert the LFO waveform's effect.

Link (Osc 1 & Osc 2) When selected, sets oscillator 1 and oscillator 2 modulation to an identical amount.

PW 1+2 Controls how much the LFO affects the pulse width of square waves generated by oscillators 1 and 2. Negative values invert the LFO waveform's effect.

Reso 1+2 Controls how much the LFO affects the resonance of filters 1 and 2. Negative values invert the LFO waveform's effect.

Assign Amt This controls the amount of modulation applied to the selected LFO destination. Negative values invert the LFO waveform's effect.

Assign Destination Selects an additional modulation destination for LFO 1.

Filter Gain Controls how much the LFO affects input gain to the filter. This can be used to create tremolo-like effects. Negative values invert the LFO waveform's effect.

LFO 2

Use the controls in the LFO 2 section to select the waveshape, rate, characteristics, and routing of LFO 2.

Rate *See the description for LFO 1.*

Clock *See the description for LFO 1.*

Shape *See the description for LFO 1.*

Contour *See the description for LFO 1.*

Env Mode *See the description for LFO 1.*

LFO Mode *See the description for LFO 1.*

Key Follow *See the description for LFO 1.*

Filter 1 This controls how much the LFO affects the cutoff frequency of filter 1. Negative values invert the LFO waveform's effect.

Filter 2 This controls how much the LFO affects the cutoff frequency of filter 2. Negative values invert the LFO waveform's effect.

Link (Filter 1 & Filter 2) When selected, sets filter 1 and filter 2 modulation to an identical amount.

Shape 1+2 This controls how much the LFO affects the Shape parameter of oscillators 1 and 2. Negative values invert the LFO waveform's effect.

Panorama Controls how much the LFO affects patch panning. Virus Indigo must be used in stereo for this to have an effect.

Assign Amount *See the description for LFO 1.*

Assign Destination Selects a modulation destination for LFO 2.

FM Amt Controls how much the LFO affects the amount of frequency modulation. Negative values invert the LFO waveform's effect.

LFO 3

Use the controls in the LFO 3 section to select the waveshape, rate, characteristics, and routing of LFO 3.

Rate *See the description for LFO 1.*

Clock *See the description for LFO 1.*

Shape *See the description for LFO 1.*

Fade In Use this to delay the start of modulation by LFO 3. When set to 127, LFO 3 modulation is delayed for roughly five seconds after a note is played.

LFO Mode *See the description for LFO 1.*

Key Follow *See the description for LFO 1.*

Assign Amount *See the description for LFO 1.*

Assign Destination *See the description for LFO 1.*

LFO Dest Selects a modulation destination for LFO 3. The choices are:
- oscillator 1 frequency
- oscillator 2 frequency
- oscillator 1+2 frequency
- oscillator 1 pulse width
- oscillator 2 pulse width
- oscillator 1+2 pulse width

The FX-1 Page

The FX-1 page has controls for the phaser, second ring modulator, chorus, patch distortion, delay, and reverb.

FX-1 page

FX Output Button

The effects on the FX-1 page are shared between all eight Indigos of the same group. The FX Output button determines which of the eight Indigos of the group will output its selected effects. Only one Indigo is allowed to output the effects at any given time. Click on the FX button in one of the eight Indigos to turn on its FX-1 controls (and automatically turn off the FX Output button in the other seven Indigos).

Analog Boost

Analog Boost adds weight to a patch by emphasizing a selected frequency range in the sound's tonal spectrum.

Intensity Controls the amount of emphasis added to the signal.

Tune Sets the center frequency of the analog boost effect.

Ring Mod

Ring Mod provides a second ring modulator (in addition to the ring modulator on the Osc page) that you can use to modulate audio input signals. This ring modulator multiplies the amplitude of an audio input signal with Indigo's other oscillators to create complex enharmonic overtones.

📖 *See "Using Input Mode" on page 50 for more information on using the key input to route external signals to the ring modulator (or Vocoder).*

Mix Controls the amount of ring modulation from ring modulator 2 added to the patch.

Phaser

Use the controls in this section to set the character and amount of phasing. Phasing animates sounds with a sweeping, swirling effect by adding a phase-shifted copy of an audio signal to itself. You can use phasing to convert a mono patch to stereo.

Mix Controls the balance between the dry source signal and the phasing effect. A setting of 127 is 100% wet.

Rate Controls the rate of the phasing effect.

Depth Controls the intensity of the phasing effect.

Frequency Controls the frequency of the phaser's all-pass filter. Lower settings produce more radical phasing effects.

Stages Selects the number of filter stages (filter poles) of the phasing effect. The greater the number of stages, the deeper and more complex the phasing effect.

Spread Controls the bandwidth of the phasing effect.

Feedback Controls feedback amount. Higher feedback settings produce more intense phasing. Negative values can produce more intense phasing.

Patch Distortion

Use the controls in this section to set the character and amount of harmonic distortion added to the signal. Patch distortion character is strongly influenced by oscillator volume, waveshape, and filter resonance.

Intensity Controls the amount of harmonic distortion added to the patch.

Curve Selects the character of the distortion added to the patch. Choices are: Off, Light Soft, Mid, Hard, Digital, and Shaper.

Chorus

Use the controls in this section to set the character and amount of chorusing. Chorusing thickens and animates sounds by adding a delayed, pitch-modulated copy of an audio signal to itself. You can use chorusing to convert a mono patch to stereo.

Mix Controls the balance between the dry source signal and the chorus effect. A setting of 127 is 100% wet.

Rate Controls the rate of the chorus effect.

Depth Controls the intensity of the chorus effect.

Delay Time Controls the delay time of the chorus effect. Longer delay times produce wider chorusing. For flanging effects, use a delay time of less than 10 ms.

Feedback Controls feedback amount. Higher feedback settings produce more intense chorusing.

Shape Selects the waveshape for the Chorus LFO. Choices are sine, triangle, sawtooth, square, sample & hold, or sample & glide. Each produces a unique detuning effect.

Delay/Reverb

Use the controls in this section to set the character and amount of delay and reverb. Delay and reverb can be used to add a sense of space and depth to a sound. You can also use delay and reverb to convert a mono patch to stereo.

All Virus Indigo plug-ins sharing the same DSP (Virus Indigo 1a, 1b, 1c, and so on) also share a single delay. The plug-in designated as the "delay master" carries the delay signal. All other plug-ins sharing the same DSP automatically bus their delay sends to the delay master.

For a plug-in to be designated as the delay master, its Effect button must be enabled (on the FX-1 page).

📑 *See "Sharing a Single Delay Among Multiple Plug-Ins" on page 52 for more details on using a shared delay and designating the delay master.*

Mode Selects the type of effect (reverb or delay) used. Selecting one of the delay patterns produces a left channel-to-right channel rhythmic ping-pong delay that modifies the currently set delay time according to the given ratio.

An X+Y pattern selects a ping-pong delay where the delay times are locked into sync with the master clock. The Clock parameter sets the delay tempo (not the Time parameter). The two numbers represent note increments and indicate the delay for the left and right channels. Setting the

delay Clock parameter to sixteenth notes and selecting 2+1 as the Mode, for example, produces a ping-pong delay with a left channel delay of two 16 notes and right channel delay of one 16th note. Used with the Feedback parameter, these groove-oriented algorithms produce interesting rhythmic patterns and accents, particularly in conjunction with the arpeggiator. Feedback is generated using the left channel delay tap.

An X:Y pattern selects a ping-pong delay where the left and right channels have a numeric ratio. Selecting 2:1, for example, selects a ping-pong delay with a left channel delay that is two times as long as the right. Use the Time parameter to set the longer channel of the ping-pong delay. Feedback is generated using the longer channel of the delay.

Send Controls the balance between the dry source signal and the delay effect. Signal level is determined by Patch Volume (Oscillator page), making this a post-fader control. Set from 0–99, it functions as a send level control. Set from 100–127, it acts as a direct/effect control. At 127, the signal is 100% wet.

Effect Selects the plug-in as the master delay control. The plug-in designated as the delay master controls all delay parameters—with the exception of Delay Send level—for all other plug-ins sharing the same DSP.

Only one plug-in on a shared DSP can be the delay master.

⚠️ *If the delay Effect button is not enabled for any plug-in sharing the same DSP, delay is turned off.*

Delay

Time Controls the delay time in milliseconds.

⚠ *On Pro Tools|HD systems, using a session sample rate of 88.2/96 kHz reduces available delay time by half.*

Clock Selects a beat-based delay time. Choices range from 1/64 to 3/4. Using the Clock control overrides the Delay time control. The Delay clock can be synchronized to MIDI Beat Clock. See "Synchronizing LFO Clock to MIDI Beat Clock" on page 47 for details.

Feedback Controls feedback amount. Higher feedback settings produce more repetitions.

Coloration Controls the character of the delay through the use of low-pass or high-pass filtering. Settings from –64 to 0 apply a low-pass filter, with lower settings attenuating more high frequencies. Settings from 0 to +63 apply a high-pass filter, with higher settings attenuating more low frequencies.

Rate Controls the rate of delay modulation. Use modulation to add chorusing or flanging effects to the delayed signal.

Depth Controls the intensity of delay modulation.

Shape Selects the waveshape for the Delay LFO. Choices are sine, triangle, sawtooth, square, sample & hold, or sample & glide. Each produces a unique detuning effect.

Reverb

Decay Time Controls the decay time of the reverb effect.

Type Selects the type and overall character of the reverb effect. Choices include, Ambience, Small Room, Large Room, and Hall.

Damping Controls the amount of damping (high frequency attenuation) applied to the reverb tail.

Coloration Controls the character of the reverb through the use of low-pass or high-pass filtering. Settings from –64 to 0 apply a low-pass filter, with lower settings attenuating more high frequencies. Settings from 0 to +63 apply a high-pass filter, with higher settings attenuating more low frequencies.

Pre-delay Controls the amount of pre-delay added to the reverb effect. Pre-delay can add a greater sense of depth to reverb.

Clock Selects a beat-based reverb time. Choices range from 1/64 to 3/4. Using the Clock control overrides the delay Time control. The clock can be synchronized to MIDI Beat Clock. See "Synchronizing LFO Clock to MIDI Beat Clock" on page 47 for details.

Feedback Controls feedback amount. Higher feedback settings produce more regeneration of reverberant echoes.

The FX-2/Global Page

This page has controls for the vocoder, arpeggiator, external audio input, envelope follower, and for global tuning, key mode, pitch bend, and other parameters.

FX-2/Global page

Vocoder

The Vocoder merges the frequencies of two different audio signals together to give one signal (the *carrier*) the texture of the other signal (the *modulator*).

The most common use for the Vocoder is to make sounds "talk" by using an oscillator waveform as the carrier and a voice as the modulator.

Both signals are processed through a series of band-pass filters. The amplitude characteristics of the modulator signal (the voice) filter bands are then applied to the carrier signal (the oscillator). The voice characteristics articulate the oscillator's harmonic content and overall sound. You can then play the vocoded sound as you would any Virus Indigo patch.

You are not limited to using an oscillator as a carrier or a voice as a modulator. Any external input can be used as a carrier, and any signal bussed to Virus Indigo can be used as a modulator.

Harmonically rich sounds typically make the best carriers.

