LiquidSonics



Fusion-IR Powered Reverb for Mac and PC

User Guide

Applies to version 1.2.0 (and above)

LiquidSonics' Seventh Heaven is dedicated to the reproduction of thirty of the best reverbs from the Bricasti M7 in an incredibly easy to use and extremely powerful native reverb plug-in.

Each of the presets has been meticulously sampled to provide unparalleled flexibility true to the original hardware to produce rich, organic reverbs of up to thirty seconds with full control over the early, late and very low frequency components. A flexible pre-delay, tempo-synced delay module and over-sampled low/high cut filters provide further opportunities to sculpt the perfect reverb for any mix.

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1. Installation and License Activation

To install Seventh Heaven Professional an Intel Mac or Windows PC is required. 64-bit DAWs with 8 GB and above are highly recommended to minimise the impact of 32-bit system memory restrictions. Approximately 10 GB of free disk space is required for a full install, and a minimum of 4 GB for a partial install containing around one third of the presets.

iLok License Manager

Before installing the plug-ins, install the iLok License Manager (http://www.ilok.com), then redeem your Seventh Heaven Professional activation code to your iLok account. Then drag this license on to your iLok.

Description of the Installers

The required data files are split over three installers:

- 1. Required The plug-ins installer which contains:
 - a. All 32-bit and 64-bit plug-ins in the following formats:
 - i. AAX;
 - ii. Audio Unit (Mac only);
 - iii. VST 2.4;
 - iv. VST3;
 - b. Starter presets a maximum of 8 presets from each of 12 banks split across all 3 algorithm variants (approximately 3.5 GB);
 - c. Various supporting files required for the plug-ins to function;
- 2. Optional v1 Presets Expansion containing the remaining 106 algorithm version 1 presets available on the M7 (approximately 2.5 GB);
- 3. Optional v2 Presets Expansion containing the remaining 38 algorithm version 2 presets (approximately 4 GB note that due to additional modulation inherent in the v2 presets these files are somewhat larger).

Please note that Seventh Heaven cannot use preset data files from Seventh Heaven Professional and vice versa as the data content / formats required by the two plug-ins are not identical.

All nonlinear algorithm presets are installed by the first installer.

Installation on Windows

The install process will request a number of file locations and the type of plug-in you wish to install (VST for most hosts or AAX for Pro-Tools). Select the plug-in formats required, an example is shown below selecting all 64-bit plug-in formats.

LS Setup - Seventh Heaven Professional	-		×						
Select Components Which components should be installed?		L.	S						
Select the components you want to install; clear the componen install. Click Next when you are ready to continue.	ts you do not	want to	_						
Custom Install		~							
VST 2.4 32-bit plugin		40.6 MB]						
VST 2.4 64-bit plugin		39.8 MB							
VST 3 32-bit plugin		40.6 MB							
VST 3 64-bit plugin		39.8 MB							
AAX 32-bit plugin		81.1 MB							
AAX 64-bit plugin		81.1 MB							
Presets (first 8 from each category)	3	,068.9 MB							
Current selection requires at least 3,230.3 MB of disk space.									
< Back	<u>N</u> ext >	Cano	el						

If you included a VST2 plug-in in your selection(s) you will be asked where those plug-ins should be installed. Typically Windows VST plug-ins are installed in one of the following locations although many options are available so you should select which is most suitable for your system.

32-bit plug-in on 32-bit Windows or	c:\Program Files\Steinberg\Vstplugins
64-bit plug-in on 64-bit Windows	c:\Program Files\Common Files\VST2
32-bit plug-in on 64-bit Windows	c:\Program Files (x86)\Steinberg\Vstplugins c:\Program Files (x86)\Common Files\VST2

Setup - Seventh Heaven Professional			_		×
64-Bit VST2 Plugin Directory				L,	Ş
Select the folder in which setup should in	stall the 64-bit VS	T2 Plugin, th	en click	Next.	
C:\Program Files\Common Files\VST2			Bro	wse	
					_

AAX and VST3 plug-ins are stored in standard locations, so there is no need for the installer to ask where they should be installed to.

