

# IPX Manager

## IPX Series Windows Control Software



Manual Number: 170302

IPX Manager Version: 2.1.40 & above

IPX Server 2.8.3 & above

IPX FPGA Firmware: 2.11.3

IPX MCU Firmware: 2.1.10

## SAFETY INSTRUCTIONS

Please review the following safety precautions. If this is the first time using this model, then read this manual before installing or using the product. If the product is not functioning properly, please contact your local dealer or Aurora for further instructions.



The lightning symbol in the triangle is used to alert you to the presence of dangerous voltage inside the product that may be sufficient to constitute a risk of electric shock to anyone opening the case. It is also used to indicate improper installation or handling of the product that could damage the electrical system in the product or in other equipment attached to the product.



The exclamation point in the triangle is used to alert you to important operating and maintenance instructions. Failure to follow these instructions could result in injury to you or damage to the product.



Be careful with electricity:

- **Power outlet:** To prevent electric shock, be sure the electrical plug used on the product power cord matches the electrical outlet used to supply power to the Aurora product. Use only the power adapter and power connection cables designed for this unit.
- **Power cord:** Be sure the power cord is routed so that it will not be stepped on or pinched by heavy items.
- **Lightning:** For protection from lightning or when the product is left unattended for a long period, disconnect it from the power source.



Also follow these precautions:

- **Ventilation:** Do not block the ventilation slots if applicable on the product or place any heavy object on top of it.  
Blocking the air flow could cause damage. Arrange components so that air can flow freely. Ensure that there is adequate ventilation if the product is placed in a stand or cabinet. Put the product in a properly ventilated area, away from direct sunlight or any source of heat.
- **Overheating:** Avoid stacking the Aurora product on top of a hot component such as a power amplifier.
- **Risk of Fire:** Do not place unit on top of any easily combustible material, such as carpet or fabric.
- **Proper Connections:** Be sure all cables and equipment are connected to the unit as described in this manual.
- **Object Entry:** To avoid electric shock, never stick anything in the slots on the case or remove the cover.
- **Water Exposure:** To reduce the risk of fire or electric shock, do not expose to rain or moisture.
- **Cleaning:** Do not use liquid or aerosol cleaners to clean this unit. Always unplug the power to the device before cleaning.
- **ESD:** Handle this unit with proper ESD care. Failure to do so can result in failure.

### FCC

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference.
- (2) This device must accept any interference received, including interference that may cause undesired operation.



### Trademarks

All trademarks in this document are the properties of their respective owners.

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# INTRODUCTION

## About

The IPX Manager is a Windows® based software available at the Aurora customer portal on [www.aurorammm.com](http://www.aurorammm.com)

Always check from time to time for the latest firmware as it may have enhancements, new features, and bug fixes.

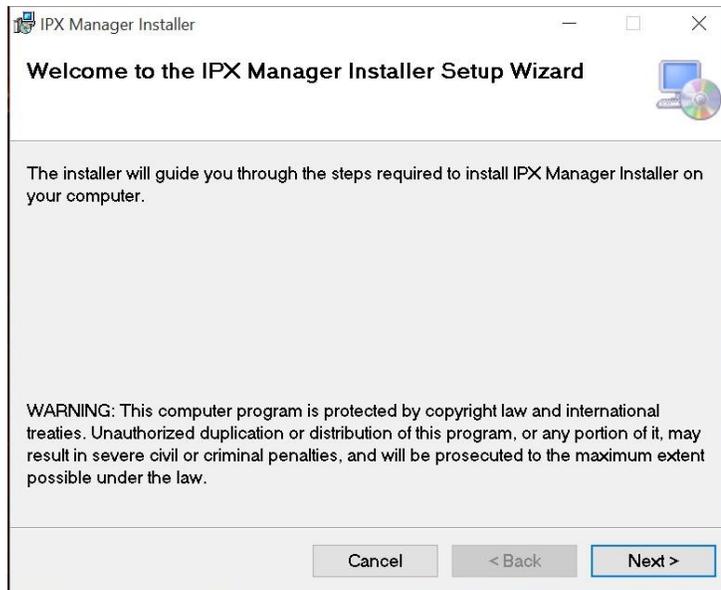
IPX Manager allows a user to control the various capabilities of IPX series products on a network. While the IPX manager is a client software, the IPX Server (QXP-2-IPX Server) handles all the communication handling and is the target for all communication. This allows for centralized communications and the ability to run many clients on a network seamlessly. In addition, 3<sup>rd</sup> party control systems can communicate via Telnet to the Server.

## Features

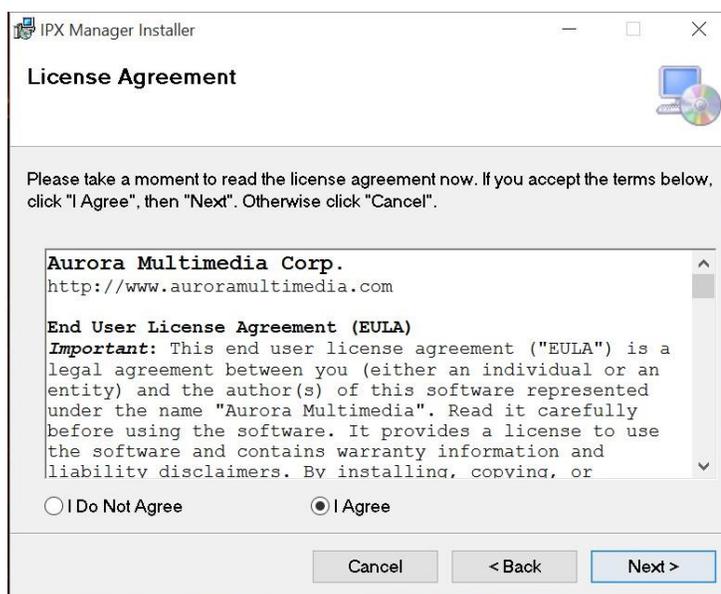
- ◆ Matrix Switching
- ◆ Seamless Matrix Switching for Progressive RGB/YCrCb 4:4:4
- ◆ Video Wall Setup and Control
- ◆ Audio Break-away Routing
- ◆ RS-232 Routing & Control
- ◆ IR (Infrared) Remote Control Routing
- ◆ USB Routing
- ◆ Horizontal and Vertical Viewing
- ◆ Preset Store and Recall
- ◆ Connection Manager
- ◆ Advanced Debug Logging
- ◆ Touch Screen Friendly Layout
- ◆ Configuration File for Cloning Presets and Connections on Other PCs
- ◆ Multi-Server connections

