Acon Digital Verberate

User Guide

Acon AS

Acon Digital Verberate

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Table of Contents

1   Introduction

Thanks for using *Acon Digital Verberate*. Verberate is an algorithmic reverb plug-in from Acon Digital that simulates real acoustical surroundings with an unprecedented degree of realism. Several conventional building blocks in traditional digital reverb design have been replaced by novel methods that allow Verberate to produce convincing early reflections and the dense reverb tails that characterize impulse response measurements of real acoustical surroundings.

1.1   Purchase and Authorization

Acon Digital Verberate 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 you 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*, the demo dialog box will not appear again.
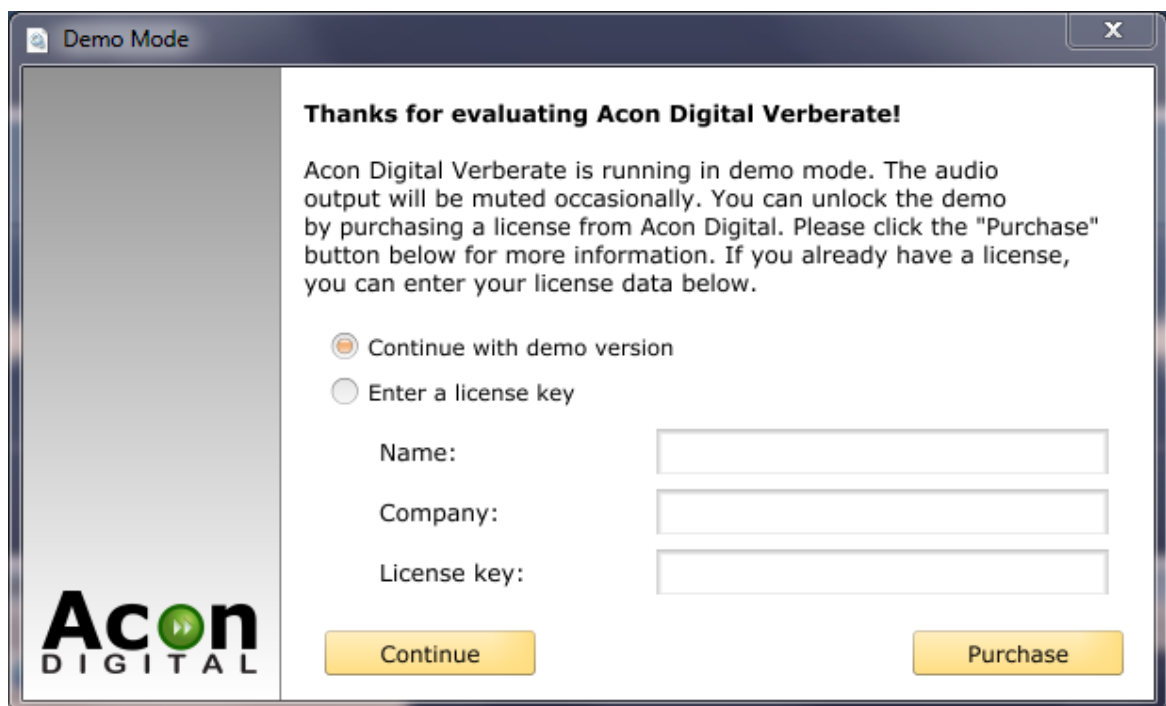
The demo dialog box appears when starting Acon Digital Verberate prior to authorization.

1.2   Acknowledgements

Special thanks to *solidtrax* and *sinkmusic* for their contributions to the preset library.
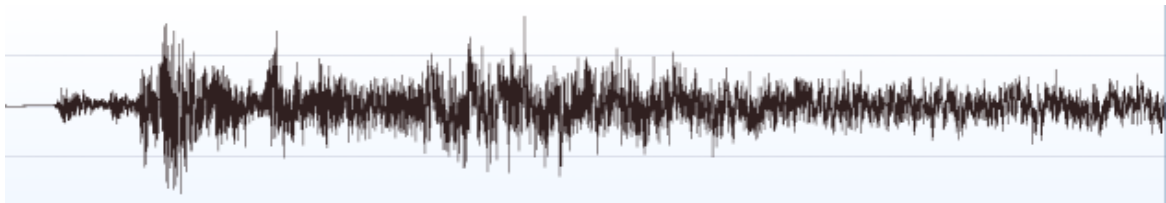
2   Acon Digital Verberate

2.1   Accessing the Plug-In

You can access *Acon Digital Verberate* from your host application (audio editor or DAW) of choice. The plug-in is available as a 32 or 64 bit VST or AAX plug-in on the Windows platform or as a VST, AU or AAX plug-in on Mac OS X (32 / 64 bit fat binaries). Some host applications will require a rescan and possibly adding the *Acon Digital Verberate* 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 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 as well as from a real measurement of a concert hall.

