

DELTA III

MATRIX SYNTHESIZER



DELTA III

Matrix Synthesizer



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Welcome

Thank you for trying the LinPlug Delta III. The Delta III Matrix Synthesizer is a fully professional, highly-flexible, easy-to-use, third-generation VST (Virtual Studio Technology) software synthesizer designed for creating music on your personal computer. Its key features include an easy-to-use interface, highly flexible oscillators, a wide range of processing and modulation options, and a modular, extensible structure. This manual describes all aspects of the Delta III Matrix Synthesizer and is designed so that your use of this software is as efficient and as painless as possible. At LinPlug we're very proud of the Delta III Matrix Synthesizer; it's the culmination of years of hard work. We hope you get a lot of pleasure using the Delta III Matrix Synthesizer and that it becomes an integral part of your music-making.

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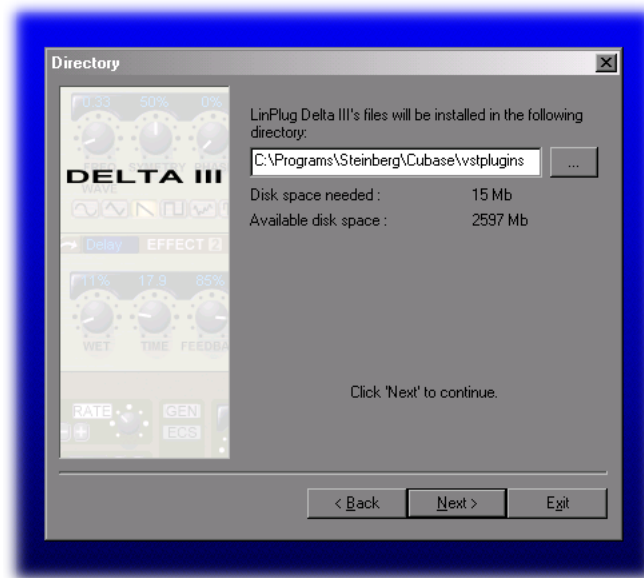
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Installation

The Delta III comes with its own Installer. After downloading the Delta III you will find a file named "Deltaiii.exe" located in your download folder. Double-click on this program to begin the installation process.

Once installation commences you will see this screen (on Mac this looks a bit different but works practically the same):



By clicking the three dots on the right of the "Extract to" textbox you can choose the plug-in directory to which all files will be copied. Refer to your host software's manual if you are unsure about where the host software plug-in directory is located.

The following is a list of plug-in directories that are present in commonly used sequencing programs (on Mac the directories are often a bit different):

- C:/Programs/Steinberg/Cubase/VstPlugIns
- C:/Programs/Emagic/Logic.../VstPlugIns
- C:/Programs/FruityLoops3/PlugIns/VST
- C:/Programs/OrionPro/VstInstruments
- C:/Programs/n-Track Studio/Vstplugins

After selecting the desired directory click the "Start" button. The instrument file "Deltaiii.DLL" and the Delta III manual and presets will now be placed in the chosen directory. The next time you start your host software the Delta III will be listed in the VST Instrument list.

If you have any questions regarding the installation of the Delta III please contact support@linplug.com

What's New

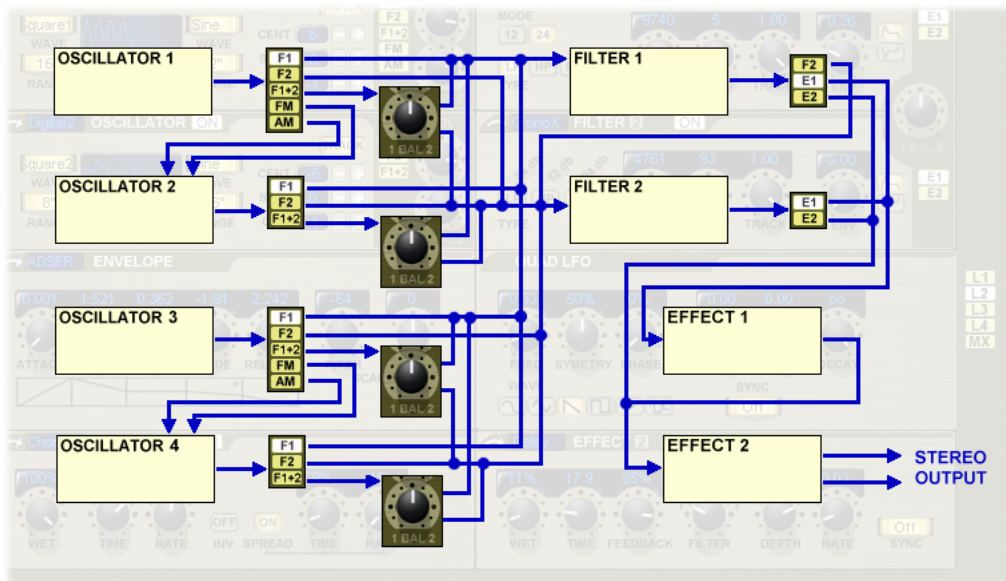
In comparison with its predecessor the Delta II, the Delta III contains a host of new features intended to make your music-making more efficient and enjoyable. These new features are described below:

- Modular and extendable design currently comprising 4 oscillators, 2 filters, 2 effects, 8 envelopes and 4 LFOs.
- Oscillator modules include Delta 2-type ("Digital"), CronoX-type ("Analogue") and Delta III-type ("Digital").
- Filter modules include Delta 2-type, CronoX-type and Delta III-type. All are multimode filters, each with a different basic design thus producing different sounding filters. The Delta 3-type filter is especially "juicy" and uses very little CPU resources.
- 5-stage envelope modules (ADSFR).
- 4 effect types including Chorus, Delay, Filter and Phaser.
- Mono/Polyphonic Portamento/Glide featuring Fingered mode, switchable constant Time/constant Rate and Auto-Bend Modes.
- Sound programs are stored directly on hard disk so providing a virtually unlimited number of storage locations.
- LFO Waves have adjustable start-phase and waveform-symmetry.
- LFO S/H ("sample/hold") and Noise waveforms are available.
- Adjustable Precision setting for recreating the warmth of true analogue synthesizers.
- New modulation Sources and Destinations.
- Gen (randomize) function for experimentation and fun!
- Each part has its own stereo output.
- Polyphony has been increased to 32 voices.
- Adjustable voice limit for part (Unlimited, 8...1 voice).
- MIDI activity display for each part (also triggers a C3 when clicked)
- Several parameters are located on the "rear panel" so they are not changed accidentally.
- ECS MIDI-Learn function for conventional and alpha-dials.
- Dial operation is switchable between circular and linear modes.

Overview

The Delta III is an eight-part multitimbral, 32 note-polyphonic VST analogue-style synthesizer with some extraordinary features. The synthesizer has a modular and extendable design that currently includes various oscillator modules, filter modules, envelope modules and effects modules.

