

ReValver Manual

This manual covers the handling of Alien Connections ReValver, a Guitar Valve Amplifier simulator.



**alien
connections**

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What is ReValver?

ReValver is a software guitar amplifier simulator.

-Why would anyone want to *simulate* an amplifier?

-Because amplifiers designed for guitars are very special, and have very little in common with ordinary Hi-Fi amplifiers. Guitar amps distort the signal in a way that is very pleasing to the ear. ReValver also includes a lot of effects that are specially designed for guitars.

ReValver is a DirectX plugin and can be used in DirectX-plugin compatible host applications.

How Does ReValver work?

ReValver is a DirectX plugin (a DirectShow filter). It can be used in any DirectX compatible program, such as many kinds of multi trackers and waveform editors.

A ReValver program is built from the combination of the ReValver modules. The modules can be configured in many different combinations and orders¹.

The signal in ReValver goes from the top to the bottom. This means that the top-most module gets the input signal from the host application, and the bottom-most module delivers the output signal back to the program.

Constructing a program

To place a module in a chain, click the empty area on the screen, or click between two modules. The module chooser will enable you to choose any type of module to place.

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- 1. Some modules can not be used at certain places in the chain. The modules must come in some sort of sensible order. They all have different physical properties, and must be treated that way.*

Even though you can choose any module, they may not be compatible with each other. The modules follow certain physical laws; for example:

The following simple rules applies to the order of modules:

Speakers must appear after a power amp.

Studio effects must appear after a room, speakers, preamp, or at the beginning of the chain.

Rooms (room simulation) must appear after speakers

Preamps must appear after a studio effect or at the beginning of the chain

Power amps must appear after studio effects or preamps

The following modules do not follow any rules:

Trim pots

Parametric filters

Loading & Saving programs

By clicking ‘Load’ and ‘Store’ preset you can load or save a configuration. The settings from each module are saved to disk along with their internal order in the chain. There is no limit to the number of programs that can be saved.

You can also save the setting of an individual module by clicking with the mouse and choosing ‘Save settings for this module’¹.

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- 1. When saving or loading settings for the room simulator module, only the reference to the ‘filename.room’ is stored, not the room-parameters themselves. This means that if you wish to store a preset/setting on a different media, you must also include the *.room file. To design your own room, you must use software compatible with the format, for example Pristine Sounds.*

Using ReValver in host applications

Some aspects may be of importance when using ReValver in a 3rd party host application.

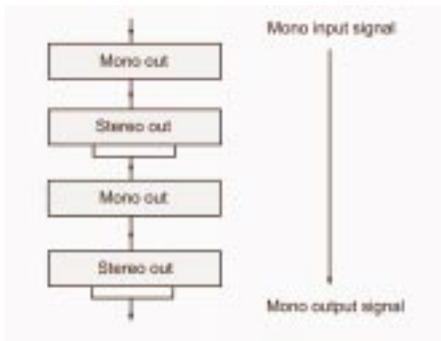
Multi trackers

A multi tracker is a host application that can play several waveforms simultaneously. This implies that you could have any number of instances of ReValver running at a time. The settings of ReValver on one track will not interfere with another track.

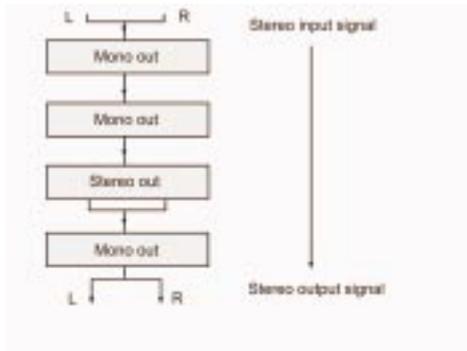
Input level: The “volume-knob” in a multi tracker *may* determine the input signal to ReValver. This will affect the distortion, and it is advised you are careful when feeding ReValver with a signal.

Mono and stereo tracks: Whenever ReValver is fed a stereo input it will deliver a stereo output, and likewise, given a mono input it will deliver a mono output. However, some sub modules in ReValver are necessarily mono or stereo in nature. A mono module (such as a preamp or a poweramp) will merge L+R into a mono information signal. In such a case you will lose stereo

information (such as stereo panning). Further more, using a stereo module (such as reverb or chorus) on mono audio will not produce a stereo effect because as described previously, mono input generates mono output.



*Given a mono input, ReValver will generate a mono output.
The output of any stereo module will be merged into mono by either a mono module or on output.*



Given a stereo input, ReValver will generate a stereo output. Mono modules will merge stereo streams into mono automatically.