⚠ *Using the Vocoder reduces voice polyphony. Additionally, the Virus Indigo filters are not available since they are used for vocoding. If you want to filter a vocoded sound, insert a second Virus Indigo plug-in on the same track and use its filters.*

Mode Selects the source of the Vocoder's carrier signal. Choices are:

- Off, Vocoder is off.
- Osc, any tone generator in the Oscillator page's Mixer section
- Osc Hold, oscillator 1 and 2 waveforms, with the last note held until the next note is played
- Noise, the noise generator only
- Input, external audio input using the Key Input

Center Freq Sets the center frequency of the band–pass filters for both the modulator and carrier signals.

Mod Offset Controls the amount of offset between the carrier and modulator filter bands.

Mod Q Controls the resonance of the band-pass filters for the modulator signal.

Mod Spread Controls the spread of the band-pass filters for the modulator signal. This affects the intelligibility of speech.

Car Q Controls the resonance of the band-pass filters for the carrier signal.

Link When selected, the Link button sets Mod Q and Carrier Q, and Mod Spread and Carrier Spread to an identical amount.

Car Spread Controls the spread of the band-pass filters for the carrier signal. This affects the intelligibility of speech.

Spect Bal Controls the spectral balance between the higher and lower frequencies of the vocoder signal. This influences the overall character of the vocoder and can be used to increase the intelligibility of speech.

Bands Controls the number of active filter bands. The number of filter bands determines the complexity and quality of the Vocoder. Increasing the number of bands generally increases the intelligibility of speech.

⚠ *Using a high number of bands reduces voice polyphony. A Band setting of 32 can use up to six voices of Virus Indigo polyphony.*

Attack Controls the attack time of the vocoder's envelope follower. Longer attack times soften the response of the vocoder and decrease the intelligibility of speech.

Release Controls the release time of the vocoder's envelope follower. Longer release times soften the response of the vocoder and decrease the intelligibility of speech.

Source Bal Controls the mix between the carrier signal and the input source. A setting of –64 is 100% carrier signal (the oscillators or noise generator). A setting of +63 is 100% modulator signal (the speech input). A setting of 0 is generally best.

📄 *See "Using the Vocoder" on page 49 for more information on using the Vocoder.*

Input

Use the Input controls to pass an external audio signal through Virus Indigo for processing. You can shape the audio signal in many unique ways by applying filtering, filter saturation, chorus, and delay effects, and modulation.

Mode Enables and disables external audio input. Passing an audio signal through Virus Indigo filters, amplifiers, and effects can produce interesting results.

◆ In Dynamic input mode, the envelope generator is active and you must play MIDI notes to pass audio through.

◆ In Static input mode, the envelope generator is not active and you don't need to play MIDI notes to pass audio through.

⚠ *Static input mode uses two Virus Indigo voices.*

Input Meters Show input signal levels when external input mode or the Vocoder is used. If clipping occurs, reduce the level of the external audio.

📄 *See "Using Virus Indigo as a Filter" on page 51 for more information on using external audio inputs.*

Envelope Follower

Use the Envelope Follower to replace the filter envelope with an envelope based on the dynamics of an external input signal.

With high filter Envelope Amount settings, the Envelope Follower will produce automatic "wah-wah" effects. Other parameters can also be modulated with the Envelope Follower by using the ModMatrix page and choosing Filter Envelope as a modulation source.

Mode When selected, enables the envelope follower. This mode requires that audio be routed through the Virus Indigo plug-in, so you can use this effect on one plug-in only per DSP.

Level Controls the envelope follower sustain level and functions in the same way as the filter envelope's Sustain parameter.

Attack Controls the envelope follower attack level and functions in the same way as the filter envelope's Attack parameter.

Release Controls the envelope follower release level and functions in the same way as the filter envelope's Release parameter.

📑 *See "Using the Envelope Follower" on page 51.*

Global

Use the Global controls to set parameters used by all Virus Indigo plug-ins in a session. Global parameters are saved and recalled as part of a session, not as part of a patch.

Tune Adjusts the tuning of all Virus Indigo plug-ins in a session.

Tempo Sets the base clock speed used by the LFOs, the Delay, and the Arpeggiator of all Virus Indigo plug-ins in a session. The global Tempo setting is overridden if you synchronize Virus Indigo to MIDI Beat Clock.

Pitch

Use the controls in the Pitch section to specify the overall detuning and key transposition of a patch.

Transpose Transposes the pitch of a sound up to four octaves up or down. The Up and Down buttons transpose pitch in 1–octave increments.

Octave Detunes the overall pitch of a sound up or down in 12 semitone (one octave) intervals.

Detune Detunes the overall pitch of a sound in semitones. Use it to detune a sound in relation to other Virus Indigo sounds or Pro Tools tracks.

Pitch Wheel

Musicians bend the pitch of notes to add expressiveness to a performance. Use these controls to set the response of the Virus Indigo patch to pitch bend information.

Scale Toggles between a linear or exponential pitch bend curve.

◆ With a *linear* curve, the pitch change is even across the range of the pitch bend controller.

◆ With an *exponential* curve, the bend is gradual at the beginning, and more radical toward the end of the controller's range. This permits a wider range of performance, ranging from subtle, manual vibrato, to guitar whammy bar-type bends.

Bend Up Sets the upper pitch bend interval in semitones.

Bend Down Sets the lower pitch bend interval in semitones.

Link (Bend Up & Bend Down) When selected, sets the Bend Up and Bend Down to the same relative interval.

Patch Param

Ctrl Smooth Selects the type of smoothing applied to Virus Indigo controls when they are adjusted in real time. Smoothing eliminates *zipper noise,* an undesirable effect that occurs when parameter values are incrementally adjusted on some digital devices.

Choices are:

- Off: No control smoothing.
- On: Smoothing is always on.
- Auto: Adaptive control smoothing. Small control changes are smoothed, large changes are not smoothed.
- Note: Smoothing is reset each time a note is played.

Hold Pedal When selected, enables the use of a hold (sustain) pedal to sustain notes after they have been released.

Note Steal Selects whether the patch is high or low priority when note stealing occurs. Selecting High helps prevent notes from being stolen. Selecting Low lets notes be stolen when necessary. Note stealing occurs when more than the 20 notes are played simultaneously among multiple shared Virus Indigo plug-ins using the same DSP.

Keyboard

Use the Keyboard section to set how the patch responds to a MIDI keyboard controller.

Low Key Sets the lowest note to which the patch will respond. If you play any note below the specified low key, Virus Indigo will ignore it. Set the Low Key by typing a MIDI note number or clicking the button and playing a key on the on-screen keyboard or a MIDI keyboard controller.

High Key Sets the highest note to which the patch will respond. If you play any note above the specified high key, Virus Indigo will ignore it. Set the High Key by typing a MIDI note number or clicking the button and playing a key on the on-screen keyboard or a MIDI keyboard controller.

Mode Sets the polyphony and portamento response of a patch. The choices are:

◆ Poly: Virus Indigo responds polyphonically, producing as many notes as are played simultaneously (up to 40 on Pro Tools|HD Accel systems; up to 20 on Pro Tools|HD systems not equipped with an HD Accel card).

◆ Mono 1: Virus Indigo responds monophonically, producing a single note even if more than one is played simultaneously. Playing legato retriggers the envelopes with every note. Portamento is always on.

◆ Mono 2: Virus Indigo responds monophonically and retriggers the envelopes when you play legato. Portamento is off when you play staccato.

◆ Mono 3: Virus Indigo responds monophonically, but does not retrigger the envelopes when you play legato. Portamento is always on.

◆ Mono 4: Virus Indigo responds monophonically, but does not retrigger the envelopes when you play legato. Portamento is off when you play staccato.

Portamento Sets the amount of time it takes for the pitch of one note to slide to the next note played. The larger the interval between notes, the more noticeable the effect.

Arpeggiator

The Arpeggiator plays the notes of a musical chord in succession, across a selected octave range, at a selected tempo. Use the controls in this section to specify the Arpeggiator's parameters.

Mode This selects the arpeggiator mode. The options are:

- Off: arpeggiation is off.
- Up: notes are arpeggiated upward.
- Down: notes are arpeggiated downward.
- Up & Down: notes are arpeggiated upward and downward.
- As Played: notes are repeated in the exact order played.
- Random: shuffles the order of notes played.
- Chord: chords are repeated instead of single notes.

Pattern Selects among 64 different rhythmic patterns for the arpeggiator. A setting of 0 sets the arpeggiator to the pattern selected in the Mode pop-up menu.

Note Length Controls the decay envelope of notes so that you can add a staccato or legato effect to arpeggiation.

Swing Adds a triplet-based, "shuffle" feel to arpeggiation.

Oct Range Selects the range of arpeggiation, from 1 to 4 octaves.

Clock Selects a beat-based arpeggiation rate. Choices range from 1/64 to 1/1. Using the Clock control overrides the Rate control. The arpeggiator clock can be synchronized to MIDI Beat Clock. See "Synchronizing LFO Clock to MIDI Beat Clock" on page 47 for more information.

Hold When selected, the arpeggiator continues to play the most recently held notes even after the keys have been released.

The ModMatrix Page

The ModMatrix page has controls for routing the sources, destinations, and amount of modulation in a patch. Three separate routing matrixes let virtually any control source be routed to virtually any Virus Indigo parameter.

Typical modulation routings include:

- Controlling filter cutoff frequency with the mod wheel of a MIDI keyboard
- Controlling an oscillator's waveshape with a breath controller
- Controlling filter or amplifier envelope parameters with key velocity
- Controlling LFO frequency with a foot pedal

ModMatrix page

Assign 1

Source Selects the modulation control source.

Amount Sets the modulation amount.

Destination Selects the modulation destination.

Assign 2

Source Selects the modulation control source.

Amount 1 Sets the modulation amount for destination 1.

Amount 2 Sets the modulation amount for destination 2.

Destination 1 Selects modulation destination 1.

Destination 2 Selects modulation destination 2.

Assign 3

Source Selects the modulation control source.

Amount 1 Sets the modulation amount for destination 1.

Amount 2 Sets the modulation amount for destination 2.

Amount 3 Sets the modulation amount for destination 3.

Destination 1 Selects modulation destination 1.

Destination 2 Selects modulation destination 2

Destination 3 Selects modulation destination 3.

chapter 4

Automating Virus Indigo

You can automate changes to Virus Indigo parameters in two ways:

- Using Pro Tools automation playlists
- Using MIDI

⚠ *To avoid conflicting automation data, use either automation playlists or Using MIDI to automate Virus Indigo, but not both.*

Using Automation Playlists

Pro Tools creates a separate playlist for each plug-in parameter that you automate. Pro Tools automation lets you record your interaction with Virus Indigo parameters using a mouse or a control surface (including M IDI control surfaces)
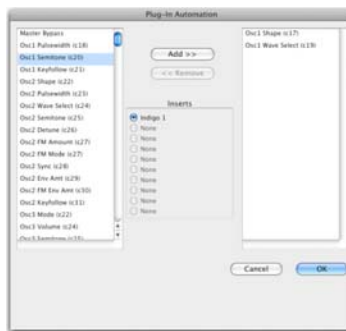
To enable plug-in parameters for automation:

1 Open the plug-in window for the plug-in you want to automate.

2 Do one of the following:

- Click the Automation Enable button in the plug-in window.

