# IGNITE AMPS

*engineering for the moshpit*

VOGER DESIGN

EMISSARY

## AUDIO PLUG-IN

## USER MANUAL

## Summary


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## Introduction

The Emissary is a digital emulation of a custom dual channel guitar tube amplifier. It has been developed to accurately model its real hardware counterpart, built for Ryan Huthnance (The Seer / Gaped / Chrome Bison / Emissary Studios) by Ignite Amps, in 2014.

The Emissary is a no compromise custom amp built for the kill. Featuring a very versatile clean channel that ranges from pristine cleans to slightly overdriven tones and a mean lead channel designed for serious bonecrushing distorsions, it offers a very wide tonal palette for the modern metal musician.
Just as with the hardware amp, here at the Ignite Amps we didn't cut a single corner when creating the VST/AU model of the Emissary to offer you the best sonic experience we can offer - FOR FREE! We had the chance to collaborate with Ryan Huthnance and Voger Design, some incredibly talented people, in the making of this amp and its simulation and we did our best to bring you the best this whole project brought to light.

Every single component on the signal path of the real analog circuit has been taken into account and modeled in the best possible way to match the original sound, keeping an eye on CPU performance and real-time playability at the same time.
The Emissary is meant to be used as a virtual guitar amplifier for live playing and jamming, tracking or mixing inside hosts capable of VST or AU Plug-Ins support.

## Minimum System requirements

**Windows**:
Windows XP/Vista/7/8 (32/64 bit)
Intel Pentium 4 or AMD Athlon XP

**Mac**:
OSX 10.6
Intel processor with SSE2 instructions support

## Installation

To install the Emissary Plug-In, just follow the instructions below, according to the platform and plug-in format you want to use.

**Windows VST**:
Copy the file **Emissary.dll** into your VST Plug-Ins folder.
(for example C:\Program Files\Steinberg\VSTPlugins)

**Mac OSX VST**:
Copy the bundle **Emissary.vst** into the path: /Library/Audio/Plug-Ins/VST/

**Mac OSX AU**:
Copy the bundle **Emissary.component** into the path: /Library/Audio/Plug-Ins/Components/

*For Windows VST format, we provide separate x86 (32 bit) and x64 (64 bit) binaries, so make sure to choose the right one according to your operative system and plug-in host specifications.*
*Keep in mind that x64 binaries will not run on 32 bit environments, while x86 binaries will most likely run on 64 bit environments, although we do not recommend such usage for performance and stability reasons.*
*We strongly advice Windows users against putting both the x86 and x64 versions in the host VST folder(s), as it may cause one of the versions not to be recognized as a plug-in.*

*Mac OSX plug-ins (VST/AU) are compiled in Universal Binary format for Intel processors, containing both 32 bit and 64 bit code in the same bundle, which means that the user doesn't need to care about choosing x86 or x64 version, as the system will handle that automatically.*

After that, you should (re)start your favourite VST/AU host, making sure it re-scans your Plug-Ins folder(s) to

recognize the Emissary as a new “Effect” Plug-In (please note that some hosts may not re-scan the plug-in folder automatically at every start-up, so you may need to do it manually. Refer to your host’s manual for instructions).
If everything is right, you should now see the Emissary entry into the “Effects” Plug-Ins list of your host.

## Main Features

- Dynamic 12AX7 / ECC83  coupled triode stages analog modeling
- Dynamic EL34 / 6L6GC / KT88 pentodes/tetrodes analog modeling (push-pull stage)
- Two channels: clean, and lead, each with fully separated controls
- Mono / Stereo processing support
- Selectable oversampling rate (up to 8x)
- Global input / output level controls
- Double precision (64 bit) floating point mathematical model
- Fully automatable controls

## Graphic User Interface


Fig. 1 – Emissary Front Panel


Fig. 2 – Emissary Back Panel

As you can see from the screenshots (fig.1 and fig.2), we've decided to make the Emissary look as similar as possible to the real hardware, in order to make the user experience easier, giving the chance to tweak the controls of the plug-in like one would do with the real amplifier.
The GUI is composed by a switchable main view (alternatively showing the front and rear panel of the

Emissary amplifier) and an always visible footer, placed at the bottom of the interface.

