Kerf Delay

A stereo delay whose repeats get out of the way of the source.

USER MANUAL · VERSION 1.0

kerfdelay.com

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Stereo delay with a dry-keyed dynamic EQ on the repeats · User manual, version 1.0 · kerfdelay.com

1 · What it is

Kerf Delay is a stereo delay whose repeats get out of the way of the source.

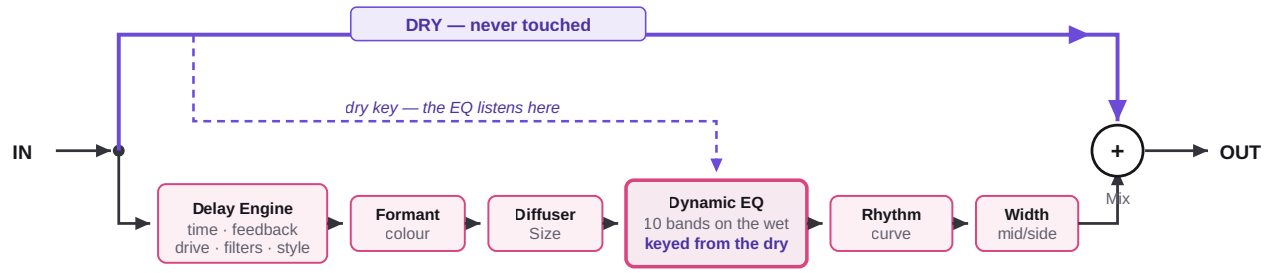
Two things make it different from the delays you already own. A **dynamic EQ sits on the echoes and is keyed from the dry signal** — when the vocal is singing the delay ducks, per frequency band, only where the two collide. When the vocal stops, the delay comes back up and fills the gap.

Second, a **drawn rhythm curve** shapes the delay's level across 1/16 to 8 bars, locked to host tempo, retriggerable from an audio transient or a MIDI note.

Everything in the plugin — filters, drive, character models, EQ, rhythm curve — touches the wet signal only. The dry passes through untouched, even at 100% mix.

> **That means Kerf Delay works as a direct insert on the channel.** No send, no return bus, no sidechain routing.

2 · Signal flow



Every processing block sits on the wet branch. The dry branch has none.

Figure 1 — Signal flow. The dry passes straight to the mix; the dynamic EQ processes the wet but listens to the dry.

3 · Installation

PLATFORM	INSTALLED TO
Windows	`C:\Program Files\Common Files\VST3\Kerf Delay.vst3`
macOS VST3	`/Library/Audio/Plug-Ins/VST3/Kerf Delay.vst3`
macOS AU	`/Library/Audio/Plug-Ins/Components/Kerf Delay.component`
Presets (Win)	`Documents\Kerf Delay\Presets`
Presets (Mac)	`~/Documents/Kerf Delay/Presets`

Run the installer, then rescan plugins in your DAW. FL Studio: Options → Manage plugins → Find installed plugins. Logic scans Audio Units on launch — if it doesn't appear, quit and relaunch.

The AU is a **MIDI-controlled effect** (type `aumf`), because it accepts MIDI for rhythm retriggering. In Logic that means it appears under MIDI-controlled effects, not the plain audio-effect list.

4 · Quick start

Sixty seconds to the thing the plugin is for.

1. Put Kerf Delay directly on a vocal channel — as an insert, not a send.
2. Set **Mix** to around 35% and **Feedback** to around 25%.
3. Switch to the **EQ** tab. Four grey band handles are waiting at 100 Hz, 800 Hz, 3 kHz and 10 kHz.
4. Drag the **3 kHz** handle down slightly. Dragging switches the band on.
5. Watch the small white tick on that band's vertical line — that's the live trigger level. Drag the **"T"** node just below where the tick reaches on the loudest words.
6. Set **Range** to about −8 dB.

Play the part. The delay steps out of the way in that range while the vocal is singing, and returns in the gaps. Turn the mix up further than you normally would — that's the point of it.