The block diagram below shows the signal flow within the Delta III Matrix Synthesizer:



The design of the Delta III can be divided into 6 sections: Oscillator, Filter, Effects, Envelope, Modulation (LFOs and Matrix) and Master.

Audio signals are generated by an oscillator that gets pitch information from the synthesizer's MIDI input. The MIDI input is automatically connected to MIDI output of the host software. Each of the Delta III's 8 Parts receives MIDI on its own channel, with Part 1 receiving on channel 1, Part 2 receiving on channel 2, and so on. The monotimbral Version of the Delta III receives MIDI on all Channels simultaneously.

The Delta III has four oscillators. Each oscillator has its own amplitude envelope. Each oscillator's pitch can be controlled using the Modulation Matrix, with all four oscillators being controlled by a single modulation envelope. The modulation intensity of each oscillator also has its own control.

The output of any or all of the oscillators can be routed to either Filter 1, Filter 2 or both in series or parallel as shown above. The filter modifies the harmonic

spectrum of the oscillator's output. Both filters are completely independent and each has an envelope for controlling its cutoff parameter.

Oscillators one and three have a further routing option. Their output can be used to crossmodulate the frequency and amplitude of oscillators two and four respectively. This option increases the harmonic spectrum of the modulated oscillators producing very interesting, harmonically-rich results.

The output of the Filter section is then sent to the Effects section which contains two independent effects modules. Module 1 (on the bottom left of the Delta III) contains various mono effects processors: for example, a Delay, a Chorus and a Filter. Module 2 contains various stereo effects processors. Each available effects processor is described in detail later in this manual. Module 2 comes after Module 1 in the signal chain. By sending the filters' output to Module 1 you can use both effects modules simultaneously.

The audio outputs of the Delta III are automatically connected to the input of your host software's mixer. Here you can set the pan position of the Delta III's output.

At various points throughout the signal path you can modulate the signal using either envelopes, LFOs or MIDI Controllers. The Delta III contains 8 independent envelopes. The first 4 control each oscillator's amplitude. Envelopes 6 and 7 can be used to control Filter 1 and Filter 2, while Envelope 8 controls the overall audio amplitude. Envelope 5 is a general purpose envelope designed for use with the Modulation Matrix and so can control any available modulation destination.

The Delta III also contains 4 independent LFOs. Each LFO has its own envelope controls as well as syncing and waveshaping options. LFOs can be routed to any available modulation destination.

Hopefully, this chapter has given you a brief overview of how the Delta III works. More detailed information can be found in the following chapters.

Controls

Users have the option of controlling all Delta III dials in either a circular or a linear manner depending on the Dial Mode setting on the Delta III's rear panel (see the "Main" section of this manual for more information about the Delta III's rear panel).

Holding down the ALT key while clicking on a control changes the selected control's value a minimum step upwards (when clicking in the upper half of the control) or a minimum step downwards (when clicking in the lower half of the control).

Holding down the CTRL key while clicking on a control sets the control to its default value (e.g. for Volume controls it sets the control's value to -6 dB).

All Controls can be automated using external MIDI messages. To do this you need to use the Delta III's ECS which is described in detail later in this manual.

Oscillators

The Delta III contains 4 oscillators grouped into 2 pairs ("O1/O2", "O3,O4"). Each oscillator pair is identical to the other. To change oscillator pairs click on the buttons on the left of the Oscillator section.



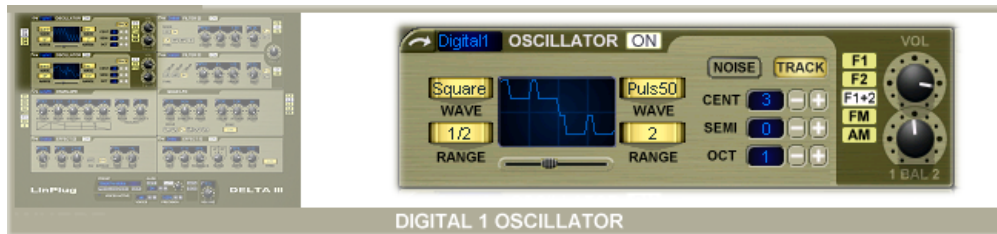
The Delta III Matrix Synthesizer contains several types of oscillator module: "Digital 1" (Delta II), "Analog" (CronoX) and "Digital 2" (Delta III). Don't be confused by the use of the terms "digital" and "analog" here; all of the Delta III's oscillators are digital (obviously!). In this case, we've used the term "digital" to describe oscillators that use sample-based waveforms, while "analog" oscillators use waveforms that are

created in real-time much as in true analog synthesizers.

As mentioned above, the Delta III contains several types of oscillator module. To change the oscillator type click on the menu to the left of the Oscillator label. When you change oscillator type, the Delta III's display changes accordingly. Each oscillator also has an "On/Off" switch to the right of the Oscillator label.

Each oscillator's controls differ slightly. These described in detail below.

Digital 1 Oscillator



The Delta III's "Digital 1" oscillator outputs a waveform that is a comb. The type of waveform is set by clicking on the Wave item on either side of the Waveform Display. This opens a menu that allows you to select from the available waveforms. See Appendix B for a complete list of all "digital" oscillator waveforms. The combined output waveform is shown in the Waveform Display. The waveform's pitch range is set in a similar manner using the Range item.

Below the Waveform Display is a slider that allows you to interpolate between the two waveforms. When the slider is at its leftmost setting, the waveform consists of purely the leftmost waveform. Similarly, if the slider is moved all the way to the right the waveform consists of purely the rightmost waveform. When in an intermediate position, the waveform consists of a mixture of the two waveforms. It's probably easier to see this rather than explain it, so try it for yourself. Set one wave to Sine and the other to a different wave such as Sawtooth. As you move the slider from one end to the other you can see the wave "morph" from one waveshape to the other. The Waveform display shows a number of cycles corresponding to the lowest waveform range setting.

The Digital 1 oscillator includes a noise generator labelled "Noise" which produces white noise. This is useful for creating percussion sounds.

The Digital 1 oscillator has a range of controls for oscillator tuning and output. These are: Track, Cent, Semi, Oct, F1, F2, F1+2, FM, AM, Vol and Bal.

The Track, Cent, Semi and Oct controls are used to set the oscillator's pitch. The Track button determines whether the oscillator tracks the pitch of incoming MIDI. Cent sets the oscillator pitch in cents (a cent is equal to 100 semitones). A range of -100 to +100 cents is available. Semi sets the oscillator pitch in semitones. A range of -11 to +11 semitones is available. Oct sets the oscillator pitch in octaves. A range of -2 to +7 octaves is available.