## Front Panel Controls

In the front panel of the Emissary you'll find all the controls you're used to see in every classic guitar amplifier:

### Common controls for both channels

**Channel**[(1)]: lets you choose the active channel. Just click on the toggle switch to select the channel: left for Clean (white led), right for Lead (red led).

**Depth**[(2)]: controls the low-end response of the power-amp section. Like in real tube amplifies, it acts on the negative feedback loop of the power-amp circuit.

**Presence**[(3)]: controls the high-end response of the power-amp section. Like in real tube amplifies, It acts on the negative feedback loop of the power-amp circuit.

**Ignition**[(4)]: a simple power switch, turns the plug-in on and off.

**Panel Switch**[(5)]: lets you switch to the Rear Panel view.

### Clean channel

**Bass / Mids / Treble**[(6)]**:** no need to explain much about these controls, but it is worth noting that, like in real amplifiers, each one of these controls influences the tonal response of the others involved in the circuit.

**Gain**[(7)]: controls the amount of gain applied to the input signal. Since this channel is designed to have a considerable headroom to maintain the picking dynamics as much uncompromised as possible, it won't overdrive unless you set the gain really high.

**Bright**[(8)]: controls the amount of picking attack, making the sound brighter or darker/softer depending on your needs.

**Clean Master**[(9)]: controls the output of the Clean Channel. It's placed right before the power-amp circuit, so it doesn't control just the output volume, but also the amount of signal driving the power-amp circuit. Therefore, when cranked up to high values, it may overdrive the power-amp, giving more saturation and compression if needed.

### Lead channel

**Gain**[(10)]: controls the amount of distortion. Please note that this channel is designed to have tons of gain, so (ab)use this control at your own risk.

**Bright**[(11)]: controls the amount of picking attack, making the sound brighter or darker / softer depending on your needs. It can be really useful to prevent the distortion getting too muddy. In this channel, the effect of this control depends on the Gain control setting. If you set the Gain at full, the bright capacitor will be bypassed, so, switching it on and off won't make any difference on the final tone.

**Deep**[(12)]: controls the low-end response of signal at the earlier stages. It can be used to make the tone fatter and deeper, adding resonance to the lower frequencies but still avoiding muddyness.

**Bass / Lo-Mids / Hi-Mids / Treble**[(13)]: the “four knobs tonestack”, one of the keys of the Emissary Lead channel. The double Mids control provides great versatility and a wide array of possible tones. It is worth noting that, like in real amplifiers, each control influences the tonal response of the others

involved in the circuit.

**Shape**[14]: changes the tonestack response of the Lead channel. When switched on (toggle up) the high-mids will be more present, making the distortion more aggressive. When switched off (toggle down), it will give a gentle scoop on the mids, resulting in a smoother tone, with a softer attack.

**Lead Master**[15]: controls the output of the Lead Channel. It's placed right before the power-amp circuit, so it doesn't control just the output volume, but also the amount of signal driving the power-amp circuit. Therefore, when cranked up to high values, it may overdrive the power-amp, giving more saturation and compression if needed.

## Rear Panel Controls

In the rear panel of the Emissary you'll find some additional controls to change the power amplifier behaviour:

**Tubes**[16]: lets you decide what kind of tubes you want to use in the Emissary's power-amp section. Clicking on this control will make a drop down menu appear and you will be able to select your preferred tube model. As described in the Bias control section, the range of the Bias control will change according to the selected tubes, avoiding the need to re-bias the power-amp, like you would do in a real world situation and making it easier for you to compare different tubes.
Apart from selecting the power tubes, you can also disable the whole power amp circuit by selecting “Disabled”. When the power-amp is disabled, the output will be taken from the FX Send stage, thus bypassing the Master volume, Depth and Presence controls. Since the Master volume controls are disabled, if you need to adjust the output volume, you can use the Output control placed on the GUI Footer.

