



Arboreal Audio presents:

OmniAmp

The all-in-one amplifier



OmniAmp is a robust audio tool meant to be used on any type of sound source. With its full feature set, you can accomplish a broad range of mixing tasks in the same interface.

Its purpose is to open the doors to what an “amplifier” plugin can be—to push the limits of what’s possible in design and feature set.

Modes

Central to OmniAmp are its three modes:

I. Guitar



Four different, custom amp models.

- **GammaRay** is a classically-voiced guitar amp with a modest, clean-to-crunch default channel, and a more aggressive and bright Boost channel. Great for indie or moderate rock tones.
- **Sunbeam** is a cleaner amp with thick low-end and very clear upper mids. Works great for clean tones or mellower overdriven tones.
- **Moonbeam** is a darker amp with less headroom and heavier distortion, good for metal or heavier rock rhythm tones.
- **XRay** an aggressive, midrange-focused amp that bridges the gap between **GammaRay** and **Moonbeam**. Has a fair amount of distortion and cuts through quite well.

II. Bass



Three custom bass amp models:

- **Cobalt**: a modern-sounding, full-voiced bass amp that doesn't spare an ounce of low-end.
- **Emerald** a more modest, modern amp with more headroom than **Cobalt**.
- **Quartz** a vintage-sounding amp with a dampened low-end and punchier hi-mids.

III. Channel



Here, you can use OmniAmp like a channel strip. The tone controls are neutrally-voiced at 12 o'clock, and its saturation stages are bypassed at 0, so you're only doing the processing that you need.

Additionally, the filters change their response depending on the amount of gain applied, so deep cuts are more surgical, and low boosts are broader.

There are two modes:

- **Modern:** here the Preamp stage produces symmetric distortion, and the filters are a bit more precise in their rolloff. The Power Amp stage has a sharper knee but is cleaner below the saturation point.
- **Vintage:** the Preamp stage uses more tube-like asymmetric saturation, the filters are broader, and the Power Amp digs into the signal earlier but has a gentler overall knee.

Amp Controls

Overdrive

This is modelled after a classic distortion pedal (it's not the Tube Screamer, don't you have enough of those?) It's the MXR Distortion+!

Conveniently, the real-life pedal just has one knob to control the distortion, and an output volume knob, so we rolled those together into one knob for a quick and easy distortion pedal before the amp. At 0 this is fully bypassed.

Preamp and Boost

The preamp stage of the amp, or a series of triodes if you're using Channel mode. By default it will add a nice warmth and crunch in all modes, but by enabling **Boost** you can get some gnarly, tube-flavored distortion.

In Channel mode, this is bypassed at 0.

Auto Gain

Automatic gain compensation for Preamp and Poweramp gain stages, as well as the EQ section, where you'll get frequency-weighted gain compensation.

Tone Controls

A mostly self-explanatory set of controls if you've ever used or even thought about using a guitar amp. However, in Channel mode they behave more like a channel strip's EQ section with fixed frequency bands. The filters also have a variable Q depending on the gain.

Power Amp

An additional gain stage at the end of the amp/channel strip. In the Guitar and Bass modes, this functions like the pentode tubes in the amp's output stage, or like an optional pair of pentodes at the end of your channel strip.

In Channel mode, this is bypassed at 0.

Pre Section



Stereo/MS

By default, this passes in a stereo input as you would expect, processing left and right independently. If you enable M/S processing, your input signal is converted into Mid/Side and processed as such throughout the plugin. This is useful if you want compression or distortion to process Mid and Side independently, which can make for more transparent or natural-sounding compression or distortion (and sounds great on a full mix!).

Note: This, along with Stereo Emphasis, won't have any effect if your channel configuration is 1 input / 1 output. You need stereo input and output for this feature to work!

Stereo Emphasis

The Stereo Emphasis tool applies either a boost or a reduction of the stereo width, and then an equal and opposite boost or cut **after** the processing. With this, you can emphasize or de-emphasize the sides of a stereo image. With the M/S option, you can create interesting relationships between Mid and Side information, and affect the sense of space in your sound.

LF/HF Emphasis

Like the Stereo Emphasis tool, except with frequency. These are high- or low-shelf filters that either boost or cut before the processing, and then apply an equal and opposite filter to negate the frequency response, so you end up **emphasizing** those frequencies. This is useful if you want to have your low-end distort less, clip off more

highs for a more vintage sound, or to just drive everything into obscenity and mayhem.

Doubler

This uses short delay lines to add width to a sound that may be narrow or even mono. Great for making a mono guitar sound double-tracked! It's also mono-compatible, meaning that you won't get phase issues if your track is played back in mono.

Opto Comp

An opto-style, feedback compressor, inspired by but in no way modelled after one of the earlier Boss compressor pedals.

All you **really** need to know is that the higher the knob goes = more compression. At 0 it's fully bypassed.

In the vein of opto compressors, the attack and release times are highly dependent on the signal and the amount of gain reduction being applied. Essentially, with small amounts of gain reduction, the attack and release are slower, with the attack being as high as 50ms, and the release approaching 1 second. With greater amounts of gain reduction, the attack time increases and so does the release, up to 5ms and 50ms respectively.

This results in a very colorful compression, and it's also frequency-dependent. The sidechain is calibrated based on the mode, but with the general pattern of gently filtering the low- and high-end. For the sake of simplicity, just know that the sidechains have been tailored to sound good for whichever mode you're using.

Lastly, in Guitar or Bass mode, the compressor imparts a high-midrange boost to aid in the plucky, punchy effect the compression gives.

