STLTONES

# IGNITE - LIBRA AUDIO PLUG-IN USER MANUAL

*Version 1.3.0 For Mac & Windows*

# INTRODUCTION



Libra is a zero latency, Impulse Response Mixer, designed to be used as a multi cabinet+microphone simulator for guitar and bass (pre)amplifiers (AAX/AU/VST/VST3 or even hardware).

It has been designed to perform pristine quality convolution in real time, while being light on the CPU and easy to use, providing advanced built-in filters and delay controls to let guitarists and bassists shape their tone with ease, without the need to be professional audio engineers.

Libra is meant to be used as a cabinet simulator for live playing and jamming, tracking or mixing inside hosts capable of AAX, AU, VST or VST3 Plug-Ins support.

# MINIMUM SYSTEM REQUIREMENTS



**Windows**:
Windows 7/8/10 (32/64 bit)
Intel Pentium 4 or AMD Athlon XP

**Mac**:
OSX 10.9
Intel processor with SSE2 instructions support

To install the Libra Plug-In, just run the supplied installer and follow the instructions.

*For Windows AAX/VST/VST3 format, we provide separate x86 (32 bit) and x64 (64 bit) binaries, so make sure to choose the right one according to your operating 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 it for performance and stability reasons.*
*We strongly advise the Windows user against putting both x86 and x64 versions in the host AAX/VST/VST3 folder(s), as it may cause one of the versions to not be recognized as a plug-in.*

*Mac plug-ins (AAX/AU/VST/VST3) 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 favorite AAX/AU/VST/VST3 host, making sure it re-scans your Plug-Ins folder(s) to recognize the Libra 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).

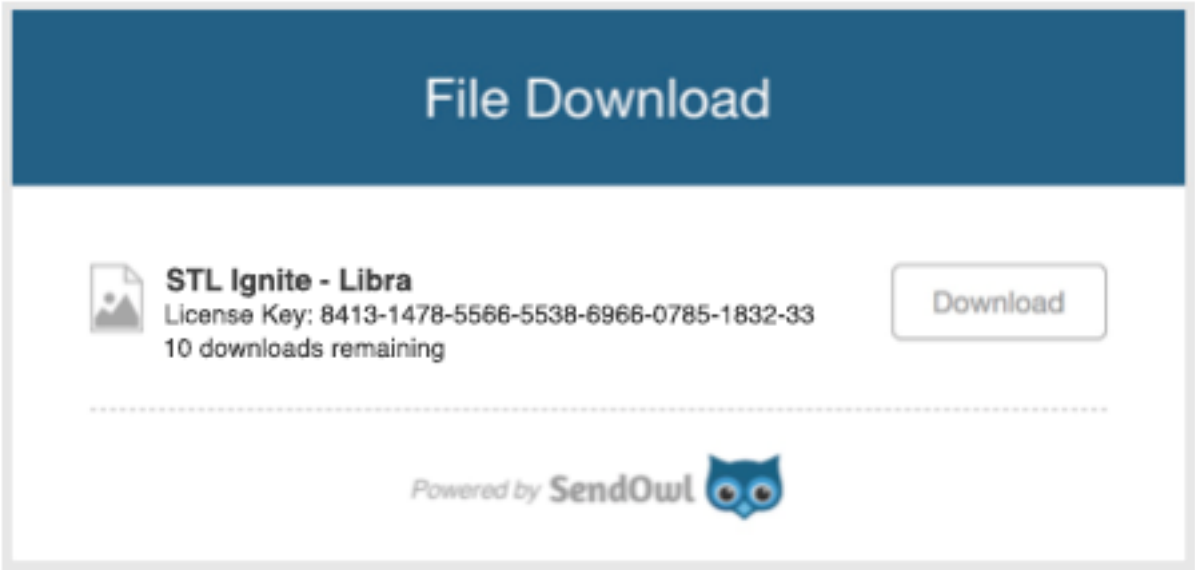
If everything is right, you should now see the Libra entry into the “Effects” Plug-Ins list of your host.

