

Reduktion User Guide

Version 1.0

User Guide Revision 2 - July 2021

Dead Duck Software

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Introduction

Reduktion is a 32-voice polyphonic software synthesizer for use in audio hosts that support the VST 2.4 plugin format. It is available for Windows operating systems in both 32-bit and 64-bit versions.



This guide provides an overview of the functions and operation of the synthesizer.

Installation

Reducktion is provided in a simple zip-file package containing the following:

- Reducktion.dll – the 64-bit version of the plugin
- Reducktion_32.dll - the 32-bit version of the plugin
- Reducktion_Data - a directory containing example presets, themes and this user guide

To install simply copy the appropriate .dll file to a plugin directory recognised by your host.

Reducktion requires a 'home' folder to store various resources such as settings, presets and themes. By default this will be created automatically when the plugin is loaded for the first time. This will create the required folders in the following directory:

`C:\Users\\AppData\Local\Dead Duck Software\Reducktion`

This allows resources to be shared by all instances of the plugin regardless of where they are installed on your computer. Note that Reducktion requires write-access permissions to these folders to save presets and settings so a shared home folder will be necessary if your plugins are located in restricted directories such as 'C:\Program Files'.

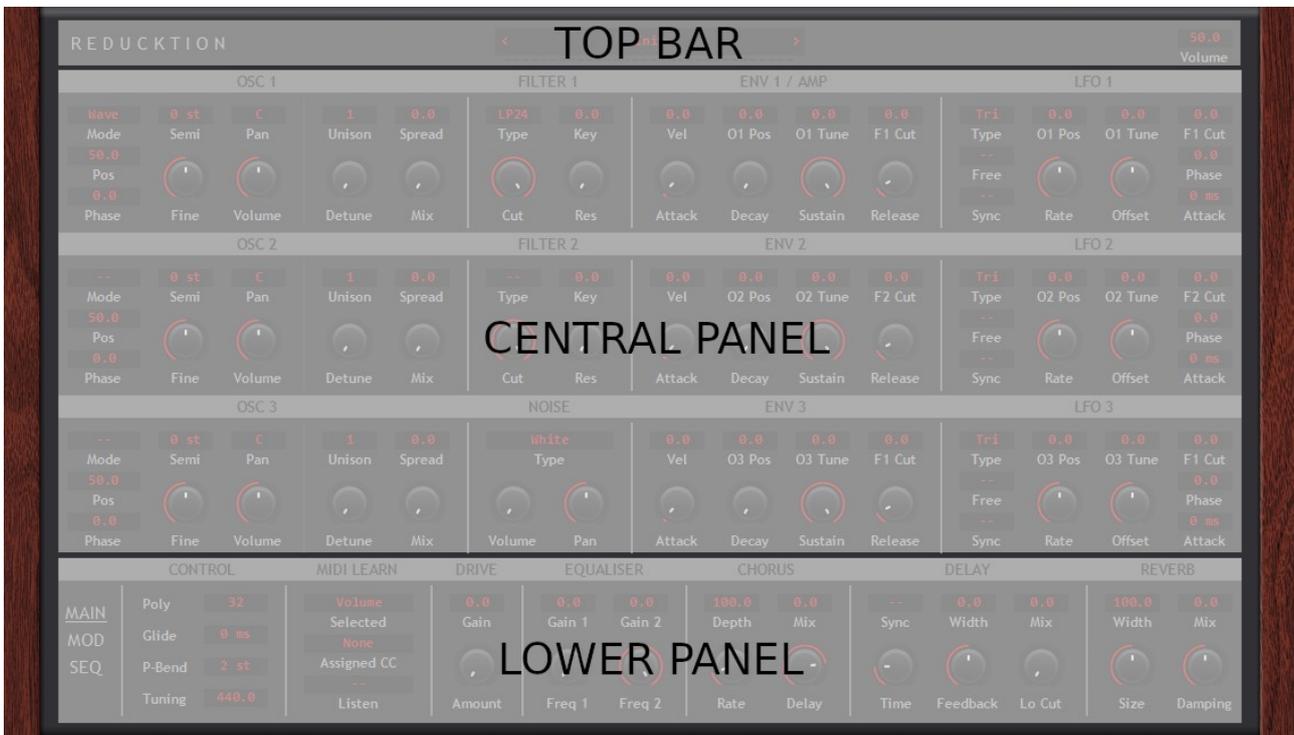
If you would prefer to keep the plugin resources and settings with the plugin itself it is possible to use a local home folder which is specific to a single instance of the plugin. This requires a folder named 'Reducktion_Data' in the same directory as the plugin; on startup Reducktion will look for this folder and if found will use it as the home location. As before make sure Reducktion has write-access to this folder to allow the saving of settings and presets.

