Krunx-Q — User Guide

High Precision Bitcrusher

Version: 1.0
Website: rockheyday.com
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Formats: Standalone Application (Windows 64-bit), VST3 (Windows)
Audio Engine: 96 kHz Ready / 32-bit Floating Point

Krunx-Q is a high-precision bitcrusher and sample rate reducer built around a dual-layer FFT analysis engine that monitors both input and output signals in real time. Instead of treating digital degradation as a simple destructive effect, Krunx-Q allows users to visualize the specific spectral artifacts and aliasing generated by the processing — making it easier to sculpt digital noise, manage high-frequency content, and dial in vintage character with surgical accuracy.

The processor features integer-stepped bit depth controls, independent rate division, and up to 8x oversampling, providing a modern, controlled approach to lo-fi audio. Krunx-Q is available as both a Standalone application and a VST3 plugin.

Key Features

- **Engine:** High-Precision Digital Bitcrusher with resolution-accurate quantization logic
- **Bit Depth Control:** Stepped integer controls from **24-bit down to 2-bit**
- **Rate Reduction:** Independent sample-rate reduction stage for controlled digital aliasing
- **Oversampling:** Selectable 1x, 2x, 4x, or 8x real-time oversampling for reduced aliasing
- **Analyzer:** Dual-Layer Input/Output FFT display for precise harmonic monitoring
- **Response Model:** Internal 4.5 dB tilt and 350 ms ballistic decay
- **Gain Structure:**
    - Drive: 0 dB to +24 dB   (Pre-processing)
    - Output : -24 dB to +24 dB   (Post-processing)
- **Metering:** Dual-layer LR Peak meters (background = input, foreground = output)
- **Precision:** 32-bit floating-point internal processing
- **Sample Rates:** 44.1 - 96 kHz (Standalone), Host-Dependent in VST3

Standalone-Only Features

- **Playback:** Drag & Drop loading with Loop functionality
- **Export:** Render processed audio to WAV (16-bit or 24-bit)

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 for reference checking, harmonic inspection, or precision adjustments.

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.

Standalone 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)

Krunx-Q standalone version is a portable application. No installation is required.
1. Download and unzip the file.
2. Double-click **Krunx-Q.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.

VST3 Plugin
1. Copy the file " **Krunx-Q.vst3**" to the standard VST3 folder on your computer:
   C:\Program Files\Common Files\VST3\
2. Once copied, restart your **DAW** or rescan your plugins.