# INSTALLATION

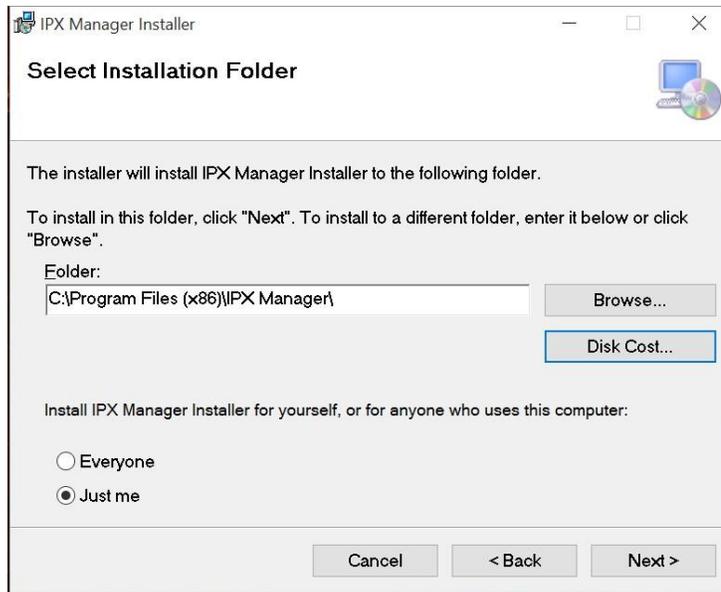
1. Download the IPX Manager from the Aurora website customer portal. It will require a login. If you do not have one you can register for one. <http://portal.auroramultimedia.com/login>
2. Unzip and launch the setup.exe



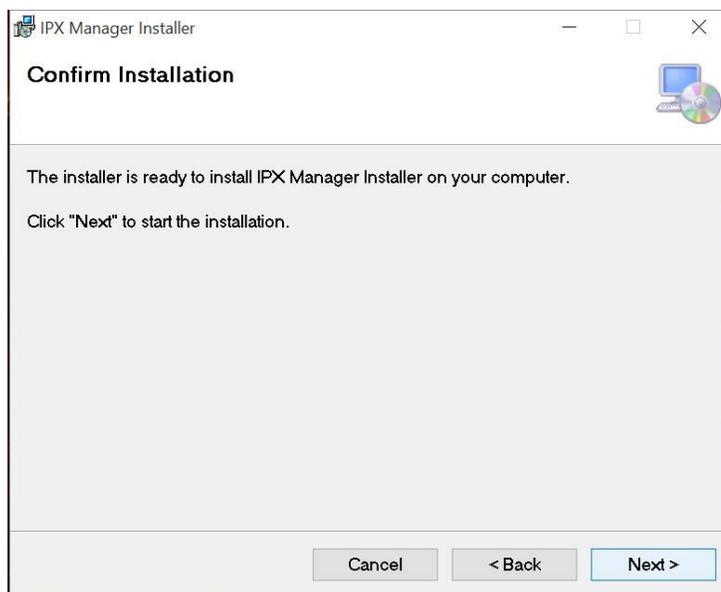
3. Read the EULA (Copy in back of manual under Appendix 4), select I agree, then Next to continue.



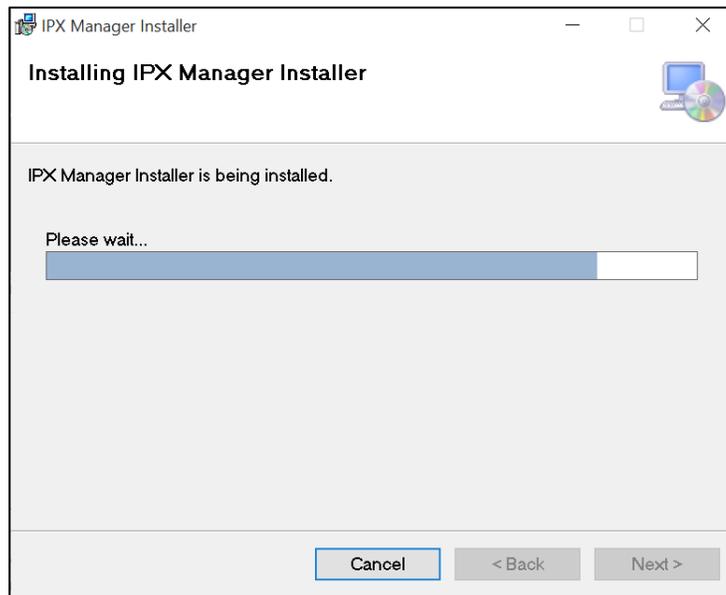
- If accepted, click next for the default directory unless it is required to install in different location.



