



TONE2

Nemesis

The license included with this product is a single user license for an installation on a single computer. Please contact our support team if you need additional licenses. This product is copy protected and uses audio watermarks.

Please note that Tone2 will deactivate licenses of users who share our software without permission. Violators will be excluded from customer resources, services and updates. Under the DMCA, copying and sharing copyrighted materials without a license is illegal, violations to copyright law may carry heavy civil and criminal penalties.

Contact

If you have any difficulties installing or using Nemesis, please contact us by visiting our website and clicking the Support button.

Tone2 website <http://www.tone2.com>

Tone2 forum <http://www.tone2.org/forum/index.php>

Support support@tone2.com



<http://www.youtube.com/user/Tone2Audiosoftware>



<https://www.facebook.com/Tone2Audiosoftware>



<https://plus.google.com/b/117394698401069212106>



<https://twitter.com/Tone2Audio>



<https://soundcloud.com/tone2-1>

Development: Markus Krause, Bastiaan van Noord

Programming & Graphics: Markus Krause

Manual: Bastiaan van Noord, Markus Krause, Chris McKoy

Sound design: Markus Krause (MF), Bastiaan van Noord (BN), Troels Nygaard (STS), Ed Ten Eyck (EDT), Massimo Bosco (MxS), George Zondag (GZ), Akira Complex (AC), Rob Mitchell (RM), Mac of BIONight (Mac), Martin Wilkinson (MW), Xavier Pfaff (XPF), Zach Archer (ZA), Reinhard Reschner (RR), Torben Hansen (TH), Mikko Nielikainen (MN), Ingo Weidner (IW), Rob Fabrie (RF), Colin Cameron Allrich (CC), Johan Landquist (JLA), Satya Choudhury (sT), Don Vittorio (DV), Lukas Jankowski (TTS), Rainer Sauer (rWs), Carl Lofgren (PH), Stephen Krajewski (SK), Allen Somerlot (BB), SupremeJA (SJA), Bryan Lee (XS), Bram van Riel (BvR), Carl Butler (BC)

Thanks go to: Anna Krause, family and friends, all sounddesigners & testers, and of course to all Tone2 customers for their continued support.



Contact.....

Credits.....

Installation & authorization procedure.....

 Automatic installation for Mac & PC.....

 Manual installation for PC.....

 Manual installation for Mac.....

Welcome – NeoFM

 What is NeoFM synthesis.....

 Some words about 'FM' and its history.....

 What advantages does NeoFM synthesis offer.....

Interface overview.....

 Menu bar.....

 Oscillator control section.....

 Filters.....

 Oscillator display.....

 Synthesis methods available in Nemesis.....

Additive Spectral Editor.....

 Spectral modifiers.....

Arpeggiator.....

 StepLFO.....

Gate.....

Configuration (CFG) display.....

Effects section.....

 Effect Types.....

Envelope section.....

LFOs.....

Modulation Matrix.....

 Source menu.....

 Destination menu.....

Midi-learn.....

Modulation Matrix: value modifiers.....

Tone2 Audiosoftware product catalog.....

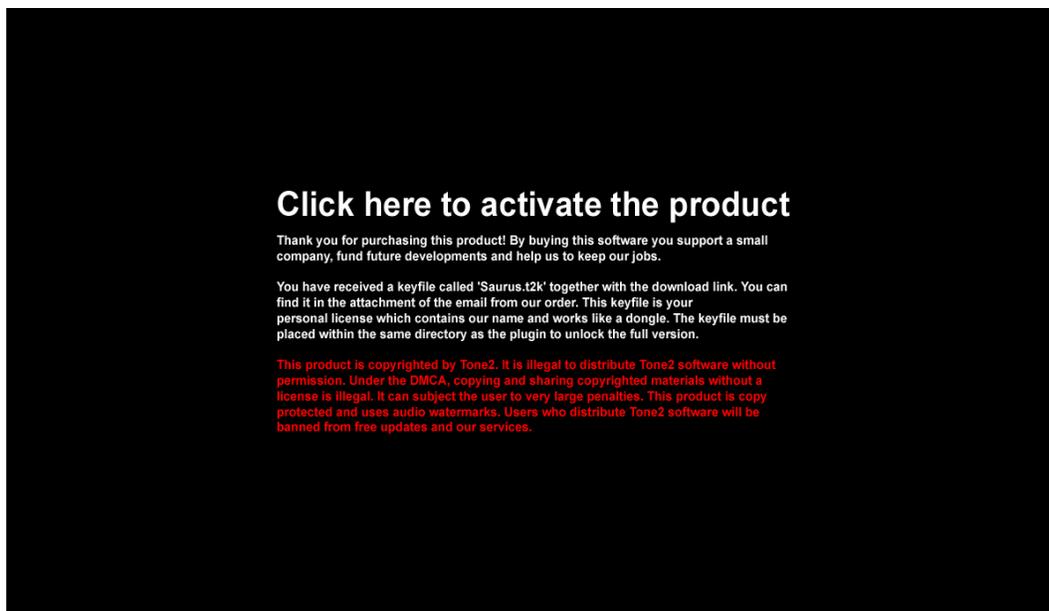
Together with the download link from Share-it you have received attached to the product delivery email a keyfile called 'Nemesis.t2k'.

This file contains your personal serial number & your name and is used to unlock the full version.



Automatic Installation (recommended) for PC & Mac

1. Close your host (Logic, Live, Cubase, etc.)
2. Install the full version of the plugin. Note: the demo version cannot be unlocked
3. Open your host program
4. Do a plugin rescan in the host if it does not list Nemesis. Detailed instructions on how to perform a rescan can be found in your host's manual
5. Open Nemesis
6. Click on the activation box in the middle
7. Select your keyfile 'Nemesis.t2k' to activate the full version
8. Restart the plugin. Note that some host programs may require a complete restart



Click inside the activation screen to browse – select your Nemesis.t2k keyfile.



Manual installation for PC

1. Close your host (Logic, Live, Cubase, etc.)
2. Install the full version of the plugin. Note: the demo version cannot be unlocked
3. Copy 'Nemesis.t2k' to the VST directory. Steinberg hosts often use C:\Program files\Steinberg\VSTplugins as the default plugin path. You can also take a look at your host's folder configuration. Note that the 'Nemesis.t2k' keyfile should be inside the same folder that the Nemesis.dll is in.
4. Open your host program.
5. Do a plugin rescan in the host if it does not list Nemesis. Detailed instructions on how to perform a rescan are found in your host's manual.
6. Open Nemesis. Now the normal user interface appears. If this is not the case, close your host and go back to step 3, as most likely you did not copy the keyfile to the right place.



Manual installation for Mac

1. Close your host (Logic, Digital Performer, Live, Cubase, etc.)
2. Install the full version of the plugin. Note: the demo version cannot be unlocked
3. Copy 'Nemesis.t2k' to 'Library/Audio/Plug-ins'. The correct path for the file is: '/Library/Audio/Plug-ins/Nemesis.t2k'.
4. Open the host.
5. Do a plugin rescan in the host if it does not list Nemesis. Detailed instructions on how to perform a rescan can be found in your host's manual
6. Open Nemesis. Now the normal user interface appears. If this is not the case, close your host and go back to step 3, as most likely you did not copy the keyfile to the right place.

Welcome

Welcome to our latest synth, Nemesis. Nemesis takes FM synthesis to its next evolutionary step: NeoFM synthesis.

Aside from NeoFM synthesis, Nemesis features an astounding selection of no fewer than 22 combinable synthesis types. From Waveshaping, Phase Distortion, Sync, Wavetable, Ringmod, Vintage FM, up to the Reso and Advanced Formant Synthesis exclusive to Nemesis.

Each synthesis type is built with attention to sound quality, musical potential and the capability to produce a wide variety of sounds not possible with other synths.

You can resynthesize a waveform from your own samples, or use the comfortable additive spectral editor to further manipulate & shape your wave by editing its partials.

With several play modes such as polyphonic, monophonic & legato, true 4x stereo unison, 22 synthesis types, and an unlimited number of waveforms, the sky is the limit...literally. .



What is 'NeoFM synthesis' (NeoFM synthesis)

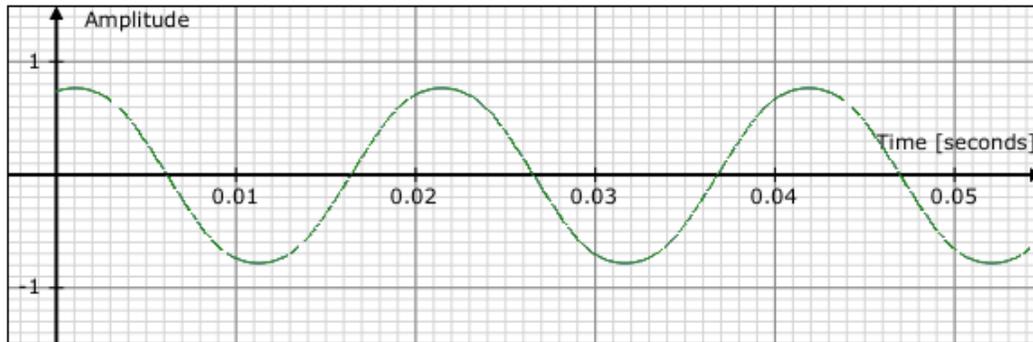
NeoFM is an exclusive new and improved approach to FM synthesis that is extremely powerful and intuitive.

Nemesis includes traditional FM synthesis as well as a completely new and improved approach to FM called NeoFM synthesis. It is now easier than ever to get very good sounding results.

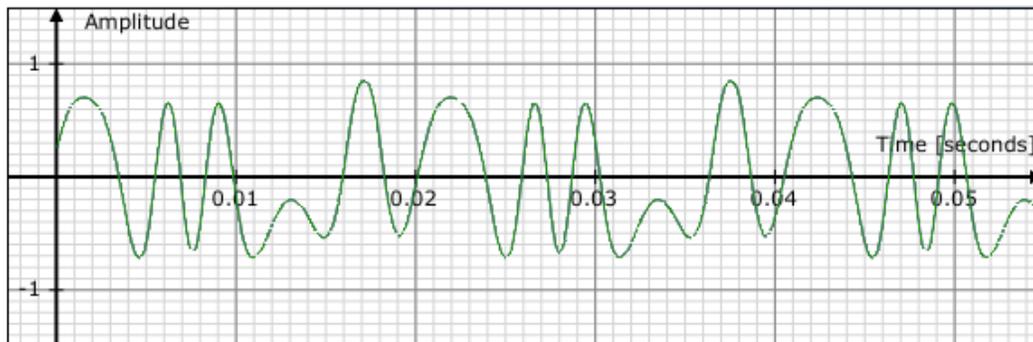
The sound quality of Nemesis surpasses conventional synths, making it easy to locate the sonic sweet spot. Nemesis features an easy-to-use interface, which ensures that you will experience FM synthesis at its best and most entertaining.

FM (Frequency Modulation) is a very powerful synthesis method, capable of creating a wide variety of sounds, both harmonic and inharmonic. By frequency modulating the timbre of a waveform with a modulation frequency within the audio range, a more complex waveform can be established.

Sine wave (carrier)



Sine wave frequency modulated by another sine wave (modulator)



In the example picture above, FM is shown using two sine waves. The first sine wave is called the modulating wave, the second is the carrier wave. The modulation wave is used to change the frequency of the carrier wave.

This is best heard if the modulator wave is running at a low frequency (which sort of sounds like a vibrato effect). As a rule, the higher the modulation frequency, the more complex your sound will get.

One major advantage that Nemesis has to offer is that NeoFM sounds very good with any kind of waveform, whereas most other FM synths are limited to dark sounding sinoids or triangle waves.



Some of the most interesting timbres in FM can be achieved if you use alternative tunings. Use for example Tune M1 and constant $\langle \rangle$ Octave M1 inside of Nemesis' Modulation Matrix, tuning the modulator to a non standard tuning.

Some words about 'FM' and its history

From the technical point of view, traditional and conventional 'FM' synths like the DX7 did not do frequency modulation, but rather phase modulation (PM).

Here the phase of a carrier oscillator is changed by a modulator oscillator. The advantage of PM is that it is easier to calculate for the chipsets.

Since the DX7 was limited to the use of sine waves there was not a big audible difference between FM and PM.

We assume that this is the reason it was marketed as an FM synthesizer, although it was a Phase-Modulation synthesizer from the technical point of view.

Later models like the DX11 adopted the phase modulation approach, added alternative waveforms besides sine waves and were also marketed with the successful and popular term 'FM'.

However, the phase modulation approach has a major disadvantage: it is limited to very dark sounding waveforms like sinoids and triangles. Most of the time classic waveforms such as Sawtooth and Square waves do not sound good with this. PM often creates a sharp, aggressive, and disharmonic sounds with lots of energy in the high frequency spectrum. Furthermore the traditional approach suffers from disharmonic sounding aliasing, or a dull, bell-like sound.

In the analog realm, a handful of synthesizers does 'real analog FM' synthesis, such as the Andromeda, for example. However these 'real analog FM' oscillators also have drawbacks: they suffer from drift. With FM and PM synthesis drift is very problematic, because slightly detuned oscillators only result in heavily detuned sidebands. This means that they frequently suffer from a disharmonic and out of place sound, In addition to this, they also lack immediate phase control.



What advantages does 'neoFM' synthesis offer compared to conventional methods?

- Unrivalled sound quality with a unique signature sound.
- Offers a new and user-friendly approach to FM synthesis. Nemesis makes FM synthesis accessible to everyone, regardless of skill level or experience.
- Easy to tweak presets or program your own sounds with.
- NeoFM covers all important aspects of traditional FM synthesis, but is in no way limited only to bell-style sounds. It offers a very large sonic range, one that is much more varied than other FM synths.
- Due to its innovative technical approach, neoFM does not suffer from a metallic sound or from the weaknesses of conventional FM.
- No fewer than 22 combinable synthesis types. Nemesis expands FM with further synthesis methods such as Additive, Formant, Wavetables, Waveshaping, Phase distortion, Sync and Reso synthesis.
- Contains 1000 inspiring patches from professional designers.
- Nemesis features a large number of exclusive sounds that are not possible with other synthesizers.
- Perfect for modern as well as all other music styles.
- Wave import, resynthesis and the additive spectral editor offer unlimited sonic possibilities.
- True 4x stereo unison.
- An extensive number of high-end quality effects, with flexible and innovative routing options.
- Trancegate with an extensive selection of setup options.
- High-End sound quality with low demands on your CPU.
- Powerful, easy-to-use arpeggiator.

