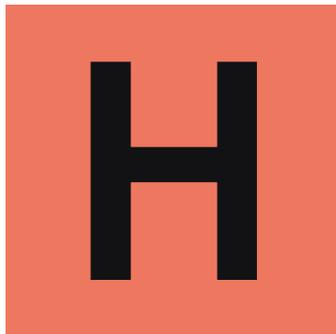


HASound

Sample Delay

(Copy Delay)

User manual



HASound



Table of Contents

- Chapter 1 - Introduction 3**
 - 1.1 Welcome 3
 - 1.2 Product Overview 3
- Chapter 2 - Components 4**
- Chapter 3 - Interface and Controls 5**
 - 3.1 Controllers 5
 - 3.2 Information display 6

Chapter 1 - Introduction

1.1 Welcome

Thank you for choosing HASound audio software. Please read this user manual before you start using our signal processor.

If after reading you still have questions, you can always ask for help at: support@hasound.com

We also recommend to follow the HASound news and software updates using our RSS feed:

<http://www.hasound.com/rssfeed.php>

Audio Unit version implemented using Symbiosis from NuEdge Development.



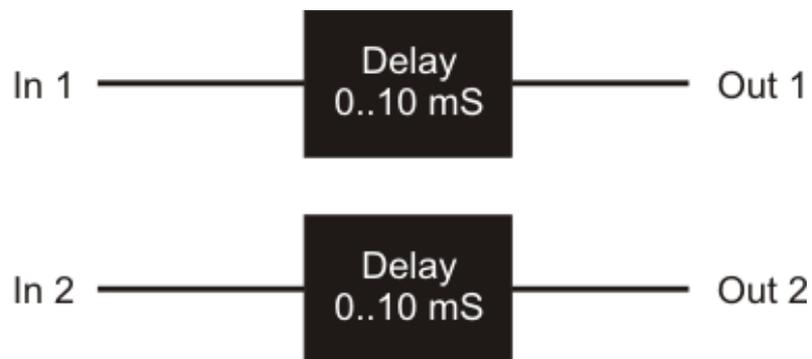
1.2 Product Overview

HASound Sample Delay can be used to delay a signal by single sample values. It can be used for correction of timing problems that may occur with multichannel microphones. It can also be used to emulate stereo microphone channel separation.

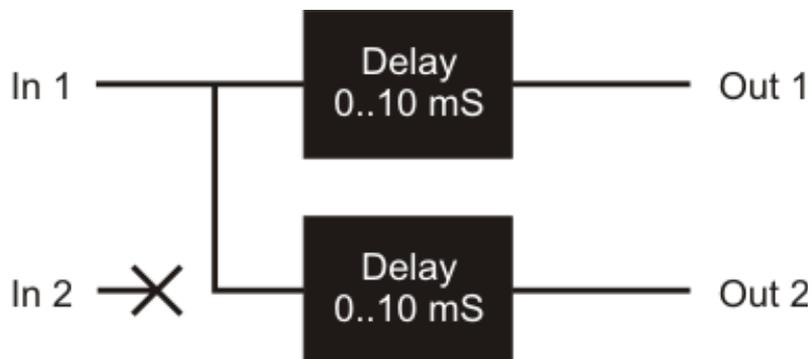
Chapter 2 - Components

This plug-in is available for one channel (Copy Delay component) and two channel (Sample Delay component) applications in two channel configuration.

Sample Delay signal circuit:



Copy Delay signal circuit:



Chapter 3 - Interface and Controls

3.1 Controllers

Sample Delay and Copy Delay components have the same controllers, but with that have different names. Copy Delay controller's name in parentheses.



Left (Channel 1) knob controls delay of left channel (first channel) signal in range 0 mS .. 10 mS or in samples (the range depends of the sample rate).

Right (Channel 2) knob controls delay of right channel (second channel) signal in range 0 mS .. 10 mS or in samples (the range depends of the sample rate).

General recommendation!

Although you can specify a delay in milliseconds, but we recommend giving the delay in samples, because it's more accurate.

3.2 Information display

```
Sample Rate, Hz: 44100
Pre-Delay, ms(sam): 2.27(100)
Ch. Shift, ms(sam): 0.11(5)
Distance, cm(inch): 3.9(1.5)
```

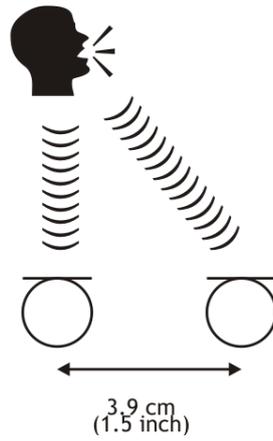
Information display show:

Sample Rate (in Hertz) - current sample rate of host application.

Pre-Delay (in milliseconds and samples) - Minimum delay value of one channel. This parameter show delay value of the output signal relative to the input signal. For example - left channel delay is 105 samples, right channel delay is 100 samples, pre-delay is 100 samples.

Ch. Shift (in milliseconds and samples) - Absolute value of the difference delay of both channel. This parameter show shift signal of one channel relative to the other channel. For example - left channel delay is 105 samples, right channel delay is 100 samples, channel shift is 5 samples.

Distance (in centimeters and inches) - The distance between the virtual microphones. For example - channel shift is 5 samples. At a sample rate of 44.1 kHz in 5 samples equal of 0.11 mS. So, the channel shift is 0.11 mS. Speed of sound in dry air (at 20° C or 68° F) is 343.2 m/s (1126 ft/s). At this sound of speed in 0.11 mS equal 3.9 cm (1.5 inch). So, one channel, shifted relative to the other channel at 5 samples, equivalent spaced two microphones by 3.9 cm (1.5 inch).



You can use this for correction of timing problems that may occur with multichannel microphones or emulate stereo microphone channel separation.