

CARBONATED AUDIO

# OPTO-TUBE

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Opto-tube vocal compressor with thermal-modeled photocell, push-pull tube saturation, and dual time-circuit.

**Version** 1.0.0

**Formats** VST3 · AU · AAX · Standalone

**Platforms** macOS Universal (10.13+) · Windows 10+

**Document** User Manual

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## 1 What Tonic Is

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Tonic is an opto-tube vocal compressor. It combines a thermal-modeled photocell, a push-pull tube saturation stage, and input/output transformer modeling — the classic five-knob layout that makes vocals sit forward without sounding squashed.

It is designed to feel forgiving on vocals first, but works on bass, drum bus, and full mix bus equally well. Set the threshold, choose how the time circuit behaves, and it does the rest.

## 2 Installation

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### macOS

1. Run `Tonic-v1.0.0-Installer.pkg`.
2. Approve the system prompt — the installer is signed and notarized.
3. Plug-ins are written to:
  - VST3 → `/Library/Audio/Plug-Ins/VST3/Tonic.vst3`
  - AU → `/Library/Audio/Plug-Ins/Components/Tonic.component`
  - AAX → `/Library/Application Support/Avid/Audio/Plug-Ins/Tonic.aaxplugin`
4. Rescan plug-ins in your DAW.

### Windows

1. Run `Tonic-v1.0.0-Setup.exe` as administrator.
2. Plug-ins land in the standard VST3 / AAX folders.
3. Rescan in your DAW.

## First Launch — Activation

On first instance, an activation panel appears.

- Enter the license key from your purchase email.
- Tonic generates a machine ID and contacts the activation server once.
- Up to **3 machines per license**. Switching machines later is fine; contact [mixedbysoda@gmail.com](mailto:mixedbysoda@gmail.com) if you hit the limit.
- Activation is one-time per machine — no online check after that.

The demo build runs without a key: 60 seconds of audio, then 10 seconds of mute, on repeat.

## 3 The Five Main Knobs

Knob	Range	What it does
<b>Threshold</b>	-60 dB → 0 dB	Where compression starts. Lower = more gain reduction.
<b>Ratio</b>	1:1 → 20:1	How hard it squeezes once over threshold. 2–4:1 for vocals, 6–10:1 for tracking control.
<b>Attack</b>	0.5 ms → 300 ms	How quickly it clamps. Slow attack lets transients through — that's where the vocal "breathe" comes from.
<b>Release</b>	50 ms → 10 s	How quickly the photocell relaxes. Program-dependent under the hood.
<b>Gain</b>	0 dB → +24 dB	Tube makeup. Above ~12 dB it starts to add harmonic warmth on top of level.

Knobs are continuous — no stepped detents. Right-click any knob to type a value, lock, link, or reset to default.

## 4 The Time-Mode Switch — FIX / MAN / FIX+MAN

This is the most important control on the plug-in after Threshold.

- **FIX** — automatic, program-dependent envelope. The release adapts to the source: faster on dense passages, slower on sustained notes. Set it and forget it. Best starting point for vocals.
- **MAN** — your Attack and Release knobs control the envelope directly. Use this when you want manual control of pumping, breathing, or aggressive snap.
- **FIX+MAN** — both modes blended. The automatic envelope is in charge, but your Attack and Release values nudge it. The "have your cake" mode.

In MAN and FIX+MAN modes, the Attack and Release knobs glow brighter to indicate they're active.

## 5 The QoL Strip

A discreet row of six modern controls below the main face. Beginners can ignore them entirely — defaults are sensible.

Control	Range	What it does
<b>Mix</b>	0 % → 100 %	Wet/dry blend. Below 100 % gives you parallel compression — punch without losing the dry signal.
<b>Stereo</b>	Stereo / Dual-Mono / M-S	How the two channels are processed. Stereo links them, Dual-Mono runs two independent compressors, M-S compresses Mid and Sides separately.
<b>SC HPF</b>	20 Hz → 500 Hz	Sidechain high-pass — stops bass from triggering compression. Crank to ~120 Hz on vocal busses or kicks. Auto-gain compensated.
<b>Drive</b>	0 → 10	Post-comp tube push. 0 = clean stock behavior. Above 3, it shifts from even-harmonic warmth toward odd-harmonic edge.
<b>OS</b>	1x / 2x / 4x	Oversampling on the gain cell. 2x is the default sweet spot. 4x for mastering. 1x saves CPU and is bit-transparent when no GR is happening.
<b>Ext SC</b>	Off / On	Routes a sidechain bus from your DAW into the detector instead of the input signal.

## 6 Meters

A single analog-style VU meter shows level. Above it, a **Meter Selector** chooses what's displayed:

- **INPUT** — incoming level before compression
- **GR** — gain reduction (the default; reads downward from 0)
- **OUTPUT** — post-compression, post-makeup level

The glass tumbler illustration around the meter is decorative and reflects bubble activity proportional to gain reduction. (Yes, it's there on purpose.)

## 7 Hidden Behavior — What Tonic Does on Its Own

You don't touch these — they're part of the sound:

1. **Photocell thermal memory** — release time depends on how long the cell has been illuminated. Long sustained gain reduction relaxes more slowly than short pumps. This is what makes opto-style compressors feel musical instead of mechanical.
2. **Program-dependent FIX envelope** — in FIX and FIX+MAN, the release tracks the input signal's density, not a fixed time constant.
3. **Tube harmonic balance shift** — at low Drive the tube stage produces mostly even harmonics (warmth). As Drive increases, odd harmonics rise (edge, presence).
4. **Sidechain auto-gain** — when you sweep SC HPF, the detector signal is level-compensated so your effective threshold stays put.
5. **True-peak safety brickwall** — a transparent -0.1 dBFS ceiling at the output, 4x oversampled. It only catches stray peaks; it does not compress musically.
6. **Selective oversampling** — only the gain cell oversamples. When the compressor isn't pulling gain, the signal path is bit-transparent.