– or –

- Command-Option-Control-click (Mac) Control-Alt-Start-click (Windows) or the Track View selector in the Edit window.

💡 *You can also use this keyboard shortcut to open the Plug-In Automation dialog: Command-Option-Control-click (Mac) or Control-Alt-Start-click (Windows) any plug-in parameter in the plug-in window, then choose Open Automation Dialog from the pop-up menu.*

3 Choose the parameters to automate and click Add. If there are multiple plug-ins on the same track, you can select from among these by clicking their buttons in the Inserts section of this dialog.

Selecting parameters to automate

4 Click OK to close the Plug-In Automation dialog.

As an alternative to using the Plug-In Automation window, you can enable individual plug-in parameters directly from the plug-in window by Command-Option-Control-clicking (Mac) or Control-Alt-Start-clicking (Windows) the parameter 's text field or control. See the Pro Tools Reference Guide for more information.

Shortcut for enabling a Virus Indigo parameter for automation

To record automation:

1 In the Automation Enable window, make sure that plug-in automation is write-enabled.

2 On the track with the Virus Indigo insert, choose an automation mode. For an initial pass, choose Auto Write.

3 Click Play to begin writing automation, and move the controls you want to automate.

4 When you have finished, click Stop.

After the initial automation pass, you can write additional automation to the track without completely erasing the previous pass by choosing Auto Touch mode or Auto Latch mode. These modes add new automation only when you actually move the control for that parameter.

For more information on creating and editing automation, see the Pro Tools Reference Guide.

Using MIDI

You can also automate Virus Indigo parameters by mapping a MIDI control surface to a specific Virus Indigo parameter and recording the controller moves on an Instrument (or MIDI) track.

Because Virus Indigo has many more parameters than there are MIDI Controller numbers, less-frequently used Virus Indigo parameters are assigned Poly Pressure note numbers for automation purposes.

Automation for a Virus Indigo parameter assigned to a Poly Pressure note number can be viewed and edited using the MIDI Event List.

Enable Control Smoothing (FX-2/Global Page > Patch Param > CTRL Smooth > On) before automating Virus Indigo parameters to avoid zipper noise and other audio artifacts.

To see the MIDI controller number or Poly Pressure note number for a Virus Indigo parameter:

■ Command-Control-Option-click (Mac) or Control-Alt-Start-click (Windows) the control.

The parameter's MIDI Controller number or Poly Pressure note number is indicated in parentheses. For example:

◆ "c36" stands for MIDI Controller number 36 (osc volume)

Checking a parameter's MIDI Controller number

◆ "p56" stands for Poly Pressure note number 56 (filter 1 resonance velocity)
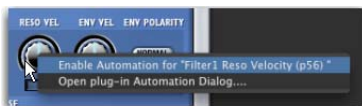
Checking a parameter's Poly Pressure note number

To automate a Virus Indigo parameter using MIDI:

1 Insert Virus Indigo on a mono or stereo track.

2 On the MIDI control surface, assign the MIDI Controller number or Poly Pressure note number for the Virus Indigo parameter you want to automate.

3 Create a new Instrument track, and insert the Virus Indigo plug-in that you want to automate.

💡 *As an alternative to using an Instrument track, you can use a combination of MIDI and Auxiliary Input tracks. For more information, see the Pro Tools Reference Guide.*

4 Do one of the following:

- Record enable the Instrument track, start playback, and perform the automation on the MIDI control surface.

– or –

- Use the Pencil tool to draw MIDI notes and controller data.

System Exclusive Events

While MIDI controller data is the most obvious choice for Virus Indigo automation, Pro Tools can also record System Exclusive (Sysex) events to Instrument tracks. See the *Pro Tools Reference Guide* for details on how to record and edit Sysex events.

Viewing MIDI Automation

Pro Tools creates a separate playlist for each type of automation you write. To view MIDI automation for a particular Virus Indigo parameter you may need to add it to the Track Display Format pop-up menu using the Add/Remove Controller command.

To view MIDI automation for a Virus Indigo parameter:

1 In the Edit window, choose the controller that you want to view.

2 If the desired controller does not appear in the Track Display Format pop-up menu, select Add/Remove Controller.

3 In the Automated MIDI Controllers dialog, locate the parameter by its MIDI Controller number and click Add, then OK.

4 Choose the newly-added automation type from the Track Display Format selector of the Instrument track.

📄 *For more information on editing automation, see the Pro Tools Reference Guide.*

Using Virus Hardware as a Control Surface

If you own Access Music's hardware version of Virus Indigo, you can use it as a control surface for adjusting Virus Indigo plug-in parameters.

Configuring Pro Tools for Using Virus Hardware as a Control Surface

To use Virus hardware as a MIDI control surface:

1 On Mac only, choose Setup > MIDI > Input Devices, select the Hardware Virus, and Click OK.

2 Insert Virus Indigo on a new stereo Instrument track.

⌯ *As an alternative to using an Instrument track, you can use a combination of MIDI and Auxiliary Input tracks. For more information, see the Pro Tools Reference Guide.*

⌯ *When using an instrument plug-in on an Instrument track, ensure the Instruments view is displayed (View > Edit Window > Instruments or View > Mix Window > Instruments).*

3 Record enable the Instrument track (or MIDI track if you have chosen the Auxiliary Input and MIDI configuration).

Moving a control on the Virus hardware moves the corresponding control on the Virus Indigo plug-in.

Virus Indigo Tutorials

One of the greatest pleasures of owning a pro-grammable synthesizer is making sounds that are uniquely your own.

In this chapter you'll learn how to do just that with the help of the Tutorial sessions included with Virus Indigo. Make sure you have installed these sessions before proceeding.

Creating New Sounds

The key to successful sound design is experi-mentation, and the cardinal rule is that there are no rules. There are, however, a few guidelines that will help you along the way:

Start with a Patch You Like

One of the best and fastest ways to create a new sound is to open a patch that you like and start changing things. When you finally stop, you'll be surprised at how different it is from the orig-inal.

Try Everything

Turn every knob—even if you're not sure what will happen. Sometimes the most interesting patches are the result of "accidents."

Save Everything

Save variations of a patch as you edit it. You'll not only create more patches, but you'll also be able to go back to a particularly interesting vari-ation and use it as a new starting point.

In the tutorials that follow, you'll work with patches designed to be as neutral as possible. These make an ideal starting point for learning the basics of sound design.

Tutorial 1: Waveforms

Waveforms are the raw sound material that you'll shape into patches. In this tutorial you'll learn how use the Virus Indigo oscillators to se-lect waveforms and vary their shape.

Wave Select

The Wave Select control selects among 64 differ-ent waveforms ranging from a simple sine wave to more harmonically complex waveforms. Each has its own unique timbre.

To use Wave Select:

1 Open the "Tutorial 1" session.

2 Record enable the Instrument track so that you can play Virus Indigo using a MIDI key-board controller.

3 At the upper left of the Virus Indigo plug-in, click Osc to show the oscillator page.

4 Play a note.

This is a sine wave, generated by oscillator 1. It is not very harmonically rich. Virus Indigo produces many other waveforms, most of which have greater harmonic complexity.

You can select among these with the Wave Select and Shape controls. When the Shape control is set fully counter-clockwise to Wav, Virus Indigo generates purely the one selected with Wave Sel.

Memory Location 1 demonstrates this.

To hear the 64 Virus Indigo waveforms:

1 Click memory location 1, "Wave Select."

2 Press the Spacebar to begin playback.

3 During playback, watch the oscillator 1 Wave Select and Shape controls.

When playback stops, experiment with the Wave Select control while playing your MIDI keyboard controller.

Changing the Waveshape

The Shape control modifies the waveshape selected with Wave Sel. Increasing the Shape value from 1–63 adds progressively more sawtooth to the selected waveshape until, at a setting of 64, the oscillator produces a pure sawtooth wave.

Memory Location 2 demonstrates this.

To use Shape:

1 Reset the patch to its original state by choosing Tutorial Sounds > Tutorial 1 Sound from the Librarian menu.

2 Click memory location 2, "Shaper–Sawtooth" and press the Spacebar to begin playback.

3 During playback, watch the oscillator 1 Shape control and listen to how the sound character changes.

Increasing the Shape value from 65–126 adds progressively more square wave to the sawtooth wave until, at a setting of 127, the oscillator produces a pure square wave.

Memory Location 3 demonstrates this.

To hear the effect of the Shape control:

1 Reset the patch to its original state by choosing Tutorial Sounds > Tutorial 1 Sound from the Librarian menu.

2 Click memory location 3, "Shaper–Square" and press the Spacebar to begin playback.

3 During playback, watch the Shape control and listen to how the sound character changes.

Changing Square Wave Pulse Width

You can modify a square wave's shape and sound character by changing its pulse width. The narrower the pulse width, the more nasal the sound.

Memory Location 4 demonstrates this.

To change pulse width:

1 Reset the patch to its original state by choosing Tutorial Sounds > Tutorial 1 Sound from the Librarian menu.

2 Click memory location 4, "Change Pulse Width" and press the Spacebar to begin playback.

3 During playback, watch the PW control and listen to how the square wave's sound character changes.

As you can see, you can produce vastly different sounds using just the Wave Select, Shape, and PW controls—and you haven't even used the filters yet.

Next, you'll use oscillator 2 to further enhance your tone generation options.

Tutorial 2: Oscillator 2

You can increase the variety and complexity of sounds by combining oscillator 2 or 3 with oscillator 1. Oscillator 2 actually provides a greater variety of waveshaping controls, several of which are covered here.

To hear oscillator 1:

1 Open the "Tutorial 2" session.

2 Record enable the Instrument track so that you can play Virus Indigo using a MIDI keyboard controller.

3 At the upper left of the Virus Indigo plug-in, click Osc to show the oscillator page.

4 Play a note.

At this point, only oscillator 1 is audible because the Osc 1/2 Bal control in the Mixer section is set to –64.

Setting Osc 1/2 Bal to 0 will add an equal amount of oscillator 2 to the mix.

Slightly detuning oscillator 2 with the Detune control will then enhance the thickness and animation of the sound.

Memory Location 1 demonstrates this.

To use oscillator 2:

1 Click memory location 1, "Osc Bal + Detune" and press the Spacebar to begin playback.

2 During playback, watch the Osc Bal and Detune controls and listen to how the sound character changes.

Tuning to a Semitone Interval

You can take detuning a step farther and tune oscillator 2 to a harmonic interval using the Semitone control for some interesting tonal effects.

Memory Location 2 demonstrates this.

To tune oscillator 2 to an interval:

1 Reset the patch to its original state by choosing Tutorial Sounds > Tutorial 2 Sound from the Librarian menu.

2 Click memory location 2, "Semitone Detune" and press the Spacebar to begin playback.

3 During playback, watch the Semitone control and listen to how the sound character changes.

When playback stops, experiment with the Detune and Semitone controls while playing your MIDI keyboard controller.

For even more sonic variety and complexity, add oscillator 3 into the mix and vary its waveshape and tuning. With three oscillators at your disposal, you can create some extremely fat and expressive sounds.

The Sub Oscillator

Using the Sub Oscillator is another way to add weight to a sound. It adds a tone an octave below the fundamental pitch of oscillator 1. Choose the waveshape of the Sub Oscillator (square or triangle) using the Sub Shape button.

Memory Location 3 demonstrates the Sub Oscillator.

