

LiquidSonics

SEVENTH HEAVEN PROFESSIONAL

Fusion-IR Powered Reverb for Mac and PC

User Guide

Applies to version 1.4.8 (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 required. 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.

To use the plug-in in multi-channel modes 32 GB of RAM is recommended with a modern specification 8-core or above i7/i9/Xeon or Ryzeb/Threadripper CPU.

If you require 32-bit support please visit the [legacy software archive](#).

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 or local authorisation location. Alternatively open a cloud session from the license manager file menu (a continuous network connection is be required to use iLok Cloud).

Description of the Installers

The required data files are split over three installers:

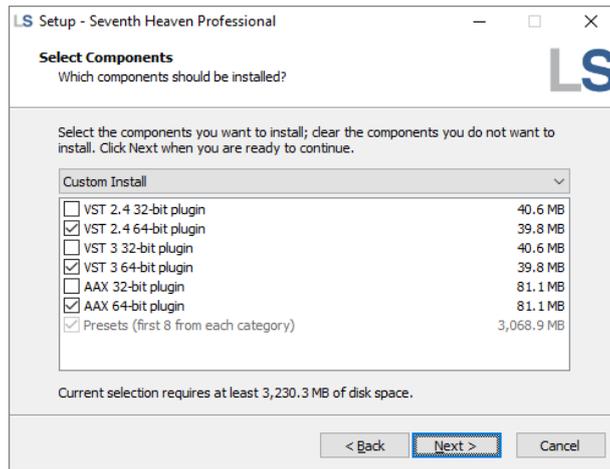
1. Required - The plug-ins installer which contains:
 - a. All 32-bit and 64-bit plug-ins in the following formats:
 - i. AAX;
 - ii. Audio Unit (Mac only);
 - iii. VST 2.4;
 - iv. VST3;
 - b. Starter presets – a maximum of 8 presets from each of 12 banks split across all 3 algorithm variants (approximately 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.

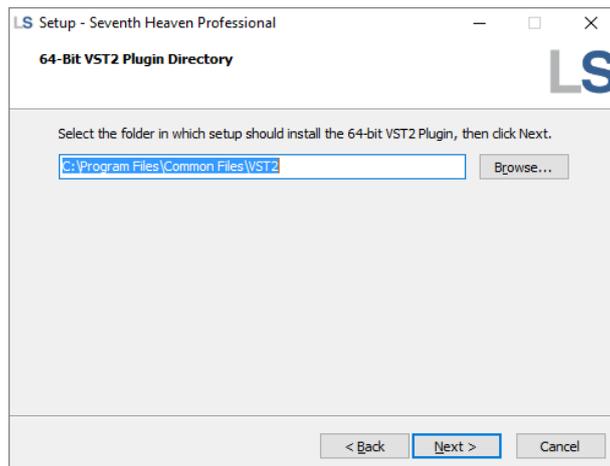
Installation on Windows

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.



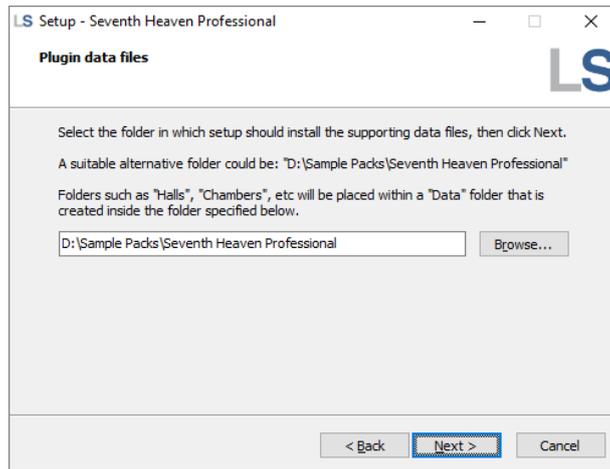
If you included a VST2 plug-in in your selection(s) you will be asked where those plug-ins should be installed. Typically Windows VST plug-ins are installed in one of the following locations although many options are available so you should select which is most suitable for your system.

