Rave Generation

PRESENTS

SONIC SURGE 2

USER MANUAL

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1. Introduction

Sonic Surge 2 is an advanced multiband dynamics processor that combines optical compression modeling with modern enhancement features for contemporary music production. Building on the success of the original Sonic Surge, this second generation brings 3-band processing with precise control over dynamics, harmonics, and spatial characteristics.

At its core, Sonic Surge 2 features stereo-linked optical compression that can operate in either **Multiband** or **Fullband** mode, inspired by classic compressors used in mastering studios. Beyond traditional compression, the plugin introduces modern enhancements including per-band tone curves, transient shaping, and low-frequency relaxation for transparent bass control.

Whether you're adding punch to EDM drops, controlling dynamics in complex mixes, enhancing individual instruments, or mastering full productions, Sonic Surge 2 provides the character of analog compression with the precision and flexibility required for modern production.

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2. Key Features

- **Dual-mode operation:** Switch between Multiband (3-band independent) and Fullband (unified) compression modes
- **3-band optical compression modeling:** Stereo-linked operation with musical attack/release characteristics
- **Modern 24dB/octave Linkwitz-Riley crossovers:** Precise frequency separation with adaptive spreading to prevent phase issues
- **Per-band tone curves:** Inflator-style waveshaping (positive values) or dynamic expansion (negative values) - active in both modes
- **Per-band drive controls:** Independent band gains active in both compression modes

- **Per-band mute switches:** Solo or remove individual frequency bands in any mode
- **Flexible compression controls:** Full control over threshold, ratio, attack, and release per band
- **Low-frequency relaxation:** High-pass filtering of the detector signal (0-1000Hz)
- **Mono maker:** M/S processing to collapse low frequencies to mono (0-1000Hz)
- **Dynamic Depth:** Transient enhancement with soft limiting (0-100%)
- **Harmonic Drive:** Tape-like saturation modeling
- **Smart Clip 0dB:** Dual-stage soft/hard clipping at 0dB
- **Listen Mode:** Monitor only the processed portion of the signal
- **Tone Curve Mode switching:** Place tone curves before (Pre-Comp) or after (Post-Comp) compression for different sonic characteristics
- **Visual feedback:** Real-time gain reduction meters and LED indicators

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3. Quick Start

1. Insert Sonic Surge 2 on your desired track, bus, or master channel
2. Enable the effect using the **"Effect In"** switch
3. Set input level with **"Influx Level"** for optimal signal level into processing
4. Choose mode: Select between **Multiband** or **Fullband** in "Comp Mode"
5. Adjust band drives: Use **Lo/Mid/Hi Band Drive** controls to balance frequency content
6. Set crossover points: Adjust **X-Over Low** (60-300Hz) and **X-Over High** (1200-6000Hz)
7. Enable compression if desired (Comp Enable) and adjust thresholds for each band (0dB = off)
8. Add enhancement: Try **Dynamic Depth** for punch, **Harmonic Drive** for warmth
9. Fine-tune tone curves: Use per-band **Tone Curve** controls for character
10. Set output level with **Outflux Level** and enable **Smart Clip 0dB** if maximizing loudness

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4. User Interface

4.1 Main Controls

Control	Range	Description
Influx Level	-12 to +12 dB	Input level control before all processing
X-Over Low	60-300 Hz	Low/Mid crossover frequency (active in both modes)
X-Over High	1200-6000 Hz	Mid/High crossover frequency (active in both modes)
Effect Amount	0-100%	Global wet/dry mix of all processing
Outflux Level	-12 to +12 dB	Final output level control
Effect In	off/on	Master bypass with smooth 5ms transition

4.2 Band Controls

Control	Range	Description
Lo Band Drive	-12 to +12 dB	Low band gain (post-compression, active in both modes)
Mid Band Drive	-12 to +12 dB	Mid band gain (post-compression, active in both modes)
Hi Band Drive	-12 to +12 dB	High band gain (post-compression, active in both modes)
Lo Tone Curve	-50 to +50%	Low band inflator (+) or expansion (-), active in both modes
Mid Tone Curve	-50 to +50%	Mid band inflator (+) or expansion (-), active in both modes
Hi Tone Curve	-50 to +50%	High band inflator (+) or expansion (-), active in both modes
Lo Mute	off/on	Mute low frequency band (active in both modes)
Mid Mute	off/on	Mute mid frequency band (active in both modes)
Hi Mute	off/on	Mute high frequency band (active in both modes)

4.3 Compression Section

Compression Mode Selection

Control	Options	Description
Comp Mode	Multiband/Fullband	Switch between 3-band independent and unified fullband compression
Comp Enable	off/on	Global compression bypass

Low Band Compression (Multiband mode only)

Control	Range	Default	Description
Lo Threshold	-60 to 0 dB	0 dB	Compression threshold (0 dB = off)
Lo Ratio	1.5:1 to 10:1	2.0:1	Compression ratio
Lo Attack	0.5-200 ms	30 ms	Attack time
Lo Release	50-2000 ms	200 ms	Release time