To hear the Sub Oscillator:

1 Reset the patch to its original state by choosing Tutorial Sounds > Tutorial 2 Sound from the Librarian menu.

2 Click memory location 3, "Sub Oscillator" and press the Spacebar to begin playback.

3 During playback, watch the Sub Vol control in the Mixer section and listen to how the sound character changes.

When playback stops, experiment with the Sub Vol and Sub Shape controls while playing your MIDI keyboard controller.

Phase Sync Effects

You can create interesting timbral effects by detuning oscillator 2 and enabling Sync to synchronize its wavecycle to oscillator 1. This produces a unique hard-edged sound.

You must enable Sync, tune oscillator 2 higher than oscillator 1 and vary the interval to produce this effect.

Memory Location 4 demonstrates this.

In this example, the Filter Envelope varies the pitch of oscillator 2 (using the Env Osc-2 control). This is a more convenient than manually adjusting the pitch of oscillator 2.

To hear the phase sync effect:

1 Reset the patch to its original state by choosing Tutorial Sounds > Tutorial 2 Sound from the Librarian menu.

2 Click memory location 4, "Osc 2 Sync" and press the Spacebar to begin playback.

3 During playback, watch the oscillator 2 Semitone control and listen to how the sound character changes.

When playback stops, experiment with the oscillator 2 Detune and Env Osc-2 controls while playing your MIDI keyboard controller.

Frequency Modulation

You can create harmonically complex timbres using the frequency modulation (FM) capabilities of Virus Indigo.

With frequency modulation, oscillator 1 is used to modulate the frequency of oscillator 2. As a result, harmonics known as *sidebands* are generated, adding timbral complexity.

Timbral character varies according to the waveshape of oscillator 2, its semitone interval, and the type and amount of FM modulation applied.

Memory Location 5 demonstrates some of the different tones that can be generated using frequency modulation. Note that the Osc 1/2 Bal is set to 63 to monitor only oscillator 2 and its FM-based tone.

To hear examples of frequency modulation:

1 Reset the patch to its original state by choosing Tutorial Sounds > Tutorial 2 Sound from the Librarian menu.

2 Click memory location 5, "FM Timbres" and press the Spacebar to begin playback.

3 During playback, watch the oscillator 2 Semitone and FM Amount controls and listen to how the sound character changes.

When playback stops, experiment with the oscillator 2 Semitone, FM Amount, FM Mode, Shape, and Sync controls while playing your MIDI keyboard controller. You can create a wide variety of FM-based sounds using just these few parameters.

Tutorial 3: Filters

Filters dramatically shape a synthesizer's sound by attenuating the harmonic content of its tone generators. Virus Indigo actually has two filters, which increase its sound-shaping capabilities.

Here you'll experiment with filter 1, starting with its cutoff frequency.

Using Filter Cutoff

The filter Cutoff control determines the harmonic content of a sound by selecting a frequency above, below, or around which harmonic overtones are removed.

To hear the effect of filter cutoff:

1 Open the "Tutorial 3" session.

2 Record enable the Instrument track so that you can play Virus Indigo using a MIDI keyboard controller.

3 At the upper left of the Virus Indigo plug-in, click Filter/Env to show the filter page.

4 Hold down a note and rotate the filter 1 Cutoff control.

Note how the sound becomes brighter or duller depending on whether you raise or lower the cutoff frequency.

The low-pass filter reduces or *attenuates* the higher frequencies in an audio signal and lets the lower frequencies pass. The frequencies above the cutoff frequency are suppressed and those below pass through the filter unaffected.

Changing the Filter Mode

The Mode pop-up menu selects among four different filter types:

LP (low-pass) Removes the higher frequencies in a signal and lets the lower frequencies pass.

HP (high-pass) Removes the lower frequencies in a signal and lets the higher frequencies pass.

BP (band-pass) Removes both ends of the tonal spectrum and lets only a narrowly defined bandwidth pass.

BS (band-stop) Lets all of the frequencies of a signal pass, except for a narrow frequency band or *notch* around the cutoff.

Memory Location 1 demonstrates each of these filters and how the Cutoff control affects them.

To hear each filter type:

1 Click memory location 1, "Filter Modes" and press the Spacebar to begin playback.

2 During playback, watch the filter 1 Cutoff and Mode controls and listen to how the sound character changes.

When playback stops, experiment with the filter 1 Cutoff and Mode controls while playing your MIDI keyboard controller.

Using Filter Resonance

Filter resonance increases the amplitude of frequencies near the cutoff and suppresses those that are farther away.

Resonance has a striking effect, especially when used in conjunction with the low-pass filter: It adds a nasal quality that increases in proportion to the amount added.

Resonance affects the band stop filter differently than it does the other filters. As the resonance increases, the bandwidth of the notch decreases, allowing more frequencies to pass.

Memory Location 2 demonstrates how resonance affects each of the filter modes.

To hear the effect of resonance:

1 Reset the patch to its original state by choosing Tutorial Sounds > Tutorial 3 Sound from the Librarian menu.

2 Click memory location 2, "Filter Resonance" and press the Spacebar to begin playback.

3 During playback, watch the filter 1 Cutoff, Resonance and Mode controls and listen to how the sound character changes.

When playback stops, experiment with the filter 1 Cutoff, Resonance, and Mode controls while playing your MIDI keyboard controller.

Using Filter Modulation

Although it is possible and sometimes desirable to adjust or *modulate* filter cutoff manually, there are other ways to do it more efficiently. One of these is to use the Filter Envelope controls. Though these controls are covered in greater detail in the section, "Tutorial 4: Amplifier and Filter Envelopes" on page 44, it is useful to briefly introduce their use here.

The Filter Envelope varies the cutoff each time you play a note, according to the Attack Decay, Sustain, Time, and Release settings.

The Envelope control determines the degree to which the envelope affects filter cutoff. The greater the Envelope amount, the greater the effect the filter envelope has on cutoff frequency.

⚠ *The Envelope control has no effect if a filter is already completely open.*

To hear the effect of the filter envelope:

1 Reset the patch to its original state by choosing Tutorial Sounds > Tutorial 3 Sound from the Librarian menu.

2 Set filter 1 Resonance to 64.

3 Set the filter 1 Cutoff to 64.

4 While repeatedly playing a note, increase filter 1 Envelope to 64. Note how the effect changes.

5 Experiment with different Cutoff, Resonance and Envelope settings.

6 Change the filter mode and repeat the previous step.

7 Try also varying the settings of the Filter Envelope.

Using just these few controls you can create a variety of dramatic effects.

Using Key Follow

Key Follow controls how filter cutoff frequency is affected by MIDI note number.

In general, the high-frequency content of natural instruments increases as their note pitch increases. Use Key Follow to mimic this behavior or to suppress it.

Memory Location 3 demonstrates the effect of Key Follow.

To hear the effect of key follow:

1 Reset the patch to its original state by choosing Tutorial Sounds > Tutorial 3 Sound from the Librarian menu.

2 Click memory location 3, "Filter Key Follow" and press the Spacebar to begin playback.

3 During playback, watch the filter 1 KeyFollow controls and listen to how the sound character changes.

Notice that with positive Key Follow settings higher notes are clearer than lower ones. This is because the filter opens wider with higher MIDI notes.

Conversely, with negative Key Follow settings, higher notes are more muffled. This is because the higher the MIDI note, the more the filter closes.

Changing Filter Routing

Audio can be routed to the two Virus Indigo filters so that they operate in series (one after another) or in parallel (independent of each other).

The routing that you select influences the character of the filters and the sound that is processed—especially when Saturation is used.

The filter routing options are:

Ser4 The filters operate in series with two poles each, for a total of four poles and a 24 dB per octave slope.

Ser6 The filters operate in series. Filter 1 has four poles and filter 2 has two poles, for a total of six poles and a 36 dB per octave slope.

Par4 The filters operate in parallel with two poles each for a total of four poles.

Split The filters operate in parallel with two poles each. They receive independent input signals whose stereo spread can be specified with the Pan Spread control.

Memory Location 5 demonstrates the effect of filter routing.

To hear the effect of filter routing:

1 Reset the patch to its original state by choosing Tutorial Sounds > Tutorial 3 Sound from the Librarian menu.

2 Click memory location 4, "Filter Routing" and press the Spacebar to begin playback.

3 During playback, watch the Filter Routing controls and listen to how the sound character changes.

When playback stops, experiment with the Filter Routing, Filter Balance, Cutoff, Resonance and Mode controls while playing your MIDI keyboard controller.

Load one of your favorite Virus Indigo patches and try changing its filter routing. You'll hear that this can make a subtle but definite impact on timbre.

Tutorial 4: Amplifier and Filter Envelopes

As the name implies, the envelope generator literally gives a shape or *envelope* to the harmonic content or amplitude of a sound.

Virus Indigo has two separate envelopes: an amplifier envelope and a filter envelope.

Amplifier Envelope

The Amplifier Envelope controls how the volume characteristics of a patch respond each time you play a note.

There are five envelope stages: attack, decay, sustain, sustain time, and release.
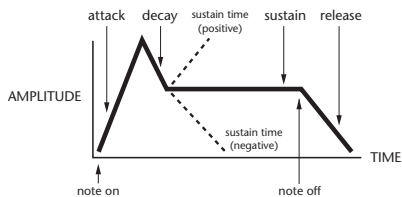
Typical amplitude envelope

By varying these four parameters, you can emulate a wide variety of instrumental effects, ranging from plucked sounds to bowed sounds, and almost anything in between.

To hear the amplifier envelope:

1 Open the "Tutorial 4" session.

2 Record enable the Instrument track so that you can play Virus Indigo using a MIDI keyboard controller.

3 At the upper left of the Virus Indigo plug-in, click Filter/Env to show the envelope page.

4 Click memory location 1, "Amplitude Attack" and press the Spacebar to begin playback.

5 During playback, watch the Attack control and listen to how the sound character changes.

Attack controls the initial volume swell of the sound. The higher the attack value, the longer it takes for the sound to reach its maximum volume after the start of the note.

Next, listen to the Decay stage.

To hear the decay stage:

1 Click memory location 2, "Amplitude Decay" and press the Spacebar to begin playback.

2 During playback, watch the Decay control and listen to how the sound character changes.

Decay controls how quickly the volume falls from its initial peak. The level to which the volume falls is called the *sustain level*. This is determined by the Sustain control.

To hear the sustain stage:

1 Click memory location 3, "Amplitude Sustain" and press the Spacebar to begin playback.

2 During playback, watch the Sustain control and listen to how the sound character changes.

💡 *If you set Sustain to its maximum level of 127, the Decay control no longer has an effect. To use decay effectively, the Sustain level must set below its maximum.*

The next stage of the amplifier envelope is determined by the Time control.

To hear the sustain time stage:

1 Click memory location 4, "Amplitude Time" and press the Spacebar to begin playback.

2 During playback, watch the Time control and listen to how the sound character changes.

The higher the Time setting, the faster the volume increases to its maximum level. The lower the Time setting, the faster the volume decreases to zero.

If Time is set to its center position of zero, the sustain level remains constant.

The final envelope stage is determined by the Release control.

To hear the release stage:

1 Click memory location 5, "Amplitude Release" and press the Spacebar to begin playback.

2 During playback, watch the Release control and listen to how the sound character changes.

Release determines how quickly the volume decreases after you release a note. The higher the Release value, the slower the fade out. The lower the Release value, the faster the fade out.