32-bit plug-in on 32-bit Windows or 64-bit plug-in on 64-bit Windows	c:\Program Files\Steinberg\Vstplugins 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



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.



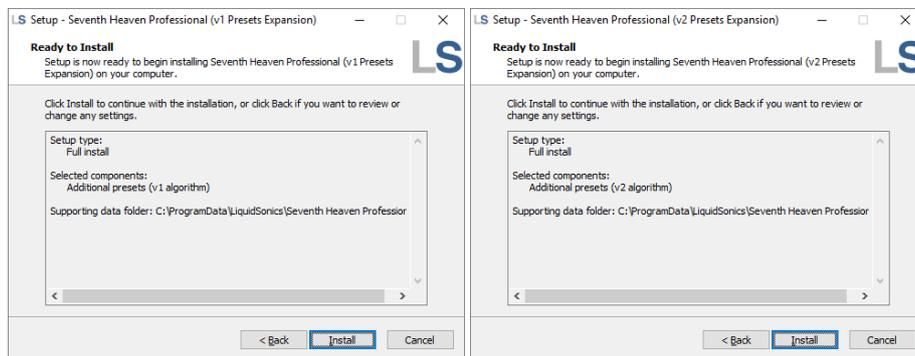
Selecting an alternative location such as:

D:\Sample Packs\Seventh Heaven Professional

would result in files being stored as follows:

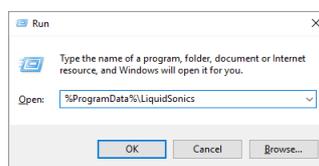
D:\Sample Packs\Seventh Heaven Professional\Data\Chambers1\<files>.7thPro

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.)



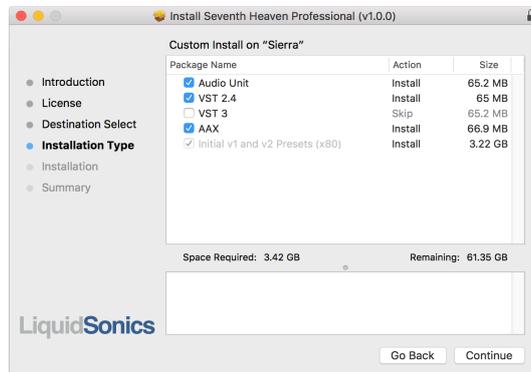
If at a later time you wish to move the files it is recommended to re-install but also you can refer to the macOS installation section to see how to tell the plug-in where to find a 'Data' folder that you have moved manually. By doing this, the uninstaller will not know where you have moved the files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



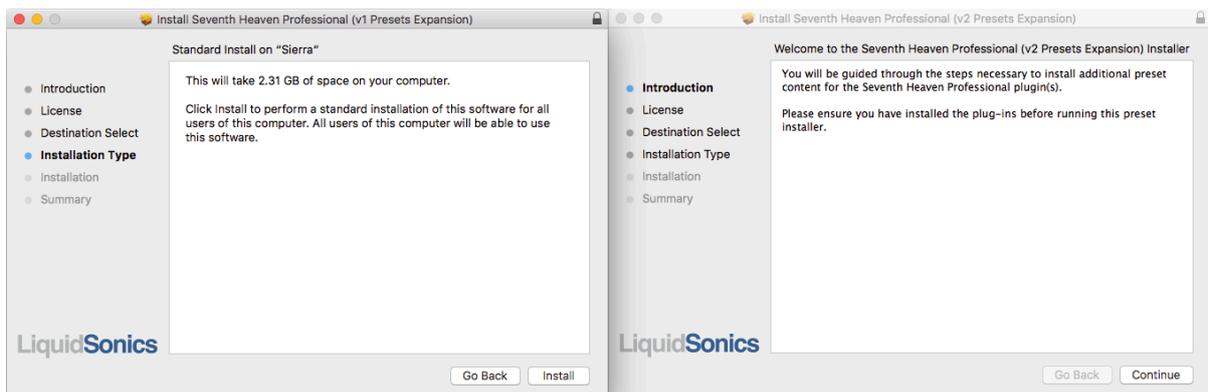
Installation on macOS

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.