Once the home folder has been created copy the content files into the Presets and Themes folders as appropriate.

For a quick and easy installation simply extract the contents of the zip package to a plugin folder that is write-accessible by your host.

User Interface

The Reduktion user interface consists of three sections: a top bar, a central panel and a multi-page lower panel.



The lower panel is a paged display; switch between the pages using the links on the left side of the panel. The currently selected page is underlined in the list.

The pages are:

MAIN – the main section presenting general synthesiser options and effects.

MOD – the modulation matrix.

SEQ – the sequencer.

These will be described in greater detail later in this guide.

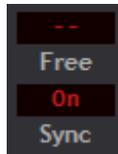
Controls

Each of the user interface sections make use of various styles of control:

Menus - present multiple options of which one must be selected. Click the menu control to reveal the options and make a selection, ctrl-click to restore its default value.



Switches - provide a choice between two options, usually 'On' or 'Off'.



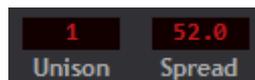
Note: switches and menus use '- -' to indicate 'off' or that no selection has been made.

Parameter knobs - control parameter values by mouse-dragging; this may occur in any direction: up/down, left/right or anywhere in between. Press shift while dragging to provide more accurate control. Ctrl-click or double-click to restore the default value.



While the value of the parameter is indicated at any time by the angular position of the knob, a more accurate readout will be displayed when the value is being changed. To view this without affecting the position of the knob right-click on the control.

Parameter displays - these function exactly the same as parameter knobs but occupy a smaller area and provide a permanent display value.



Many of the user interface sections feature context menus that provide additional functions; to access these click the title-bar of the relevant section. In most cases the menus provide access to clipboard operations allowing the section settings to be copied and a reset option to restore the section to its default values.

The Top Bar

The top bar provides access to the system menu, preset browser, voice display and master volume control.

System Menu

To access the system menu right-click the Reduktion logo or any empty space within the top bar area. It contains the following options:

Save Preset - save the current plugin settings to a file. This can be saved anywhere but the preset will only appear in the preset browser if it is saved within the Presets directory in the Reduktion home folder.

Load Preset - load a previously saved preset into the plugin. All parameters will be updated with the values in the preset file.

Init Preset - restore all parameters to their default values. By default Reduktion will use internal default values but this can be overridden using a preset file named '_init.prs'. This must be located in the Preset home directory and will be used to initialise the plugin when first loaded or when Init Preset is selected from the menu.

Size - select from a choice of sizes for the plugin window: 100%, 150% and 200%. To change the size select the required option and reopen the plugin window.

Themes - select from a choice of themes. Make a selection and reopen the plugin window to see the changes.

Note when changing the size or themes some hosts may require the plugin to be completely unloaded before the changes will take effect. Also, make sure there are no other instances of Reduktion in use as these may override the new settings when unloaded.

Theme and size changes will persist between sessions.

Preset Banks - select from a list of plugin banks available. Selecting a bank will make its contents visible in the preset browser.

Show Home Folder - open the home folder in Windows Explorer.

About - information about the plugin.

Preset Browser

The preset browser occupies the centre section of the top bar. It shows the current preset and provides a way to navigate the contents of the currently selected preset bank.



To select a preset click the preset name panel; a menu will appear listing the names of the presets available. Click a name to load its parameters into the plugin. Alternately, click the '<' and '>' arrows to navigate from preset to preset loading each one in turn.

Reduction features a file-based preset management system in which presets are saved and loaded as files; the presets listed in the browser are simply files stored in the preset home directory and can be copied, moved or deleted just as you would any other document. To create a new preset simply save the current parameters with a new name.

Beware that switching presets, either via the browser or by loading directly from a file, will cause the current parameters to be overridden; make sure to always save any changes you want to keep before selecting a new preset.

The presets displayed in the list are determined by the currently selected preset bank. A bank is simply a subdirectory within the 'Presets' home folder. As mentioned the currently selected bank is set using the system menu.

Note: the selected bank only persists for the current session. The default bank will always be selected when the plugin is first loaded. Preset banks must be located at the top level within the Preset folder; nested banks are not supported.

Voice Display

The voice display is located directly below the preset browser and shows the current voice activity; a highlighted segment indicates that a voice is playing.

Master Volume

The Master Volume parameter display controls the main output level. This is the final stage of the audio signal path and the output is passed to the host for further processing.