The F1, F2, F1+2, FM, AM buttons determine the oscillator output destination. F1 selects Filter 1, F2 selects Filter 2 while F1+2 selects both filters. In the latter case you can use the Bal dial to control how much of the signal each filter receives (see below).

In the case of Oscillator 1 and 3, two further routing options are available, both of

which can be used to create complex, harmonically-rich waveforms. FM allows you to modulate the frequency of oscillators 2 and 4 using oscillators 1 and 3. This type of modulation, known as Frequency Modulation, is great for producing metallic, bell-like tones. AM allows you to modulate the amplitude of oscillators 2 and 4 using oscillators 1 and 3. This type of modulation, known as Amplitude Modulation can also be used to produce rich and complex waveforms.

Finally, the Vol dial is used to set the output volume of the oscillator while the Bal dial determines the proportion of the signal that is sent to Filter 1 and Filter 2. Turning the Bal dial all the way to the right sends all of the oscillator's output to Filter 2, while turning it all the way to the left sends all of the output to Filter 1.

Analog Oscillator



The Analog oscillator module creates its waveforms in real-time and emulates the sound of an analog synthesizer's oscillator.

The Analog oscillator is the simplest of the Delta III's oscillators. It contains two controls: Waveform and Symmetry.

The Waveform dial sets the oscillator's waveform shape. When turned all the way to the right it outputs a pulse wave. When turned all the way to the left it outputs a sawtooth wave. In intermediate positions it outputs a waveform that is a combination of the two.

The Symmetry dial effects the waveform's shape, expanding and contracting it, as in the case of pulse width modulation. In this case however, the waveform reshaping can be applied to any waveform setting.

The "Analog" oscillator module contains a range of controls for oscillator tuning and output. These include: Track, Cent, Semi, Oct, F1, F2, F1+2, FM, AM, Vol and Bal.

The Track, Cent, Semi and Oct controls set the oscillator's pitch. The Track button determines whether the oscillator tracks the pitch of incoming MIDI. Cent sets the oscillator pitch in cents (a cent is equal to 100 semitones). A range of -100 to +100 cents is available. Semi sets the oscillator pitch in semitones. A range of -11 to +11 semitones is available. Oct sets the oscillator pitch in octaves. A range of -2 to +7 octaves is available.

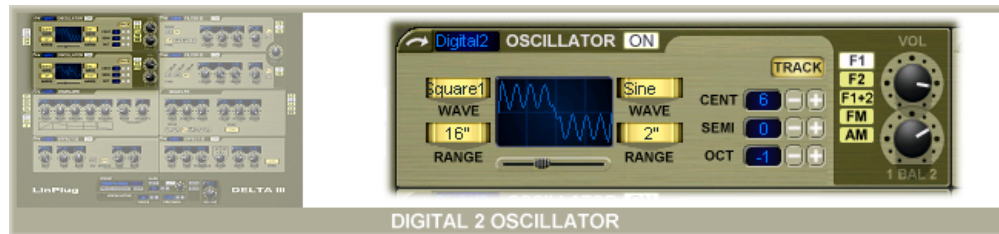
The F1, F2, F1+2, FM, AM buttons determine the oscillator output destination. F1 selects Filter 1, F2 selects Filter 2 while F1+2 selects both filters. In the latter case you can use the Bal dial to control how much of the signal each filter receives (see below).

In the case of Oscillator 1 and 3, two further routing options are available, both of which can be used to create complex, harmonically-rich waveforms. FM allows you to modulate the frequency of oscillators 2 and 4 using oscillators 1 and 3. This type of modulation, known as Frequency Modulation, is great for producing metallic, bell-like tones. AM allows you to modulate the amplitude of oscillators 2 and 4 using oscillators 1 and 3. This type of modulation, known as Amplitude

Modulation can also be used to produce rich and complex waveforms.

Finally, the Vol dial is used to set the output volume of the oscillator while the Bal dial determines the proportion of the signal that is sent to Filter 1 and Filter 2. Turning the Bal dial all the way to the right sends all of the oscillator's output to Filter 2, while turning it all the way to the left sends all of the output to Filter 1.

Digital 2 Oscillator



The Delta III's "Digital 2" oscillator module is a significant improvement over its predecessor, the "Digital 1" oscillator. It's more versatile because it has more waveforms and it uses a different signal generation algorithm so it sounds different as well. It also uses less CPU resources than the "Digital 1" oscillator. The "Digital 1" oscillator module has been included in the Delta III especially for those users who have upgraded from the Delta II to the Delta III but still want to recreate their favourite Delta II patches.

The Delta III's "Digital 2" oscillator outputs a waveform that is a combination of two basic waveforms.

The type of waveform is set by clicking on the Wave item on either side of the Waveform Display. This opens a menu that allows you to select from the available waveforms. See Appendix B for a complete list of all "digital" oscillator waveforms. The combined output waveform is shown in the Waveform Display. The waveform's pitch range is set in a similar manner using the Range item.

Below the Waveform Display is a slider that allows you to interpolate between the two waveforms. When the slider is at its leftmost setting, the waveform consists of purely the leftmost waveform. Similarly, if the slider is moved all the way to the right the waveform consists of purely the rightmost waveform. When in an intermediate position, the waveform consists of a mixture of the two waveforms. It's probably easier to see this rather than explain it, so try it for yourself. Set one wave to Sine and the other to a different wave such as Sawtooth. As you move the slider from one end to the other you can see the wave "morph" from one waveshape to the other. The Waveform display shows a number of cycles corresponding to the lowest waveform range setting.

The "Digital 2" oscillator module contains a range of controls for oscillator tuning and output. These include: Track, Cent, Semi, Oct, F1, F2, F1+2, FM, AM, Vol and Bal.

The Track, Cent, Semi and Oct controls set the oscillator's pitch. The Track button determines whether the oscillator tracks the pitch of incoming MIDI. Cent sets the oscillator pitch in cents (a cent is equal to 100 semitones). A range of -100 to +100 cents is available. Semi sets the oscillator pitch in semitones. A range of -11 to +11 semitones is available. Oct sets the oscillator pitch in

octaves. A range of -2 to +7 octaves is available.

The F1, F2, F1+2, FM, AM buttons determine the oscillator output destination. F1 selects Filter 1, F2 selects Filter 2 while F1+2 selects both filters. In the latter case you can use the Bal dial to control how much of the signal each filter receives (see below).

In the case of Oscillator 1 and 3, two further routing options are available, both of which can be used to create complex, harmonically-rich waveforms. FM allows you to modulate the frequency of oscillators 2 and 4 using oscillators 1 and 3. This type of modulation, known as Frequency Modulation, is great for producing metallic, bell-like tones. AM allows you to modulate the amplitude of oscillators 2 and 4 using oscillators 1 and 3. This type of modulation, known as Amplitude Modulation can also be used to produce rich and complex waveforms.