Finally select the supporting data folder for the presets files. Due to the size of the files it could be better to store them on a disk other than your primary hard drive.

S Setup - Seventh Heaven Professional	_		×
Plugin data files		1	Ş
Select the folder in which setup should install the supporting data	iles, ther	n dick Next.	
A suitable alternative folder could be: "D:\Sample Packs\Seventh H	leaven Pi	rofessional"	
Folders such as "Halls", "Chambers", etc will be placed within a "Da created inside the folder specified below.	ta" folder	r that is	
D:\Sample Packs\Seventh Heaven Professional	E	rowse	
< Back	xt >	Cano	el

Selecting an alternative location such as:

D:\Sample Packs\Seventh Heaven Professional

would result in files being stored as follows:

D:\Sample Packs\Seventh Heaven Professional\Data\Chambers1\<files>.7thPro

Once the first installer has been run optionally download and install the supplementary preset files for the v1 and v2 M7 algorithms. These installers require no more information from you as they automatically put all the files in the preset location that was chosen during the main installation. (There is no option to change it in these supplementary installers, so if you want to do that for the extra files it is recommended to uninstall the main plug-ins and then re-install with the plug-ins installer selecting your preferred location.)

LS Setup - Seventh Heaven Professional (v1 Presets Expansion) - 🗌 🗙	LS Setup - Seventh Heaven Professional (v2 Presets Expansion) — 🗌 🗙
Ready to Install Setup is now ready to begin installing Seventh Heaven Professional (v1 Presets Expansion) on your computer.	Ready to Install Setup is now ready to begin installing Seventh Heaven Professional (v2 Presets Expansion) on your computer.
Click Install to continue with the installation, or click Back if you want to review or change any settings.	Click Install to continue with the installation, or click Back if you want to review or change any settings.
Setup type: A Full install	Setup type: A Full install
Selected components: Additional presets (v1 algorithm)	Selected components: Additional presets (v2 algorithm)
Supporting data folder: C: ProgramData LiquidSonics\Seventh Heaven Profession	Supporting data folder: C:\ProgramData\LiquidSonics\Seventh Heaven Profession
<	<
< Back Install Cancel	< Back Install Cancel

If at a later time you wish to move the files it is recommended to re-install but also you can refer to the macOS installation section to see how to tell the plug-in where to find a 'Data' folder that you have moved manually. By doing this, the uninstaller will not know where you have moved the files so would not be able to remove them automatically so it is better to use the installers.

The ProgramData folder where the files are installed by default is usually hidden on Windows. If you later want to get to that folder this can be accessed by un-hiding hidden files in Windows explorer, or using a Run box (press the Windows keyboard button and press r) then typing %ProgramData% into the box then hitting return.



Installation on macOS

Download and run the macOS plug-ins installer and progress through it until asked which plug-ins to install - select the ones you need and then continue. These are mixed 32-bit and 64-bit plug-ins, but it is strongly recommended to use them in a 64-bit DAW.

	Install Seventh Heaven Professional (v	1.0.0)	
	Custom Install on "Sierra"		
	Package Name	Action	Size
Introduction	🗹 Audio Unit	Install	65.2 MB
License	VST 2.4	Install	65 MB
 Destination Select 		Install	66.9 MB
Installation Type	✓ Initial v1 and v2 Presets (x80)	Install	3.22 GB
 Installation 			
 Summary 			
	Space Required: 3.42 GB	Remaining:	61.35 GB
Liquid Sonics			
		Go Back	Continue

Note that the 80 starter presets are also configured to be installed at this time. These will be put in: /Library/Application Support/LiquidSonics/Seventh Heaven Professional/Data

After installation optionally download and run through the additional algorithm v1 and v2 presets installers. These also put the presets files in the same fixed location.