By using the amplifier envelope creatively you can simulate the amplitude characteristics of virtually any instrument, from drums to woodwinds and beyond.

Memory Locations 6 and 7 demonstrate how different envelopes can radically change the character of a patch.

To hear envelopes change sound character:

1 Click memory location 6, "Typical Amp Envelope 1" and press the Spacebar to begin playback.

This patch has a soft attack similar to woodwind instruments. Next, listen to the same basic patch, but with a different envelope.

2 Click memory location 7, "Typical Amp Envelope 2" and press the Spacebar to begin playback.

This patch has a hard attack and fast decay, not unlike a Japanese koto. These simple examples should give you some idea of the sound shaping power of the Amplifier Envelope.

Next, you'll experiment with the Filter Envelope.

Filter Envelope

The Filter Envelope controls how the filter responds each time you play a note.

The Filter Envelope varies the cutoff frequency of both filter 1 and 2 each time you play a note. It has the same five controls as the Amplifier Envelope: Attack Decay, Sustain, Time, and Release.

In addition, filter 1 and 2 each have an envelope amount (Env Amt) control. This determines the degree to which the envelope affects filter cutoff. The greater the envelope amount, the greater the effect the filter envelope has on cutoff frequency.

Memory Location 8 demonstrates all five stages of the Filter Envelope.

To hear the filter envelope:

1 Click memory location 8, "Filter Envelope" and press the Spacebar to begin playback.

2 During playback, watch the Attack, Decay, Sustain, Time and Release controls and listen to how the sound character changes.

Experiment with different Resonance and Env Amt settings while playing your MIDI keyboard controller.

For the Filter Envelope to have a significant effect, the filter should be at least partially closed so that the envelope can open it.

Use the Envelope Polarity switch to invert the polarity of the filter envelope of each filter for some interesting effects.

Memory Locations 9 and 10 demonstrate how different filter envelopes can radically change the timbre of a patch.

To hear how filter envelopes affect timbre:

1 Click memory location 9, "Typical Filt Envelope 1" and press the Spacebar to begin playback.

This patch has a fast attack similar to synthesizer bass patches heard on many recordings.

2 Click memory location 10, "Typical Filt Envelope 2" and press the Spacebar to begin playback.

This patch has a soft attack that sweeps the filter. This is also a commonly used synthesizer effect.

These examples should give you an idea of the sound shaping power of the Filter Envelope.

Tutorial 5: Using the LFOs

Virus Indigo has three separate low frequency oscillators. These can be used to modulate the oscillators, filters, and other parameters to produce vibrato, tremolo, wah-wah, and many other effects.

LFO waveshapes include:

- sine
- triangle
- sawtooth
- square
- sample & hold (random)
- sample & glide (random with portamento)
- oscillator waveform number. This selects one of the many different waveshapes (3-64) produced by the main oscillators.

Each of these waveshapes produces a characteristic type of modulation.

When routed to the oscillators, for example, sine and triangle waveforms produce vibrato. A square wave produces trills. A sawtooth wave produces a falling pitch effect reminiscent of laser gun-type sound effects.

To hear LFO pitch modulation:

1 Open the "Tutorial 5" session.

2 Record enable the Instrument track so that you can play Virus Indigo using a MIDI keyboard controller.

3 At the upper left of the Virus Indigo plug-in, click LFO to show the LFO page.

4 Click memory location 1, "LFO Waveforms" and press the Spacebar to begin playback.

In this example, LFO 1 modulates the pitch of the oscillators.

You can use the LFOs to modulate many other parameters, such as the pulse width of square waves generated by oscillators 1 and 2. Pulse width modulation adds thickness and animation to square-wave based timbres.

To hear LFO pulse width modulation:

1 Click memory location 2, "Pulse Width Mod."

2 Press the Spacebar to begin playback.

3 During playback, watch the PW 1+2 control.

LFOs are also commonly used to modulate filters, producing a wah-wah-type effect. Filter Resonance and Cutoff settings greatly influence the intensity of the effect.

To hear LFO filter modulation:

1 Click memory location 3, "LFO Filter Mod" and press the Spacebar to begin playback.

2 During playback, watch the filter 1 and filter 2 controls, which are linked.

You can use the Key Follow control to vary LFO rate according to MIDI note number. Playing higher notes increases LFO speed. Playing lower notes decreases LFO speed.

To hear how Key Follow affects LFO rate:

1 Click memory location 4, "Pan Mod Key Follow" and press the Spacebar to begin playback.

2 During playback, watch the filter 1 and filter 2 controls, which are linked.

In this example, LFO 2 modulates panning of a stereo patch. Panning speed increases with higher notes and decreases with lower notes.

Try modulating other parameters with the LFOs. Experiment with different waveshapes for some surprising effects.

🔅 *You can route LFO modulation to virtually any Virus Indigo parameter using the Mod-Matrix page.*

Synchronizing LFO Clock to MIDI Beat Clock

You can synchronize the clock of the LFOs, Arpeggiator, and Delay to MIDI Beat Clock for rhythmic consistency with other MIDI Beat-based elements in a session.

If multiple Virus Indigo plug-ins share the same DSP, MIDI Beat Clock must be routed to the first instance of the plug-in. The other instances will then also use the MIDI Beat Clock. Once MIDI Beat Clock has been enabled, Virus Indigo will automatically turn off its internal tempo generator.

⚠️ *You can use MIDI Beat Clock tempos ranging from 63–190 with Virus Indigo. Tempos outside this range will cause timing errors.*

To synchronize the Virus Indigo clock to MIDI Beat Clock:

1 In Pro Tools, choose Setup > MIDI > MIDI Beat Clock.

2 Select the Enable MIDI Beat Clock option.

3 Select the Virus Indigo plug-in that you want to receive MIDI Beat Clock and click OK. If multiple Virus Indigo plug-ins share the same DSP, select the instance with the highest alphabetical priority. (The "a" instance is highest, followed in order by b–h.)

Sending MIDI Beat Clock to a Virus Indigo plug-in

4 In the Virus Indigo LFO Clock pop-up menu, select the clock value that you want to use.

Tutorial 6: Virus Indigo Effects

Virus Indigo provides a number of effects, such as phasing, chorus, reverb, and delay, that you can use to enhance patches.

The Chorus Effect

Adding chorusing to a patch is a simple way to enliven its sound. Memory Location 1 demonstrates this effect on an otherwise static patch.

To hear the Chorus effect:

1 Open the "Tutorial 6" session.

2 Record enable the Instrument track so that you can play Virus Indigo using a MIDI keyboard controller.

3 At the upper left of the Virus Indigo plug-in, click FX-1 to show the effects page.

4 Click memory location 1, "Chorus" and press the Spacebar to begin playback.

When playback stops, experiment with the various Chorus controls while playing the patch with your MIDI keyboard controller.

Using the Arpeggiator

Arpeggiators are typically used to add a highly-sequenced "techno" feel to music.

If you play a note or a musical chord, the Arpeggiator will play the individual notes in succession, across a selected octave range, at a selected tempo.

By varying the range, clock speed and playback mode of the Arpeggiator, you can create a variety of effects.

💡 *The Arpeggiator can be synchronized to MIDI Beat Clock. See "Synchronizing LFO Clock to MIDI Beat Clock" on page 47.*

To hear the arpeggiator:

1 Click memory location 2, "Arpeggiator" and press the Spacebar to begin playback.

2 At the upper left of the Virus Indigo plug-in, click FX-1 to show the effects page.

3 During playback, watch the Mode, Clock, and Oct Range controls and listen to how the arpeggiation changes.

Experiment with different Mode, Clock, and Oct Range settings while playing your MIDI keyboard controller.

Select the Hold control and note how the arpeggiator continues to play the most recently held notes even after you release the keys.

Arpeggiation is more dramatic with high-impact, percussive sounds. Memory Location 3 demonstrates this.

To hear another example of arpeggiation:

1 Click memory location 3, "Arpeggiator."

2 Change the patch by choosing Tutorial Sound > Tutorial 6 Arpeggiate from the Librarian menu.

3 Press the Spacebar to begin playback.

This patch uses Unison mode to add weight to the patch and give it a wide stereo spread.

💡 *To hear more examples of arpeggiation, load one of the Arpeggiator presets with the Librarian.*

Using the Vocoder

Vocoders are commonly used to make sounds "talk" by filtering a waveform or other audio source (the *carrier* signal) according to the amplitude characteristics of a human voice (the *modulator* signal).

By merging the frequencies of the two different audio signals together, the carrier takes on the texture of the modulator.

The Vocoder Demo session demonstrates this type of vocoding.

💡 *For best results, use the Vocoder on harmonically rich material.*

To open the Vocoder demo session:

1 Locate and open the "Vocoder Demo" session.

2 Record enable the Instrument track so that you can play Virus Indigo using a MIDI keyboard controller.

3 At the upper left of the Virus Indigo plug-in, click FX-2/Global to show the vocoder.

4 Click memory location 1, "Full Vocoder" and press the Spacebar to begin playback.

Memory Location 2 demonstrates how the Source Balance control determines the balance of modulator and carrier signals.

To hear the carrier and modulator signals:

1 Click memory location 2, "Vocoder Balance" and press the Spacebar to begin playback.

2 During playback, watch the Source Balance and listen to the carrier and modulator signals.

Memory Location 3 demonstrates the various Vocoder parameters and how they affect the timbre and quality of vocoding.

To hear the various Vocoder parameters:

1 Click memory location 3, "Vocoder Balance."

2 During playback, watch the various Vocoder controls and listen to how they affect vocoding quality and intelligibility.

Memory Location 4 demonstrates how vocoded material can be played with a MIDI keyboard controller.

To hear the Vocoder played:

▪ Click memory location 4, "Play Vocoder" and press the Spacebar to begin playback.

☀ *To hear more examples of vocoding, load one of the Vocoder presets with the Librarian.*

To use the vocoder:

1 Insert Virus Indigo on an Instrument track, audio track, or Auxiliary Input with the sound material you want to use as the modulator signal.

2 Open the FX-2/Global page and in the Vocoder section, set Mode to the sound source you want to use as the carrier signal.

3 Begin playback and use your MIDI keyboard controller or an Instrument or audio track to play the vocoded sound.

⚠ *Using the Vocoder reduces voice polyphony. Additionally, the Virus Indigo filters are not available since they are used for vocoding. If you want to filter a vocoded sound, insert a second Virus Indigo plug-in on the same track and use its filters.*

Using Input Mode

If you want to use the Vocoder's Input mode, you must send an external carrier signal to Virus Indigo using the Key Input pop-up in the Inserts/Send Editor. With this technique, you can use two audio tracks or a live input from a microphone to create vocoded sounds without having to play notes on a MIDI keyboard controller.

To use Input mode:

1 Insert Virus Indigo on an Instrument track or audio track containing the audio you want to use as a modulator.

2 Route the audio track or audio input you want to use as the carrier signal to any Pro Tools bus.

3 In the Inserts/Sends Editor for the Virus Indigo plug-in, choose the bus from the Key Input pop-up menu.

4 Set the Vocoder's Mode pop-up menu to Input.

5 Start Pro Tools playback.

You should hear the vocoder. Note that you don't have to play notes on your MIDI keyboard controller to hear the vocoder effect.