## STL Tones User Account -

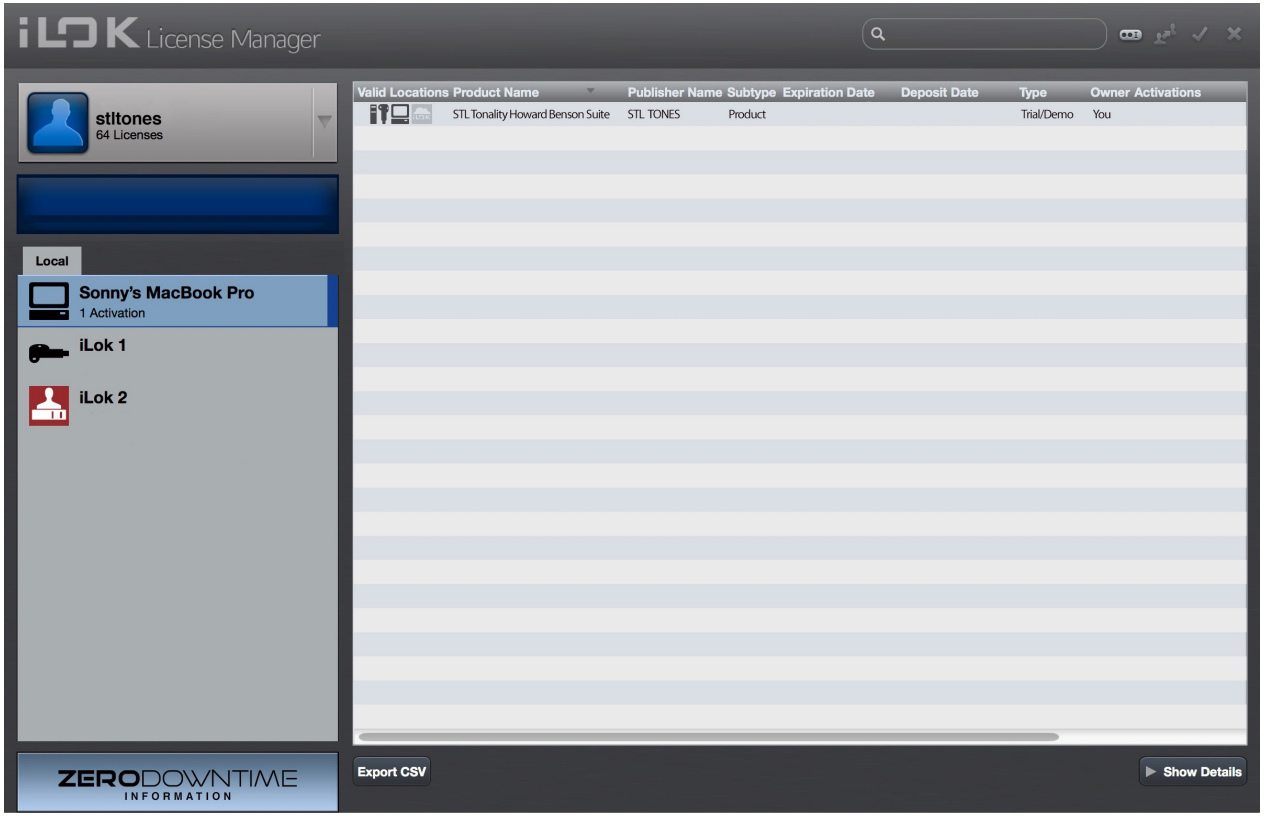
In your STL Tones User Account, you will have access to your product installers, and latest software updates. To login to your user account, go to http://www.stltones.com and click the 'Login' button in the upper right-hand corner of the website. If you don't have a user account, please create one by clicking 'Create Account' inside the same login window.

## License Location -

- In your STL Tones account you will have access to your product installers and latest updates. By clicking your product download link, a new window will open that will show your Activation License
- To login into your user account, go to http://www.stltones.com and click on the "Login" button in the upper right- hand corner. If you don't have a user account, create one by clicking "Create Account" inside the same login window.



Please create an iLok account by visiting http://www.ilok.com and download the latest version of the iLok license manager application. This will allow you to register your serial number and deposit your license to your computer or an iLok USB key. NOTE:- **You DO NOT need an iLok USB Dongle in order to use this plugin. You can simply register your iLok license code to your computer that you intend to use the plugin.**

