

# FAT



# SPACE

## User's Manual

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# 1. Welcome to Fat Space

Thank you for choosing Fat Space, a rack extension developed by Synapse Audio Software! This manual will give you an overview of the features found in Fat Space, as well as explain how to use this unique Reason device.

## 1.1. Introduction

We are proud to introduce a completely new and unique reverb effect to your Reason Rack, Synapse Fat Space!

Fat Space is a novel type of reverb, which allows you to customize the reverb envelope freely, and which offers a fat reverb sound not heard in previous conventional reverbs.

By employing a new technology we call Liquid Convolution, Fat Space combines the best features of both algorithmic and convolution reverbs. In the following, we will briefly review algorithmic and convolution reverbs, and then explain how Fat Space differs from both.

Algorithmic reverbs use a network of delay lines in order to simulate the reflections in a room. If the network is constructed properly, such a reverb sounds very good and offers many parameters to shape the sound. By employing clever modulation of the delay network, the reverb sound can be further enhanced and provide yet more realism. A downside of algorithmic reverbs, however, is that they typically need a few hundred milliseconds to build up density (see Fig. 1).

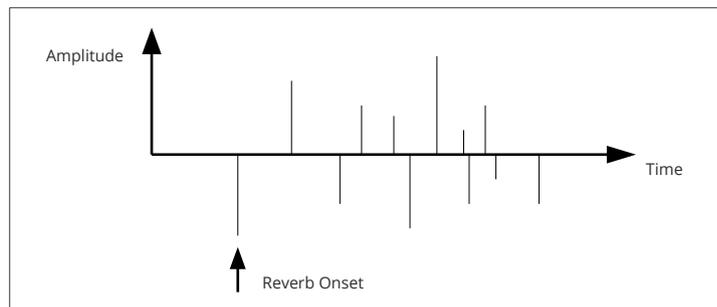


Fig 1. Impulse Response of a typical algorithmic reverb.

The initial part of the reverb is often sparse, which leads to a thin sound when simulating small spaces, as there is not enough time to build up sufficient density.

Convolution reverbs, on the other hand, use a pre-recorded sample of a space, which then can be imprinted on any signal by the mathematical convolution operation. In theory, any space can be modeled that way, thus modeling high density is not an issue. In practice, however, convolution reverbs tend to sound too static. Since they are based on samples, the reverb tail lacks motion, and thus realism. Furthermore, non-linear effects are not captured by convolution reverbs.

## 1.2. The Liquid Convolution technology

Fat Space uses a novel technology we call Liquid Convolution, which has neither the shortcomings found in algorithmic reverbs, nor the problems associated with convolution reverbs. Using Liquid Convolution, Fat Space can generate a very high reverb density right on the onset of the reverb (see Fig. 2), providing more realism than conventional algorithmic reverbs. At the same time, the Liquid Convolution technology is capable of modulating the reverb tail similar to what algorithmic reverbs can do, enhancing the sound quality and avoiding a dull reverb sound.

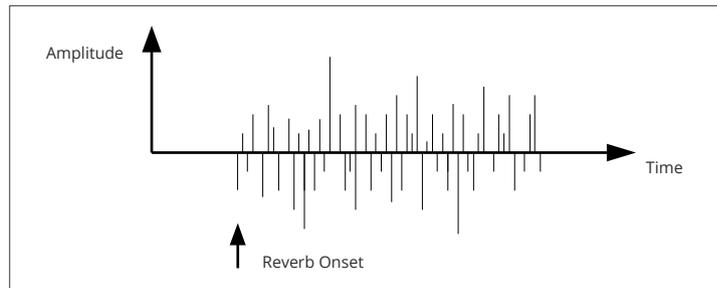


Figure 2. Fat Space Impulse Response.

Another very important feature of Fat Space is the ability to offer custom reverb envelopes. Anything from a natural quick reverb decay to a "brickwall" type of reverb with almost no decay is possible, and can be easily adjusted on the interactive display.

# 1. Fat Space Parameters

## 2.1. Reverb Type



Fat Space offers two reverb programs, a forward and a reverse reverb. Forward reverb is the default mode, which is closest to the reverb of a real room (provided the Shape value is not too high). The Reverse mode is a special purpose program useful for creative effects. Reverse mode acts like a reverb that was recorded and is then played backwards. Like the forward mode, the reverse mode provides high echo density from start to end, a feature which distinguishes it from many algorithmic reverbs offering reverse programs. Try Reverse mode on Drum, Vocals or Synth sounds to create new interesting effects!