☀ *You can use this same key input setup to route external audio signals to the ring modulator.*

Using Virus Indigo as a Filter

You can pass an external or existing audio signal through Virus Indigo and process it in many interesting ways by applying filtering, filter saturation, chorus, phasing, delay effects, or modulation.

To filter an external or existing audio signal:

1 Insert Virus Indigo on an Instrument track or audio track containing the audio you want to process.

2 Open the FX-2/Global page and in the Input section, set the Input Mode to either Dynamic or Static.

In Dynamic input mode, the envelope generator is active and you must play MIDI notes to pass audio through.

In Static input mode, the envelope generator is not active and you don't need to play MIDI notes to pass audio through.

⚠ *Static input mode uses two Virus Indigo voices.*

3 Press the Spacebar to begin playback.

4 Fine tune the effect by adjusting the Filter Mode, Cutoff, Resonance, Saturation, and other controls.

💡 *To hear more examples of external input processing, load one of the "Input" presets with the Librarian.*

Using the Envelope Follower

The Envelope Follower replaces the filter envelope with an envelope based on the dynamics of an external input signal. Envelope followers are typically used to produce "wah-wah" type effects.

To use the Envelope Follower:

1 Insert Virus Indigo on an audio track containing the audio that you want to process.

2 Open the FX-2/Global page and in the Input section, set Input Mode to Static.

3 In the Envelope Follower section, enable Env Follow.

4 Open the Mod Matrix page and in the Assign 1 section, choose Filter Envelope as the Source and Filter Cutoff as the Destination.

5 Set the Amount control to 63. The higher the setting, the more pronounced the effect.

6 Open the Filter/Env page and set the filter Mode, Cutoff, and Resonance of filter 1 and 2 to a mid-range value.

7 Press the Spacebar to begin playback.

8 Fine tune the effect by adjusting the Filter Resonance, Filter Cutoff and Filter Envelope controls.

Attack sets the Envelope Follower's response time when increasing the volume of a signal.

Release sets the Envelope Follower's response time when decreasing the volume of a signal.

Level sets the Envelope Follower's intensity.

Sharing a Single Delay Among Multiple Plug-Ins

All Virus Indigo plug-ins sharing the same DSP also share a single delay. The plug-in designated as the "delay master" carries the delay signal. All other plug-ins sharing the same DSP automatically bus their delay sends to the delay master.

If you want to use delay on multiple plug-ins sharing the same DSP, it is recommended that you use one Virus Indigo plug-in strictly for delay or reverb effects (not for playing a patch) by inserting it on an Auxiliary Input and designating it as the delay master.

For a plug-in to be designated as the delay master, its Effect enable button must be on. By default, the first instance of a Virus Indigo plug-in (1a, for example) is the delay master and its Effect enable button is automatically turned on. On all other instances (1b, 1c, 1d, and so on), the Effect enable button is off.

To designate a different plug-in on the same DSP as the delay master, you must turn on its Effect enable button. The Effect enable button on the previous delay master will then be turned off.

⚠ *If the* Effect *enable button is not enabled for any plug-in sharing the same DSP, delay is turned off.*

Designating a plug-in as the delay master:

1 Open the Inserts/Sends Editor for the Virus Indigo plug-in you want to use as the delay master.

2 Open the FX-1 page and in the Delay/Reverb section, enable Effect.

The Effect enable state is not saved with a Virus Indigo patch. It is saved with a session. All other delay settings, including the delay Send level, are saved with a Virus Indigo patch.

If you load a Virus Indigo patch from the Librarian menu, its delay settings will load just as you saved them—*if that plug-in is the delay master.* The settings will also be sent to the other plug-ins sharing the same DSP.

If the plug-in is *not* the delay master, its settings will be overridden by the designated delay master.

💡 *Delay parameters for all plug-ins sharing the same DSP can be manually adjusted from any one of the plug-ins.*

Using a Single Delay as a Shared Resource

For maximum flexibility in a shared delay situation, use one Virus Indigo plug-in as a shared resource by inserting it on an Auxiliary Input and designating it as the delay master.

All other Virus Indigo plug-ins sharing the same DSP automatically bus their delay sends to the delay master. Delay return levels can then be adjusted independently from patch volume.

The "Shared Delay Demo" session demonstrates such an arrangement.

To hear the shared delay session:

1 Locate and open the "Shared Delay Demo" session.

2 Press the Spacebar to begin playback.

In this example:

- Virus Indigo 1b and 1c generate music.

- Virus Indigo 1a serves as a dedicated delay.

- Delay send levels of Virus Indigo 1b and 1c are controlled by the Delay Send knob on the FX-1 page of each plug-in.

- Master delay return level is controlled by the fader on the "Delay Master" Auxiliary Input.

appendix a

DSP Requirements

The number of TDM plug-ins you can use at one time depends on how much DSP power is available in your system. Since the TDM hardware on Pro Tools cards provide dedicated DSP for plug-ins, plug-in performance isn't limited by CPU processing power.

The DSP tables in this appendix show the theoretical number of instances of each plug-in that can be powered by a single DSP chip on Pro Tools|HD cards. DSP usage differs according to card type.

⚠ *DSP tables show the theoretical maximum performance when no other plug-ins or system tasks (such as I/O) are sharing available DSP resources. You will typically use more than one type of plug-in simultaneously. The data in these tables are provided as guidelines to help you gauge the relative efficiency of different plug-ins on your system. They are not guaranteed performance counts that you should expect to see in typical real-world sessions and usage.*

There are a total of nine DSP chips on a Pro Tools|HD card (HD Core®, HD Process®, and HD Accel). HD Core and HD Process cards provide identical chip sets. HD Accel cards provide newer, more powerful DSP chips (making the HD Accel card ideal for DSP-intensive plug-ins, and for high sample rate sessions).

Not all plug-ins are supported on all types of chips. The following tables indicate the number of compatible chips per card.

⚠ *Virus Indigo does not support 174.4 kHz or 192 kHz session sample rates on Pro Tools|HD systems.*

⚠ *A maximum of four DSPs can be used for Virus IndigoV40. This allows a maximum total of 160 Virus Indigo voices on Pro Tools|HD Accel systems.*

A maximum of eight DSPs can be used for Virus Indigo. This allows a maximum total of 160 Virus Indigo voices on Pro Tools|HD systems.

Systems with enough DSP to support both Virus IndigoV40 and Virus Indigo allow a maximum total of 320 voices.

Voice polyphony may be reduced by as much as 25% if all effects (chorus, phaser, reverb and delay) are used simultaneously.

Using Multi-Mono Plug-Ins on Greater-Than-Stereo Tracks

Plug-Ins used in multi-mono format on greater-than-stereo tracks require one mono instance per channel of the multi-channel audio format. For example, a multi-mono plug-in used on a 5.1 format track, requires six mono instances since there are six audio channels in the 5.1 format.

Monitoring DSP Usage

The System Usage window (Window > System Usage) shows how much DSP is available in your system and how it is being used in the current Pro Tools session.

For more information about DSP usage and allocation, see the Pro Tools Reference Guide.

Virus Indigo DSP Requirements

The Virus Indigo plug-in has the following DSP requirements:

HD Accel Card

Table 2.   Maximum number of voices per DSP chip for an HD Accel card at different sample rates (mono and stereo)

Plug-In	44.1/48 kHz	88.2/96 kHz	Compatible DSP Chips per HD Accel Card
Virus IndigoV40	40	20	4
Virus Indigo	20	10	6

HD Core and Process Cards

Table 3.   Maximum number of voices per DSP chip for an HD Core or HD Process card at different sample rates (mono and stereo)

Plug-In	44.1/48 kHz	88.2/96 kHz	Compatible DSP Chips per HD Core or HD Process Card
Virus Indigo	20	10	9

appendix b

DSP Delays Incurred by TDM Plug-Ins

Virtually all TDM plug-ins incur some amount of signal delay.

If you are working with mono tracks, or are processing all channels with the same plug-in, the signal delays are not long enough to be significant and should not be a concern.

This signal delay is significant only if you use a plug-in on one channel of a stereo or multichannel signal but not the others, since this can cause the channels to be slightly out of phase.

📖 *Pro Tools systems provide automatic Delay Compensation (and other methods) to compensate for signal processing delays. For detailed information, see the Pro Tools Reference Guide.*

Table 3 shows the delays inherent in the Virus Indigo plug-in.