Finally, the Vol dial is used to set the output volume of the oscillator while the Bal dial determines the proportion of the signal that is sent to Filter 1 and Filter 2. Turning the Bal dial all the way to the right sends all of the oscillator's output to Filter 2, while turning it all the way to the left sends all of the output to Filter 1.

Filters

The Delta III contains several types of filter; All are multi-mode filters, each having a different design. A lot of care and attention has been paid to the Delta III filter which is particularly "juicy" and uses very little CPU power.



The Delta III has 2 filter modules, each of which can be set to one of the filter types mentioned above. To turn a filter on or off, select the "On/Off" button to the right of the filter's title. An important point to note is that when a filter is turned off no audio can pass through it. To change the filter type click on the menu to the left of the Filter label.

The output from both filters can be sent to either Effect 1 or Effect 2 by clicking on the output buttons to the right of the filter module. Filter 1 has an additional option; its output can be sent to Filter 2. This can be used to produce really extreme results. A Balance control is also available. This is used to mix the outputs of Filter 1 and Filter 2. When set all the way to the right Filter 2 outputs with maximum volume while filter 1 is muted. When set all the way to the left Filter 1 outputs with maximum volume while filter 2 is muted. When set to an intermediate position both filters' output in proportion to the dial's position. When connecting both filters in series (that is, when you route Filter 1 to Filter 2) this control should be set to the middle position.

Each filter's controls differ slightly. These are described in detail below.

Delta 2 Filter



The Delta II filter contains 12 filter types: L6, L12, L24, L36, H6, H12, H24, H36, B6, B12, B24, B36. The letter ("L", "H" or "B") indicates whether the filter is lowpass, highpass or bandpass. The number indicates the filter depth (in dB).

The Delta II filter contains several parameter controls. These are: Cutoff, Reso (Resonance), Track (Tracking), Env (Envelope Depth) and Envelope Direction.

Cutoff is used to set the frequency (in Hz) above which frequencies are filtered out of the signal. Higher settings produce brighter sounds while lower settings result in darker sounds.

Resonance is used to set the amount of emphasis around the cutoff frequency. Higher settings create a more pronounced peak in the signal while lower settings produce a flatter response.

Tracking is used to control the degree to which the filter tracks the signal's frequency.

Env is used to set the degree to which the filter's envelope effects the signal. Setting Env to 0.00 means that the envelope has no effect on the filter. Setting Env to 1.00 means that the filter is modulated by the envelope's full range.

The Envelope Direction button is used to set either a positive or negative envelope shape. This can be used for a range of effects including opening the Filter when a note is released (this is impossible with a non-inverted envelope).

CronoX Filter



The CronoX filter contains 3 filter types: LP (Low Pass 24 dB/Oct), HP (High Pass 12 dB/Oct) and BP (Band Pass 24 dB/Oct).

The CronoX filter contains several parameter controls. These are: Cutoff, Reso (Resonance), Track (Tracking), Env (Envelope Depth) and Envelope Direction.

Cutoff is used to set the frequency (in Hz) above which frequencies are filtered out of the signal. Higher settings produce brighter sounds while lower settings result in darker sounds.

Resonance is used to set the amount of emphasis around the cutoff frequency. Higher settings create a more pronounced peak in the signal while lower settings produce a flatter response.

Tracking is used to control the degree to which the filter tracks the signal's frequency.

Env is used to set the degree to which the filter's envelope effects the signal. Setting Env to 0.00 means that the envelope has no effect on the filter. Setting Env to 1.00 means that the filter is modulated by the envelope's full range.

The Envelope Direction button is used to set either a positive or negative envelope shape. This can be used for a range of effects including opening the Filter when a note is released (this is impossible with a non-inverted envelope).

Delta III Filter



The Delta III filter has 4 types and 2 modes. The 4 types are: LP ("Low Pass"), HP ("High Pass"), BP ("Band Pass") and N ("Notch"). Each of these filter types can be set to either 12 dB or 24 dB modes.

The Delta III filter contains several parameter controls. These are: Cutoff, Reso (Resonance), Track (Tracking), Env (Envelope Depth) and Envelope Direction.

Cutoff is used to set the frequency (in Hz) above which frequencies are filtered out of the signal. Higher settings produce brighter sounds while lower settings result in darker sounds.

Resonance is used to set the amount of emphasis around the cutoff frequency. Higher settings create a more pronounced peak in the signal while lower settings produce a flatter response.

Tracking is used to control the degree to which the filter tracks the signal's frequency.

Env is used to set the degree to which the filter's envelope effects the signal. Setting Env to 0.00 means that the envelope has no effect on the filter. Setting Env to 1.00 means that the filter is modulated by the envelope's full range.

The Envelope Direction button is used to set either a positive or negative envelope shape. This can be used for a range of effects including opening the Filter when a note is released (this is impossible with a non-inverted envelope).

Envelopes

The Delta III has 8 independent envelopes available for controlling various parameters. Seven of the envelopes have a pre-set destinations while the eighth ("Mod") can be routed to the Modulation Matrix and then sent to any of its modulation destinations. These destinations are: Oscillator 1, Oscillator 2, Oscillator 3, Oscillator 4, Mod, Filter 1, Filter 2 and Amplitude. To select an envelope click on one of the buttons to the left of the Envelope section.



Two options are available for controlling the envelopes: ADSFR and 5 Stage. To change the envelope type click on the menu to the left of the Envelope label. In general, the ADSFR envelope type sounds more natural (due to its exponential decay) while 5 Stage uses linear slopes and thus gives a different sound.

ADSFR Envelope



The ADSFR envelope-type consists of controls for Attack, Decay, Sustain, Fade and Release.

The Attack dial setting determines the length of time (in seconds) it takes for the amplitude envelope to reach the full envelope depth. For example, if the Attack slider is set to 0.100 seconds, the sample's amplitude will move from zero to full volume within 100 milliseconds.

The Decay dial setting determines the length of time (in seconds) that the amplitude envelope takes to move from the Attack peak level to the Sustain level.

The Sustain dial setting determines the amplitude level after the initial Attack/Decay phase.

The Fade dial is used to set the rate at which the signal amplitude moves from the Sustain level to either silence (for negative Fade values) or full output (for positive Fade values). A Fade setting of 0 means that the signal amplitude remains at the Sustain level until the key is released.

The Release dial is used to set the length of time (in seconds) that the amplitude envelope takes to move from the current level to silence after the key is released.

Pitch Scaling allows you to scale the envelope time using the pitch of the incoming MIDI note.

Velocity Scaling allows you to scale envelope time using the velocity of the incoming MIDI note.

In both cases, setting the dial to 0 means that the envelope is not scaled according to the incoming MIDI note's pitch or velocity.

The dials can be set to deliberately under-track or even reverse-track. This allows you to create sounds that are very smooth and even across their range, or that drastically change across their range (as is the case with many acoustic instruments). Reverse Track produces an unnatural effect which is useful for more experimental sounds.