5 · Interface

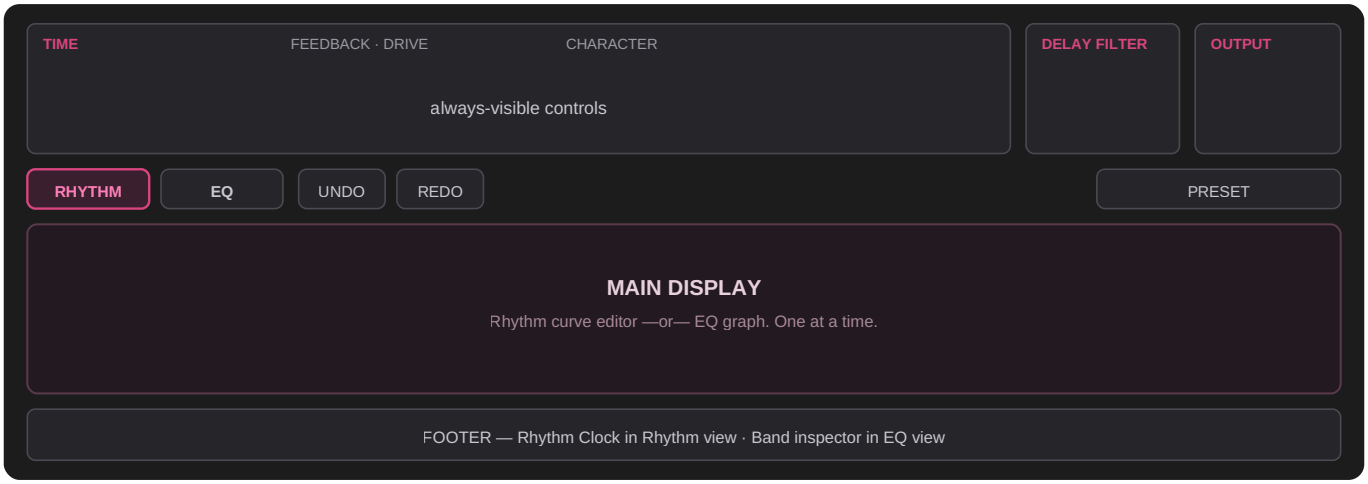


Figure 2 — Window layout. The main display and the footer both switch with the RHYTHM / EQ buttons.

UNDO and REDO sit beside the view buttons and cover everything — parameter moves, EQ edits, rhythm curve edits, preset loads. A full drag counts as one step.

Drag the window edge to resize; the size is saved with your session. The EQ view has its own **dB range** selector above the graph, which sets the vertical zoom (3 / 6 / 9 / 12 dB, default 6).

6 · Time

CONTROL	RANGE · DEFAULT	FUNCTION
Time Unit	`Notes / Ms · Notes`	Notes locks the delay to host tempo; Ms sets it in milliseconds and ignores tempo by design.
Channel	`Solo / Dual / Ping-Pong`	See below.
Delay	`1/1 … 1/16T · 1/8`	1/1, 1/2, 1/4, 1/4. , 1/4T, 1/8, 1/8T, 1/16, 1/16T. Dotted values end in a period, triplets in T.
Delay (Ms)	`1–2000 ms · 350 ms`	Dual mode gives one per channel.
Solo	One delay time, both channels together.	
Dual	Independent times for left and right. Different note values give a wider, less predictable pattern.	
Ping-Pong	Echoes alternate left, right, left, right. The input is summed to mono before it enters the bounce, which is what keeps the alternation clean. With Feedback at zero you get a single echo on the left, because the bounce is the feedback path.	

7 · Feedback & Drive

CONTROL	RANGE · DEFAULT	FUNCTION

Feedback	`0–98% · 17%`	How much of each repeat is fed back. Higher means a longer tail. **Feedback alone controls tail length** — nothing else in the plugin changes it.
Drive	`0–100% · 0%`	Anti-aliased saturation on the delay output. Applied once on the way out, not inside the feedback loop, so the texture is uniform across the whole tail and turning it up never makes the delay longer or louder. Gain-matched: a normal-level signal keeps its level, quiet material lifts slightly, peaks compress into harmonics.

8 · Character

CONTROL	RANGE · DEFAULT	FUNCTION
Rate	`0.01–12 Hz · 0.6 Hz`	Modulation of the delay line. Small depths give chorusing and movement; larger depths give obvious pitch wobble.
Depth	`0–12 ms · 1.0 ms`	
Formant	`0–100% · 0%`	Vocal-tract colour on the repeats. Makes a delay sit differently from the source rather than sounding like a copy of it.
Width	`0–200% · 100%`	Mid/side width of the repeats only. At 0% the repeats are mono; above 100% they spread wider than the source. The dry is never affected, so this stays mono-safe.
Size	`0–100% · 0%`	Diffusion. Smears the repeats toward reverb — thickens at low settings, blurs to a wash at high ones. Bypassed entirely at zero.

