



Imperium 2U & 1U

by 2400 Audio

Digitally controlled balanced passive stereo console

Manual V.2.4

Imperium Firmware V.2.4



Important! Read this before use!

The Imperium ships with the “Level bypass” function disabled!!

Hence there is no light in the Level bypass switch. Do not worry, it is not broken, the switch has to be turned on, through the small hole below or next to the “Level bypass” switch, depending on the Imperium model.

If you are curious to hear or see what Level bypass does, please pay close attention!

The “Level bypass” function will pass audio/signal on any Level bypassed input to the selected output without any attenuation what so ever!!!! So be very careful!

Please read the section “Functions” before engaging.

Important: Level bypass can potentially cause loss of hearing and damage your speakers, if used in the wrong way!

Note: On Imperiums´ with firmware before V1.0 Level bypass is global!

If in doubt, please upgrade your firmware to V1.0 or higher.

To check the firmware version go to page 8 “**Combos**”

If you are not able to get your Imperium to display the current firmware version, please go to “How to update your firmware” page 15

We recommend all users to update to the latest software - All Imperiums´ bought from June 2015, are shipped with V1.0 or higher by default.

2400 Audio can not be held responsible for any damage personal nor equipment wise, from any misuse of this product what so ever.

When using the “Level bypass” function, you would normally have some kind of level control before the input.

Please read the section “**Functions**” / Level bypass - BEFORE trying out this function!

Oh.. Another thing.. Even though Imperium seems to have an ethernet port, this is not the case! The Link port is intended for future 2400 Audio Products.

Connecting Imperium via ethernet to ANYTHING else, may result in damaging other equipment.

And congratulations on your new Monitor console, may your mixes improve by the minute. Hope you will enjoy...

Change-log: Manual:

- **Page 8 - Combos - Updated, Firmware version is now displayed on 1U Imperium as well.**
- **Page 11 - Updated - Setting up for wireless control via IOS and Midi -**
- **Page 20 connections page - Updated, Hybrid I/O functionality added.**

Firmware 1.1

It is now possible to link Phase Left CH & Mono.

Overall timing on level, in and output relays have been improved for even better sonic performance, reducing potential clicks and pops.

Firmware 2.0

Level Profile features added:

Program your very own levels for each of the 8 level steps in Imperium - Up to 8 different level profiles.

Freerange Fader added:

Turn the volume up and down, in a very smooth manner, while maintaining the super accurate stereo imaging from the stepped attenuation.

Scene Feature added:

Save and recall snapshots during use.

Slight Changes: You now have to hold the "Level Bypass" pin in the "paperclip" hole for a short moment for the Switch to become active.

Official release Firmware 2.4 August 2017

Support for Barefoot MEME Option Board via IOS / Ipad

Support for EuCon level control via Pro Tools Dock - Midi only.

Support for Hybrid I/O for 1U (sL)Imperium.

Support for display of current firmware version, now on 1U Imperium too.

Now the "send mode" function is engaged, even while cut. Allowing signal flow from Imperium to fx a headphone amplifier while Imperium is cut.

Minor Bug fixing.

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Imperium description:

The Imperium is a simple, flexible and extremely accurate monitor controller optimised, for active monitors in sound mix/mastering studios and showrooms.

Basic features for Imperium 1U (nickname Slimperium)

- 2 or 3 stereo balanced inputs - depending on configuration
- 3 or 4 stereo balanced outputs - depending on configuration
- 8 stepped balanced relay attenuator
- 8 Independent Switches for level selection
- Independent switches for each In and Output selection
- 1x I/O MIDI for remote control
- Link port -Only for linking future 2400 Audio Products - [You cannot link two Imperiums!](#)

Available upgrades:

- Custom Caps for In and Output selector switches
- Custom Level Kit
- Internal WIFI board for wireless remote control - TBA

Basic features for Imperium 2U

- 2 stereo balanced inputs
- 3 stereo balanced outputs
- 8 stepped balanced relay attenuator
- 6 Toggle switches for choosing levels and selecting In and Outputs.
- Nice 3 Digit Eighties LED Display
- 1x I/O MIDI for remote control
- Link port - Only for linking future 2400 Audio Products - [You cannot link two Imperiums!](#)

Available upgrades:

- Up to a total of 4 stereo balanced inputs
- Up to a total of 8 stereo balanced outputs
- Custom Level Kit
- Internal WIFI board for wireless remote control - TBA

Upgrades can easily be installed, at any time, by an authorised 2400 Audio dealer

The audio signal path:

There are no capacitors or active components, that could affect the audio signal inside the Imperium. No transistors, fets, filters, opamps, transformers, nothing.

The Imperium features a fully balanced circuit, so there are no internal conversions between balanced and unbalanced audio signals. What goes in comes out!

It features an 8-stepped balanced relay attenuator for ultra precise stereo imaging and level control.

All switching inside the Imperium is done with high quality low noise relays.

Controlling the Imperium:

You can control everything using the front switches, you can also use your Iphone, Ipad or Android device as a wireless remote via the Touch OSC software or MIDI to control your Imperium.

”Functions”

Parallel output

“**Parallel Out**” - Is used to split the output into two, having your selected output + the last output of the Imperium playing together.

To program a specific output to have a parallel output, first choose the output you want to program. Then hold the “Parallel Out” switch for a short moment, it will flash and so will the selected output. This means that when ever you select this output it will engage the parallel output.

This way you can toggle a pair of speakers with no sub, with a pair with sub. You can program the parallel output to as many outputs you have got on you Imperium. This means a maximum of 7, since the parallel output will always be on the last output of your Imperium.

So a fully expanded Imperium, will do 7 outputs with a parallel output on output 8. To detach the parallel output from a specific output, simple do the process in reverse.

Choose the output with the parallel output function engaged, then simple hold the “Parallel output” switch once again until it starts flashing the output flashes as well. It is that simple.

Insert

The “**Insert**” switch has two functions:

It can function as an insert point between the inputs and the outputs bypassing the level section. When engaged, the signal is sent to the send output of the Imperium, and the return input is open, allowing an input going into the imperium after the level section.

This is useful if you fx. want to use a separate secondary volume control like a t.c. level pilot fx.

The Insert function can also work as a “send only”. This is achieved by holding the Insert switch until it flashes, and the current volume state is still lid and active.

Activating the send, will send what ever you are hearing, to the send output without any volume attenuation! This is useful for sending to a separate headphone system fx. or for a meter.

Level bypass

“**Level Bypass**” - Also know as the killer switch! Bypasses, all attenuation on the selected input where engaged!

It is extremely important that you know exactly what you are doing when using this function, otherwise you may damage both your ears and your speakers!

So the Level Bypass switch turns off the Level attenuator in Imperium all together, routing your signal directly from the selected input to the selected output.

Thus you can end up having a really loud level going on!

Before you can use the Level Bypass switch, you will have to turn it on.

This is done by inserting an object such as a straighten out paperclip, into the hole below or besides the Level Bypass switch (Depending on your Imperium model) Hold it for a couple of seconds. The Level Bypass switch will light up dimmed. This means that the Level Bypass switch is now ready to program. The way you do this is, by first selecting the input you want to have level bypassed, then hold the Level Bypass switch. The switch will start flashing, first slow and the faster and faster until it is activated. It takes about 5 seconds to program an input to be level bypassed. This is for security reasons, so you do not level bypass, by accident. If you let go of the switch during the sequence, the programming will be aborted. To un-program an input, simply do the process in reverse.

**Phase
left CH**

OR

**Polarity
L**

“Phase Left Channel” or on new versions “Polarity L”, flips the polarity of the left channel on all outputs, very useful to check for phase correlation. Nice to know, when used in conjunction with the “Mono” function, you will hear Diff summed to mono.

Mono

Plain and simple, sums left-right to mono - Check your mix in Mono

Cut

Yes - you guessed it! This is the “Cut” switch. When engaged, All signals will be cut! - Hey, not entirely true.. From V.2.1, when using the “send only” function this will be active, even with Cut engaged. Useful for still having signal to the headphone amp, but not to your speakers.

Which can be a real lifesaver if you by mistake get a real loud signal thru Imperium to your precious speakers. Why would you do that? We don’t know, but it does happen from time to time though...Just one of those things when working in a studio.

Cut is always enabled when booting Imperium - Nice - this saves your speakers from nasty pops and clicks at power up. Remember to Cut before turning of the power of Imperium, again this will protect your speakers.