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


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

2.3   Performance Considerations

Acon Digital Verberate 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

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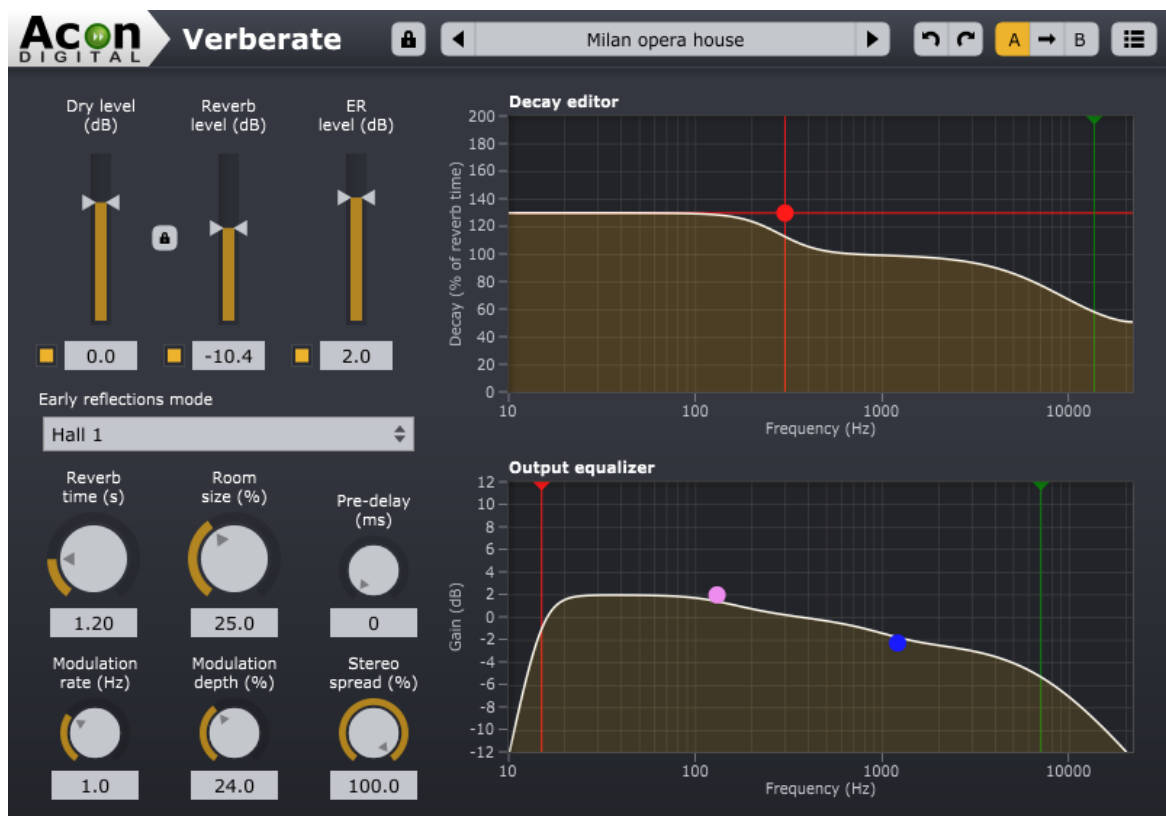
The graphical user interface of the Verberate plug-in in action.

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 level by activating 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 level (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.

Early reflections mode

You can choose the early reflection program from a set of predefined programs, such as rooms, chambers, halls and plates.

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.

Room size (%)

The room size determines the size of the simulated acoustical environment. In general, the room size should match the reverberation time. Using a very long reverberation time combined with small room sizes may result in resonances causing a slightly "metallic" quality. In some cases, as with a couple of the plate presets, the resonances are desired to achieve a specific sonic quality.

Pre-delay (ms)

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

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.

Modulation depth (%)

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

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.