🗧 🔵 🛛 💝 Ins	tall Seventh Heaven Professional (v1 Presets Expansion)		001	Install Seventh Heaven Professional (v2 Presets Expansion)
	Standard Install on "Sierra"			Welcome to the Seventh Heaven Professional (v2 Presets Expansion) Installer
Introduction	This will take 2.31 GB of space on your computer.		Introduction	You will be guided through the steps necessary to install additional preset content for the Seventh Heaven Professional plugin(s).
License	Click Install to perform a standard installation of this software for all	•	License	Please ensure you have installed the plug-ins before running this preset
Destination Select	this software.	•	Destination Select	installer.
Installation Type		•	Installation Type	
Installation			Installation	
Summary			Summary	
LiquidSonics		11	quidSonic	
Liquidounics			quiasonic	
	Go Back Install			Go Back Continue

You may prefer to keep the files on a different disk than the system drive after installation. The location of the files is illustrated in the Finder image below. To move them, either drag the 'Data' folder in Finder (indicated with an orange ellipse) to somewhere else and go and delete the original files, or do a copy-move (command+c when 'Data' is highlighted, then command+shift+v in the new location).

Applications	Þ	Application Support	Þ	2C-Audio	- Þ.	📄 Seventh Heaven 🛛 🧧 Data 🔵 🕨	Ambience1	•	01 Large Ambience.7th
installers	Þ	i Audio	Þ	🚞 Adobe	- F	Seventh Heaven Professional	Chambers1	Þ	02 Med Ambience.7th
🔃 Library	Þ	Caches	- 14	AdobeAdobe PCD	- F		🚞 Halls1	Þ	03 Small Ambience.7th
🔀 System	Þ	ColorPickers	- 14	AdobeSLCache	- F		Halls2	Þ	04 Large & Dark.7th
📃 Users	Þ	ColorSync	- 1	🚞 Antares Models	- F		Plates1	Þ	05 Medium & Dark.7th
		Components	- 1	App Store	- F		Plates2	Þ	06 Small & Dark.7th
		Compositions	- 1	i Apple	- F		Rooms1	Þ	07 Large & Bright.7th
		🚞 Contextual Menu Items	- 1	ApplePushService	- 1		Rooms2	Þ	08 Med & Bright.7th
		CoreMedialO	- 1	📥 Avid	- •		Spaces1	Þ	09 Small & Bright.7th
		Desktop Pictures	- 1	com.apple.TCC	- 1		Spaces2	Þ	10 Deep Ambience.7th
		DirectoryServices	- 1	CrashReporter	- •		System	Þ	11 Long Ambience.7th
		Documentation	- 1	Developer					12 Clear Ambience.7th
		DropboxHelperTools	- 1	📄 Digidesign					13 Heavy Ambience.7th
		Extensions	•	eLicenser					14 Bass XXL.7th
		Filesystems	•	fr.whitebox.packages					15 Percussion Air.7th
		E Fonts	•	GarageBand	- F				
		Frameworks	Þ	iLifeMediaBrowser	- F				
		Graphics	Þ	Lexicon	- F				
		🔲 Image Capture	•	LiquidSonics	•				
		Input Methods	•	Logic	Þ				

Doing this will mean the plug-in does not know where its data files are anymore, but this can easily be corrected in the settings menu of the plug-in. Click the cog icon (shown in orange), then "View/Modify Disk Location", then click the down arrow indicated in green and then 'Select new location'; choose the newly moved 'Data' folder; and then close settings with the X icon.

