

# Verberate 2

## User Guide

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Acon AS

# Verberate 2 User Guide

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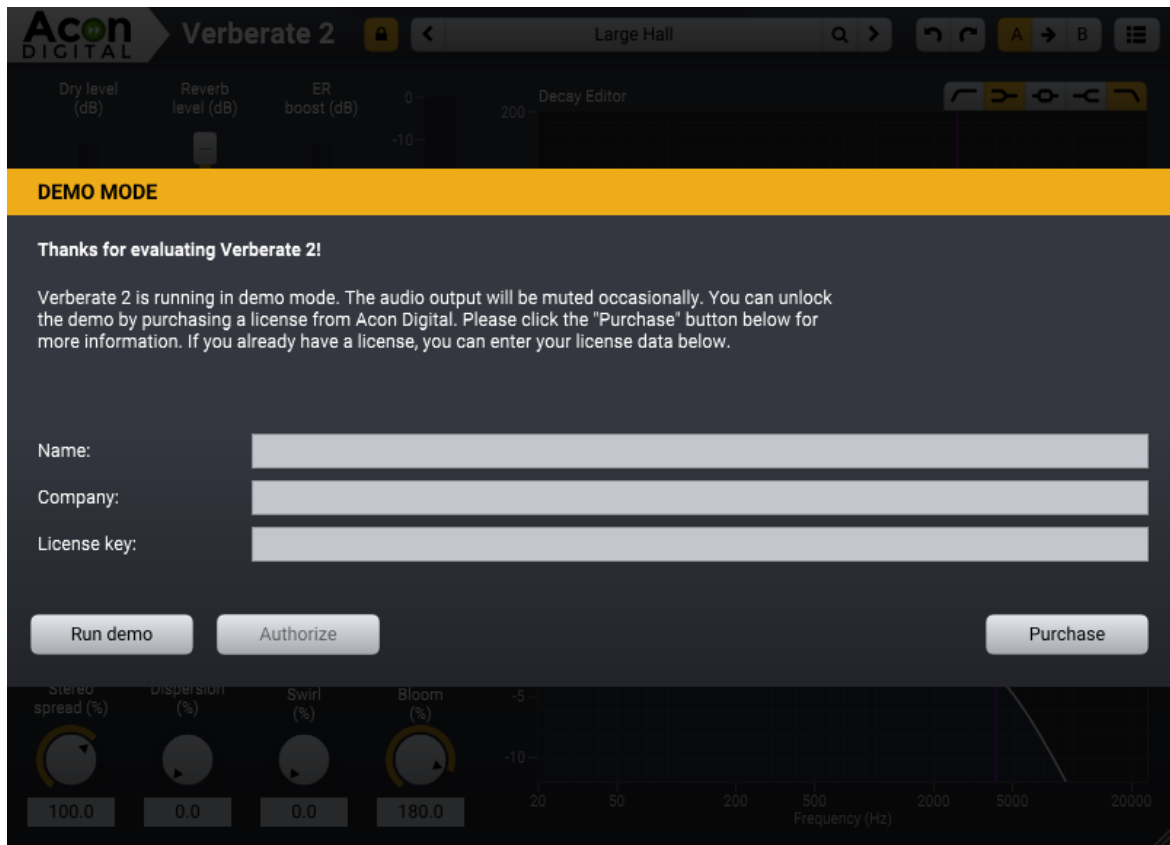
# 1 Introduction

Thanks for using *Acon Digital Verberate 2*. *Verberate 2* is an algorithmic reverb plug-in from Acon Digital that simulates real acoustical surroundings with an unprecedented degree of realism. Version 2 introduces the new *Vivid Hall* algorithm that is based on entirely new technology. The early reflections are convincing and the late reverb tail is dense and vivid. Unlike the *Legacy Hall* algorithm used in the first version of *Verberate*, *Vivid Hall* models variations in the reverb tail that can be due to air currents, moving performers or people moving in the audience. By modeling these effects, *Vivid Hall* is able to simulate acoustical spaces very realistically and without the static stiffness that convolution-based reverb algorithms introduce.

## 1.1 Purchase and Authorization

*Verberate 2* will run in demo mode the first time you open it from your audio editor or digital audio workstation (DAW). The demo mode is fully functional with exception of short passages with muted audio output at irregular intervals. The demo version can be unlocked by purchasing a license key from Acon Digital (see Acon Digital online shop). When a plug-in is opened in demo mode, a dialog box appears where you can choose to continue with the demo version or enter a license key. There is also a purchase button which directs you to the Acon Digital online shop.

