Chro-Nyx

A Pulsecraft and Impact Soundworks Instrument
for Reaktor Player 6.5+
Instrument Version 1.0.0

Product Manual

Introduction

Welcome to **Chro-Nyx**!

You are about to experience the culmination of over 5 years of Reaktor development. We created **Chro-Nyx** because we wanted a synthesizer that we could use every day: in our own productions, proudly and confidently across hundreds of tracks, inspiring trust both in the studio and on stage, and reviving those tried-and-true classic hardware sounds for the modern in-the-box era.

We started with a synthesizer we intimately know, meticulously studied its unique characteristics, and—having fine-tuned our models—added every feature that we personally wanted for our own music. Leveraging over a decade of experience with Reaktor, along with feedback and contributions from our beta users, **Chro-Nyx** grew well beyond our original concept.

We have heard tracks using **Chro-Nyx** in ways more diverse than we could ever imagine: from Hardcore to Industrial Pop, House, Trance, and even Metal.

We hope you'll enjoy the amazing sound and vast possibilities that **Chro-Nyx** puts at your fingertips!

— The Team at Pulsecraft × Impact Soundworks

Installation

Please see our installation guide. *Note that you will need to install **Reaktor** or **Reaktor Player** instead of Kontakt Player, since this is a Reaktor Player instrument.*

About Chro-Nyx

Chro-Nyx is a 2-oscillator synthesizer inspired by the legendary JP-8080, *the* original Japanese classic virtual analog synthesizer. It expands upon these roots by incorporating a much wider range of oscillator types, filters, effects, and modulation routings, borrowing elements from a wide range of synthesizers ranging from ‘80s analog classics all the way to present day innovations. This curated borrowing of features enables **Chro-Nyx** to cover a diverse array of classic and modern sounds.

Designed with a multi-page workflow, **Chro-Nyx** ensures easy access to all its functions while still maintaining the experience of using a classic hardware synthesizer.

A key feature of **Chro-Nyx** is its 16×2 modulation matrix with advanced mathematical options. This comprehensive control system provides users with extreme flexibility for detailed sound shaping.

The synthesizer includes a collection of custom Digital Signal Processing (DSP) models for each oscillator. This approach allows **Chro-Nyx** to produce a broad variety of timbres.

With 10 voices of polyphony, **Chro-Nyx** mimics the characteristics of late 1990s and early 2000s analog modelling synthesizers. Its voicing system includes an optional analog drift, which replicates the subtle imperfections and organic fluctuations found in vintage analog synthesizers and enables authentic, warm, and rich vintage sounds.

We have packaged **Chro-Nyx** with presets for a wide variety of sounds in nearly any genre. **Chro-Nyx** can generate lush pads, cinematic soundscapes, powerful leads, rich chords, deep basses, and detailed physical modeling-type sounds (including emulations of instruments like guitars, flutes, strings, and saxophones). This makes **Chro-Nyx** a valuable tool for producers, composers, and sound designers.

Using Chro-Nyx

Presets

Chro-Nyx comes loaded with over 200 presets and with full capabilities to make and save your own.

Browsing and Loading Presets

In Reaktor 6.5

Loading presets in Reaktor is just a matter of `click`ing the presets selector at the top of the plugin window, and then navigating to the sound you're looking for.

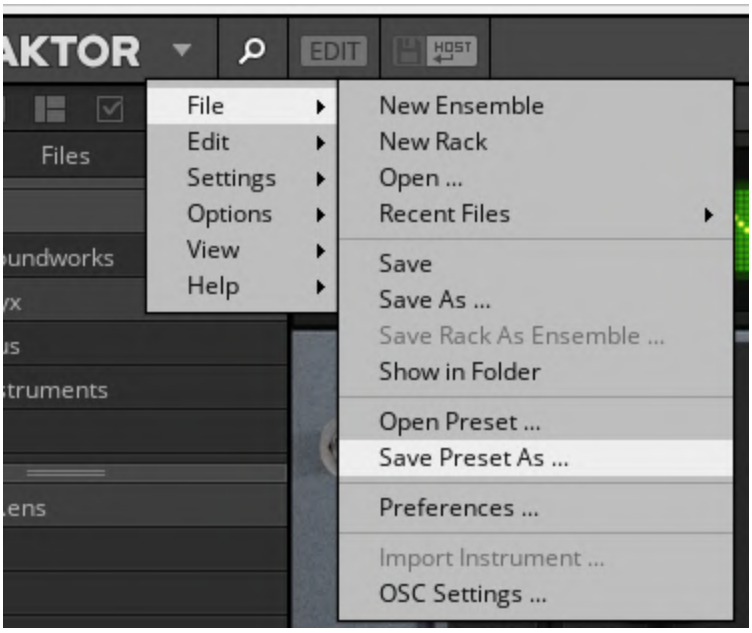
In Maschine and Komplete Kontrol

All of **Chro-Nyx**'s presets are available through the Browser; find **Chro-Nyx** in the INSTRUMENT category, and select the preset you want!

Saving Presets

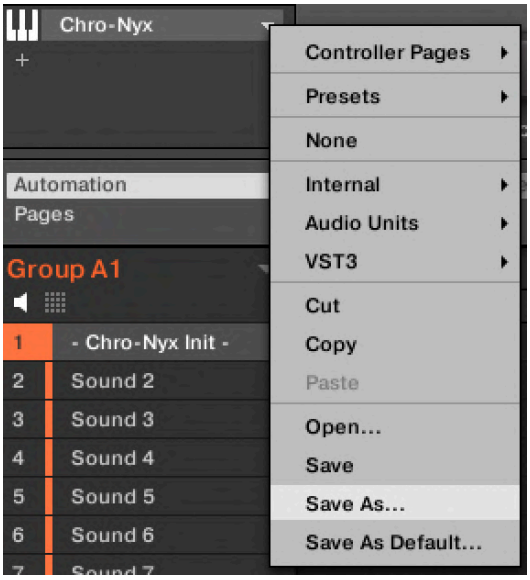
In Reaktor 6.5

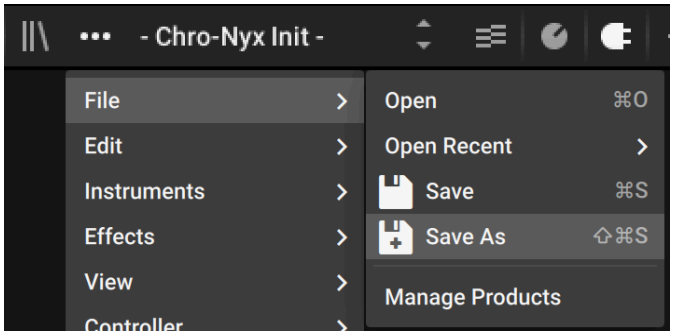
To save your own presets, `click` the drop-down arrow next to the Reaktor logo on the top left, and then go to *File > Save Preset As...*



In Maschine and Komplete Kontrol

You can use the library feature to save your sounds in Maschine and Komplete Kontrol. In both cases you will be asked to name the preset.





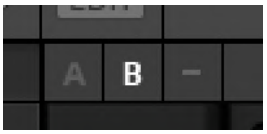
Navigation

There are two distinct 'views' available for **Chro-Nyx**: 'Simple View' (*see page 11*) and 'Advanced View' (*see page 12*). Switching between these differs slightly depending on how the instrument is loaded. While in Simple View, all but the most crucial controls are hidden; in Advanced View, everything is shown.

Switching Views

In Reaktor 6.5

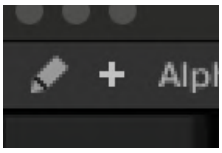
Switch between A (Simple View) and B (Advanced View):



NB: *These buttons are part of the Header. If they are not visible for you, go to the Panel Sets tab*  *in the upper left corner, just below the REAKTOR logo, and select* '003 Show Header'.

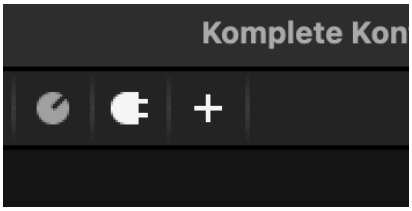
In Maschine

When the '+' button is off (**gray**), 'Simple View' is shown. `Click` the '+' button to switch to 'Advanced View' (*button turns* **white**):



In Komplete Kontrol

When the '+' button is off (**gray**), 'Simple View' is shown. `Click` the '+' button to switch to 'Advanced View' (*button turns* **white**):



Switching Tabs

Advanced View features a tabbed page system for access to the various synthesis parameters and settings in **Chro-Nyx**. `Click`ing on one of the 7 buttons will display the parameters for that section. The lower half of the interface is shared between some tabs.

Additionally, some sections of the synthesizer (*such as the* **SEQUENCER** *section in the* **SEQ** tab*, shown above; see page 42*) have a tabbed sub-display. These have a slightly different appearance.

Pop-Up Menu System

We have developed a custom pop-up menu system specifically for **Chro-Nyx** in Reaktor.

On pages with many dropdown menus such as the **MATRIX** the menu will pop up in the center of the screen regardless of which button was pressed (*this is done to improve performance*).

The menu item currently selected is denoted by a star * to its right.

Left-**click**ing a menu item will select it.

When multi-level menus or categories are present, a sub-menu availability will be indicated by a greater-than sign > to the right of the parent item. Initially, mousing over will expand any sub menu, but you can latch the selection by left-**click**ing on the parent item.

Right-**click**ing on any menu item will cancel the current selection process and close the menu.

MPE

Chro-Nyx features compatibility with a technology called **MIDI Polyphonic Expression** or **MPE** which allows a compatible multi-dimensional controller to exact additional dimensions of expression over each individual note being played. To enable this global-session setting, either **click** the **MPE** button in the **FX** section (Simple View) or the **MPE** button in the **VOICING** section (Advanced View). MPE is supported for both monophonic and polyphonic voicings.

Setting Chro-Nyx up for your MPE controller

The **MISC** tab (*for more information, see page 62 and following*) in Advanced View includes some MPE global settings for controller compatibility adjustments and personal preferences.

Specific Devices

For devices where the slide dimension can start from any position such as the Seaboard or Continuum, it is recommended to set **SLIDE START** to **Half** or **Last Val**. This reduces artefacts at the start of a note before the slide position has been received for that note on the MIDI bus.

Press (Aftertouch) always starts from **0** on a new note.

For devices such as the Osmose or Polybrute 12, where slide position acts as an extended aftertouch under the key, it is best to set Slide Start to **Zero**, since any new note is likely to begin with the slide dimension at its minimum value.

SLIDE TARGET is set to **Modwheel** by default, and **PRESS > VEL** is also engaged, to improve MPE expression on patches which are not designed for MPE. You can turn these off if the behavior does not suit your controller or you want more control over how MPE is applied to your own patches.

Finally, smoothing is available and enabled by default as some interfaces or controllers will thin out pitch-bend and slide values and produce audible stepping in a performance.

Designing presets that take advantage of MPE

After ensuring that the **MPE** button is switched on and you are set up for your controller, you can begin to map additional dimensions of expression to your sounds.

We want to start with a preset that has the greatest potential for expression, so we will use the 'Chro-Nyx Init' preset and immediately select the Super Saw model on Oscillator 1.

Aftertouch is a great place to begin, as this translates to non-MPE controllers as well through polyphonic and channel aftertouch. With **PRESS > VEL** enabled, we can just turn up the Velocity knobs in the **AMP** and **FILTER** sections to unlock additional expression and dynamic range.

***NB**: Maschine users will find that their software currently blocks aftertouch messages.*

This next part will get a little complicated.

Now, add some MPE Slide dimensional expression. In the `LFO` (**Low Frequency Oscillator**) tab, under the LFO 2 section, turn off the MW switch. Once that is done, go to the `MATRIX` tab, and look for any Matrix slot column where the source is set to None. Click the drop-down button for your source, choose Modwheel from the MIDI Input category, and assign a destination. With the Super Saw, assign Osc1 P2 from the Oscillators category as this will control the Super Saw's Mix control. Finally, turn the associated Depth slider up to full.