Virus Indigo DSP Delay

Table 3.   Samples of delay incurred by each TDM plug-in on Pro Tools|HD, cards

Plug-In	Samples of Delay on Pro Tools|HD Cards
Virus Indigo	386

appendix c

Virus Indigo Oscillator Waveforms

The Wave Select knob on the Osc page selects among 64 preset waveforms. Figures 1 and 2 show these waveforms.
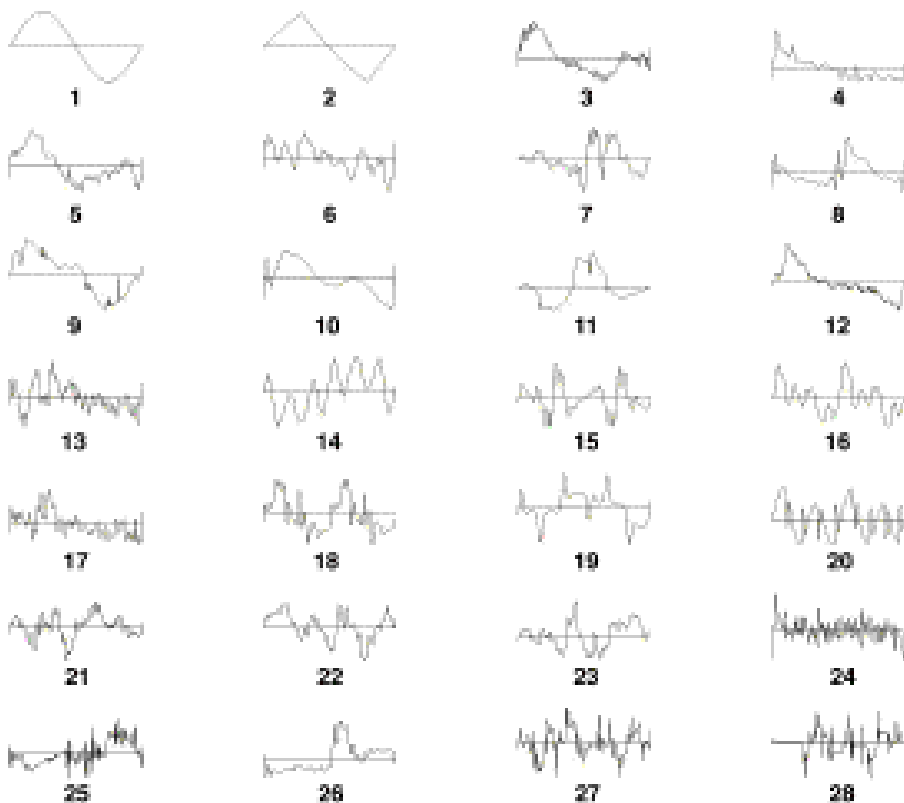
Figure 1. Virus Indigo oscillator waveshapes
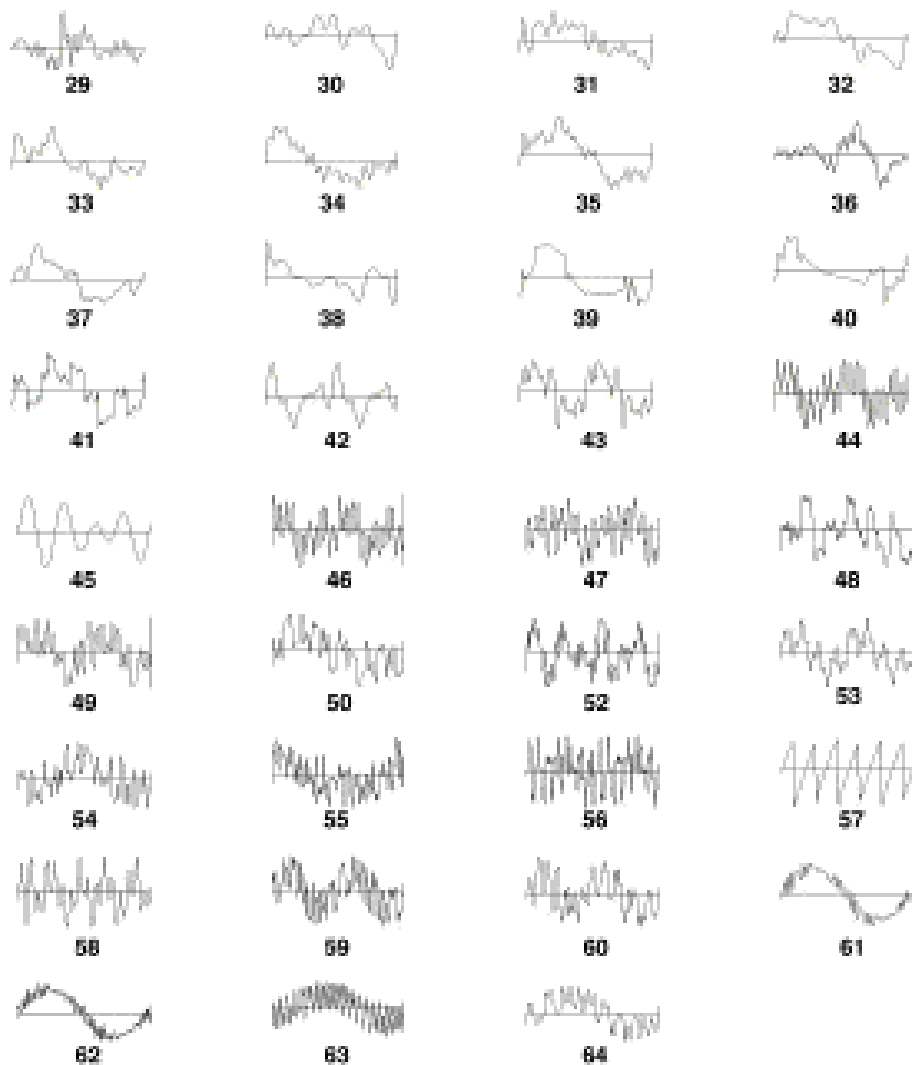
Figure 2. Virus Indigo oscillator waveshapes

appendix d

Virus Indigo Patches

Virus Indigo comes with a library of over 1000 patches. These patches are:

Init Sounds
- - Init -
- - Space -
- - Start -
- Input

Acid
- Adrenalin2
- Anhigh M
- B-Foe M
- Bassta JS
- BC NewVox3 BC
- BC VoV-2BC
- Braxter JV
- CutRes zs
- DigThis JS
- Dirty zs
- DopeEp zs
- Driver SV
- dstStep zs
- eXtreme RP
- FePudn zs
- Fuzzbox JS
- Fuzzline DM
- Impact MS
- Infinity JS
- majority JS
- metalSynth JS
- Nasty JS
- NewVoV4 BC
- NoFuture M
- OldSchool OK
- PRebird M
- Quack HS
- Raw JS
- Rotterdam RP

Satsync CK
SatSync2 K
T-Axxe JS
TB-V03 RP
TeeOBee K9
UniVoV BC
V-Acid 04 M
V-Birth K
Velo-me RP
Virus B JS
WetThn zs
Wobble M
Wowgrowl M@
Xo Bass RP

Arpeggiator
A Spacenight J
ABC-1 RP
Anima JS
Animate JS
Arp-1
Arpeggia
Arpeggiator
Bad S JS
Basstard JS
BeatBox JS
Begin HS
BellaArp JS
BGot90s M@
Boingy HS
ChaosBells JS
Chord 1 RP
Chord-U RP
Chordy RP
Club-To RP
Concrete JS
Cyberpop HS
Cyclone JS
D Echoer M@

Dancio Rp
DB-Goer HS
Donkey JS
Dr What HS
DSP Sequence RP
Dublyoo HS
E-Cord RP
Easter1 HS
Eighties RP
Enforcerer DM
EnglArp JS
FlageoletAD
FMChitter M@
FutureX SV
FX Drum JS
Ganges HS
Girls SV
Go-Sequence RP
Goa4 it JS
Goatic SV
GungGungCK
He-Vpluk M@
Hektik HS
Hoppin SV
IndiArp BC
JawDan HS
JunoArp JS
Kitchen HS
Kyrie M@
Mallet JS
Mettley HS
MoveIt SV
Movements HS
MS-10 1 RP
MS-10 2 RP
NiceArp JS
NoiseAA RP
NoiseBurst RP
NotPad RP
Oscar-1 HS
Percold JS
Pergru M@
PhazPluk M@
Picking HS
Piggy HS
Pizza HS
Plang CK
PolySin JS
Prions HS
Pumpah HS
Quarp BC
Quarx JS

Quatsi HS
R-peggie RP
RadioG HS
Random JS
Raspry HS
Repeater JS
ResoChord JS
Reztails M@
Rhy-Arp JS
Rhythmix DM
Rollin JS
S&H ARP
SeqIt JS
Sequence RP
Series3 HS
Seventh Cord RP
SH-123 RP
Sharp BC
SidKit HS
SilkArp SV
Slapska HS
Sorry RP
Spring HS
Squeeze HS
Step2it zs
Str-Arp RP
Str-Wow RP
Strummer HS
Swee-Plug M@
T-Dreams RP
Tabloid HS
Tec-Arp RP
TechnoArp
TecMos RP
TheDome HS
TweakMe HS
Two burst RP
Two Chord RP
V-bee Rp
V-Birth2 K
V-Birth3 K
VarArp RP
Vi-Chord RP
Vi-tro Rp
Vienna JS
Virus CK
Virus K
Virus2 K
Voodoo HS
Wave1 K9
Waven RP
Waver JS

Wextex RP
Wheek Rp
WheelPadArp RP
X Mean RP
Zorch HS
Zyntar M@

Bass
101 Bass RP
101 Sub RP
AccyBass RP
AlfBass RP
Autobend BC
Autotekkno BC
B-Square BC
Back280s SV
Basic JS
Bass 415 M
Bass 504 M
Bass Me RP
Bass RP
Bass-O RP
Basser M
BasserIk M
Basting zs
Basting2 zs
Beasty DM
BigFish
BigTung zs
Bowzerz M@
Bubble2 M
Cavsak M
Cleen M
Club Tools BC
CommBass SV
Contra BC
CosmicBass SV
Da Funk BC
DB Woofer
DeeBass RP
DinoBass HS
DontFret M@
DropIt zs
Drubber BC
DryBass J
DubSak M
Dukbass+ BC
Fingers M@
Five in One BC
Fm Bass JS
Fripper JS
GarBass8 BC

Goomby HS
JV Bass M@
KingSize JS
Latitude SV
Mini Bass-2 SM
Mini Bass-5 SM
Minibass-1 SM
MiniBass-2 SM
MiniBass-3 SM
MiniBass-4 SM
MiniBass-5 SM
MisterOizo DM
Monza HS
MooBass RP
Na-bass RP
NasalBass SV
NewWorld M@
NoizBass M@
P600 RP
Pitchy BC
PPG Bass
PseudoTB SV
RE-Bass RP
RiBass RP
RoBass RP
RubberHarp BC
SineBass JS
Skware zs
SmileBass RP
SmoothBs BC
Something SV
SubBass K9
SubBass zs
SyncPedal M@
TecBass RP
TfBass RP
TiBass RP
Tight JS
TimeStep HS
TomBass RP
UK garage BC
UK Garage2 BC
Upright JS
Vanilla HS
ViBass RP
WoodBs HS
ZZ-Bass RP

Classic

Atlas J
Bellthing
BigSweep JS
Brass-1 RP
Brass-2 RP
Brass-8 RP
Choir2 HS
E.Rigby HS
Farfisa AD
Flute RP
Howner RP
JunoPower M@
Lets Sync M@
Melodiea M@
Moving JS
ObiPad J
Pit-Str HS
PopComp M@
PortaPoly M@
Pro12 RP
Puncher JS
Saw-Ya M@
Simply JS
Sitar
Spinett
Stevie RP
T-Organ RP
T8 RP
TEC Strings RP
Tender JS
Tomita J
TronFlt M@
TronStr M@
TwinPads M@
Two brass RP
UofYouth M@
USA RP
V-Jump K
Wish U He HS
X-Clavi RP

Decay

Aandreas M@
ABC-2 RP
Airmonics M@
Aliser MS
Anabolic JS
Aouuh CK
Attack J
AwashBs HS
BandPad RP
Be Two RP
Big Fish PN
Birdy JS
Bowed RP
Bronze HS
Chillout HS
Compress 2 K
Compress K
ComPump M@
Cutoff K
Decay JS
DecDATA zs
DecDATA2 zs
DecDATA3 zs
Detector M@
Devlish SV
Dig Me JS
Digedi JS
Dragon M
Duffer BC
Ease RP
Facial M
Far East JS
Filters RP
FnkStng zs
Formant PI
FuzzBell JS
GBEp3 zs
Generator MS
George2 zs
Harmonix
Hauntin JS
Hawsch RP
Hollow JS
HongKong BC
Hybrid JS
Ice House
Induced JS
Jazzy JS
Justice JS
K-Werkx2 RP
KyotoLd JS

LepY2 zs
LepY3 zs
Lite JS
Low
Maja JS
Mo Tjo RP
Moloko K9
Monolith JS
Moon Pad JS
MorsSpec JS
Necro M
No Tjo RP
NoizToys JS
Off Soft BC
OliveLF MS
Omnef RP
Organic JS
Overtone JS
Pensive BC
Percy M@
Phasa RP
PhasEp zs
Pluka zs
Plukalog HS
Polaris
Polygroove JS
PortaBello BC
PPG Pad
PulseP41 DM
Q-Teck
RbbrBell BC
Rezoid SV
Rezzer BC
RingSync CK
RuffSaw DM
Sadings RP
Sawing Rp
Sci-Fi1 K
Shifted BC
Sickly BC
SimSala JS
Sitar zs
Sitar
So-Soft RP
Soft3rds BC
Spring SV
Spy HS
Startup JS
Str-II RP
Stratus JS
Submerge SV
Sweeper JS