	SEVE	NTH HEA	VEN _	-	LiquidSonics
Settings Der Presets Initial Presets Initial Presets Select New I Hold Parame Decay Time Early / Late Early / Late Early / Late Early / Late Early Reflection POWERED BY Fusion-IR Determine View / Modition	c Default eters On Preset Change / VLF Mix Roll-off Frequencies tions Set i-band LF/HF Decay Delay y (Echo) nable	*1151 *9e Hall 3 -13.0 dB EA	> OI	INPUT UTPUT BARLY LATE VLF	60 - 48 - 24 - 12 - 6 - 3 0 3 6 Master Equaliser Advanced Controls O
下 7 0	SEVE	ΝΤΗ ΗΞΛ	VEN _		LiquidSonics
Decay Time Mix Preset Categories and Data Fi ibrary/Application Support Preset Folder Select new location Revert to default location View location in Finder	les (*.7thPro) Disk Location ort/LiquidSonics/Seventh H 0.0 dB	Hallsi Hallsi eaven Professional/Dat 31 Large Hall		INPOT UTPUT GB EARLY LATE VLF	
POWERED BY Fusion-IR	VERY LOW FREQ REVERB	-12.0 dB -13.0 dB E/	ARLY/LATE M	ax Late	Master Equaliser 〈> Advanced Controls ①

2. Quick Help System

Once the plug-in is loaded help is available within it by clicking the question mark icon and enabling "Interactive Assistance". Then hovering over a control will bring up additional information about it as shown below.

r T @ 0 —	SEVE	ENTH HEA	VEN	I	LiquidSonics
Plug-in Information Decay Ti About Seventh Heaven Professional Access Manual Online V Interactive Assistance V Interactive Assistance 0.0 dB Wet 2.20 sec		Halls1 Ø1 Lar9e Hall		INPUT OUTPUT dB EARLY LATE VLF	
POWERED BY Fusion-IR	LOW FREQ REVER	RB -12.0 dB -13.0 dB E	ARLY / LATE	Max Late	Master Equaliser 🐟 Advanced Controls 🕐

丙 丁 ۞ ?	—S =		VEN	- LiquidSonics
Decay Time Mix The time taken for the re to 60 dB below its initial	Gain t verb to decay level (RT50)	<pre>Halls1 < 01 Large Hall</pre>	INPUT OUTPUT dB EARLY LATE	
Vet 2.20 sec	VERY LOW FREQ	REVERB -12.0 dB -13.0 dB E	VLF ARLY / LATE Max Late	e Macter Equaliser
Fusion-IR				Advanced Controls ()

3. Plug-in View Mode

The plug-in has a compact and full view as shown below. Clicking the down arrow or the 'Master Equaliser' or 'Advanced Controls' buttons will expand the view. It can be collapsed again clicking the up arrow.



4. Preset Selection / Save / Recall

The presets in Seventh Heaven Professional are selected in categories and presets as shown below.

First choose from the categories list by clicking the top matrix display...



... and then choose a preset from the menu shown clicking the lower matrix display.



Preset Types

The presets in an M7 and in Seventh Heaven Professional are arranged into three categories:

- Version 1: The original M7 algorithm (indicated by a 1 after the category name);
- Version 2: A newer algorithm with additional tail modulation and brighter roll-off filters (indicated by a 2 after the category name);
- Nonlinear: A short reverb with a non-decaying region, followed by an exponential decay.

Version 1 reverbs are home to the M7's most famous and most realistic synthetic reverberation presets. Version 2 reverbs pay homage to the very noticeable modulation of reverb tails heard in the early years of synthetic reverbs which were introduced at the time to reduce metallic ringing, colouration and other undesirable artefacts. This algorithm captures the vibe of some of these classics while staying true to the nature of the M7's classic algorithm (which of course suffers from none of the acoustic problems).