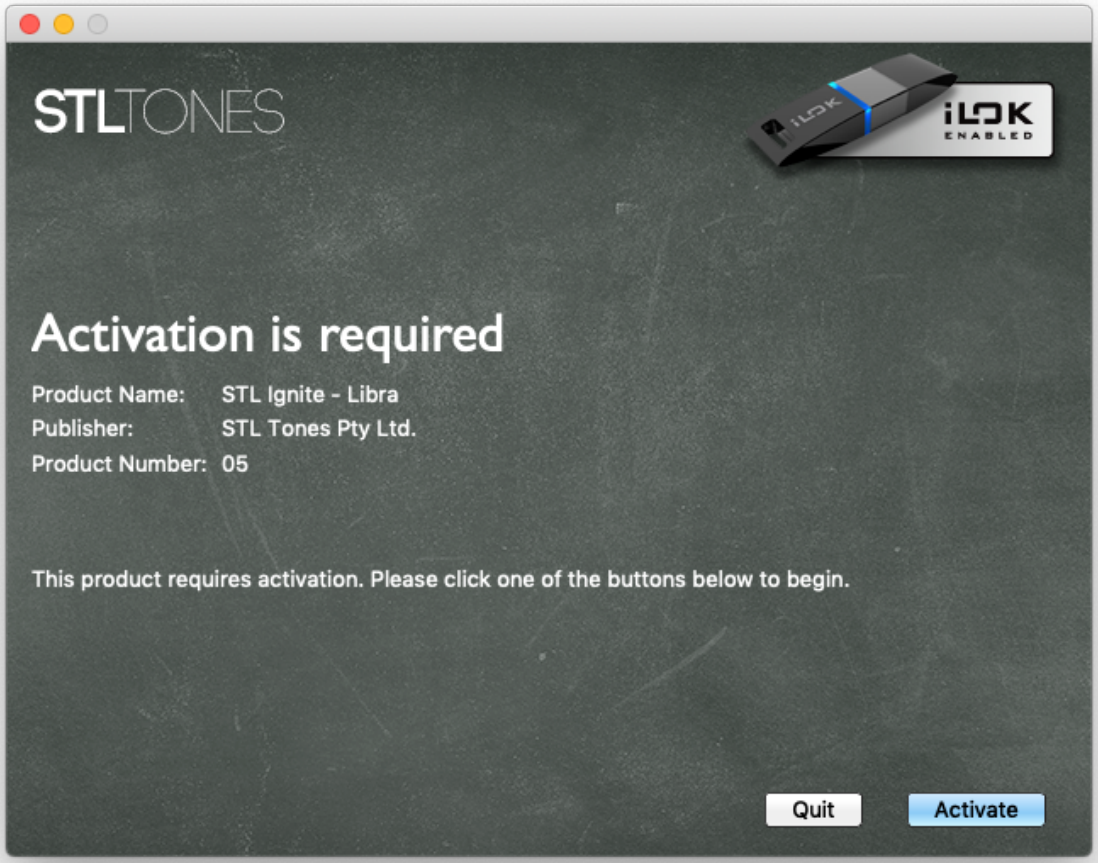



Install the **iLok License Manager**, open the program on your computer, and log in with the iLok User ID information that you created at http://www.i-lok.com. When logged in, a list of available destinations for license placement will be displayed under your User ID, such as your computer, or your iLok USB Keys. A list of all currently activated products will be shown in the main right list window. Inactive licenses will be shown in the “available” tab on the top.

You can drag and drop licenses to deposit them in your computer or iLok USB Keys.

- Run the provided installer which you will receive via email, follow the on-screen instructions given by the installation software.

## License Activation -

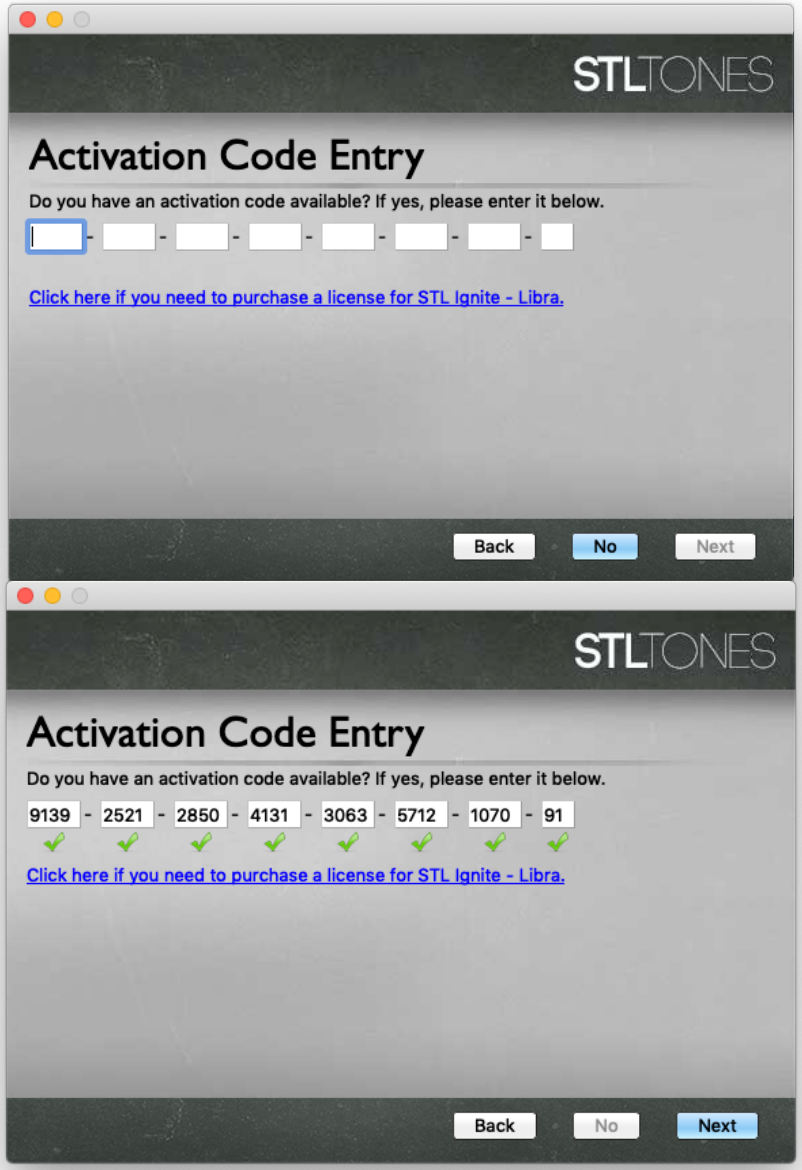



The plugin won't be functional until you authenticate it with a valid iLok license.