If you have purchased a license key from Acon Digital, click the "Enter a license key" toggle button and enter your name, company name if applicable and the license key you obtained. The *Continue* button will remain deactivated until the license key has been accepted. After having successfully authorized *Acon Digital Verberate 2*, the demo dialog box will not appear again.



*The demo dialog box appears when starting Acon Digital Verberate 2 prior to authorization.*

## 1.2 New in Version 2

*Verberate 2* is a huge leap in functionality and sound quality. The most notable new feature is the *Vivid Hall* algorithm, but there are several other exciting new features.

### Highlights

- New *Vivid Hall* algorithm that is resonance free and time variant.
- *Vivid Hall* offers a greatly improved decay editor where the frequency dependent reverb times can be sculpted using high/low cut, high/low shelving and bell filters.
- The output equalizer now allows filter bands to be enabled or disabled and offers high/low cut, high/low and bell filters.
- New *Dispersion* effect simulates how high frequency content travels faster than low frequency content in metal plates. Combined with the powerful decay editor, it allows *Verberate 2* to model mechanical plate reverbs very realistically.
- New *Swirl* effect creates a chorus-like effect that increases towards the end of the reverb tail, thus creating a vintage and cloud-like reverb tail.

## 1.3 Requirements

Before you install *Acon Digital Verberate 2*, please make sure your computer fulfills the following requirements:

### PC Version (Windows)

- Windows 10 / 8 / 7
- Intel Core i3 or AMD multi-core processor (Intel Core i5 or faster recommended)
- 1366 x 768 display resolution (1920 x 1080 or higher recommended)
- 1 GB RAM (4 GB or more recommended)
- 1 GB free HD space
- A host application that is compatible with (32 bit or 64 bit) VST , VST3 or AAX (Pro Tools 10.3.5 or higher)

### Macintosh Version (OS X)

- OS X 10.8 or later
- 1 GB RAM (4 GB or more recommended)
- 1 GB free HD space
- A host application that is compatible with (32 bit or 64 bit) AU, VST, VST3 or AAX (Pro Tools 10.3.5 or higher)

## 2 Acon Digital Verberate 2

### 2.1 Accessing the Plug-In

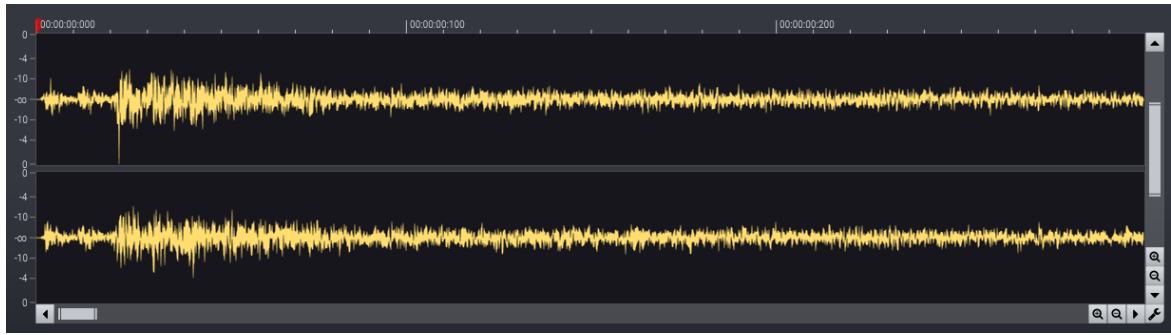
You can access *Acon Digital Verberate 2* from your host application (audio editor or DAW) of choice. The plug-in is available as a 32 or 64 bit VST, VST3 or AAX plug-in on the Windows platform or as a 32 or 64 bit VST, VST3, AU or AAX plug-ins on Mac OS X. Some host applications will require a rescan and possibly adding the *Acon Digital Verberate 2* installation directory to the list of VST directories. Please consult the manual for your host application for further details.

