VITRIC AUDIO · MUSE HUB EDITION

Plinth Subharmonic Synthesizer

User guide · version 0.2.0

What it is

A subharmonic synthesizer that shows its work: a filtered mono detector finds the fundamentals that are actually in your source, up to three voices generate a sub one octave below each one, phase-locked to it, and the screen draws both. Blend is a volume sum, the sub is mono and dead center, and there is no compressor, ducker or auto-makeup anywhere in the box. VST3, AU and AAX for Windows and macOS.

A subharmonic generator that is roughly in time with the source adds a beat against it, and one that guesses on noise adds a burble. Plinth does neither, and shows you that it does neither. Drift of the generated sub against an 80 Hz reference measures plus or minus 0.000 degrees over 60 seconds, against a bar of 5 degrees; when locked, correction is bounded at 10 degrees per cycle, so re-locks are inaudible. On pink noise the sub bus renders exact digital silence. On the octave-trap battery, a strong second harmonic over a weak fundamental, it produced zero flips.

The screen is the input spectrum. The bright line is the DETECT crossover, engraved 100 to 500 Hz and starting at 350: drag it, or turn the knob, to set the region Plinth hunts in. Markers show the located fundamentals and the brightest curve is the sub being generated right now, labeled with its own frequency. The LOCATED SUBHARMONICS row reads out what the detector found: a locked slot shows its frequency in Hz, READY marks a live generator slot and a dash marks a reserved one. Three generators run at once across six slots, each with its own mute. Six exact values sit along the top of the screen and follow the controls and the host; click one to type a percentage, a frequency or a dB value.

BLEND is the instrument: it sums the generated sub into your untouched dry signal, and all the way up the sub sits at level with the dry low band by volume. RESONANCE is a tuned bloom riding the generated fundamental; past half dial, gentle upper partials join it for small-speaker reach, supporting the fundamental rather than replacing it. OVERRIDE with its ENGAGE toggle pins the tracker to a chosen fundamental from 20 to 120 Hz for material that hunts. CLIP is an optional first-order ADAA soft clip on the summed output, measuring a worst non-harmonic spur of minus 104 dBFS on a clipped 35 Hz sine at full clip. OUTPUT trims plus or minus 12 dB. SOLO hears only what Plinth added, at its blended level, and POWER is a click-free true bypass.

Reported latency is 0 samples, always, the clip stage included. When a new note starts the sub fades in over the first confident cycles, about 7 cycles to 90 percent: that is the physics of identifying a 40 Hz fundamental, not plugin delay, and nothing is time-shifted. The sub bus is mono and dead center, so decorrelated stereo program yields bit-identical left and right contributions. 32 factory starting points sit under PRESETS, tagged by source. The whole engine costs 0.33 percent of one core at 48 kHz and a 128-sample block.

Plinth Subharmonic Synthesizer generates one octave down. The second octave is deliberately not in this version, and there is no compressor, ducker or auto-makeup anywhere in the signal path.

Built and used at a working recording studio. Support: support@vitricaudio.com

Key features

- Up to three generated subharmonic voices on one mono bus, dead center by construction
- Phase-locked to the source: plus or minus 0.000 degrees of drift over 60 seconds at 80 Hz
- Blend to 100 puts the sub at level with the dry low band by volume, not by compression
- Unpitched material renders exact digital silence on the sub bus: no burble, no guessing
- The display shows the fundamentals it found and the sub it made, live, with Hz readouts
- Zero reported latency, the optional first-order ADAA soft clip stage included

Working the screen

The spectrum is your input. The bright line is the DETECT crossover: drag it, or turn the DETECT knob, to set the region Plinth hunts in, 100 to 500 Hz, starting at 350. Markers show the located fundamentals and the brightest curve is the sub Plinth is generating right now. The LOCATED SUBHARMONICS chips light with the generated frequencies as they lock; click a chip to mute that generator slot. Three generators run at once across the six slots.

The six values along the top of the screen follow the controls and host changes. Click a value, or focus it and press Enter, to type an exact percentage, frequency or dB value. Enter commits, Escape cancels; invalid units or out-of-range values stay in the field with an error cue and leave the sound unchanged. The status row identifies AUTO TRACKING, MANUAL, SUB SOLO or POWER OFF, and the preset name follows the actual settings, showing Custom after any change.

Grab the DETECT line anywhere inside its hit band without a frequency jump. Hold Shift while dragging for ten times finer movement. The wheel and arrow keys move on the semitone grid; Shift uses ten-cent steps. Double-clicking the line resets it to 350 Hz. PRESETS selects the 32 factory starting points and [and] step to the previous or next one; presets never touch POWER, SOLO or OVERRIDE.

BLEND sums the generated sub into your untouched dry signal, and all the way up the sub sits at level with your dry low end. RESONANCE is a tuned bloom riding the generated fundamental. OVERRIDE with its ENGAGE toggle pins the tracker to a chosen fundamental, 20 to 120 Hz, for material that hunts. CLIP is a zero-latency soft clip on the summed output, 0 a true bypass and 100 full clipping. OUTPUT trims plus or minus 12 dB, SOLO hears only what Plinth added, and POWER is a click-free true bypass.