“Toggle Arrow” switches on the 2U Imperium, for selecting various volume steps, inputs & outputs - In and Outputs are directly accessible on 1U Imperium.



In 1

In 2

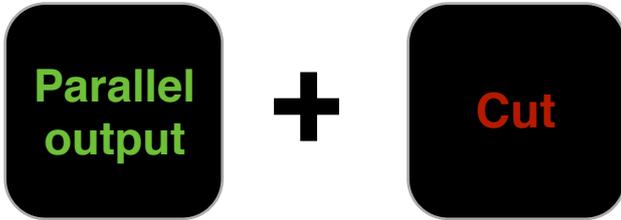
In 3

Out 1

Out 2

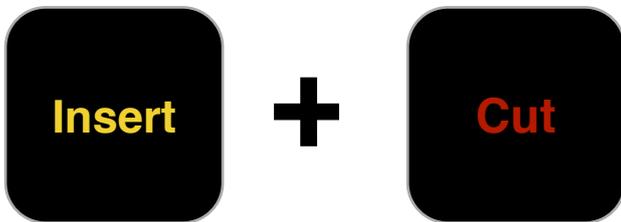
Out 3

“Combos”



Saving Imperium Boot Up state:

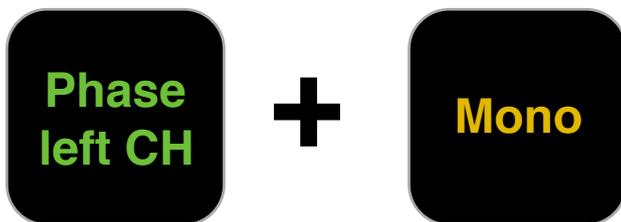
Hold down both switches at the same time. Lights will flash 3 times, to indicate that the current state of Imperium, is saved, this includes selected Input and output, Parallel output programmings, Level Bypass switch enabling + programmings. Imperium is always cut at boot up to protect your speakers.



Hold Cut and press Insert, to **view current firmware revision** - Now on 1U Imperium too. The first digit will flash in one of the level knobs, then the second digit will flash. Fx. 2.4

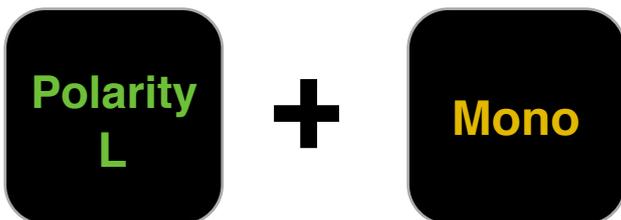


On 2U Imperium only: Hold Downwards pointing Input arrow, then toggle Level Arrows up or down to either **increase or decrease display intensity**



Hold **Phase left CH** and **Mono**, to **link** them. When pressing Mono alone, it will behave as normal, when pressing Phase left CH, it will engage both Phase left CH & Mono at the same time, and you will hear Diff summed to mono. Do the process in reverse to unlink.

OR

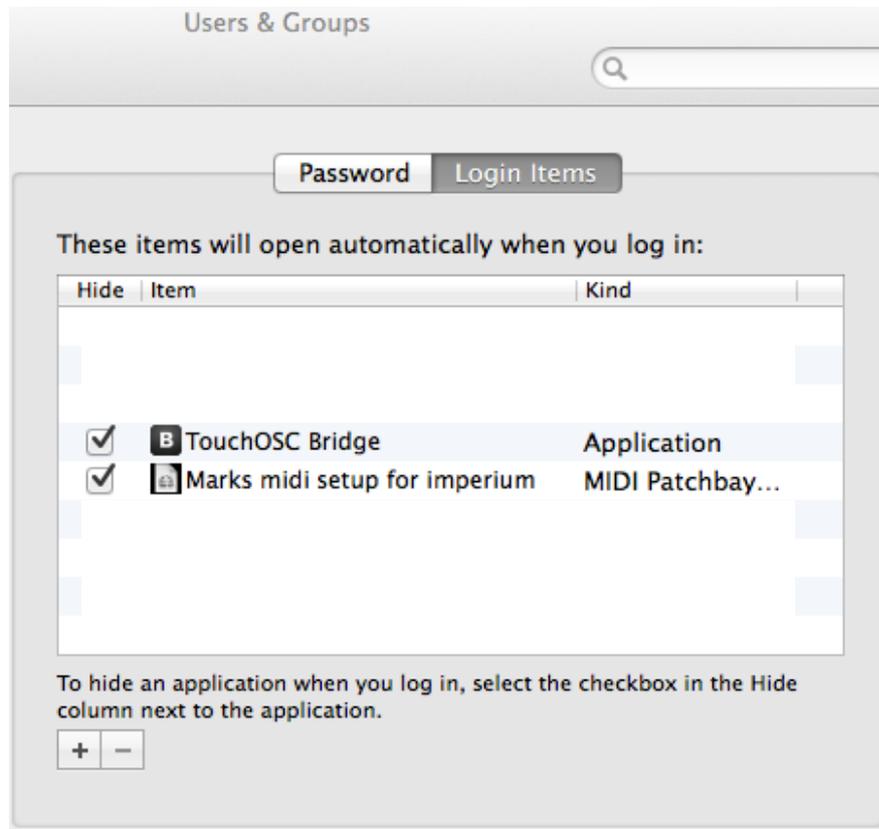


NB: Newer models will have a *Polarity L button* instead of the Phase left CH. The function is the same.

”Software needed on your Mac”



Touch OSC Bridge Software - should be installed first.
Drag the program to you applications folder - then go to:
System settings / User and Groups / Login Items
Then drag the Touch OSC Bridge program from your program folder to the
Login items menu list, should look like this:



This will ensure that the Touch OSC Bridge is enable at boot up of your Mac, and make it possible for you iPad or iPhone to connect to your computer. After reboot, you will see the Touch OSC Bridge symbol in your Menubar.





Next you need to make your MIDI interface connect to the Touch OSC Bridge.

Install the 2400 Audio Midi Patchbay software. Drag the Program to the Applications folder and to your dock (for convenience) Launch 2400 Audio Midi Patchbay - Add a Patch, and set your MIDI interface input to go to TouchOSC Bridge, and TouchOSC Bridge to go to your MIDI Output -

The screenshot shows the 2400 Audio MIDI Patchbay software interface. On the left, a patch configuration window displays two connections: 'Your Midi Interface Input' (all channels; all notes) connected to 'TouchOSC Bridge', and 'TouchOSC Bridge' (all channels; all notes) connected to 'Your Midi Interface Output'. Below this is an 'Add Patch' button. On the right, the 'TouchOSC Bridge' settings are shown. The 'MIDI Input' is set to 'TouchOSC Bridge'. Under the 'Notes' tab, the 'Allow all notes' option is selected. Below this, there are sliders for 'Only allow notes in the range' set from C-1 to G9, and a 'Transpose notes by' slider set to +0. The 'MIDI Output' is set to 'Your Midi Interface Output'.

Next save your setup and drag the document to your Login Items, same place as you did with the TouchOSC Bridge.

Do not forget to turn on the hide function on both the bridge and your document, otherwise the programs will open at startup, which can be annoying.

The screenshot shows the 'Users & Groups' system preferences window, specifically the 'Login Items' tab. The window title is 'Users & Groups'. Below the title bar, there are two tabs: 'Password' and 'Login Items'. The 'Login Items' tab is selected. The main content area is titled 'These items will open automatically when you log in:'. Below this title is a table with three columns: 'Hide', 'Item', and 'Kind'. The table contains two rows of data:

Hide	Item	Kind
<input checked="" type="checkbox"/>	TouchOSC Bridge	Application
<input checked="" type="checkbox"/>	Marks midi setup for imperium MIDI Patchbay...	MIDI Patchbay...

Below the table, there is a note: 'To hide an application when you log in, select the checkbox in the Hide column next to the application.' At the bottom left, there are two buttons: a plus sign (+) and a minus sign (-).

”Setting up for wireless control via IOS and MIDI”

Software for Imperium can be downloaded at www.2400audio.com

In this section you will learn how to set up the Imperium to be controlled via IOS

On your iPad or iPhone - Go to the App store and buy Touch OSC.

Touch OSC, is the App we use to communicate with Imperium via Wifi and MIDI.

When this is done, you need to sync your Ipad or Iphone to iTunes in order to sync the Imperium layout(s) that fit your configuration. We supply layouts for all configuration, these can be downloaded at www.2400audio.com

You can even do your own layouts, using the Touch OSC Editor. It is also possible to sync layouts to your IOS device using the Touch OSC Editor instead of Itunes.