***Please note that when the power-amp is disabled, the plug-in output level is automatically scaled for consistency, so, if you set the Master volume or Bias controls very low or very high, you could experience extreme output volume differences after switching. Use this option carefully!***

**Bias**[17]: lets you choose the bias point of the power amp tubes. It is divided into 3 separate controls, which is one of the Emissary key features: Left Tube Bias, Common Bias and Right Tube Bias. As you can imagine, the Common Bias acts on both tubes and sets the global bias value. The Left and Right controls act on the single pentode/tetrode instead, and can be used to fine tune the symmetry of the class AB power amp circuit by making the tubes work in a perfectly matched way, or deliberately applying an offset to generate more even order harmonic distortion due to the increased asymmetry.
Generally speaking, the Bias controls the amount of (negative) voltage offset applied to the signal at the grid of the tubes. Colder settings (trimmer turned counter clockwise) will make the pentodes/tetrodes draw less current, decreasing the overall output volume and potentially introducing cross-over distortion due to the class AB design (which may be what a guitarist needs to achieve a more dirty/loose tone). Hotter settings (trimmer turned clockwise) will make the pentodes/tetrodes draw more current, increasing the overall output level and eventually the power supply “sagging” effect, adding compression or, in extreme cases, saturation and cleaning up the tone from potential cross-over distortion.
Keep it in the default range (around half-way) for standard/real world operations, but feel free to experiment without the fear of blowing something up.
It is important to note that the range of the Common Bias control changes depending on the selected tubes (see the Tubes control), for practical reasons. In fact, in a real world situation, biasing a KT88 with the same grid voltage offset of a 6L6GC, would cause the KT88 to draw almost two times the current drawn by the 6L6GC, causing a huge output volume difference and potentially damaging the tube itself by exceeding the maximum power dissipation rate of its anode plate.
Scaling the bias control range according to the selected tube, guarantees output volume coherence (making it easier to compare different tubes and choose the right one for you), and makes the virtual tubes work with currents that make sense in a real world situation, allowing you to set the bias of the power amp correctly, without the need to be a tube amplifier technician.

**Panel Switch**[18]: lets you switch back to the Front Panel view.

## Footer Controls

In the Emissary footer, you'll find controls to manage the plug-in to suit your system and guitar at best:

**Input level**[19]: it is a simple control to adjust the amount of guitar signal going through the virtual circuit. It is really important not to underestimate this control, since it is the key to have the Emissary reacting correctly to your guitar and playing. In fact, we can safely say that this is the most important control to get the best out of the Emissary.
*What's the correct way to use it, then?* Let's start from your guitar signal: as you might know, when you play, the pickup output going to your sound-card input will be transformed to a digital signal by the AD converter of your audio interface. The first thing you should keep in mind, is that the converter has a maximum headroom that should never be exceeded. If your signal goes over this maximum threshold, it will be clipped. A clipped signal means less dynamics and the introduction of digital distortion.
So, the first thing you need to make sure of, is to never clip the AD converter (if you are clipping it, the clipping led indicator featured in most audio interface will light on, warning you that your input signal is too hot, so you need to lower the preamplifier control until the problem disappears).
On the other hand, an important thing to keep in mind, is that the higher the input signal (within the above mentioned headroom limit), the more accurate the AD conversion will be, keeping also the signal-to-noise ratio at the highest possible value. This means that, in order to get the best out of your sound-card, you need to keep the input signal as high as possible right before reaching the clipping threshold.
*Ok, cool story, but when does the input level control comes into play?* Once your signal is converted to digital, it will be represented as a series of numbers that you can see as voltage values. These voltages can have a maximum and minimum value of 1.0 and -1.0 respectively. Supposing your input signal is peaking at its higher possible value right before the clipping threshold of the converter, it will be represented as 1.0 inside your host and the Emissary will react to it like if you're sending a 1.0V signal to its input stage.
Why is it so important to know these details? Because if your guitar pickup has a maximum output voltage higher than 1V (or 2V peak-to-peak), like many modern active pickups have, you'll need to adjust the input signal that's being sent to the Emissary. That's where the Input Level control comes into play: you need to tweak it to compensate the voltage scaling/normalization made by your AD converter.
The Input level control applies a scaling factor to the input signal. For example, if your pickup has a maximum output of 1.5V (so 3V peak-to-peak), you'll need to set the control at 1.5x. By doing this, your input will be multiplied by 1.5, so the Emissary will not be fed with a 1.0V maximum signal, instead, it'll get a 1.0V x 1.5 = 1.5V maximum signal, which is the correct value to match your pickup specifications.
If you are using a single coil and its maximum output value is, let's say, 0.5V, you'll need to lower the input level by setting the control to 0.5x. This will make the Emissary react like the input signal is 0.5V, or 1V x 0.5.
Remember that the sound-card input level is meant to be always set so that you use the full AD converter headroom. Signal level adjustments, to pair the Emissary with your guitar pickups, need to be made after the AD conversion, using the Input Level control.