***NB:** This mod wheel routing works because the SLIDE TARGET in the MPE section (`MISC` tab) sends slide to override the mod wheel source. This increases the MPE expression of presets that were not specifically designed with MPE in mind, but using the mod wheel source also allows you to audition these patches without an MPE controller, thanks to the mod wheel and aftertouch controls typically found on most MIDI controllers.*

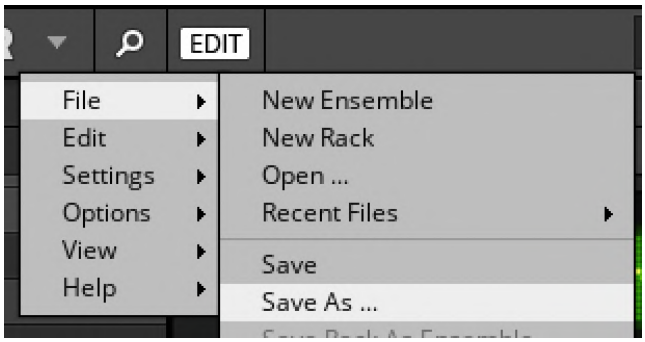
Changing Global Settings

There are various session-global settings that are saved with the plug-in instance state in your DAW file but are not part of the preset. These are the MPE mode, MPE settings, PERFORMANCE Profile (*see page 64*), Limiter, and FX BYPASS (*see page 50*), and are always called out as 'session-global' in this manual. You can set these every time you open **Chro-Nyx**, but if you want to use these settings again there are a couple options available.

DAW Presets

Many DAWs offer a way to save the plugin state as a preset, or even save a default state for that plugin. Refer to your DAW's documentation for specific steps.

Ensemble Replacement



Full Reaktor license owners can save a copy of the Reaktor ensemble file with 'Save As ...' in the 'File' menu. This will save the entire plugin state, including the current preset and all parameters. In order to use this modified ensemble file with the Chro-Nyx preset library, you will need to replace the Chro-Nyx.ens file with the modified version using exactly the same naming.

***NB**: Make a backup copy of your Chro-Nyx ensemble file in a completely different folder before making any changes!*

Parameter Guide

View A: Simple View

The 'Simple View' (View A in Reaktor) is designed to provide instant access to all of the most important parameters when browsing patches. It is the default view in Maschine and Komplete Kontrol.

All of the controls in this view are directly linked to their counterparts in the 'Advanced View' (View B), and as such they override the stored preset values, providing access to the full range of each parameter.

Only a brief overview of the parameters are supplied here. See their dedicated definitions in the Advanced View section for further information (*starting on page 12*).

Filter

Provides access to the **FILTER 1** **CUTOFF** and **FILTER 1** **RES** (*Resonance*) sliders. Use these to tweak the timbre of the sound.

Filter Env

Provides access to the **FILTER ENVELOPE** Attack (**A**), Decay (**D**), Sustain (**S**), and Release (**R**) sliders. Also provides the **FILTER 1** Envelope **DEPTH** control access. Use these to tweak the tonal envelope of the sound.

Amp Env

Provides access to the **AMP ENVELOPE ATTACK** (**A**), Decay (**D**), Sustain (**S**), and Release (**R**) sliders. Use these to shape the overall volume envelope of the sound.

FX

Provides access to basic shelving equalization of **BASS** and **TREBLE** frequencies. These controls are bipolar: turn clockwise to boost, and anti-clockwise to attenuate their respective frequency bands.

Also found here is the **DELAY** effect return level.

Pitch

Allows octaval transposition of the entire sound.

Macros

These provide up to 8 assignable knobs for transformations, performance features, and other aspects intended by the sound designer - More about the Macros in the `MISC` tab (*see page 64*).

View B: Advanced View

Advanced View (View `B` in Reaktor) provides full access to the **Chro-Nyx** sound engine.

NB: *From here on, when we go over the many knobs, faders, and toggle buttons in the user interface, we will list either that control's minimum and maximum values (such as* `[-100..+100]` *- lowest value is* `-100`*, highest is* `100`*) or its different possible states (*`[Off, On]`*) before the description.*

Tab 1: `OSC`

The oscillator page is home to Oscillator 1 and 2 (`OSC 1` *and* `OSC 2` *respectively; this manual will use both ways to refer to them*), as well as other audio sources such as noise and the sub oscillator. Here you control their balance and routing, and also have controls for the voicing, envelopes, and amplifier sections. There is a reason we made it the first page; being the originating point of all **Chro-Nyx**'s sounds, it is a great starting point for crafting new sounds or changing existing ones.

Oscillator 1

Model/Waveform Selection

This is where you select the 'base' of your sound. Here is a brief description of each of the available options, as well as their accompanying **P1**, **P2** ,and **ALTER** controls *(see page 18)* and what they affect:

Super Saw An iconic oscillator model inspired by original hardware, consisting of 7 detuned sawtooths. This is supposed to approximate the sound of a detuned analog polysynth in unison mode, but has become a genre-defining sound with a life of its own.
P1: Detune Amount.
P2: Center/Detune Mix.
ALTER: Center Oscillator Pitch Shift.

Noise A noise source with an integrated, adjustable, key-tracking filter.
P1: Cutoff offset of the integrated filter.
P2: Resonance of the integrated filter.
ALTER: Blends between white `[-100.0]` and pink `[+100.0]` noise.

PWM The classic pulse-width modulation waveform.
P1: Varies the Pulse Width from Square `[0.0]` to a very narrow pulse `[100.0]`.
P2: Amount of **LFO 1** modulation of Pulse Width.
ALTER: Coarse pitch.

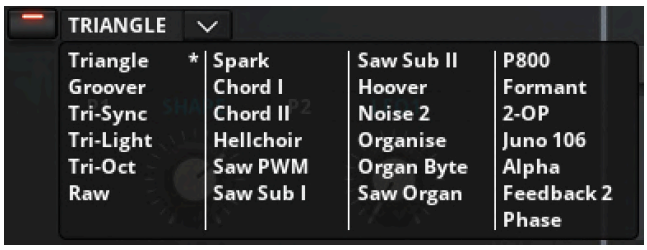
Triangle Mod A warped triangle wave with variable symmetry.
P1: Varies the symmetry. Sounds hollow at lower values, and more nasal at higher values.
P2: Amount of **LFO 1** modulation of symmetry.
ALTER: Coarse pitch.

Feedback Osc A sawtooth fed into a looped delay line. This is another iconic oscillator model based upon the original hardware.
P1: Tuning of the delay line length, effectively creating comb filtering.
P2: Feedback amount of the delay line.
ALTER: Coarse pitch of the sawtooth exciter oscillator.

Saw The ubiquitous sawtooth waveform, found on many classic analog and digital synthesizers.
P1: Controls the amplitude of the fundamental harmonic. Unity is at `[33.3]`.
P2: Amount of **LFO 1** modulation of the fundamental harmonic amplitude.
ALTER: Coarse pitch control of the fundamental harmonic only.

Triangle/More The last slot of the waveform selection has a drop-down menu where more oscillator types can be selected beyond the scope of any original hardware models. We list all of these in the following section, which is:

More Models/Waveforms



The last slot of the waveform selection features a drop-down menu where more oscillator types can be selected beyond the scope of any original hardware models. Many of these extended oscillator types use multiple internal sub oscillators with complex intermodulation and other routings. The following selections are available:

Triangle A triangle modelled on the classic hardware
P1: Adds harmonics.
P2: Amount of **LFO 1** modulation of harmonics.
ALTER: Coarse pitch control of the harmonics.

Groover A triangle with asymmetric wave folding
P1: Increases the asymmetry of the wave folding
P2: Amount of **LFO 1** modulation of wave folding.
ALTER: Coarse pitch control of harmonic overtones.

Tri-Sync Another variation of a triangle, this time synced to a hidden master oscillator.
P1: Increases the pitch of the synced triangle.
P2: Amount of **LFO 1** modulation of synced triangle pitch.
ALTER: Coarse control of synced triangle pitch, with additional range, and more brightness at extreme settings.

Tri-Light A gentler triangle wave that morphs into a complex sine-based shape with multiple harmonics.
P1: Morphs the triangle into multiple sines.
P2: Amount of **LFO 1** modulation of the morphing.
ALTER: Coarse pitch.

Tri-Oct A triangle wave that expands into multiple synced triangle waves at different octaves.
P1: Brings in additional octaves of triangle wave via hard sync.
P2: Amount of **LFO 1** modulation of the triangle waves.

ALTER: Coarse pitch of the sawtooth exciter oscillator.

Raw This waveform is inspired by an electric bass guitar. Intended to be rich in harmonics, it can sometimes produce intentional aliasing.
P1: Increases the intensity and complexity of the waveform. Try modulating this with a decaying envelope for typical guitar-like tones.
P2: Amount of **LFO 1** modulation of the waveform intensity.
ALTER: Adjusts the phase of some overtone components, effectively shifting the tone in a similar manner to pulse-width modulation.

Spark A similarly complex waveform to Raw, this one uses internal FM and can be described as more 'clipped' and 'biting'.
P1: Increases the intensity and complexity of the waveform. Try modulating this with a decaying envelope for typical guitar-like tones.
P2: Amount of **LFO 1** modulation of the waveform intensity.
ALTER: Increases the intensity of the internal FM.

Chord I A sawtooth based minor 9th chord.
P1: Increases the fundamental harmonic of the root oscillator.
P2: Progressively adds intervals until the full 9th chord is complete.
ALTER: Coarse pitch control of the top (*9th*) tone.

Chord II A pulse wave based minor 9th chord.
P1: Varies the Pulse Width from Square `[0.0]` to a very narrow pulse `[100.0]`.
P2: Progressively adds intervals until the full 9th chord is complete.
ALTER: Coarse pitch control of the top (9th) tone.

Hellchoir A sawtooth based minor 3rd interval with deep subs.
P1: Controls the volume of the synced square wave sub oscillator.
P2: Progressively adds intervals, starting with octaves, and finally the minor third.
ALTER: Fine pitch control of the second (*top*) note of the interval.

Saw PWM Sawtooth width modulation produced combining synchronized sawtooth and pulse waves.
P1: Varies the Pulse Width from DC `[0.0]` to a very narrow pulse `[100.0]`.
P2: Amount of **LFO 1** modulation of Pulse Width.
ALTER: Adjusts the pitch of the pulse wave, increasing the number of notches introduced to the sawtooth wave.

Saw Sub I A Saw-pulse with a 25% pulse wave suboscillator two octaves below.
P1: Varies both the suboscillator mix (*full at* `50.0`) and the pulse width.
P2: Amount of **LFO 1** modulation of pulse width.
ALTER: Coarse pitch adjustment of the master window oscillator.

Saw Sub II A Saw-pulse with a 25% pulse wave suboscillator at one octave below.
P1: Varies both the suboscillator mix (*full at* `50.0`) and the pulse width.
P2: Amount of **LFO 1** modulation of pulse width.
ALTER: Adjusts the pitch of the pulse wave, increasing the number of notches introduced to the sawtooth wave.

Hoover A Saw-PWM based oscillator model with extended subs, inspired by classic hardware.
P1: Pulse width of the pulse wave component.
P2: Amount of **LFO 1** modulation of the pulse width.
ALTER: Coarse pitch control of some of the synchronized oscillators, producing a unique combination of pitch and destruction.

Noise 2 An alternate white/pink noise source without filtering.
P1: Blend from white to pink noise.
P2: Amount of **LFO 1** modulation of the noise blend.
ALTER: Volume adjustment of the noise source.

Organise For classic organ tones, four stacked sine waves produce the 1st, 2nd, 3rd, and 5th harmonics.
P1: Progressively adds harmonics until all four are audible.
P2: Amount of **LFO 1** modulation of the harmonic mix.
ALTER: Quantized octave shift of the harmonic indices.

Organ Byte Another additive model for classic organ tones, this one produces 8 harmonics and features its own internal overdrive effect.
P1: Bitwise selection of the active harmonics (*128 unique combinations*).
P2: Amount of **LFO 1** modulation of the harmonic selection.
ALTER: Overdrive mix.

Saw Organ Four stacked sawtooths, excellent for producing transistor and even pipe organ tones.
P1: Progressively adds sawtooth octaves until all four are audible.
P2: Amount of **LFO 1** modulation of the harmonic phases. sounds a bit like PWM
ALTER: harmonic phase offset.

P800 Based on a budget ‘80s synthesizer, this model uses four octaves of square waves to produce stepped sawtooth or organ-like tones.
P1: Bitwise selection of the active square waves.
P2: Blend between square and sawtooth profiles.
ALTER: Pulse-width adjustment of all square waves.

Formant A sawtooth windows and synchronises four fixed-frequency sine wave oscillators. This is tuned to produce classic vocal/vowel tones (*known as ‘formants’*).
P1: Chooses the vowel frequency presets for the sine wave oscillators.
P2: Shifts the character of the chosen vowel.
ALTER: Quantized rotation of the vowel frequency tables.