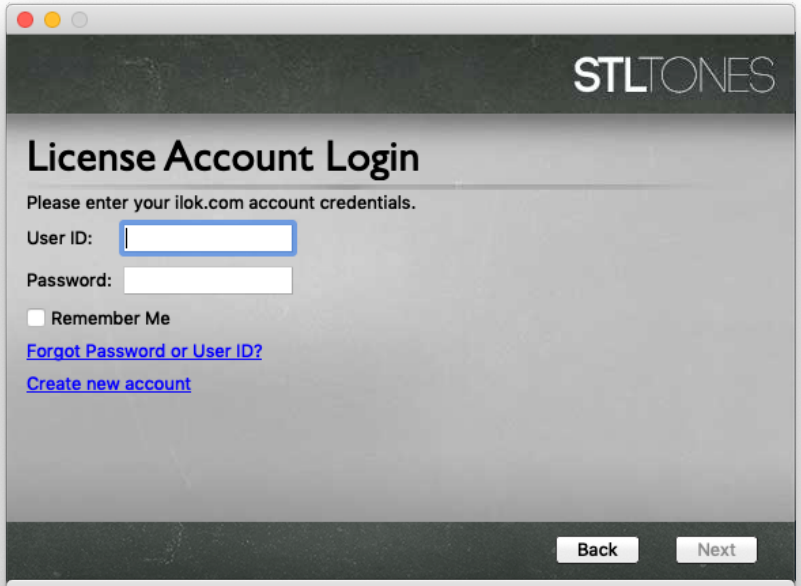
Follow these steps to complete the software activation.

**STEP 1 -**

After logging in to your iLok Account, click on the “Activate” button and go through the process to authorise your software.

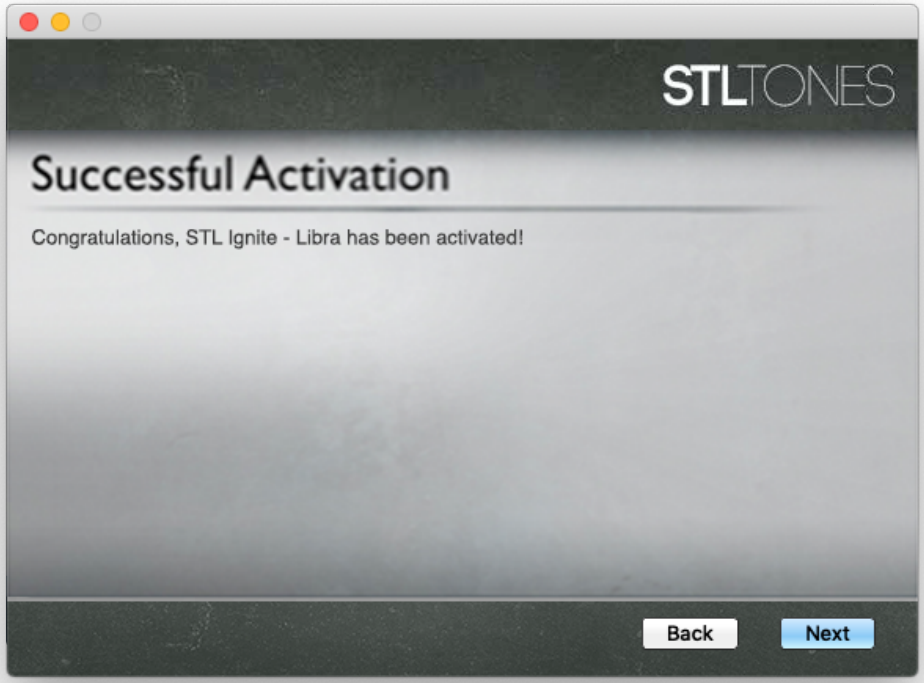



**STEP 2 -** Enter your serial number and if valid, green ticks will appear, as seen in the image below.




**STEP 3 -** If you haven't yet created one, click on the 'Create new account' link, and you will be directed to ilok.com to create an account, which is free.


**STEP 4 -** Here you will see all available locations to place your license. Select either your computer, iCloud, or iLok USB key.




**STEP 5 -** Successful Activation window will be next, confirming you have registered your product correctly.

Libra is an “impulse response convolver”, but what does that mean? Let's start with the “impulse response” term. From Wikipedia:

> *In signal processing, the **impulse response** (**IR**), or impulse response function (IRF), of a dynamic system is its output when presented with a brief input signal, called an impulse. More generally, an impulse response refers to the reaction of any dynamic system in response to some external change. In both cases, the impulse response describes the reaction of the system as a function of time*

The use of impulse responses in digital signal processing has spread enormously in recent years, especially for the implementation of reverberation processors, but this is not the only field where they can be used.

Impulse responses contain a lot of useful and very detailed information about the system from which they've been captured, one of which is its **frequency response**. This makes them perfect for the simulation of systems like equalizers and, mostly, guitar or bass **cabinets**.

If you've ever looked at the frequency response graph of a loudspeaker, you've surely noticed how complex it is, with hundreds of sharp peaks and notches, which are basically impossible to replicate accurately with standard digital filters.
Properly capturing the impulse response of a cabinet and processing it through a math operation called “**convolution**”, gives extremely accurate results in terms of frequency response fidelity.

The process of “capturing” the impulse response of a system, usually involves these simple steps:

- A generic test signal (which can be a Dirac, a sinesweep, or noise) is sent as input through the system of interest.
- The output of the system is recorded through a soundcard or a transducer (like a microphone)
- A math operation called “**deconvolution**” is performed using both the input test signal and the recorded system response, generating the impulse response of the system.