After syncing the layout(s) to your Ipad or iPhone, go to the Touch OSC App.

Choose settings. Enable the “Touch OSC Bridge”, Now the name of your Mac should show up on the list. Choose it.

Now your IOS device is connected to your Mac via the Touch OSC bridge.

Make sure your Mac and your IOS device is always on the same wireless network.

There are several ways to setup for wireless control. We recommend to use the build in Wi-Fi in your Mac to turn it into it’s own network(“Wi-Fi Spot”) - This will give you the best results. (shown in diagram A & B)

The reason for this is that, when you make a closed network, you will have no interference from other sources. Even just being on the internet can in some cases cause interference.

It is important that your Mac is then connected to your router via ethernet too, If you want to be on the internet at the same time.

It is possible to make an all wireless connection (shown in diagram D).

Your Imperium needs to be connected to your Mac via a USB Midi Interface.

Any should do.

We recommend using a simple 1 in - 1 out interface, this will make it dedicated to Imperium. If you want a more sophisticated setup with a wired + wireless connection which include charging of your iOS device during operation, you should use an interface like the iConnectivity iConnectMIDI2+ (Shown in Hardware Hookup Configuration Diagram A)

”Setup Diagrams”

Diagram A

Highly recommended setup.

In the Wi-Fi menu you need to “Create Network” to make the Mac into it’s own Network

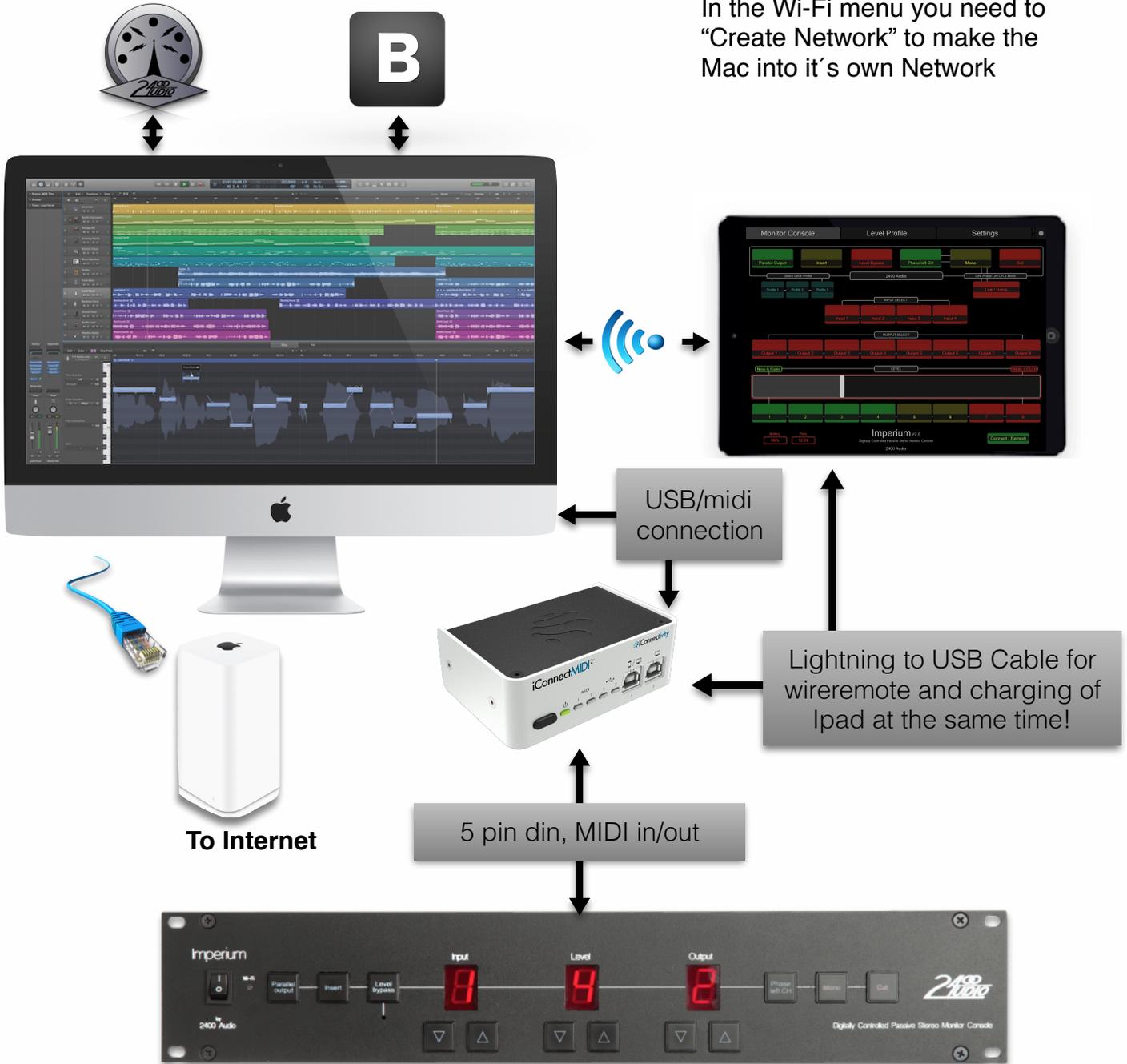


Diagram B

Recommended setup.

In the Wi-Fi menu you need to “Create Network” to make the Mac into it’s own Network

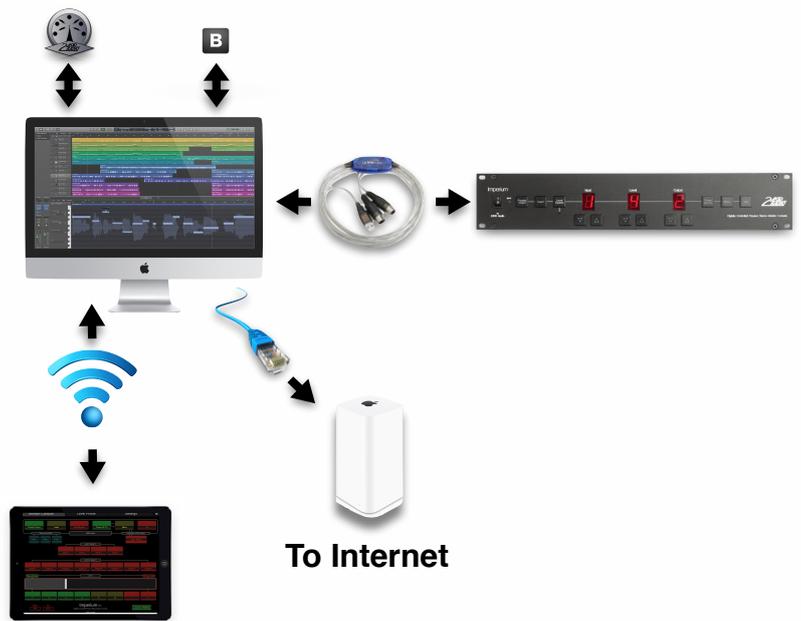


Diagram C

2nd best setup.

In the Wi-Fi menu you need to choose the wireless network that your Mac connects to.