Examples of mono modules are preamps, poweramps and speakers without room ambience. Examples of stereo modules are most effects and speakers with room ambience.

Techniques for creating programs

ReValver was designed to be used in ways similar to real life hardware. The modules have the same look and feel as ordinary 19" rack modules. By constructing a chain of modules a unique sound can be created.

Handling of a module

When a module has been placed in the chain there are several ways of entering parameters into it. Most modules have a graphics display showing the values of the knobs.¹

By clicking on an empty area of a module the main menu is displayed:

- * Move module (change to location in the chain)
- * Remove module (removes the module from the chain)
- * Replace module (replaces the module with another)
- * Bypass module (temporarily turn the module off)
- * Load preset (loads a parameters for the module from disk)
- * Save preset (saves the modules parameters to disk)

1. By simply clicking on a knob, its content is shown in the display. It will be lit for a couple of seconds, or until you click another knob.

By dragging the modules' edges (left or right) you can scroll the system up or down. (Sooner or later you will have more modules than will fit in the window...)

If you feel uncomfortable with turning the round knobs, you can double click on the knobs and use the slider.

A chain of modules!

It is the combination of modules and their internal order that makes the unique sound of a system. Most often you will want to include a preamplifier. The “sound” of a guitar amplifier is created by the preamp.

To create a good sounding system...

you should start by selecting a *preamplifier*. This is what will create the characteristics of the finished amplifier.¹

Effect-loops, stomp-boxes and mixer-room effects

When an effect (reverb, chorus etc.) is used after a preamp, it can be thought of as an effect in an effect loop. When they are used before a preamp, they can be

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1. Note that trim pots and filters can be placed at any point in the chain. They should be thought of as an internal components of other modules. With filters you can enhance the sound of those other modules. You should not be afraid to use many filters.

thought of as stomp boxes (pedals). When an effect is used after a poweramp it can be thought of as a mixer-room effect.

Poweramps

A poweramp must be placed after a preamp. A poweramp does not have any user adjustable parameters. *It is a slave amplifier.* To drive a stronger or weaker signal to a poweramp you must use the “output level” parameter on the preamp. (You can also use a trim pot, it has the same function.)

Speakers and room simulation

A speaker (if used) must be placed directly after a poweramp, and the room simulator (if used) directly after the speakers. To make a parallel to the real world, what happens after a poweramp? You have two choices; either you use some sort of “power soak” so you can connect the power output directly to the mixer, or more commonly connect a pair of speakers and use a microphone. In ReValver you cannot have any effects (other than the trim pot and filters) directly following a poweramp. To use effects you must first “mike up” the speakers (speaker simulation). If you want you can apply the room simulation as well.

Descriptions of modules

This chapter will discuss the most unique types of modules in ReValver.

The Preamps

Most preamps have similar parameters:

Input drive (This basically controls the amount of distortion. It is the input drive to the preamp. The higher the volume, the more the output signal will distort.)

Filters (The bass, mid and treble filters are applied after distortion. To apply a filter before distortion, please use a parametric filter module.)

Presence (It depends on preamp type what this does, but it is usually a high-mid filter before distortion.)

Output level (This simply adjusts the output level of the module. This can be used to control the distortion in the poweramp.)

Trim pot

The trim pot has only one function: to adjust the signal level. It has volume meters for visual indication. It can be used in a +16 or +32dB span. By clicking the “normalize” button, the signal is analyzed, and the level is raised to the highest level possible without clipping.

Parametric filter

A parametric filter changes the frequency response of the signal. It has a span of 50Hz to 12kHz. The adjustment level spans +/-16 dB. The Q-value (bandwidth) can be 0.1 to 10. You can choose between EQ, high shelf or a low shelf filters)

Noise gate

The noise gate operates in 3 separate bands, 1Kz, 3kHz and 5kHz. The knobs define the sensitivity of the gating. When the signal is low enough it will be attenuated 16 dB in that band. The noise gate also has a built-in hum filter. 60Hz for the US and 50Hz for Europe. Other parts of the world may or may not have different AC frequency coming out of the wall...

Auto Wah-Wah

A Wah-Wah is usually a stomp box where the guitar player dynamically changes the frequency of a filter. By stomping on a pedal, the signal is amplified in a sharp frequency band, the center of which is defined by the position of the foot. This is very useful, but hard to implement in a DirectX plugin. Instead of the foot, the Wah-Wah (now called “auto”) is controlled either by a BPM value (non smart mode) or by the signal content (smart modes). The speed controls how fast the signal is to glide up and down the frequency scale. The range defines the total change of the frequency, usually between 200-2000 Hz).

