

Rave Generation

HarmonEQ

Harmonic EQ



User Manual

Overview

HarmonEQ is a harmonic exciter plugin that adds musical harmonics and saturation to your audio. Unlike traditional equalizers that simply boost or cut frequencies, HarmonEQ creates perceived loudness and presence without significant peak level increase.

Features include dual-channel Stereo/Mid-Side processing, three harmonic EQ bands, per-band dynamics processing (expand, compress, transient shaping), progressive slope cut filters, oversampling for cleaner harmonics, and a unique De-Emphasis mode that isolates only the harmonic content.

Signal Flow

Input → In Gain → [LO | MID | HI Parallel Bands] → Sum → Lo/Hi Cut Filters → Dynamics → Output → Mix

Each band extracts its frequency content, applies harmonic generation, then sums back with the dry signal. The parallel architecture means bands interact musically rather than cascading.

Processing Modes

Stereo	Channel 1 controls both L and R channels identically (linked). Channel 2 is ignored. Use for standard stereo processing.
Mid-Side	Channel 1 processes the Mid (center) signal, Channel 2 processes the Side (stereo width) signal independently. Allows separate treatment of mono and stereo content.

Channel Controls

Each channel has identical controls. In Stereo mode, only Channel 1 is active. In Mid-Side mode, Channel 1 controls Mid and Channel 2 controls Side.

Input/Output

Input	Input gain before processing (-20 to +20 dB). Higher values drive the saturation harder for more harmonic content.
Output	Output gain after processing (-20 to +20 dB). Use to compensate for level changes.
In/Out	Channel bypass switch. When Off, the channel passes signal unprocessed.

Band Controls

Three parallel harmonic bands, each with frequency, level, and enable controls:

LO Band (Low Shelf)

LO Freq	Shelf frequency (20-420 Hz). Default: 100 Hz. Sets where the low-frequency saturation begins.
LO Level	Harmonic intensity (-10 to +10 dB). Positive values add warm bass harmonics, negative values reduce low-end content.
LO In	Enables/disables the LO band processing.

MID Band (Peaking EQ)

MID Freq	Center frequency (200-6200 Hz). Default: 1500 Hz. Wide Q provides musical presence adjustment.
MID Level	Harmonic intensity (-10 to +10 dB). The mid band generates progressively rising harmonics for exciter-style presence.
MID In	Enables/disables the MID band processing.

HI Band (High Shelf)

HI Freq	Shelf frequency (5-25 kHz). Default: 12 kHz. Controls the air and brilliance region.
HI Level	Harmonic intensity (-10 to +10 dB). Adds smooth saturation for air and shimmer without harshness.
HI In	Enables/disables the HI band processing.

Per-Band Saturation Types

Each band (LO, MID, HI) has a saturation type selector that determines the harmonic character. Click the type name below each band’s frequency knob to open the list:

MAIN	The signature HarmonEQ sound, with a different harmonic profile per band: mostly 2nd harmonic in LO, an even/odd mix in MID, soft and strongly 2nd in HI. Default for all bands.
TUBE	Valve-style soft clipping with even harmonics (2nd, 4th). Classic tube warmth, versatile across all bands.
SOLID	Transistor-style asymmetric clipping with odd harmonics (3rd). Adds midrange grit and edge.
TAPE	Magnetic tape-style saturation, third-harmonic led. Punchy, slightly compressed feel. Ideal for bass, kick drums, and LO band.
CLEAN	No saturation, pure EQ boost. Use when you want frequency shaping without harmonic coloration.

Each saturation type has its own tonal character and output level. Experiment with different combinations—for example, TAPE on LO for punchy bass, MAIN on MID for presence, and TUBE on HI for smooth air.

Cut Filters

Progressive slope filters that transitions as frequency evolves:

Lo Cut Freq	High-pass filter frequency (18-180 Hz). Removes sub-bass content.
Lo Cut In	Enables/disables the low cut filter.
Hi Cut Freq	Low-pass filter frequency (8-40 kHz). Removes high frequencies.
Hi Cut In	Enables/disables the high cut filter.