Pitch Scaling is often used in creating Patches that have different amplitude release characteristics across their range. By setting an amplitude envelope's Pitch Scaling parameter to a value greater than 0 you can create a Preset in which low frequency notes have a longer release time while the high frequency notes have a short release time.

Velocity Scaling can be used in a similar manner.

5 Stage Envelope



In the 5 Stage Envelope each section of the envelope has its own Time and Level setting. The Time setting indicates the time (in seconds) it takes for the signal amplitude to reach the corresponding Level setting.

In the above example the full level (100) is reached in 870 ms after the note has started. The envelope falls to 53% within 1.35 seconds, rises abruptly to 67% within a millisecond and falls to a sustain level of 20% within 1.861 seconds.

Note that the 4th level is always the Sustain level and the 5th time and level are the release time and the release level. The release level should normally be 0.

Pitch Scaling allows you to scale the envelope time using the pitch of the incoming MIDI note.

Velocity Scaling allows you to scale envelope time using the velocity of the incoming MIDI note.

In both cases, setting the dial to 0 means that the envelope is not scaled according to the incoming MIDI note's pitch or velocity.

The dials can be set to deliberately under-track or even reverse-track. This allows you to create sounds that are very smooth and even across their range, or that drastically change across their range (as is the case with many acoustic instruments). Reverse Track produces an unnatural effect which is useful for more experimental sounds.

Pitch Scaling is often used in creating Patches that have different amplitude release characteristics across their range. By setting an amplitude envelope's Pitch Scaling parameter to a value greater than 0 you can create a Patch in which low frequency notes have a longer release time while the high frequency notes have a short release time.

Velocity Scaling can be used in a similar manner.

Modulation

One of the key features of the Delta III is its sophisticated modulation capabilities. The instrument contains four independent LFOs (low frequency oscillators) as well as a Modulation Matrix that is used to control modulation routing.



To select one of the LFOs click on one of the four buttons ("L1", "L2", "L3", "L4") to the right of the Quad LFO/Modulation Matrix section. To select the Modulation Matrix click on the "MX" button beneath the four LFO buttons.

The LFO controls and Modulation Matrix are described in more detail below.

Quad LFO



An LFO is an oscillator that generates low frequency signals that can be used to modulate other aspects of the signal. The Delta III contains 4 separate LFOs each offering 8 user parameters. These are: Wave, Freq (Frequency), Symmetry, Phase, Delay, Attack, Decay and Sync.

To select one of the LFOs waveforms click on one of the waveform buttons at the bottom left of the LFO section. Six LFO waveforms are available: Sine, Triangle, Ramp, Square, Noise and Sample and Hold.

The "Freq" (Frequency) parameter determines the LFO's frequency (in Hz).

The "Symmetry" parameter can be used to distort the waveform's shape, stretching it or compressing it as required.

The "Phase" parameter sets the point in the waveform cycle at which modulation begins.

You can also apply an envelope to the LFO using the Delay, Attack and Decay dials.

The "Delay" parameter sets the amount of time (in seconds) before the LFO begins modulating the signal. A Delay setting of 0 means that the LFO begins operating immediately.

The Attack dial setting determines the length of time (in seconds) it takes for the LFO to reach the full modulation depth. This can be used to slowly increase the amount of modulation applied to the signal. A setting of 0 means that modulation commences immediately.

The Decay dial setting determines the length of time (in seconds) that the LFO modulation depth takes to move from the Attack peak amount to 0. Setting this parameter to ? (infinite) means that modulation is applied for an infinite amount of time, that is, the full duration of the signal. Finally, you can use the Sync menu to sync LFO triggering with the current tempo (see Appendix C for the range of possible sync settings).

Modulation Matrix



The Delta III's Modulation Matrix allows you to create 8 user-defined modulation routings. 32 modulation destinations are available for modulation by 24 modulation sources (see Appendix D for a listing of all modulation sources and destinations). This section also contains Velocity, Pitch Bend and Channel Volume switches right of the Matrix.

Modulation sources are shown in a column on the left of the display, while the destinations are shown on the right. The modulation amount is displayed in the middle. To change a routing click on the source or destination that you want to change. A menu will appear which lets you select the new source or destination. To remove a modulation source or destination select the "- - - -" entry in the menu.

To change the modulation depth click on the amount display and move the mouse (while keeping the mouse button pressed) upwards or downwards (increasing or decreasing the value) until the desired amount has been reached. A negative modulation depth inverts the waveform of the modulation source.

The modulation of Main Pitch has a special display for modulation depth. The example above shows a modulation depth of "2:40" (see last row of the Modulation Matrix). This means master pitch is modulated to a depth of 2 semitones and 40 cents (or 2.40 semitones).

The three buttons on the right of the Modulation Matrix are used to select 3 default modulation settings: the Patch volume by the "MIDI channel volume" ("Chan. Vol"), the Patch volume by MIDI key velocity ("Velocity") and the pitch by the pitch wheel ("Pit. Bend"). The amount of pitch change caused by the pitch wheel can be set on the Delta III's rear panel (see below for more information about the Delta III's rear panel).

Remember, without using the Modulation Matrix the following can be modulated: the oscillators' pitch by an envelope, the oscillators' amplitude by an envelope, the envelope rate by the pitch of the note played, and the envelope rate by the velocity of the note played.

Main

The Delta III's Main section contains various controls for setting global parameters for each part.



The Preset control is used for all File-related operations. The Load button opens a dialog that lets you select a file for loading. The Previous and Next buttons allow you to traverse a list of files. The Save button allows you to save the current preset settings. The Delta III loads and saves all of its presets directly to hard disk so your computer's RAM does not limit the number of available presets.

The Glide or "portamento" section allows you to set the Delta III's portamento parameters. "Glide" continuously changes the pitch from one note to the next, connecting the notes and letting you smoothly "glide" from one to the other.

The Glide section has three controls: the Glide button, the Range control, and the Time/Rate control.

The Time/Rate control has two settings: Time and Rate. These settings determine the manner in which the pitch of one note moves to that of the next note. When set to "Time", it takes a constant amount of time to move from one note to the next. In this case it will take the same amount of time to reach the destination pitch regardless of whether the preceding notes are a semitone apart or an octave apart. When set to "Rate", the amount of time it takes to move from one note to the next depends upon how far apart the two notes are. The further apart the notes, the longer it will take for the pitch of the first note to reach that of the following note.

The Glide button has 4 values: On, Off, Held and Bend. The On and Off functions turn "Glide" on and off. When "Glide" is on, the Time/Rate dial is used to set the length of time it takes for the first note to reach that of the second note. The "Held" setting works as follows. If notes overlap then Glide is applied, however if they don't then the notes are played without Glide. This makes it possible to apply Glide only to selected notes. "Bend" allows you to apply a predetermined pitch bend to each note. The bend range is set using the Range control. A bend range of -48 to +48 semitones is available.