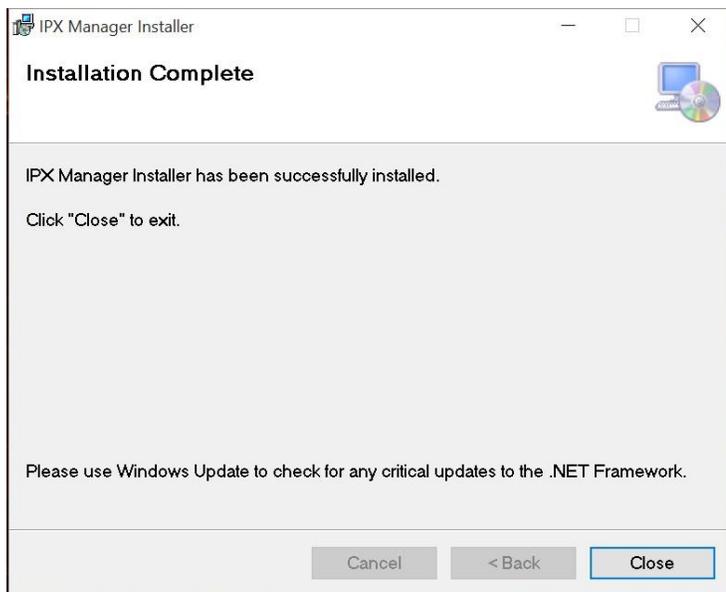
- A prompt will appear to confirm the installation selection. Press Next if you still wish to continue.



- A progress bar will appear. Please note it will not start until Windows User Account Control prompts for permission.



- Once installation is finished a prompt will appear to confirm. Note at the bottom instructions to check for any updates to the .net framework as IPX Manager uses it.



## Cloning Installations

The clone file IPX Manager.exe.config is located at C:\Program Files (x86)\IPX Manager\IPX Manager\. If there is an existing installation with presets and other parameters, the clone file can be saved and used to copy over a new installation config file. The new installation will have all the same settings.

# SOFTWARE OPERATION

## Launching IPX Manager

With a properly installed IPX Manager there will be an Icon for the IPX Manager as shown below. Launch the application by double clicking or single clicking (based on mouse settings).



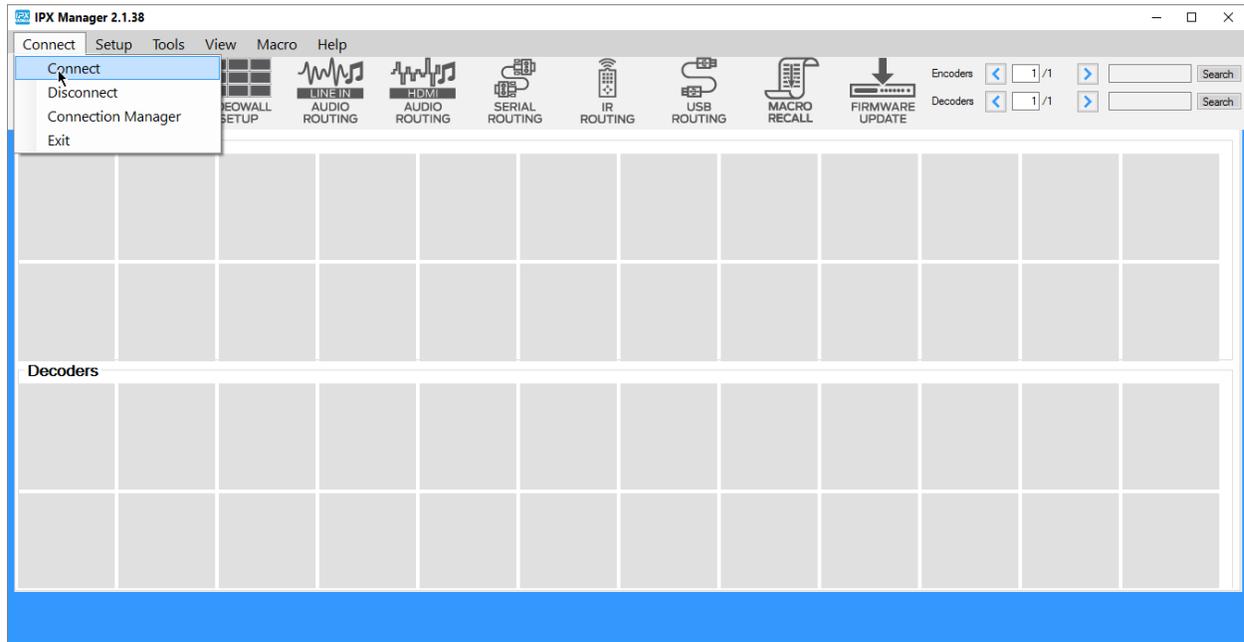
The default starting position will appear which is in an unconnected state which is why no units will show at this time. Note the IPX Manager firmware revision number will appear in the top header bar. The view being shown is Horizontal view. Under the View tab it can be changed to Vertical view so objects can be dragged left to right instead of top to bottom.

It is also important to note if it is planned to have a specific unit switch between Encoder and Decoder mode the setup for the unit must be done once in both Encoder and Decoder mode so it is saved accordingly.