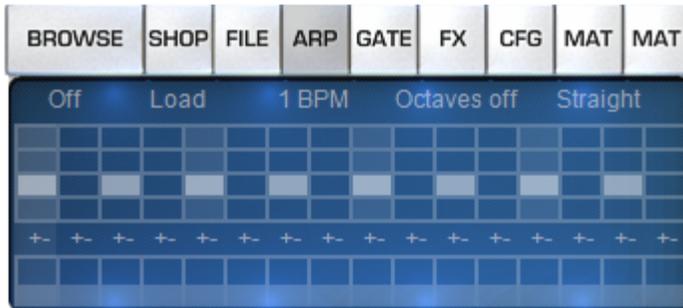
Interface overview



The Nemesis interface is split up into several sections:

- 1. Patch Display** The patch display is used to select your preset category, your presets, and it displays the current controller value.
- 2. Oscillator section** The oscillator section contains all oscillator specific controls for OSC1 & OSC2.
- 3. Envelope section** Contains all controls for Envelope1 & Envelope2.
- 4. LFO section** Contains all controls for LFO1 & LFO2.
- 5. Main section** Inside the main section you'll find the Volume & Volume Envelope, Pan, Glide, as well as all Unison controls.

Menu bar



The menu bar is used to switch between Nemesis' feature displays:

- **BROWSE** displays the Patch Manager
- **SHOP** the Shop link found in the Menu bar can be used to shop for / download new presets & expansions for Nemesis.
- **FILE** The File menu offers basic preset management functions.
 - Load patch Loads a patch from disk into Nemesis
 - Save patch Saves the current patch to disk
 - Download sounds Opens a link to the online preset section.
 - Init all Initializes Nemesis (oscillators, arpeggiator, fx,..) to its default settings.
 - Init matrix Initializes the Modulation Matrix to its default settings.
 - Copy Osc1 to Osc2 Copies Oscillator1 settings to Oscillator2
 - Copy Osc2 to Osc1 Copies Oscillator2 settings to Oscillator1
 - View handbook Opens the Nemesis PDF manual
- **ARP** switches the display to show the Arpeggiator controls.
- **GAT** switches the display to show the Gate controls.

- **FX** switches the display to show the Effects slots.
- **CFG** switches the display to show configuration panel.
- **MAT** switches the display to show the 1st Modulation Matrix page.
- **MAT** switches the display to show the 2nd Modulation Matrix page.

Oscillator control section

Nemesis offers two main oscillator panels, Oscillator1 & Oscillator2. Each Oscillator panel is divided into a Carrier & Modulator oscillator (Oscillator 1: Carrier + Modulator) - (Oscillator 2: Carrier + Modulator)

The Carrier and Modulator sections of an oscillator use their own waveform and offer a dedicated Tune, ENV, Filter & Mix control.



- **Tune C** Tune C controls the tuning of the Carrier oscillator.
- **Tune M** Tune M controls the tuning of the Modulator oscillator.
- **Det / Drift** Oscillator detune / drift Control.
 - Turning this control clockwise will detune the oscillator.
 - Turning this control counter clockwise will apply oscillator drift to the oscillator.
- **Phase** Adjusts the oscillator's starting phase. When set to a value of zero the oscillator's start phase will be Free running & Global. Changing the Oscillator phase can be used to clean up your sound. For example, by taking one of the waves out of phase, it's easy to get rid of colliding frequencies or make everything fit a bit better.

- **Feedb** Introduces a feedback signal into the oscillator. Feedback works best with either a sinoid waveform as Carrier or if the Filter C knob is set to a low value.
- **Key** FM keyfollower for the Neo FM knob. When FM key follow is set to a higher positive value and a higher key is played it will result in more frequency modulating (FM) being applied to the sound.
If you play a low key the sound will have less frequency modulating being applied.
- **Neo FM** The Neo FM control adjusts the amount of FM applied to the oscillator.
- **Env2** Controls how much of Envelope 2's modulation is applied to the Filter C control.
- **Env1** Controls how much of Envelope 1's modulation is applied to the Neo FM control.
- **Filter C** Filter C controls the amount of filtering applied to the carrier oscillator.
- **Filter M** Filter C controls the amount of filtering applied to the modulator oscillator.
- **Mix C** Controls how much of the oscillator's carrier signal is mixed in.
- **Mix M** Controls how much of the oscillator's modulator signal is mixed in.

Filters



Inside of Nemesis' oscillator section you'll see two knobs labeled Filter C & Filter M. These knobs control the amount of filtering applied to the Carrier oscillator and Modulator oscillator.

The filters in Nemesis do not work like classic VA / Subtractive filters. They are innovative 0phase-filters which operate directly on the waveform and are specifically optimized to be used with neoFM synthesis.

There are several advantages to this: they provide 2 additional real-time controls for shaping your FM sound, offer a more precise sound, do not suffer from phase shift, and filter with a 90dB slope per octave.

If the filter is set to 0, all partials with the exception of the lowest one are filtered out and you will hear a pure sine wave. With the filter completely opened the entire wave as-loaded will be audible, such as a saw or a squarewave



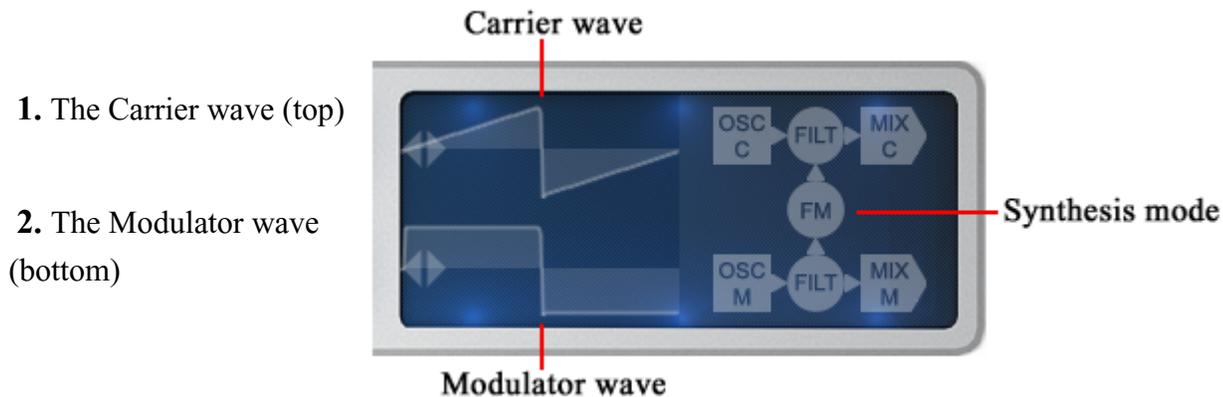
Nemesis' digital filter has an extremely steep slope of 90dB per octave. This extreme slope is useful for the FM and punchy sounds, due to the filter cutoff being lowered very quickly. At times this can sound too warm or dark for certain sounds.

What helps here is to add more energy in the waveform's high spectrum. To do this: click on the waveform to open the 'Additive Spectral Editor' and then click edit->'Damp Brighter'.

Oscillator display

The oscillator display offers several options: switching Synthesis Modes, loading factory waves, loading-in & exporting-to external waves, up to a Spectral Editor to edit partials.

First we'll look at what is displayed – the oscillator display is split into three parts:



A menu will open when you click on either Carrier or Modulator wave. From this menu, several options are offered.

- Additive Spectral editor: switches the display to the Additive Spectral Editor mode.
- Load / Resynthesis Wave: allows you to load a wave from disk. When a wave file larger than 8000 samples is loaded the user is asked if the waveform should be resynthesized (extracting a waveform from the center of the wavefile) or if the sample should be loaded completely.
- Export Wave: exports the current wave. This gives you the option to save & load an edited wave back into Nemesis or other program.



Both Carrier & Modulator wave displays are dynamically updated, whenever changes are made to the oscillator (e.g. Filter/Phase/Spectral editor...) their display will automatically follow the changes made.

3. The current synthesis mode (right)

Nemesis currently offers no fewer than 22 synthesis modes. Clicking on the current synthesis mode label will open a menu with all available synthesis modes. To switch to another mode, simply select & click on the preferred synthesis mode.



Synthesis Modes available in Nemesis

○ neoFM

Our exclusive and new approach to FM synthesis. The modulator oscillator 'M' changes the frequency of the carrier oscillator 'C'. Special 90dB 0-phase filters damp the oscillators before FM is applied, providing 2 additional dimensions of sound manipulation.

○ neoFM Softsync

neoFM synthesis with soft sync. The phase of the modulator oscillator is inverted as soon as the phase of the carrier oscillator passes 0. Softsync gives a resonating, formant-style sound with a subharmonic.

○ **neoFM Hardsync**

neoFM synthesis with hard sync. The phase of the modulator oscillator is reset as soon as the phase of the carrier oscillator passes 0. Hardsync gives a sharp, resonating and formant-style sound.

It's interesting to sweep the pitch of the modulator oscillator with an envelope. In the matrix select an envelope like 'Env1' as source and select the modulator pitch as target with 'Pitch M1'.

○ **neoFM Winsync**

neoFM with a completely new and secret approach to syncing, exclusive to Tone2 products. It gives an exciting, resonating sound - especially with combinations of squarewaves.

○ **neoFM Vintage**

The old YM chipsets of the DX7 were still quite weak. That's why they suffered from many round-off errors and aliasing, which resulted in hiss-noise and other frequency garbage.

However some people say that it did also add 'character'. This mode is a hybrid between the neoFM and the old, noisy YM chipsets.

○ **neoFM + OscC**

When you use FM synthesis with higher levels of FM, the sounds sometimes lack some 'bottom'. This mode mixes an additional unmodulated carrier oscillator to fill the frequency gap.

○ **neoFM + SubC**

When you use FM synthesis with higher levels of FM, the sounds sometimes lack some 'bottom'. This mode mixes an additional unmodulated carrier sub-oscillator one octave lower to fill the frequency gap.

○ **neoFM + SubDampM**

When you use FM synthesis with higher levels of FM, the sounds sometimes lack some 'bottom'. This mode mixes an additional, damped modulator sub-oscillator one octave lower to fill the frequency gap.

○ **FM / PM**

Conventional phase modulation – often mistakenly called 'FM'.

Only sine waves, combinations of sine waves (with a low number of partials) or triangle waves will work well as Modulator waveform. Other, more complex waveforms do not work well with this traditional FM/PM mode.

○ **FM / PM Vintage DX**

Conventional, vintage sounding phase modulation – this is what people typically call 'FM that sounds like the DX'.

The old YM chipsets of the DX7 series were still quite weak. That's why it suffered from many round-off errors and aliasing, which resulted in hiss-noise and other frequency garbage.

However some people also say that it did add 'character' to its sound.

○ **Waveshape Soft**

Conventional waveshaping suffers from sharp sound with heavy disharmonic artifacts. We've solved this problem by applying the neoFM approach to it. The modulator oscillator changes the shape of the carrier oscillator. By turning the FM knob the waveform morphs.

Low FM values can result in silence - that's why we recommend that you always use a small amount of FM or that you also mix the modulator oscillator. Note that the 'Waveshape' synthesis mode mostly requires an FM level larger than 0 to be audible.

○ **Waveshape Hard**

Is like the Waveshape Soft mode, but with sharper sound. It is similar to the traditional approach of Waveshaping but without the disharmonic artifacts. We recommend that you use more dark sounding waveforms with it, like sine or triangle. Note that the 'Waveshape' synthesis mode mostly requires an FM level larger than 0 to be audible.

○ **PWM**

Applies pulse width modulation to the waveform of oscillator C. The FM knob controls the amount of PWM. Unlike traditional synthesizers that are limited to a squarewave, our PWM can be applied on any waveform and supports feedback. The Spectral Editor can be used to create very interesting morphing transitions. Note that 'FM key follow' should be set to 100 when you use this mode.

○ **PD Saw**

Applies phase distortion to the waveform of oscillator C. The FM knob controls the amount of PD. When you load a sine wave into Osc C it will morph to a saw as soon as you change the FM level.

Unlike traditional PD synthesizers, such as the Casio CZ series, which are limited to morphing sinewaves, our PD can be applied on any waveform and supports feedback. The Spectral Editor can be used to create very interesting morphing transitions. Note that 'FM key follow' should be set to 100 when you use this mode.

○ **PD Square**

Applies phase distortion to the waveform of oscillator C. The FM knob controls the amount of PD. When you load a sine wave into Osc C it will morph to a square as soon as you change the FM level. Unlike traditional PD synthesizers, like the Casio CZ series, which are limited to morphing sinewaves, our PD can be applied on any waveform and supports feedback. The Spectral Editor can be used to create very interesting morphing transitions. Note that 'FM key follow' should be set to 100 when you use this mode.

○ **Wavetable**

The wavetable synthesis mode allows you to crossblend between two waveforms. The MixM amount controls the mix balance between waveform C and waveform M.

You can create interesting transitions if you use the spectral editor to manipulate the phase of the partials. When you set the phase to 0 for the first waveform C and to 180 for the second waveform M, the amplitude of the partials will cancel out when the FM mix level is around 50%. When you use identical phase for both waveforms you'll get a smooth transition when you morph with the FM and a more solid sound. In addition to this, FM and feedback are also available.

○ **RingMod Soft**

Ringmodulates oscillator M and oscillator C, which creates additional harmonics. The traditional Ringmod method suffers from a very sharp and aggressive sound. Our RingMod Soft mode damps one of the oscillators before the signal is modulated, resulting in a more comfortable sound. The FM knob controls the amount of ringmodulation mixed. Make sure that you set either Mix M or Mix C to a value larger than 0, otherwise the output will be muted. 'FM key follow' should be set to 100 when you use this mode. You can create interesting transitions if you use the spectral editor to manipulate the phase of the partials.

○ **RingMod**

Ringmodulates oscillator M and oscillator C, which creates additional harmonics. This is traditional ringmodulation without damping. This mode is especially useful for darker, sinoid waveforms.

The FM knob controls the amount of ringmodulation mixed. Make sure that you set either Mix M or Mix C to a value larger than 0, otherwise the output will be muted. 'FM key follow' should be set to 100 when you use this mode.

You can create interesting transitions if you use the spectral editor to manipulate the phase of the partials.

○ **Reso Soft**

Creates a soft sounding resonance sound with partials of oscillator C. This synthesis method is exclusive to Tone2 only. FM controls the formant frequency. The 'Reso' synthesis modes are very useful to simulate resonant filter sounds, for example.

This mode can be used to mimic filter sweeps of a bandpass filter. The Spectral Editor can be used to create very interesting morphing transitions. Note that 'FM key follow' should be set to 100 when you use this mode.

○ **Reso Hard**

Creates a hard sounding resonance sound with partials of oscillator C. This synthesis method is exclusive to Tone2 only. FM controls the formant frequency. The 'Reso' synthesis modes are very useful to simulate for example resonant filter sounds.

This mode can be used to mimic filter sweeps of an analog filter, if you load a saw or square wave to oscillator C and set Filter C to a value from 0 to 20. You will get a synced sound if you set Filter C to 100. The Spectral Editor can be used to create very interesting morphing transitions. Note that 'FM key follow' should be set to 100 when you use this mode.

○ **Reso Hollow**

Creates a hollow sounding resonance sound, which for example can sound like an elephant or an overblown flute. This synthesis method is exclusive to Tone2 only and not available in any other synthesizer.