In audio signal processing, the impulse response generated through the deconvolution process, is usually stored into an audio file (in Wave, Raw or AIFF format, for example) which can have various lengths, depending on the system from which it has been captured. They can be up to 10 seconds (or more) long, when capturing big reverberation spaces or under 100 milliseconds long when capturing loudspeaker cabinets or equalizers. This makes those files portable and conveniently small in terms of byte size, allowing users to have huge libraries with thousand impulse responses of various systems.

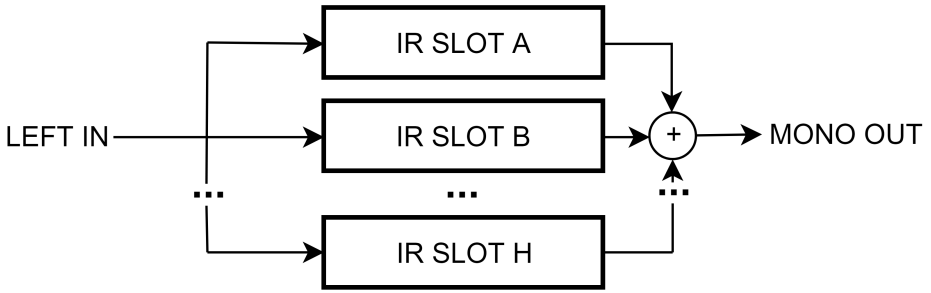
Libra is designed to load up to 8 of these audio files and perform convolution of these impulse responses with its input signal, to recreate the frequency response of the captured system with great accuracy, in real time and at a low CPU cost.
Being optimized to be used as a cabinet simulator and not as a general purpose convolution processor, it supports audio files long up to about 0.5 seconds, which may seem too restrictive, but is way more than enough to get impressive accuracy for cabinet simulation.

Some impulse response files and presets will be installed along with Libra, so you'll have everything you need to create the most awesome tone you've ever heard.

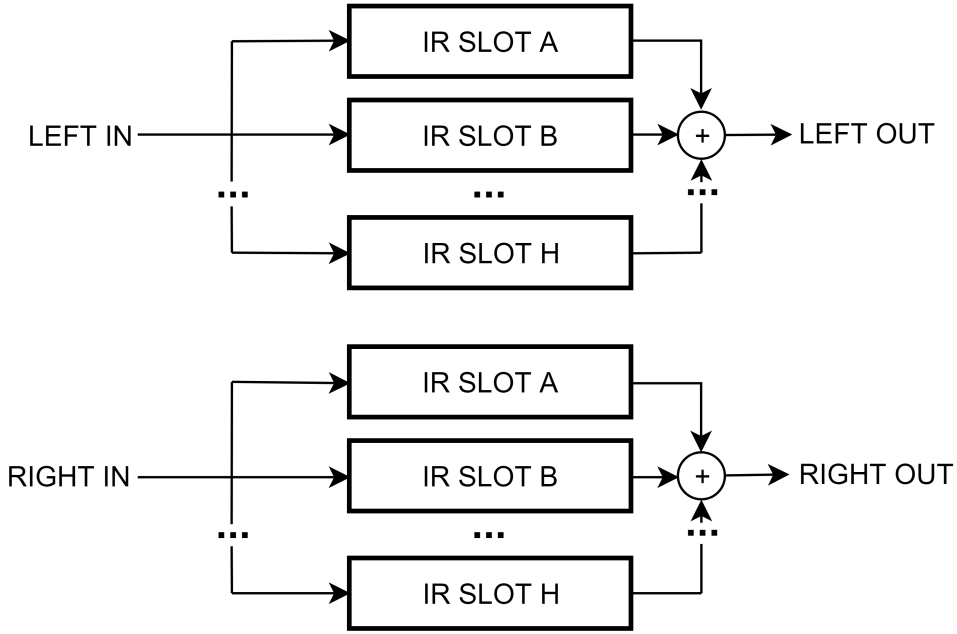
### Main Features

- Zero Latency
- Low CPU usage
- Mono and Stereo support
- Automatic high-quality resampling for IRs with different sampling rates
- High-quality analog shaped filters
- Automatic phase recognition and flipping for negative phase IRs
- Selectable delay for phase interactions between loaded IRs
- Continuous graphical morphing control between loaded IRs
- Option to merge multiple IRs into one and export
- Option to freeze multiple IRs processing and greatly reduce CPU usage
- Global input level and single IR level controls
- Fully automatable controls

## Mono Routing




## Stereo Routing



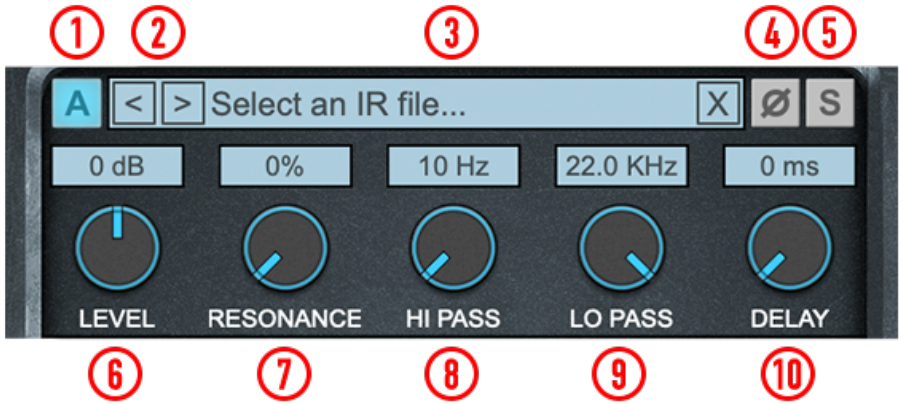

The GUI is composed by a **header**, containing the Presets Management System plus other convenient functions, the **main view** with all the main Libra features and a **footer**, containing the global controls of the plug-in.