The Part control is used to select one of the Delta III's eight parts for editing. Each part is completely independent of the others. Above each of the parts is an activity display that shows if any notes are currently being played by that part.

Please be aware that this control is not present in the monotimbral version of Delta III.

The Voices control is used to set the number of voices ("polyphony") available for a particular part. The maximum polyphony for all parts is 32.

The "Precision" control can be used to set the accuracy of the Delta III's signal generation. When the "Precision" control is set to less than 100% small inaccuracies are introduced into the waveform at various point in the Delta III's signal chain. This is useful if you're trying to replicate the warmth of an old analog synthesizer. Precision can be set in a range from 90% to 100%.

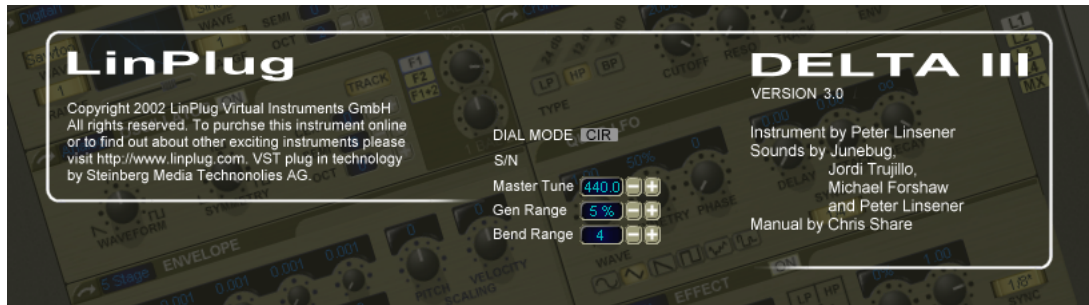
The "Volume" control sets the overall volume for the part. Volume can be set in a range from -24dB to +12dB.

The "Gen" control is used to generate random patch settings. To generate a new patch click on the button and some or all of the current parameter settings will be changed to new settings. The Gen range is set on the Delta III's rear panel (see below). Not all parameters are changed with each new random patch. With lower settings (e.g. 5%) even less parameters are affected. Normally, a setting in the range of 2 to 10% will produce the most interesting and useable results.

The ECS (Easy Controller Setup) button makes it simple to control the Delta III from an external MIDI controller (either hardware or software). All you have to do is switch on the ECS button, select a Delta III parameter with the mouse and then send some MIDI messages to the Delta III from your MIDI source. That's all there is to it! From now on you can change the parameter with that controller. In addition to this, more than one controller can be defined to change a particular parameter. In fact, you can define up to 128 parameter-controller-combinations. This does not depend on the type of controller you have nor the particular MIDI Control Change messages it sends. Don't forget to switch off the ECS button after you have finished using it!

Rear Panel

The "Rear Panel" of the Delta III is accessed by clicking on the LinPlug logo at the bottom of the Delta III. Several master controls have been located here to make the front panel less crowded, and also so that they are not changed accidentally while the Delta III is in use. The controls located here are Dial Mode, MasterTune, Bend Range and Gen Range.



Dial Mode is used to select the Delta III dial operation mode. Two modes are available: "Cir" (Circular) and "Lin" (Linear). In "Cir" mode the Delta III's dials track cursor movement in a circular fashion around the dial. In "Lin" mode the Delta III's dials track vertical cursor movement.

Master Tune is used to set the overall tuning of the Delta III. Tuning can be set from 430.0 Hz to 450 Hz.

Bend Range is used to set the Delta III's response to pitch bend messages. Bend Range can be set from 1 to 24 semitones.

The Gen Range control is used to set the range for random parameter generation. It has a range of 0% to 100%. Using lower values will effect the patch less than using higher values.

Finally, the rear panel also contains your Delta III's serial number and version number.

To switch back to the main edit screen once again click the LinPlug Logo.

Effects

The Delta III has two independent effects units: Effect 1 and Effect 2.



Effect 1 contains several effects modules: Delay, Chorus, Phaser and Filter, while Effect 2 contains 2 effects modules: Delay and Chorus. All Effect 1 modules output a mono signal, while all Effect 2 modules output a stereo signal. To change the effect type click on the menu to the left of the Effect label. Both effects modules can be set to either "On" or "Thru" using the button to the right of the Effect label.

Each effect's controls differ slightly. Each effect is described in detail below.

Delay



The Delay effect can be used to create "echoes" and other related effects. It features controls for "Wet", "Time", "Feedback", "Filter", "Depth", "Rate" and "Sync".

The Wet dial allows you to set the balance between the processed "wet" signal and the original unprocessed "dry" signal.

The Time dial is used for setting the delay time (in milliseconds). This can range from 1 ms to 680 ms.

The Feedback dial allows you to set the number of times the signal repeats or "echoes".

Also included in the Delay section is a variable low pass/high pass 6dB/Oct filter.

The Depth dial is used to set the depth to which the delayed signal is modulated, while the Rate dial determines the modulation speed. For example, if you set a delay time of 100ms and a depth of 50%, the amount of modulation is 50% of 100ms (50 ms). In this case you'll get a delay time that varies from 100 - 50ms (50ms) up to 100 + 50ms (150ms).

The Delay Rate sets the rate (in Hz) at which the modulation takes place. As an example, when you set the Delay Rate to 0.5Hz you get a complete sweep from 50ms (using the above example) to 150ms and back to 50ms in 2 seconds. Finally, you can use the Sync menu to sync the delay time with the current tempo (see Appendix E for the range of possible sync settings).

Normally it doesn't make much sense to combine a synced delay time with delay time modulation.

Chorus



The Chorus effect can be used to "thicken" a single sound creating the impression that it contains multiple voices. The Chorus works by mixing delayed signals with the original signal. The Delta III's Chorus features controls for "Wet", "Time", "Rate", "Inv", "Spread", "Spread Time" and "Spread Rate".

The Wet dial allows you to set the balance between the processed "wet" signal and the original unprocessed "dry" signal.

The Time dial is used for setting the delay time (in milliseconds). Longer times produce a "chorusing" effect while shorter times create a "flanging" effect.

The Rate dial sets the rate at which the signal is modulated.

The Inv (Invert) button allows you to invert the signal that is used to create the chorus effect. This is particularly useful when creating flanged sounds with shorter delay times (0.25 ms and below).

A unique feature of the Delta III Chorus is its Spread parameter which is turned on or off using the Spread button. Basically, "Spread" makes the chorus sound fatter by adding random deviations to the Time and Rate parameters. The degree of "randomness" depends on the spread Time and Rate parameters; setting the Spread Time and Rate to 0 cancels the effect; increasing the value of the Spread Time and Rate parameters adds additional richness and fullness to the sound. It can also make the effect sound more natural.