FM controls the formant frequency. The Spectral Editor can be used to create very interesting morphing transitions. Note that 'FM key follow' should be set to 100 when you use this mode.

○ Formant Synthesis

An enhanced formant oscillator with a sharp, bandlimited sound. This synthesis method, which can be difficult to handle, is suitable for modeling voices or natural instruments. If you load a sine wave into oscillator C it will sound similar to the format oscillators from the classic Yamaha FS1R.

However, Nemesis is not limited to just sine waves - it can do formant synthesis with any waveform, which allows the creation of much more complex spectra. FM controls the formant frequency and reso controls the bandwidth of the formant. The spectral editor can be used to edit the partials of the formant.



Complex Waveforms work well in neoFM and other modes. They can be used as Modulator waveform as well as Carrier waveform.

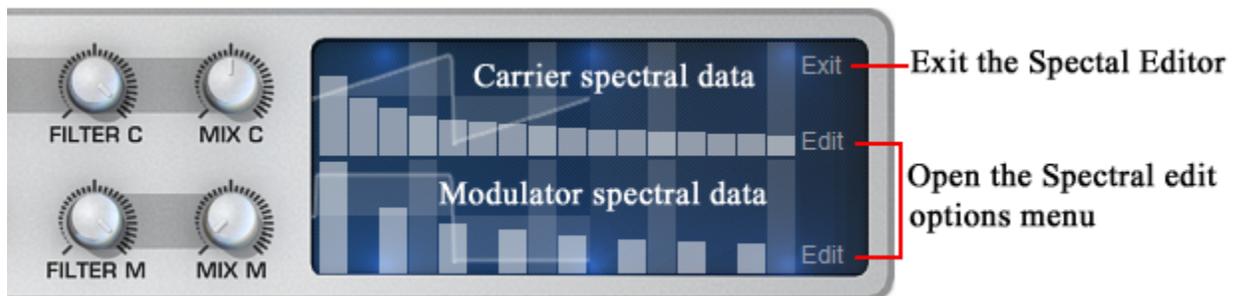
In FM / PM / FM Vintage mode, use sine waves, combinations of sine waves (with a low number of partials), or triangle waves. These will work best as Modulator waveform. More complex waveforms do not work well with the traditional FM/PM modes.

The formant synthesis is very useful for modeling vocals. Use a spectrum analyzer and tweak the partials inside of the additive editor till you got the desired shape.

Additive Spectral Editor

The additive Spectral Editor can not only be used to synthesize waveforms such as in a simple additive synthesizer, it is also a very useful tool to manipulate the partials or phase of existing waveforms.

Most conventional additive waveform editors offer no phase control and are limited to 16-64 partials. The additive editor of Nemesis can handle the first 32767 partials of any waveform and you have detailed control over the phase of the waveform. This can make a significant difference in the sound, especially when the oscillator is played at a low frequency.



To open the Spectral Editor, click on either the Carrier or Modulator Wave inside of the Oscillator display and select Spectral Editor from the menu (top left). To exit the Spectral Editor, click on the Exit button (top right)

The vertical sliders allow direct control of the gain value for the first 16 partials. To edit a partial, left-click-hold on one of the bars and drag the partial bar up or down to change its value.

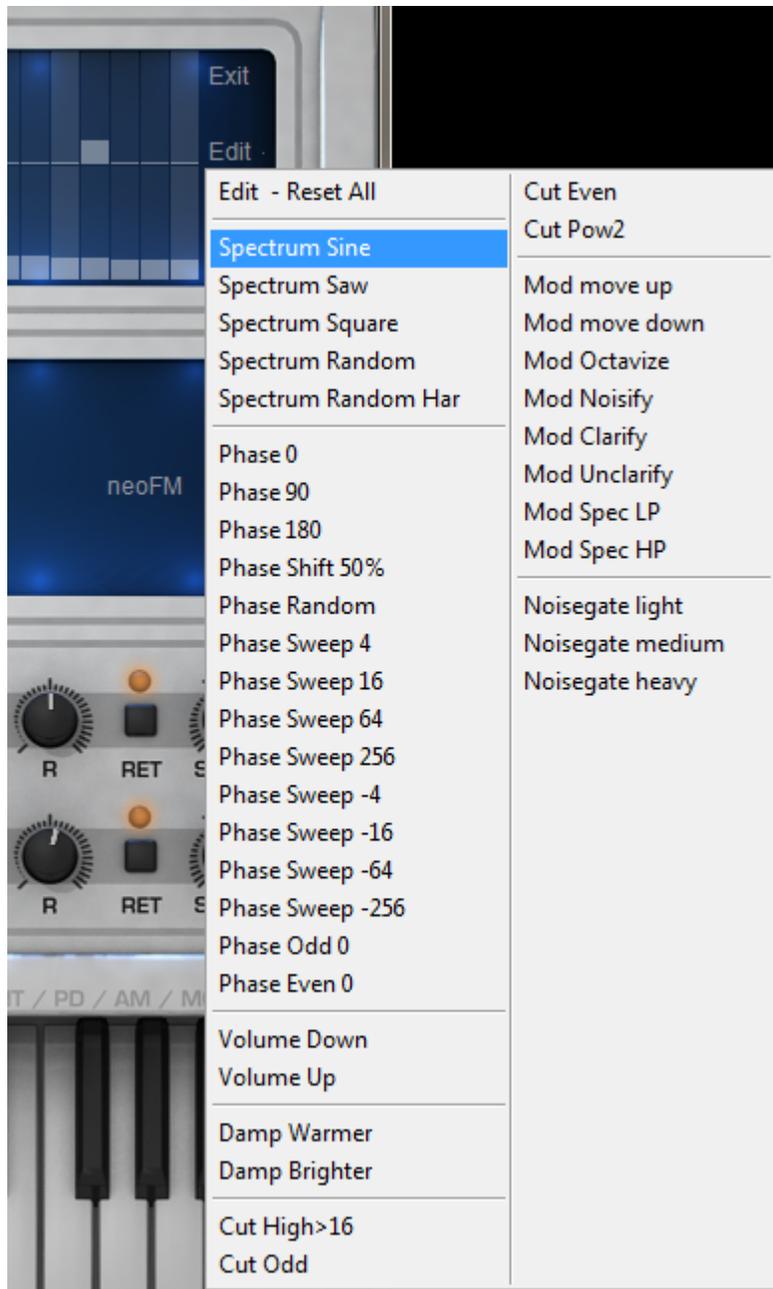
The higher partials and their phases can be tweaked with the modifiers, to open a menu with these modifiers, click on the Edit button next to the partials line.

The Modifiers are used to tweak a waveform – they change the phase or the gain of the harmonics. We recommend that you set Filter to 100 when you edit a waveform, otherwise you may not hear the high frequencies.



The gain of the first 16 partials (1-16) inside of your waveform can be edited directly with the sliders. The gain and the phase of all partials (1-32768) can be changed with the modifiers found inside of Nemesis' Spectral Edit menu.

The Modifiers are destructive. This means that an unlimited number of Modifiers can be applied to a waveform. However, it also means that the original waveform is lost as soon as you apply them. To reset a waveform you can either exit the Spectral Editor and reload it, or use the 'Reset to Saw' Modifier. You can also save your creations to a wave file by selecting 'Export wave' in the waveform selector. Nemesis automatically lists all wav files from the Nemesis_waves folder in the waveform selector, as soon as you load the plugin. On PC, the waveform directory can be found inside of the VST plugin directory. On the Mac it is found in the Library/Audio/Plug-Ins/Nemesis_waves folder.



Spectral modifiers

Edit – Reset All

Completely resets the waveform to a Saw wave. All partials are set to the spectrum of a saw wave and the phases of all partials are set to 0.

Spectrum Sine

All partials are set to 0 except for the first one. The phases of the partials are not affected by it.

Spectrum Square

All partials are set to the spectrum of a square wave. The phases of the partials are not affected by it..

Spectrum Random

All partials are set to a random spectrum that has an energy distribution similar to pink noise. The phases of the partials are not affected by it.

Spectrum Random Har

All partials are set to 0 except for four random partials. The phases of the partials are not affected by it.

Phase 0

The phases of all partials are set to 0. This phase setting is the most common for traditional waveforms. The spectrum is not affected by it.

Phase 90

The phases of all partials are set to 90 degrees. The spectrum is not affected by it. While your ear may not notice a change in the sound compared to 0 degrees, it gives a significant difference in combination with PWM, PD or Wavetable synthesis.

Phase 180

The phases of all partials are set to 180 degrees, which results in inversion. The spectrum is not affected by it. While your ear may not notice a change in the sound compared to 0 degrees it gives a significant difference in combination with Wavetable synthesis or additional, slightly detuned oscillators.

Phase Shift 50%

The phase of all partials is shifted in such a way that the starting point of the waveform is moved 50% forward. The spectrum is not affected by it. While your ear may not notice a change in the sound compared to 0 degrees, it gives a significant difference in combination with Wavetable synthesis or additional, slightly detuned oscillators.

Phase Random

The phases of all partials are set to a random value. The spectrum is not affected by it. This Modifier makes a waveform sound silky, noisy and soft, especially when you play the oscillator at a low frequency.

Phase Sweep 4

The phases of all partials are swept by a value of 4. The spectrum is not affected by it. This Modifier makes a waveform sound laser-like, chirpy, futuristic or artificial, especially when you play the oscillator at a low frequency.

Phase Sweep 16

The phases of all partials are swept by a value of 16. The spectrum is not affected by it. This Modifier makes a waveform sound laser-like, chirpy, futuristic or artificial, especially when you play the oscillator at a low frequency.

Phase Sweep 64

The phases of all partials are swept by a value of 64. The spectrum is not affected by it. This Modifier makes a waveform sound laser-like, chirpy, futuristic or artificial, especially when you play the oscillator at a low frequency.

Phase Sweep 256

The phases of all partials are swept by a value of 256. The spectrum is not affected by it. This Modifier makes a waveform sound laser-like, chirpy, futuristic or artificial, especially when you play the oscillator at a low frequency.

Phase Sweep -4

The phases of all partials are swept by a value of -4. The spectrum is not affected by it. This Modifier makes a waveform sound laser-like, chirpy, futuristic or artificial, especially when you play the oscillator at a low frequency.

Phase Sweep -16

The phases of all partials are swept by a value of -16. The spectrum is not affected by it. This Modifier makes a waveform sound laser-like, chirpy, futuristic or artificial, especially when you play the oscillator at a low frequency.

Phase Sweep -64

The phases of all partials are swept by a value of -64. The spectrum is not affected by it. This Modifier makes a waveform sound laser-like, chirpy, futuristic or artificial, especially when you play the oscillator at a low frequency.

Phase Sweep -256

The phases of all partials are swept by a value of -256. The spectrum is not affected by it. This Modifier makes a waveform sound laser-like, chirpy, futuristic or artificial, especially when you play the oscillator at a low frequency.

Phase Odd 0

The phases of all odd partials are set to 0. The spectrum is not affected by it.

Phase Even 0

The phases of all even partials are set to 0. The spectrum is not affected by it.

Volume Down

Lowers the volume of all partials. This does not affect the phase.

Volume Up

Raises the volume of all partials. This does not affect the phase. If the higher volume would result in a clipping of the waveform it is automatically limited to the maximum.

Damp warmer

Reduces the volume of high partials, which makes the waveform sound more warm. This does not affect the phase.

Damp brighter

Reduces the volume of low partials, which makes the waveform sound brighter. This does not affect the phase.

Cut High >16

Sets the volume of all partials above the 16th to 0, which results in a band-limited, low-pass-filtered sound. This does not affect the phase.

Cut Odd

Sets the volume of all odd partials to 0, which results in squarewave-like sound. This does not affect the phase.

Cut Even

Sets the volume of all even partials to 0, which results in sawtoothwave-like sound one octave above. This does not affect the phase.

Cut Pow2

Sets the volume of all partials to 0, which are not equal to the power of 2. This results in an organ-like sound. This does not affect the phase.

Mod move up

Shifts all partials one slot up. This does not affect the phase.

Mod move down

Shifts all partials one slot down. This does not affect the phase.

Mod Octavize

Duplicates the waveform and adds it one octave higher. This does not affect the phase.

Mod Noisify

Distorts the harmonics and the phase. It results in a waveform that sounds noisier.

Mod Clarify

Attenuates all harmonics with a high volume and damps all harmonics with a low volume. As a result you mostly get a more clean sound. This does not affect the phase.

Mod Unclarify

Attenuates all harmonics with a low volume and damps all harmonics with a high volume. As a result you mostly get a more sawtooth-style sound. This does not affect the phase.

Mod Spec LP

Applies a lowpass filter to the spectrum of the harmonics. As a result you mostly get a more sawtooth-style sound. This does not affect the phase.

Mod Spec HP

Applies a highpass filter to the spectrum of the harmonics. As a result you mostly get a more characteristic and clean sound. This does not affect the phase.

Noisegate light / medium / heavy

Sets the volume of all partials below the threshold to 0, which removes noise from the sound.

This does not affect the phase.

Arpeggiator

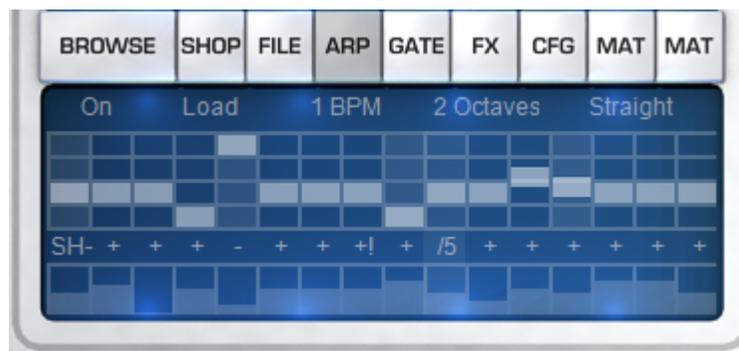
Almost a synth by itself, the arpeggiator section holds the key to all of your arpeggio needs. It offers a way to set up your own arpeggios that is both powerful and easy to work with.

We developed smart algorithms which return melodies that are more useful musically than conventional arpeggiators.

Working with the arpeggiator is extremely simple. Just lay down your notes inside the note sequencer as you normally would and select the play direction. The arpeggiator also supports optional advanced features such as autochords, polyphonic playback, pitch slides, legato, swing-shuffle, split, matrix integration and it gives you very precise control over note-sorting, play direction and velocity.

Don't feel like programming your own patterns? Use one of the built-in patterns or load one of the many external pattern presets to use as a starting point.