Note: Reduction includes a +3dB hard clipper at the output stage to prevent excessive audio levels from reaching the host.

The Central Panel

Reduktion features a simple signal flow that is reflected in the layout of the central panel.

Sounds are originated in the three oscillators and noise generator. These are combined into a stereo signal according to their volume and pan controls and directed to the filter section. Here the signal passes through Filter1 and then Filter 2 before reaching the amplifier stage which provides volume control via Envelope 1.

Similarly, the central panel features sections for the oscillators, noise, filters and amp reflecting the signal flow from left to right.

In addition to these signal processing elements there are modulators and modulation controls. Likewise the central panel includes controls for the envelope generators and low-frequency oscillators (LFOs) that form the basis of Reduktion's modulation system.

Oscillators

Oscillators are the primary sound generators and provide waveforms according to three different generation modes:

Wave – generates saw, square, triangle or sine waves as either pure waves or a mix of two adjacent waves. See the following section on wave mode for more information.

Pulse – a rectangular pulse wave whose duty-cycle is determined by the Pos parameter. By default a square wave is produced corresponding to a Pos value of 50. Changing the value will alter the duty-cycle between 0 and 100.

FM – a simple phase-modulation 'FM' setting which provides a single sine-wave carrier and two sine-wave modulators. The modulators are arranged in series with Mod 2 modulating Mod 1 which in turn modulates the carrier (the main oscillator voice).

Note: setting the mode to '- -' will deactivate the oscillator.

The three oscillators in Reduktion are identical and include the following parameters:



Mode – the waveform generation mode: Wave, Pulse, FM or off ('- -').

Pos - the mix amount for Wave mode or the duty-cycle setting in Pulse mode.

Phase – the starting phase of the wave. Set to the maximum value to select random phase.

Semi – the semitone tuning of the voice; allows the tuning to be offset from the note being played by up to 2 octaves up or down (-24 st to + 24 st).

Fine – the fine tuning of the voice in cents. Adjustable between a semitone up or down (-100 ct to +100 ct).

Pan – the stereo pan position of the oscillator.

Volume – the volume level of the oscillator.

In Wave and Pulse modes the oscillators present a set of addition parameters to control unison voicing. This allows up to 8 additional oscillators to be mixed into the main voice according to the following parameters:

Unison – the number of additional oscillators mixed into the main oscillator signal, from 1 to 8.

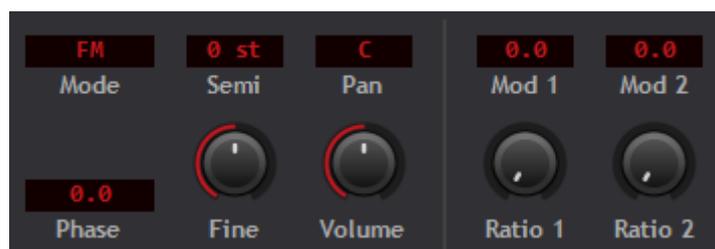
Detune – the amount by which each additional oscillator is detuned from the main oscillator pitch. The higher the value, the greater the extra oscillators differ from the main oscillator.

Spread – the stereo pan positions of the additional oscillators. The higher the value the wider the stereo separation between the oscillators.

Mix – the level of the additional oscillators relative to the main oscillator.

Note: the extra unison oscillators are related to each other as pairs (1-2, 3-4, 5-6, 7-8) such that the Detune and stereo Spread parameters are mirrored in each member of the pairs. So for example, unison oscillator 1 is detuned to a pitch below the main note while unison oscillator 2 is tuned above it. Similarly oscillator 1 will be positioned to the left of the main oscillator with oscillator 2 to the right. This is repeated at differing amounts of separation for the remaining pairs.

In FM mode the oscillator presents controls for the FM modulators:



Reduction's FM mode provides a single carrier and two modulators which are combined in series to modulate the phase of the carrier. Both carrier and modulators generate sine waves and are controlled by the following parameters:

Mod1/Mod2 – the modulation amounts applied to the respective modulation target. Mod 2 modulates modulator 1 while Mod 1 modulates the carrier (main oscillator).

Ratio 1/Ratio 2 – the modulation frequency of each modulator as a ratio of the carrier frequency, from 1:1 to 1:10 in half-step increments.

Oscillator Wave Mode

When set to wave mode the oscillators can generate one of four different waveforms; the value of the Pos parameter being used to determine which one:

0 – square.

25 – triangle.

50 – sawtooth.

75 – sine.

100 – square.

Any Pos setting between these values will provide a mix of the two adjacent waveforms, for example a value of 40 will generate a mix of saw and triangle waves.