The nonlinear type is characteristic of the sound of a very famous early 80's digital reverb unit that became famous for its nonlinear program mode, particularly when used on drums. The non-decaying

initial portion varies in 11 discrete steps from very short (length 'small', around 50 ms) up to 300 ms (length '10') depending on the reverb size selected (which is available in 11 steps). This is followed by an exponential decay with an RT60 of around 200 ms for all sizes. The tail uses a static algorithm and is presented in true stereo. The original reverb had no early reflection capability but in the M7 version modulated early reflections can be added. Seventh Heaven Professional takes this one step further, also allowing the modulated very low frequency reverb to be used, as well as reverb pre-delay and delay. Frequency dependent decay times are unavailable in this mode. Although these reverbs are quite short (at most half a second), some quite effective extension can be achieved with judicious combinations of delay, pre-delay and early reflections.

Save and Recall

Any modifications to loaded presets will be stored in the DAW save for project save/recall purposes, the files on disk are not modified.

User modifications of presets can be saved to disk by clicking the load (right) and save (left) icons indicated below. This will store XML files that can be used for later recall if desired. These are not integrated into the factory default lists shown, and should be recalled using the load button (right, below)



Additional Preset Information

Enabling the quick-help question mark and hovering over the preset will reveal the original preset's size, diffusion and density values for reference. These cannot be changed, but provide a means of finding presets with the desired characteristics by clicking on the < and > arrows.



Defaults

The default preset can be specified in the settings menu.

5. Levels and Metering

F T O ?			SEVEN		VEN		LiquidSonics
Decay Time	1 Mix	2 Gain		Chambers1		INPUT OUTPUT dB EARLY	-60 -48 -24 -12 5 0 3 6
1.25 sec	Equal Mix	0.0 dB	< 02 3	Medium Chamber	> 4	LATE VLF	
POWERED BY Fusion-IR				-12.0 dB Equal Mix EA		Equal Mix	Master Equaliser 🐟 Advanced Controls 🔿

The key level controls and metering available are as labelled below.

The controls and metering are as follows:

1. Mix	Controls the contribution of dry to reverb signal. This can be set to default to fully wet in the settings menu (see the cog icon).
2. Gain	Controls the volume of the entire plug-in.
3. Very low frequency reverb (VLF)	The M7 has a very low frequency (up to around 200 Hz) reverb that provides fullness and body to the reverb. This can be controlled via the slider.
4. Early / late	The balance of the M7 early reflections and late reverb field can be controlled with the slider.
5. Meters	The peak levels of the input, early / late / VLF reverbs, and the final output sum is shown in the metering area (5).

6. Decay Time

The decay time indicates how long the reverb takes to decay to 60 dB below its initial value (known as the RT60 time). This can be selected from 200 milliseconds (one fifth of a second) to 30 seconds.

Traditionally in a convolution reverb it is possible to extend a decay time perhaps a little, and to reduce it, but in neither case will the reverb structure change as it would with the hardware. As a decay time is increased and reduced, the very low frequency reverb time will non-linearly track the decay time, and the structural size of the room will adapt to the larger physical dimensions of the room. Due to the multi-sampling in Seventh Heaven, this is recreated much more accurately than ever before.

Right-clicking the 'Decay Time' text will reveal a pop-up menu with the precise sampled times, as shown below. Selecting a sampled time will provide the most accurate recreation of an M7 selection, and in-between these points an interpolation algorithm is used to approximate a suitable set of impulse responses. More regular sampling is done at smaller deviations from the standard preset's decay time so that the usual case of small tweaks are well accounted for to minimise the need for interpolations.



In nonlinear reverb preset mode the function of the decay time dial changes on the plug-in interface so that a range of nonlinear decay times can be selected from small (length 0) to large (length 10). In DAW automation lanes the text does not change, so these correspond to the display of 0.2 sec (small), 1 sec (length 1) up to 10 sec (length 10), although please see Section 4 for a discussion of nonlinear decay times.



7. Early Reflections (Selection and Filtering)

The M7 has a preset list of early reflection patterns, but typically it would not be possible to change these in a sampled preset, but in Seventh Heaven Professional every reflection pattern has been individually sampled for selection. These can be selected in the lower panel of Seventh Heaven Professional (Set 0 through Set 31 are available). The lower numbered sets are best for small spaces, the larger numbered ones are intended for much large spaces.