### 2.2 About Reverberation

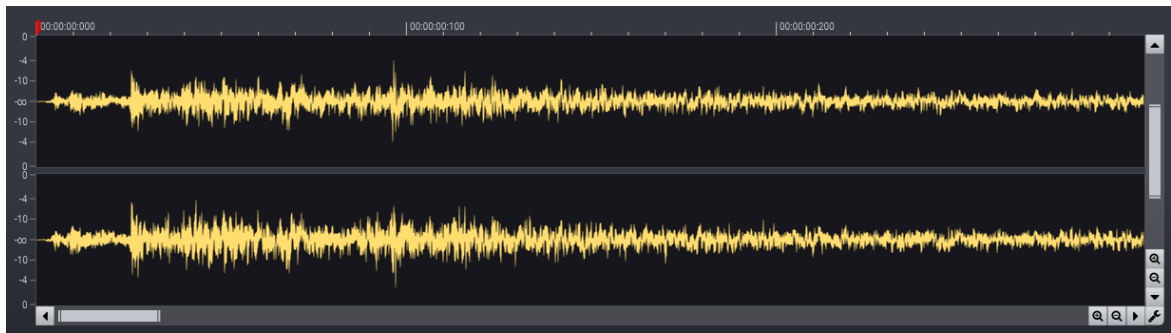
Reverberation occurs when sound is produced in an enclosed acoustical environment. Even outdoors, there is likely to be some level of reverberation, however subtle. The sound propagates through the air before it arrives at the listener, but the sound is also reflected when it hits walls or other objects. Due to the propagation time, these

reflections arrive at the listener later than the sound from the direct path. After a certain build-up time, there are usually so many reflections that no distinct echoes are distinguishable, but rather a smoothly decaying sound.

The first few reflections, usually called early reflections, are important cues for our perception of an acoustical environment. For that reason, most digital reverberation units differentiate between early reflections and the dense late reverberation. *Verberate 2* simulates both the early reflections and the dense reverberation in a way that comes extremely close to what can be measured in a real acoustical environment. An important tool when analyzing the reverberation of real rooms is the impulse response, which can be measured by playing a very short impulsive sound (the impulse) and recording the resulting reverberation. The figures below are examples of impulse responses obtained from *Acon Digital Verberate 2* as well as from a real measurement of a concert hall.



*Results of an impulse response measurement of the Tokoy Hall preset in Acon Digital Verberate 2 (the first 300 milliseconds).*



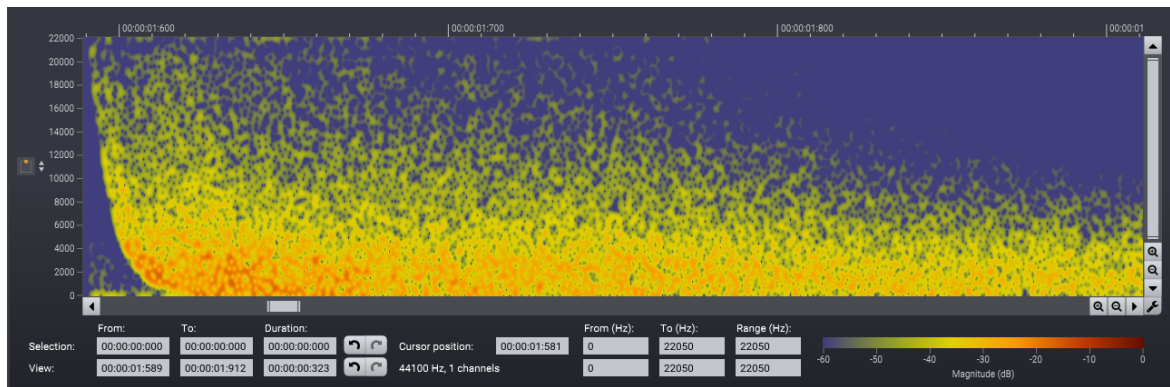
*A measured impulse response from a real hall (the first 300 milliseconds).*

So-called convolution reverbs can use these impulse response measurements to recreate the acoustical space. However, they only capture a snapshot at a specific time. Real acoustical surroundings will have slight variations due to air currents caused by temperature differences or fans. Also, performers or people moving in the audience will cause slight variations. These small variations may seem subtle. However, the effect

towards the end of the reverb tail will be significant, since the sound is reflected a large number of times before the reverb tail fades out. The new *Vivid Hall* algorithm models these random variations without artifacts like chorus effects or pitch changes, and is therefore capable of simulating reverberation of real halls with a higher degree of realism.