Dynamics

Three dynamics controls for subtle envelope shaping, applied post-EQ. Designed as finishing touches rather than heavy-handed processing. Each can be selectively applied to LO, MID, or HI frequency bands using the per-band toggles.

Expand	Widens dynamic range (0-100%). Louder parts get gently boosted while quiet parts stay untouched, increasing perceived liveliness. At 100% applies up to +3 dB on peaks.
Compress	Tightens dynamic range (0-100%). Gently reduces peaks above -12 dB threshold. At 100% reaches a 2.5:1 ratio for smooth, transparent leveling without pumping.
Transient	Reshapes attack character (-100 to +100%). Positive values enhance punch and transient snap, negative values soften attacks for a smoother feel. Uses dual-envelope detection to distinguish transients from sustained material. At full range applies up to ± 3 dB of transient shaping.
Dyn Lo / Mid / Hi	Per-band enable toggles for all three dynamics controls. When all are on, dynamics processing is applied broadband. Disable individual bands to apply dynamics selectively. For example, compress only the low end, or add transient snap only to the highs.

Global Controls

Mode	Selects processing mode: Stereo (linked L/R) or Mid-Side (independent M/S processing).
Mix	Wet/dry blend (0-100%). At 100% you hear only processed signal. Lower values blend in dry signal for parallel processing.
Quality	Oversampling factor. Normal (1x) for low CPU, Medium (2x) for cleaner harmonics, Best (4x) for maximum quality.
Scoop	Automatic scoop amount (0-100%). At 0% disabled, 50% (default) standard, 100% double depth. Reduces muddiness when boosting bands.
Clip 0dB	Soft-clipping followed by hard-limiting at 0dB, so the output cannot exceed digital full-scale. On by default, matching the hardware's output ceiling.
De-Emphasis	When enabled, subtracts the clean EQ boost component leaving ONLY the harmonic saturation. Creates a subtle harmonic enhancer effect.
x2	Doubles the internal intensity of all band levels for more harmonic content.

Quick Start

Subtle warmth: LO at +3-5 dB, 80-100 Hz. Adds bass presence without boom.

Vocal presence: MID at +4-6 dB, 2-4 kHz. Brings vocals forward with harmonic excitement.

Air and shimmer: HI at +3-5 dB, 10-15 kHz. Smooth high-frequency saturation for sparkle.

Parallel processing: Set Mix to 30-50%, drive Input higher. Blend harmonics with dry signal.

Harmonic-only mode: Enable De-Emphasis to hear only the added harmonics. Great for subtle enhancement.

Mid-Side mastering: Switch to M/S mode. Add warmth to Mid, add air to Side for width.

Clean mix protection: Enable Clip 0dB to prevent overs when driving hard.

Maximum quality: Set Quality to Best (4x) for final mixes. Higher CPU but cleaner harmonics.

Drum punch: Transient at +20-30%, enable only Dyn Mid and Dyn Hi. Adds snap to drums without muddying the low end.

Bus glue: Compress at 10-30% with all Dyn bands enabled. Gently levels peaks for cohesive mix bus processing.

Mastering channel strip: Combine harmonic EQ with subtle dynamics. Shape tone with the bands, add presence with Expand, tighten peaks with Compress, enhance punch with Transient. All in a single insert.

Technical Notes

- Oversampling uses Kaiser-windowed FIR filters for clean anti-aliasing.
- Latency is automatically compensated in Quality modes Medium (2x) and Best (4x).
- Mix control uses phase-aligned delay compensation for the dry signal.
- Dynamics processing is applied post-EQ, pre-output gain. All three dynamics controls (Expand, Compress, Transient) are intentionally scaled for subtle, musical results that complement the harmonic EQ character.

Support

For technical support, updates, and additional information:

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