Phaser



The Delta III Phaser can be used to create "swirling" dynamic movement in sounds. The Phaser effect is created by automatically sweeping a series of equally spaced frequency notches up and down the audio spectrum. The Delta III's Phaser features controls for "Wet", "Rate", "Depth", "Center", "Feed", "Inv" (Invert) and "Stages".

The Wet dial allows you to set the balance between the processed "wet" signal and the original unprocessed "dry" signal.

The Rate dial sets the rate at which the signal is modulated. The Depth dial is used to set the depth to which the signal is modulated.

The Center dial is used to set the frequency around which modulation occurs.

The "Feed" (Feedback) control is used to set the amount of internal feedback employed within the phaser. More internal feedback produces increasingly pronounced resonant peaks.

The Inv (Invert) button allows you to invert the signal that is used to create the phasing effect.

The final phaser control is "Stages". Each phaser stage shifts the signal's phase by 180 degrees. The higher the Delta III's Stages setting, the more frequency notches there are in the signal and so the more pronounced is the phasing effect.

Filter



The Filter features controls for: Wet, Satur (Saturation), Type, Cutoff, Reso (Resonance), Cutoff-Mod Speed and Cutoff-Mod Depth.

The Wet dial allows you to set the balance between the processed "wet" signal and the original unprocessed "dry" signal.

Satur (Saturation) enables you to set the amount of filter drive or distortion. Cutoff is used to set the frequency (in Hz) above which frequencies are filtered out of the signal. Higher settings produce brighter sounds while lower settings result in darker sounds.

Resonance is used to set the amount of emphasis around the cutoff frequency. Higher settings create a more pronounced peak in the signal while lower settings produce a flatter response.

The filter's cutoff frequency can be controlled using the Cutoff-Mod Speed and Cutoff-Mod Depth controls. The Cutoff-Mod Speed dial allows you to set the rate (in Hz) at which the filter's cutoff frequency is modulated. The Cutoff-Mod Depth control is used to set the depth to which the filter's cutoff frequency is modulated. A setting of 0% means no modulation occurs.

Reverb



The Reverb is well suited to add some ambiance to percussive sounds. It features controls for: Wet, Predelay, Roomsize and Damping (Damp).

The Wet dial allows you to set the balance between the processed "wet" signal and the original unprocessed "dry" signal.

Predelay enables you to delay the processed signal by the given amount (in milliseconds) to achieve a more natural reverberation. Normally shorter predelay times are applied on a smaller roomsize and longer predelay times on a bigger roomsize.

Roomsize is used to set the size of the simulated room. The Roomsize varies from a small chamber (displayed as small box) up to a huge hall (displayed as big box).

The simulated rooms wall materials can be adjusted with the Damping (Damp) control that ranges from practically loss free reflecting walls (0% damping) up to very absorbing walls (90% damping). Practically the damping determines the amount of higher frequencies that are contained in the processed signal: The higher the Damp is adjusted the less higher frequencies are contained in the processed signal.

Get The Full Version

You can use the demo version of the Delta III for evaluation purposes for a period of up to 90 days. If you then decide that you would like to keep using the Delta III you must register your demo version.

Registering the Delta III is very easy. All you have to do is visit our online shop at www.linplug.com and purchase a license. As soon as your credit card transaction has been authorized you will be sent a personal serial number. In most cases this will only take a few minutes.

After you've installed and opened the full version of the Delta III, go to the instrument's rear panel. The S/N edit box should read "Please enter serial number here". Enter the serial number you have received into the S/N edit box. If the serial number has not been entered or it has been entered incorrectly, the full version of the Delta III will not play any notes.

After entering the serial number return to the Delta III's front panel. Now send the Delta III a few note-on messages. After the Delta III receives the first few note-on messages it automatically becomes registered. After registration, the S/N field is no longer editable. You can confirm this by looking at the S/N field on the instrument's rear panel.

If you have any questions regarding the Delta III's registration process, please write to support@linplug.com.

Optimizing CPU Usage

Software synthesizers are highly CPU-intensive. The real-time calculation of audio waveforms, filters, effects and modulators places a significant load on the host computer's CPU.

As such, the main limiting factor in software synthesizer performance is CPU processing power. Each additional oscillator, filter, effect and modulator that is included in an instrument adds to the CPU load. As a result, it's best to switch off any unused units within the Delta III to conserve CPU resources.

Glossary

AM:	AM or "Amplitude Modulation" is a process where the amplitude of one oscillator (the carrier) is controlled by another (the modulator). When the frequency of the modulator is periodic and below the audio range (less than 20 Hz) tremolo is produced. When the modulation frequency is within the audio range, Ring Modulation is produced.
Amplifier:	A signal processing device that changes the amplitude, and hence the volume, of a signal.
Effect:	A signal processing device that changes some aspect of the input signal. An enormous number of different effect types are available. These include Chorus (which produces a thickening of the signal), Delay (adding echoes to the signal) and Distortion (which changes the shape of the waveform usually adding overtones).
Envelope:	A time-varying signal used to control the development of another signal after it has been triggered. Envelopes are most often used for controlling a signal's amplitude. The shape of the envelope is determined by the number of control parameters. Usually four parameters are available: Attack Time, Decay Time, Sustain Level and Release Time.
Filter:	A signal processing device that suppresses or "filters" out specific parts of a signal's frequency spectrum. Numerous types of filter are used in audio synthesis. These include Low Pass, High Pass, Band Pass and Notch. The tone controls on a stereo amplifier are one example of an audio filter.
FM:	FM or "Frequency Modulation" is a process where the frequency of one oscillator (the carrier) is controlled by another (the modulator). When the frequency of the modulator is periodic and below the audio range (less than 20 Hz) vibrato is produced. When the modulation frequency is within the audio range, Frequency Modulation is produced.
LFO:	An LFO or "Low Frequency Oscillator" is a periodic signal source (usually below audio frequency range) used to modulate another signal parameter. An LFO can be used for a variety of effects including vibrato (by modulating the volume) and tremolo (by modulating the pitch).

- Modulation Matrix:** A signal "junction" where a source signal can be patched so that it controls a destination signal. The Delta III's Modulation Matrix is used for tasks such as modulating an oscillator's amplitude by an LFO.
- Oscillator:** A signal source that generates a periodic waveform at a given frequency.
- Ring Modulation:** The process of combining two audio signals by multiplication. Ring Modulation produces sidebands but suppresses both the carrier and modulating frequencies.