Working with an arpeggiator should be fun and inspiring. The arpeggiator in Nemesis is as fun and inspiring as it is powerful, flexible, and easy to use



The arpeggiator display can be split up into 4 major parts:

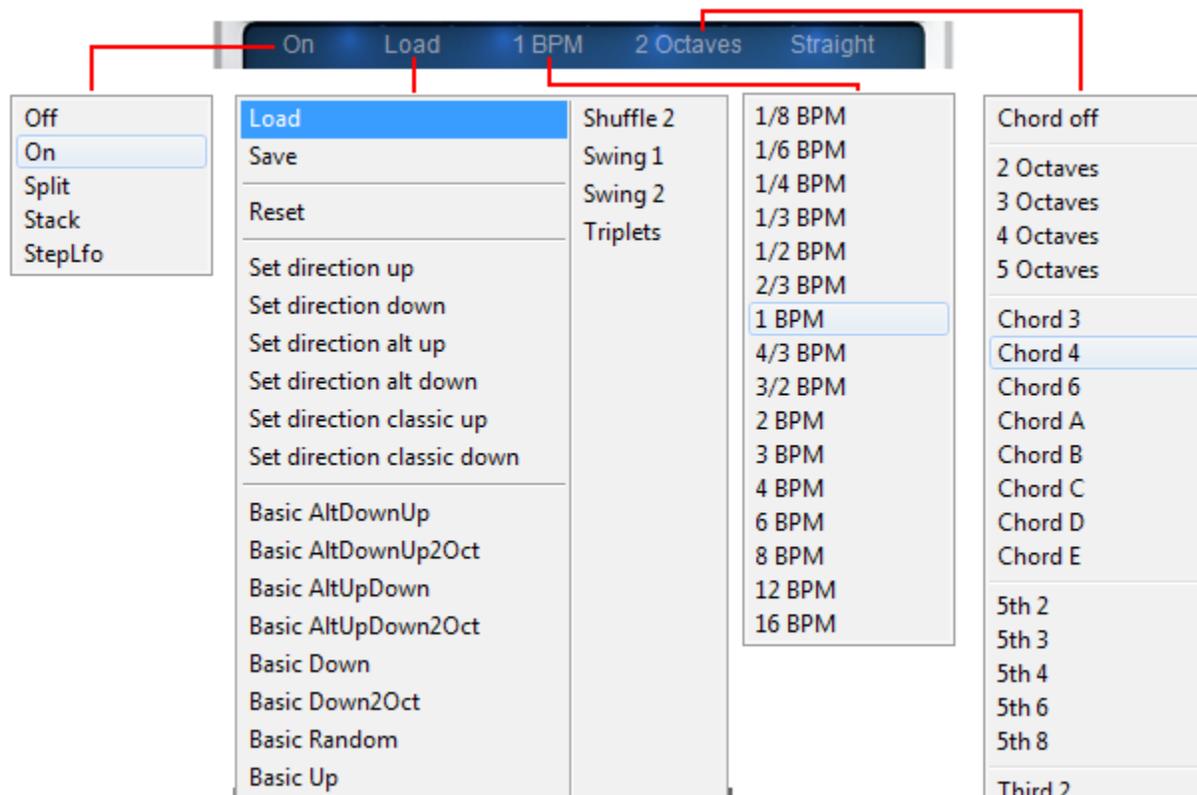
■ **The Menu bar** Used to set Arp modes, load/save/reset patterns, set Tempo, Chord and set Swing / Shuffle amount.

■ Arp mode menu

The Arp mode menu let's you select which Arpeggiator mode should be used, its options are:

Off Switches the arpeggiator off.

On Switches the arpeggiator on.



Split Switches the arpeggiator to keyboard split mode. Low keys will use the arp to playback and higher keys will play normally.

Stack This mode works together with the Chord option found in the arp menu. It uses the selected chord and lets you play that chord using a single key.
Note that all arpeggiator options (note sorting, octave, semi,...) will be ignored in this mode.

StepLfo This mode enables the StepLfo found at the bottom of the arp. Use the Modulation Matrix and the "Arp StepLfo" options inside of the ModMatrix to route the StepLfo to a modulation destination.
Note that in StepLfo mode, all arpeggiator options (note sorting, octave, semi,...) will be ignored.

■ Load menu

The Load menu provides you with basic features like Arp pattern loading & saving, pattern reset, pattern direction options, as well as a list of template patterns for you to select from.

■ BPM menu

The BPM menu is used to set the arpeggiator's tempo in multiples and divisions of the tempo of your host program. Multiples of the tempo: default is 1 BPM – the ARPEGGIATOR's tempo, which is the same as the host's tempo. 2 BPM is twice the host's tempo. 8 BPM is eight times the host's tempo, etc. Divisions of the tempo: e.g., 2/3 BPM is two thirds of the hosts' s tempo.

■ Arpeggiator Octave / Chord menu

The Nemesis arpeggiator supports playback over several octaves as well as automatic chords.

To make the arpeggiator play over several octaves click on 'Octaves off' and select 2,3,4 or 5 octaves instead. When you select '3 Octaves' it will play C2 C3 C4 as soon as you press the C key. The 'Chord', '5th', and 'Third' modes automatically create chords when you press a single key.

You can combine all 'Octave' and 'Chord' modes with the 'Stack' Arpeggiator mode. In Stack mode a whole stacked major or minor chord will be triggered when you hit a single key. It is released when you release the key. Make sure that you don't forget to switch to 'Polyphonic' in the voice configuration (CFG).

Octave / Chord modes

Chord off:

No additional octaves or chords are generated.

2 octaves:

One additional octave is generated. The arpeggiator will play C2 C3...

3 octaves:

Two additional octaves are generated. The arpeggiator will play C1 C2 C3...

4 octaves:

Three additional octaves are generated. The arpeggiator will play C1 C2 C3 C4...

5 octaves:

Four additional octaves are generated. The arpeggiator will play C1 C2 C3 C4 C5...

Chord3:

A major or minor chord with 3 notes is generated. The arpeggiator will play C3 E3 G3...

Chord4:

A major or minor chord with 4 notes is generated. The arpeggiator will play C3 E3 G3 C4...

Chord6:

A major or minor chord with 6 notes is generated. The arpeggiator will play C3 E3 G3 C4 E4 G4...

ChordA:

A major or minor third chord with 3 notes is generated. The arpeggiator will play C3 C4 E4...

ChordB:

A 5th chord with 3 notes is generated. The arpeggiator will play C3 C4 G4...

ChordC:

A major or minor chord with 4 notes is generated. The arpeggiator will play C3 C4 E4 G4...

ChordD:

A major or minor chord with 5 notes is generated. The arpeggiator will play C3 G3 C4 E4 G4...

ChordE:

A major or minor chord with 8 notes is generated. The arpeggiator will play C2 G2 C3 E3 G3 C4 E4 G4...

5th 2:

A 5th chord with 2 notes is generated. The arpeggiator will play C3 G3...

5th 3:

A 5th chord with 3 notes is generated. The arpeggiator will play C3 G3 C4...

5th 4:

A 5th chord with 4 notes is generated. The arpeggiator will play C3 G3 C4 G4...

5th 6:

A 5th chord with 6 notes is generated. The arpeggiator will play C2 G2 C3 G3 C4 G4...

5th 8:

A 5th chord with 8 notes is generated. The arpeggiator will play C2 G3 C3 G3 C4 G4 C5 G5...

Third 2:

A major or minor third chord with 2 notes is generated. The arpeggiator will play C3 E3...

Third 3:

A major or minor third chord with 3 notes is generated. The arpeggiator will play C3 E3 C4...

Third 4:

A major or minor third chord with 4 notes is generated. The arpeggiator will play C3 E3 C4 E4...

Third 6:

A major or minor third chord with 6 notes is generated. The arpeggiator will play C2 E2 C3 E3 C4 E4...

■ Swing / Shuffle menu

The Swing / Shuffle menu allows you to add swing or shuffle to your arp pattern. Its default setting is straight – when click-held & dragged up shuffle is increased, when click-held & dragged down the amount of swing is increased.

- Straight: When set to its middle position: Straight, all step events are aligned straight to the tempo grid.
- Swing: swing lets you create various ‘swing’ effects. By increasing the amount of swing, step events will have a greater swing groove.
- Shuffle: shuffle has a specific 8th note rhythmic feel. It is based on triplet subdivisions of the beat rather than on dividing each beat perfectly in half (a.k.a. straight 8th notes).

The Pattern sequencer:

The Pattern sequencer is where all the action happens. Here you will tell the arpeggiator which pattern to follow and set up which notes it should use.

The pattern sequencer is represented by a grid of 16 steps. The horizontal line represents the arp sequencer step number, the vertical line is used to set which octave / semi note that step should use.

To switch a step on/off click on one of the steps. Whenever a step is switched on, it will play back a note. When a step is switched off, the last active note will be held until the next active step.

To set which octave a step should use, click within the 4 octave vertical range of the step. To select semi notes, click-hold & drag the step up or down.

Note that Nemesis' value readout display (found below the Patch display, will show you which Octave / Semi note value is selected.

Note sorting / Play direction / Chord and special commands

The 'Arp Order' row is located below the sequencer note grid. This row gives detailed control on how the arpeggiator handles the incoming notes.

The 'Arp order' command always refers to the current arpeggiator slot.

■ Play direction commands

+ (up: CEG CEG)

Sets the play direction of the current slot to 'up'. When you play a chord with three notes (C E G) it will start with the lowest note C. After that it will continue with the middle note E. As soon as the highest G has been played it will restart with the lowest note C. You can set the play direction of all 16 slots to + by selecting 'Load' -> 'Set direction up'.

- (down: GEC GEC)

Sets the play direction of the current slot to 'down'. When you play a chord with three notes (C E G) it will start with the highest note G. After that it will continue with the middle note E. As soon as the lowest note C has been played it will restart with the highest note G. You can set the play direction of all 16 slots to - by selecting 'Load' -> 'Set direction down'.

+ - (alt up: CECE CECE)

Sets the play direction of the current slot to 'alternate up and down'. When you play a chord with three notes (C E G) it will start with the lowest note C and go 'up'. After that it will continue with the middle note E. When the highest note G is played it will change the direction to 'down' and the middle note E will follow. When the lowest note C is reached it changes the direction to 'up' again. You can set the play direction of all 16 slots to +- by selecting 'Load' -> 'Set direction alt up'.

- + (alt down: GECE GECE)

Sets the play direction of the current slot to 'alternate down and up'. When you play a chord with three notes (C E G) it will start with the highest note G and go 'down'. After that it will continue with the middle note E. When the lowest note C is played it will change the direction to 'up' and the middle note E will follow. When the highest note G is reached it changes the direction to 'down' again. You can set the play direction of all 16 slots to -+ by selecting 'Load' -> 'Set direction alt down'.

++ (two up)

Like +, but instead of one it goes two notes up.

- (two down)

Like -, but instead of one it goes two notes down.

. (same note again)

Repeats the note played in the previous slot.

? (random)

Plays a random note

+! (classic up: CEG CEG)

Like +, but without the 'smart melody' algorithm. In this mode the arpeggiator behaves as in conventional synthesizers. The (mostly uncomfortable) effect is most obvious when you set 'Arp Note semi' in the grid to various values. You can set the play direction of all 16 slots to +! by selecting 'Load' -> 'Set direction classic up'.

-! (classic down: GEC GEC)

Like -, but without the 'smart melody' algorithm. In this mode the arpeggiator behaves as in conventional synthesizers. The (mostly uncomfortable) effect is most obvious when you set 'Arp Note semi' in the grid to various values. You can set the play direction of all 16 slots to -! by selecting 'Load' -> 'Set direction classic down'.

■ Chord commands

2 (chord with 2 notes)

Plays a chord with two notes.

+2 (Go up and play a chord with 2 notes)

Like + followed by 2

-2 (Go down and play a chord with 2 notes)

Like - followed by 2.

3 (chord with 3 notes)

Plays a chord with three notes

+3 (Go up and play a chord with 3 notes)

Like + followed by 3

-3 (Go down and play a chord with 3 notes)

Like - followed by 3

All (Play a chord with all notes)

Plays a chord containing all keys that are currently pressed.

■ Special commands

SL (start with the lowest note)

Forces a resorting of the notes and the lowest note is played. It can be musically useful to place this command in slot 0 or slots that you want to attenuate. As a result the melody created by the arpeggiator appears less 'chaotic'.

SH (start with the highest note)

Forces a resorting of the notes and the highest note is played. It can be musically useful to place this command in slot 0 or slots that you want to attenuate. As a result the melody created by the arpeggiator appears less 'chaotic'.

R (release)

Triggers the envelope's release phase.

L (looplevelth)

If you set slot 6 to L the Arpeggiator will restart the loop sequence after 6 bars, instead of 16 bars.

E (end)

If you set slot 6 to E the Arpeggiator will stop playing at slot 6.

■ Pitch glide and legato commands

< (legato)

When the < is placed in a slot the arpeggiator does not trigger a new note. Instead of this it glides from the currently played note to the new one. This command only applies if the current and the last note are different. So a combination with 'Arp note' set to one of octave higher/lower is useful in most cases.

/X (glide X halftones up)

This glide behaves like you would be moving your pitchwheel up. It raises the pitch for X halftones till the next slot. It does not care about the previously or currently played note like the legato.

\X (glide X halftones down)

This glide behaves like you would be moving your pitchwheel down. It lowers the pitch for X halftones till the next slot. It does not care about the previously or currently played note like the legato.

Arp velocity / StepLFO

This part of the Arpeggiator display is used to set up which velocity value each arpeggiator step should use. It also doubles as a StepLFO.



Each step is represented by a small slider (value 1-100). By routing the ArpStepLfo and / or Velocity sources to a destination inside of the Modulation Matrix, you can use this to modulate features within Nemesis. For example, you could use the StepLfo to modulate the filter or Neo FM knob.

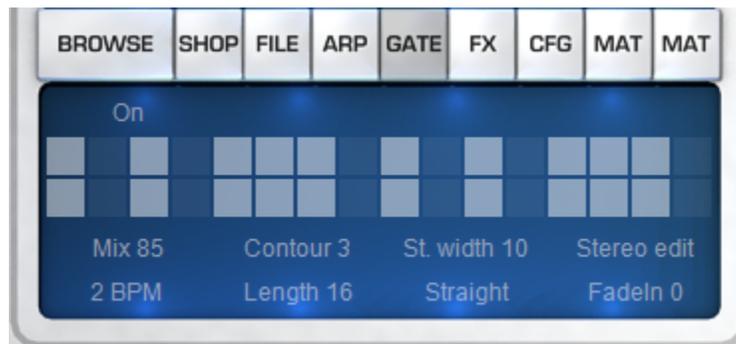
Gate

Nemesis also offers a dedicated Gate section. As with the arpeggiator, we aimed to make this as intuitive and flexible as possible.

The Gate section provides advanced features like Contour, Fading, Swing and Shuffle to fine-tune your gate to perfection.

Arpeggiator, gate and modulation run in perfect sync with each other. This allows you to use the three together in all kinds of creative ways and it makes them easy to use and fun to play with.

To open the Gate section, click on the Gate button inside the menu bar. The Gate is displayed as 32 squares divided into two rows (16 steps for the left signal & 16 steps for the right). Below these steps you'll find all further Gate settings, including those for instance Tempo, Mix, Contour and Edit mode.



To switch the Gate on or off, click on the On/Off label on the top left of the Gate window.