Mid Band Compression (Multiband mode only)

Control	Range	Default	Description
Mid Threshold	-60 to 0 dB	0 dB	Compression threshold (0 dB = off)
Mid Ratio	1.5:1 to 10:1	2.0:1	Compression ratio
Mid Attack	0.5-200 ms	30 ms	Attack time
Mid Release	50-2000 ms	200 ms	Release time

High Band Compression (Used for both Multiband and Fullband modes)

Control	Range	Default	Description
Hi Threshold	-60 to 0 dB	0 dB	Compression threshold (0 dB = off). In Fullband mode, controls unified compression
Hi Ratio	1.5:1 to 10:1	2.0:1	Compression ratio. In Fullband mode, sets fullband ratio
Hi Attack	0.5-200 ms	30 ms	Attack time. In Fullband mode, sets fullband attack
Hi Release	50-2000 ms	200 ms	Release time. In Fullband mode, sets fullband release

Compression Features

Control	Range	Description
Comp Lo Relax	0-1000 Hz	High-pass filter for detector signal (0 = off)

4.4 Enhancement Controls

Control	Range	Description
Dynamic Depth	0-100%	Transient enhancement amount with soft limiting
Harmonic Drive	0-100%	Tape saturation intensity
Mono Maker	0-1000 Hz	Frequency below which signal is summed to mono (0 = off)
Smart Clip 0dB	off/on	Dual-stage soft/hard clipping at 0dB
Listen Mode	off/on	Monitor only the processed portion
Tone Curve Mode	Post-Comp/Pre-Comp	Position tone curves before (Pre-Comp) or after (Post-Comp) compression

5. Signal Flow & Processing

Complete Signal Path

Multiband Mode: Input → Influx Level → 3-Band Crossover → Per-Band Compression → Per-Band Processing → Band Recombination → Mono Maker → Outflux Level → Smart Clip → Output

Fullband Mode: Input → Influx Level → 3-Band Crossover → Fullband Compression (applied proportionally) → Per-Band Processing → Band Recombination → Mono Maker → Outflux Level → Smart Clip → Output

Detailed Processing Chain

3-Band TPT Crossover (Active in Both Modes)

- 4th-order (24dB/octave) phase-coherent Linkwitz-Riley filters
- Serial topology: Input splits to Low and (Mid+High), then (Mid+High) splits to Mid and High
- Provides precise band separation for both compression modes and tone shaping

Per-Band Processing (Both Modes)

For each frequency band:

1. Tone Curve (if Pre-Comp Mode)
2. Compression (independent in Multiband, proportional in Fullband)
3. Band Drive Gain (post-compression)
4. Transient Shaping (Dynamic Depth)
5. Harmonic Saturation
6. Tone Curve (if Post-Comp Mode)
7. Soft Clipping (if Smart Clip enabled)
8. Band Mute

Fullband Mode Specifics

- Compression is applied to the **summed signal** using Hi band parameters
- The gain reduction is then **distributed proportionally** to each band
- All band processing (drives, curves, mutes) remains **fully active**
- Maintains spectral balance while applying unified dynamics

Stereo Processing

- Stereo-linked compression: One detector per band controls both L+R channels
- Maintains stereo image while controlling dynamics
- M/S processing available via Mono Maker feature

Low-Frequency Relaxation

When Comp Lo Relax is set above 0Hz, the compression detector signal is high-pass filtered at the specified frequency. This allows low frequencies to pass through uncompressed while still being processed by other effects, resulting in more transparent bass handling.

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6. Operating Modes

Multiband Mode

The default mode offering **independent compression** of three frequency bands:

- Each band has its own compression threshold, ratio, attack, and release
- Full crossover network active for band separation
- Allows frequency-specific dynamics control
- Best for surgical compression and problem frequency management
- All three GR meters show independent activity

Fullband Mode

Unified compression mode with **multiband tone shaping**:

- **Single compression stage** using Hi band parameters applied to full spectrum
- **Crossover remains active** for band-specific tone shaping and gain control
- **All band drives remain active** - adjust Lo/Mid/Hi Band Drive independently
- **All tone curves remain active** - shape each band's character separately
- **All mute switches remain active** - solo or remove individual bands
- Compression applied to sum, then scaled proportionally across bands
- Best for cohesive "glue" compression while maintaining tonal control
- Only High band GR meter shows activity (unified compression)

Important Note: In Fullband mode, the Lo and Mid compression parameters are ignored. Only the Hi band compression parameters control the unified compressor. However, all other band controls (drives, tone curves, mutes) remain fully functional, making this mode unique in offering unified dynamics with multiband tonal shaping.