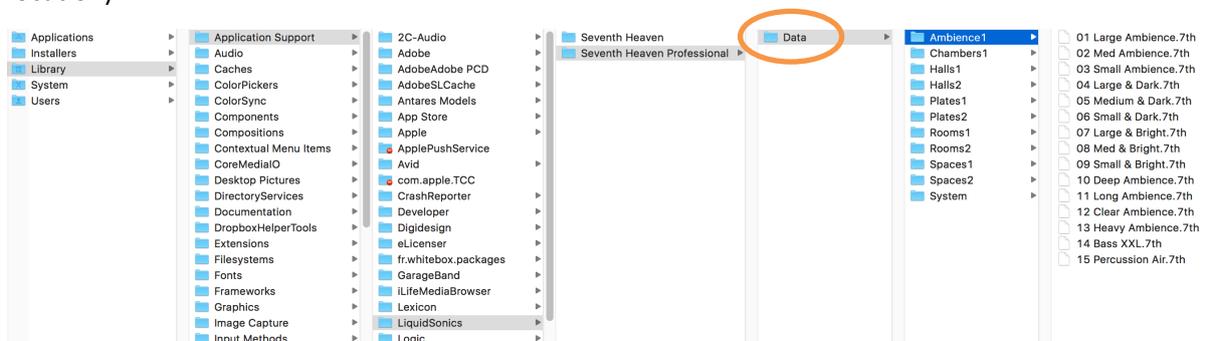


Note that the 80 starter presets are also configured to be installed at this time. These will be put in: /Library/Application Support/LiquidSonic/Seventh Heaven Professional/Data

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.



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).



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.



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.





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).

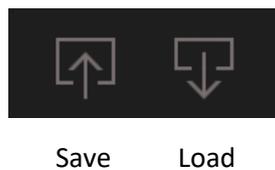
The nonlinear type is characteristic of the sound of a very famous early 80's digital reverb unit that became famous for its nonlinear program mode, particularly when used on drums. The non-decaying initial portion varies in 11 discrete steps from very short (length 'small', around 50 ms) up to 300 ms (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

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



The controls and metering are as follows:

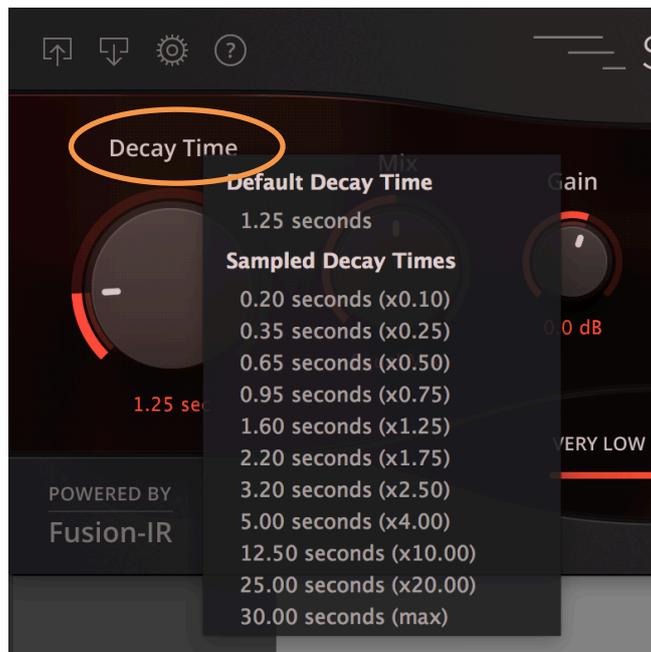
1. Mix	Controls the contribution of dry to reverb signal. This can be set to default to fully wet in the settings menu (see the cog icon).
2. Gain	Controls the volume of the entire plug-in.
3. Very low frequency reverb (VLF)	The M7 has a very low frequency (up to around 200 Hz) reverb that provides fullness 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 predefined collection of early reflection patterns. Typically it would not be possible to change these in a sampled reverb capture, but in Seventh Heaven Professional every reflection pattern has been individually sampled and is available for selection. These can be selected in the lower panel of Seventh Heaven Professional - Set 0 through Set 31 are available to you. 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 in an M7 can be subjected to user adjustable roll-off, but this too would not usually be possible to edit in a sampled reverb increase or reduce the spectral content. 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.