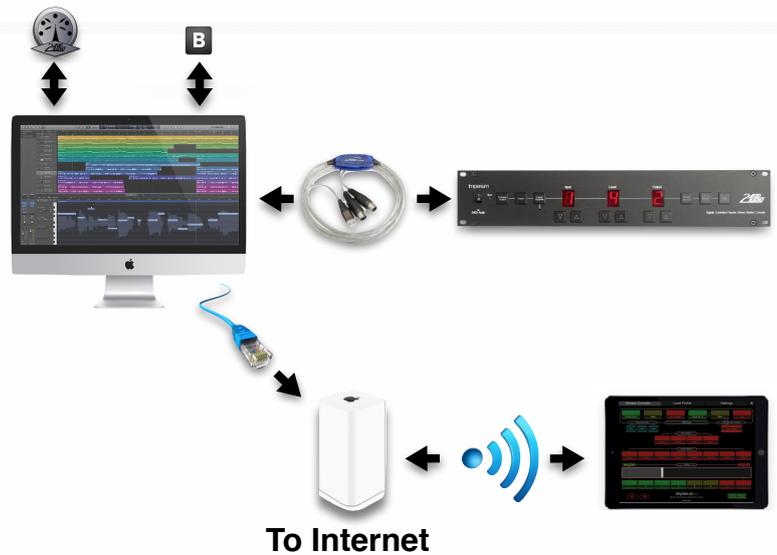
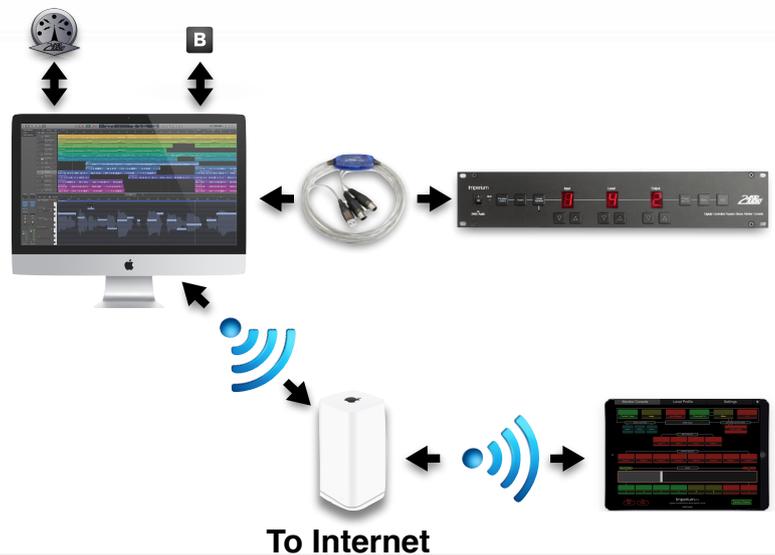


Diagram D

3rd best setup.

In the Wi-Fi menu you need to choose the wireless network that your Mac connects to. This will work but there is a risk that the Wi-Fi connection might be more sluggish.



“How to filter out, unwanted MIDI messages from your DAW”

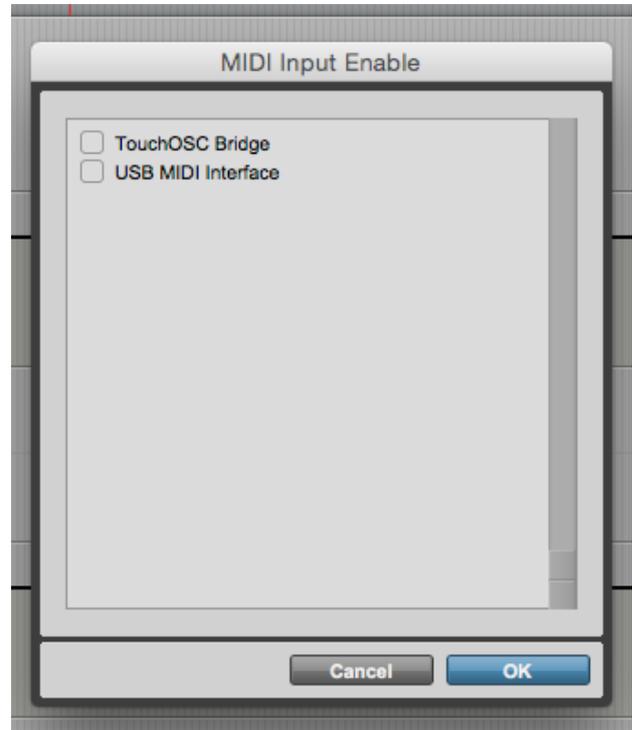
Since Imperium “talks” MIDI, it is important to “filter” out all messages on the MIDI interface in your daw. This is done differently in every DAW. We will give you a couple of examples.



Pro Tools:

Go to the Menu:
Setup / MIDI / MIDI Input Devices

Make sure the box is unchecked for the midi interface ports for Imperium & TouchOSC bridge



Logic Pro X:

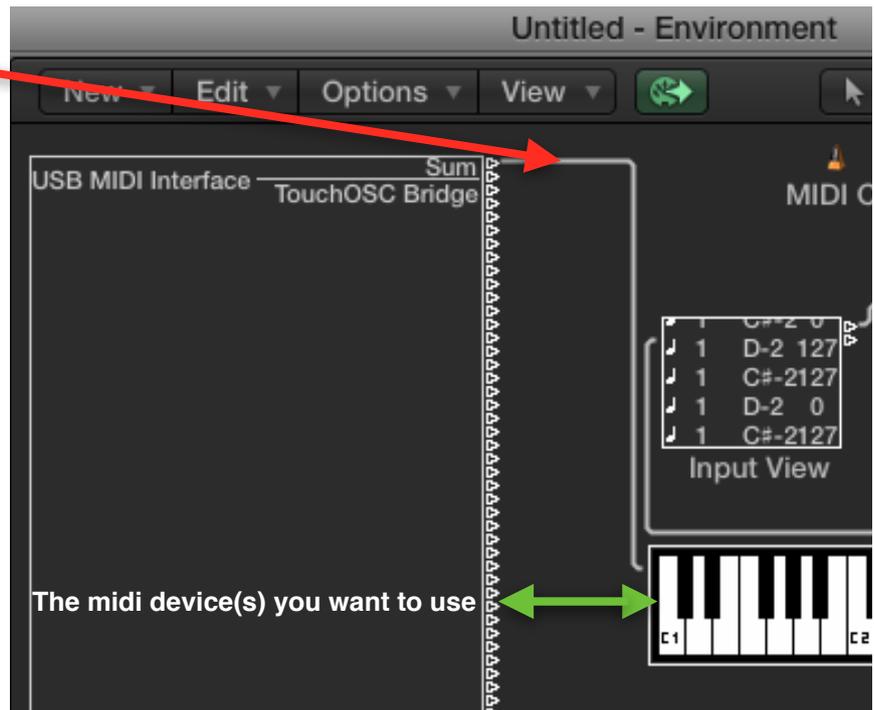
Is a little more tricky. Logic Pro X, will by default automatically add any midi device that connects to your Mac. This means that your Imperium will send MIDI notes to Logic, when you use the Imperium front panel or the Touch OSC software. This is of course not desirable. Fortunately there is a way to make Logic not sum all added MIDI devices automatically.

Remove the Sum Cable.
This will stop Logic from summing all midi inputs.

Remember to draw a cable from the MIDI devices to the keyboard, you do want to have access to Logic. Otherwise you will not have any midi input to Logic at all.

Make sure that TouchOSC Bridge and your midi interface for Imperium is not connected to the keyboard.

Last but not least, remember to save your setup as template, unless you want to do this for every song you make.



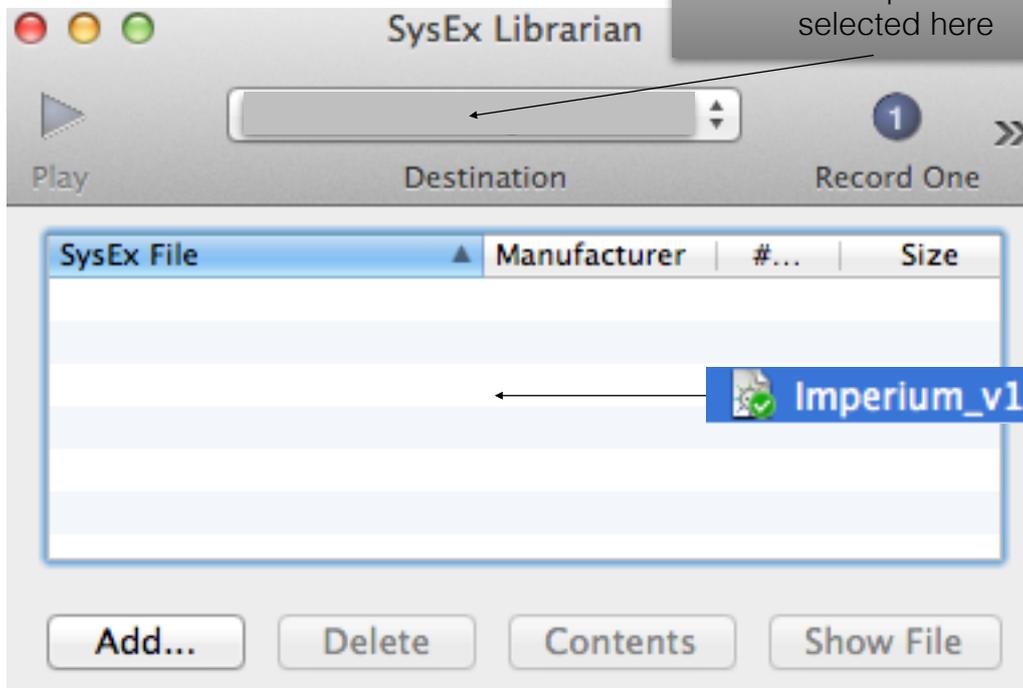
“How to update your firmware (on a Mac)”