## 2.2. Predelay

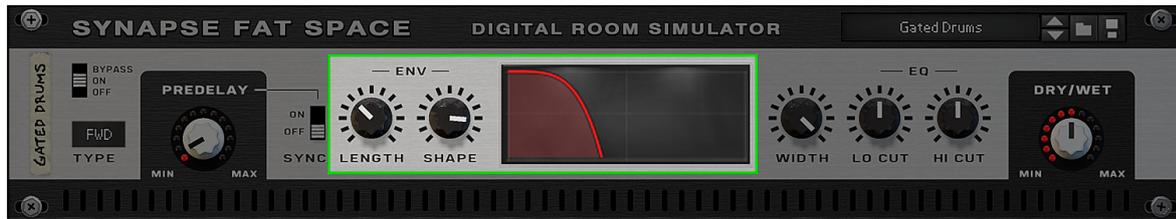


Predelay introduces a short delay between the sound source and the onset of reverberation. Higher Predelay values increase the time before the reverb onset, and can help separate the reverb from the dry sound. Lower values tend to blend the dry and wet sound more.

By default, the predelay time is adjusted in milliseconds.

When the Sync switch is enabled, however, the predelay time will depend on the current song tempo. This is very useful to create rhythmic reverb effects in electronic dance music.

### 2.3. Shape and Length



With the Shape and Length knobs, the reverb envelope can be adjusted. The Length parameter controls the reverb's total length in milliseconds, while the Shape knob adjusts its decay slope. Note that it is possible to adjust both parameters using the interactive display, as well.

### 2.4. Width



The Width knob controls the stereo width of the reverb. By default, the Width is set to 100%, which means that both the left and right channels are uncorrelated. Lower values of Width can narrow the stereo image. Note that the dry sound is not affected by the Width parameter.

## 2.5. Lo Cut / Hi Cut



The reverb timbre can be adjusted by using the Lo / Hit Cut knobs.

Lo Cut removes low frequencies. Higher values shift the corner frequency upwards, such that more bottom end is removed. Cutting low frequencies can be useful to prevent a "muddy" bottom end and improve the overall clarity of the sound.

High Cut removes high frequencies. Higher values result in a darker tone, which can be useful if the reverb sounds too bright or too sharp.

Note that the dry sound is not affected by either the Lo Cut or Hi Cut parameter.

## 2.6. Dry/Wet



The Dry/Wet knob adjusts the balance between the reverberated signal and the dry source signal. The value is given as a percentage, thus a value of 50/50 means that the output signal is roughly half dry and half wet. Higher values increase the level of the wet signal, while lower values emphasize the dry signal.

### 3. Back Panel



Stereo Width, Lo Cut, Hi Cut and the Dry/Wet mix can be modulated via the CV inputs on the back panel.

The Modulation knob allows to control the internal reverb modulation in Fat Space. By default, Fat Space uses a subtle modulation that works on a wide range of program material. By increasing the value of the Modulation Amount knob, a stronger, chorus-type modulation is added to the reverb, which can be useful to breath more life into some sounds - particularly certain synthetic sounds can benefit from this. For acoustic sounds like a grand piano, it is usually better to keep the modulation amount at zero. Also note that non-zero values for the modulation amount increase the CPU usage.

## 4. Automation and Remote Control

All parameters in the Fat Space can be remote-controlled and accessed within Reason's Combinator.

### 4.1. MIDI Map

<b>Parameter</b>	<b>CC#</b>
Type	12
Sync	13
Predelay	14
Predelay (Sync)	15
Shape	16
Length	17
Width	18
Low Cut	19
High Cut	20
Dry/Wet	21

## 4.2. Remote Map

<b>Synapse Audio</b>	<b>Fat Space</b>			
Type	0	1	Toggle	Value Output
Sync	0	1	Toggle	Value Output
Predelay	0	1	Value	Value Output
Predelay (Sync)	0	20	Value	Value Output
Shape	0	100	Toggle	Value Output
Length	100	800	Value	Value Output
Width	0	100	Value	Value Output
Low Cut	0	100	Value	Value Output
High Cut	0	100	Value	Value Output
Dry/Wet	0	100	Value	Value Output