Note: to make selecting the ‘pure’ waveforms easier try the following tricks:

- for a saw wave ctrl- or double-click the Pos control to set the default value of 50,
- for a square wave drag the Pos control to its maximum or minimum limits,
- for a triangle or sine wave use the oscillator context menu to select Pos values of exactly 25 or 75.

Noise

The noise generator provides white or pink noise:



Type – the type of noise generated; choose from white, pink, stereo white and stereo pink.

Volume – the output level of the noise generator. This is mixed with the oscillator outputs and passed to Filter 1.

Pan – the stereo pan position of the noise output.

Filters

Reduktion provides two filters arranged in series. Both are identical and include the following parameters:



Type – the filter type. Choose between 24dB/Oct low pass and 12 dB/oct low pass, high pass, band pass, band stop (notch) and peaking.

Cut - the filter cutoff frequency.

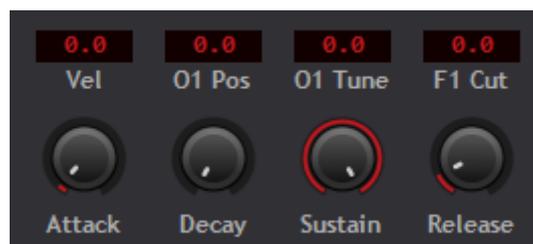
Res – the filter resonance level. Note: the LP24 filter will self-oscillate with a high enough resonance setting.

Key - the keyboard tracking amount. This enables the cutoff frequency to be adjusted according to the note being played. Set to 100 to make the cutoff follow the note; lower values will cause the cutoff to 'close down' as the higher notes are played.

Note: the frequency readout on the cutoff frequency control is only accurate when key tracking is set to zero. With tracking enabled the actual frequency will differ depending on the note being played.

Envelopes

Reduktion provides three ADSR envelopes. Envelope 1 is dedicated to controlling the amplitude but all three can be used for any modulation task. They include the following parameters:



Attack – the attack time, from 1ms to 20s.

Decay – the decay time, from 1ms to 20s

Sustain – the sustain level, from 0 to 100.

Release - the release time, from 1ms to 20s

Vel – the velocity sensitivity from 0, where velocity has no effect and the envelope provides the maximum output level, to 100 where the velocity completely controls the output level.

All of the modulator sections provide modulation controls for selected parameters. In Envelope 1 these are:

O1 Pos – selects the modulation amount sent to the Pos parameter of Osc 1.

O1 Tune – selects the modulation amount sent to the Tune parameter of Osc 1.

F1 Cut – selects the modulation amount sent to the Cut parameter of Filter 1.

Envelopes 2 and 3 include similar controls for modulating Osc 2, Osc 3 and Filter 2.

LFOs

Reduktion provides three low-frequency oscillators which include the following parameters:



Type – the waveform generated: triangle, sine, sawtooth, square or random. The random setting generates a new value on each cycle.

Rate – the rate of oscillation in Hz (0.01 to 20) or a host tempo-based rate (8/1 to 1/32T).

Sync – switches between a time- or tempo-based rate.

Free – enables free-running mode; the LFO becomes a global oscillator shared across all the active voices so that each is modulated in sync.

Offset – the amount by which the output is offset. By default the LFOs generate a modulation signal from -50 to +50. The Offset parameter allows this to be shifted by up to +/- 50 allowing modulation ranges between -100 to 0 and 0 to +100. See the modulation matrix section for more information about the modulation system

Phase – the starting phase of the wave. Use this to invert the waves or alter the starting modulation level (e.g. make a triangle start at its peak value).

Attack – the time required for the full modulation level to be applied; from 0 to 20s. The modulation level rises from 0 to the full amount whenever a new note is played.

The remaining parameters control the modulation amount sent to the oscillators and filters.

The Lower Panel

The sub-panel contains three separate pages accessed by the selection links on the left of the panel.



The pages available are:

MAIN – controls for general parameters, the MIDI learn function and the effects.

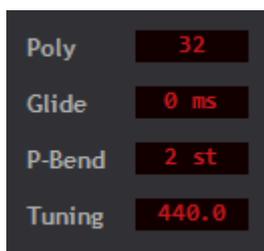
MOD – the modulation matrix. This is described in a separate section.

SEQ – the sequencer. This is described in a separate section.

The sections contained in the MAIN page are as follows.

Control

The control section provides access to these general settings:



Poly – sets the polyphony, i.e. the number of voices that can play at the same time. Setting this to 1 selects mono mode which is described below.

Glide – sets the glide time in ms; only applicable in mono mode.