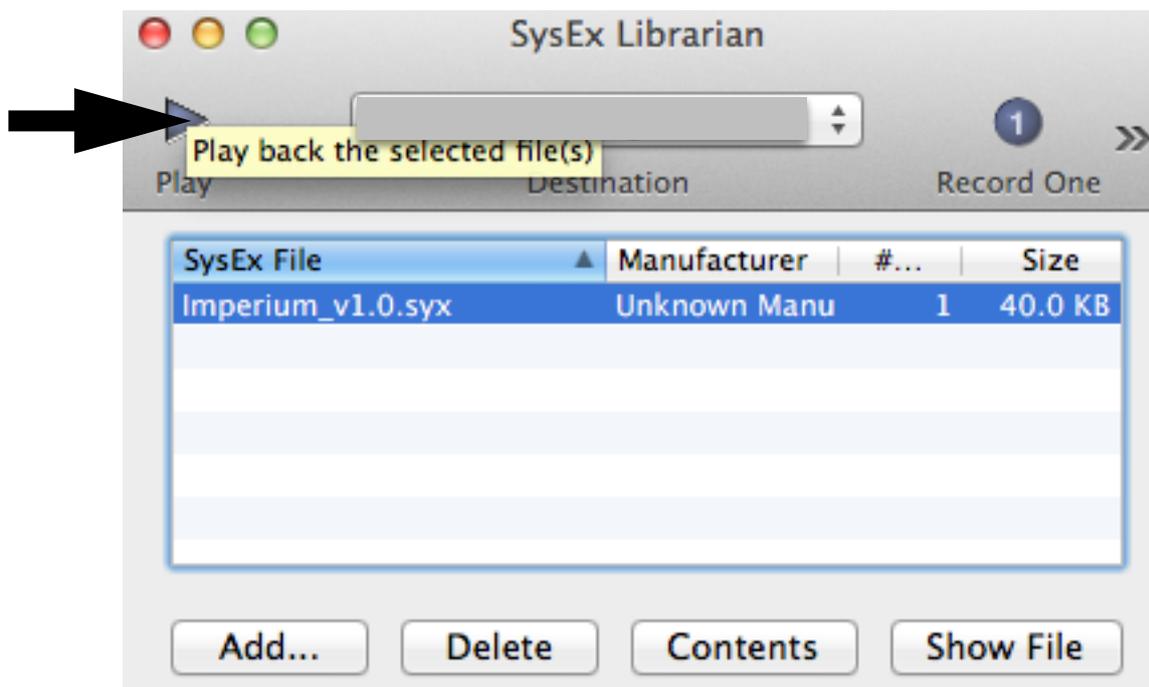
Install the SysEx Librarian Program, Drag it to your applications folder (for convenience drag it to your dock too)

Launch SysEx Librarian: Either “add” or drag drop the 2400 Audio SysEx firmware file into the window

The name of your MIDI interface output should be selected here



Turn off your Imperium: Highlight the firmware file. Turn back on Imperium, hit play in SysEx Librarian right after Imperium is turned on, you have a few seconds before the Imperium boots.. You should now hear a clicking sound from Imperium while it updates. Once the clicking stops, wait a few seconds - The firmware update is now complete. Reboot Imperium, and you are good to go. Imperium is always ready to receive a firmware update within the first few seconds of boot up. If you don't make the first time - don't worry, just give it another go.. nothing will break, not even if you interrupt the firmware update. Simply do the sequence again to rewrite the firmware.



”Ipad Layouts”

2400 Audio supply a good handfull of Ipad / Android layouts for Touch OSC.

This is to get you going straight away. However it is possible, and not that difficult to do your very own customised layouts for Imperium. Just install the free Touch OSC editor and your are on your way. Since Imperium “talks midi”, and all buttons and faders have their own “code”, you have to be very carefull not to change any of these, since this can potentially make you Imperium act many untended ways. 2400 Audio does not take any responsibility for wrong programming of customised layouts, what so ever.

That being said, it fairly easy to copy or move the, buttons and faders we have already made, around to suit your needs. Some good advice, is to test your layout with “Cut” enabled to make sure you do not get a sudden loud signal, in case you have messed up the layout. If you are happy with the layouts from 2400 Audio, you are good to. All our Layouts have been thoroughly tested and are working straight away.

The standart layouts for V2.4 can be found in the “2400 Audio Resources August 2017” download package / “Imperium August 2017 layouts”

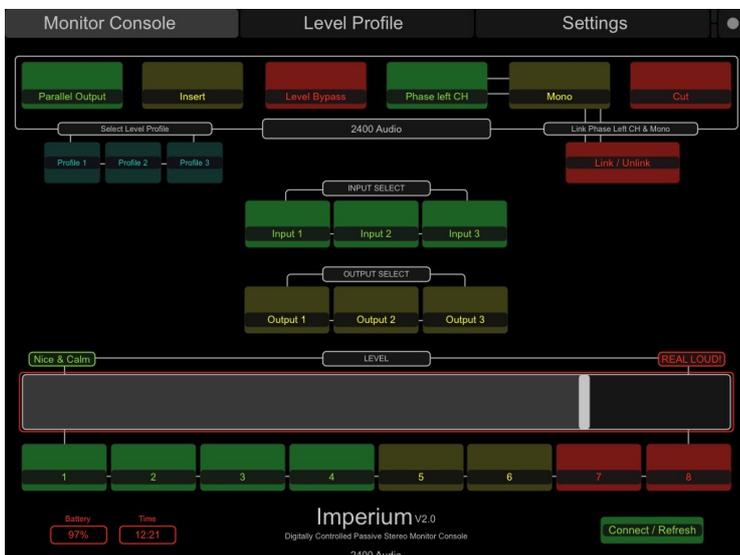
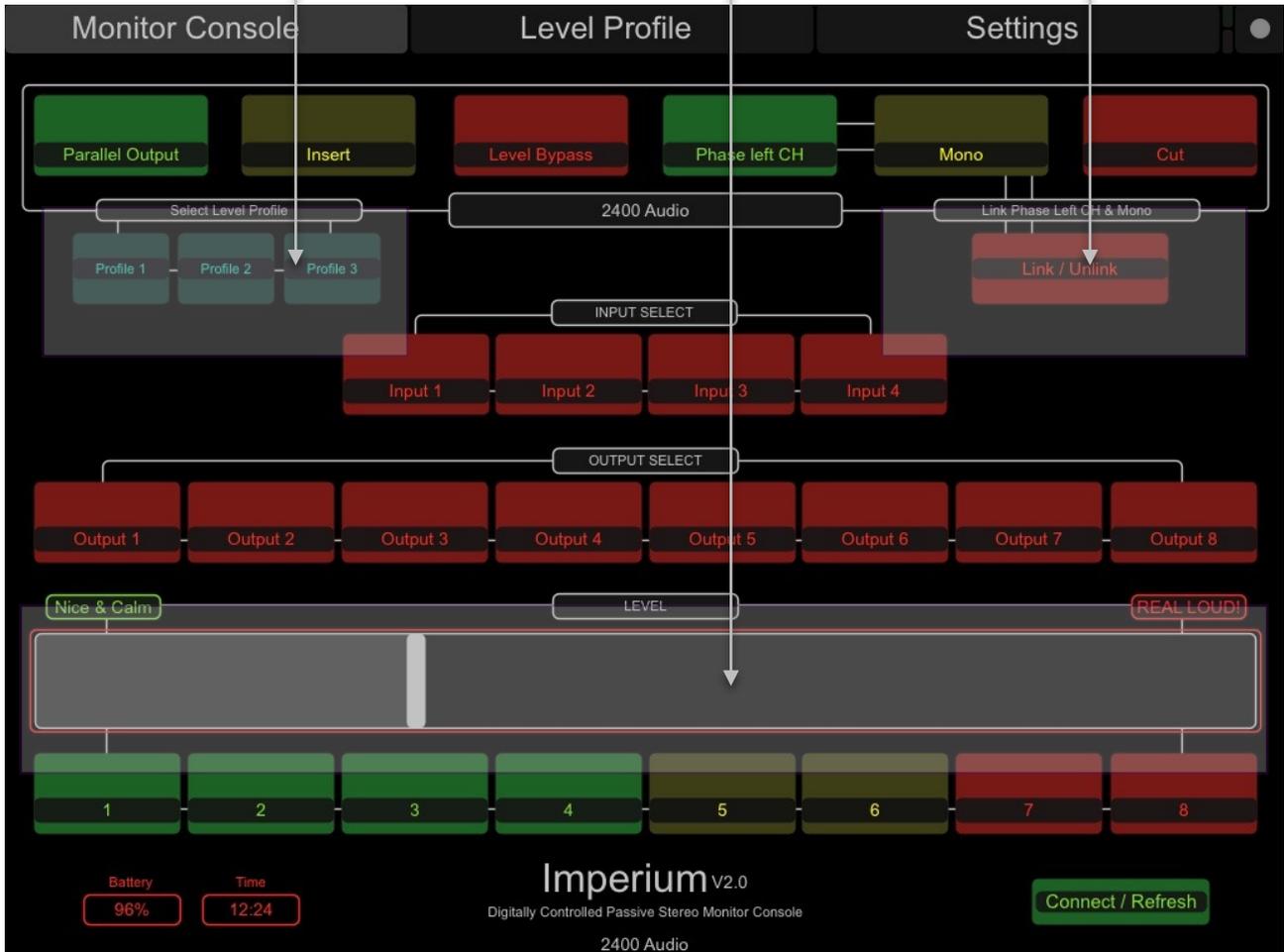
”Monitor Console”