## 8 Factory Presets

Preset	Use For	Key Settings
<b>Vocal Tonic</b>	Lead vocals, gentle and transparent	THR -18, R 4:1, A 15 ms, R 220 ms, G +3, FIX
<b>Bus Glue</b>	Vocal bus, slight cohesion	THR -12, R 2:1, A 30 ms, R 400 ms, FIX
<b>Heavy Pump</b>	EDM, modern pop vocals	THR -22, R 8:1, A 3 ms, R 1 s, MAN
<b>Slow &amp; Smooth</b>	Ballads, jazz vocals	THR -16, R 3:1, A 25 ms, R 650 ms, FIX+MAN
<b>Aggressive Snap</b>	Rap, attitude vocals	THR -20, R 6:1, A 1.5 ms, R 120 ms, MAN
<b>Drum Bus</b>	Glue + slight pump	THR -14, R 4:1, A 8 ms, R 180 ms, Dual-Mono, MAN
<b>Bass Tightener</b>	Bass guitar, sub	THR -15, R 5:1, A 12 ms, R 300 ms, M-S, MAN
<b>Mix Bus Polish</b>	2-bus, light touch	THR -10, R 1.8:1, A 40 ms, R 500 ms, FIX, 4x OS

User presets are saved to:

- macOS → `~/Library/Application Support/Carbonated Audio/Tonic/Presets/`
- Windows → `%APPDATA%\Carbonated Audio\Tonic\Presets\`

Files are portable `.tonicpreset` XML — share them by dropping into the same folder on another machine.

## 9 Practical Recipes

### Lead vocal, set-and-forget

Load **Vocal Tonic**. Adjust Threshold for 3–5 dB of gain reduction on loud syllables. Done.

### Aggressive rap vocal

Load **Aggressive Snap**. Push Drive to 2–3 for harmonic forwardness. SC HPF at 120 Hz so plosives don't pump.

### Parallel vocal punch

Load any vocal preset. Drop Mix to 50 %. Lower Threshold so the wet path is doing 8–10 dB of gain reduction. The dry path keeps the air; the wet path adds the punch.

### Mix bus glue

Load **Mix Bus Polish**. Aim for 1–2 dB of gain reduction on peaks only. OS at 4x. Stereo Mode = Stereo (linked).

### Mid/Side mastering trick

Load **Mix Bus Polish**. Switch Stereo Mode to **M-S**. Compress only what's appropriate — usually a touch on Mid, very little on Sides.

## Bass that won't pump

Load **Bass Tightener**. SC HPF up to 80–120 Hz so the kick fundamental doesn't cause the bass compressor to duck.

## 10 CPU & Latency

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- **1x OS** — zero added latency, lowest CPU.
- **2x OS** — ~0.3 ms latency, default.
- **4x OS** — ~0.6 ms latency, used on mix bus / mastering.

Tonic reports its latency to the host — your DAW will compensate automatically when delay compensation is enabled.

## 11 Activation & Licensing

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- One license = up to 3 machine activations.
- Re-running the installer on the same machine does not consume an activation.
- Moving machines: contact [mixedbysoda@gmail.com](mailto:mixedbysoda@gmail.com) and the slot is freed.
- License keys are HMAC-signed; the activation server validates and binds the key to your machine ID. After first activation, no online check is required.

Lost your key? Email [mixedbysoda@gmail.com](mailto:mixedbysoda@gmail.com) from the address you purchased with.

## 12 Troubleshooting

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### Plug-in doesn't show up after install.

Rescan plug-ins in your DAW. On macOS, AU validation can take a moment on first launch — let **auval** finish.

### Pro Tools rejects the AAX.

Tonic is PACE-wrapped. Run iLok License Manager and confirm the machine has been activated. If activation is good, restart Pro Tools.

### Activation fails with "Invalid license key".

Keys are 64 hex characters in eight groups of 8. Copy the key exactly from the email — including the hyphens. It's not case-sensitive but spaces or extra characters will reject.

### Activation fails with "Maximum activations reached (3/3)".

Email [mixedbysoda@gmail.com](mailto:mixedbysoda@gmail.com) and we'll free a slot.

### Demo cuts in and out.

That's the demo build. 60 seconds audio / 10 seconds mute. Buy the full version at <https://carbonatedaudio.com/tonic> to remove it.

## No sound through the plug-in.

Check the Bypass switch. Check Mix is above 0 %. Check input level — if the meter is reading silence, the issue is upstream.

## 13 Specifications

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- **Sample rates:** 44.1 / 48 / 88.2 / 96 / 176.4 / 192 kHz
- **Bit depth:** 32-bit float internal, 64-bit on bus
- **Oversampling:** Selective on the gain cell, 1× / 2× / 4×
- **Headroom:** -0.1 dBFS true-peak ceiling at output
- **Channel formats:** Mono / Stereo
- **Sidechain:** Internal or external (host-routed)
- **macOS:** Universal binary (Apple Silicon + Intel), deployment target 10.13
- **Windows:** 10 and later, 64-bit
- **DAWs tested:** Pro Tools, Logic, Ableton Live, Studio One, Reaper, Cubase, FL Studio, Bitwig

## 14 Support & Updates

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- Email — [mixedbysoda@gmail.com](mailto:mixedbysoda@gmail.com)
- Site — <https://carbonatedaudio.com/tonic>
- Updates — installer downloads from your purchase email's "Re-download" link always serve the latest version. Your existing license key continues to work.

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