2-OP A basic FM model where one sine wave modulates the phase of another.
P1: Controls the depth of the phase modulation.
P2: Selects the integer harmonic frequency of the modulation oscillator.
ALTER: Linear fine-frequency adjustment of the modulation oscillator.

J106 Based on classic ‘80s analog hardware, this model produces combinations of sub, square, sawtooth, and noise with an iconic tone.

P1: Controls the blend of waveforms, starting with sawtooth and square, and progressively adding sub and noise.
P2: Amount of **LFO 1** modulation of the pulse width.
ALTER: Adjusts the synchronized pitch of the pulse wave oscillator, while also adjusting pulse width.

Alpha Similar to Hoover, but more closely tuned to the original hardware model.
P1: Adds sub-oscillator.
P2: Amount of **LFO 1** modulation of the pulse width component.
ALTER: Coarse pitch control of some of the synchronized oscillators, producing a unique combination of pitch and destruction.

Feedback 2 A variation of the Feedback oscillator model, this one is a sawtooth fed into a looped delay line with inverted phase, producing more of a pulse wave.
P1: Tuning of the delay line length, effectively creating comb filtering.
P2: Feedback amount of the delay line.
ALTER: Coarse pitch of the sawtooth exciter oscillator.

Phase A unique waveform produced from the modulation of allpass filters, much like a phaser. This can produce tones ranging from very natural and moving to more extreme.
P1: Harmonic shift of the allpass filters.
P2: Controls feedback across the filters, increasing the tonal complexity of the sound.
ALTER: Controls the amount of clipping in the feedback loop.

P1

`[0..100]` Controls parameter 1 of the chosen oscillator model. Typically controls the primary timbral characteristic of the oscillator. *Each model has its own* **P1** *control; see pages 13-17 for detailed descriptions.*

P2

`[0..100]` Controls parameter 2 of the chosen oscillator model. Typically controls **LFO 1** modulation of P1, or a secondary timbral characteristic. *Each model has its own* **P2** *control; see pages 14-18 for detailed descriptions.*

Alter

`[-100..+100]` Controls a third parameter of the chosen oscillator model. Typically controls a pitched aspect or fine adjustments of timbre. *Each model has its own* **ALTER** *control; see pages 14-18 for detailed descriptions.*

Reset

`[Off, On]` When engaged, the oscillator will start from the same phase (*determined by the* **PHASE** *slider*) every time a new note is triggered.

Phase

`[-180..+180]` Controls the initial phase of the oscillator, only effective when **RESET** is turned on.

Oscillator 2

EXT

`[Off, On]` When engaged, Oscillator 2's output is replaced with the audio input.

Sync

`[Off, On]` Synchronise Oscillator 2 phase to Oscillator 1. This produces classic hard-sync effects when used in combination with the Sawtooth, Pulse, and Triangle waveforms.

Range

`[-24..+24]` Coarse, semitone-quantized control of the Oscillator 2 pitch.

Fine/Wide

`[-100..+100]` Adjusts the oscillator pitch by +/- 1 semitone. When Range is in the orange ('**WIDE**') region, the control range is +/- two octaves.

Octave

`[-4..+4]` Quantized control of the Oscillator 2 pitch by +/- 4 octaves.

Reset

`[Off, On]` When engaged, the oscillator will start from the same phase (*determined by the* **PHASE** *slider*) every time a new note is triggered.

Phase

`[-180..+180]` Controls the initial phase of the oscillator, only effective when **RESET** is turned on.

NB: **SWEEP** *must be set to* `0` *for* **RESET** *to fully, well, reset. See our tips section (pages 66-68).*

Sweep

`[0..100]` When **RESET** is engaged the starting phase of oscillator 2 is modulated. This allows more precise control over the attack of the note whilst still preserving the natural process of two free running oscillators.

P1

`[0..100]` Controls parameter 1 of the chosen oscillator model. Typically controls the primary timbral characteristic of the oscillator.

P2

`[0..100]` Controls parameter 2 of the chosen oscillator model. Typically controls **LFO 1** modulation of P1, or a secondary timbral characteristic.

Alter

`[-100..+100]` Controls a third parameter of the chosen oscillator model. Typically controls a pitched aspect or fine adjustments of timbre.

Model/Waveform Selection

These are a subset of the oscillator models available to Oscillator 1 *(see page 14)*. The specific details can be found in the previous section.

Oscillator Common

Osc Balance

`[-100..+100]` A crossfade control which blends between Oscillator 1 and Oscillator 2

X-Mod Depth

`[0..100]` Controls the amount of Oscillator 2 output signal used to modulate the pitch of Oscillator 1.

Ring

`[Off, On]` Replaces the output of Oscillator 2 in the balance with the sum-and-difference combination of Oscillator 1 and Oscillator 2.

Alpha

`[Off, On]` Changes the character of the ring modulation to one based upon classic analog hardware. This mixes in more of the original waveform and also affects the output of Oscillator 1.

LFO 1 Depth

`[-100..+100]` Bipolar control of the amount of **LFO 1** sent to the oscillator pitch, as determined by Mod Env.

Mod Env

`[OSC 1+2, OSC 2, X-MOD]` Changes target of pitch modulation from **LFO 1** and from the **MOD ENVELOPE** between both Oscillators, Oscillator 2 only, or modulating the **X-MOD** Depth.

Sub

`[0..100]` Controls the level of the sub-oscillator, which is mixed with the **OSC BALANCE** before being sent to the filters.

Sub Waveform

Choose the waveform used by the sub-oscillator. The following choices are available:

Off	No sub-oscillator is active.
Sub1	A simple square wave.
Sub2	A filtered square wave with more weight and presence.
Sub3	A three-stage pulse, two octaves below Oscillator 1.
Sub4	A complex pulse-based waveform mixing one and two octaves below Oscillator 1.
Sub5	A brighter stack of multiple pulse waves.
Sine	A simple sine wave one octave below Oscillator 1, for a pure fundamental.
Triangle	A simple triangle wave one octave below Oscillator 1.

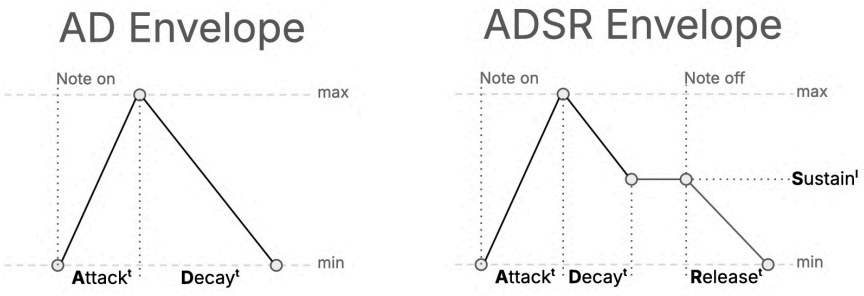
Sub Tune

`[-1200..+1200]` Fine control of the sub-oscillator pitch across +/- 1 octaves, in cents.

Mod Envelope

Type

`[AD, ADSR]` Choose between a two-stage (Attack-Decay or AD) envelope, or a classic four-stage (Attack-Decay-Sustain-Release or ADSR) envelope.



An **AD** envelope rises to its maximum value during the Attack stage and then immediately decays back to its minimum (zero) value in the Decay stage.

An **ADSR** envelope rises to its maximum value during the Attack stage and then decays back down to the Sustain level where it is held until the note is released, at which point it decays back down to the minimum (*zero*) value in the Release stage.

Curve

`[-40..+40]` Change the curve of the envelope's decay stage from more exponential (*negative values*) to more logarithmic (*positive values*).

Depth

`[-100..+100]` This provides bipolar control over the amount of the **MOD ENVELOPE** output, which is sent to the modulator envelope target (**LFO & MOD DEST**) set in the **OSC COMMON** section.

A

`[0..100]` The attack time of the envelope.

D

`[0..100]` The decay time of the envelope.

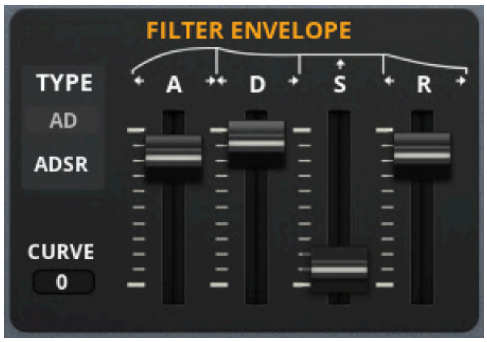
S

`[0..100]` The sustain level of the envelope. *This parameter is grayed out when* **AD** *mode is selected.*

R

`[0..100]` The release time of the envelope. *This parameter is grayed out when* **AD** *mode is selected.*

Filter Envelope



Type

`[AD, ADSR]` Choose between a two-stage (**AD**) envelope, or a classic four-stage (**ADSR**) envelope.

Curve

`[-40..+40]` Change the curve of the envelope's decay stage from more exponential (*negative values*) to more logarithmic (*positive values*).

A

`[0..100]` The attack time of the envelope.

D

`[0..100]` The decay time of the envelope.

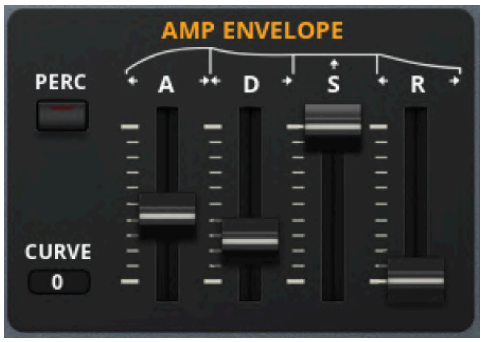
S

`[0..100]` The sustain level of the envelope. *This parameter is grayed out when* **AD** *mode is selected.*

R

`[0..100]` The release time of the envelope. *This parameter is grayed out when* **AD** *mode is selected.*

Amp Envelope



Perc

`[Off, On]` A unique feature inspired by modern hardware, when engaged this adds additional punch to the attack portion of the envelope.

Curve

`[-40..+40]` Change the curve of the envelope's decay stage from more exponential (*negative values*) to more logarithmic (*positive values*)

A

`[0..100]` The attack time of the envelope.

D

`[0..100]` The decay time of the envelope.

S

`[0..100]` The sustain level of the envelope.

R

`[0..100]` The release time of the envelope.

Amp

Velocity

`[0..100]` Controls the amount of velocity modulation applied to the **AMP ENVELOPE**. High values result in deeper expression. This also allows aftertouch pressure to control the volume when **PRESS > VEL** (*see page 9*) is enabled in the **MPE** settings.

Level

`[0..100]` Sets the overall pre-FX output volume of the synthesizer voice.

Amp Modulation

The following two controls work together to determine the fixed modulation scheme for the **AMP** section.

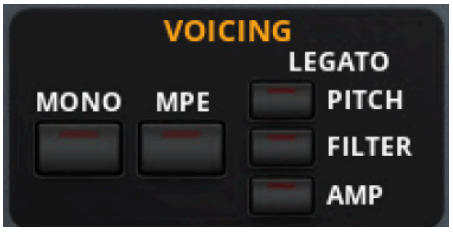
Pan/Vol

`[LFO 1, MANUAL, LFO 1]` Choose between **LFO 1** modulation of pan, manual pan positioning, or **LFO 1** modulation of volume.

Depth

`[-100..100]` Sets either the amount of LFO modulation or the pan position of the voice output, depending on the **PAN/VOL** choice.

Voicing



Mono

`[Off, On]` Forces the synthesizer into monophonic mode. When active, only one note will sound at a time, with priority determined by the most recent or held key (*also known as 'last note' priority*).

MPE

`[Off, On]` This is a session-global setting which enables **MIDI Polyphonic Expression (MPE)** mode, allowing per-note pitch bend and slide position expression, when used with an MPE-compatible controller. *For more information on how to set up MPE for an MPE-compatible controller, see pages 8-10*.

Legato

`[Pitch, Filter, Amp]` Determines which envelopes will not retrigger in monophonic mode.

Portamento

Glide

`[0..100]` Sets the amount of portamento (*pitch glide*) between consecutive notes. Higher values result in slower, more noticeable slides.

On

`[Off, On]` Activates portamento. If disabled, all glide settings are ignored.

Gliss

`[Off, On]` When engaged, the glide sweep steps through semitone values rather than smoothly changing the pitch.

Pitch Control

Osc Oct

`[-2..+2]` Adjusts oscillator pitch in octave increments.