9 · Delay Filter

Low Cut	`20 Hz–20 kHz · 20 Hz`	Filters on the repeats. These sit **outside the feedback loop**: every repeat is filtered identically and the tail never darkens progressively as it decays. For a tail that gets darker with each pass, use the Tape or BBD character models — that behaviour belongs to them.
High Cut	`20 Hz–20 kHz · 20 kHz`	

10 · Output & Style

CONTROL	RANGE · DEFAULT	FUNCTION
Mix	`0–100% · 35%`	Dry/wet balance. Because the dry path is untouched, at 100% you hear only wet, and at 0% you hear the input exactly as it arrived.
Delay Gain	`-24 to +12 dB · 0`	Level of the delay signal after the rhythm curve and the EQ. Balances the delay without changing the mix ratio.
Output	`-24 to +12 dB · 0`	Final output trim.

STYLE	CHARACTER MODEL
Digital	Clean. Exact, no colouring at all.
Tape	Wow and flutter, high-frequency loss, a little rumble. Loses more with every pass, so long feedback settings drift somewhere interesting instead of just repeating.
BBD	Bucket-brigade. Bandwidth narrows on every pass with clock noise and harder clipping. Darker and grittier than Tape.
Lo-Fi	Sample-rate and bit-depth reduction per pass, band-limited after the crush so it degrades rather than just aliasing.

The three non-digital models degrade per repeat, which is separate from Drive. You can run a clean digital delay with heavy Drive, or a Tape delay with no Drive at all.

11 · Rhythm view

Click **RHYTHM**. The graph shows a volume curve running left to right across a musical period; the delay's level follows it. The vertical scale runs 0 dB at the top through –3, –6, –12 to –∞ at the bottom, with bar positions along the bottom edge.

> **The curve is locked to song position.** Start playback halfway through a bar and the curve picks up at that same point in its cycle. Move the playhead with the transport stopped and the curve follows it. With the transport parked, the phase free-runs so retriggering still works when you are playing live.

Editing the curve

- Click anywhere on the graph to add a point, then drag it into place.
- Drag a point to move it. The two end points are pinned horizontally but move freely up and down.
- Double-click a point to delete it. The two end points can't be deleted.
- **RESET** (bottom right) returns the curve to flat.
- The ← and → arrows beside RESET are undo and redo, sharing history with the main UNDO/REDO buttons.

Rhythm Clock (footer)

CONTROL	RANGE · DEFAULT	FUNCTION
Rate	`1/16 … 8 Bars · 4 Bars`	Length of one pass through the curve: 1/16, 1/8, 1/4, 1/2, 1 Bar, 2 Bars, 4 Bars, 8 Bars. Short rates give stutter and tremolo; long rates give slow swells across a section.
Retrigger	`on / off · off`	Off, the curve runs against the host timeline. On, it restarts from the beginning whenever a trigger arrives, so the shape lands where you want it rather than wherever the bar happens to fall. Triggers come from an audio transient in the input or a MIDI note sent to the plugin — MIDI routing to an effect varies by host.
Thresh	`-60 to 0 dB · -28 dB`	Input level at which a transient counts as a trigger. Lower triggers more easily. Two triggers can never fall within 50 ms of each other.
Smooth	`1–200 ms · 16 ms`	Smoothing on the curve's output. Low values give hard, clicky gating; higher values round the transitions. If a steep curve is clicking, raise this.

12 · EQ view

Click **EQ**. This is the part of the plugin that does the thing nothing else does. The display shows two spectra — dry in violet, delay in pink — plus the EQ curve. The selector above the graph sets the vertical zoom.

Up to **ten bands** sit on the delay signal. Each can be static, like an ordinary EQ, or dynamic — watching the dry signal and moving when it crosses a threshold in that band's range.

> **The EQ processes the wet, but it listens to the dry.** That is what lets the delay duck out of the way of the source, in specific frequency ranges, with no sidechain routing.