The frequency content of the early reflections typically could be subjected to additional roll-off, but it would not usually be possible to increase the spectral content with a wider roll-off. This restriction does not apply in Seventh Heaven Professional, so if a wider filter is required to expose more high frequency content then this can be dialled in as required. The filter curve used for the reflections roll-off filter is modelled closely on the M7's for maximum authenticity.



8. Pre-delay

The pre-delay in a reverb provides part of its essential character, and the ability to modify it is of critical importance when there is a need to change the vibe or dimensions of the room. In the M7, altering the pre-delay only affects the late and very low frequency reverb components, not the early reflections (these are totally unaffected - if you require a pre-delay on the early reflections the best option is to use a post-delay effect in the DAW's channel).

The pre-delay inherent in the sampled M7 preset is reproduced in Seventh Heaven Professional. So on the hardware - if it was 4 ms on the hardware it is shown in Seventh Heaven Professional as 4 ms. This pre-delay can be modified to anything in the range 0 ms to 500 ms and appropriate offsetting is handled within the plug-in (hence a sampled pre-delay can be removed or increased as required with full consideration of its effect on the VLF and late reverb components).

A further capability is the ability to use tempo-synced delays in a range of common time signatures (e.g. eighth notes). This allows rhythmic pre-delays to be quickly configured without a need to refer to BPM to delay time tables. This mode can be enabled by clicking the metronome icon.



9. Delay (Late Reverb)

The delay facility feeds a delayed copy of the dry signal back into the late reverb line at a specified level. This can also be configured to use the tempo-sync option as per the pre-delay.

The actual M7's delays utilise a multi-voice system, but the delays modelled here only use a single voice. If a preset had a delay inherent within it, this is sampled with the M7's original multi-voice delay for maximum authenticity. If this value (time or level) is changed by the user, then the single voice emulation comes into effect on another multi-sampled version of the preset. This may slightly diminish the perceived depth of the delayed component when subject to critical listening against an M7, but it does provide the ability to more fully control any delay within a signal (or to add a delay) in the same style of the M7 with great effect.

Simply adding a delay in the DAW would unavoidably also add the delay to the early/VLF signals, so it is beneficial to do it within the plug-in so this can be achieved more naturally.

10.Roll-off

The frequency content of a reverb is one of the most important factors determining its sound, and the filter implementation plays a vital role in characterisation. The M7 has different types of filters for the early and late reverb components (the very low frequency reverb filter never changes). The late reverb filtering is further controlled by the version of the algorithm (i.e. if it comes from a version 1, version 2 or nonlinear preset - version 1 has a faster roll-off filter than version 2 or nonlinear). All hardware filter types are accurately modelled.

It is typically not known what the filter cut-off was when using a sampled reverb, and certainly not possible to change it in a manner true to the original hardware. Whilst additional cut can be applied, usually this would be done with a filter of the wrong shape (unless this is known to a particularly knowledgeable user) losing the character of the reverb entirely.

Seventh Heaven Professional however applies the correct filter types to a wideband version of the sampled reverb if the cut-off value differs from the default sampled version. This provides an unparalleled level of authenticity and control over the tone of the reverb's early reflections and late components.

11.Frequency Dependent Decay Time

A reverb will typically provide controls allowing the low, mid and high frequencies to decay at different rates. Different types of room with different structures and furnishings have very different decay characteristics. The high frequencies in a tiled room will bounce around for longer than in a room with a lot of soft furnishings; the low frequencies in a large arena will be detected for longer than the highs due to air absorption properties; and so on. The ability to control these bands is critical to designing a space.