Fine

`[-100..+100]` Fine-tunes oscillator pitch in cents.

Semi

`[-24..+24]` Coarse pitch control in semitone steps.

Noise

NB: *This is different from the* NOISE *source in the* OSC 1 *and* OSC 2 *sections; noise enabled through this section will affect the sound from the oscillators regardless of their source!*

Level

`[0..100]` Sets the output level of the noise generator.

VCO1

`[Off, On]` Routes noise to Oscillator 1's pitch for special effects. The noise will be inaudible and the Level knob will control the amount of modulation.

Pink

`[Off, On]` When on, switches the noise source from white to pink noise, producing a warmer, less bright spectrum.

Snap

`[0..100]` Introduces a high frequency noise burst at the beginning of a note, useful for accentuating punch or attack brightness.

NB: *You won't hear the 'snap' if the Amp Envelope Attack is set much higher than 10.0.*

On

`[Off, On]` Toggles SNAP on or off.

Extra

Drift

`[0..100]` Introduces subtle random pitch variations between voices, emulating the natural instability of vintage analog synthesizers.

Change

`[0..100]` Lets you adjust both **OSC 1** and **OSC 2**'s **P1** control for performance access and extended range.

Tab 2: `FILTER`

The `FILTER` tab puts the FILTER 1, FILTER 2, and ROUTING panes on top. The MOD ENVELOPE, FILTER ENVELOPE, AMP ENVELOPE, AMP, and VOICING panes are also present from the previous tab. *This makes it a hub of tonal shaping and timbre manipulation.*

Filter 1

Cutoff

`[0.08 Hz..21.2 kHz]` Controls the cutoff frequency of the filter.

Res

`[0..100]` Controls the resonance or emphasis of the filter, typically enhancing frequencies around the cutoff point.

Depth

`[-100..+100]` Bipolar control over the amount of **FILTER ENVELOPE** applied to the cutoff frequency.

Type

Select between three different filter types:

LPF Lowpass Filter: frequencies above the cutoff point are attenuated.

BPF Bandpass Filter: a narrow band around the cutoff frequency is emphasized, the rest are attenuated.

HPF Highpass Filter: frequencies below the cutoff point are attenuated.

Slope

`[12 dB, 24 dB]` When lit, the filter is changed from a two-pole to a four-pole mode. Four-pole filters have an attenuation slope of 24 dB/octave and typically have a smoother and more rounded response, whereas 2-pole filters have a 12 dB/octave response and are considered brighter by comparison.

Follow

`[-100..+100]` Bipolar control over the amount of key tracking applied to the cutoff frequency.

LFO 1

`[-100..+100]` Bipolar control over the amount of **LFO 1** modulation applied to the cutoff frequency.

Vel

`[-100..+100]` Bipolar control over the amount of velocity added to the cutoff frequency.

Env Vel

`[0..100]` Sets the amount of velocity applied to the filter envelope depth.

Filter 2

Cutoff

`[0.08 Hz..21.2 kHz]` Controls the cutoff frequency of the filter.

Res

`[0..100]` Controls the resonance or emphasis of the filter, typically enhancing frequencies around the cutoff point.

Depth

`[-100..+100]` Bipolar control over the amount of **FILTER ENVELOPE** applied to the cutoff frequency.

Type

Select between three different filter types:

LPF Lowpass Filter: frequencies above the cutoff point are attenuated.

BPF Bandpass Filter: a narrow band around the cutoff frequency is emphasized, the rest are attenuated.

HPF Highpass Filter: frequencies below the cutoff point are attenuated.

On

`[Off, On]` **FILTER 2** must be enabled to be used (otherwise, the controls in this section do nothing). *Note that this will consume more CPU processing power, so proceed with care.*

Follow

`[-100..+100]` Bipolar control over the amount of key tracking applied to the cutoff frequency.

LFO 1

`[-100..+100]` Bipolar control over the amount of **LFO 1** modulation applied to the cutoff frequency.

Vel

`[-100..+100]` Bipolar control over the amount of velocity added to the cutoff frequency.

Routing

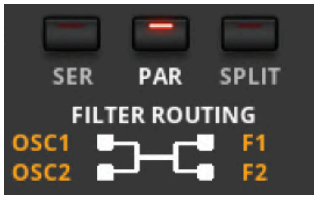
Cutoff Link

`[Off, On]` The cutoff frequency of **FILTER 1** is added to **FILTER 2**. The **FILTER 2** **CUTOFF** slider will become an offset against **FILTER 1**'s **CUTOFF**.

Filter Link

`[Off, On]` Other controls (**RES**, **DEPTH**, *and* **FOLLOW**) are directly replicated from **FILTER 1** to **FILTER 2**.

Filter Routing



Choose between three different filter routings:

SER Stands for 'serial'. Audio flows from the oscillators to **FILTER 1**, and the output of **FILTER 1** flows to **FILTER 2**.

PAR Stands for 'parallel'. Audio flows from the oscillators to both **FILTER 1** and **FILTER 2**.

SPLIT Oscillator 1 and **SUB** (*found in the* **OSC COMMON** *section*) flow to **FILTER 1**, while Oscillator 2 and **NOISE** flow to **FILTER 2**.

Oscillator to Filter Modulation

These two controls work together to control audio rate modulation of **FILTER 1**.

Modulation Blend

A cross-fader mix between Oscillator 1 and Oscillator 2, which allows fine control over the **VCO>VCF1** modulation.

VCO > VCF1

`[0..100]` Audio rate modulation of **FILTER 1** via the oscillator source chosen by the Modulation Blend crossfader (*see above*).

Noise > VCF2

`[0..100]` Audio rate modulation of **FILTER 2** from the noise generator.

Drive

`[-100..+100]` Controls both the pre-filter amplitude as well as the shaper/drive effect depth.

Balance

`[-100..+100]` A cross-fader control selecting the output of the filter section between **FILTER 1** (left) and **FILTER 2** (right).

Boost

`[Off, On]` Applies additional drive and distortion to the output of **FILTER 1**, dependent on **SHAPER TYPE**.

Shaper Type

Select between a variety of different shaper/distortion types, the intensity of which is controlled by the **DRIVE** slider:

Off	**DRIVE** only controls volume up to the halfway point.
Post	Standard post-filter saturation.
Pre	Saturation is applied pre-filter.
Double	A two-stage saturation effect.
X-Drive	Overdrive with a highpass crossover.
Cross	A more complex filtered overdrive.

XClip 4x oversampled hard clipping.

Light A mild soft-clipping effect.

Soft A moderate soft-clipping effect.

Medium A harsher soft-clipping effect.

Hard Extreme soft-clipping.

Digital A more digital saturation effect.

Sine A sine-based wavefolder.

Rectify Typical asymmetric clipping.

Bit Classic bit reduction. **DRIVE** controls the bit-resolution applied to the signal, higher drive giving less bits and thus harsher stepping.

Rate Classic sample rate reduction, applied post-filter. **DRIVE** controls the sample rate.

Lopass A utility lowpass damping filter. Higher drive values produce more filtering.

Hipass A utility highpass damping filter. Higher drive values produce more filtering.

Rate KF A variation of Rate whereby the sample rate tracks the keyboard.

Filter Style

Select between five different filter styles for **FILTER 1**:

Modern A clean, modern take on a virtual analogue filter.

Classic Finely tuned to match the original hardware.

Acid A filter with screaming resonance, designed for use with the various **SHAPER TYPE** options (*see above*).

Lush A vintage analog styled filter with a smoother response and more pronounced resonance.

Chro-MP A self-resonating filter based on a vintage 4 oscillator instrument known for its sweet SSM filter chip.

Tab 3: LFO

The `LFO` tab provides a detailed overview of all modulation sources; primarily the **LFO 1** and **LFO 2** panes are present, but the envelopes are also preserved from the previous tabs.

LFO 1

Wave

Selects the LFO waveform from the following: Triangle , Sawtooth , Pulse , or Random .

Rate

`[0..100]` Controls the rate or speed of the modulation.

Width

`[0..100]` Bends the shape of the modulation (*for example from linear sawtooth to exponential*) or varies the pulse width (*duty cycle*) of the pulse wave, or turns the random modulation into pure white noise.

Fade

`[0..100]` Controls the amount of time that the modulation increases from `0` to full when a new note is started. This is effectively a one-stage Attack-Hold envelope.

Quantize

`[0..100]` Reduces the resolution of the modulation to introduce stepping and other artefacts.

Style

`[Off, On]` When active, the result of the quantization is mixed with the original LFO signal.

Phase

`[-180..+180]` Controls the initial phase of the modulation, only effective when **RESET** is turned on.

Reset

`[Off, On]` When engaged, the modulation will start from the same phase (*determined by the* **PHASE** *slider*) every time a new note is triggered.

Sync

`[Off, On]` Changes the rate knob to follow divisions of the DAW or Reaktor system tempo.

Sync Type

These three buttons allow changing the type of synchronization. Options are: **NORMAL**, **TRIPLET**, and **DOTTED**.

Slow

`[Off, On]` Only applies when **SYNC** is active. When off, the synced LFO rate range is 2 bars to 1/64th. When active, the synced LFO rate range is 64 bars to 1/2nd.

Hi

`[Off, On]` When active, the maximum LFO rate is extended into the audio range. *With this turned* on*, the LFO quality is increased (but with it* off*, you get a more authentic sound out of the LFO.)*

LFO 2

Wave

Selects the LFO waveform from the following: Triangle , Sawtooth , Pulse , or Random .

Rate

`[0..100]` Controls the rate or speed of the modulation.

LFO Depth and Target

DEPTH sets the amount of modulation sent to the chosen target (**PITCH**, **FILTER**, *or* **AMP**).

While only one depth knob is visible, each target actually has its own depth value. Choosing a target will show and control the modulation amount for that target.

MW

`[Off, On]` When active, all modulations set by the **DEPTH** knob will be attenuated by the modwheel. This allows for setting up typical vibrato and filter modulation effects on the modwheel with **LFO 2**.

Quantize

`[Off, On]` Reduces the resolution of the modulation to introduce stepping and other artefacts.

Style

`[Off, On]` When active, the result of the quantization is mixed with the original LFO signal.

Phase

`[-180..+180]` Controls the initial phase of the modulation, only effective when **RESET** is turned on.

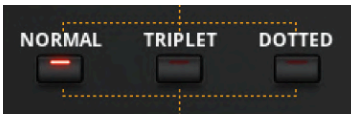
Reset

`[Off, On]` When engaged, the modulation will start from the same phase (*determined by the* **PHASE** *slider*) every time a new note is triggered.

Sync

`[Off, On]` Changes the rate knob to follow divisions of the DAW or Reaktor System tempo.

Sync Type



These three buttons allow changing the type of synchronization. Options are: Normal, Triplet, Dotted

Slow

`[Off, On]` Only applies when Sync is active. When off, the synced LFO rate range is 2 bars to 1/64th. When active, the synced LFO rate range is 64 bars to 1/2nd.

Hi

`[Off, On]` When active, the maximum LFO rate is extended into the audio range.

Tab 4: MATRIX

Sub-Tabs

Use these to switch views between Matrix slots 1-8, Matrix slots 9-16, and the Math processors.

Matrix Slots

Source

`[Matrix Sources List]` The source from which the modulation will be taken.

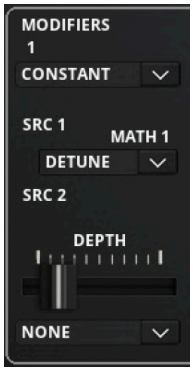
Destination 1 & Depth

First destination for the applied modulation source, the amount of modulation is set by the **DEPTH** slider.

Destination 2 & Depth

Functionally the same as Destination 1, a second destination is provided for additional modulation possibilities.

Math Processors



SRC 1

`[Matrix Sources List]` First input to the operation. Typically the “base” signal you want to transform.

SRC 2

`[Matrix Sources List]` Second input to the operation. Functionality is dependent on the selected operation (*see the Math Operation table below*).

