DAHLIA

TAPE DELAY

User Manual

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Contents

1 Overview

Dahlia is a stereo tape delay audio unit with analog-modelled wow, flutter, and tape head frequency response. It runs as an AUv3 audio unit plugin on macOS and iOS.

Key features:

- Four delay time modes: free milliseconds, sync, dotted, and triplet
- Independent left/right delay times via Spread
- Ping-pong stereo mode with adjustable stereo width
- Tape wow and flutter modulation with Perlin noise oscillators
- Feedback path with tape EQ and head response filtering
- Drift-compensated delay lines for stable long delays

2 Installation

2.1 macOS

1. Open the Dahlia Tape Delay application
2. The audio unit extension registers automatically with the system
3. Open your DAW and scan for new audio units
4. Dahlia appears under the *Horse Parade* manufacturer name

2.2 iOS / iPadOS

1. Install Dahlia Tape Delay from the App Store
2. Open Settings → Audio Units to verify it is enabled
3. The plugin appears in compatible hosts such as GarageBand or AUM

3 Parameters

3.1 Delay Time

The primary delay time control. Four modes are available:

ms — Free-running delay time from 30 ms to 4000 ms.

sync — Locks to the host tempo. Sixteen grid positions from shortest to longest: 1/64, 1/32, 1/16, 1/8, 3/16, 1/4, 5/16, 3/8, 7/16, 1/2, 5/8, 7/8, 1/1, 2 beats,

3 beats, 4 beats. The compound divisions (3/16, 5/16, 3/8, 7/16, 5/8, 7/8) are useful for odd-time feels, shuffle patterns, and polyrhythmic displacement.

dotted — Same grid as sync, multiplied by 1.5× for dotted note values.

triplet — Same grid as sync, multiplied by 2/3 for triplet note values.

When *Spread* is engaged, an additional fader appears for the right channel delay time. Both channels share the same time mode.

3.2 Spread

Enables independent left and right delay times. When active, the main delay time fader controls the left channel while a second fader controls the right channel. This creates a wider, more complex stereo image.

3.3 Feedback

Controls the amount of delayed signal fed back into the delay input, from 0% to 95%. Higher values produce more repeats. The feedback path passes through the tape EQ and head response filter, so repeats progressively darken or thin depending on those settings.

3.4 Ping Pong

When enabled, the feedback signal crosses between channels: the left delay feeds back into the right, and vice versa. Each repeat alternates between left and right, creating a bouncing stereo effect.

3.5 Stereo Width

Adjusts the stereo spread of the output signal:

0% — Mono (left and right summed).

100% — Unity (unaltered stereo image).

200% — Exaggerated width (side signal doubled).

Applied after the wet/dry mix, so it does not affect the feedback loop.

3.6 Mix

Wet/dry crossfade from 0% (fully dry) to 100% (fully wet). Uses an equal-power crossfade curve.

3.7 Tone

3.7.1 Erosion

Controls the tape EQ character applied in the feedback path. Higher values increase the tape colouration on each repeat.

3.7.2 Head Response

Two parameters shape the feedback filter:

Frequency — Sets the corner frequency of the shelf filter (40 Hz to 21 kHz).

Gain — Controls both the filter type and cut amount. 0–50% applies a high shelf cut; 50–100% applies a low shelf cut. At 50% the filter is flat.

Flutter modulates the head response frequency for an authentic harmonic tremolo effect.

3.8 Modulation

3.8.1 Wow

Low-frequency pitch modulation simulating tape transport irregularities.

Depth — Modulation amount (0–100%).

Rate — Modulation speed (0.1–10 Hz).

Wow uses Perlin noise oscillators with unique seeds per channel for a natural, non-repetitive character.

3.8.2 Flutter

Higher-frequency modulation simulating capstan and motor irregularities.

Depth — Modulation amount (0–100%).

Rate — Modulation speed (0.1–20 Hz).

Flutter also modulates the head response filter frequency, with deeper modulation at higher filter frequencies.