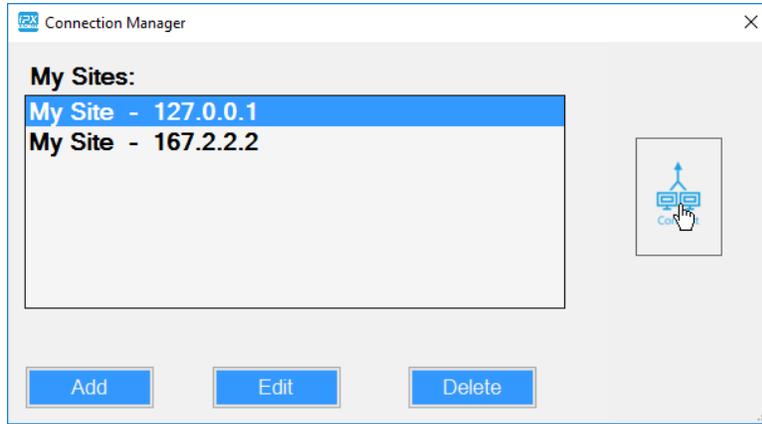


## Connecting to QXP-2-IPX Server

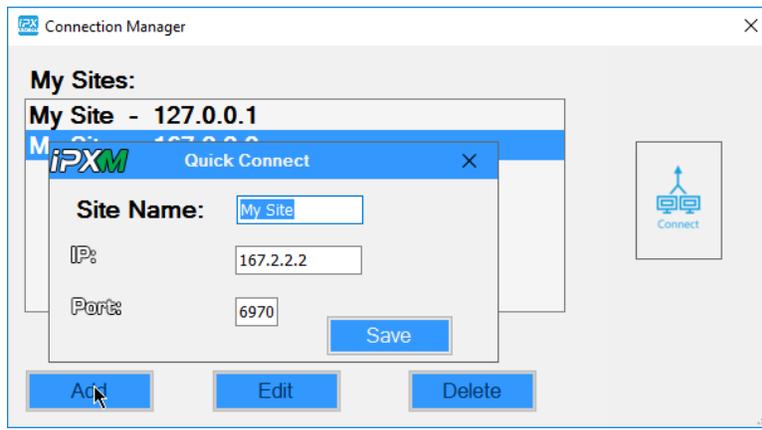
Click on Connection at top and select Connection Manager if this is the first time setting up IPX Manager. If there is already a connection created click on connect.



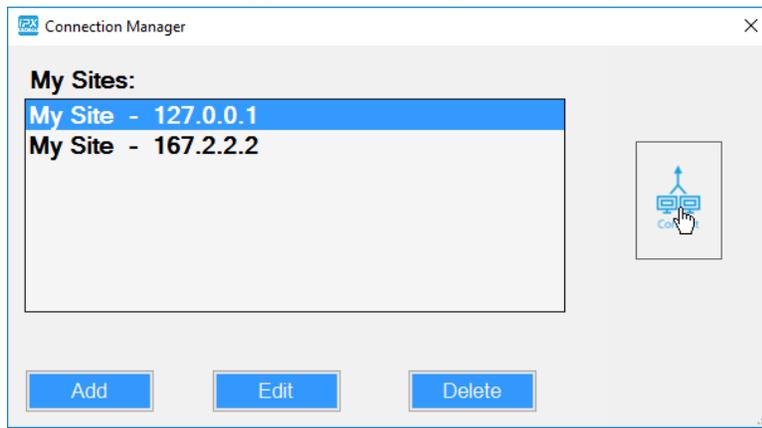
The Connection Manager has the ability to Add, Edit, Delete, and to Connect Servers.



When adding a new connection, enter the Site Name it is to be referred by and the IP Address. The port number is fixed at 6970. When done click on Save.



The Site Name will appear in the listing. To connect, click on the Connect icon to the right.



## Matrix Switching

Once connected, the Matrix page will show the Encoders and Decoders available on the network. The matrix page is for genlocked routing which means there will be no latency. The switch is instant but takes the time of the display to lock before the image will show. Usually this is about 3 seconds depending on the brand and model of display. For faster switching refer to the Seamless switching but has certain requirements and latency for the process to switch instant. Each box will show the Host Name, IP Address of the IPBaseT Video Stream, resolution the unit is processing, color space it is processing, stream status, and the firmware revision of the IPBaseT Video Engine. This information is very handy especially when trying to understand what is going on in a system.

To make a route click and hold on the encoder which will highlight green and drag it to the desired decoder, let go and the route will be made.

Right clicking on an Encoder or Decoder will bring up local device's source selections, EDID management, and setup features specific to the device. The Encoder source selections are HDMI1 and HDMI 2. Decoder is HDMI1, HDMI2, and Stream. Refer to the setup section for details on the individual device setup.



*Important: EDID must be setup for IPX units for proper operation. The EDID must be a common denominator so the sources put out the proper resolution, audio, and color space that all displays are capable of handling.*

## Seamless Switching

Seamless switching routing is the same as the matrix switching except the image will change instantly without going to black for 3 seconds. There are rules to using this feature with the IPX-TC1 and TCW-3.

1. When switching between sources they must be of the same resolution and refresh rate.
2. The source must be RGB or YCrCb 4:4:4. Other color spaces will no work properly.
3. Seamless switch adds a 16ms to 32ms delay (1 to 2 video frames). This will not be noticeable to the human eye but it does add the latency due to the frame memory required to align the signals the proper time to switch so it is undetectable.