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. Verberate has two filters controlling the decay, a shelf filter and a low-pass filter. You can control the cut-off frequency of the low-pass filter by moving the blue handle. The current cut-off frequency in Hertz is displayed as cursor information while you do the adjustment. Additionally, a shelf filter allows you to increase or reduce the reverberation time below a given cross-over frequency. You can control the gain (vertical movements) and the frequency (horizontal movements) using the red handle. As with the low-pass filter, cursor information is displayed with the cross-over frequency in Hertz as well as the reverberation time multiplication factor (relative to the current reverberation time) in percent. At all times, the current decay profile is displayed in terms of the relative reverberation time as a function of frequency.
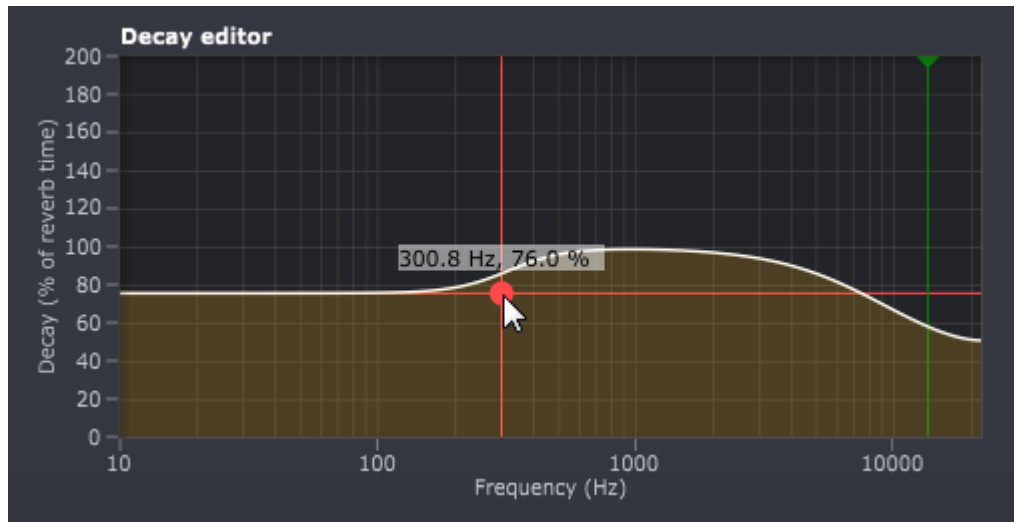
The decay editor lets you define frequency dependant reverberation times and the curve displays the relative reverberation time as a function of frequency.

Output Equalizer
You can use the output equalizer to apply filtering to the reverberation signal. Both the early reflections and the dense reverberation are filtered using the output equalizer. The equalizer consists of high and low pass filters as well as high and low shelving filters. As in the decay editor, you can use handles to change the filter settings and the frequency in Hertz as well as the gain in dB are displayed as cursor information while making adjustments. The filters in the output equalizer have variable filter slopes. You can modify the filter slope by clicking the filter section you want to edit. A small arrow appears in the same color as the filter section. You can move this arrow using the mouse to modify the slope as depicted below:
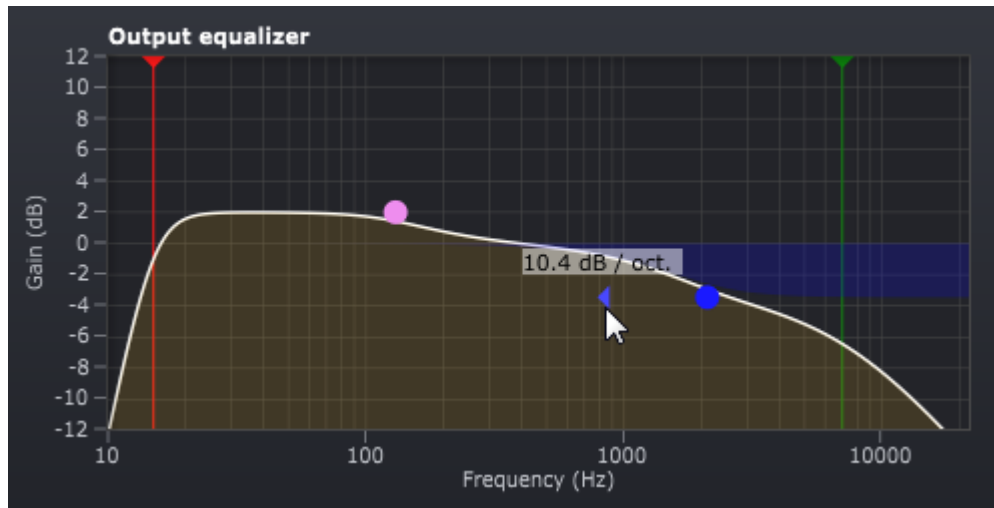
The output equalizer allows detailed control over the frequency content of the reverberation signal. The filter slope of the low pass filter is being modified in this case.

The Plug-in Header

The upper region of the Verberate plug-in window lets you manage presets, undo or redo changes or quickly compare different settings using the A / B compare tools:

Preset section

A large number of carefully programmed factory presets are shipped with Verberate. You can browse through preset categories and presets as well as create and manage your own presets using the preset management section in Verberate:

The preset management section. The lock button to the left can be used to freeze the dry and reverb levels when browsing through the presets.

You can browse through the presets using the arrow buttons. If you are using Verberate as a send effect, you can use the lock button to browse through the presets without having to readjust the levels. If you prefer to browse using categories, you can simply click the preset name box and the following pop-up menu appears. 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.

Undo and redo

You can undo (or redo) any 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 plug-in menu
The last button in the plug-in header displays the plug-in menu:

You can click the plug-in menu button for the plug-in specific menu

From the plug-in menu you can among other choose different visual themes, show this help or information about the plug-in.

Index