Ipad main controle page

Most buttons on this page should make perfect sense. All are described in the “functions” section of the manual. However some buttons are not present on the hardware unit.

Such as the “Select Level Profile” Buttons, the “Freerange” volume fader the “Link/Unlink” button.

The “Freerange” fader gives you a very smooth volume high resolution control volume control, very much like a traditional analoge knob or fader, but with the precision of attenuated steps!



Snapshot from the “Slimperium” Monitor Console page.

3 Inputs & 3 Outputs

”Level Profile”

The “Level Profile” feature is all new for V2.0 and up. It is now possible to make your very own level “steps”. Not only can you adjust each one of the 8 steps, you have 8 different Profiles to choose from! We think this is a very powerfull feature. Fx. all engineers using the studio can have their own Level Profile that fits his or hers preferred listning preferences. Or you could have different profiles for various situations. Fx. Low volume x 8 steps and another one mid volume x 8 steps and a very loud x 8 steps.

This gives you flexibility for each application, without being locked to a specific preset reference level.

You can save each of the 8 custom profiles into the Imperium memory. Play around and test levels at will, reprogram the profiles all you want they will not be saved until you hit the save button.

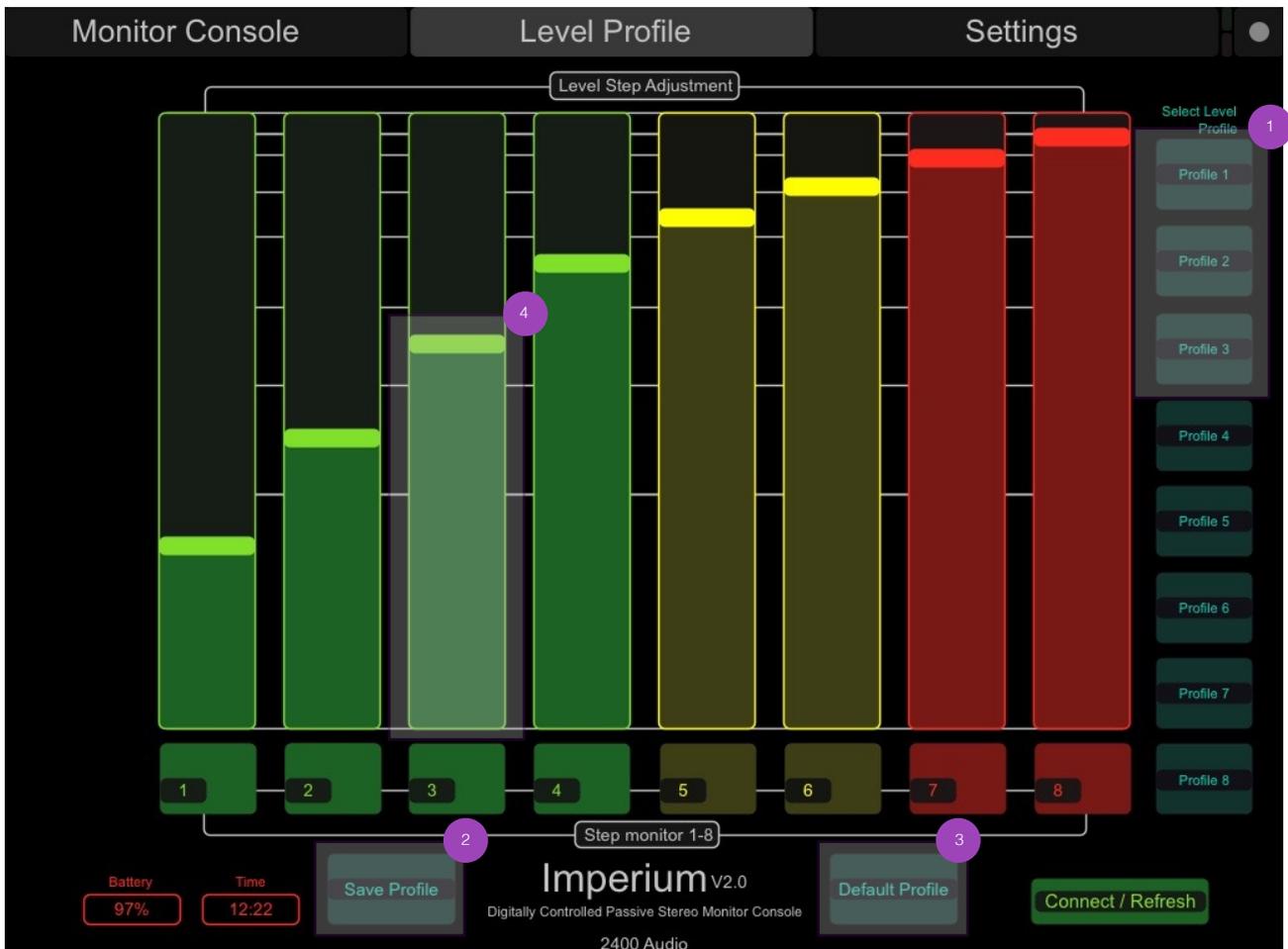
The “Level Profile” page is for programming and adjusting your levels and not meant to be a part of your daily workflow.

When you select a Profile, Monitor buttons are turned off for security reasons. You can still adjust the faders and volume ⁴ for each step, without actually hearing the effect. It is not until you hit one of the Step Monitor buttons you will hear the adjusted volume setting for the selected step.

When no Monitors Steps are engaged, a very low signal will still be audible. You can only preview one “step” at the time.

If you want to reset a profile, simply select the profile and hit the “Default Profile” Button ³ and then hit the “Save Profile” Button. ²

We have included the first 3 Select “Level Profile” ¹ Buttons on the Monitor Console page. This way you can switch between different level profiles very fast.