Typical uses

- **Kick drums.** A phase-locked sub under the kick's fundamental, at level with the low end by volume, with the clip stage catching the peaks when you want it to.
- **Bass guitar and synth bass.** The detector follows the played fundamental and the chips show exactly which note it locked to, so the added octave never argues with the part.
- **808s and sparse low end.** Blend brings the generated sub up to the dry low band by volume, with no compressor or ducker reshaping the groove underneath it.
- **Sound design.** Override pins the frequency by hand, Resonance shapes the voice, and the display keeps showing what the box is doing while you push it.

Full specification

- Filtered mono detection sidechain; the dry path is never processed by the detector
- Up to three generated subharmonic voices, one octave below each located fundamental
- One mono sub bus, dead center; decorrelated stereo program gives bit-identical L and R
- Phase lock measured at plus or minus 0.000 degrees of drift over 60 s against 80 Hz
- Correction bounded at 10 degrees per cycle when locked, so re-locks are inaudible
- Confidence smoothed for about 30 ms before a voice can open
- Octave hysteresis needs about 64 ms of persistent evidence: zero flips on the trap battery
- Unpitched material renders exact digital silence on the sub bus
- BLEND 0 to 100: a volume sum into the untouched dry signal
- At BLEND 100 the sub sits at level with the dry low band, by volume
- No compressor, ducker or auto-makeup anywhere in the box
- RESONANCE: tuned bloom on the generated fundamental, with gentle upper partials past half dial
- DETECT: 100 to 500 Hz, default 350 Hz, the centre of the detection region
- OVERRIDE: 20 to 120 Hz, default 55 Hz, with an ENGAGE toggle to pin the tracker
- CLIP: optional first-order ADAA soft clip, 0 is true bypass and 100 is full clipping
- Worst non-harmonic spur at full clip: minus 104 dBFS on a clipped 35 Hz sine
- OUTPUT: trim of plus or minus 12 dB
- SOLO: hear only what Plinth added, at its blended level
- POWER: click-free true bypass
- Reported latency: 0 samples, always, the clip stage included
- Sub onset is tracking physics, about 7 cycles to 90 percent, not plugin latency
- Display: input spectrum, located-fundamental markers and the generated sub drawn brightest

- LOCATED SUBHARMONICS: six slots, locked slots read Hz, READY marks a live generator slot
- Click a chip to mute that generator slot; loading a preset unmutes the chips
- Six exact value fields on the screen for percent, Hz and dB entry
- Status row identifies AUTO TRACKING, MANUAL, SUB SOLO or POWER OFF
- Drag the DETECT line anywhere in its hit band without a frequency jump
- Shift drags ten times finer; wheel and arrows move on the semitone grid, Shift in ten cents
- Double-click the DETECT line to reset it to 350 Hz
- 32 factory starting points under PRESETS, tagged by source, stepped with [and]
- Presets never touch POWER, SOLO or OVERRIDE
- CPU: 0.33 percent of one core at 48 kHz / 128, Release, full engine
- One octave down only; the second octave is deliberately not in this version
- VST3, AU and AAX, Windows and macOS

Installation on Muse Hub

Muse Hub installs and updates this edition for you, and purchase, refunds and uninstall are handled there too. Once installed the plugin opens and runs directly from the Hub, with no further steps inside the plugin. On Windows the plugin installs as VST3 and AAX. On macOS the installer places VST3, AU and AAX builds in the standard system plugin folders. If the plugin does not appear in a host, rescan plugins and confirm the host is 64-bit.

Requirements: Windows 10 or later (64-bit) or macOS 11 or later, Intel or Apple Silicon. Settings and presets are the same as the edition sold at vitricaudio.com, so projects open in either edition.

Frequently asked questions

Is the generated sub really in phase with the source?
Measured drift against an 80 Hz reference is plus or minus 0.000 degrees over 60 seconds, against a 5 degree bar. When locked, correction is bounded at 10 degrees per cycle, so re-locks are inaudible.

What happens on noise or unpitched material?
The sub bus renders exact digital silence on the pink-noise battery. No burble, no guessing. Confidence is smoothed for about 30 ms before a voice can open.

Will it flap octaves?
The octave-trap battery, a strong second harmonic over a weak fundamental, produced zero flips. Octave hysteresis needs about 64 ms of persistent evidence before it moves.

Is the sub stereo?
No. The sub is mono and dead center: decorrelated stereo program yields bit-identical left and right contributions.

Does it add latency?
No. Reported delay compensation is always 0, the clip stage included. Sub onset is tracking physics, about 7 cycles to 90 percent, not plugin latency.

Is there a compressor or ducker inside?

No. Blend is a volume sum. At Blend 100 the sub sits at level with the dry low band by volume, with no compressor, ducker or auto-makeup anywhere in the box.

How much CPU does it use?

0.33 percent of one core at 48 kHz and a 128-sample block, Release build, full engine.

Which formats and DAWs does Plinth Subharmonic Synthesizer support?

VST3, AU and AAX on Windows 10+ and macOS, Intel and Apple Silicon. That covers Pro Tools, Logic Pro, Ableton Live, Cubase, Studio One, FL Studio, REAPER and every other major host.

Support: support@vitricaudio.com · Product page: https://vitricaudio.com/plinth · Vitric Audio, Cleveland, Ohio. This guide describes Plinth Subharmonic Synthesizer 0.2.0 as distributed on Muse Hub.