To switch a Gate step on or off, left-click on one of the squares. Note that when the Gate is in Stereo edit mode, left & right steps are edited separately. In Mono mode, both left & right steps are tied and edited as one. Stereo or Mono mode can be set by clicking on the Stereo edit label (top right of the Gate settings)

Below the Gate steps you'll find all Gate settings:

- **Mix:** The Mix parameter sets the amount of dry / wet Gate signal mixed in. A value of 100 will mean the signal is completely gated, lower values will mix dry signal back in.
- **BPM:** BPM sets the speed for the Gate in multiples of the tempo of your host program. Default value is 2 BPM – which is the same as twice the host's tempo.

■ **Contour:** Sets the contour shape used to for the Gate. The higher its value the softer the gated signal will be; e.g. a value of zero will use a hard gated volume, whereas a value of 10 will use a more soft faded gate.

■ **Length:** Defines the length of steps used for the Gate.

■ **St.width:** Sets the stereowidth; Note: its effect is audible only if the Gate uses different left & right steps.

■ **Straight:** Drag up / down to change its values, dragging up applies Shuffle to the Gate, down applies Swing. Left in the middle position the Gate is played in a straight pattern.

■ **Swing / Shuffle:**

Shift / Shuffle is used to set the amount of swing or shuffle used in the Gate playback . Default setting is straight, when click-held & dragged up shuffle is increased, when click-held

- Straight When set to its middle position: Straight, all step events are aligned straight to the tempo grid.

- Swing swing lets you create various ‘swing’ effects. By increasing the amount of swing, step events will have a greater swing groove.

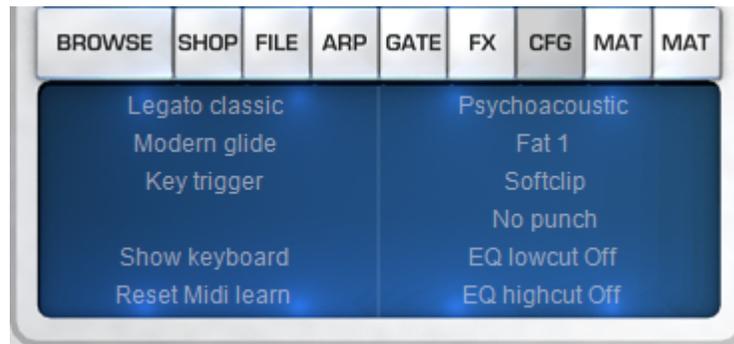
- Shuffle shuffle has a specific 8th note rhythmic feel. It is based on triplet subdivisions of the beat rather than on dividing each beat perfectly in half (a.k.a. straight 8th notes).

■ **Stereo edit:** Switches the Gate edit mode to Stereo or Mono. In Stereo mode each left & right step is edited individually. In Mono mode both left & right steps are edited as one.

■ **Fadein:** Applies a fade-in to the Gated signal. A value of zero will apply the Gate immediately, while higher values result in a short dry signal before the wet gated signal is mixed in.

Configuration (CFG) display

The configuration menu contains all settings for Voice and Audio-output management. Next to this you'll also find the Show / Hide keyboard switch and Reset Midi-learn option here.



■ Play Modes

Nemesis supports a large number of different and innovative monophonic and polyphonic play-modes.

Monophonic

Only one voice will be used – similar to old analog synths. If you press a key while a voice is still playing, the volume envelope and oscillators will be soft re-triggered to prevent clicks. If you set the RET (Re-trigger) option for Env1 or Env2 to off, the Envelope will also be re-triggered when you release a key. In Monophonic mode the glide knob controls the glide speed of the oscillators. Gliding always occurs if the glide knob is set to a value larger than 0 - no matter how many keys you already have pressed.

Legato new

The punchy sounding Legato new is suitable for modern music. This innovative mode is exclusive to Tone2 synthesizers and not available from any other company.

When you play a key, no gliding will occur – the oscillators will immediately play the new note. As soon as you release the second key the oscillators will glide. The glide knob controls the glide speed of the oscillators. If you set the RET (Re-trigger) option for Env1 or Env2 to off, the Envelope will also be re-triggered when you release a key.

Legato

This is a classic Legato. When you play the first key no gliding will occur. As soon as you press another key the oscillators will glide. The glide knob controls the glide speed of the oscillators. If you set the RET (Re-trigger) option for Env1 or Env2 to off, the Envelope is re-triggered as soon as you play another key.

Polyphonic 1

This mode is suitable for punchy bass sounds. Because the Monophonic mode does not always re-trigger the oscillators when you play a new key, it sometimes lacks punchiness and precision.

Polyphonic 1 mode solves this problem by quickly fading the old voice out, as soon as a new one (with a re-triggered phase) starts playing. For maximum punch set the Osc Phase to a value larger than 0.

When you play a second note the first one stops playing.

The glide knob controls the glide speed of the oscillators. Gliding always occurs if the glide knob is set to a value larger than 0 - no matter how many keys you already have pressed.

Polyphonic X

This is a Polyphonic play-mode similar to what you know from conventional synthesizers.

X represents the number of voices that are available. When this limit is reached the engine softly fades out voices without any clicks. If you use unison (2X or 4X), the number of voices is automatically multiplied by 2 or 4. In this way voice management is taken care of for you automatically.

In most cases 6 or 8 voices will suffice. If you notice that the CPU usage is too high you can reduce the number of voices or switch off the unison. The glide knob controls the glide speed of the oscillators. In Polyphonic mode polyphonic gliding is supported. Gliding always occurs if the glide knob is set to a value larger than 0.

If you set RET of Env1 or Env2 to off the Envelope is switched to global mode. All voices will share one single envelope for modulation, which is re-triggered with the first pressed key. This setup gives a lot of dynamic expression, which works well for sounds like rising pads.

■ **Glide modes**

The glide knob controls the glide speed of the oscillators. Gliding occurs if you set the glide knob to a value larger than 0. Inside the configuration menu 'CFG' you can select from one of the several Glide modes that Nemesis offers:

Modern glide

A linear pitch sweep between notes. In most cases this will be the most musically useful sounding mode.

Vintage glide

A logarithmic pitch sweep between notes which sounds more like 'analog' synthesizers. This mode lowpass filters the pitch of the oscillators. As a result you get faster gliding at the beginning and slower gliding when the target pitch is reached.

Variable glide

The speed of the glide depends on how far the distance between the two notes is. A glide over several octaves will take longer than gliding to a neighboring note.

■ **Re-rigger mode**

The Re-trigger mode is used to determine which sync. mode is used by the Arpeggiator & Gate. There are two Re-trigger options:

Key trigger: The Arpeggiator and Gate are re-triggered with each new key press.

Sync to host: The Arpeggiator and Gate are synced-to and follow the host's play position.

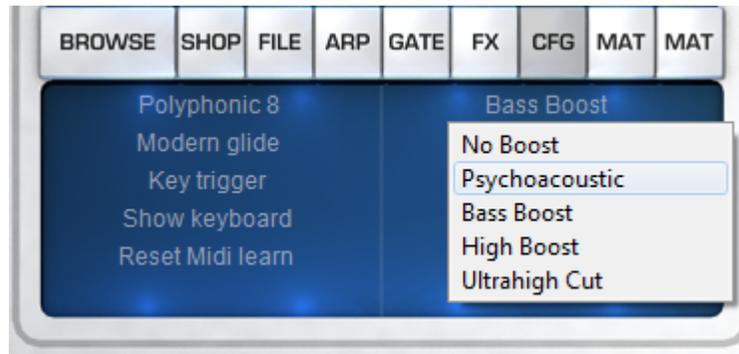
■ **Show / Hide Keyboard**

The Show / Hide keyboard is used to hide or show Nemesis' keyboard.

■ **Reset Midi-learn**

Reset Midi-learn clears all midi-learned controls by resetting them to their default unassigned setting. The midi-learn configuration is stored inside the Fmmidi.cfg file. Note: if you delete this file manually, you must be sure to unload Nemesis first before you delete Fmmidi.cfg.

■ Boost modes



Nemesis offers several boost modes that will enhance various frequency ranges of the sound. These can be used to enhance bass, high frequencies, or make the sound closer to that of analog-style synths.

No Boost: no boost or enhancement.

Psychoacoustic: Equalizes non-linearities of the human ear, making the patch sound thicker and louder, without raising the overall volume.

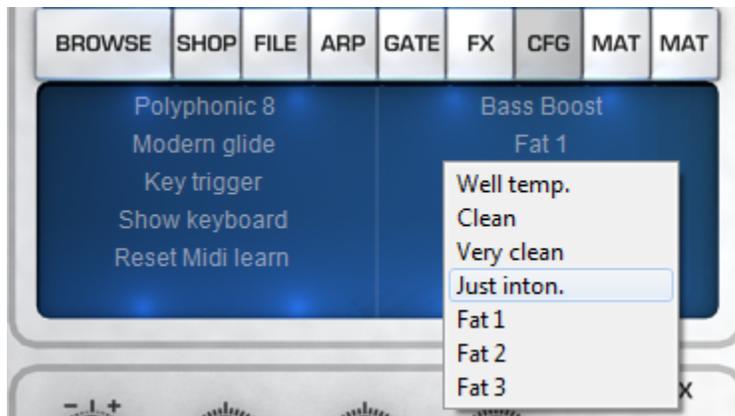
Bass Boost: Equalizes non-linearities of the human ear. Suitable for most bass sounds to add additional low end.

High Boost: This mode adds high-end and removes a bit of sharpness from the sounds. This mode is useful for leads and pads.

Ultrahigh Cut: Removes frequencies above 10Khz from the signal. Use this mode if you want to do analog-style sounds.

■ Micro-tuning

Nemesis supports a large number of innovative microtuning modes, not available from other companies. They make the synthesizer sound fatter or cleaner or both at the same time. The following microtuning modes are available:



Equal temp

This is the standard tuning that you know from conventional synthesizers. Every pair of adjacent notes has an identical frequency ratio.

Clean

This mode makes chords sound cleaner. When a chord is played, the pitch of the single notes is slightly detuned in a smart way. The speed of interferences between frequencies is reduced. This improvement is especially audible with static sounds that do not use detuned oscillators.

Very clean

A more aggressive variant of 'Clean'

Just inton

Just intonation or pure intonation is a music tuning in which frequencies of notes are related by ratios of small whole numbers. This tuning is sometimes used for organs, horns or in modern music. It has a static, clean sound. It's recommended that you set the OSC PHASE to a value larger than 0 when using this mode.

Fat1

This mode makes chords sound fatter. This mode is a good 'general purpose' setting. If you play a chord, the pitch of the single notes is slightly detuned in a smart way. As a result, the speed of interferences between frequencies is reduced or additional beating is added. The improvement is especially audible with very static sounds that do not contain detuned oscillators.

Fat2

Like fat, but with slightly faster interferences.

Fat3

Like fat, but with faster interferences. Well suited for chords with a lower pitch.



Nemesis sounds very nice with 'Fat1' as microtuning and 2-10% Unison Spread. Also, thirds sound much better when you set the microtuning to use one of the 'Fat' modes.

■ Clip modes



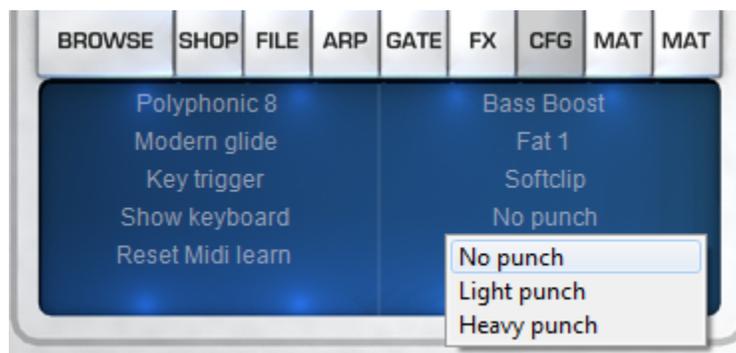
Linear: No clipping is applied

Softclip: At a certain threshold peaks are brought down in level (soft clipped) so that they do not cause distortion.

Softlimiter: Reduces the volume (soft limiting peaks) based on the amount of active voices.

Softclip + Limit: Applies a combination of both Soft clipping and Limiting.

■ Punch modes



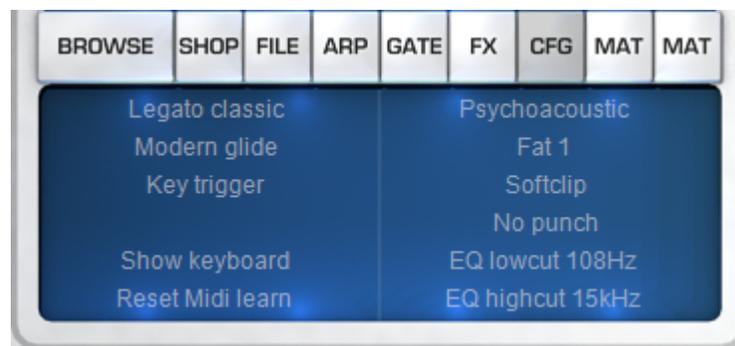
The punch modes add a kind of artificial, zapping, percussive and chirping quality to the sound. It's most obvious when you play a saw wave at low frequency, or if you are using volume envelopes with short decay and release times.

It masks nonlinearities in speakers & amplifiers and light settings simulate the natural dispersion of sound.

There are 3 different modes here: No Punch (default: no punch is applied), Light Punch and Heavy Punch.

■ EQ lowcut

EQ lowcut filters out the lower frequencies. Drag its value up / down to increase the amount of filtering applied. Default value is 'Off'



■ EQ highcut

EQ highcut filters out the higher frequencies. Drag its value up / down to increase the amount of filtering applied. Default value is 'Off'



With some patches it helps to apply a bit of EQ to clean up your sound. This of course depends on what kind of sound you're working with, but in most cases applying a high or low cut makes the sound easier to mix.

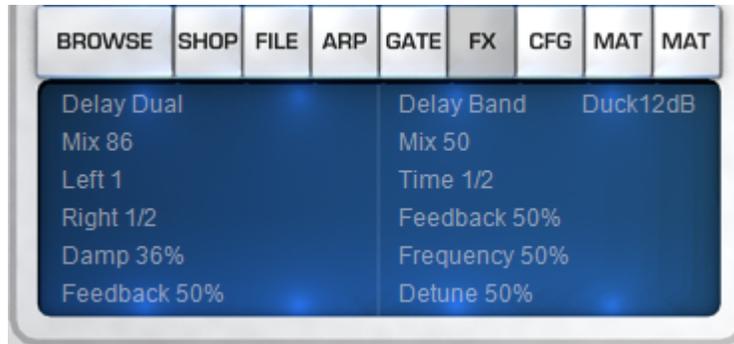
Bass or Analog sounds: set EQ highcut to around 5 kHz to get a more analog feel and a more 'solid' sound.

Pads, Leads, Gates, Keys and Vocalic sounds: set EQ lowcut to a value of around 150 Hz. This removes some low frequency rumble and will result in a cleaner mix.