You will find the reflection patterns grouped into subsets: 0-9 / 10-19 / 20-25 / 26-31. The first subsets sound closer, the later sets sounding further away. Within each sub-set the reflectivity of the space increases, i.e. 9/19/25/31 sound like more reflective environments than 0/10/20/26.

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.Ducker

The ducker is accessed by clicking the ducker tab in the bottom right corner of the screen, this area is shared via tabbing with the frequency dependent decay time facility. Two ducking modes are available in Seventh Heaven Professional:

- Reverb (late tail and VLF) ducker – the reflections and VLF will not be ducked
- Wet mix (reflections, VLF and late tail) ducker – the entire wet signal is ducked

Ducking a reverb is often used to avoid a reverb swamping the dry signal, allowing the verb to be tucked away until there is space in the mix for it to fill the space between phrases. Often this will improve intelligibility. By ducking only the reverb (not the reflections) one retains the spatialisation effect of the early room without compromising intelligibility with excessive reverb tail fighting with the dry. This is the default mode of operation.

Ducking takes its signal from the input, it is simply a compressor side-chained on the input of the reverb. This is not merely offered as a routing convenience, due to the beneficial effects of ducking only the late reverb signal (leaving the reflections untouched) it is a powerful tool that would be time consuming to configure and manage with multiple instances of the plugin with early / late components isolated.

Threshold controls the point at which the ducker activates when signal is above it. The ratio controls how much the signal is compressed by when it breaches the threshold. Release controls how quickly the compression is removed when the signal falls again below the threshold.

Trim is a simple gain control, useful for compensating for the fact that ducking can reduce signal volumes. The gain reduction (GR) meter indicates how much compression is active at a given moment.



The ducking modes (late vs wet) are accessed through the menu available by clicking the down arrow indicated in green. You may also choose from a small selection of envelope attack times and if it is triggered from an external sidechain (as opposed to the dry incoming signal). The power indicator (visible within the tab header when the tab is selected) shows whether the ducker is active.

13.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.

14. 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.

Synchronous update

Some DAWs change preset settings or instantiate a new instance just before a render or mixdown, which can mean a period of silence is encountered while the plug-in is updating itself in the background. If you are experiencing some trouble with this experiment with the two options in this area to lock down the plug-in updates before renders can continue (either on sample rate changes or preset changes, select the option that interferes least with your workflow).

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.

Surround

Crossfeed To Centre

This option provides the means to disable reverb flooding to the centre channel from other surround channel sources. This is useful for keeping your dialog channel free from any reverb that would otherwise crossfeed in from other channels in multichannel modes.

Mono Upmix Centre Channel

Some hosts allow a mono input with surround output. Under these circumstances you can control whether the mono is used as phantom centre in the front left/right channels, or within the centre channel itself.

15. Full Preset Automation Notes

Full preset automation is now supported in versions 1.3.4 and above by including the bank and preset content parameters as an automation lane in your DAW. These are not directly accessible from the UI but are written when a preset is changed from the preset selection menus.

In previous versions attempts to fully automate the a preset change would automate all parameters correctly, but the content pack itself used for Fusion-IR data could not be changed. This is addressed in version 1.3.4 by adding parameters for the bank/preset combination required.

Please bear in mind that selecting a bank/preset manually in the automation lane will only automate the content file used, it would not pull through a preset's proper decay time etc as it is not a snapshots facility. You should write whole preset plug-in automation using the plug-in's interface to change presets rather than editing automation lanes yourself, this way every parameter that changes plus the required content pack will be recalled.

