BIG MAX ZERO

Low Latency Lookahead Limiter

User Manual

Version 1.0

Big Man Labs

1. Introduction

BIG MAX ZERO is a low latency, production-focused limiter. With latency as low as 0.5 ms, it was intentionally designed for artists, producers, and broadcast applications where monitoring latency is of utmost importance—all while delivering clean, loud sound.
Whether you're tracking with effects, running a live stream, or mixing in real-time, BIG MAX ZERO gives you professional limiting without the latency that can ruin your monitoring.

Key Features

- Extreme low latency with selectable modes: 0.5 ms, 1 ms, and 2 ms
- Four distinct limiter modes: LOUD, CLEAN, SMOOTH, and SAFE
- Program-dependent AUTO release for intelligent dynamics control
- Adjustable stereo linking for precise stereo image control
- Integrated LUFS and RMS loudness metering
- Real-time gain reduction visualization
- Adjustable ceiling with precision down to -0.01 dB
- 64-bit internal processing for maximum audio fidelity
- Cross-platform: Windows, macOS, and Linux

2. Interface Overview

Interface Sections

Header
Right click the header to reveal the about panel

Waveform Display

The top section features a real-time waveform display. The visual gain reduction meter shows the input signal (blue), gain reduction activity (pink/red), and output level.

Info Bar

Below the waveform, the LOOKAHEAD selector, loudness meter (LUFS-I, LUFS-M, or RMS), current gain reduction (GR), and maximum peak level (MAX). These provide essential metering information at a glance.

Main Controls

The lower section contains all primary controls: the INPUT gain knob, ATTACK, RELEASE, LINK, and CEILING knobs, along with the four limiter MODE buttons and the CURVE slider.

3. Controls Reference

INPUT

The large INPUT knob controls the amount of gain applied to the incoming signal before limiting. This is the primary control for adjusting how hard you're driving the limiter.
Increasing the input gain pushes more signal above the ceiling threshold, resulting in more limiting and a louder perceived output. The current input gain value is displayed below the knob in dB.
Range: 0 dB to +24 dB

LOOKAHEAD

The LOOKAHEAD control sets how far ahead the limiter examines the incoming audio to anticipate peaks. This allows the limiter to begin gain reduction before a transient occurs, resulting in smoother, more transparent limiting.
Shorter lookahead times preserve more transient punch but may introduce slight distortion on extreme peaks. Longer times provide smoother, cleaner limiting but may soften transients. The lookahead setting also determines the plugin's latency.
Available values: 0.5 ms, 1 ms, 2 ms

ATTACK

The ATTACK knob works differently than you may be accustomed to in traditional compressors. Higher values allow more perceived transient punch through, while lower values clamp down on transients more aggressively for tighter control.
Think of it as a "punch" control—turn it up for more impact, turn it down for more control.
Range: 0.1 ms to 100 ms

Note: *The ATTACK knob is bypassed in SAFE mode.*

RELEASE

The RELEASE knob controls how quickly the limiter returns to unity gain after a peak has passed. Shorter release times recover quickly but may cause pumping artifacts on sustained loud material. Longer release times are smoother but may reduce overall loudness.
When AUTO mode is engaged (indicated by the AUTO button lighting up), the release time becomes program-dependent, with your RELEASE knob value setting a center point from which the auto algorithm modulates. This allows intelligent adjustment based on the incoming audio characteristics while still giving you control over the general release behavior.
Range: 10 ms to 1000 ms
AUTO: ON/OFF toggle for program-dependent release

LINK

The LINK control determines how the limiter processes stereo information. At 100% link, both channels are limited identically, preserving the stereo image. At lower percentages, channels are processed more independently. For mastering applications, 100% linking is typically recommended to maintain stereo coherence. Lower link values can be useful for individual tracks or creative effects where some stereo movement is acceptable.
Range: 0% (independent) to 100% (fully linked)

CEILING

The CEILING knob sets the maximum output level that the limiter will allow. This is your "brick wall"—no signal will exceed this level. For most mastering applications, a ceiling of -0.1 dB to -1.0 dB is recommended to allow headroom for inter-sample peaks and codec conversion.
Range: -12.0 dB to 0.0 dB

CURVE

The CURVE slider adjusts the shape of the gain reduction envelope. Values to the left produce a faster, more aggressive curve that clamps down quickly and releases quickly. Values to the right produce a slower, smoother curve that eases into and out of gain reduction more gradually. Use faster curves for punchy, upfront material. Use slower curves for smoother, more transparent limiting.

4. Limiter Modes

BIG MAX ZERO features four distinct limiter modes, each optimized for different use cases and sonic characteristics. Select the mode that best matches your material and goals.

LOUD

The LOUD mode is designed for maximum loudness and impact. It employs aggressive gain reduction with fast attack characteristics to catch peaks hard and push the perceived volume as high as possible.

CLEAN

CLEAN mode prioritizes transparency and minimal coloration. It uses gentler gain reduction curves and optimized release behavior to limit the signal while preserving the original tonal character as much as possible.

SMOOTH

SMOOTH mode is optimized for sustain and glue. It uses specifically crafted attack and release behavior to create a cohesive, "glued together" sound that works especially well on full mixes and bus applications.

SAFE

SAFE mode prioritizes absolute peak control with zero distortion. It uses conservative limiting parameters to ensure that no audible artifacts are introduced under any circumstances. The trade-off is slightly less maximum loudness compared to other modes.
In SAFE mode, the ATTACK knob is bypassed. Release characteristics are controlled only by the RELEASE knob, AUTO button, and CURVE slider.

5. Metering

Waveform Display

The real-time waveform display at the top of the interface shows the incoming audio signal along with gain reduction activity. Blue areas represent the input signal level, while pink areas indicate where limiting is occurring and how much gain is being reduced.
This visualization helps you understand exactly when and how hard the limiter is working, making it easy to identify problematic peaks or adjust your settings for optimal results.

Gain Reduction (GR)

The GR readout shows the current amount of gain reduction being applied in real-time. This value updates continuously as audio passes through the limiter. For most mastering applications, aim for 2–6 dB of peak gain reduction. Going beyond 8–10 dB may introduce audible artifacts.

Maximum Peak (MAX)

The MAX display shows the highest peak gain reduction that has occurred in the last 2 seconds. This helps you understand the most extreme limiting moments in your material.

Loudness Metering

The dropdown selector lets you choose between three different metering modes:

- **LUFS-I (Integrated):** Shows the average loudness over the entire playback duration. This is the standard for streaming platform loudness targets.
- **LUFS-M (Momentary):** Shows the loudness over a short window (400 ms), giving you a responsive view of the current loudness level.
- **RMS:** Shows the root-mean-square level, a traditional measure of average signal level.

6. Technical Specifications

Parameter	Specification
Plugin Formats	VST3, AU, CLAP
Supported Platforms	Windows 10+, macOS 10.13+, Linux
Processing	64-bit internal processing
Sample Rates	44.1 kHz to 96 kHz
Latency	0.5 ms, 1 ms, or 2 ms (user selectable)
Input Gain Range	0 dB to +24 dB
Ceiling Range	-12.0 dB to 0.0 dB
Attack Range	0.1 ms to 100 ms
Release Range	10 ms to 1000 ms
Lookahead Options	0.5 ms, 1 ms, 2 ms
Link Range	0% to 100%
Metering	LUFS-I, LUFS-M, RMS

Support

For additional support, bug reports, or feature requests, please contact Big Man Labs:

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