Effects section

The effects section consists of two effect slots. We spent a great deal of time ensuring that Nemesis featured a suite of high quality FX.

No less than 33 effects are available from the effects section, ranging from Reverb, Delay, Chorus, and Phaser, to Tremelo, Vibrato, Distortion, Amp-Simulation, Bitcrush, Degrader and Compressor.



A new feature inside of the Effects section is the Routing menu, found in the top right of the Effects display (its default setting is Serial)

Inside the Routing menu you'll find several options having to do with how the effects are routed or applied to the signal.

The routing menu offers the following options:

Serial (default): In serial mode the synth's dry signal is sent into effect slot 1, after which slot 1's wet signal is sent into effect slot 2.

Parallel: In parallel mode the synth's dry signal is sent to both effect slot 1 and slot 2, after which the wet signals from both slots are mixed back together again.

Ducking (Duck6dB, 12dB, 96dB):

Ducking helps to make the mix sound more transparent and fat. Especially with long Reverbs and Delays you frequently face the problem that a part of the delay tail overlaps with a currently played note. As a result it either 'messes up the mix' with 'too much effect mix' or the delay effect is nearly inaudible, because the mix level had to be reduced a lot.

To solve this problem we introduced several innovative ducking modes which allow a higher effect mix without making the synth sound 'over effected'.

If you select Duck as effect routing the effect mix is dynamically adjusted with the volume of the voices. A high voice volume will result in a dry mix, while a low voice volume results in a wet mix. Duck6dB reduces the effect mix level by 6dB if you play a voice. It's a good general purpose setting for Reverbs and Delays. The other modes are more aggressive settings for special purposes.

If you want to control the amount of ducking manually, we provided a special Mod Matrix target called 'FX Duck'. If you route a modulation source like an LFO or envelope to it, the ducking amount is controlled by this source and no longer by the voice volume.

L/R Split:

Effect 1 is applied to the left output of the voices and Effect 2 is applied to the right output of the voices. This setting is useful if you want to route different effects to different oscillators or if you want to crossblend between effects. As an example: you could pan OSC1 to the left by routing 'Const' with 100 to 'Pan 1'. Then pan OSC2 to the right by routing 'Const' with -100 to 'Pan 2'. Now the OSC1 is processed with Effect 1 while OSC2 is processed with Effect 2.

L/R Mix:

Effect 1 and Effect 2 is applied to the left output of the voices while the right output of the voices remains dry. This setting is useful if you want to crossblend dynamically between wet and dry mix. The voice panning must be set in the matrix by routing a source to 'Pan 1' or 'Pan 2' as target. As an alternative you could also use the ducking.

Effect Types

■ Reverb Large

Mix: Adjust the amount of wet / dry mix.

Size: Adjusts the size of the simulated space.

Damp: Adjusts the amount of damping applied to high frequencies in the reverberated signal.

Swirl: Applies additional modulation to the reverb signal

Lowcut: The Lowcut control is used to remove low frequencies from the reverberations.

■ Reverb medium

Mix: Adjust the amount of wet / dry mix.

Size: Adjusts the size of the simulated space.

Damp: Adjusts the amount of damping applied to high frequencies in the reverberated signal.

Swirl: Applies additional modulation to the reverb signal

Lowcut: The Lowcut control is used to remove low frequencies from the reverberations

■ Reverb Small

Mix: Adjust the amount of wet / dry mix.

Size: Adjusts the size of the simulated space.

Damp: Adjusts the amount of damping applied to high frequencies in the reverberated signal.

Swirl: Applies additional modulation to the reverb signal

Lowcut: The Lowcut control is used to remove low frequencies from the reverberations

■ Reverb Plate

Mix: Adjust the amount of wet / dry mix.

Size: Adjusts the size of the simulated space.

Damp: Adjusts the amount of damping applied to high frequencies in the reverberated signal.

Swirl: Applies additional modulation to the reverb signal

Lowcut: The Lowcut control is used to remove low frequencies from the reverberations

■ Reverb Cheap

Mix: Adjust the amount of wet / dry mix.

Size: Adjusts the size of the simulated space.

Damp: Adjusts the amount of damping applied to high frequencies in the reverberated signal.

Feedback: Sets the amount of signal fed back into the reverb's input.

Lowcut: The Lowcut control is used to remove low frequencies from the reverberations

■ Reverb Feedback

Mix: Adjust the amount of wet / dry mix.

Size: Adjusts the size of the simulated space.

Damp: Adjusts the amount of damping applied to high frequencies in the reverberated signal.

Swirl: Applies additional modulation to the reverb signal

Feedback: Sets the amount of signal fed back into the reverb's input.

■ Delay

Mix: Adjust the amount of wet / dry mix.

Time: Sets the delay time. The delay time is set to either divisions or multiples of your host's tempo. e.g. $2/3$ is two thirds of your host's tempo.

Feedback: Sets the amount of delay signal fed back into the delay's input.

Damp: Adjusts how much of the high frequencies are attenuated.

Detune: Adjusts how much of the feedback signal is de-tuned.

■ PingPong

Mix: Adjust the amount of wet / dry mix.

Time: Sets the delay time. The delay time is set to either divisions or multiples of your host's tempo. e.g. $2/3$ is two thirds of your host's tempo.

Feedback: Sets the amount of delay signal fed back into the delay's input.

Damp: Adjusts how much of the high frequencies are attenuated.

Detune: Adjusts how much of the feedback signal is de-tuned.

■ Delay Dual

Mix: Adjust the amount of wet / dry mix.

Left: Sets the delay time for the left. The delay time is set to either divisions or multiples of your host's tempo. e.g. 2/3 is two thirds of your host's tempo.

Right: Sets the delay time for the right.

Damp: Adjusts how much of the high frequencies are attenuated.

Feedback: Sets the amount of delay signal fed back into the delay's input.

■ Multitap

Mix: Adjust the amount of wet / dry mix.

Time: Sets the delay time. The delay time is set to either divisions or multiples of your host's tempo. e.g. 2/3 is two thirds of your host's tempo.

Feedback: Sets the amount of delay signal fed back into the delay's input.

Dotted: Used to select a multitap delay preset, default setting is dotted.

Detune: Adjusts how much of the feedback signal is de-tuned

■ Doubler

Mix: Adjust the amount of wet / dry mix.

Left: Sets the delay time for the left. The delay time is set in milliseconds.

Right: Sets the delay time for the right. The delay time is set in milliseconds.

Damp: Adjusts how much of the high frequencies are attenuated.

Feedback: Sets the amount of the effect signal that is routed back into the input of the effect.

■ Delay Band

Mix: Adjust the amount of wet / dry mix.

Time: Sets the delay time. The delay time is set to either divisions or multiples of your host's tempo. e.g. 2/3 is two thirds of your host's tempo.

Feedback: Sets the amount of delay signal fed back into the delay's input.

Frequency: Adjusts the frequency used by the delays' band-filter

Detune: Adjusts how much of the feedback signal is de-tuned.

■ Chorus White

Mix: Adjust the amount of wet / dry mix.

Speed: Adjusts the LFO speed used to modulate the frequencies of the chorus effect.

Depth: Adjusts the modulation depth

Feedback: Sets the amount of the effect signal that is routed back into the input of the effect.

■ Chorus Classic

Mix: Adjust the amount of wet / dry mix.

Speed: Adjusts the LFO speed used to modulate the frequencies of the chorus effect.

Depth: Adjusts the modulation depth

■ Ensemble

Mix: Adjust the amount of wet / dry mix.

Speed: Adjusts the LFO speed used for the ensemble effect.

Depth: Adjusts the modulation depth

■ Phaser

Mix: Adjust the amount of wet / dry mix.

Speed: Controls the LFO speed used to modulate the Phaser frequencies.

Depth: Adjusts the modulation depth

Stages: selects the number of all-pass poles used by the phaser, 2-pole gives the least affected signal, whereas higher values provide a deeper & more full phase effect.

Feedback: Sets the amount of the effect signal that is routed back into the input of the effect.

■ Phaser Stereo

Mix: Adjust the amount of wet / dry mix.

Speed: Controls the LFO speed used to modulate the Phaser frequencies.

Depth: Adjusts the modulation depth

Stages: selects the number of all-pass poles used by the phaser, 2-pole gives the least affected signal, whereas higher values provide a deeper & more full phase effect.

Feedback: Sets the amount of the effect signal that is routed back into the input of the effect

■ Flanger

Mix: Adjust the amount of wet / dry mix.

Speed: Controls the LFO speed used to modulate the Flanger's delay time.

Depth: Adjusts the modulation depth

Feedback: Sets the amount of the effect signal routed back into the input of the effect.

■ Flanger

Mix: Adjust the amount of wet / dry mix.

Speed: Controls the LFO speed used to modulate the Flanger's delay time.

Depth: Adjusts the modulation depth

Feedback: Sets the amount of the effect signal routed back into the input of the effect.

■ Vibrato

Mix: Adjust the amount of wet / dry mix.

Speed: Adjusts the LFO speed used to pitch modulate.

Depth: Adjusts the intensity of pitch modulation.

■ Vibrato Stereo

Mix: Adjust the amount of wet / dry mix.

Speed: Adjusts the LFO speed used to pitch modulate.

Depth: Adjusts the intensity of pitch modulation.

■ Tremelo

Mix: Adjust the amount of wet / dry mix.

Speed: Adjusts the LFO speed used to modulate amplitude.

■ Tremelo Stereo

Mix: Adjust the amount of wet / dry mix.

Speed: Adjusts the LFO speed used to modulate amplitude.

■ Rotary

Mix: Adjust the amount of wet / dry mix.

Speed: Sets the rotational speed.

Depth: Adjusts the depth of the rotary effect.

Modspeed: Sets the modulation speed.

Moddepth: Sets the modulation depth.

■ EQ Low Cut

Mix: Adjust the amount of wet / dry mix.

Cutoff: Controls the cutoff frequency.

■ EQ High Cut

Mix: Adjust the amount of wet / dry mix.

Cutoff: Controls the cutoff frequency.

■ EQ Param

Mix: Adjust the amount of wet / dry mix.

Cutoff: Controls the cutoff frequency.

Gain: Controls the amount of boost.

Q: Controls the bandwidth.

■ Distort

Mix: Adjust the amount of wet / dry mix.

Drive: Sets the amount of distortion.

Gain: Controls the amount of boost.

Q: Controls the bandwidth

■ Amp Sim

Mix: Adjust the amount of wet / dry mix.

Drive: Sets the amount of distortion.

Pre Damp: Adjusts how much high frequencies will be damped before entering.

Bass: Adds lower frequencies to the signal.

■ Bitcrush

Mix: Adjust the amount of wet / dry mix.

Bits: Sets the bit rate (between 1 and 12 bits).

■ Degrader

Mix: Adjust the amount of wet / dry mix.

Samplerate: Controls how often the digital conversion samples the input signal.

■ Compressor

Mix: Adjust the amount of wet / dry mix.

Threshold: The level above which the signal is reduced & compression is applied

Attack: The time it takes to start compressing after the threshold has been reached

Release: The amount of time used to return after the input signal has fallen below threshold.

Ratio: Difference between the signal increase into the compressor and increase at output level.

■ Surround enc.

Mix: Adjust the amount of wet / dry mix.

Center: Controls to which speaker the signal is encoded on dolby prologic II compatible surround systems. If you select 'Center' and play back your song on a surround system the sound will come from the center speaker.

Envelope section



Nemesis offers two auxiliary envelopes called ENV1 & ENV2. These aux. Envs. can be used to control various parameters by assigning them through the modulation matrix. Both envelopes include the option to run in Retrigger or Freerun mode and they also offer a Shape knob with which to edit the envelope's shape.

Inside the Oscillator 1 & 2 section you'll also find ENV1 and ENV2 send knobs. These ENV send knobs are routed to the FM Morph control or Filter C control of that oscillator and determine how much the Envelope should affect the FM Morph or Filter.



What is an Envelope?

An envelope generator allows a synthesizer to mimic acoustic instruments' properties of changing volume and timbre over time. Traditionally, an envelope generator produced a control voltage that varied over time which could be used to automatically change the filter cut off or amplifier volume. There are many different types of envelopes but the most common one is known as an ADSR which is an acronym for Attack, Decay, Sustain and Release which describes the four controls of the envelope.

Attack Is a time value which states how long it takes for the envelope to go from zero to maximum peak when a key is pressed.

Decay Is a time value which states how long it takes for the envelope to drop to the sustain level.

Sustain Is a level value which states the highest value while the key is being held down after the Attack, Hold and Decay stages.

Release Is a time value which states how long it takes for the the envelope to drop back down to zero after the key has been released.

- RET** The 'RET' button in the envelope section switches between different retrigger modes, which adds a lot of expression to the sounds. For dynamically evolving Pads switch it to 'off'.
- Shape** Used to edit the shape used by the envelope.

LFOs



There are two LFO's available within Nemesis. Both are freely assignable from within the modulation matrix and can be used for basically anything, from modulating FM Morph to modulating oscillator pitch.

LFO waveform button – This cycles the waveform for the LFO to be used. The available waveforms are:

- Sine
- Triangle
- Square
- Saw
- Sample & Hold
- Ramped Noise

Additional LFO waveforms (Like a sinoid or smoothed versions) can be created by using the filter (X) function in the matrix.

Freq. This controls at which frequency the LFO runs; the LFO speed

BPM This will synchronize the LFO's frequency to the host.

Phase This will adjust the starting position of the LFO's waveform, with the LFO phase set to a value of zero, the LFO will be global & free running.



There are 14 additional envelopes and 32 additional Sine LFOs available in the Modulation Matrix. Select one of the 'Decay' sources to use as envelope, or use one of the 'Sine' sources as additional LFO.

Modulation Matrix

The MOD MATRIX or Modulation Matrix is a system that allows you to flexibly assign different modulators (such as LFOs or envelopes) to different destinations (such as the filter, amplifier or even other modulators).



There are two modulation matrix pages available, each page offering 6 different assignable modulation slots.

To use the mod matrix the procedure is very simple:

1. Choose a modulator (modulation source) in the drop-down menu. This is what causes the modulation or changing effect
2. Choose a target (destination) in the drop-down menu. This is what gets affected by the modulation or changing effect.
3. Drag the slider in the center of the bar left or right in a negative (left) or positive (right) direction to increase or decrease the values.