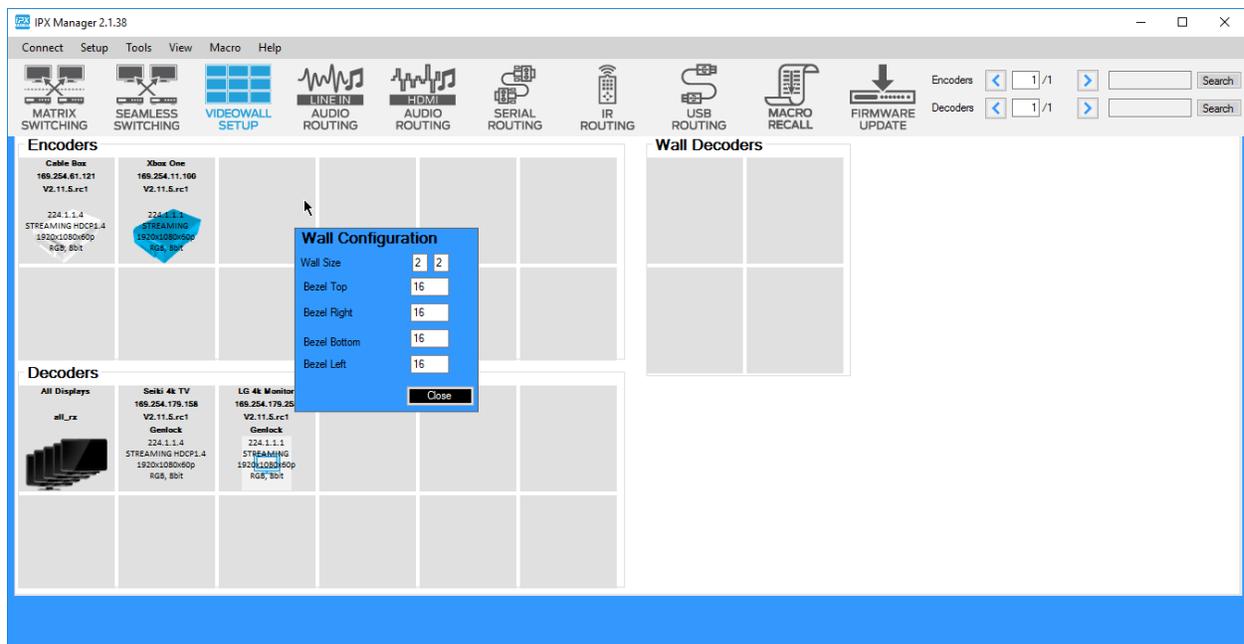
The IPX manager will try to identify invalid signals for Seamless mode and do a standard Matrix switch. This allows for interrupted operation but there will be the 3 second delay.



## Video Wall

The IPX-TC1 & IPX-TCW3 videowall mode has the ability to take in a 4K UHD signal and create a low latency high quality videowall. It is important to note it does this without the use of the scaler as it relies on the scaler and capabilities of the display. The way the mode works is by dividing the input resolution by the amount of displays. For example, a 2x2 videowall will become four 1080p signals from a 4K UHD signal. Please refer to the IPX User Guide when selecting the displays to be used with the IPX units.

The first step is to go to the Setup at the top and select Videowall Configuration. A box will appear to enter a video wall up to 4x4. In addition, there are parameters for bezel compensation for a window pane effect.



Once setup the Videowall page will show the available Encodes and Decoders. To the right will be the representation of the Videowall. Drag each decoder to the right to its relative physical empty outline. This allows the user to know where the physical box is located on the videowall. To make the route drag an encoder to the decoder on the right. You can also drag an encoder below to the Wall Group or All Displays for a more instant effect when it is one big image. There are also preset capabilities available which make changing sources very easy.

Image below is before the Decoders are dragged to the right.