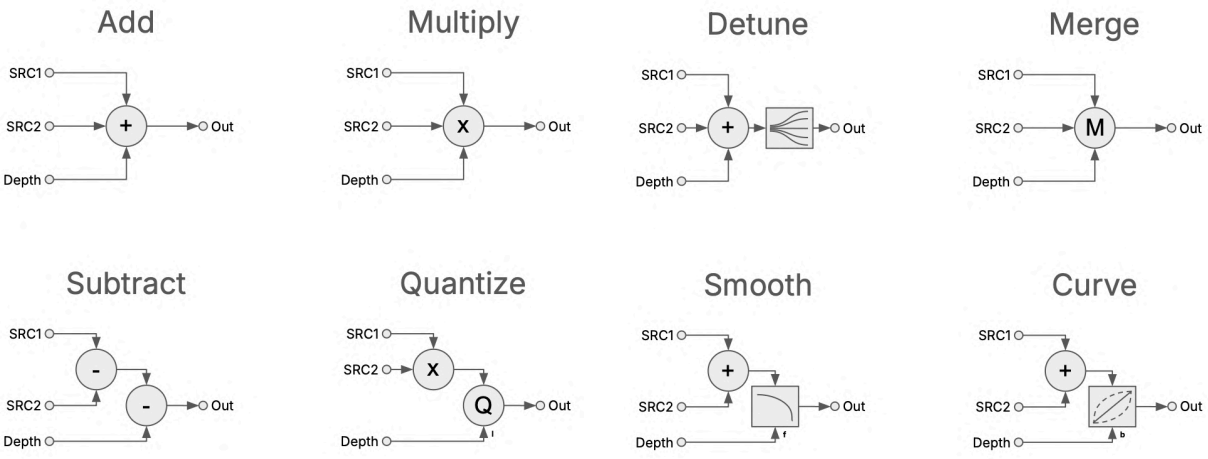
Depth

`[-100..+100]` Provides a third, manual parameter to the operation. Functionality is dependent on the selected operation (*see the Math Operation table below*).

Math Operation

`[Add, Subtract, Multiply, Quantize, Smooth, Curve, Detune, Merge]` Selects how **SRC 1** and **SRC 2** are combined. See the table below for details.

> ***Tip:*** *If you are not hearing any result from your Math module, you may want to use the 'Constant' source (found under 'MIDI Input') for SRC1 or SRC2 in cases where they are multiplied together. Otherwise, any source multiplied by None (a 0 value) will also output a 0.*



Add SRC 1, SRC 2, and DEPTH are summed together.

Subtract Depth is subtracted from the result of SRC2 subtracted from SRC1.

Multiply SRC 1, SRC 2, and DEPTH are multiplied together.

Quantize SRC 1 and SRC 2 are multiplied together, the result of which is quantized by the step size set by DEPTH.

Smooth SRC 1 and SRC 2 are summed together, and a linear smoothing algorithm is applied, the bandwidth of which is specified by DEPTH.

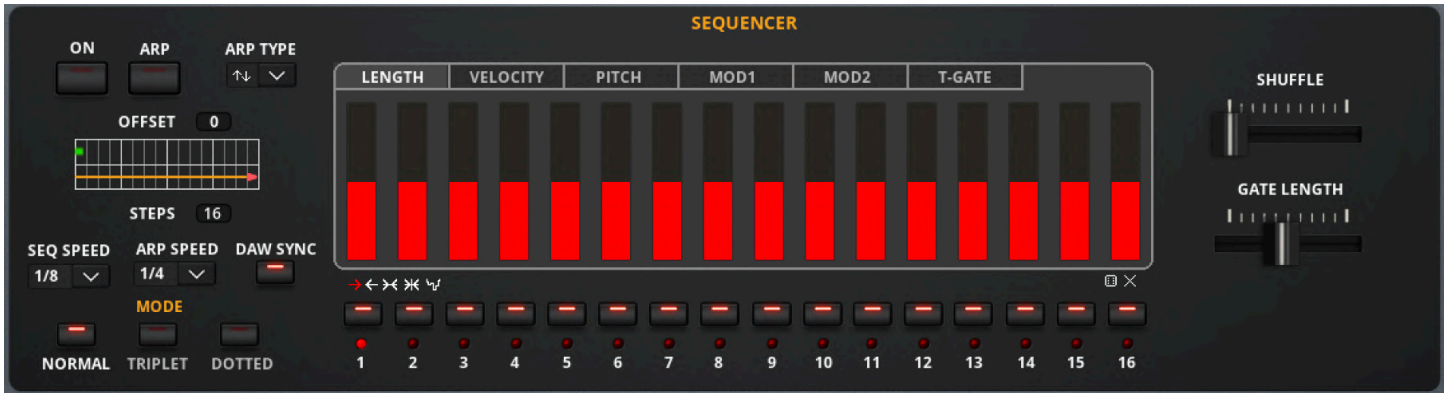
Curve SRC 1 and SRC 2 are summed together, and a parabolic shaper is applied. DEPTH sets the amount of shaping. Negative values will be more exponential, whilst positive values will be more logarithmic. `0` is a linear response (*no shaping*).

Detune SRC 1, SRC 2, and DEPTH are summed together. The result is then offset differently for each voice which is assigned to the same note.
NB: *Detune only works with voice unison as applied on the* `MISC` *page.*

Merge Primarily intended for advanced MIDI controller routing, SRC 1 and SRC 2 are both multiplied independently by DEPTH. The result is sent to the same output so the most recent controller event takes priority. *Here is an example: send Modwheel to* SRC 1 *and Velocity to* SRC 2*. The output will usually be the velocity the last note was played at, but moving the modwheel will override this output until the next note arrives.*

Tab 5: SEQ

Sequencer



On

`[Off, On]` Activates the sequencer functionality.
NB: *Unlike some sequencers,* ***Chro-Nyx****'s sequencer starts a new sequence for each key played in polyphonic mode. Use* **MONO** *voicing mode or even the arpeggiator (***ARP***) if you want a more 'locked-in' rhythmic performance!*

Arp

`[Off, On]` Turns the arpeggiator on or off.

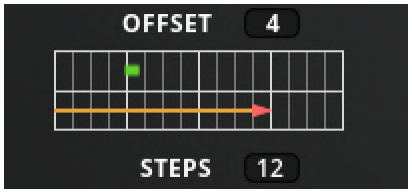
NB: *The arpeggiator and the sequencer are intricately linked. Activating the arpeggiator will automatically engage both the Sequencer switch and the Mono mode switch. This means that if you then toggle the arpeggiator off again, you will need to also toggle the* **MONO** *button off.*

> ***Tip:*** *You can use the sequencer to expand the rhythmic and melodic capabilities of the arpeggiator. You can apply rhythmic step gates, velocity, and gate length sequences, and even per-step pitch offsets with the pitch tab!*

Arp Type

`[Up, Down, Up/Down, Up/Down2, Random]` Selects the note order of the arpeggiator.

Grid



A handy grid diagram helps to visualise the **OFFSET** and **STEPS** parameters.

Offset

`[0..16]` Sets the starting step of the sequence.

Steps

`[1..16]` Sets the length of the sequence. For example, if this is set to `12` then steps `13-16` are ignored.

Seq Speed

`[4/1, 2/1, 1, 1/2, 1/4, 1/8, 1/16]` Drop-down menu that sets the clock division for the sequencer.

Arp Speed

`[4/1, 2/1, 1, 1/2, 1/4, 1/8, 1/16]` Drop-down menu that sets the clock division for the arpeggiator.

DAW Sync

`[Off, On]` When enabled, timing and position information is taken from the DAW (*where available*) instead of the internal clock.

NB: *The tempo value itself is always linked to the DAW (when Reaktor is running as a plugin) or Reaktor's internal transport (in the standalone version of Reaktor).*

Mode

`[Normal, Triplet, Dotted]` Shifts the division selected by **SEQ SPEED** to triplet or dotted timing variants.

Shuffle

`[0..100]` Sets the amount of shuffle applied to the sequencer and arpeggiator clock.

Gate Length

`[0..100]` Sets the duration of the note events triggered by the sequencer, from complete silence to tied notes.

Step Mutes

`[On, Off]` The step mutes can be used to add rhythmic patterns to the sequencer and arpeggiator. Turning a step off causes the sequencer to not trigger a note event on that step.

Direction

`[Forward, Backward, Alt1, Alt2, Random]` Choose the direction that the sequencer cycles through the steps. `Alt1` *and* `Alt2` *are two variations of a forwards-backwards sequence.*

Randomize, Clear

Randomize' (dice ⚄) and a 'Clear' (☒) buttons are provided to rewrite the contents **of the currently selected sub-tab**. *On the* T-Gate *sub-tab, these buttons affect the entire sequencer contents instead.*

Sub-Tabs

Use these to switch tabs between the Length, Velocity, Pitch, Mod1, Mod2 sequencer aspects, and the T-Gate sequencer effect.

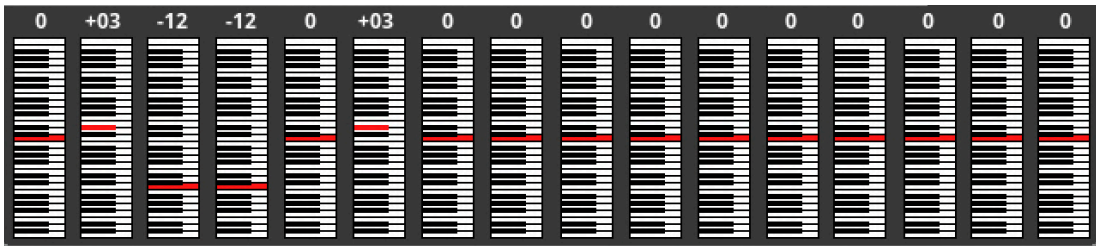
Length

`[0..100]` Drag the bars up and down to set the length of each step of the sequence in combination with the **GATE LENGTH** slider. Setting the step length to maximum has a similar effect to a tie, especially if the envelope legato switches are on.

Velocity

`[0..100]` Works the same way as **Length**, **Mod1**, and **Mod2** . Use the bars to set the velocity of each step of the sequence.

Pitch



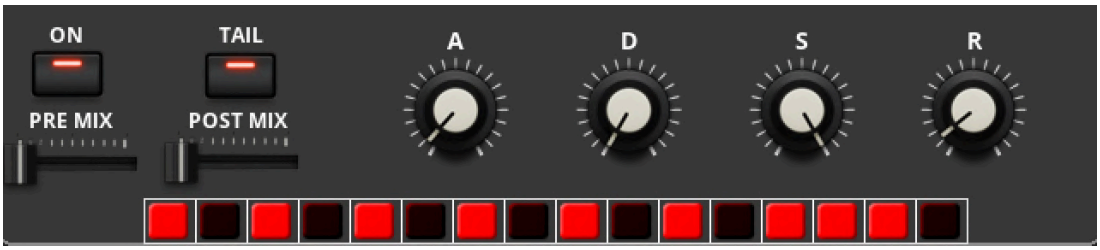
`[-24..+24]` The **Pitch** sub-tab 'piano roll' sliders are used to set a melodic offset to the played note, an essential part of any sequence. Drag up and down on the vertical keyboards to move the selected note (colored **red**). *For additional clarity, a number display on top of each bar shows the offset in semitones from the root;* `-24` *means two octaves down, while* `+24` *means two octaves up.*

NB: *These 'keys' work like all other controls in* ***Chro-Nyx****, which means you can double-*`click` *on a vertical keyboard to reset that step to* `0` *(root note).*

Mod1 & Mod2

`[0..100]` Visually identical to the **Length** and **Velocity** sub-tabs, these two define custom modulation sequences which can be assigned as sources in the **`MATRIX`** (*see page 38*).

T-Gate



The Trance Gate (or 'T-Gate') is a sequencer effect which applies rhythmic audio gating before and after the effects chain.

On

`[Off, On]` Enables or disables the Trance Gate.

NB: *Enabling the Trance Gate can have dramatic effects on the arpeggiated sequence!*

Tail

`[Off, On]` When enabled, the Trance Gate clock continues to run after notes are played. This is helpful to apply rhythmic effect to reverb and delay tails with the Post Mix setting.

Pre Mix

`[0..100]` The amount of Trance Gate applied before the effect chain. This is effectively a dry/wet control.

Post Mix

`[0..100]` The amount of Trance Gate applied before the effect chain, for gating reverb tails and similar effects. This is effectively a dry/wet control.

A

`[0..100]` The attack time of the Trance Gate's step envelope.

D

`[0..100]` The decay time of the Trance Gate's step envelope.

S

`[0..100]` The sustain level of the Trance Gate's step envelope.

R

`[0..100]` The release time of the Trance Gate's step envelope.