P-Bend – the maximum range for the pitch-bend controller, from 0 to 24 semitones.

Tuning – the master tuning for the synthesizer in Hz. Adjustable from 390Hz to 490Hz.

Mono Mode

Setting the polyphony to 1 will select monophonic playback in which only one note can be played at a time. In addition to reducing the number of available voices to 1 mono mode can also cause the notes to be played in 'legato' mode.

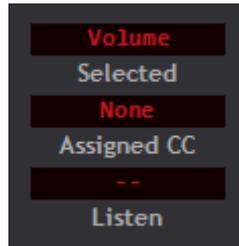
Legato mode applies when successive notes are played such that the next note begins before the previous note has completed. This can happen when envelopes have longer release times but can be applied deliberately by playing a new note without releasing the note currently playing . In

either case the voice will adopt the pitch of the new note and reset envelopes to attack but other aspects of the voice will remain unchanged. This provides a smooth transition between the notes but may cause changes in the sound, particularly in sounds containing slow envelope modulations which are not reset between successive notes.

In legato mode the mono voice adopts the pitch of the new note; by default this happens instantly but by setting a glide time it is possible to make this transition happen gradually.

MIDI Learn

This allows external MIDI controllers to control parameters presented by the user interface.



Reduktion responds to MIDI CC (control change) values from 0 to 119 and these can be assigned to most of the available controls. Assignable controls will appear by name in the selected window when clicked; if not the parameter cannot be controlled externally.

On selecting a parameter control its name and current MIDI status should appear in the MIDI Learn display. If a CC controller has already been assigned its value will appear in the Assigned CC display.

To remove an assigned controller ctrl-click the Assigned CC display.

To assign a controller click the Listen control to activate 'listening' and click the parameter you wish to assign. Move the hardware control until the parameter begins to change and its CC value appears in the Assigned CC display. Click listen again to deactivate listening.

Multiple controls can be selected while listening is active, simply click each one in turn and move the corresponding hardware controller for each.

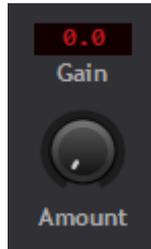
Assigned CC controllers are saved on exit and will persist across sessions.

Effects

The remaining sections in the the lower panel main page provide a series of effects. These are applied in series in the order presented from left to right. The effects are applied after the amplifier stage but before the Master Volume control.

Drive

The drive effect provides distortion:



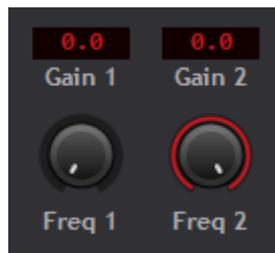
Amount – the amount of overdrive applied to the signal.

Gain – raise or lower the gain by +/-20 dB. This is applied after the overdrive effect to adjust the signal level after the effect has been applied.

Note: Gain can also be used without the overdrive as an input gain trim for the effects chain.

Equaliser

A two-band equaliser with high and low shelf or bell curves:



Gain 1 – the amount of gain applied to the lower band from -20 dB to +20 dB.

Freq 1 – the centre frequency of the lower band from 20Hz to 1kHz.

Gain 2 – the amount of gain applied to the upper band from -20 dB to +20 dB.

Freq 2 – the centre frequency of the upper band from 500Hz to 18kHz.

By default both bands provide shelving responses; to switch to a bell-shaped curve right-click the equaliser title bar to access the context menu.

Chorus

A stereo chorus:



Rate – the modulation rate from 0.1Hz to 10Hz.

Delay – the maximum delay time applied to the signal from 0.1ms to 10ms.

Depth – the amount by which the delay is varied by the modulator.

Mix – the dry/wet mix between the original signal and the chorus output with 0 being no chorus and 100 all chorus.

Delay

A delay with tempo-sync and ping-pong:



Time – the delay applied to the input signal in time (10ms to 6s) or host tempo units (1/32T to 1/1D).

Sync – switch between time-based and tempo-based timing.

Feedback – set the percentage of the delayed signal to be fed back into the input. Can be set to 100 for infinitely repeating delays.

Width – sets the stereo spread of the delayed signal. The stereo input of the delay is combined into a mono signal. With Width set to 0 the output is centred in the stereo field. Setting any other value causes the delayed signal to be played on either side in a 'ping-pong' style; the larger the value the wider the stereo spread. Positive values cause the ping-pong to start on the right; negative on the left.

Lo Cut – a high-pass filter applied to the delayed signal; from 10Hz to 14kHz.

Mix - the dry/wet mix between the original signal and the delayed output; at 100 the input and output signals are mixed equally.