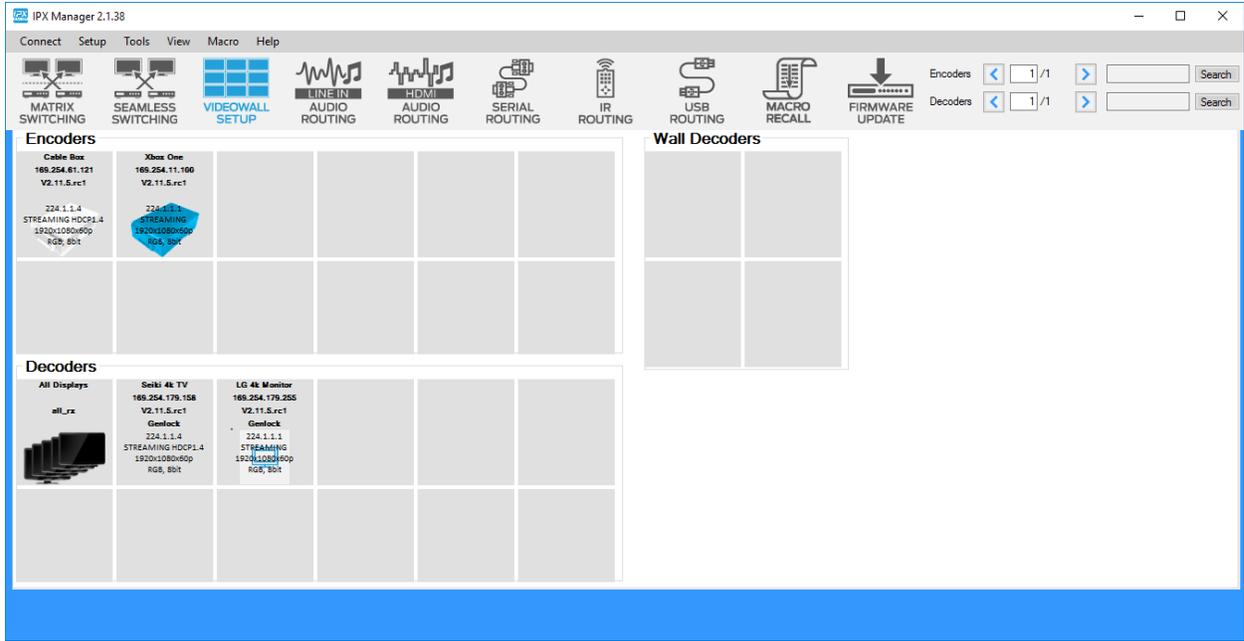
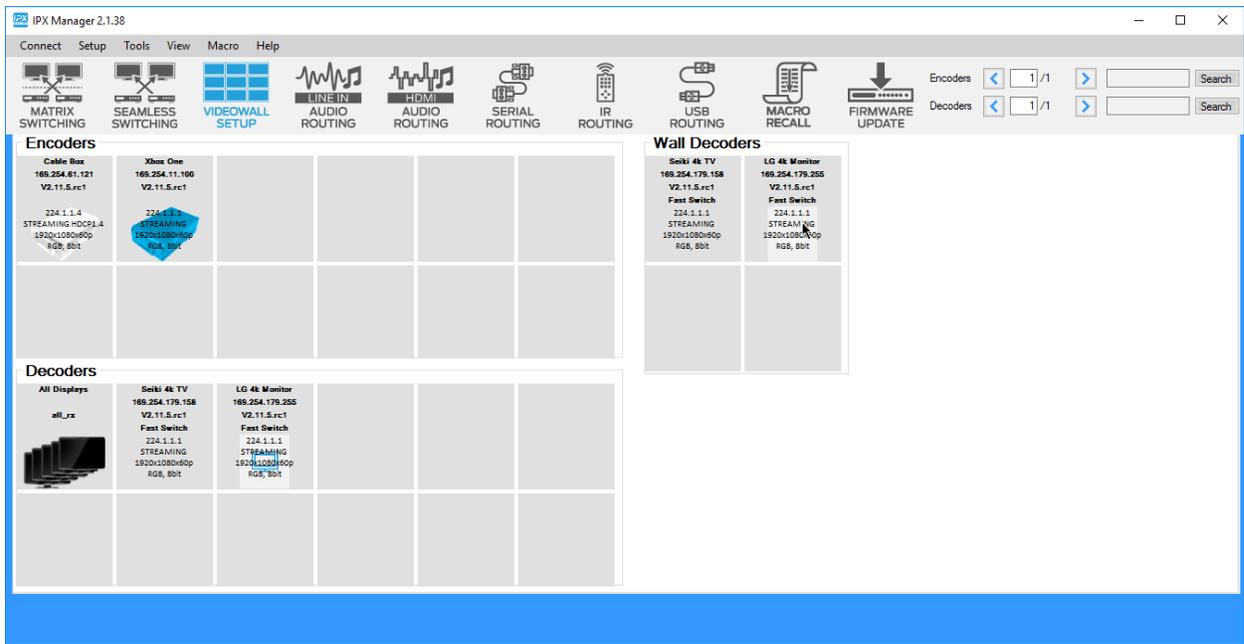
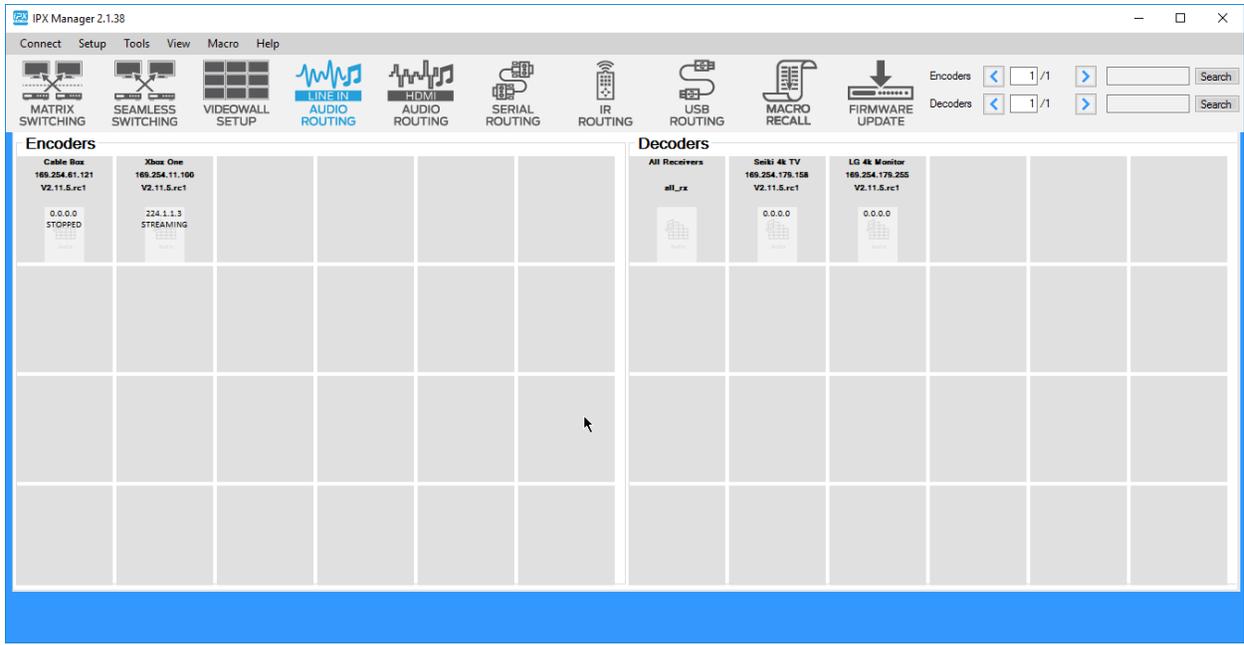


Image below is after Decoders are starting to be dragged to the right.



