

# SlowWave — User Guide

## Slow Playback & Reverb Transformation Tool

**Version:** 1.0

**Website:** <https://hakanyurdakul.com/slowwave/>

**Copyright:** © 2026 Rockheyday (Hakan Yurdakul). All rights reserved.

**Format:** Standalone Application (Windows 64-bit)

**Audio Engine:** 96 kHz Ready / 32-bit Floating Point

**SlowWave** is a creative slow-playback and reverb transformation tool that lets you stretch audio between 0.5x and 1.5x while shaping ambience with Size and Mix controls. It includes LR peak meters, stereo correlation, and dual-layer FFT for detailed visual feedback.

---

## Key Features

- **Engine:** Slow-Playback & Reverb Transformation Processor
  - **Speed Control:** Variable 0.5x to 1.5x playback rate
  - **Reverb:** Size and Mix controls for spatial enhancement
  - **Processing:** Smooth real-time DSP with zero-latency architecture
  - **Utility Controls:** Bypass for instant A/B and Reset for restoring defaults
  - **Analyzer:** High-Resolution Real-Time Spectrum Display (Dual-Layer Dry/Wet FFT)
  - **FFT Engine:** 4096 / 8192-point resolution with Blackman window
  - **Response Model:** Internal 4.5 dB tilt and 350 ms ballistic decay
  - **Metering:** Dual-layer LR Peak meters (background = input, top ticks = output)
  - **Stereo Tool:** Correlation meter for phase monitoring
  - **Safety:** Post Gain trim control
  - **Playback:** Drag & Drop loading with Loop functionality
  - **Export:** Render processed audio to WAV (16-bit or 24-bit)
  - **Precision:** 32-bit floating-point processing
  - **Sample Rates:** 44.1–96 kHz support
- 

## Standalone Architecture

The standalone architecture enables instant loading, looping, and analysis of audio files without requiring a DAW. It's designed for fast, focused audio work—whether checking references, making precise adjustments, or performing detailed evaluations.

---

## CPU-Efficient Processing

Each tool is engineered with highly optimized DSP and lightweight graphics, ensuring stable, low-latency performance in both standalone and VST3 formats—even under heavy analysis or high sample rates.

---

## Analyzer and Windowing

### High-Resolution Spectrum Engine

This tool provides a high-resolution real-time spectrum display optimized for accurate dual-layer frequency visualization during playback.

### Blackman Windowing

An ultra-low spectral leakage Blackman window provides clean frequency separation and stable fundamentals, minimizing spectral smearing between adjacent bands.

### Precision Engine Support

The application operates using a high-resolution 32-bit floating-point processing engine, optimized for desktop performance and stable real-time operation.

---

## File Management and Export

### Flexible Loading

- **Load Button:** Browse files via your system dialog.
- **Drag & Drop:** Drag audio files directly onto the window for instant loading.

### Audio Export

It is intended for reference renders, comparison, and archiving.

- **Format:** WAV
- **Bit Depth:** Selectable 16-bit or 24-bit

---

## WAV Output Only

The application processes all audio in high-resolution 32-bit float, so exporting to compressed formats would cause generation loss and artifact buildup. To preserve full fidelity, the output is limited to uncompressed WAV with selectable 16-bit or 24-bit depth.

---

## Credits

**Development:** Application architecture, processing integration, analysis engine, and user interface design by Hakan Yurdakul. DSP implementations use JUCE framework components.

**Framework:** Developed using the JUCE framework.

**Typography:** Open Sans (SIL Open Font License 1.1). Copyright © The Open Sans Project Authors.

**Trademarks:** VST is a trademark of Steinberg Media Technologies GmbH.

---

## Installation & First Launch (Windows)

**SlowWave** is a portable standalone application. No installation is required.

1. Download and unzip the file.
2. Double-click **SlowWave.exe** to launch the application.

**Note:** On the first launch, Windows may display a “**Windows protected your PC**” message. This occurs because the application is not yet code-signed by Microsoft.

### To continue:

1. Click **More info**
2. Click **Run anyway**

*The application does not install background services or modify system files.*