If you wish to use Pro Tools' native preset management you may need to first remove the old factory presets from the Pro Tools folder in the Documents folder in your OS. This means Pro Tools will replace them with the updated tfx presets included in the later release which include the proper bank/preset parameter data in the .tfx files. If you had Pro Tools presets deposited by v1.3.3 or below you can visit your operating system's user *Documents* folder, then visit *Pro Tools/Plug-In Settings* and delete the *Seventh Heaven P* folder (be sure to keep aside any presets of your own before doing so).

16. Multichannel Support

Multi-channel surround support allows you to use Seventh Heaven Professional in a number of track width configurations beyond stereo. When using surround track width modes the metering switches into a bar style design.



When instantiating Seventh Heaven Professional on a surround track or bus the same base true stereo preset is replicated across all additional surround frames in the bed (sides, rear, centre and elevated channels) and passed through a sophisticated decorrelation process to ensure fold-down compatibility and improved spatialisation performance for the surround / height channels.

The cross-fed convolution engines allow reverb to propagate naturally throughout a space just as you would expect from a surround reverb plug-in. This would typically be very difficult to achieve with stereo instances of any reverb. In most cases using multiple stereo instances would result in suboptimal acoustic and cross-feed behaviours and fold-down problems (or if different presets / reverbs are used to work around the problems, difficulty defining a coherent space).

The decorrelation engine ensures that every channel sounds just like the original capture, but each is mathematically unique (decorrelated). This avoids problems with fold-downs such as audible comb filtering due to small time delays between channels (this could arise if any additional delays have been added to some surround channels to improve the sense of space or even due to differing path lengths between the listener and each speaker in the theatre). The plug-in uses the original captures for the front channels, and decorrelated Fusion-IRs for the remaining channels in the surround field.

Crossfeed

The crossfeed parameter defines the amount of bleed/propagation throughout the surround space (i.e. how much reverb moves from a source channel into the other surround channels, especially helpful for controlling pan tracking). The M7 typically has the cross-fed paths (left to right, right to left) a little lower in the mix than the direct channels, but the ability to control cross-fed level is beneficial when working in surround. The parameter allows for small boosts (max +3 dB) and deep cuts down to -24 dB (or disabling it altogether).

Four surround crossfeed topology modes are available. These can be selected from the settings menu when the channel count is quad and above. They apply to the current plug-in instance, irrespective of the preset loaded.

Full Surround Crossfeed Propagation

Audio received on each channel produces reverb and reflections heard in its own channel and which also floods into every other channel. All crossfeed reverb is decorrelated.

This is the default option.

True-Stereo L/R Propagation Only

The plug-in can be virtually divided into a set of true-stereo reverbs along the stereo plane lines. For instance, in a 7.x reverb this would mean the front L/R, side L/R and rear L/R become partitioned and operate independently, plus a further mono reverb for centre that is completely isolated. Audio received on the front left channel would create reverb in the front left and front right (as per true stereo processing), but would not propagate to any other channels.

This could be thought of as a 'multi true-stereo' option.

True-Stereo L/R Propagation With LCR

Operation per True-Stereo Plane L/R Propagation Only mode, but with additional coupling such that the front L/R and Centre channel act as a 3-in/3-out LCR reverb rather than the centre being treated as an isolated mono reverb.

All Except L/R Propagation

To allow signal panned hard left or right to stay in the left and right surround channels, all propagation except the 'true stereo' propagation paths are active.

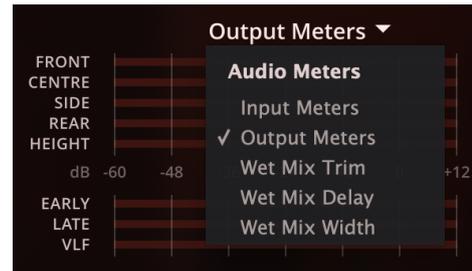
For example, using this mode audio panned into the left rear will propagate to all other left channels (left front, left side, left wide, all left height channels) but will not flood into any right channels or the centre.

