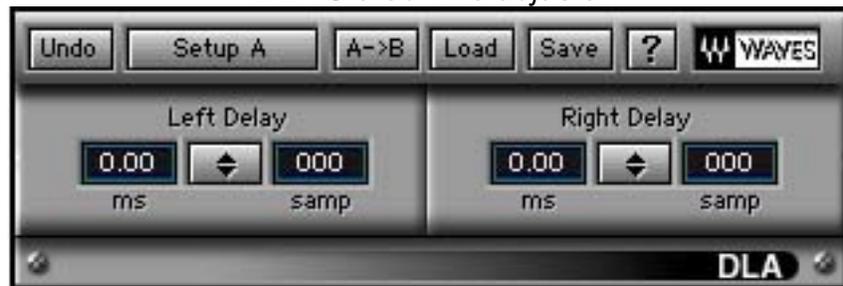# Waves DLA

Software Audio Processor

Users Guide

DLA Stereo time adjuster

DLA-X Delay and Cross-feed

This document is up to date with Waves DLA version 3.5.

The DLA plug-in

INTRODUCTION

The DLA Plug-Ins are small TDM utility plug-ins that delay the audio passing through. This is not the delay effect used as an echo generator. It is a handy tool for applying short delays for a few useful applications.

DLA consists of 8 different plug-in components.
2 Straightforward delay for time adjustment.
3 Fixed delays or Plug-In specific delay compensation components.
3 Cross-feed delay components.

This short guide will describe each of the different DLA components.

TIME ADJUSTERS

Some digital audio processors use "lookahead" to perform their application thus delaying the signal by the lookahead length. When such a plug-in is used on an audio track, the track's time alignment is offset. Some Audio application can automatically compensate for this slide other's can't. In a TDM multitrack project such an offset can cause phase shifting and comb filtering, or just an annoying latency when the delay is longer. To fix the issue, delaying the other tracks by the same amount aligns the time of all tracks.

Waves has many plug-ins with "Lookahead" and some go as far a 8240 samples on 44.1Khz audio, which is about 187ms. This is enough to slide the track away from the rest of the playback. You can open a DLA plug-in with 8240 samples on the other tracks to align playback back to sample accuracy.

DLA, DLA Plus

The DLA and DLA Plus components are similar in that they allow you to select a preset or specify the required delay manually.

DLA
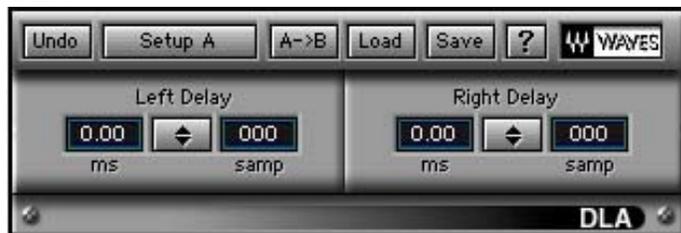
Handles the shorter delays of up to 1000 samples or 22.73 ms @ 44.1kHz. It has only one control to set a value between 0-1000.

DLA Plus

Goes up to 7999 samples or 181.8ms @ 44.1kHz. It has one control for 0 – 999 samples and a separate control for 1K increments between 1 and 8.
DLA Plus includes a set of presets to compensate for some single plug-ins as well as some plug-in chains. It has some different presets to compensate for the same plug-in in different sample rates such as 96kHz or 192kHz and includes delay compensation presets for the components of the Waves Masters bundle.

If you adjust DLA and you need more delay you can hot switch between DLA and DLA Plus will update with the settings that were in the DLA plug-in to which you can now add further delay.

L1-DLA, C1-DLA and UltraPitch–DLA

Waves DLA version 3.5 provides 3 fixed length DLA components to compensate for some of our Gold bundle plug-ins –

L1-DLA

Delays the signal by 64 samples to compensate for the lookahead in **L1UltraMaximizer** as well as **Renaissance Compressor**, **Renaissance VOX** and **L2UltraMaximizer**.

C1-DLA

Delays the signal by 340 samples to compensate for the lookahead in the **C1 comp/sidechain** and **C1 Compressor/gate.** Other C1 components C1 compressor and C1 gate do not introduce delay and therefor require no compensation.

UltraPitch-DLA

Delays the signal by 8240 samples to compensate for the delay of any UltraPitch component.

DELAY AND CROSS FEED

The **DLA-X** process family is based on short time stereo cross feed delays (not an echo effect). DLA-X is the basic effect; DLA-XL controls the amount of cross feed separately for the high and low frequencies, and DLA-XLB has an optional longer delay of low frequencies. While DLA-X processors can be useful used on mono input sources, it is most effective on stereo inputs, and especially when used in cascade with either PS-Spread or PS-Split can give spectacular and dramatic results.

DLA-X
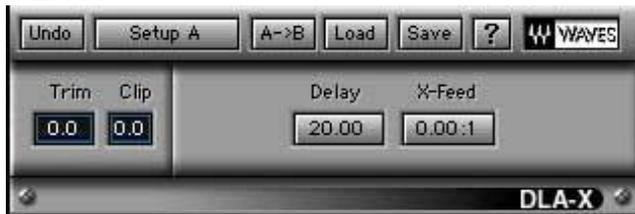
The basic Delay and Cross feed plug-in. It has the following controls:
Delay 0.50 – 20.00ms. Determines the delay until the signal will be fed back and mixed with the direct signal.
X-Feed 0.00:1 – 1.00:1. Determines the amount of cross feed between the left and right channels.
Trim is a gain control allowing to pad the input 0 - -6dBfs.
Clip is just a counter showing you how many clipped samples pass through the plug-in. To avoid clipping use the Trim control.

DLA-XL

This Component extends the DLA-X with a frequency domain crossover allowing a separate Cross-feed ratio for frequencies above and below the crossover.
On top of the DLA-X controls It has the following controls:
X-Feed LF ratio 0.00:1 – 1.00:1. Determines the amount of cross feed between the left and right channels for frequencies below the crossover. This is a ratio of the overall cross-feed set by the X-Feed control.
Freq. 32 – 16384Hz Sets the crossover frequency.

DLA-XLB

This component is just like the DLA-XL with the addition of a Bass delay On/Off control. This control adds further delay to the low frequencies.

DLA-X family and PS22.

The DLA-X and PS processes complement each other. When used on mono input sources DLA-X tends to produce a comb-filter coloration side effect as a result of the interaction between the delayed and original sound. On the other hand, PS-Split (and for a lesser extent PS-Spread) will split the spectrum of a central sound so that distinct frequency bands will exist only in one of the two stereo channels, this has a different kind of coloration side effect.

When DLA-X and PS plug-ins are used together, the DLA-X cross-feeds the missing frequency bands from one channel to the other, but since each channel has different frequency bands, the interaction between the delayed and original signal is avoided. A similar, but more complex effect takes place on stereo input. Note that following PS-Split by a stereo compatible reverb will achieve similar results, so using DLA-X is not needed in this case.

PS-Split is the tool to use when you wish to split input mono sounds into two almost completely separate stereo positions, e.g. for a dramatic left-right split. It is capable of extreme and dramatic stereo separation effects. Best results are normally achieved when used in conjunction with one of the DLA-X plug-ins, but it can also be used either on its own or with a reverb effects unit.
All three effects are fully user-adjustable from zero effect up to a high degree of effect — as much or as little reprocessing of stereo effect as you want or need. The quality as well as amount of the stereo effect is also fully under user control. The PS22-Spread component has the basic set of controls common to all 3 PS components.