In the M7 these multiband decays are specified as a multiplier of the main decay time. Seventh Heaven Professional does not seek to replicate these features precisely - all multi-samples contain

the inherent multiband decay times of the M7 presets - but it does provide the facility to split the reverb as-sampled into multiple bands and apply supplemental decay times to it. The multi-band filters are approximately the shape of those in the M7. Many M7 presets do not have extreme multiplier settings so gentle multipliers of the decay times can produce very useful effects.

The low and high frequencies selected are as per the M7 preset to serve as a useful guide on where to begin any modifications.



12.Master Filter

The M7 does not provide a master filter, but one is provided for quick access to some supplemental tone shaping. The filters are twice oversampled low/shelf/bell types, with the exception of the high cut which is a 12 dB/Oct Massberg low-pass for superior roll-off performance.

The low and high bands can be switched between a shelf and bell shape, and the mid band is fixed as a bell shape.



When boosting the mid/high bands, remember the effect desired may be better achieved by increasing the amount of high content through the roll-off filters on the Advanced Controls tab. When applying low cut or low shelf, also consider using the very low frequency reverb level in preference. It is always better to fix the source rather than apply an equaliser, but in instances where greater flexibility is needed or a quick-fix over an otherwise well balanced reverb is needed the master equaliser can be very powerful.

13.Settings

The behaviour of the plugin in a number of areas can be controlled via the settings menu. This is accessed via the cog icon in the top left.

Presets

Initial preset

Select the initial preset to load at start-up (this is not supported in AAX).

Hold values on preset update

When changing presets it is sometimes desirable that not all of the parameters switch to the new settings. For instance, if a specific decay time and roll-off are working well but it is desirable to audition different combinations of size/diffusion/density, it would be possible to lock the filters and decay time while rapidly moving between presets.

Modify data file location

Allows the data files to be moved to an alternative folder. This is more fully described in the macOS installation section. On Windows it is recommended to move files via the installer rather than after installation.

Interface

Advanced controls

The default visibility of the advanced controls panel can be specified.

CPU Efficiency

A number of options for reducing load on the system can be selected. If in doubt about the compromises using these features may present you with then leave them at their default values or contact support to discuss your specific situation (all CPU saving features are initially turned off).

Host compensated latency

Allowing the reverb to be processed in larger batches of audio reduces CPU load. This introduces processing delay, but this is reported to the host for automatic delay compensation where possible.

Sample rate limiting

All reverb samples are recorded at 96 kHz and then re-sampled to the current DAW rate so that the reverb can run at the host's native rate. Higher sample rates increase processor demand on the system.

It is possible to under-sample the Fusion-IR processors when using sample rates above 48 kHz. For 88.2/96 kHz a 2x under-sample rate can be selected, and for 176.4/192 kHz a 2x or 4x under-sample rate can be selected. For instance, a 96 kHz project can run the reverb at 48 kHz; a 192 kHz project can run the reverb at 48 kHz or 96 kHz.

Running the reverb at a lower sample rate than the rest of the DAW reduces CPU load. There is much less benefit using a convolution reverb at high sample rates than for many other types of processors like saturation or synth effects unless preservation of high frequency sample content is critical; however even in this case, running above 96 kHz is of little benefit (other than to avoid unnecessary resampling filters) because the original hardware does not produce any reverberation above this rate.

High-quality linear phase anti-aliasing filters are used to minimise any acoustic impact when using the rate limiting modes. Delays introduced by the linear phase resampling anti-alias filters are automatically compensated.

Fusion-IR VLF processing

The early and VLF reverb components typically use independent modulation at slightly different rates for maximum reproduction authenticity. Enabling this option synchronises the processing of these two components (as a result the VLF modulates at a slightly faster rate) which lowers CPU processing requirements. This does not affect reverb quality but can slightly affect the authenticity of the low reverb response relative to the hardware.

It is expected that many users will not notice an appreciable acoustic difference when enabled (especially if not making direct comparisons to the hardware reverb), so using this mode would typically be recommended if lowering CPU consumption is of interest.

It is not recommended to use this mode if you make use of VLF level automation.