### Dispersion Effect in Metal Plates

Mechanical plate reverbs are popular for their special sonic qualities. These vintage units produce reverb by placing a transducers on a metal plate. The powerful *Decay Editor* in *Verberate 2* makes it easy to simulate the longer high frequency decay that is special for plate reverbs. However, unlike how sound travels in air, high frequencies travel quicker than lower frequencies in a metal plate. *Verberate 2* lets you simulate this effect using the *Dispersion* parameter that you can set anywhere between 0 and 100% (for maximum time difference between high frequency and low frequency content).

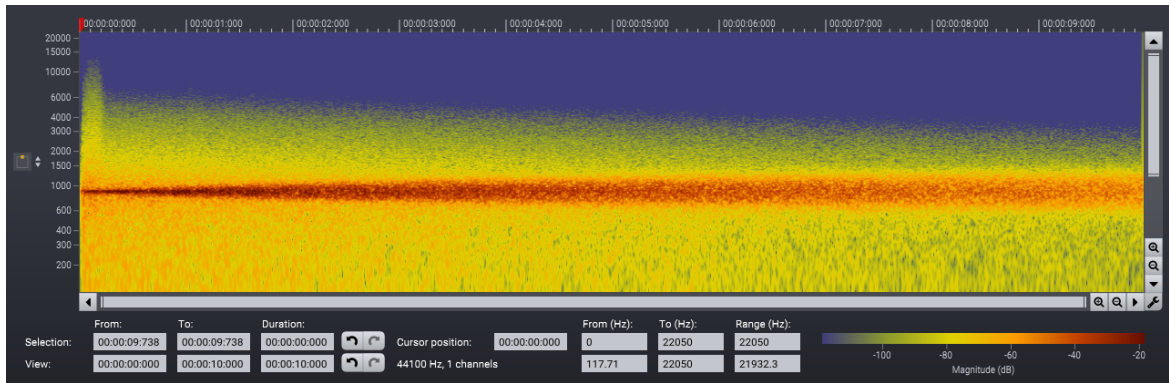


*This spectrogram shows how high frequency content arrives earlier than low frequency content when dialing in Dispersion in Verberate 2.*

### Swirl Effect

Vintage digital reverb units commonly use frequency modulation techniques in the feedback loop to increase echo density without adding too much resonance. Such feedback modulation is no longer required in modern algorithms, but the feedback modulation can be sonically pleasing and desirable. The *Vivid Hall* algorithm makes it possible to simulate the effect of feedback modulation and we call this effect *Swirl*.





*This spectrogram shows the effect of the Swirl on a sine wave input (880 Hz). Notice how the red line broadens towards the end of the reverb tail, giving the reverb a cloud-like vintage flair.*

## 2.3 Performance Considerations

*Acon Digital Verberate 2* is a zero latency plug-in. Due to implementation internals, however, the CPU consumption will in general be higher when very low latencies is a requirement. If the CPU usage is a problem, we recommend to set up your host to use larger buffer sizes. For maximum performance, the buffer size in samples should be a power of two, such as 256, 512, 1024 or 2048 samples. Please consult the documentation of your plug-in host software if you don't know how to modify the buffer size.

## 2.4 Using Verberate 2

The graphical user interface of *Acon Digital Verberate 2* is designed to give quick and intuitive access to all the parameter settings defining the sonic quality of the reverb.



*The graphical user interface of the Verberate 2 plug-in in action.*

## Reverb Parameters

- **Dry level (dB)**

The amount of dry (unprocessed) signal to send to the output specified in decibel. You can use the toggle button to exclude the dry signal completely. You can lock the relation between the dry and reverb levels by clicking the lock button between the dry and reverb level sliders.

- **Reverb level (dB)**

The amount of reverberation signal to send to the output specified in decibel. You can use the toggle button to exclude the late reverberation completely.

- **ER boost (dB)**

The amount of early reflections to send to the output specified in decibel relative to the reverb level. The early reflections are important for our perception of distance to the sound source. Increasing the early reflection level gives the impression of getting closer to the source. You can use the toggle button to exclude the early reflections completely.

- **Algorithm**

*Verberate 2* offers two late reverb algorithms. We recommend the new *Vivid Hall* algorithm, but you can also choose the *Legacy Hall* algorithm from version 1.

- **Early reflections mode**

You can choose the early reflection (ER) mode from a set of predefined modes, such as rooms, chambers, halls and plates. The modes with names that correspond to natural acoustical surroundings aims at realism. Please note that the room size should match the ER mode. Realistic room simulations should have small room sizes whereas halls require larger room sizes to sound natural. The *Wide ER* programs are designed to be as smooth as possible while at the same time enhancing the stereo image. These are ideal for music production.