***Please note that these concepts applies only when the Emissary is the first plug-in of your virtual guitar chain. If you are using another digital effect before the Emissary, we suggest you to keep the input level control at half (default).***

**Oversampling**[20]: lets you choose the internal processing sample rate of the plug-in. The available options are 2x, 4x or 8x. This means that if your host is set up to process at 44100Hz sample rate, by selecting 4x oversampling, for example, the Emissary will process your signal at 44100 x 4 = 176400 samples per second. Oversampling is needed to avoid digital artifacts (aliasing) and to improve the accuracy and musicality of the plug-in.
Obviously, the higher the oversampling, the higher the CPU usage.
In our experience and tests, we've found 4x oversampling to be the best compromise for accurate processing and good performance, but we've decided to add two other options to help users with slower machines to run the plug-in without CPU overloading (2x) or run the plug-in at its full potential

when having a powerful system at disposal (8x).
Keep in mind that the sound difference between these three modes is not going to be night and day, so, for mixing purpose, you will hardly need to rework the mix settings when switching between different oversampling values. A good practice would be to run the plug-in at 4x or 2x during mixing and switch it to 8x right before rendering your project. This will avoid CPU usage problems when using multiple plug-ins in mixing phase and still give you full processing quality once your tracks are exported.

**Routing**[(21)]: lets the user select the processing mode of the plug-in (Mono or Stereo). It is extremely important to note that a complete stereo separation, and thus a correct stereo image preservation, is only possible when the Emissary is placed on a stereo bus and fed with a stereo signal with left and right components panned at 100%. Feeding the Emissary with two tracks panned at less than 100% left and right, will not preserve the correct stereo separation of the tracks at the output.
Stereo Mode will obviously double the CPU load of the plug-in, as the two audio channels are being implicitly processed by two separated instances of the Emissary.

**Output**[(22)]: lets you change the overall output level of the plug-in. Unlike the Volume control located in the front panel, this control is completely linear and doesn't affect the dynamic behaviour of the plug-in in any way.

## Tips for “digital” guitarists

- Always use the high impedance (Hi-Z) input of your sound-card (when featured). This will ensure less noise and signal loss. Most real (pre)amplifiers and stomp boxes, have an input impedance of 1MegaOhm, so it would be a good idea to get a sound-card with 1MegaOhm input impedance to use Ignite Amps simulators at their best.

- As mentioned above, make always sure to have the highest input signal before the AD conversion, avoiding clipping.

- Amp sims and stomp box simulators are not noisy, they do not add noise. In fact, they're a lot quieter than real hardware. If you have noise issues, check your guitar electronic circuit, cables and sound-card settings.

- In almost all cases, amp simulators and stomp box simulators don't introduce noticeable latency. The Emissary doesn't introduce any noticeable latency. If you're experiencing latency issues, check your sound-card settings (specifically, try to reduce the “Input Buffer Size”).

- The Emissary is an amplifier simulator, so it needs a cabinet simulator to be placed in chain after itself, to sound like a real mic'd tube amplifier, so make sure to place one (and only one!) of them right after the Emissary.

- We strongly recommend to use our **NadIR Zero Latency Convolver** plug-in for cabinet simulation, which is freely downloadable from our official site.

## Acknowledgments

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A VERY special thank goes to Voger Design, for creating one of the best looking GUI we've ever seen and for the great and very professional collaboration and endless patience.
Thanks to all the musicians interested in the Ignite Amps project, trusting us into taking care of their sound. You know who you are.

Thanks to You too, for downloading and trying Emissary and for reading the f***ing manual! :-)

Sincerely
The Ignite Amps Crew

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