The strength is simply a measure of how much the signal is amplified at the current frequency.

Room simulator

The room simulator, however complex it might be, has no user adjustable parameters. To design a complete room, please use software compatible with the *.room file format, for example Pristine Sounds 2000. Click “Load” to load a preset from disk.¹

Echo/Delay

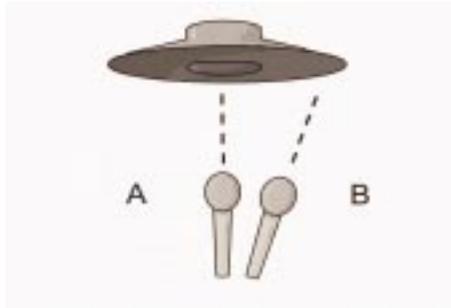
The delay unit can easily be transformed into an echo, simply by feeding the delayed signal back into the loop. The delayed signal is filtered using one high pass and one low pass filter.

The speakers

The speaker modules mimic the behavior of real cabinets. The cabinets can have an opened or closed back. (This will change the resonance of the enclosing box.) The speaker models will accurately take into account:

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1. *When saving or loading settings for the room simulator module, only the reference to the ‘filename.room’ is stored, not the room-parameters themselves. This means that if you wish to store a preset/setting on a different type of media, you must also include the *.room file. To design your own room, you must use software compatible with the format, for example Pristine Sounds.*

the dimensions of the cabinet's box and its inner walls absorption, the area of the speaker membrane and the distance and direction of the virtual microphone. The mike can be placed 1-100 cm (1/3" - 35") from the speaker. The mike can be directed anywhere - from the voice coil (the middle of the speaker) to the circumference (the edge). The room ambience is separately modeled using the included *.room files that you can design yourself using Pristine Sounds 2000.



In this figure, mike A is directed towards the voice coil, and mike B is directed towards the speaker's edge. The most common setup is to angle it somewhere in between.

Midi & DXi Automation

The DXi midi interface of ReValver lets you control the parameters in real-time from any DXi compatible host.

Midi capabilities of ReValver

ReValver listens to NRPN messages. The NRPN's is a ReValver-defined list of parameters. The parameter set is generic, and comply to all ReValver presets. A preset may not necessarily *listen* to all particular parameters; it will in that case ignore them silently.

Table 1: NRPN command set

NRPN name	NRPN	Description
Preamp Gain	0	Gain of the first preamp in the chain.
Preamp Bass	1	Bass filter of preamp
Preamp Mid	2	Mid filter of preamp
Preamp Treble	3	Treble filter of preamp
Preamp Out Volume	4	Output volume of preamp.
Eq 100	5	100 Hz filter of last EQ9 in chain
Eq 200	6	200 Hz filter
Eq 400	7	400 Hz filter
Eq 800	8	800 Hz filter

Table 1: NRPN command set

Eq 1600	9	1600 Hz filter
Eq 2200	10	2200 Hz filter
Eq 3200	11	3200 Hz filter
Eq 4800	12	4800 Hz filter
Eq 6400	13	6400 Hz filter
Eq Out Volume	14	Eq out volume compensation
Reverb Dry	15	Dry mix of last reverb in chain
Reverb Wet	16	Wet mix of reverb

Usage notes

These parameter sets comply to all presets, regardless if they have these modules or not. Also, if *multiple* modules of the same type exist, the following rules apply:

- Preamp parameters only work on the *first* preamp.
- Eq parameters only work on the *last* graphical 9 band equalizer.
- Reverb parameters only work on the *last* reverb.

An NRPN value ranges between 0-16383. That value will be interpreted by ReValver accordingly; a value of 0 (zero) maps to the lowest value of the parameter, and 16383 maps to the largest.

A “*Midi bank*” is mapped to a subdirectory in the \ReValver\Presets directory. A “*Midi patch*” will map to a *.ReValver file in that directory. The file midi-map.ini will contain this explicit mapping.

DXi midi control in SONAR

SONAR (formerly Cakewalk Pro Audio) is a multi-tracker which let you automate the parameters in ReValver.

ReValver will be recognized by SONAR as a “software synthesizer”, namely an audio plugin with midi control. To access the midi interface of ReValver, simply create one audio track with ReValver as usual, then create a midi track and select “Alien Connections ReValver” as an output midi port. This midi port exist only in SONAR, and if you have more than one ReValver tracks, you will have as many midi ports. You can send data to this “virtual midi synth” as to any other synthesizer. ReValver will listen to:

- Bank changes
- Patch changes
- NRPN commands (see table)

That’s all folks...