Source menu

- Off** Default matrix source is set to off
- Volume Env** The Volume envelope will be used as modulation source
- Env1** Envelope1 envelope will be used as modulation source
- Env2** Envelope2 will be used as modulation source
-
- LFO1+-** LFO1 in bipolar mode as modulation source, this uses LFO1's negative and positive values
- LFO2+-** LFO2 in bipolar mode as modulation source, this uses LFO1's negative and positive values
- LFO1+** LFO1 in unipolar mode as modulation source, only uses LFO1's positive values
- LFO2+** LFO1 in unipolar mode as modulation source, only uses LFO1's positive values
-
- Arp StepLfo+** Applies the arp's velocity steps as modulation source using only positive values
- Arp StepLfo+-** Applies the arp's velocity steps as modulation source using both positive and negative values
-
- Key Pressed** Applies a On/Off Gate modulation; i.e, on key press its value is 1, on release it's 0
- Key Pressed -** Applies a Off/On Gate modulation; i.e, on key press its value is 0, on release its 1
-
- Key split high** Assigns the high keys of a keysplit to be used as modulation source
- Key split low** Assigns the low keys of a keysplit to be used as modulation source
-
- VoiceOutput** 'Voice Output' allows you to route the audio output to a modulation destination. This results in 'analogish like chaos'. Use for example 'Voice output' as source and 'Pitch' as destination to use the audio-output to modulate the oscillator pitch.
- Const** Applies a constant value to modulate, the amount is set by the value slider
- Random** A random value will be used to modulate
-
- Flipflop :** An on/off value will be used as modulation source; could for example be used to pan from left to right on keypress

WhiteNoise	Uses white noise as modulation source
PinkNoise	Uses pink noise as modulation source
Key	Uses the played note value as modulation source
Velocity+	Uses the positive Velocity values to modulate
Velocity+-	Uses both the positive and negative Velocity values to modulate
Modwheel	Uses the Modulation Wheel as modulation source
Pitchwheel	Uses the Pitch Wheel as modulation source to modulate
Aftertouch	Uses the keyboard's incoming after-touch values to modulate
Breath	Responds to Breath controller as modulation source
Foot	Responds to Foot switch controller as modulation source
MainVol	Responds to Main Volume controller (CC#7) as modulation source
Expression	Responds to Expression controller (CC#11) as modulation source
Hold	Responds to Hold pedal (sustain) on/off (CC#69) as modulation source
CC16 > CC 19	Responds to CC#16 to CC#19 (continuous controllers) as modulation source
X*X	Uses the X multiplied by X value modifier as modulation source
Sqrt (X)	Uses Squareroot X value modifier as modulation source
Filter (X)	Uses the filter X value modifier as modulation source
Limit (X)	Uses the Limit X value modifier as modulation source
Impulse	A short impulse is used as modulation source; could for example be applied to sharpen the attack portion of a sound
Decay4ms > Decay16s	Decay will use an internal envelope to modulate, options are envelopes that run from 4 milliseconds to 16 seconds.
Sine 1/8Hz > Sine 256Hz	Uses a sine shape as modulation source, the amount of Hz denotes the modulation speed used.

Destination menu

Off	The default selection; no modulation destination is selected
Volume	Selects the Master Volume control as destination
Pan	Selects the Master Panning control as destination
Spread	Selects the Unison Spread control as modulation destination
Stereo	Selects the Stereo control as modulation destination
FM1	Selects the oscillator 1 FM Morph Control as modulation destination
FM2	Selects the oscillator 2 FM Morph Control as modulation destination
Feedback 1	Selects the oscillator 1 Feedback control as modulation destination
Feedback 2	Selects the oscillator 2 Feedback control as modulation destination
Tune C1	Selects OSC1's Carrier Tune control as destination
Tune C2	Selects OSC2's Carrier Tune control as destination
Tune M1	Selects OSC1's Modulator Tune control as destination
Tune M2	Selects OSC2's Modulator Tune control as destination
Pitch	Selects the Master Pitch as destination
Pitch C1	Selects OSC1's Carrier Pitch control as destination
Pitch C2	Selects OSC2's Carrier Pitch control as destination
Pitch M1	Selects OSC1's Modulator Pitch control as destination
Pitch M2	Selects OSC2's Modulator Pitch control as destination
Octave	Selects the Master Octave as destination
Octave C1	Selects OSC1's Carrier Octave control as destination
Octave C2	Selects OSC2's Carrier Octave control as destination
Octave M1	Selects OSC1's Modulator Octave control as destination
Octave M2	Selects OSC2's Modulator Octave control as destination
Semi	Selects the Master Semi control as destination
Semi C1	Selects OSC1's Carrier Semi control as destination
Semi C2	Selects OSC2's Carrier Semi control as destination
Semi M1	Selects OSC1's Modulator Semi control as destination
Semi M2	Selects OSC2's Modulator Semi control as destination

Fine	Selects the Master Fine control as destination
Fine C1	Selects OSC1's Carrier Fine control as destination
Fine C2	Selects OSC2's Carrier Fine control as destination
Fine M1	Selects OSC1's Modulator Fine control as destination
Fine M2	Selects OSC2's Modulator Fine control as destination
Detune 1	Selects OSC1's Detune control as destination
Detune 2	Selects OSC2's Detune control as destination
Filter C1	Selects OSC1's Carrier Filter control as destination
Filter C2	Selects OSC2's Carrier Filter control as destination
Filter M1	Selects OSC1's Modulator Filter control as destination
Filter M2	Selects OSC2's Modulator Filter control as destination
Mix C1	Selects OSC1's Carrier Mix control as destination
Mix C2	Selects OSC2's Carrier Mix control as destination
Mix M1	Selects OSC1's Modulator Mix control as destination
Mix M2	Selects OSC2's Modulator Mix control as destination
Pan 1	Selects OSC1's Pan control as destination
Pan 2	Selects OSC2's Pan control as destination
FilterEnvSend 1	Selects the Filter Envelope Send1 control as destination
FilterEnvSend 2	Selects the Filter Envelope Send2 control as destination
FMEnvSend 1	Selects the FM Envelope Send1 control as destination
FMEnvSend 2	Selects the FM Envelope Send2 control as destination
Reserved	Reserved for future use
Reserved	Reserved for future use
LFO1 Speed	Selects LFO1's Frequency control as destination
LFO2 Speed	Selects LFO2's Frequency control as destination

Vol A	Selects the Volume Envelope's Attack control as destination
Vol D	Selects the Volume Envelope's Decay control as destination
Vol S	Selects the Volume Envelope's Sustain control as destination
Vol R	Selects the Volume Envelope's Release control as destination
Env1 A	Selects the Auxiliary1 Envelope's Attack control as destination
Env1 D	Selects the Auxiliary1 Envelope's Decay control as destination
Env1 S	Selects the Auxiliary1 Envelope's Sustain control as destination
Env1 R	Selects the Auxiliary1 Envelope's Release control as destination
Env2 A	Selects the Auxiliary2 Envelope's Attack control as destination
Env2 D	Selects the Auxiliary2 Envelope's Decay control as destination
Env2 S	Selects the Auxiliary2 Envelope's Sustain control as destination
Env2 R	Selects the Auxiliary2 Envelope's Release control as destination
Matrix1 -> Matrix12	Sets the modulation destination to matrix position 1 through 12
X:=Value	Selects the X:=Value destination
FX Duck	Selects the FX Duck output as destination (note that FX Duck has to be enabled inside of the FX panel!



Using the Modulation Matrix to set the pitchwheel to use +- 2 halftones

- Select Pitchwheel as source
- Select Fine as target
- Set Matrix Send to 100

Using the Modulation Matrix to set the pitchwheel to use +- 1 octave

- Select Pitchwheel as source
- Select Pitch as target
- Set Matrix Send to exactly 25 (use shift + left mouse for more precise control)

Using the Modulation Matrix to get a +-1 Octave Glissando using the pitchwheel

- Select Pitchwheel as source
- Select Semi as target
- Set Matrix Send to 100

■ **Midi-learn**

Nemesis offers an easy way to midi-learn controls.

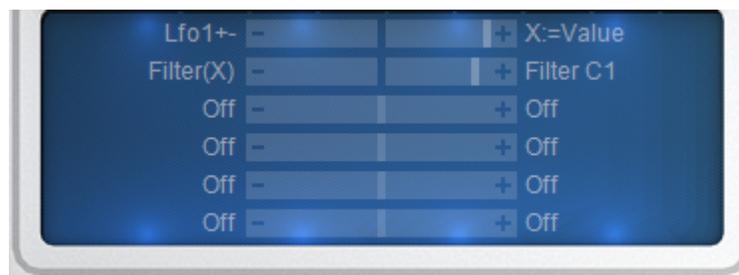
- Right-click on the Nemesis interface control you want to midi-learn: a dialog will come up asking you if you want to assign the next Midi CC to this control. Click on Yes.
- Turn the knob on your midi keyboard you want assigned to this control and Nemesis will automatically Midi-learn the correct Midi CC.

Note: When using midi-learn on a control that already has a Midi CC assigned to it, a dialog will come up and ask if you want to remove the current Midi CC from this control. Click Yes here to remove the current Midi CC assignment for this control, click No to keep the current assigned Midi CC.

Modulation Matrix: value modifiers

Nemesis gives you the option to use a modifier on the source value, this allows for a smoother control over the original source (e.g. smoothing an LFO shape) often giving better results than using direct modulation.

This new modifier approach uses four new modulation sources called: Filter(X), X*X, Sqrt(X) and Limit(X) X=Value, as well as a new destination target called X=Value



Let's say we want to use LFO1 with a square wave to modulate the Filter C parameter. However, instead of the direct LFO1>Filter C1 Modulation Matrix option we'll use a modifier to get a smoother result:

1. The first thing to do is to set up our LFO settings; go into Nemesis' LFO section and set LFO1 to use the following settings: Wavetype: Square, BPM: On and Frequency: 2BPM.
2. Next, we'll assign a modulation source to our destination X=Value. Go into the modulation matrix and on the first line assign LFO1+- to the destination X=Value, set the slider for this to +80
3. Now we'll assign one of our modifiers to Filter C1; on the second matrix line assign Filter(X) to cutoff and set its slider to +70.

You should now hear the LFO modulating the Filter C1 parameter using our Filter(X) modifier. If you play a little with Filter(X) matrix line values you can adjust the amount of modifying applied.

What Filter(X) does in this case is to apply a low pass filter to the value of X. In other words, in the first line we declared that the LFO1+- function was X and in the second line we told Nemesis to use the Filter(X) modifier to further modify X's value.

The fun here is that you can also modulate the matrix line containing the modifiers.

For example, drop in an ENV1 > Matrix2 on matrix line 3, set matrix line 2 to a value of 0, and your modifier suddenly is being modified by Envelope1. It's a very cool but handy way to apply subtle or smoothed modulation.

Or apply the X modifier to a volume gate (use the StepLFO for this) and change the amount of gating applied over time. This way you can switch between a hard & soft gated volume.

There are currently four modifiers available:

- Filter(X) - Filters values, very handy to use with LFO shapes, or for example trance gates to shape the type of volume gate used.
- X*X - Can be used to further shape modify envelopes, for punchier envelopes for example.
- Sqrt(X) - Also very good to further shape modify LFO / envelopes with.
- Limit(X) - Can be used to limit a the amount of modulation by clipping its value within a certain range set with the value slider.



Using the value modifiers to smoothing a sawtooth or squarewave LFO for a more 'analog' type of sound:

Select 'LFO' as source and 'X:=Value' as target and set the send value: 50% to 100%. The send level for this slot controls the modulation amount.

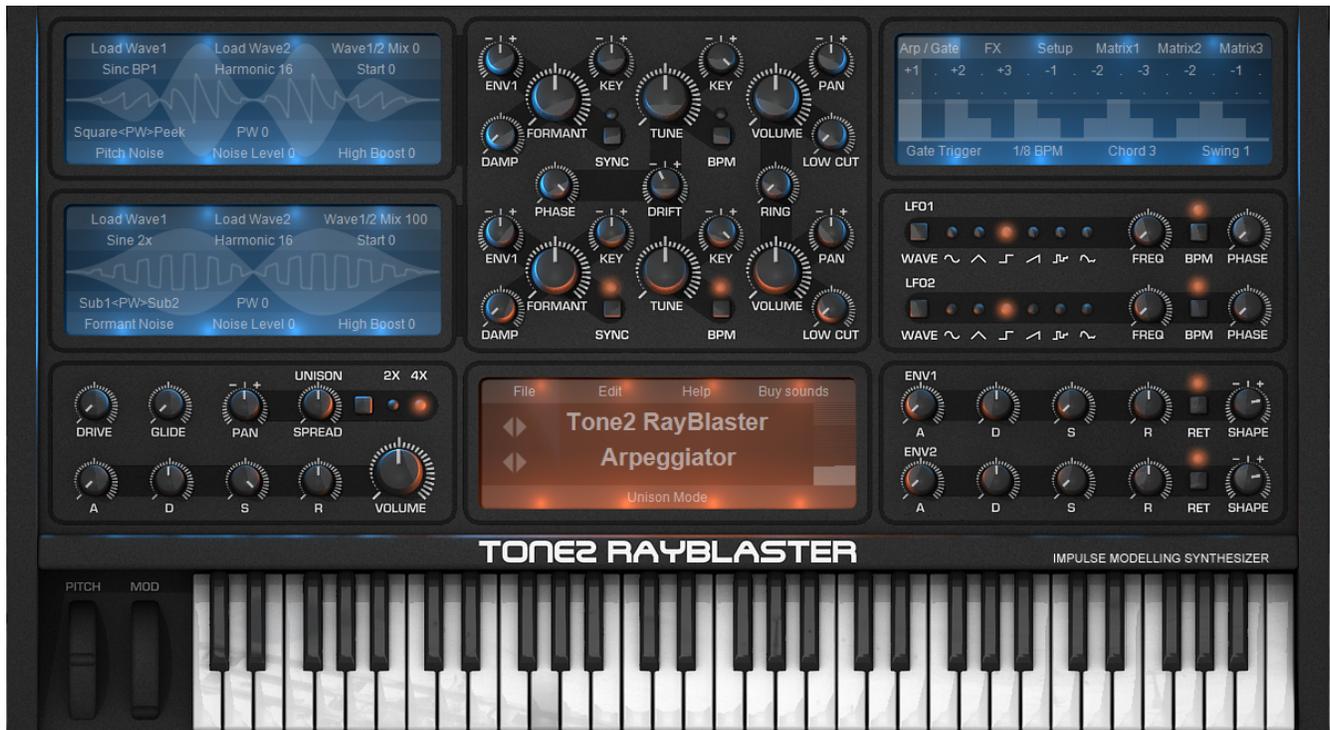
In another slot select 'Filter(X)' as source and for destination use pitch, set the send level to 20% to 50%. The send level for this slot controls the smoothing amount.

Tone2 Audiosoftware Catalog

Be sure to take a look at some of our other effect & synthesizer plugins, the following pages will provide a short overview of part of our product line.

For more information on our products, MP3s and product demos please visit our website at <http://www.tone2.com>

Rayblaster: Impulse Modelling synthesizer



RayBlaster - a radically new form of synthesis!

Impulse Modelling Synthesis (IMS) is far more than a marketing buzzword - it represents a radically new and different approach in sound generation.

What is Impulse Modeling Synthesis ?

Offering a new world of high quality sounds and limitless creative potential for all styles of music, IMS goes well beyond traditional forms of synthesis.