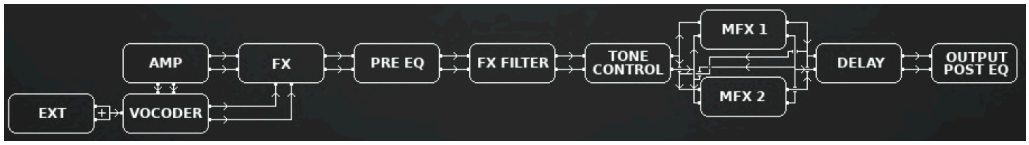
Steps

`[On, Off]` Used to set the rhythmic pattern of the Trance Gate.

Tab 6: FX

The **FX** tab is home to the Chain effects (**TONE CONTROL** *EQ*, **DELAY**, *and* **SUB BOOST**), Multi-Effects, **Pre** and **Post EQ**, **FX Filter**, and **Vocoder** processors. This is where the sound is finalized before it is output to your DAW or sound card.

The signal flow is illustrated in the center of the tab as a handy reference:



Tone Control

Bass

`[-100..+100]` Controls the gain of a low shelving EQ in the output stage.

Treble

`[-100..+100]` Controls the gain of a high shelving EQ in the output stage.

Delay

Time

The function of the Time knob varies depending on the **SYNC** setting:

> `[1 ms..60 s]` When **SYNC** is *off*, the delay time can be varied across a range of milliseconds to seconds.
>
> `[1/64..1/2]` When **SYNC** is *on*, the delay time can be varied based upon divisions of the master clock.

Feed

`[0..100]` The feedback level of the delay effect back into itself. This effectively controls the number of repeats and their natural decay.

Level

`[0..100]` The output level or volume of the delay effect, which is mixed back in with the dry signal.

Mod

`[0..100]` The amount of modulation applied to the delay time from the internal LFO, controlled by the **FREQ** knob.

Freq

`[0.02 Hz..130 Hz]` The rate of the internal LFO used for delay time modulation via the **MOD** knob.

Sync

`[Off, On]` Controls whether the delay time is set in milliseconds and seconds, or is synchronized to divisions of the master clock.

Color

`[-100..+100]` Controls the filtering or 'damping' of the delay signal within the feedback path. This can be used to reduce clashes with muddy repeats, or to add space or emphasis to the delay effect.

Type

Allows choosing between a number of delay effect types with different routings:

Mono The signal is summed to mono before passing to a single delay line.

Inv-R A stereo delay where the right channel output is inverted. This will sound incredibly wide but will disappear entirely in a mono mix.

Pong L>R The signal is summed to mono before passing to two delay lines in series. One outputs to the left and the other outputs to the right. The result is an effect where the repeats appear to bounce between the left and right speaker.

Pong R>L Identical to Pong L>R but the direction of the effect is reversed, the repeats bounce from right to left.

Stereo The left and right signals are each sent to their own delay line with approximately the same times and modulation. A very slow moving offset is applied to the delay times to widen the effect.

Sub Boost

The Sub Boost effect is a type of low frequency emphasis and extender circuit. It reinforces the low end of the sound for a more solid bass foundation.

On

`[Off, On]` Activates the Sub Boost effect.

Intensity

`[0..100]` Controls the intensity of the effect.

Tone

`[0..100]` Adjusts the frequency response of the effect.

Sub-Tabs

Use these tabs to select the Multi-FX 1 & 2, Pre EQ, Post EQ, FX Filter, and Vocoder sub-tabs.

FX 1 & 2

Two multi-effect slots are provided with a wide array of algorithms produced especially for **Chro-Nyx**.

***NB:** As the FX 1 and FX 2 modules are identical in function, only FX 1 will be covered here.*

Bypass

`[Off, On]` A session-global parameter, this bypasses the entire effects chain when active.

Routing

`[SER, PAR]` Changes the routing of the two Multi-FX modules from **Serial** (FX 1 *feeds into* FX 2) to **Parallel** (FX 1 *and* FX 2 *both receive the* Pre EQ *output and are summed before going to the* TONE CONTROL *EQ*).

FX Gain

`[0..100]` Sets the pre-effect volume level for gain-staging.

FX Out

`[0..100]` Sets the post-effect volume level for gain-staging.

Reset

`[Off, On]` Causes new notes to reset the LFO phase to that set by the PHASE slider. Only applies to effects which contain a compatible LFO.

Phase

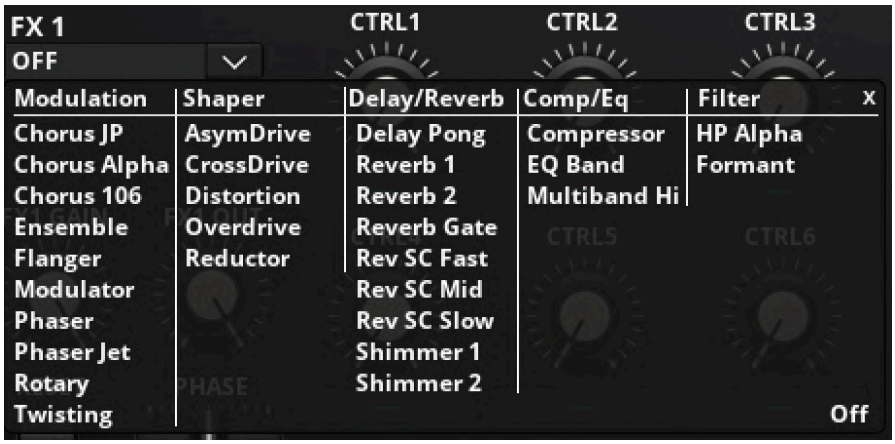
`[-180..+180]` Sets the phase that the effects internal LFO is set to when RESET is enabled.

Effect Parameter Controls

CTRL 1, 2, 3, 4, 5, 6

`[0..100]` Sets the numbered parameter of the effect (as described by the **blue text** below the knob), if any.

FX1 Type



Select which algorithm is used for this multi-effect slot.

NB: *To remove an effect in either of the two FX slots, open this menu and* `click` *'Off' on the lower right.*

Modulation

Chorus JP Based on original hardware, this is a smooth chorus effect with a lot of movement.

Chorus Alpha Based on '80s vintage analog hardware, this is a warm and surprisingly versatile chorus effect.

Chorus 106 Based on '80s vintage analog hardware, this effect almost has more of a flanger character to it, but is loved for its warm, larger-than-life character.

Ensemble Inspired by vintage string machines and polysynths, this effect uses two LFOs at very different rates to produce additional movement. Great for vintage analog string, choir, and brass patches.

Flanger Functionally similar to a chorus, flanger is a much more pronounced effect, using shorter delay times and offering feedback.

Modulator A variation on the flanger with a unique stereo field effect and a warmer character

Phaser A cousin of the flanger, phasers actually use a very different mechanism to emphasise frequencies using allpass filters. This produces more of a type of comb filtering effect without any meaningful audio delay. *These are great for vintage polysynth and string ensemble sounds!*

Phaser Jet A variation of the phaser effect with more pronounced emphasis on high frequencies.

Rotary A dual-band stereo rotating speaker effect with internal saturation and distortion. This models speaker systems typically found on vintage electro-mechanical organs and produces motion with a distinctive stereo spinning-effect.

Twisting A variation of the Modulator with a warmer but subtler effect.

Shaper

AsymDrive An overdrive model with bias.

CrossDrive An overdrive with a highpass crossover for high frequency emphasis.

Distortion A heavy distortion effect with tonal control.

Overdrive An oversampled hyperbolic saturator effect, perfect for crunchy preamp sounds.

Reductor A resonant stereo ladder filter with a sample rate reduction effect, perfect for creating talking effects and unusual sweeps.

Delay/Reverb

Delay Pong Similar to the Chain FX Pong Delay effect, this one has a pitch shifter on the wet signal for 'shimmer' type effects.

Reverb 1 Inspired by the reverb found in a cult classic Eurorack module, this reverb is perfect for synths.

Tips:

- ➔ *Be sure to turn up the Diffusion on CTRL 5 for smooth reverb tails.*
- ➔ *If your reverbs sound unusually delayed, check the Pre Delay on CTRL 6 which can add up to 1 second of delay to the reverberation effect.*

Reverb 2 A variation on Reverb 1 with more pronounced initial reflections and a more relaxed tail.

Reverb Gate A shorter reverb with a built in wet gate, perfect for beefing up transients or adding space whilst retaining punch.

Rev SC [Fast, Mid, Slow] All variations on Reverb 1, these feature sidechain compression of the wet signal against the dry. Effectively, you get the tails, but the reverb ducks out of the way for the synth.
The three variations refer to the Fast, Medium, and Slow response time of the sidechain compressor.

Shimmer 1 This is an extra long-tailed variant of the reverb with a pitch shifter on the wet signal. This is for classic 'shimmer' effects.

> ***Tip:*** *The Pitch parameter on CTRL 2 is used to set the pitch shift across a range of plus or minus 1 octave.*

Shimmer 2 A variant of Shimmer 1, this model places the pitch shifter within the sustainer feedback loop, producing other-worldly, endlessly ascending or descending reflections.

> ***Tip:*** *slightly detuning the Pitch parameter on CTRL 2 can produce some very smooth and out of phase reflections that sound out of this world!*

Comp/EQ

Compressor A typical compressor effect used to tame the dynamics of a sound, from smoothing out volume fluctuations in pads to adding punch to basses.

EQ Band A single-band stereo parametric EQ.

Multiband Hi A stereo multiband compressor with high-gain.

Filter

HP Alpha Based on vintage analog hardware, this is a simple highpass filter for cleaning up - or boosting the low end of your analog themed patches.

Formant This model is based on the Formant oscillator available in the OSC section. A stereo five-band filterbank morphs through a series of preset parameters to mimic various human voice vowel responses. This can be a great alternative to a static phaser or filterbank for adding a unique tonal fingerprint, talkbox effects, and unusual motion

> ***Tip:*** *Try using the Matrix to send a very slow LFO modulation to the Vowel parameter on CTRL 1!*

Pre EQ

The **Pre EQ** is used to shape the synthesizer sound before it goes into the Multi FX. This can be used to emphasize certain parts of the audio for the effects processor modules.

On

`[Off, On]` When on, the **Pre EQ** is active.

Low Shelf

Gain

`[-24..+24]` Sets the gain factor of the shelving band in decibels.

Freq

`[20 Hz..20 kHz]` Sets the corner frequency of the shelving band.

Q

`[0..100]` Sets the intensity of the slope of the shelving band.

High Shelf

Gain

`[-24..+24]` Sets the gain factor of the shelving band in decibels.

Freq

`[20 Hz..20 kHz]` Sets the corner frequency of the shelving band.

Q

`[0..100]` Sets the intensity of the slope of the shelving band.

Peak Bands

Gain

`[-24..+24]` Sets the gain factor of the band in decibels.

Freq

`[20 Hz..20 kHz]` Sets the corner frequency of the band.

Q

`[0..100]` Sets the intensity of the slope of the band.

Lo Cut

A utility two pole highpass filter applied to the audio to clean up the low end.

On

`[Off, On]` Turns on the Lo Cut band. The main EQ **ON** button (*found in the top middle of the sub-tab*) must also be turned on for this to have any effect.

Freq

`[20 Hz..20 kHz]` Sets the cutoff frequency of the band.

Q

`[0..100]` Sets the intensity of the slope of the band. This is a lot like a resonance control.

Hi Cut

A utility two pole lowpass filter applied to the audio to clean up the top end.

Freq

`[20 Hz..20 kHz]` Sets the cutoff frequency of the band.

Post EQ

The **Post EQ** is used to shape the synthesizer sound before it goes into the Multi FX. This can be used to de-emphasize certain parts of the audio for the effects processor modules that might have been boosted in the **Pre EQ**, but it is also typically used for overall tone shaping of the preset.

On

`[Off, On]` When on, the **Post EQ** is active.

Low Shelf

Gain

`[-24..+24]` Sets the gain factor of the shelving band in decibels.

Freq

`[20 Hz..20 kHz]` Sets the corner frequency of the shelving band.

Q

`[0..100]` Sets the intensity of the slope of the shelving band.

High Shelf

Gain

`[-24..+24]` Sets the gain factor of the shelving band in decibels.

Freq

`[20 Hz..20 kHz]` Sets the corner frequency of the shelving band.

Q

`[0..100]` Sets the intensity of the slope of the shelving band.

Peak Bands

Gain

`[-24..+24]` Sets the gain factor of the band in decibels.

Freq

`[20 Hz..20 kHz]` Sets the corner frequency of the band.

Q

`[0..100]` Sets the intensity of the slope of the band.

Lo Cut

A utility two pole highpass filter applied to the audio to clean up the low end.