Pre/Post

Sets whether the compressor is before or after the amp. Yes, while this is technically the pre-amp section, it can be interesting to put the compressor after the amp!

Link

Enables or disables stereo linking for the compression. Linking is on by default and suitable for most stereo content—but for wildly asymmetric stereo images, or if you want unlinked M/S compression, here you go!

Cabs and Reverb



What amp plugin would be complete without cab simulation? And you're going to need reverb, too.

Cabs

There are three cabs to choose from:

- **2x12:** A small two-speaker cabinet with a tight, bright, and punchy sound, good for clean guitar or more moderate tones.
- **4x12:** A four-speaker cabinet designed for roaring rock tones, with a beefy low-end and a scooped midrange.
- **6x12:** Intended to be used as a bass cabinet, this has a huge low-end and a top-end voicing that sounds great on bass guitar.

Reso Filters

This adjust the low and high frequency resonance of the cabinets. You can add or attenuate the response of the cab for further customization over the sound.

Mic Position

An emulated mic position in front of one of the cab's speakers. You can adjust the horizontal position and the distance away from the speaker, which affects tone in a variety of ways.

Reverbs

There are two algorithmic reverbs:

- **Room:** A medium-sized, dampened room with short reflections, great for adding a touch of ambience or space to a sound without getting overwhelming.
- **Hall:** A longer, richer reverb, perfect for adding a grander scope to your sound.

You also have **Predelay**, **Decay**, and **Size** controls for customizing the response more finely. Increasing the size changes the frequency response and early reflection level of the reverb, making things a bit darker and tending towards late reflections, so you can use it in conjunction with the decay control to fine-tune how the space feels.

Last, the **Bright** control gives you more shimmering top-end in the reverb. With this off, frequencies above 8.5kHz will be rolled off with a 2nd-order filter.

Post Section



Low Frequency Enhancer

On the left is a Low Frequency Enhancer. It's a saturating low-end boost that works wonders in thickening your sound. The frequency of the boost depends on the mode being used:

- **Guitar:** 300Hz
- **Bass:** 175Hz
- **Channel:** 200Hz

The enhancer signal is processed in parallel and added onto the dry signal.

Invert

Inverts the enhancer's signal for a change in response. This will generally function like a more resonant highpass filter, but due to the nonlinear nature of the enhancer, at higher levels its response can end up looking more like a peak boost around the filter's center.

High Frequency Enhancer

On the top right is a High Frequency Enhancer. This is a saturating high-end boost, perfect for adding air, presence, or a nice top-end sheen to your sound. The cutoff for the filter is at 7500Hz

Invert

Inverts the enhancer's signal for a change in response. This will generally function like a more resonant lowpass filter, which can end up functioning like a differently-voiced high-shelf at higher levels.

Auto

Enables auto-gain compensation for the enhancer filter, which will reduce the amount of frequency boost. The filtered signal is gain compensated after the saturation, so this is useful if you just want the saturation and less of a frequency boost.

Cut Filters

A pair of 6db/octave high-pass and low-pass filters, processed after the enhancer filters

Top Controls

1. **Input:** An input gain before all processing, between -12dB and $+12\text{dB}$, useful for adding or decreasing distortion or compression.
2. **Link:** Link the input gain to the output gain, with the ability to still adjust the output gain. If you turn link off it will automatically adjust the output gain so you don't get a huge jump in volume.
3. **Output:** An output gain after all processing, between -12dB and $+12\text{dB}$, for fine-tuning the final level.
4. **Width:** Add or subtract stereo width. Since this is applied *after* all the nonlinear processing, you can use this in conjunction with Stereo Emphasis for interesting manipulations of the stereo field.
5. **Mix:** A simple dry/wet mixer for global parallel processing. Keep in mind that many of OmniAmp's processes are non-linear phase, so you may encounter phase cancellation if using this (not necessarily a bad thing!)
6. **Byp:** A global latency-compensated bypass control

Menu

In the upper right is a popup menu for maintaining some of OmniAmp's more advanced features:

- **OpenGL On/Off:** On Windows and Linux, this controls whether hardware-accelerated graphics rendering is done via OpenGL or software rendering. If you've got a decent graphics card in your computer, this may make the UI snappier. Otherwise, if you don't have a graphics card or OpenGL installed on your system, enabling this will either do nothing or cause issues.
- **HQ:** Enables 4x oversampling with linear-phase filters. Off by default to save CPU.
- **Render HQ:** This will enable 4x oversampling when rendering. If HQ is too CPU-intensive for your computer, you could use this to keep aliasing out of your final mix, while getting better performance when mixing in real-time.
- **Show tooltips:** You can disable tooltip hints with this option
- **Default UI Size:** This will reset the UI size to its default of 800x800
- **Check update:** Checks for an update to OmniAmp. If there is one, you'll be presented with a list of new changes and asked if you want to download the update.
- **Activate:** If you haven't activated OmniAmp yet, you can click this to bring up the activation prompt and enter your license.

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chowdsp_wdf ²

(c) 2022 Jatin Chowdhury

https://github.com/Chowdhury-DSP/chowdsp_wdf

chowdsp.com

WaveDigitalFilters_SHARC

https://github.com/schachtersam32/WaveDigitalFilters_Sharc

xsimd ²

(c) 2016 Johan Mabilie, Sylvain Corlay, Wolf Vollprecht and Martin Renou

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(c) 2018 Serge Guelton

<https://github.com/xtensor-stack/xsimd>

Gin ²

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