Conventional synthesizers employ what is known as subtractive synthesis, in which the oscillator source is a looped waveform that is filtered to create a sound. By contrast, RayBlaster utilizes an entirely new and fresh approach to sound generation and creates its distinctive sound from many short bursts of energy, which combine to form a more complex sound. In fact, this innovative approach to synthesis is very close to how our human inner ear perceives sound. Because of its radically new method of synthesis, RayBlaster offers a wide range of original sounds, sounds that have never been heard before.

Sounds

RayBlaster ships with an inspiring library of over 500 outstanding presets from some of the world's top sound designers. Many complex sounds such as arpeggiators, vocals or drumloops automatically

synchronize to the BPM. For fast & easy access to the specific sound you desire, all sounds are arranged into categories, making them easy to locate whether for live performance or within a professional studio environment.

Filters

IMS has no need for a separate filter section because its oscillators are capable of authentically reproducing the filter sound of other synthesizers by using one of the factory impulse presets or simply by importing one of your own impulses. Not only is RayBlaster capable of modeling the sound of existing filters – it also makes it possible to create completely new artificial 'fantasy' filters that are exclusive to RayBlaster. This renders its filter capabilities virtually unlimited.

Waveforms, Samples & Resynthesis

In addition to importing filter characteristics into RayBlaster's oscillators, you can also import the waveform of any other synthesizer into RayBlaster. This gives you an unlimited number of possible waveshapes, all of which are capable of being morphed in real-time. You can resynthesize short samples like a drumloop or a vocal phrase. RayBlaster also offers you many possibilities to synchronize complex sounds to BPM as well as providing the ability to manipulate the pitch, timing and the timbre of all your sounds in real-time.

Features – summary

- A revolutionary new method of synthesis
- Provides access to completely new sonic territory
- High-end sound quality with low CPU usage
- Create distinctive sounds that are impossible to produce with other synthesizers
- Allows your music to stand out from the crowd!
- Delivers professional sound quality that is never muddy and fits well into the mix
- Sounds more detailed, appealing, fat and louder than conventional synths
- Allows for Independent control over pitch, timing and timbre
- Filter import: Mimic filters of other synthesizers or create your own fantasy filters.
- Resynthesis allows easy import & manipulation of your own sounds
- Huge sonic range and very flexible
- Easy to use & fun to play
- Over 500 ready-to-use sounds created by professional designers
- Psychoacoustic processing
- Expandability
- Fair price

For more information: http://tone2.com/html/rayblaster_synthesizer_vst_au.html

- Free personal support and updates
- Easy-to-use interface
- Unique sounds which no other synthesizer can create
- Huge sonic range
- Flexibility, expandability
- Ships with 563 outstanding presets from 21 top sound designers

Features

- Covers all important aspects of traditional analog synths
- Mono, Legato & Polyphonic modes employing analog voice management
- Two Syncable Oscillators and two Sub Oscillators
- Not just standard waveforms but also a large number of exotic ones
- Pulse Width Modulation and Oscillator Sync applicable to every waveform
- Oscillator Drift, Phase and Noise Modulation controls
- Noise FM, AM and Ring Modulation for Oscillators
- Analog filter with self-oscillation, nonlinearity, 6 filter types, FM and feedback
- LFOs and modulation capable of running at audio-rate
- Powerful Arpeggiator with extensive configuration possibilities
- Flexible Modulation Matrix with new features, including a filter
- Programmable gate
- 4x Stereo Unison modes with spread and panning control
- Analog modeled Distortion and Tube amp
- Optional Psycho-Acoustic processing
- High-end quality Effects

For more information: http://tone2.com/html/saurus_synthesizer_vst_au.html

ElectraX synthesizer



ElectraX! Explore the vast musical universe of multi-synthesis oscillators, analog modeled filters, chaotic fractals, samples, psychoacoustic processing, flexible modulation and an immense sonic range. Combine multiple polyphonic or monophonic synthesizers and 13 different synthesis methods to create incredible results while the well-designed preset management system provides access to a large library of sounds carefully crafted by professional designers.

Features - summary

- Four synthesizers in one interface
- High-end sound quality
- Huge sonic range
- High flexibility
- 13 different synthesis methods which can be combined
- Psychoacoustic processing
- Low CPU, multicore processor support
- Easy to use
- 4x multitimbral, 4x stereo unison
- Over 1000 sounds in 575 presets by professional sound designers
- 32 exclusive analog modeled filter types
- 45 oscillator types
- 18 effect types; Master effect section with Equalizer
- More than 1000 waveforms
- 64x4 voices
- Midi learn

- Customizable user interface with 4 skins
- Expandability
- Standalone version for PC
- Flexible preset management

Features per synthesizer (4 synthesizers available)

- Several playmodes: Monophonic, legato, polyphonic, glide
- 3 multi-synthesis oscillators
- Dual multimode filters
- Dual multimode distortion/waveshaper
- 3 LFOs (global or per voice) and a Step LFO, BPM syncable
- Four Envelope generators
- Arpeggiator
- Insert effect, BPM syncable
- Flexible modulation
- Key splitting

Synthesis methods & OSC features

- Virtual analog
- FM
- Sample playback and import of own samples with loop/sustain loop support
- Wavetables with resynthesis function and the ability to load own waveforms
- Ultrasaw (up to 18 detuned oscillators per voice)
- Fractal (a completely new synthesis method)
- Phase distortion
- Waveshaping
- Exclusive oscillator types
- PWM
- Sync
- Noise
- Ringmod
- Vocoder
- Analog oscillator drift modeling
- Fat tuning

18 warm sounding effect types

- Reverbs: Hall, Cathedral, Room
- Delays: Delay, Delay band, Ping Pong, Multitap
- Chorus, Ensemble, Phaser, Flanger, Rotary
- Trancegate, Compressor, Ampsim, Equalizer, Surround Encode
- Vocoder

23 exclusive filter types

- 11 analog modeled filters with self oscillation: Lowpass/Highpass/Bandpass
- 12dB/18dB/24dB, Moog, Filter-FM
- High precision digital filters: Lowpass, Highpass, Bandpass, Notch
- Equalizers: LowShelf, HighShelf, Peak, Wide
- Special types: Phaser, Comb+, Comb-, Vocals, Aliaser, Ringmod
- Exclusive fractal filters

For more information: http://tone2.com/html/electrax_synthesizer_vst_au.html

Gladiator2 Synthesizer



The award winning Gladiator gives you a groundbreaking approach to sound generation. Its exclusive HCM synthesis technique covers new and unique aural territory, only possible with Gladiator. The innovative synthesis, design and unmatched sound quality, make this not only the perfect instrument, but also the best virtual synthesizer and go-to instrument for all those looking for the ultimate creative tool.

Synthesis types supported by Gladiator 2 are:

- Tone2's award winning Harmonic Content Morphing synthesis (HCM)
- Frequency Modulation (FM) & Amplitude Modulation (AM)
- Pulse Width Modulation (PWM)
- Analog oscillators
- Resynthesized instruments
- Vocoder sounds
- Oscillator sync
- Phase Distortion
- Phase Modulation
- Waveshaping
- Super-saw
- Additive synthesis
- Sample playback

Filters

The analog modeled filter section uses high-end quality stereo filters, most of which are exclusive to Tone2 products.

Gladiator 2 ships with 40 different filter types: Moog, Low Pass, High Pass, Band Pass, Vocals, Comb, EQ, FM, AM, Phaser, Resample, Analog, ...

Sounds

Gladiator 2 ships with an inspiring library of 1105 outstanding presets from top sound designers.

Besides that a variety of expansion banks is available to further expand Gladiator's features and preset library. All sounds are arranged into categories for easy access to the sound you require.

Modulation

Gladiator 2 has a powerful and flexible modulation section which is easy to setup. The analog modeled envelopes sound punchy. LFOs offer 22 different waveforms and can be synced to BPM. The Step LFO's design was inspired by the old analog step sequencers and can be used to create rhythmic sequences and trance gates.

With 'midi-learn' you can assign your hardware controller with a single mouse click.

Psychoacoustic processing

The exclusive IQM algorithm (Intelligent Microtuning) makes the synthesizer sound fatter and cleaner by automatically detuning notes for lush chords.

The innovative phase modulator module in the OSC section is based on the latest knowledge in

phonetic science. It makes a digital spectrum sound warm, silky and analogue.

A special post-processing module in Gladiator mimics effects of the human ear. It creates deeper basses and more transparency.

- True high-end quality: Analog, warm, crystal clear, rich sound
- New synthesis method (HCM)
- New unique sounds which no other synthesizer can create
- Huge sonic range
- Boundless possibilities
- Psychoacoustic processing
- Different synthesis methods can be combined freely
- Flexibility, expandability
- Easy to use
- Low CPU and high reliability
- 1135 professional preset sounds included

For more information: http://tone2.com/html/gladiator_2_vsti_au_synthesize.htm

Warmverb Multi Effect



Warmverb is a multi-effect unit which gives you the flexibility to create unique sounding custom effects with a mouse click. Not only can it do classic effects with pristine sound quality - it can do crazy stuff like a 'distorted-reverb-phaser-feedback-vocoder'!

Equipped with the high quality reverb technology which can be found in our Gladiator synthesizer, Warmverb improves upon it by including an ultra version of the reverb.

With an easy to use interface, an intelligent randomize function and over 150 presets, Warmverb gives you instant access to a large selection of essential effects and inspiring new sounds.

Effect modules

- 3 high-end quality Reverbs
- Vocoder and Vocoder L-R
- Delay, Ping pong delay, Filtered Ping pong
- Chorus, Ensemble
- Flanger, Stereo Flanger
- Superstrings
- Phaser, Stereo phaser
- LFO Low pass, Band pass and High pass
- Talkbox
- Tubeamp, Transistor, Presence, Hardclip
- Bitcrush, Waveshape
- Rotary
- Dolby Prologic II surround encoding
- Tremelo
- Autopanning
- Stereo enhancing
- Stereoizer
- Equalizer
- Ringmod
- Trancegate
- Early reflections (3 different types)
- Pitch shifter
- Feedback module

For more information: http://www.tone2.com/html/warmverb_vst_au_effect_synthes.html

AkustiX Enhancer Effect

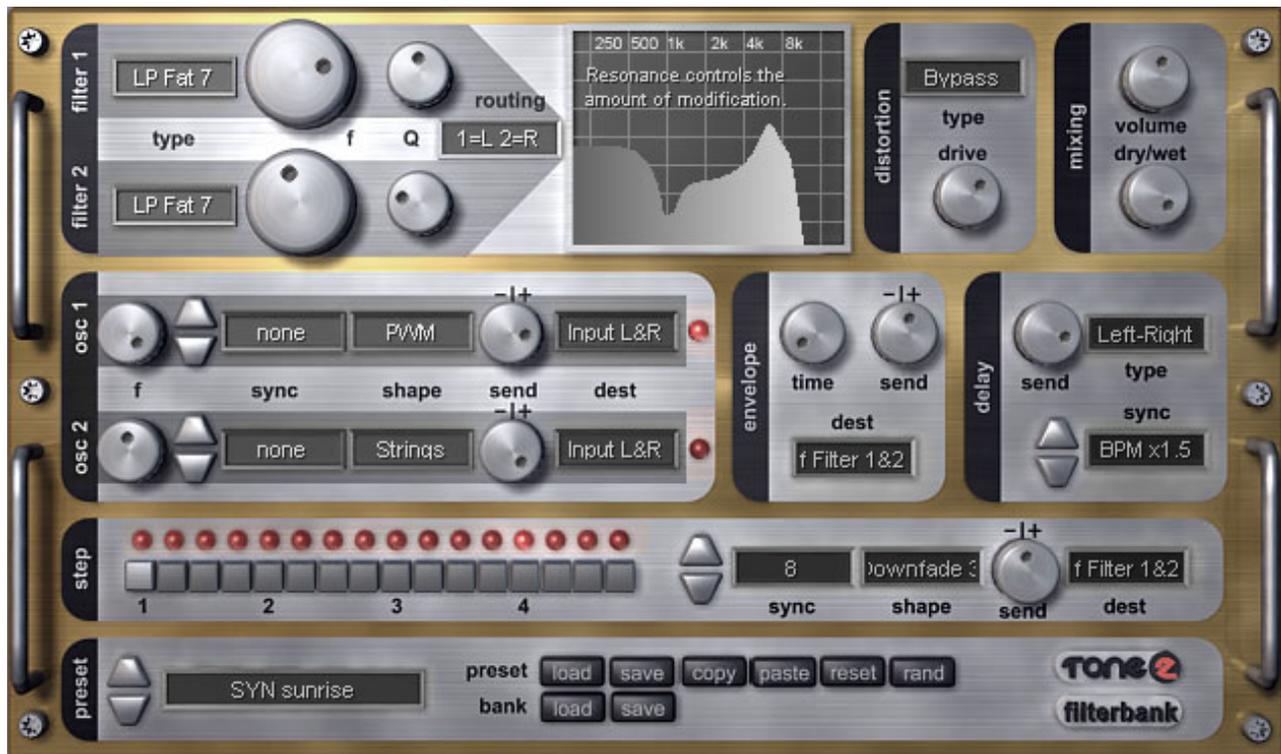


Tone2 AkustiX is a collection of six essential enhancement tools combined into one intuitive user interface. Ideal for tracks as well as full mixes AkustiX features six powerful effects: Psycho EQ, Ultra Stereo, Phase Enhance, Multi Exciter, Smart Filter and Stereo Width. Each effect is based on the latest developments in research and offers multiple ways to enhance the sound of your recordings drastically by using psycho-acoustic processing. Unlike competing enhancers AkustiX is easy to use and works well with nearly all kinds of material. It's a one-click solution to make your mix sound professional without knowing about mastering-vooodoo.

- Six essential effects to complement your track and mastering process
- Add brightness, transparency, fatness, vibrancy and depth to your mix
- Restore and revitalize old recordings
- Drastically enhances stereo mixes
- Exclusive new technology based on the latest in psychoacoustics research
- High-end quality processing
- Powerful spectrum analyzer & phase meter to visualize imaging and phase
- Ships with professional presets for a broad range of mix & mastering tasks

For more information: http://tone2.com/html/akustix_enhancer_vst_au_effect.html

Filterbank 3 Effect



Tone2 FilterBank3 is more than an analog modeled filter plugin - it is a complete VST synthesizer and a flexible multi-effect unit. The modular design and flexible modulation routing give you nearly unlimited possibilities. With self-oscillating filters, oscillators and feedback it can create complete sequences and textures. FilterBank sounds impressive and unique. The built-in step sequencer can create rhythmic sequences with some mouse clicks.

- 58 different high-end quality dual-stereo filters
- Outstanding sound quality
- Flexible, semi - modular architecture and routing
- Virtual-analog OSCs/LFOs
- FM, AM, feedback
- 20 Delay types, Reverb, 12 Distortion types
- 320 presets included
- Can be loaded as synthesizer as well as effect
- Vocal filtering, equalizing, phasing, flanging, compressing, envelope following
- 303-like step sequencer
- Midi learn
- Syncable to BPM
- Realtime frequency display
- Dolby Prologic II compatible
-

For more information: http://www.tone2.com/html/filterbank3_vsti_vst_au_synthe.html