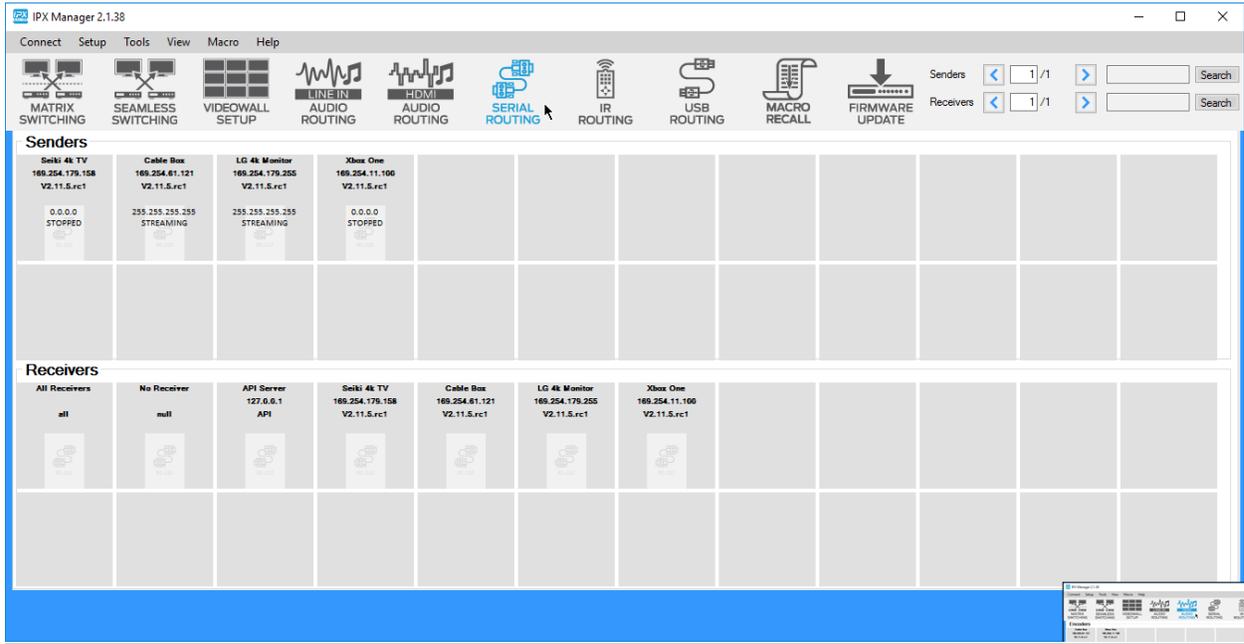
## Audio Switching

The IPX Series has the ability to do break away audio routing. The example below shows the Encoders and Decoders on the network for routing in the vertical view mode.



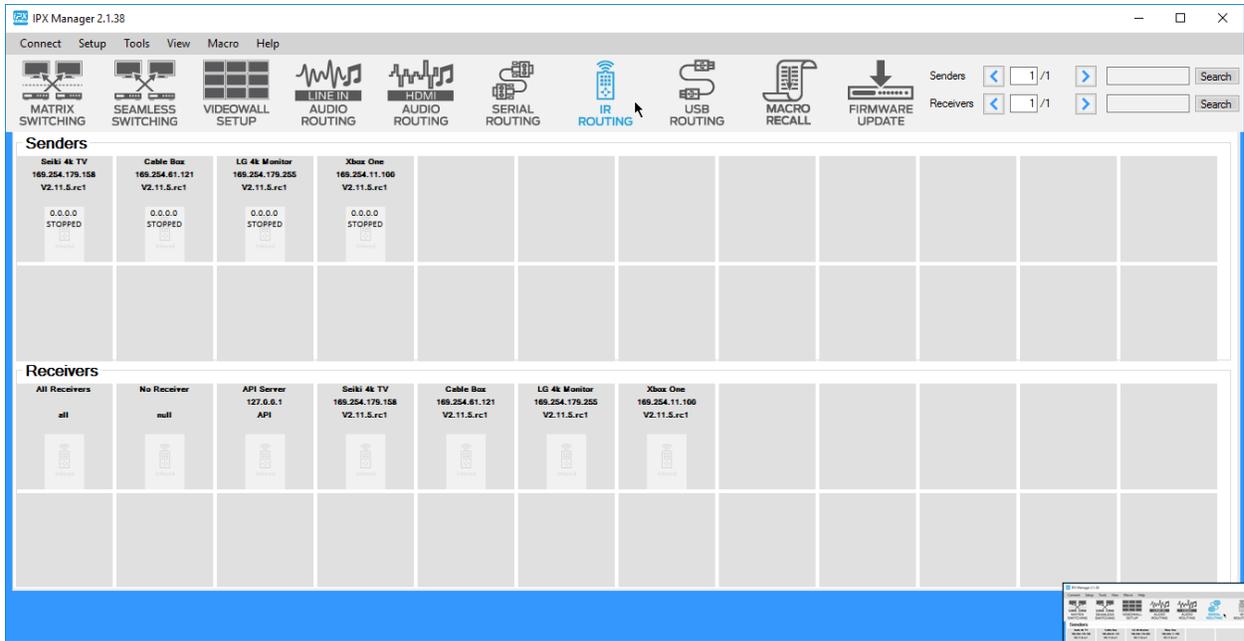
## RS-232 Routing and Control

The IPX Series has the ability to do RS-232 routing of one devices port to another. The example below shows the Encoders and Decoders on the network for routing of the RS-232 in the vertical view mode. If a third party control is being used it will send the RS-232 command right to the unit's port without any routing required.



## Infrared Routing

The IPX Series has the ability to do IR routing of one devices port to another. The example below shows the Encoders and Decoders on the network for routing of the IR in the Horizontal view mode.