Reverb

A reverb effect:



Size - the size of the room being emulated by the reverb.

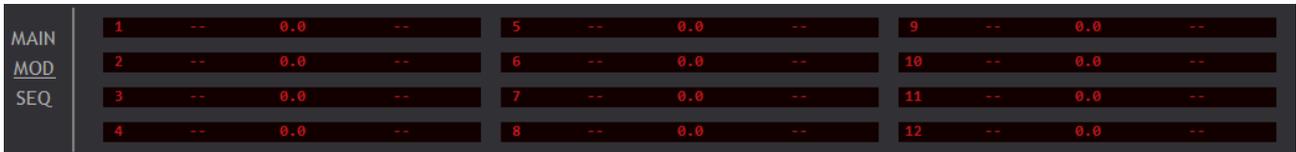
Damping - the rate at which the reverberations are reduced.

Width - the width of the stereo spread occupied by the reverberations.

Mix - the dry/wet mix between the original signal and the reverb output; at 100 the input and output signals are mixed equally

The Modulation Matrix

The modulation matrix is the main focus of Reduktion's modulation system and is located in the lower panel page accessed by the MOD link:



MAIN	1	--	0.0	--	5	--	0.0	--	9	--	0.0	--
MOD	2	--	0.0	--	6	--	0.0	--	10	--	0.0	--
SEQ	3	--	0.0	--	7	--	0.0	--	11	--	0.0	--
	4	--	0.0	--	8	--	0.0	--	12	--	0.0	--

The matrix presents 12 'slots' in which modulations can be defined; a modulation consists of a source, a target and a modulation amount. Each slot contains a source selection menu on the left, a target selection menu on the right and a central parameter display for controlling the modulation amount.

A modulation source provides a value to be applied to a modulation target. Examples include envelopes, LFOs and note velocity. Modulation sources can produce modulation values from -100 to + 100 though in most cases they are limited to a subset of this covering a total range of no more than 100. LFOs, for example, provide a default output from -50 to +50, for envelopes this is 0 to +100.

Modulation sources are either bipolar, where the values generated vary from positive to negative about 0, or unipolar where the value changes between 0 and a positive or negative limit. LFOs are by default bipolar but can be made unipolar using an offset of +/- 100. Envelopes are an example of a unipolar source.

Modulation targets represent synthesizer parameters to be controlled by modulation sources; they receive modulation inputs in the range -100 to +100 though in most cases the practical range will be less than this. For example, volume targets do not recognize negative values and accept input from 0 to +100.

For each of the available modulation slots, the output of each assigned source is sent to the assigned target. The actual modulation value applied to the target is determined by the modulation amount.

The modulation amount is a multiplier between -100 and +100 and represents the percentage of the modulation source applied to the target. By default the amount is 0 so no modulation is applied. Setting an amount of +100 causes all of the source value to be applied to the target. Similarly -100 applies all of the source to the target but with the opposite polarity. This is relevant for envelopes and LFOs where the output can be inverted.

Modulation targets may be modulated by multiple sources; the actual value applied to the target will be the sum of all the sources (limited to a maximum of +100 and a minimum of -100.)

The modulation applied to the target will be in addition to the value already assigned to the parameter via the control panel.

Modulation Sources

The following modulation sources are available:

LFO - the output of the LFOs. By default this is in the range -50 to +50. This allows the LFO output to be applied symmetrical to a source such as pitch. Use the LFO offset value to shift the range up or down to address unipolar targets such as volume (0 to +100).

Envelope - the output of the ADSR envelopes in the range 0 to +100.

Velocity - the velocity of the current note in the range 0 to +100.

Pitch Bend - the current position of the pitch bend controller in the range -100 to +100.
Note: pitch bend is always applied to the pitch of notes played according to the setting in the control section. If the pitch bend modulation source is applied to note pitch it is in addition to that applied directly from the MIDI controller.

Mod Wheel - the current position of the mod wheel in the range 0 to +100.

Channel Pressure - the 'aftertouch' pressure value in the range 0 to +100. Affects all the notes currently being played.

Key Pressure - the 'aftertouch' pressure value in the range 0 to +100. Affects only the notes where aftertouch is being applied.

Random - a random number generated for each new note in the range 0 to +100.

Constant - a constant value of +100. This allows any fixed modulation value to be applied to a target using the modulation amount control; the value applied is the same as the amount. Applying a fixed negative amount to a target can shift the output a unipolar modulator, for example an envelope, into negative values turning it into a bipolar modulator.