- **Reverb time (s)**

The reverb time specifies the duration of the reverberation and is specified by the number of seconds before the reverb tail level drops below -60 dB or 1/1000 of its initial amplitude. The freeze button on the left hand side of the numerical reverb time entry can be toggled to "freeze" the reverb. The reverb time is infinite and no input is added when the reverb is frozen.

- **Room size (%)**

The room size defines the size of the simulated acoustical environment.

- **Pre-delay (ms)**

The pre-delay slider allows you to adjust the time in milliseconds before the reverberation signal arrives.

- **Stereo spread (%)**

You can use the stereo spread parameter to control the stereo width of the reverberation signal. If the stereo spread is set to 0%, the reverberation signal will be mono and at 100% the full stereo width is achieved. The *Vivid Hall* algorithm allows stereo spread values above 100%. *Vivid Hall* uses M/S processing when the stereo spread is above 100% and the reverb gradually decays more into the side channel with higher values. This ensures mono compatibility while adding a touch of extra width.

- **Dispersion (%)**

Frequency dispersion is an effect that occurs in mechanical plate reverbs. High frequency content travels faster in metal than low frequency content. You can read more about this effect in the [About Reverberation](#)<sup>[4]</sup> chapter. You can set the amount of dispersion in percent and 0% disables the effect completely.

- **VIVID HALL ONLY** – Swirl (%)

The swirl effect smooths the frequency spectrum as the reverb tail fades out, thus giving it a vintage "swirley" or "cloudy" effect. You can read more about this effect in the [About Reverberation](#)<sup>[4]</sup> chapter. You can specify the effect strength in percent and 0% disables the effect completely.

- **VIVID HALL ONLY** – Bloom (%)

The bloom parameter changes build-up time of the reverb and is specified in percent relative to the room size. The late reverb build-up gets quicker with *Bloom* values less than 100% and slower with values above.

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- **LEGACY HALL ONLY** – Modulation rate (Hz)

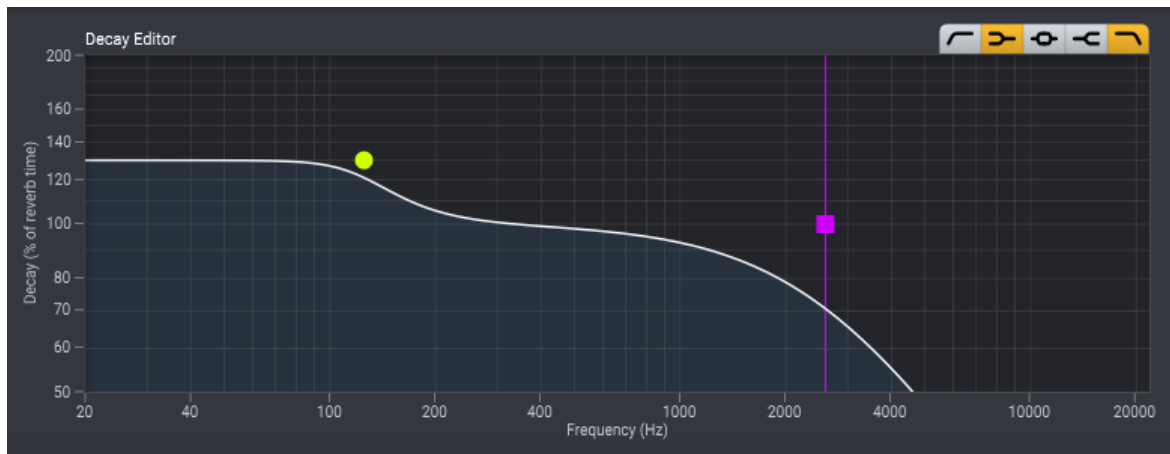
Modulation can be applied to the late reverberation to simulate fluctuations in the arrival times of the sound waves and you can control how rapid the fluctuations are using the modulation rate.

- **LEGACY HALL ONLY** – Modulation depth (%)

The modulation depth controls the depth of the modulation ranging from no modulation (0%) to full modulation (100%).