## Main View


Fig. 5 – Main View

The main view of Libra is composed of 3 areas, 2 of them being specular at the sides and containing the controls for each of the 8 independent IR convolution slots (4 per side) and a middle area devoted to IR browsing, mixing and other user utilities.

**IR Slot View**




In the IR Slot view of Libra (fig. 5) you'll find controls to load and manage the cabinet IRs loaded into Libra.
When you click on one of the slot, you'll notice the color of the value labels and the loaded IR label become more intense as to indicate that the slot is in “active” mode, meaning that the IR Browser (see “Common controls view”, point 2) is now related to it.

1. **Slot state**: lets you switch the single IR slot On and Off. When active, the button will appear with a cyan background and the same color will appear in the slot knobs corona.
   Whenever you enable or disable a slot, the overall output of the plug-in will be automatically scaled accordingly, in order to maintain the output volume constant.

2. **Prev/Next**: lets you load the previous or next IR file in alphabetical order, with respect to the one currently loaded in the slot, cycling in the same working directory.

3. **IR Label**: indicates the currently loaded IR file, if any.
   Clicking on the label, will open the file browser to select a new IR file.

4. **Unload**: lets you unload the currently loaded IR. This will automatically load a Dirac IR into the slot, meaning the input will be convolved using a totally transparent IR. The other controls of the slot will keep working as usual.

5. **Phase**: lets you flip the phase of the loaded IR.
   *Libra will automatically detect negative phase IRs upon loading and invert their phase to avoid cancellation when combining different IRs, so use this control only if you want to achieve phase cancellation on purpose.*

6. **Solo**: sets the selected IR Slot in “solo” mode. By switching it On (button with red background color), you'll only hear the sound from the selected IR Slot. Please note that the output volume in “solo” mode is affected by both the Gain [6] control and the Cartesian Mixer listening point (see “Common controls view”, point 3)

7. **Gain**: lets you control the output volume of the IR slot. It can be useful to achieve the perfect balance between IRs or change the output level perception when using multiple slots. It ranges from -18 dB to +18dB, default is 0dB or unity gain.

8. **Resonance**: simulates the power amp + speaker interaction in tube amplifiers. It provides a boost at guitar cabinet speaker resonant frequencies.
   Use this control at **high values** if you're using IRs captured using **solid state power amplifiers**, at low values as a tone shaping tool when using IRs captured using **tube power amplifiers**.

9. **Hi Pass**: lets you select the frequency of the high pass filter. It ranges from 10Hz to 400Hz and can be

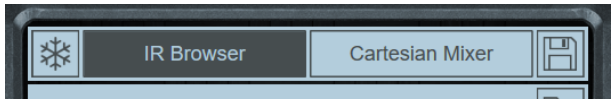
really useful to control the low-end response of the IR, preventing excessive resonance and rumble.



10. **Lo Pass**: lets you select the frequency of the low pass filter. It ranges from 6 KHz to 22 KHz and it can be useful to control the high end response of the IR, preventing harshness, especially when the plug-in is used in conjunction with high-gain (pre)amplifiers.
    Libra uses advanced filtering algorithms to avoid the typical frequency “warping” affecting most digital filters, guaranteeing perfectly analog-like sound and perfectly clean transient response.

11. **Delay**: lets you delay the convolution output by a short amount of time, from zero (default, no delay) to 20 milliseconds. Using short delay values can be useful to emulate phase interactions happening when using multiple microphones at different distances, to record guitar or bass tracks. Increasing the delay can be seen as moving the microphone away from the speaker. Considering that the sound travels at circa 340 m/s, 0.01 ms delay means a distance of 0.34 cm from the source, 0.1 ms is equal to a distance of 3.4 cm and so on. Longer delay values can be used in conjunction with Stereo routing and wide panning, to emulate stereo guitars from a mono source.

### Common controls view

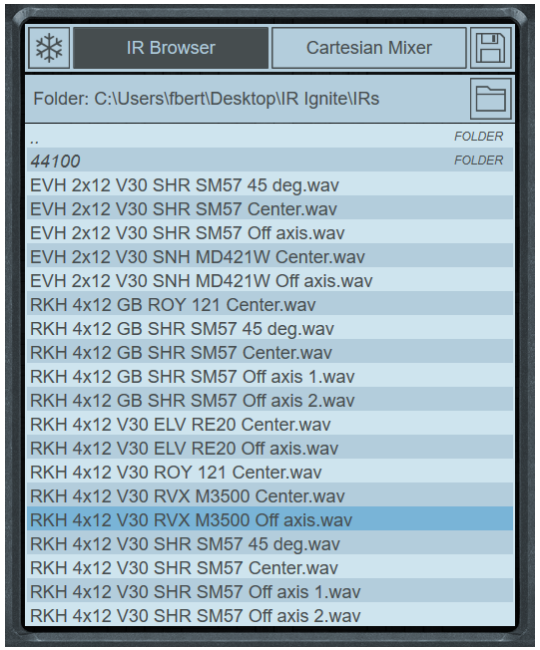



In the common area, you'll find a header with 4 buttons and an interactive area that will switch from IR browsing to graphical mixing according to what the user wants to do.