Seq Mod - a modulation value provided by the current step of the sequencer, from -100 to +100. This is 0 when the sequencer is not running.

Modulation Targets

The following modulation targets are available:

Osc Tune - the oscillator pitch in semitones; for each unit change in the source value the pitch will change by a semitone. The pitch can be changed continuously over its modulation range.

Osc Semi - the oscillator pitch in semitones; this is the same as Osc Tune except it can be changed only in semitone intervals.

Osc Fine - the oscillator pitch in cents; for each unit change in the source value the pitch will change by a cent.

Osc Pos - the currently selected waveform or pulse duty-cycle.

Osc Pan - the oscillator pan position.

Osc Vol - the oscillator volume.

Filter Cut - the filter cutoff frequency.

Filter Res - the filter resonance level.

Noise Vol - the noise generator volume.

Noise Pan - the noise generator pan position.

LFO Rate - the LFO rate.

Mod Amount - the modulation amount for each of the 12 modulation slots. This allows the modulation amount of a given slot to be controlled by a second modulation source in another slot. For example, if slot 1 contains an LFO to filter cutoff assignment, a second slot can be used to assign the mod wheel to mod amount 1. In this way the mod wheel can control the amount of modulation applied to the filter. In this case set the LFO modulation amount to +100 and use the mod amount in slot 2 to control the maximum modulation level.

The Sequencer

The sequencer is located in the lower panel page accessed by the SEQ link:

MAIN MOD SEQ	Run	--	Note	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Time	1/8	Vel	100	100	100	100	100	100	100	100	100	100	100	100	100	100
	Steps	16	Len	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0
	Mode	Up	Mod A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
			Mod B	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

The sequencer is activated by clicking the Run button; once running any keys pressed will be played individually according to the settings in the controls on the left of the panel. These are:

Time - the duration of each step in the sequence, in host tempo-based divisions.

Steps - the number of active steps in the sequence; steps beyond this limit are ignored.

Mode - the order in which multiple notes are played.

The actual notes played are determined by the sequencer grid; this takes each key being pressed and translates it into a new note according to the settings in the appropriate step of the grid. These settings are:

Note - an offset in semitones to be applied to the key to create the actual note played.

Vel - the velocity applied to the note played.

Len - the length of the note as a percentage of the step length.

Mod A/B - two independent modulation values to be applied through the modulation matrix for the duration of the step.

Generally speaking the sequencer plays any combination of keys in the style of a traditional keyboard arpeggiator; whenever keys are pressed the sequencer will play each one in turn in the order indicated by the mode. A single key will simply be repeated while two keys will be played repeatedly one after the other. In either case the mode setting makes no difference but becomes important once three or more keys are played. Here the keys will be played in ascending note order (up), descending note order (down) or both (up/down).

Whatever mode is in effect each note will be played against a step in the sequencer; as each note is selected the sequencer step is advanced by one and the corresponding settings applied to the note. Once the final step has been played it will return to step 1 and continue.

Note: the playback mode affects the order in which the keys being pressed are played; it has no effect on the sequencer playback which always plays left-to right.

Setting the velocity of a step to zero will cause a silent step; no new note will be played and the currently selected note will remain selected for playback on the next non-silent step. This prevents

played notes from being skipped when they are matched against a silent step in the sequencer. The Mod A and Mod B values are always applied even when there is a silent step.

Right-clicking the sequencer section title bar will reveal the context menu. This contains the following options:

Save Sequence - save the current sequence to a text file.

Load Sequence - load a saved sequence from a text file.

Init Sequence - reset the sequence to its default values.

Smooth Mod A & B - Smooth the modulation values sent to the modulation matrix.

The Mod A & B values provide modulation sources for use via the modulation matrix. By default the values of Mod A & B remain fixed for the duration of each step with each value jumping to the next as each step is selected. If required, the values can be 'smoothed' to create continuous modulation values by enabling the corresponding options in the context menu. When smoothed the outputs of Mod A & B will start each step at their assigned value but change gradually over the step to match the starting value of the next step.

Themes

Reduktion features a simple theming system that allows the user interface design to be customised by the end user.

Themes are located in the Themes sub-directory of the Reduktion home folder. To start a new theme create a new directory in this location and name it after your theme.

A theme consists of the following resources:

Background.png – a graphical image used to define the plugin background.

Knob.png – a film-strip image used to define the control knobs.

Theme.txt – the theme definition file containing colours and other parameters.

The background image must be a png file at least 2112 by 1248 pixels in size. This represents the default size of the 200% scale and will be automatically resized when 100% and 150% sizes are selected. If you opt to add additional margins to the background (see later) the actual size will be larger.