- **Decay Editor**

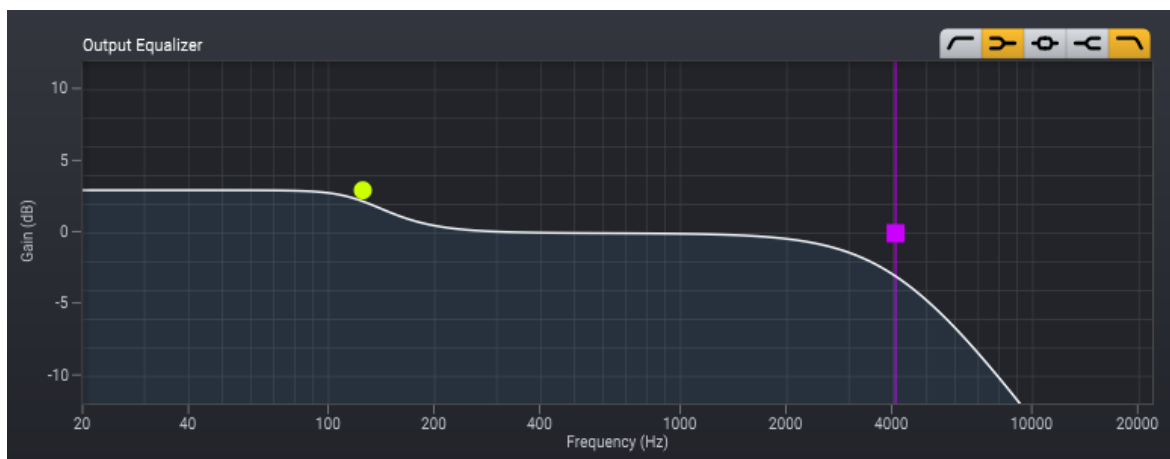
The decay editor allows you to set up reverberation times that are dependent of the frequency. Air absorbs high frequencies to a larger degree than lower frequencies, so the low frequencies will in general have a longer reverberation time in natural spaces. This effect is easily modeled in the decay editor with a high cut or a high shelving filter. The *Vivid Hall* algorithm offers high and low cut, high and low shelving as well as bell filters to sculpt decay behavior with great flexibility. These filter types all have variable filter slopes. The *Legacy Hall* algorithm offers high and a low shelving filters with a fixed slope. You can toggle the filter bands using the buttons in the upper right corner:



*The decay editor lets you define frequency dependent reverberation times and the curve displays the relative reverberation time as a function of frequency.*

- **Output Equalizer**

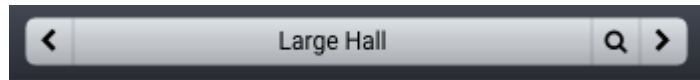
You can use the output equalizer to apply filtering to the reverb signal. Both the early reflections and the dense reverberation are filtered using the output equalizer. The *Output Equalizer* is operated in the same way as the *Decay Editor* and you can use the button in the upper right corner to toggle filter bands:



*The output equalizer allows detailed control over the frequency content of the reverberation signal.*

## **Preset Manager**

Acon Digital Verberate 2 is shipped with an extensive set of factory presets. You can browse through preset categories and presets as well as create and manage your own presets using the preset management section:



*The preset management section available in Verberate 2.*

You can browse through the presets using the arrow buttons. Alternatively, you can click the current preset name and a drop-down menu appears. Click the button with the magnifying glass icon to search for a preset. Matching presets appear in a drop-down list as you type.

You can also save your own presets by choosing "Save user preset file..." from the menu. A file chooser dialog box appears where you can enter the name of the preset you wish to save. You can create sub folders and place your preset files inside, and these will appear as categories in the user presets. Presets from *Verberate 1.x* can be imported into *Verberate 2* by clicking "Load user preset file..." and looking up the preset file. Please note that this won't be 100% accurate in all cases, so we recommend to keep *Verberate 1.x* installed for legacy projects.

### **Undo and Redo**

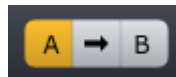
You can undo (or redo) changes to the parameter settings by clicking the circular arrow back or forward buttons:



*Undo and redo buttons*

### **A / B Comparisons**

It is frequently useful to be able to quickly compare different parameter settings. You can do this using the A / B comparison buttons:



*The A / B comparison buttons allows you to quickly compare different settings*

You can keep two independent sets of parameter settings, the A and B settings, and switch between them using the corresponding buttons. The arrow button copies the settings from A to B or the other way around depending on which parameter set that is currently active.

### **The Processor Menu**

The last button in the header section displays the processor menu:



*You can click the processor menu button for the processor specific menu*

The processor menu allows you to access the processor help topic directly along with other processor specific features.





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