On

`[Off, On]` Turns on the Lo Cut band. The main EQ **ON** button (*found in the top middle of the sub-tab*) must also be turned on for this to have any effect.

Freq

`[20 Hz..20 kHz]` Sets the cutoff frequency of the band.

Q

`[0..100]` Sets the intensity of the slope of the band. This is a lot like a resonance control.

Hi Cut

A utility two pole lowpass filter applied to the audio to clean up the top end.

Freq

`[20 Hz..20 kHz]` Sets the cutoff frequency of the band.

FX Filter

The FX Filter is a stereo filter based on the Classic filter found in the main filter section, but this filter is applied after the voice summing and chain effects, very much as an effect itself.

On

`[Off, On]` Turns the filter on or off.

Link

`[Off, On]` Links the cutoff to the main FILTER 1 CUTOFF frequency. This will turn the CUTOFF slider into an offset against FILTER 1.

Cutoff

`[0.08 Hz..21.2 kHz]` Sets the cutoff frequency of the filter.

Res

`[0..100]` Sets the resonance of the filter.

Follow

`[-100..+100]` Sets how much the CUTOFF frequency follows the most recently played note pitch.

LFO 2

`[-100..+100]` Sets the depth of modulation from LFO 2 to the CUTOFF frequency.

Vel

`[-100..+100]` Sets how much the most recently played note velocity affects the CUTOFF frequency.

Shaper Type

Select between a variety of different shaper/distortion types, the intensity of which is controlled by the Drive slider:

Off	DRIVE only controls volume up to the halfway point.
Post	Standard post-filter saturation.
Pre	Saturation is applied pre-filter.
Double	A two-stage saturation effect.
X-Drive	Overdrive with a highpass crossover.
Cross	A more complex filtered overdrive.
XClip	4x oversampled hard clipping
Light	A mild soft-clipping effect.
Soft	A moderate soft-clipping effect.
Medium	A harsher soft-clipping effect.
Hard	Extreme soft-clipping.
Digital	A more digital saturation effect.
Sine	A sine-based wavefolder.
Rectify	Typical asymmetric clipping.
Bit	Classic bit reduction. DRIVE controls the bit-resolution applied to the signal, higher drive giving less bits and thus harsher stepping.
Rate	Classic sample rate reduction, applied post-filter. DRIVE controls the sample rate.
Lopass	A utility lowpass damping filter. Higher drive values produce more filtering.
Hipass	A utility highpass damping filter. Higher drive values produce more filtering
Rate KF	A variation of Rate whereby the sample rate tracks the keyboard

Drive

`[-100..+100]` Controls both the pre-filter amplitude as well as the shaper/drive effect depth.

Shaper Mix

`[0..100]` Blends between the filter mix output (*at* `0`) and the shaper output (*at* `100`).

Filter Mix

`[0..100]` Blends between the dry synthesizer audio (*at* `0`) and the filtered audio (*at* `100`).

Vocoder

On

`[Off, On]` Activates the vocoder effect.

NB: *It is not necessary to use the 'FX Mode' switch to use the vocoder. You will, however, have to send the modulator audio signal (microphone, drum loop, etc) to the sidechain input of the plugin in your DAW, either by the plugin configuration or audio routing in your DAW.*

Hold

`[Off, On]` When activated, the envelope followers of each band will be disengaged and their values frozen. This allows you to capture the formant of an incoming microphone signal and even save it in a preset. The band level controls still apply for further shaping the formant.

Base

`[-100..+100]` Sets the frequency of the lowest band. The default value of `0` is approximately 65 Hz.

Spacing

`[0..100]` Sets the spacing between bands. The default value of `50` is a perfect fifth above (or 1.5x the frequency of) the previous band.

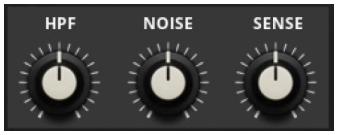
Release

`[0..100]` Controls the response time of the envelope followers of each band.

Res

`[0..100]` Controls the intensity of the effect by tightening the bandwidth of the bands.

High Band



This section controls a 13th frequency band with a highpass instead of bandpass response.

HPF

`[0..100]` Sets the output level of the High Band

Noise

`[0..100]` Cross-fades between the instrument sound (`0`) and an enveloped white noise source (`100`). With noise applied, this band functions as the opposite of a de-esser.

Sense

`[0..100]` Controls the sensitivity of the noise envelope. Higher is more sensitive.

Width

`[0..100]` Alternatively pans the bands left and right, increasing the stereo field of the effect.

Bands (1-12)

`[0..100]` Sets the output level of each filter band.

Filterbank

`[Off, On]` When activated, the envelope followers of each band will be disengaged, but unlike the **HOLD** button, every band will be locked at full volume. The band level controls still apply for further shaping the sound. *In this mode the vocoder can be used as a fixed filter bank or a comb filter without relying on any incoming audio.*

Inst

`[0..100]` Sets the level of the synth going into the vocoder's carrier input.

Mix

`[0..100]` When the vocoder is active, this blends the output between the vocal (*modulator*) input signal (*at* `0`) and the vocoded signal (*at* `100`). When the **FILTERBANK** button is turned on, it blends between the instrument (*carrier*) input signal and the filtered signal.

Vocal

`[0..100]` Sets the level of the external vocal input going into the vocoder's modulator input.

Gate Thrs

`[0..100]` Sets the trigger threshold of a noise gate on the vocal (*modulator*) input. *This can be used to clean up low level background noise and ambience from the external audio input when using a microphone!*

Tab 7: `MISC`

Unison

Voices

`[Off, 2..10]` Enables unison voice stacking by setting the number of voices to sound simultaneously for each played key.

NB: *Since this control works on new notes ('note-on'), if you move the knob while holding down a key on your MIDI keyboard, you will not hear any change to the sound - but you will hear the effect of volume compensation. We recommend that you move this knob and then play a new note. Also, the effect is most noticeable when* **DETUNE** *is turned up (a slight amount is enough).*

Detune

`[0..100]` Sets the amount of pitch variation applied to each stacked voice. This thickens the sound in much the same way the Super Saw oscillator does.

Spread

`[0..100]` Sets the amount of pan variation applied to the stacked voices. Higher values widen the stereo field.

> ***Tip:*** *For a super wide stereo effect, try setting Voices to 2 and Spread to 100!*

Phase

`[-180..+180]` Sets the range of oscillator reset phase variation applied to the stacked voices.

Random

`[0..100]` Sets the amount of random phase variation applied to each voice.

Pitch Bend

Down

`[+36..-36]` Sets the downward pitch bend range in semitones.

Up

`[-36..36]` Sets the upward range of the pitch shifter in semitones.

MPE

`[0..48]` A session-global setting, this sets the MPE pitch bend range *(typically an extreme value such as +/-48. Check your MPE MIDI Controller's specifications for a compatible value*) in semitones.

NB: *Note that the* **DOWN** *and* **UP** *knobs are not linked, so you can have different values in either direction. The values you set here also affect the pitch bend wheel on your MIDI controller!*

Voice Spread

Pan

`[0..100]` Sets the range of alternating pan allocated to each voice. Used for emulating the stereo behavior of certain analog synthesizers.

Filter

`[0..100]` Sets the range of random cutoff variations assigned to each voice. Used for emulating the behavior of vintage analog synthesizers.

NB: *When used together with only one voice* (i.e., *the* **VOICES** *knob is at* `0`), *these two knobs will essentially apply random pan and filter variations to each played note. Also: setting* **Chro-Nyx** *to monophonic mode will* disable *these controls.*

Key and Velocity

Root

[-100..+100] Adjusts the center point of the 'Key Follow' source which is available in the **`MATRIX`** and for the **FOLLOW** knob in the **FILTER** sections.

Vel Curve

`[-100..+100]` Adjusts the velocity sensitivity curve. Positive values are more logarithmic (*tends towards maximum*) whilst negative values are more exponential (*tends towards the minimum*).

NB: *This works together with the* **VELOCITY** *knob in the* **AMP** and **FILTER** *sections, as well as the Velocity source in the* **`MATRIX`**. *If those knobs are both at* `0`, *and there is no velocity modulation applied in the Matrix,* you will not hear any difference *when adjusting this slider!*

Velocity

`[On, Off]` Switching this off disables velocity sensitivity completely.

Macro Controls

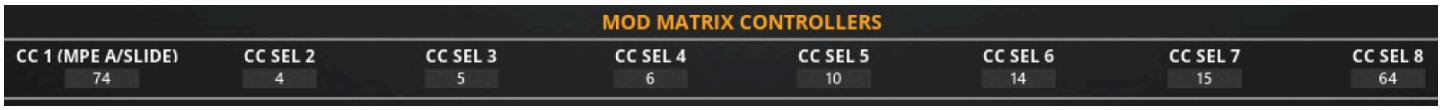
Macro Knobs (1-8)

The macro knobs are assignable modulation sources intended to allow the sound designer to provide quick access to customized aspects of the sound during a live performance. *These knobs do nothing on their own as they have to be assigned through the* **`MATRIX`**. They also appear in Simple View.

Macro Names (1-8)

A drop-down menu allows naming each macro. This name is also carried through to Simple View. *This does not affect any Macro routings; as with the Macro Knobs, these knobs and menus are purely cosmetic and do nothing to change the sound.*

Mod Matrix Controllers



Here you can configure 8 custom MIDI Continuous Controller (CC) sources which can be assigned in the Mod **`MATRIX`**. The first controller is also used to set the MPE Slide dimension controller number.

Performance

A session-global setting. Three ‘performance profiles’ are available here, which alter the internal computational rates of various controllers, modulators, and effects. You can change this if you want to push **Chro-Nyx** into extreme sound quality or get a little bit more performance out of your CPU.

High All modules are run at the full audio rate.

Balanced A middle ground that under-clocks most modulation sources by a moderate amount.

Economic All modulation sources are run at a reduced rate.
NB: *This setting will lower the quality of certain modules, such as LFOs, in order to reduce CPU usage.*

MPE

All MPE settings are session-global.

NB: *We go into greater detail regarding how to set up MPE with your MPE compatible controller on page 8!*

Slide Start

`[Last Val, Zero, Half, Full]` Some devices will not always send the Slide position before the note starts. This can result in an audible artefact as Slide will be incorrect for a matter of milliseconds. The **SLIDE START** parameter allows you to mitigate this behavior by fine-tuning the MPE behavior to match your MIDI controller. For example, keyboard controllers that use the Slide dimension as an extended pressure expression will naturally always start with a low Slide value, so **SLIDE START** can be set to Zero. The default Last Val is a middle ground that works moderately well on all controllers.

Slide Target

`[Modwheel, Cutoff, CC Only]` MPE Slide can be targeted to the Modwheel modulation source, the **FILTER 1** Cutoff, Or no specific target (*CC Only*). MPE Slide is always available as the assignable MIDI CC 1 in the **`MATRIX`**.

Press > Vel

`[On, Off]` Directs MPE Pressure to the Velocity modulation sources. This improves the expression of patches even if they have not specifically been designed with MPE in mind.

Smoothing (Slide and Press)

`[On, Off]` Enables smoothing of incoming controller data for MPE Slide and MPE Pressure. This can help to improve expression and quality when MIDI data is thinned by an upstream device or poor connectivity.

Tips & Tricks

Reaktor Interface Basics

- ➔ Almost all controls can be MIDI-learned by (1) right-`click`ing the UI and (2) selecting 'MIDI & OSC Learn'. You will then need to move the control of your choice (*i.e.*, fader, knob, *et al.*) on your MIDI control surface or in your DAW to establish the link.
  ***Pro tip**: Once you MIDI-learn something, you should save your modified version of that ENS so you won't have to do it again!*

- ➔ **Chro-Nyx** is fully NKS compatible and features quite a few existing host-automatable controls. If you have a Komplete Kontrol keyboard or use the Komplete Kontrol application or Maschine software and hardware, you will be able to benefit from this functionality!

- ➔ The knobs and sliders in **Chro-Nyx** have an attached value readout just above them; mouse over the name of the control to see what the value is at currently (*the readout temporarily replaces the name of the control*). The readout also appears while you are actively changing the parameter.

- ➔ If you are trying to reach a specific value on a knob or just need higher precision, you can hold the SHIFT key on the keyboard whilst `click`-dragging the control as usual. This will increase the available control resolution.

Tips for sound design

Chro-Nyx is filled to the brim with controls (as you have seen in this manual!), and it can be used to do much more than we have gone over. Here we have gathered - in no particular order - a bunch of useful, more advanced tips, to inspire you to dive a bit more under the hood and experiment with **Chro-Nyx**. Once you get started, the sky truly is the limit!