Synchym2 M@
T-8 RP
Talking PI
Taurus JS
TE-T42 RP
The Fog CK
Ting RP
Tremor JS
Tubez JS
TwoOfUs JS
TwoTones BC
Uck Muk RP
V-550 2 RP
V-550 RP
VibePad m@
VO Pad RP
Wino bench
Wirly JS
X-Men JS
XPandr zs

Drums
908 Kick RP
909 Kick RP
BD 1 (C3)
BD 10
BD 12
BD 2 (C3)
BD 3 (C3)
BD 4 (C3)
BD 5 (C3)
BD 6 (C3)
BD 7 (C3)
Claps RP
Crash 4
HH Arp RP
HH Closed 2 RP
HH Closed 3
HH Closed BC
HH Closed RP
HH Closed Ts BC
HH Open 2 RP
HH Open BC
Kick 2 RP
Kick 7 BC
Kick Arp RP
Kick Distorted RP
Kick Drum 5 CK
Kick Drum CK
Kick Drum2 CK
Kick Long SM
Kick Low RP

Kick Punch Short SV
Kick Punch SV
Kick XOX RP
Ride Bell BC
Ride Rim BC
Rim Gated HS
RimSHot BC
Sim Synth HS
Snare 1 BC
Snare 2 BC
Snare 3 BC
Snare IQ RP
Snare New BC
Snare One
Snare V-Snare RP
Snare X RP
Tom-Tom RP
Top E2000 M@

Effects

-Space -
Alert JS
AmbientFX J
Apogee M@
Arcade BC
Arcadia MS
BadLand M
Baggins M@
BeTwo RP
BigFly JS
Bleu M
BlubblX HS
Chant JS
Clocked RP
Cold Saw2 JS
D&B FX
D-Sock RP
Dark Matter
DrpBomb zs
Entropie J
Everest HS
Feng Jiu JS
Flubber RP
FlyBy BC
For Deep JS
FX303 Rp
Ghost JS
Ghost2 JS
GoingDown SV
Goodnight JS
GooHat M
Gulf JS

Haunted JS
HIDEson M
HoldChord M@
Infinity JS
LaVille JS
LetsGo SV
LootRng zs
Lost M
Mentalist JS
MoveMyMW BC
MS99 RP
Multasm HS
MW-Steps HS
MWCord BC
NastyFX JS
Neu Utz
NoWhere BC
Oh Yeah M@
Oil-crwl SV
Old H&H HS
Opener JS
Outland JS
Plead M
Pstyro2 HS
RichWind
Ripper JS
Rise-Up SV
Ruminate HS
ScanJob JS
Sci-Fi 1 K
Sci-Fi 2 K
SFX Pan FP
SFX-VC3 RP
SFX-X- RP
SFX-XXX RP
Shycus RP
So Sad M
Spaced JS
Squoid HS
SubAqua BC
Sunder HS
T-Pod BC
Td-Sequence RP
Tunnel HS
Ufo 1
Ufo 2
Ufo4 M
V-Acid 09 M
V-Acid7 M
Vapour SV
VideoG1 zs
VideoG2 zs

VideoG4 zs
Voyager JS
Wailing JS
WalkaArp JS
Walker JS
Waoload zs
Warlord HS
Water RP
Weeehh HS
Whales JS
Wind RP
WishBon HS

Input

Inp Amp
Inp Bandpass
Inp Clean
Inp Double
Inp Flange
Inp Highpass
Inp Key
Inp Keyfollow
Inp lowpass
Inp Pad
Inp Reso
Inp Saturation
Inp Shaper

Leads

-Go Bass RP
-VCS 3a J
@-Lead RP
AESound zs
AldoNova M
AnHigh M
AT-Mini HS
B-Deep M
Blotto M
BowBounceHS
Buzzler DM
Calliope HS
CantburyHS
CappSt M
Catalyst MS
ChainsawJS
cirqStb zs
Cloaking M
ClubMed HS
CommerseSV
Compress K
Crispy
Dangelo HS

Driven M@
Dynette HS
Dyson++ BC
Empiria 2 M
Fat Boy K9
FatWah BC
Flutoon HS
Formant PI
Froese HS
Function HS
FunkLd-1 SM
FunkLd-2 SM
FunkLd-3 SM
FunkLd-4 SM
Futureworld SV
Fuzzy RP
GedyLeed M@
Gimey M@
Gotham M
Grunge2 CK
Hallows M@
Hendrix RP
Holland RP
InfectLead
J Edgar HS
JamMini HS
JaySync JS
JoeZolo BC
Klick Lead
Kptkork HS
Latex HS
Lead JS
Lektrik M@
LuckyMan J
Macho HS
Manfred HS
MarsAtx HS
Menace
Mini-M RP
MiniLead SM
Minority HS
Mister Foo M
Monose zs
Moogy RP
MoonWeed HS
NylSolo HS
O-ME-2 RP
Oboe HS
OddgssaySV
Oddigy HS
Odyssey HS
OhEQ-8 M@

Orange HS
Overload HS
OZ-Load RP
P-Lead RP
PataFiz HS
PatsGR M@
Penicillin
Phlute JS
Pickup HS
PopCorn HS
Prodigy JS
Red Line SV
RngPort zs
Roboe zs
Rollups M@
Rot DAM RP
Rough JS
Sawz 2 SV
SaxPet HS
ShineOn HS
Sinemorph zs
SineSolo HS
Sinezzz zs
SinusSeq
SmoovLd zs
Sneakr zs
Soaker JS
Softbell J
SoLead RP
Soloist JS
Spaz MeC
Spinner M
Spitfire JS
Spoiled SV
SupersncDM
Tech-no RP
Ten Inch JS
Tight8s M@
TinyCAT SV
Torque
TuvaWheel HS
VI-Sync RP
Vitar RP

Vorwerk HS
Weazel M
Welard
Whist RP
Wish U were here HS
X-Didge HS
XitLeft M@
Yeao M
Yukka JS
Zurpy

Organ
Cheezwiz M@
Deep9th BC
Ham&X HS
Harmonics JS
JuiceOrgan HS
K-Organ RP
Korgan M@
Lordorgan HS
M-Organ RP
P-Organ RP
PeaceOrgan HS
Pingorgan HS
S&H Organ BC
T-Organ RP
V-Church K
V-Organ K

Pads
7thHeaven JS
Aerosol J
AerSynth m@
Ageless JH
Ah Reso JS
AI2 Pad M@
Aion R
AmbiRgm zs
Andromeda HS
Aquatouch M@
Arctis HS
Avenues JS
Backing HS
Bad take HS
BigPadSw M@
Black Velvet SV
BluePad RP
BPM Pad RP
Cali-Air M@
Carpets JS
Choir4 BC
Clench BC

Cloud City M@

Creamery BC

CrossQ BC

Crunchy JS

Dawn JS

DeciDATA4 zs

Deeper JS

DHR Ambience BC

Dirtron JS

Dmode Pad MS

DnB Generator MS

DreamSweeper JS

DSP-V RP

EddiWho M@

EnoEsque JS

Etheral SV

Everest J

Evil Pad K9

Expense HS

FeedyPad JS

Flutes HS

FourSaw

Freno BC

Gentle9th M@

GinaPad JS

Glassey SV

Grander M@

HarmoPad M@

HissPad BC

HOA Pad SV

Hrmadnes M@

Industry BC

IQ-Pad RP

J Arnold

Jetropa M@

Katmandu JS

Kompin M@

Longskrt SV

MeBad M

Mellotrone RP

MelloVI HS

Mistery RP

ModSweep M@

Mover RP

Muzzle BC

Mystique JS

O-Pad M@

OBY-Pad RP

Oceanus M@

Orbteria M@

Orguit zs

Outpost JS

Overture CK

Owwah BC

Pad Flanger RP

Padings RP

PadLayer M@

Paiow M@

Pathos BC

Peace BC

Polar JS

PolyPha RP

PowerString J

PPG-Pad RP

Profetic M@

Pulse4th BC

PulseRay zs

Q-Pad BC

QMen BC

QT Soft RP

Rave Pad 1 K

Rave Pad 2 K

ReflexShine BC

Replica M@

Resonator

resPad zs

Restless BC

Reveal JS

Reverse J

RingPad

RoboPad RP

Sadings RP

Sci-Fi2 K

SeaPad RP

ShineChord J

Shiny Pad NH

ShivrPad zs

Shortwave m@

Sidebands NH

SineBeez JS

So Soft RP

Soaring JS

Softie CK

SofueMod zs

SpaceChoir2

SpasDrv zs

SpoolPD zs

SpringPd SV

SqPadMM zs

StarPad J

StickyPd BC

String RP

Strings CK

Subdvisn M@

Sunbeams JS
SwellAd RP
SwellPad NH
Tec-String RP
Tension
Theramos M@
Thustra HS
V-550
V-Pad 1 K
V-Pad 2 K
V-Pad 3 K
V-Pad 4 K
V-resoni K
Vindictr SV
Volution M@
Wavelet M@
WavePad JS
Windo RP
Wineglass M@
Wynwould M@
Yahy zs
ZartPad J

Percussion
BerimTam HS
Block
Claps HS
Claps RP
Conga
Congoid HS
FluteDrum BC
Potty RP
Shaker Pan HS
Slap-it RP
Snip
Stick
TomTom RP
Untune JS
V-Cuss RP
V-Perc 1
VeloPEW RP
VR-78 1 RP
Vr-78 2 RP
Wood
X-Werx HS

Pianos
E Grand HS
Echo Rhodes HS
EP Stage M@
EP Tines2 M@
EP Whirly M@
EP zeply M@
Harpsie HS
JazRhodes HS
Mark One HS
Wurly RP

Pluck
8bit Ear DM
AmbientBell J
Artificl JS
Aviator DM
AylasDrum DM
Bell2 JS
Bella JS
BellyBoy BC
Braaatz DM
Braaatz2 DM
Busysaws SV
Cleanex JH
Clockwork
Club It RO
DigiKoto M
Disco OK
DJ IQ RP
Dream-0 HS
DripDrop M@
Dump M
DX OEM RP
DX VE RP
Edgy HS
FenderBass RP
FnkNasty BC
Frozen JS
Glitch OK
Hackbart JS
Hifive SV
HomeBoy JS
Hovis JS
Howner RP
Intntent SV
K-Werkx1 Rp
K-Werkx3 RP
Mamba JS
Marimba1 zs
Marimba4 zs
MostHih zs

No Age JS
Percussion Chord AD
PercVox
PickGtr RP
PlayCool SV
PluckMe BC
Plugged JS
Pulsar SV
Pulsic JV
RmBack zs
Sacralizer
Sinderel JS
Softie J
Softsequence J
Square00 zs
Sr Goo M
Stella SV
Sunday
SyOrgen RP
TecNos RP
ThirdEar JS
TipTapTu SV
TriCobld DM
Tubular JS
V-2-U RP
V-Bells JS
V2U RP
Velorp RP
WetFunk BC
Wickider PN
X Dreams JS
X-bellz JS
Xyrimba HS
Zoober
Zupfi J

Vocoder
Voc Bell 1
Voc Bell2
Voc Crisp
Voc Decay
Voc Diffuser
Voc Eazy
Voc Flange
Voc Flat
Voc Follow
Voc LFO
Voc Narrow
Voc Noise
Voc Odd
Voc OSC1
Voc Pad 2
Voc Pad
Voc Pitch 2
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Voc Twelve
Voc Walker
Voc Waves

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