The knob graphic is a vertical film-strip image file containing 101 frames each 96 by 96 pixels in size. This is used to create the animated parameter knobs. As with the background these dimension represent the 200% level scaling and will be resized as required.

Note: the free KnobMan tool can be used to create these images.

The theme definition file is a plain text file that defines the colours to be used for the various interface elements and sizes for the top, bottom and side margins.

An example theme definition looks like this:

```
backgroundColor=0xa0 0xa0 0xa0 0xff
headerColor=0x00 0x64 0x6a 0x88
divider1Color=0x00 0x64 0x6a 0x88
divider2Color=0x80 0x80 0x80 0x88
voiceOnColor=0x00 0xff 0x00 0xff
voiceOffColor=0x00 0x00 0x00 0xff
presetButtonColor=0xff 0xff 0xff 0xff
logoFontColor=0x00 0x00 0x00 0xff
titleFontColor=0xe0 0xe0 0xe0 0xff
displayFontColor=0x05 0xbe 0xee 0xff
displayBackColor=0x00 0x00 0x22 0xff
```

```
labelFontColor=0x00 0x00 0x00 0xff
onTabFontColor=0x00 0x00 0x00 0xff
offTabFontColor=0x00 0x00 0x00 0xff
seqLabel1FontColor=0x00 0x00 0x00 0xff
seqLabel1BackColor=0xa0 0xa0 0xa0 0xff
seqLabel2FontColor=0x00 0x00 0x00 0xff
seqLabel2BackColor=0x80 0x80 0x80 0xff
seqLabel3FontColor=0x00 0x00 0x00 0xff
seqLabel3BackColor=0xc0 0xc0 0xc0 0xff
topMargin=0
bottomMargin=0
sideMargin=0
```

On each line a keyword is followed immediately by a value definition. In most cases these are colours which are defined by four values; red, green, blue and alpha.

Use alpha to determine the transparency of the element; 0x00 for invisible and 0xff for fully visible.

There must be no spaces before the keyword, or before or after the '='. Blank lines and lines starting with '#' are ignored.

Colours are defined using hexadecimal (0x00 to 0xff) or decimal (0 to 255) values.

The colour keywords are interpreted as follows.

backgroundColor – the colour of the entire plugin background. This will completely hide the background image if its alpha value is set to 0xff. Alternatively, use a semi-transparent colour to modify the colours of the background image.

headerColor – the background colour of the section title bars.

divider1Color – the colour of the main section dividers.

divider2Color – the colour of the section sub-dividers.

voiceOnColor – the colour of the active voice indicators.

voiceOffColor – the colour of the inactive voice indicators.

presetButtonColor – the colour of the preset bowser arrow buttons when clicked.

logoFontColor – the colour of the Reduction title text.

titleFontColor – the colour of the section header titles.

displayFontColor – the text colour for menus, switches and parameter display values.

displayBackColor – the background colour for menus, switches and parameter displays

labelFontColor – the colour of the control knob text values and other labels.

onTabFontColor – the colour of the active lower panel selection link.

offTabFontColor – the colour of the inactive lower panel selection link.

seqLabel1FontColor – the text colour for inactive steps in the sequencer grid.

seqLabel1BackColor – the background colour for inactive steps in the sequencer grid.

seqLabel2FontColor – the text colour for active steps in the sequencer grid.

seqLabel2BackColor – the background colour for active steps in the sequencer grid.

seqLabel3FontColor – the text colour of the currently playing step in the sequencer grid.

seqLabel3BackColor – the text colour of the currently playing step in the sequencer grid.

Three more keywords are used to define margins around the edges of the plugin.

topMargin – space to be added to the top of the plugin window.

bottomMargin – space to be added to the bottom of the plugin window.

sideMargin – space to be added to either side of the plugin window.

In each case the margin must be defined in units of 16 pixels; for example, a top margin of 1 would add 16 pixels to the top of the plugin window.

Any margins added to the plugin must be reflected in the size of the background graphic; add 16 pixels for each margin unit added to each edge of the plugin window.

All the resources required to present the default theme are built-in to the Reduktion plugin. Defining a new theme requires these internal resources to be overridden; any resources missing from a user-defined theme will be provided by the default theme.

This allows simple changes to be made without having to develop a complete theme. For example, an alternative knob design can be installed simply by adding a new Knob.png image to the Default folder in the Themes directory.

Similarly, the theme definition file does not have to be complete; any missing values will be provided by the plugin. To change a colour in the default theme add a Theme.txt file to the Default theme directory and add new definitions for the colours you want to change.