7. Tips & Tricks

The "Sonic Surge" Sound

1. Start with **Lo Band Drive** at +3dB, **Mid Band Drive** at +1dB for warmth
2. Set **Dynamic Depth** to 25-40% for punch
3. Add 15-30% **Harmonic Drive** for analog character
4. Enable **Smart Clip 0dB** for transparent loudness
5. Use **Multiband** mode for precision, **Fullband** mode for glue, **Pre-Comp** mode for vintage character

Electronic Music Production

- **Kick Enhancement:** Lo Band Drive +4dB, Lo Attack 30ms, Lo Release 200ms
- **Drop Impact:** Dynamic Depth 60-80%, all bands compressed
- **Wide Mix:** Hi Band Drive +2dB, Harmonic Drive 20%
- **Sub Control:** Mono Maker at 120Hz for tight low end
- **Fullband Glue:** Switch to Fullband mode, 2:1 ratio, slow attack

Vocal Processing

- **Presence:** Mid Band Drive +2-4dB, Mid Tone Curve +20%
- **Air:** Hi Band Drive +1-2dB, Hi Tone Curve +30%
- **Warmth:** Lo Band Drive +1dB at 150Hz crossover
- **Control:** Use Fullband mode for natural compression with tonal shaping

Mastering Applications

- **Transparent Enhancement:** Effect Amount at 40-60%
- **Multiband Control:** Use Multiband mode with gentle ratios (2:1 to 3:1)
- **Low Freq Relax:** Set Comp Lo Relax to 80-120Hz for open bass
- **Tone Curves:** Subtle ±15% for character without artifacts
- **Final Glue:** Switch to Fullband for cohesion, use band drives for balance

Understanding Fullband Mode

Unlike traditional single-band compressors, Sonic Surge 2's Fullband mode maintains the multiband architecture for tone shaping while applying unified compression. This unique approach allows you to:

1. **Apply cohesive compression** while maintaining frequency-specific tonal control
2. **Use band drives** to balance the spectrum post-compression
3. **Apply different tone curves** to each band even with unified dynamics
4. **Create frequency-specific effects** with consistent compression character

The Tone Curve Mode switch changes how compression responds to your signal:

Post-Comp Mode (default):

- Clean, predictable compression followed by tonal enhancement
- Tone curves add harmonics to already-controlled dynamics
- Best for mastering and transparent processing
- Maintains original compression character
- Need to compress only certain frequency ranges

Pre-Comp Mode:

- Tone curves feed harmonics into the compressor detection circuit
- Creates more colored, vintage-style compression behavior
- The compressor "hears" and reacts to the added harmonics
- Expansion curves (negative values) create gate-like effects

Creative Uses:

- **Vintage Warmth:** Pre-Comp with +20-30% curves for analog-style compression
- **Dynamic Enhancement:** Pre-Comp with negative curves for expansion before compression
- **Punchy Drums:** Pre-Comp emphasizes transients that trigger the compressor

Mode Selection Guidelines

Use Multiband Mode when:

- You need independent compression per frequency band
- Dealing with specific problem frequencies
- Want maximum surgical control over dynamics
- Processing unbalanced material
- Need to compress only certain frequency ranges

Use Fullband Mode when:

- You want cohesive "glue" compression across the spectrum
- Need unified compression with multiband tonal shaping
- Want simplicity of single-threshold compression with advanced tone control
- Seeking classic compressor behavior with modern flexibility

Fullband Mode Techniques

- **Classic with a Twist:** Set compression for glue, then use band drives to rebalance
- **Tonal Compression:** Unified dynamics with per-band tone curves for character
- **Frequency Focus:** Compress everything equally, then boost/cut specific bands
- **Parallel Processing:** Use Effect Amount at 50% for natural parallel compression

Band Isolation Techniques

- Use **Mute switches** to solo bands for precise adjustment
- **Listen Mode** reveals exactly what's being added to the signal
- Adjust crossovers while listening to isolated bands
- Works in both Multiband and Fullband modes

Compression Strategies

- **Transparent:** Thresholds at -5 to -10dB, low ratios (1.5:1 to 2:1)
- **Punchy:** Medium attack (10-30ms), medium release (100-300ms)
- **Pumping:** Fast release times (50-100ms), higher ratios (4:1+)
- **Glue:** Fullband mode, slow attack (30-50ms), 2:1 to 4:1 ratios

Tone Curve Applications

- **Positive values (+):** Inflator-style harmonic enhancement, adds warmth and density
- **Negative values (-):** Dynamic expansion for openness and clarity
- **Per-band control:** Different curves for frequency-specific character
- **Fullband mode:** All three tone curves remain independently adjustable

8. Installation

System Requirements

- **Operating System:** macOS 10.13+ or Windows 10+
- **Processor:** Intel Core i5 or equivalent (Apple Silicon native support)
- **RAM:** 4 GB minimum (8 GB recommended)
- **Plugin Formats:** VST3, AU (macOS)
- **DAW:** Any VST3/AU compatible host

Support

For additional support, preset packs, and tutorials, visit **ravegeneration.io**

Sonic Surge 2 by Rave Generation - Modern multiband dynamics processing with the character of classic optical compression. Experience precise frequency control with the musical response that made analog gear legendary.