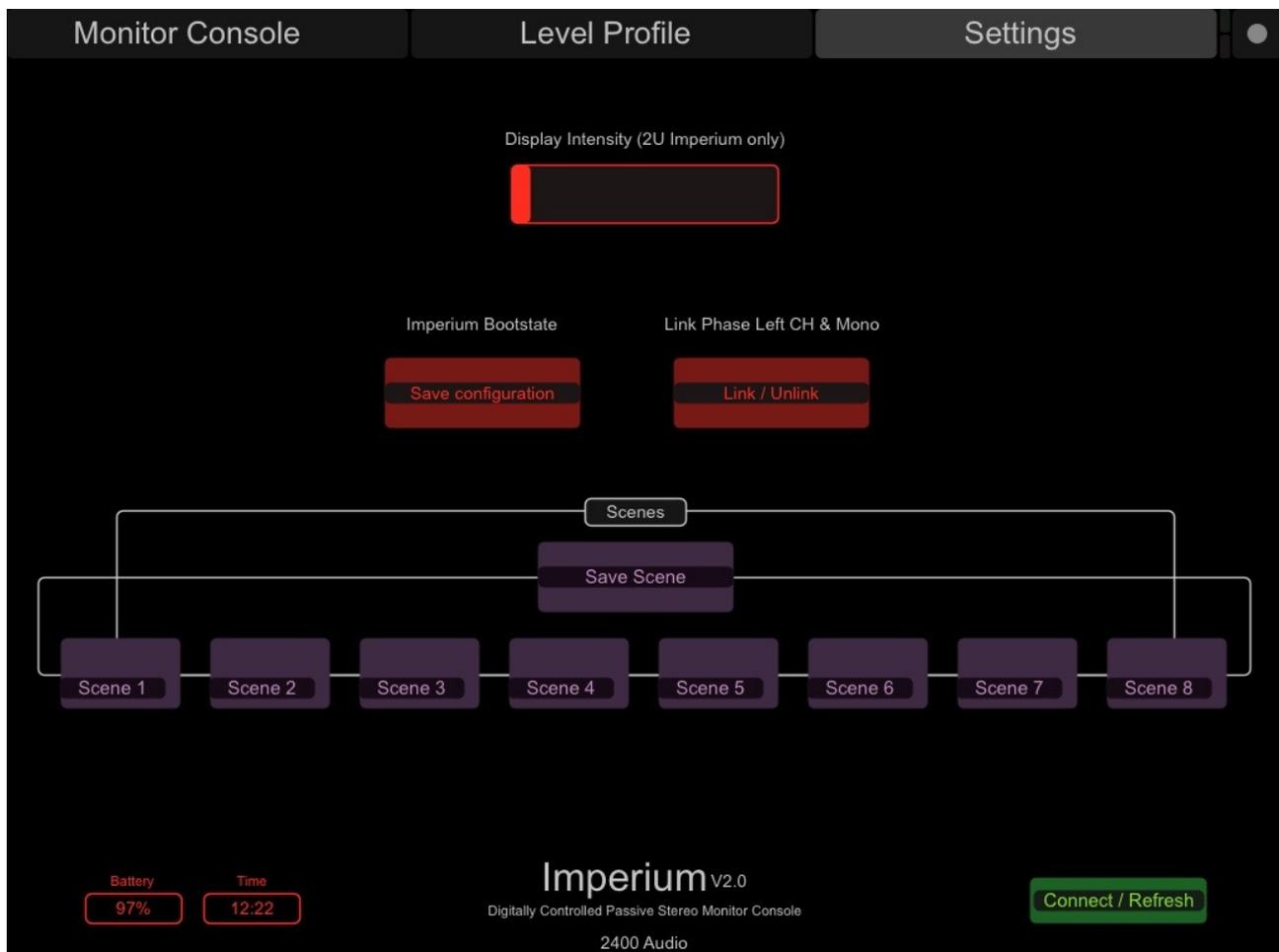
”Settings”

On the “Setting Page” You will find the “Save configuration” Button, the “Link/unlink” of Phase Left CH & Mono button and the adjustment slider for the “Display Intensity” for the 2U Imperium. Added to this page is the new “Scene” Feature.

Essentially a scene is the as the “Save configuration” which is also the the Imperiums Bootstate. The difference is that a scene can be recalled and saved at any time during operation.

This can be useful when wanting to switch several things at once. Fx. Switch both input and output and level and perhaps even level profile at the same time. The possibilities are many.

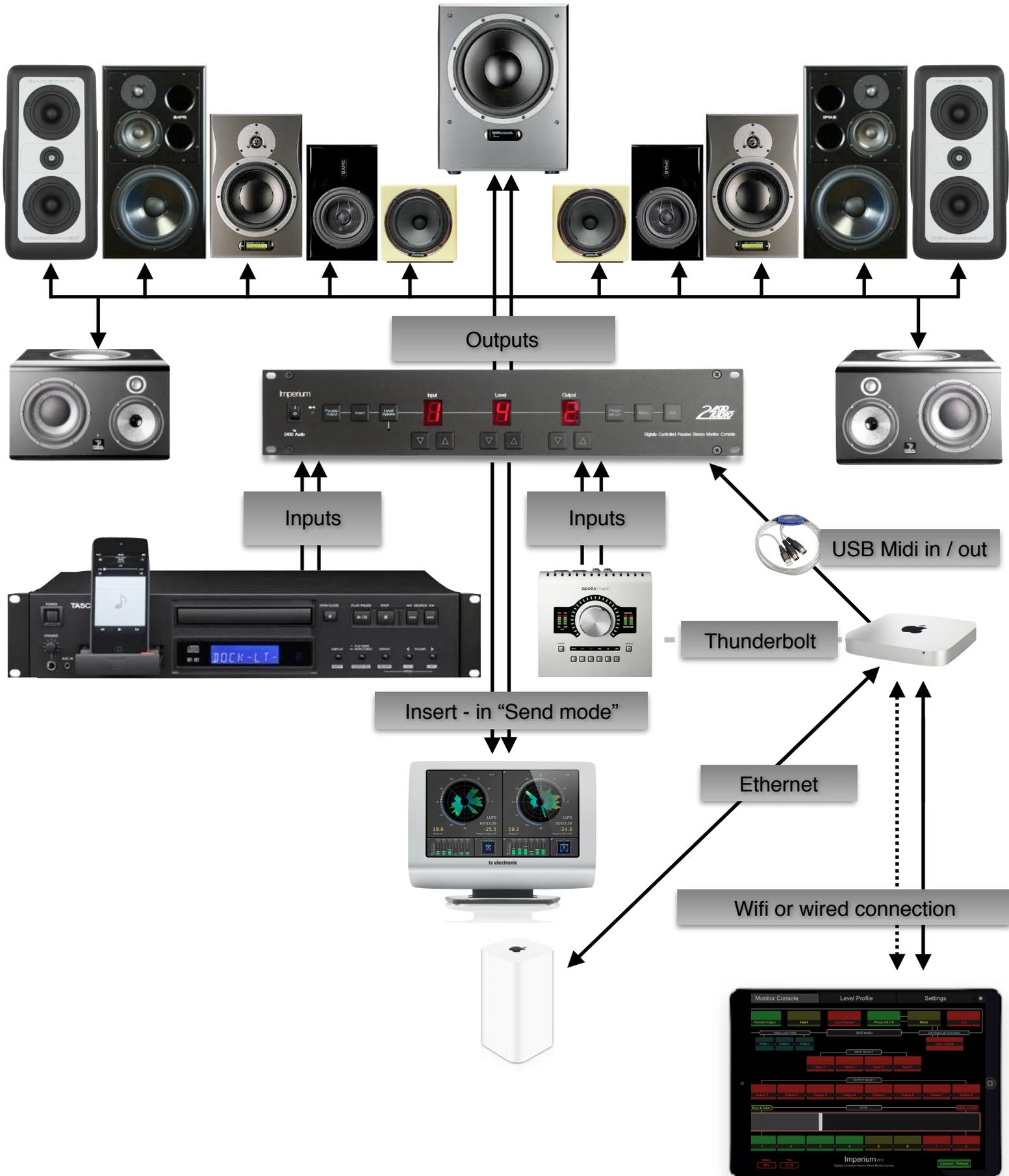
To save a scene, first you have to hit the Scene button you want your scene snapshot to reside on. Fx Scene 1. Next you make the adjustments to Imperium to you want save. Next hit the “Save Scene” Button. That’s it now you have a Scene snapshot you can recall at anytime. To Recall a Scene, simply hit the desired scene button you want to recall. Note that a Scene can only become the “Imperium Bootstate”, if you Select the Scene and then hit the “Save Configuration” button afterwards.