Creating and deleting bands

Four band handles are placed on load at **100 Hz, 800 Hz, 3 kHz and 10 kHz** — low, mid, high, treble. They are drawn dimmed and process nothing until you use one.

- **Drag** a dimmed handle to switch that band on.
- **Double-click empty space** to create a band there. Clicking near the far left or far right creates a cut; anywhere else creates a bell at the clicked gain.
- **Double-click a node** to delete that band. Deleted bands stay gone.
- Click a node to select the band and open its inspector in the footer.

Mouse shortcuts

ACTION	BELL / SHELF	LOW CUT / HIGH CUT
Drag node horizontally	Frequency	Frequency
Drag node vertically	Gain	Q — corner resonance
Scroll wheel over node	Q	Slope (steps through the values)
Double-click node	Delete band	Delete band
Double-click empty space	Create a band at that position	

Band inspector (footer)

CONTROL	RANGE · DEFAULT	FUNCTION
On/off	—	Bypasses the band without deleting it.
Type	`5 shapes · Bell`	Bell, Low Shelf, High Shelf, Low Cut, High Cut.
Slope	`6–96 dB/oct · 12`	6, 12, 18, 24, 36, 48, 72, 96. **Applies to every shape.** On a cut it sets the Butterworth order. On a bell or shelf it steepens the sides into near-vertical walls with a flat plateau between, while Q keeps setting the width. The passband stays flat at 0 dB at every slope.
Gain	`-18 to +18 dB · 0`	The band's static EQ move. Not shown for cuts.
Q	`0.3–12 · 1.0`	Bandwidth for bells and shelves. For cuts, Q sets corner resonance: 1.0 is flat (textbook Butterworth), higher adds a resonant peak, lower damps it. No effect on a 6 dB/oct cut, which is first-order.
Thresh	`-60 to +12 dB · -34`	The dry level at which this band starts to move. The detector is band-limited, so it reads below the broadband level of the source — use the live tick on the band's line to place it.
Range	`-24 to +24 dB · -5`	How far it moves and in which direction. Negative ducks (the usual case); positive lifts the band when the dry is loud. Full Range is reached about 9 dB above the threshold, with a soft knee that eases in just below it. Set to 0 and the band is a static EQ.
Attack	`0.5–100 ms · 8 ms`	How fast the band responds and recovers. **Global** — shared by all bands.
Release	`5–800 ms · 120 ms`	

13 · The three nodes

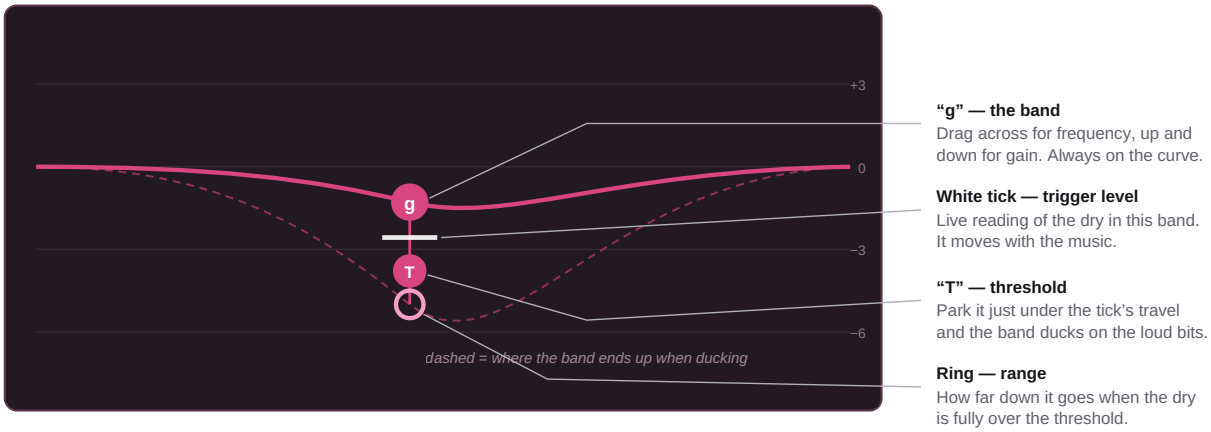


Figure 3 — A dynamic band. Cut bands show only the “g” node, because a cut has no gain and doesn't duck.

14 · Presets

The **PRESET** menu at the top right holds the factory bank and your own presets. **Save preset…** at the bottom saves current settings — including the rhythm curve — to the presets folder.