All Crossfeed Propagation Disabled

The reverb algorithm can be further partitioned so that each channel is fully isolated from all others. With no crossfeed between any of the channels, this is similar to a 'multi-mono' configuration.

Surround Metering (Input / Output)

When instantiated with channel counts above stereo the visualisation automatically switches from the traditional LED mode metering to bar mode metering. The lower portion provides metering of the early reflections, late reverb and very low frequency. The upper portion can be switched between input and output monitoring, and shows the front, centre, side, rear and height planes as applicable.



Within the menu you will also find options for 3 additional banks of controls that are only accessible when using the plug-in in surround mode. These simple level trim, delay and width parameters are applied to the wet mix (i.e. the sum of the early, late and VLF components before the dry is added).

Wet Mix Trim

Simple level control ranging from -24dB to +12 dB, or off at the lowest level to completely disable a surround frame. This is especially useful for tasks such as muting the centre's wet signal.

Wet Mix Delay

Delays can be added to each stereo plane. Although all channels are mathematically decorrelated this can be helpful to perceptually decorrelate the reverbs so that the wavefronts hit the ear at different moments improving spatialisation.



Wet Mix Width

A mid/side widener is available allowing stereo planes to have widened or reduced stereo spread. This is an effective way to create a more immersive sense of width in a surround mix.



Surround Modes

The following channel modes are supported:

- Mono
- Stereo
- 3.0 (LCR)
- 4.0 (Quad)
- 5.0 - 5.1.4 (5.x and 5.x.y)
- 7.0 - 7.1.6 (7.x and 7.x.y)
- 9.0.4 - 9.1.6

Input / output modes supported by the plug-in are indicated in the table below.

Output Width	Input Width									
	Mono	Stereo	LCR	Quad	5.x	5.x.y	7.x	7.x.y	9.x.4	9.x.6
Mono	Supported	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Stereo	Supported	Supported	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
LCR	Supported	Supported	Supported	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Quad	Supported	Supported	Supported	Supported	N/A	N/A	N/A	N/A	N/A	N/A
5.x	Supported	Supported	Supported	Supported	Supported	N/A	N/A	N/A	N/A	N/A
5.x.y	Supported	Supported	Supported	Not supported	Not supported	Supported	N/A	N/A	N/A	N/A
7.x	Supported	Supported	Supported	Supported	Supported	Not supported	Supported	N/A	N/A	N/A
7.x.y	Supported	Supported	Supported	Supported	Supported	Not supported	Supported	Supported	N/A	N/A
9.x.4	Supported	Supported	Supported	Not supported	Supported	N/A				
9.x.6	Supported	Supported	Supported	Supported	Supported	Not supported	Supported	Supported	Not supported	Supported

N/A
 Supported
 Not supported

A DAW with bus width identification capabilities are required to use 5.x.y and 9.x.4.

In all x.1.z versions the LFE channel is treated as pass-through.

Pro Tools versions prior to 2023.6 do not support track widths beyond 7.1.2. To support these legacy versions an additional three stereo auxiliary outputs are provided by the plugin that can be used with 7.x and 7.x.2 output widths. These produce additional decorrelated crossfed audio to help improve spatialisation in the mix. In order to use these create an instance of the plugin on a 7.0, 7.1, 7.0.2 or 7.1.2 channel, create up to 3 additional stereo aux busses, and select the input for the stereo aux channels to be the auxiliary outputs of the plugin. These can be routed to objects to supplement a 7.1 or Atmos 7.1.2 bed. Given these can only be provided as outputs there is no way to pan into the .4 and .6 channels when using this technique.

The auxiliary outputs are disabled by default to save CPU usage if not required. Then can be enabled through the settings menu. This is a global setting affecting all instances, and requires a restart of all plugins to take effect.

In Pro Tools the 7.x auxiliary outputs are always present but can only be used when the plug-in is operating in 7.0 and up mode. Auxiliary outputs are not provided in other plug-in formats.

All auxiliary stereo outputs operate in the elevation plane.