1. **Freeze**: lets you freeze the current state of the plug-in.
   Even if Libra's convolution engine is highly optimized, loading up to 8 IRs at the same time may start to demand a non-negligible amount of CPU processing depending on the IRs length: that's when this function comes to the rescue.

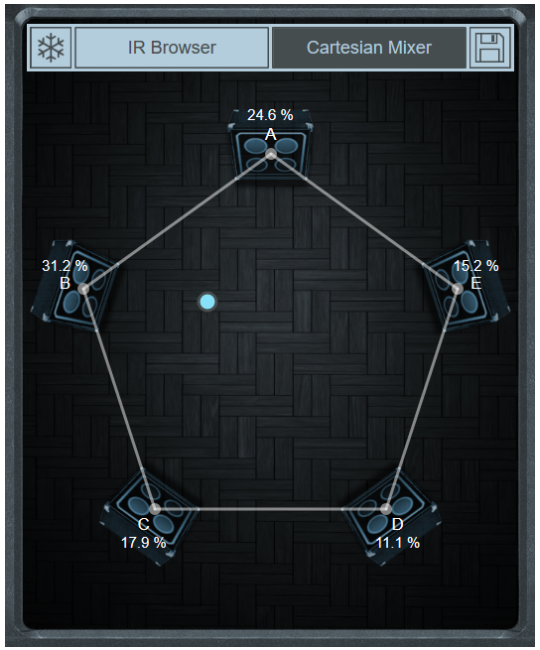
   When you freeze the plug-in, all the loaded IRs will be merged into one and the filters (Resonance, HPF, LPF) and Delay will be printed into that single IR, causing a massive CPU drop and maintaining the exact same output sound as before. The only con is that you won't be able to make any adjustment until you un-freeze the plug-in (by clicking on the button again).
   We suggest using this function when you've found the perfect mix of IRs and settings and want to minimize the CPU usage for your project.

2. **IR Browser**: lets you switch the interactive area into a file system styled IR browser.
   When active, you'll be able to load IRs by either clicking the Folder icon (top right corner of the area) or navigating through the IRs list by double-clicking on the available entries.
   You should first load an IR using the Folder icon, then you'll be able to navigate using the items in the list, by either changing folder or selecting a new IR.
   Keep in mind that the actions performed in this interactive area will be related to the currently active IR slot, which is the latest one you've interacted with, either changing one of the settings or simply clicking into it. You'll be able to recognize the active IR slot by checking the color of the labels, which will be more intense and stand out from the rest of the slots.




3. **Cartesian Mixer**: this is the most important and unique feature of Libra! The Cartesian Mixer will give you the possibility to seamlessly mix up to 8 different IRs in a graphical way, maintaining the output level consistently and allowing you to find the perfect balance between all the loaded IRs.
   When Cartesian Mixer mode is enabled, a regular polygon will appear, shaped according to the number of active IR slots (straight line for 2 slots, triangle for 3 slots, square for 4, etc.).

Each polygon vertex represents a single IR slot and you'll be able to change the balance of each slot by dragging the “Listening Point” (the cyan circle placed inside the polygon) around using your mouse. The percentage of the blend of each IR will appear near the vertex itself, along with the IR slot identifier (A, B, C, etc), so you'll know exactly how you've achieved that perfect balance you've been searching for.
Clicking on the Listening Point while pressing Ctrl will reset its position to the centroid of the polygon.
You'll obviously need to have at least 2 active IR slots in order to use the Cartesian Mixer, otherwise an alert message will appear.



4. **Export**: this is another key feature of Libra you'll love. Once you've found the perfect IR combination, you can click on this button and export that same combination (also containing the effect of the Resonance, HP, LP filters and Delay!) into a single new IR in .wav format, that you can load on an external device or simply re-import it into Libra or your convolver of choice for more experimentation.
   This function will bring the same result as the Freeze [1] function, just on an external IR.

### Header controls

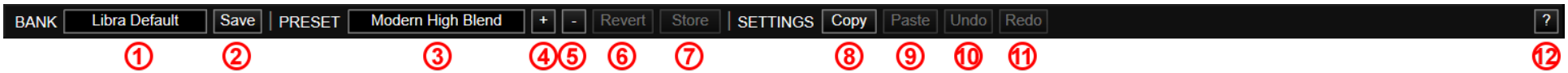



Fig.6

In the Libra header section (fig.6), you'll find controls for the Ignite Amps proprietary Preset Management System and other useful features:

1. **Bank**: lets you change the name of the current bank. A bank is a group of presets which can be loaded or exported to file, in order to save or recall settings and share them with other the Libra users, or just move them from one DAW to another. Clicking on this control will open a drop down menu showing all the Banks currently available and selectable. If a project session was saved using a Bank that is not available anymore, the settings will still be recalled correctly, but the bank name will have an **asterisk** (“*****”) at the end to make the user aware of the issue and will appear greyed out in the drop down menu.In such case, the user can use the **Save** function [2] to re-save the bank on disk (selecting another bank from the menu instead, will cause the previous settings to be lost).