- ➔ LFO 2 is linked to the modwheel by default. Turn off MW in the LFO 2 section if you want to use the modwheel or LFO for something else without pitch variations.

- ➔ The Envelope CURVE parameter only affects the Decay, but you can use the `MATRIX` Math operators to send the entire envelope through a Curve shaper and assign its output in the `MATRIX`.

- ➔ Another technique for Envelope curves is to send the envelope to its own attack, decay and release parameters in the `MATRIX`. Higher DEPTH values will mean that the envelope spends longer at higher output values (*logarithmic response*), whereas lower DEPTH values will mean that the envelope spends longer at the low values (*exponential response*).

- ➔ You can use the effects chain of **Chro-Nyx** as an audio effect using the 'FX Mode'. This sends incoming audio directly to the effects chain. *This is necessary in order to use the vocoder!*

- ➔ When using an MPE controller, be sure to turn on the MPE mode (*in the* VOICING *section*). The standard MIDI CC number for MPE Slide is the same as the standard MIDI CC number for Filter

Cutoff or 'Brightness'. Playing **Chro-Nyx** in this manner is likely to lead to some jagged, unexpected modulation and low filter cutoff values.

➔ The Oscillator 2 SWEEP parameter uses an internal LFO to modulate the reset phase, mimicking the natural procession of detuned oscillators on a monosynth (*even though* **Chro-Nyx** *is a polysynth with* RESET *engaged*). For a true machine-gun reset effect, be sure to turn the SWEEP parameter down to zero.

➔ To emulate the behavior of classic analog polysynths, you will have to turn RESET off completely. It can also help to turn up the FILTER knob (located in the VOICE SPREAD section in the MISC tab).

➔ Use matched oscillator, filter, and effect modules (for example '106' or 'Alpha') where available for a more authentic vintage experience. These were designed to work together, but it can also be fun to mix and match!

➔ You do not need to enable the sequencer to use the MOD1 and MOD2 sequencer sub-tabs. Just route it through the MATRIX and it will work using the start, length, and rates set for the sequencer!

➔ The **Chro-Nyx** arpeggiator does not have a 'range' parameter to add additional octaves. But it *does* have a sequencer tied into the arpeggiator. Use the Pitch tab to cycle through octave shifts and set the pattern length to match. Or mix it up for additional variation: you can add any combination of intervals in any pattern. Try octaves and fifths, or jump up and down one octave in a particular rhythm pattern instead of using the step mutes.

➔ The LFO 2 DEPTH knob is actually three knobs operating simultaneously. Select the modulation target using the three buttons (PITCH, FILTER, AMP) and you can set a different modulation amount for each.

➔ You can use the MATRIX Math Multiply operator to assign LFO modulation via the modwheel. Simply select 'Modwheel' as one source, an LFO as the second source, and Multiply as the operation. Be sure to turn the Depth slider up to ensure that some signal is passing through. Assign the Math module to any one or more sources in the normal Matrix sub-tabs.

➔ The MATRIX Math Multiply operator can also be used in conjunction with the Const source to produce fine-tuned versions of modulation sources. For example, Set SRC1 to Velocity and SRC2 to Const. Set DEPTH to a really low value like 5.0. Then, in the MATRIX, send this Math modulator to Oscillator 2's pitch to introduce tiny variations based on velocity.

➔ The Const MATRIX source can be used for offsetting some parameters outside of their usual range. For example, try modulating the Super Saw Detune parameter (P1).

➔ When using the MATRIX Math operator Detune, it is important to also turn up UNISON VOICES in the MISC tab. You can send the Detune modulator to a number of diverse polyphonic (*in-voice*) destinations to produce a huge and varied wall of sound.

➔ The Mod Envelope target can be changed in the OSC tab's OSC COMMON Section - you will find the buttons that do this in the LFO & MOD DEST sub-section.

➔ `FILTER` **BOOST** changes the Shaper algorithms. For example if **Pre** is selected (under **SHAPER TYPE**), **BOOST** also applies a post-filter distortion. For the non-saturating shapers such as **Bit** and **Rate** this also applies a saturation shaper.

➔ In the `FILTER` tab, the **DRIVE** slider and **BOOST** knob both typically come *after* **FILTER 1**, but *before* **FILTER 2** (*in serial mode*) in the signal chain, so you can still use **FILTER 2** to tame some of the additional harmonics.

➔ Many modulation destinations are available which are outside of the typical voicing structure, such as effects parameters and the FX Filter. You can still modulate these with polyphonic sources such as an envelope or MPE pitch bend. The value will be taken from the last active note (*the same voice which would be active if playing in mono mode*).

➔ The `LFO` Sync types (**NORMAL**, **TRIPLET**, and **DOTTED**) are not available as a modulation destination (i.e., *you can't right-*`click` *to automate them directly in Reaktor*), but they *can* be automated in your DAW, which is great for complex modulation such as in dubstep basses. Look for the **LFO 1 Sync Type** and **LFO 2 Sync Type** automation parameters in your DAW; `0` is **DOTTED**, `1` is **TRIPLED**, and `2` is **NORMAL**. *Note that there is a delay before these parameters take effect when automated this way.*

➔ The **SUB** oscillator has its own level and tune parameters, effectively making it an independent third oscillator.

➔ If **Chro-Nyx** is loaded in Reaktor FX (i.e., *it is acting as an effect, rather than an instrument*), the entire `OSC` tab is bypassed unless you toggle the **EXT** mode on (in the **OSC 2** section). You will now need a separate MIDI channel mapped to the **Chro-Nyx** Reaktor FX instance.

➔ Toggling the **ARP** (in the `SEQ` tab) *on* will put the synth into monophonic mode. If you want to get your polyphony back after turning *off* the **AMP**, remember to go to the **VOICING** section and toggle the **MONO** option off again.

Tips for CPU Performance & Memory Optimization

If you experience high CPU usage with **Chro-Nyx**, there are a number of things you can do to mitigate the issue.

Power Scheme (Windows 10+)

Make sure to set a High or Ultimate power scheme (note that Cubase has its own separate power scheme). If the power scheme is set to Balanced or lower, Reaktor will overload, and put a much higher strain on your CPU. Essentially: in order to make sure **Chro-Nyx** works as intended, set your power scheme to High or higher.

A more advanced tip: If you are using an older 4-core processor (like 5th generation Intel models), Reaktor's performance may be lower. This can be mitigated by increasing CPU - usually through your power scheme (see above).

We do not normally include external links to articles in our manuals, but here is some further reading if you are on Windows 10 and are experiencing performance issues:

https://www.howtogeek.com/368781/how-to-enable-ultimate-performance-power-plan-in-windows-10/

Use multiple instances

Chro-Nyx is monotimbral, meaning it only plays one program at a time. The Reaktor engine is also single threaded, meaning it uses only one CPU core at a time to process audio and events, but many modern computers have many CPU cores available. This means that even if **Chro-Nyx** is already pushing the CPU hard on one track, you should be able to add more tracks without negatively impacting performance.

Similarly, **Chro-Nyx**, like many Reaktor synthesizers, will use a high *baseline* of CPU because all 10 voices are processed continuously (this is in line with performance expectations for hardware emulations), but playing additional notes will typically *not* further impact performance.

Freeze or bounce tracks

Many DAWs have a feature to 'freeze' or 'bounce in place' plug-in instrument tracks to audio. If you think you are hitting the limits of your processor in a project, do not be afraid to use this feature on tracks with CPU heavy plugins. You will lose the ability to further modify the performance or synthesis parameter automations, either temporarily (freeze) or permanently (bounce) for that specific track, but the computer will no longer be burdened with the processing associated with the synthesizer itself.

Save CPU and memory by quitting unnecessary applications

For experienced users, this may seem obvious, but it's easy to lose track of how much computing power is being used by seemingly-innocuous applications. For example, it's not uncommon to have a Chrome browser, Discord, Slack, Skype, Zoom, and Dropbox all running at the same time. All of these not only take up RAM, but can also interfere with real-time audio playback by causing pops & crackles.

So, anytime you work on a very intensive DAW project, it's a good idea to close all applications and services you don't need - even if they just run in the background.

Avoid pops and crackles with a higher buffer size

This applies to your DAW settings in general. Typically, every DAW's audio settings allow you to change the 'buffer size' of the playback drivers. Sometimes, this may only be changeable in a separate application, such as with some RME products.

The buffer size (measured in milliseconds or samples, like `8ms` / `512 samples`) determines the amount of latency in DAW output and input, inversely correlated to CPU usage. In other words, lower buffer sizes are much more demanding on your CPU than higher ones.

Though it feels great to perform and record MIDI at very low buffer sizes, this is also most taxing on your CPU. Consider increasing your buffer size once you're out of the MIDI recording phase, and on to editing, mixing, and mastering.

On a modern Mac

On devices with Apple Silicon processors, Reaktor may be offloaded to an 'efficiency core' which has inherently worse performance. If you are experiencing high CPU usage on a mac with an M-series processor, try reducing the buffer size in the audio settings to 128 or less. This may seem counterintuitive, but it will force Reaktor to run on a 'performance core' which has more power.

Credits & Acknowledgements

Executive Producer: Jasper Broeks, Bradley Gray

Programming: Jasper Broeks, Bradley Gray

User Interface & Graphic Design: Paulo Nunes, Jasper Broeks

Marketing: Lauren Liebowitz, Andrew Aversa

User Manual: Bradley Gray, Fredrik Häthén

Quality Assurance: Mario Krušelj, Andrew Aversa, Shane Roberts, Kent Kercher

...And a special thanks to our Beta Team!

Troubleshooting

Having trouble with **Chro-Nyx**? Use it in a project you want to tell us about? Drop us a line via our **Contact page** (but be sure to read the FAQ first!)

Copyright & License Agreement

License Agreement

The following license is granted non-exclusively to all purchasers of our products. This version (updated 20 December 2022) supersedes any prior printed or digital versions of our license.

Overview

All sound recordings, performances, scripting and/or code contained in this product is the intellectual property of Impact Soundworks LLC ('ISW') unless otherwise noted, and remains the property of ISW after the product is purchased. When purchasing an ISW product, you are purchasing a non-exclusive license to use, edit, perform, or otherwise utilize the contained recordings, performances, scripting and/or code for commercial and non-commercial purposes as defined below.

Authorized Users

Depending on the type of customer and usage scenario, authorized users of this license will vary.
ALL purchases fall into category A or B:

A. Individual Purchase

This license is extended to customers who are purchasing as the primary user of the product, OR are purchasing on the behalf of another primary user (i.e. as a gift). The licensee (primary user) MAY install the product on as many computer systems as they have access to. However, ONLY the licensee may use the product. **No other users are authorized.**

B. Corporate/Academic/Institutional Purchase

This license is extended to customers who are purchasing for a multi-user setting, such as a shared studio, networked workstation, computer lab, etc. In this case, the licensee is the institution and not any one user. In contrast with individual purchases, an institutional license applies to ONE computer / workstation. All users of that workstation who belong to the purchasing institution (licensee) shall be considered 'authorized users'. However, at no point may multiple authorized users access one license simultaneously. Multiple licenses must be purchased if the product is to be used by multiple users simultaneously.

Scope of License (Virtual Instruments, Sample Libraries)

The licensee is entitled to the use and unlimited editing of the Product within the scope of music production, performance, recording, and composition. This includes both non-commercial and commercial usage of all types, including, but not limited to, film scores, television scores, music libraries, video game soundtracks, digital and physical music releases, albums, compilations, etc.

The licensee is entitled to distribute, sub-license, sell, stream, edit, monetize, or otherwise utilize **any music** created with the Product.

Exceptions to this scope are listed below.

The licensee **MAY NOT** use the Product in the production of any other sample library or virtual instrument products.

The licensee **MAY NOT sell** *individual sounds* from the Product in any audio marketplace (e.g. stock audio websites, sound effect libraries, etc.)

For clarity: The licensee **MAY** use sounds from the Product to create individual sound effects (SFX) for use in film, TV, advertising, and video games. The limitation is strictly on **selling** *individual sounds* in a marketplace, SFX library, or similar.

Ownership, Resale and Transfer

Redistributing, reselling, electronically transmitting, uploading, sharing, or renting the Product in any way, shape, or form is prohibited by law. The licensee may create a physical backup copy of any digitally purchased and downloaded Product. This backup copy is subject to the same limitations as the original copy of the Product, and may not be transferred to any other individual for any reason.