Midi Implementation Chart

Product: Linplug Delta III Version 3.0x Date: 8.May 2002

Function	Transmitted	Recognized	Remarks
Basic Channel			
Default	no	no	
Changed	no	no	
Mode			
Default	no	Poly	(Omni for monotimbral Version)
Changed	no	no	
Note Number			
True Voice	no	yes	
	no	no	
Velocity			
Note On	no	yes	
Note Off	no	no	
Aftertouch			
Poly (Key)	no	yes	
Mono (Channel)	no	yes	
Pitch Bend	no	yes	
Control Change	no	yes	
Program Change	no	no	
System Exclusive	no	no	
System Common			
Song Position	no	no	
Song Select	no	no	
Tune Request	no	no	
System Realtime			
Clock	no	no	
Commands	no	no	
Aux Messages			
Local On/Off	no	no	
All Notes Off	no	yes	
Active Sensing	no	no	
System Reset	no	yes	

Appendix A: Importing Delta II Files Into The Delta III

The Delta III can load all Delta II preset ("fxp") files. However, it's not possible to load Delta II bank ("fxb") files into the Delta III.

The Delta III always attempts to recreate Delta II presets as closely and as completely as possible. However, due to differences in the internal structure of the Delta II and Delta III, in some cases a Delta II preset may sound different when imported into the Delta III. In rare cases the difference may be substantial. Most presets should sound fine, however if you're not happy with your favourite Delta II Preset after importing it into the Delta III contact support@linplug.com and we'll see if we can help you.

Below is a list of things that you should be aware of when importing Delta II presets into the Delta III:

- Only files that have been saved in the latest version of the Delta II preset format (Delta II version 2.05) are supported. If you have made presets with earlier versions of the Delta II, it may be necessary to re-save your presets using the Delta II (version 2.05) again. If your presets don't import properly into the Delta III make sure you have saved them using the Delta II (version 2.05).
- 8 Modulation Matrix slots are available in the Delta III; as a result, presets that require more slots are not recreated completely; all Modulation Matrix settings related to slot 9 or above are rejected.
- The internal routing of Delta III modules is quite different to that of the Delta II. Oscillators cannot be routed to AM/FM and a Filter simultaneously as in the Delta II. Also, Filter output cannot be placed in the stereo panorama. This means that modulations that make use of these routings might not work properly in the Delta III.
- The Delta II parameter "Scaling Center" has no counterpart in the Delta III (it was removed in order to make programming sounds easier) and so is ignored when importing Delta II presets. It's possible that this may cause severe changes in timbre.
- The Delta II's dedicated Pitch Envelope has been replaced by a Modulation Envelope. This makes the internal routing of the Delta III more flexible and allows each oscillator's pitch to be modulated individually. Unfortunately the Modulation Envelope lacks all of the capabilities of the Delta II's dedicated Pitch Envelope. In the case of the Delta II, the Pitch Envelope could raise the pitch above the original pitch and lower it below the original pitch within one envelope cycle. This is not possible in the Delta III. In addition, each Oscillator Pitch Modulation requires one slot in the Modulation Matrix. These slots are filled automatically when importing a Delta II preset. However, if the Modulation Matrix slot is already filled this will not be set correctly.
- The modulation range has been decreased from +-48 semitones to +-24

semitones.

- Pitch modulation of single oscillators via the Modulation Matrix has changed. In the Delta II the actual frequency was modulated in a range from 0 to $2 \times f$ (where f is the Oscillator's base frequency). In the Delta III true pitch modulation is used within a range of ± 24 semitones.
- The unit of measurement of the Detune parameter in the Delta II was ± 4 Hz from the original frequency. In the Delta III this parameter is now in semitones. This is adjusted for middle C while importing however it necessarily leads to different timbres on lower and higher notes. Normally, the change this creates is subtle however manual readjustment of Detune parameter may be required.

Appendix B: Digital Oscillator Types and Waveform Ranges

Digital1 Oscillator Types:

Sine, Triang(le), Sawtoo(th), Square, Pulse50, Pulse25, Pulse12, Pulse06, DefSin, ShSin, HiSin, Stairs.

Digital1 Waveform Ranges:

1/4, 1/2, 1, 2, 3, 4, 5, 6, 7, 8.

N.B. These are frequency multipliers.

Digital2 Oscillator Types:

Sine, Triangle, Sawtooth, Square1, Square2, Square3, Organ1, Organ2, Organ3, Spectra1, Spectra2, Spectra3, RichSaw1, RichSaw2, RichSaw3, RichSaw4, SawSpec1, SawSpec2, VintSaw1, VintSaw2, VintSaw3, SawBass1, SawBass2, SawBass3, SawBass4, SawBass5, SawBass6, SawBass7, SawBass8.

Digital2 Waveform Ranges:

32", 16", 8", 4", 2".

Appendix C: LFO Sync Settings

Off, 16/*1, 16/1, 16/1T, 8/*1, 8/1, 8/1T, 4/*1, 4/1, 4/1T, 2/*1, 2/1, 2/1T, 1/*1, 1/1, 1/1T, 1/2, 1/2T, 1/4*, 1/4, 1/4T, 1/8*, 1/8, 1/8T, 1/16*, 1/16, 1/16T, 1/32*, 1/32, 1/32T. [New]

Note: "T" stands for Triplet and "*" stands for a dotted note. In the case of a dotted note, the note duration is equal to 1.5 times its original undotted value.

Appendix D: Modulation Sources and Destinations

Modulation Sources:

--- (Off), Note played Exp, Note played Lin, Velocity, Aftertouch(poly), Aftertouch(mono), Pitch Wheel, Modulation Wheel, Breath Controller, Foot Controller, ExpressionContr, CC16 Controller, CC17 Controller, CC18 Controller, CC19 Controller, LFO 1, LFO 2, LFO 3, LFO 4, Osc 1 Envelope, Osc 2 Envelope, Osc 3 Envelope, Osc 4 Envelope, Mod-Envelope.

Modulation Destinations:

---(Off), Amplitude Osc 1, Amplitude Osc 2, Amplitude Osc 3, Amplitude Osc 4, Pitch Osc 1, Pitch Osc 2, Pitch Osc 3, Pitch Osc 4, Pulsewidth Osc 1, Pulsewidth Osc 2, Pulsewidth Osc 3, Pulsewidth Osc 4, Balance Osc 1, Balance Osc 2, Balance Osc 3, Balance Osc 4, Cutoff Filter 1, Cutoff Filter 2, Resonance Filt 1, Resonance Filt 2, Filter Balance, Main Amplitude, Main Pitch, Modulation Depth 1, Modulation Depth 2, Modulation Depth 3, Modulation Depth 4, LFO 1 Speed, LFO 2 Speed, LFO 3 Speed, LFO 4 Speed.

Appendix E: Delay Sync Settings

Off, 1/2, 1/2T, 1/4*, 1/4, 1/4T, 1/8*, 1/8, 1/8T, 1/16*, 1/16, 1/16T, 1/32*, 1/32, 1/32T.

Note: "T" stands for Triplet and "*" stands for a dotted note. In the case of a dotted note, the note duration is equal to 1.5 times its original undotted value.