User presets are saved as `.kerf` files. They are plain files in a folder, so you can back them up, share them, or drop someone else's in. Files from earlier builds with the `.edp14` extension are still read.

15 · Technique

Start with the mix higher than feels right

The whole point of the dynamic EQ is that you can run more delay than usual. Set the mix the way you would with an ordinary delay and you're leaving the feature unused.

One band usually does it on a vocal

Find where the vocal's energy sits — often 1–3 kHz — put a band there with a range around −6 to −10 dB, and leave the low end and air alone. Ducking the whole delay is what a return compressor already does; ducking one range is what this is for.

Use the trigger tick, not guesswork

The detector is band-limited, so it reads well below the broadband level of the source. The white tick on each band's line shows exactly what that band is hearing. Park the threshold just under its travel on the loudest passage.

Watch the two spectra

The violet dry trace and the pink delay trace show exactly where they're colliding. Put your bands where the two overlap.

Use Attack and Release like a compressor

Fast attack with moderate release gets out of the way of consonants. Slower attack lets transients through before the duck happens.

Steep bells for surgical ducking

Raise a bell's Slope and its sides become walls with a flat bottom. Useful when you want the delay pulled down in one narrow band and completely untouched either side.

For rhythmic effects, start at 1/8 or 1/4

Draw a curve that dips on the beat and the delay ducks the kick with no sidechain. Turn Retrigger on and set the threshold so the kick itself restarts the shape.

Long feedback plus Tape or BBD

Those models degrade with every pass, so a long tail gradually becomes something other than the source. This is where the interesting drift lives.

16 · Specifications

Formats	VST3, AU (`aumf`)	**EQ bands**	10, bell / shelf / cut, per-band dynamics
Windows	10 or later, 64-bit	**Slopes**	6 to 96 dB/oct, all shapes
macOS	11 or later, universal	**Rhythm curve**	1/16 to 8 bars, audio or MIDI retrigger
Channels	Mono and stereo	**Character**	Digital, Tape, BBD, Lo-Fi
Latency	Zero	**Presets**	`.kerf` in Documents/Kerf Delay/Presets
Sample rates	Up to 192 kHz	**Licensing**	No iLok, no dongle, no account
Delay time	1–2000 ms, or 1/1 to 1/16 incl. dotted and triplet	**Feedback**	0–98%

17 · Troubleshooting

SYMPTOM	FIX
Doesn't appear in my DAW	Rescan plugin folders. FL Studio: Options → Manage plugins → Find installed plugins. Logic: quit and relaunch — and look under **MIDI-controlled effects**, not the audio-effect list. Reaper: Preferences → Plug-ins → VST → Re-scan.
Can't hear the delay	Check Mix isn't at 0%, and that Delay Gain and Output aren't turned down. If the rhythm curve is drawn low across the whole bar, the curve is turning the delay down — press RESET on the rhythm graph.
Delay isn't in time	Time Unit must be set to Notes for tempo sync. In Ms mode the delay ignores host tempo by design.
Ping-Pong sounds mono	Expected on the input side — Ping-Pong sums the input to mono before the bounce so the alternation stays clean. The output alternates left and right. To preserve the source's stereo image, use Dual mode.
Rhythm curve is clicking	Raise Smooth. Steep curve shapes need more smoothing.
Retrigger fires too often	Raise Thresh. It gates both the level and the transient detector, so raising it reduces triggers across the board. Two triggers can never land within 50 ms of each other.
Retrigger does nothing	Check it's switched on — it's off by default. Then lower Thresh. For MIDI, confirm your DAW is actually routing MIDI to the plugin, which usually needs specific setup on an effect.
A band isn't ducking	Dynamic movement needs a Range other than zero — at 0 dB the band is a static EQ. Then check the white trigger tick on that band's line: if it never rises above the “T” node, lower the threshold. Cuts don't duck.
The EQ graph is empty	All four starter bands were deleted. Double-click anywhere on the graph to create a new one.
Presets disappeared	They live in `Documents\Kerf Delay\Presets` (Windows) or `~/Documents/Kerf Delay/Presets` (macOS). Uninstalling doesn't remove them.

18 · Support

Email **support@kerfdelay.com**. If you're reporting a problem, include your operating system, DAW and version, and the plugin format you're using.