2. **Save**: lets you save the current bank on file. Clicking on this button will open a dialog window in which the user can enter the bank/file name. Once the file is chosen, all the presets contained in the current bank will be saved on the selected storage device and made available for future loading via the Load [2] control.
   *This is the only control that persists bank data on disk. Any other function of the Preset Management System will act on the plug-in memory(RAM), so no changes will be saved on file until this control is used.*

3. **Preset Selector**: lets you switch between presets contained in the current bank. Clicking on this control will open a popup menu showing all the available presets. Selecting a preset will immediately update the plug-in settings to the ones stored into it.
   Additionally, when the mouse cursor is over this control, a button labelled "**E**" (as "Edit") will appear on the right side: by clicking on it you can edit the name of the current preset through a dialog box.
   Once a preset is loaded, as soon as you edit one of the plug-ins settings, an **asterisk** ("*****") will appear next to the preset name, in order to remind you that the settings for that preset are changed. You can revert the settings back using the Revert [6] function or permanently update them using the Store [7] function.

4. **Add Preset**: lets you add a new preset to the current bank. Clicking on this button will create and load a new preset with a default name (“Preset <N>”), using the current plug-in settings.

5. **Remove Preset**: lets you remove a preset from the current bank. Clicking on this button will erase the current preset and load the settings of the previous one on the list (or the next one, in case the removed preset was the first of the bank).
   *There is no undo function for preset removal, so use this control carefully!*

6. **Revert**: lets you revert the selected preset settings to the original state. Clicking on this button will discard all the current plug-in settings and reload the last saved ones. This control is enabled only when a preset has been changed from its saved state.

7. **Store**: lets you store the selected preset settings as its original state. Clicking on this button will save all the current plug-in settings and mark them as the last saved state, meaning that every successive use of the Revert [6] function, will recall these settings. This control is enabled only when a preset has been changed from its original state and will be disabled as soon as you click it (you'll also notice the asterisk next to the preset name disappear).

8. **Copy**: lets you copy the current preset settings on the plug-in's clipboard. You can then use the Paste [9] function to reload them. The cool thing about this control, is that the plug-in's clipboard is shared among different the Libra instances, so you can conveniently copy and paste settings from one to another, without having to explicitly save and load the bank.
   *Please note that when all the Libra instances are removed from the project, clipboard data will be lost.*

9. **Paste**: lets you load the preset settings available on the plug-in's clipboard. You can then use the Copy [8] function to store them. The cool thing about this control, is that the plug-in's clipboard is shared among different the Libra instances, so you can conveniently copy and paste settings from one to another, without having to explicitly save and load the bank.
   *Please note that when all the Libra instances are removed from the project, clipboard data will be lost.*

10. **Undo**: lets you cancel the latest operation performed from plug-in interface, reverting the plug-in back to the previous state

11. **Redo**: lets you re-apply the latest operation cancelled using the Undo [10] function

12. **About**: clicking on this button will show up all the Libra additional information. Just click anywhere in the plug-in graphic interface to make it disappear.

### Footer Controls


In the Libra footer section (fig.7), you'll find controls to manage the plug-in to suit your system and mixing environment at best:

1. **Input level**: it is a simple way to adjust the amount of signal going through the convolution engine.

2. **Routing**: controls the signal routing of the plug-in. Clicking on the text box will show up a drop-down menu with 2 different options: Mono and Stereo. To understand the difference between these options, we suggest you to take a look at the “Libra Processing Diagram” section of this manual.

3. **Output**: lets you change the overall output level of the plug-in.

## Tips for digital guitarists and bassists

- 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.

- Make always sure to have the highest input signal before the AD conversion, while still avoiding clipping.

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

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

- Libra is a cabinet simulator, so it needs a (pre)amp (like our Emissary plug-in, or even a real hardware preamp) and, optionally, a power amplifier simulator, to sound like a real mic'd guitar/bass rig.

For technical issues or any problems experienced with our software contact us through our support page at www.stl-tones.com. Before doing so, follow our Troubleshooting questions below to see if these fix your issue.

Support Information to be provided -

In order to help us assist you the best way possible, please attach the following information to our support team:
Product Version Number (e.g STL Ignite - Libra, V1.3.0.)

Version number of your audio system (e.g ProTools 11.2.2, Logic 10.2.4)
Interface/hardware (e.g. Focusrite Scarlett 2i2, Apogee Duet 2, etc.)
Computer and operating system info (e.g Macbook Pro OS X 10.9.6, Windows 10 ver 1709 64 bit, etc.)

Please include a detailed description of the problem and the steps to reproduce it, whenever possible.

# ACKNOWLEDGEMENTS

STL Tones & Ignite Amps wants to thank all the musicians interested in the project, who have shown great enthusiasm toward us, always pushing us to improve our work, helping us beta test and find bugs, everyone who has provided precious suggestions, kick-ass audio clips or videos, or have donated money for our research and development in the DSP field.
Without these people, this plug-in would have never been created.

Thanks to you too, for downloading and trying the Libra plug-in and for reading the manual! :-)

Sincerely
STL Tones & The Ignite Amps Team