4 Signal Flow

The incoming stereo signal is copied to a dry buffer for later mixing, then fed into two independent delay lines — one for the left channel and one for the right. Each delay line receives its input summed with the feedback signal from the previous processing cycle. Wow modulation is applied to the delay read position, creating gentle pitch variations on each tap.

The output of each delay line is passed through a tape EQ stage, which shapes the tonal character of the repeats according to the Erosion parameter. The signal then enters the head response filter — a state-variable filter configured as either a high shelf or low shelf depending on the Gain setting. Flutter modulation is applied to the filter's cutoff frequency at this stage, producing the harmonic tremolo characteristic of real tape machines.

After filtering, a 20 Hz high-pass removes any DC offset or sub-audible rumble that might accumulate in the feedback loop. The resulting signal is written

back into the feedback buffers, scaled by the Feedback amount, ready for the next processing cycle.

When Ping Pong is engaged, the feedback routing crosses channels: the left delay's output feeds back into the right delay's input, and vice versa, so each successive repeat alternates between speakers.

When Spread is active, the left and right delay lines operate at different delay times — the main time control sets the left channel while the dedicated right-channel fader sets the right.

Finally, the wet delay signal and the original dry signal are blended using an equal-power crossfade controlled by the Mix parameter. Stereo Width processing is applied to the combined output as the last stage, adjusting the mid/side balance without affecting the feedback loop.

5 Presets

Dahlia includes a preset browser for managing factory and user presets. Open it by tapping the Presets button in the plugin interface.

5.1 Browsing & Loading

The preset browser shows two sections: Factory presets (read-only, sorted alphabetically) and User presets (sorted by most recently modified). Tap any preset to load it immediately. The currently active preset is highlighted.

5.2 Saving a User Preset

Tap Save Current at the bottom of the preset browser to save the current parameter state as a new user preset. You will be prompted to enter a name.

5.3 Renaming & Deleting

Long-press (iOS) or right-click (macOS) on a user preset to access the context menu. From there you can rename the preset or delete it. Factory presets cannot be renamed or deleted.

5.4 Sharing & Preset Folder

Tap Open Folder to reveal the user preset directory:

- macOS: `~/Documents/presets/` opens in Finder.
- iOS: The directory is accessible via the Files app under the Dahlia Tape Delay app container.

Each preset is stored as a standalone JSON file. To share a preset, copy the `.json` file from the presets folder. To install a preset someone else has shared, drop the `.json` file into the same folder.

5.5 Factory Presets

Vintage Echo — Classic tape delay with moderate wow and flutter, warm feedback darkening. 400 ms, 65% feedback.

Slapback — Short, clean delay for rockabilly and doubling effects. 120 ms, 15% feedback, minimal modulation.

Ambient Wash — Long, heavily modulated delay for atmospheric pads. 1200 ms, 85% feedback, deep wow and flutter. Extra-wide stereo field.

Rhythmic Ping — Dotted eighth note ping pong delay synced to tempo. 1/8 dotted, 45% feedback, slightly widened stereo image.

Degraded Tape — Heavy tape character with extreme wow, flutter, and erosion. 600 ms, 70% feedback, aggressive tone shaping.

Dual Tap — Spread enabled with offset left/right times (375 ms L, 250 ms R) for rhythmic stereo echoes with a natural, off-grid feel.

Wide Pong — Ping pong at quarter-note sync with a very wide stereo field. 55% feedback, gentle tape colour.

Polyrhythm — Triplet mode with spread — 1/8 triplet left, 1/4 triplet right — for interlocking polyrhythmic patterns against straight beats.

Lo-Fi Spread — Warm, degraded tape character with heavy modulation and spread stereo times (800 ms L, 530 ms R). Vintage lo-fi texture.

Pristine — Clean, digital-style delay with no tape modulation or colouration. Synced half note, 35% feedback.

Dotted Spread — Dotted eighth left, quarter note right — a spread variation of the classic dotted delay trick, with light tape tone.

Runaway — Near-maximum feedback (95%) for self-oscillating drones and textural mayhem. 300 ms with moderate tape character.