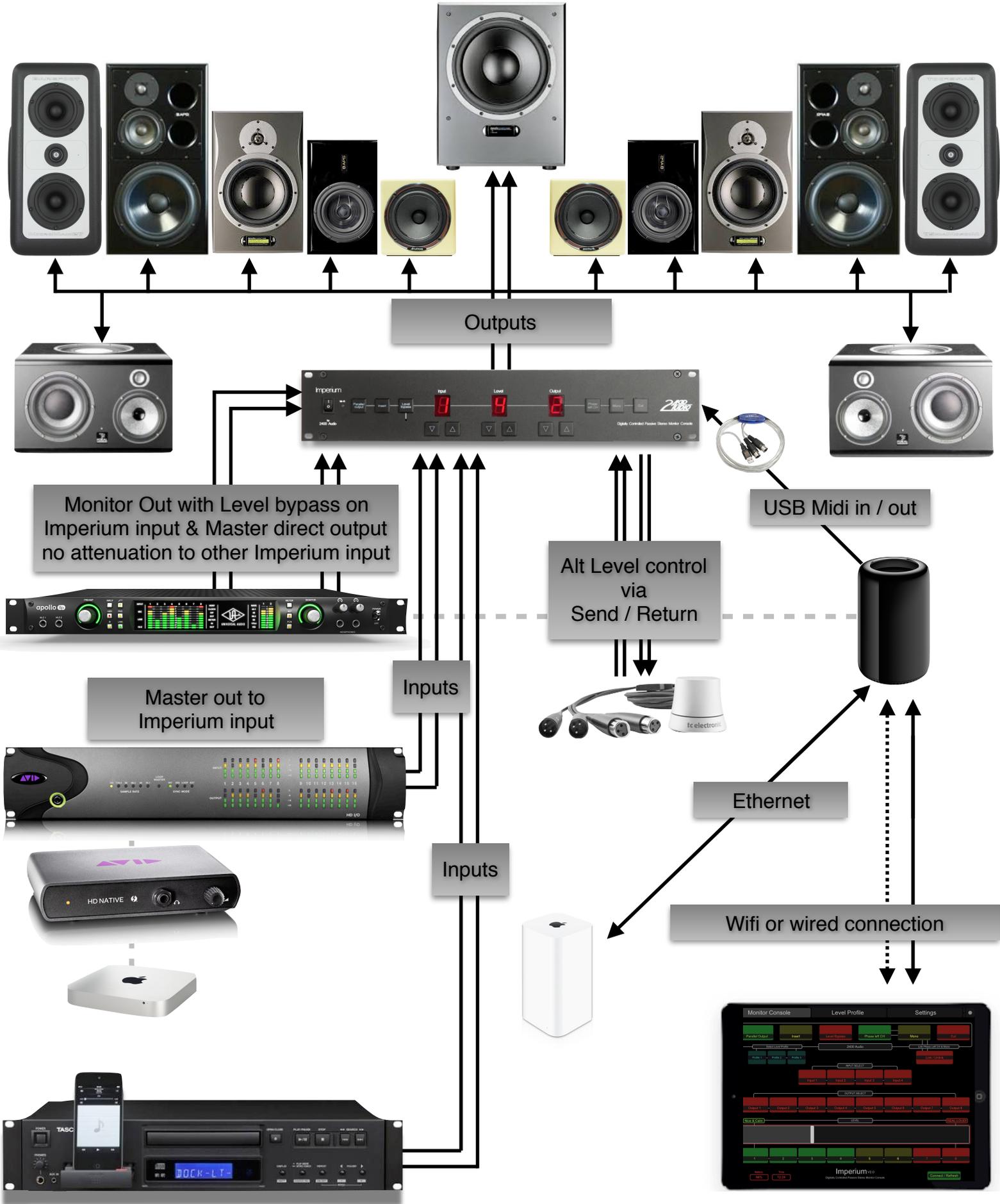
”Connections”

	<p>Optional in and output expansions</p>
	
<p>Balanced XLR send/return Standard configuration</p>	<p>Connections shared by 1U & 2U Imperium</p>
<p>Balanced TSR send/return and Hybrid I/O L/R Standard configuration</p>	 <p>All Balanced XLR In and Outputs Barefoot MEME option Mounting hole 5 Pin din Midi In & Outs Ethernet Link port - Can NOT be used with ethernet devices USB Midi connector - currently for maintenance only</p>

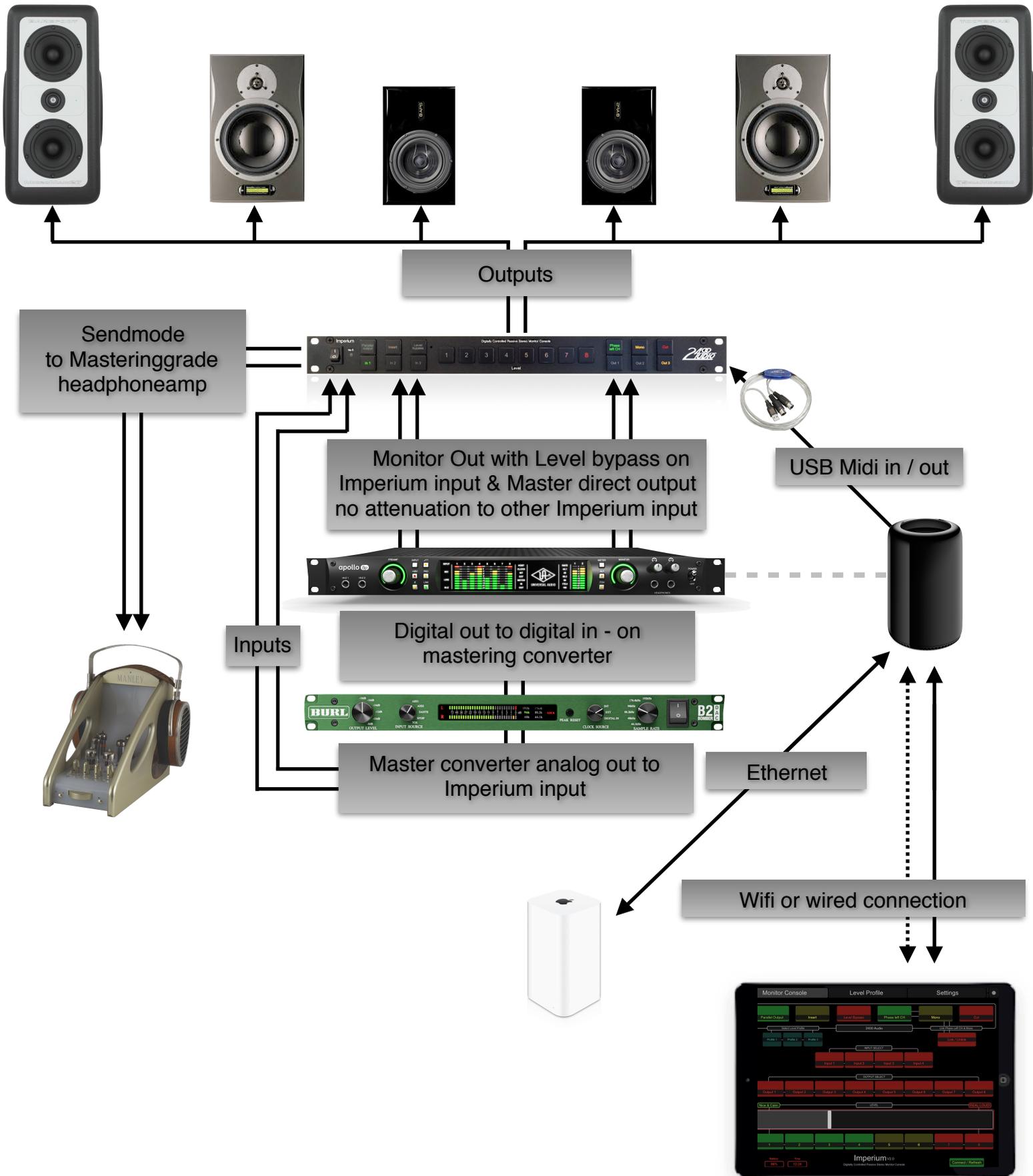
“Typical showroom setup”



"Typical larger studio setup"



"Typical mastering setup"



If you for any reason have trouble with your Imperium or the software, installation etc.

Please contact us via our website or read the Q & A's first.

Important:

2400 Audio can not be held responsible for any damage personal nor equipment wise, from any misuse of this product what so ever.

2400 Audio Imperium Credit list:

Product development and design:

Mark Hannibal
Niels Hasselstrøm
Julian Falck
Lars Nygaard
Anders Bonde
Anton Twile Nielsen

Hardware & Software design:

Niels Hasselstrøm & Mark Hannibal

Bootloader Programming:

Jesper Vestergaard

Manual & Guides:

Mark Hannibal
Niels Hasselstrøm
Julian Falck
Lars Nygaard
Floyd Adams III

2400 Audio Logo design:

Mark Hannibal
Julian Falck
Anders Bonde
Lars Nygaard
René Damsbak

2400 Audio MIDI Patchbay Logo design:

Mark Hannibal

Touch OSC Layouts:

Mark Hannibal
Niels Hasselstrøm

Special Thanks to:

Dennis Rudi Nielsen and Steen Sonne.
René Damsbak
R.J. Fisher for The Touch OSC Bridge & Pete Yandell for MidiPatch.

Legal Stuff:

Floyd Adams III