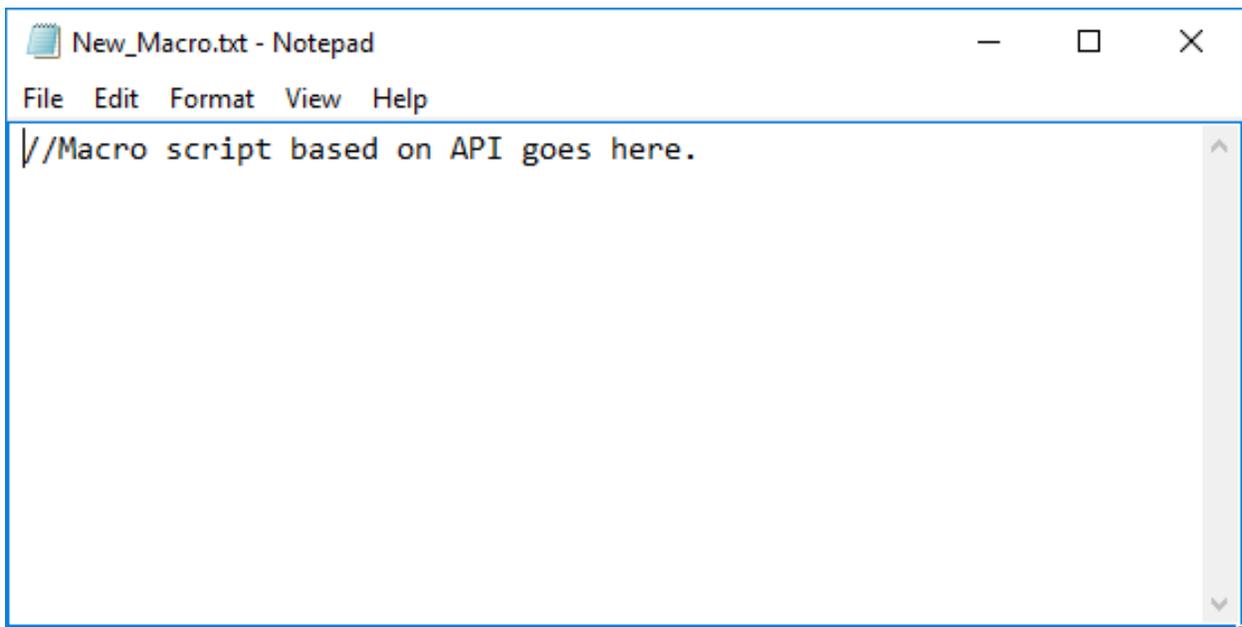
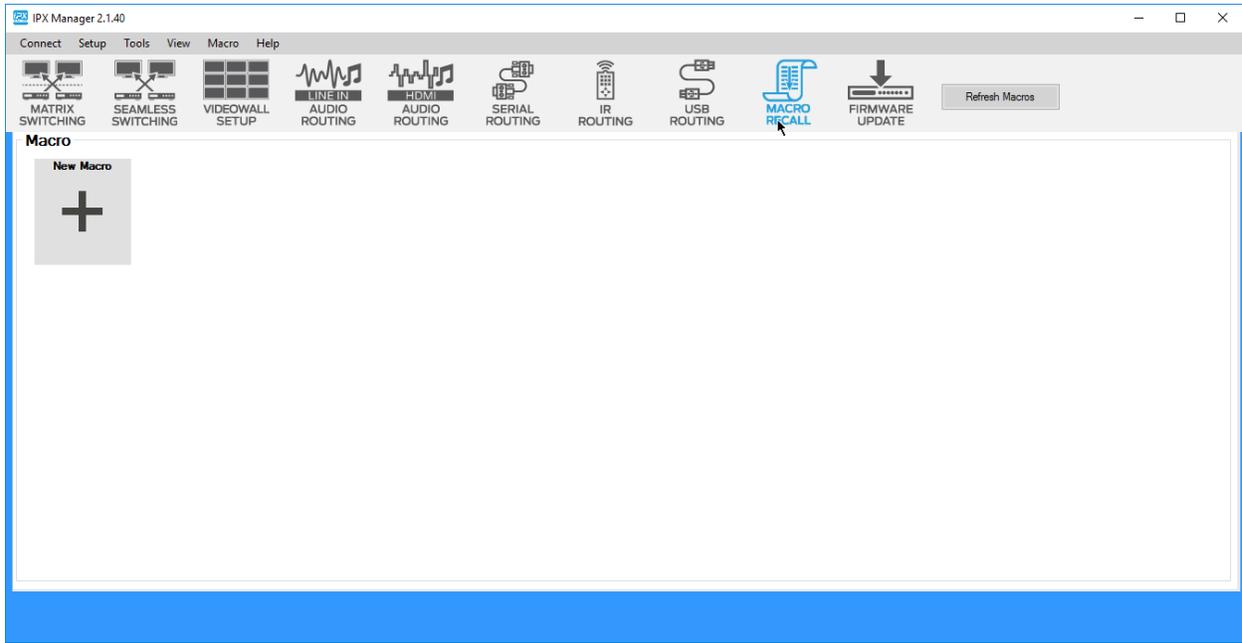
## USB Routing

The IPX Series has an optional USB 2.0 480Mbps feature for KVM and data transfer applications. If the feature has been installed the Encoders and Decoders with the option installed will appear. Routing of the USB is the same by using drag and drop technique. A very powerful feature of the USB is the ability to choose if it is a Host or a Device on Encoders or Decoders. If setup as a Host, a PC or like device will be connected. If setup as a Device, a peripheral like a USB stick, Keyboard, Mouse, Smartboard, etc. would be connected.

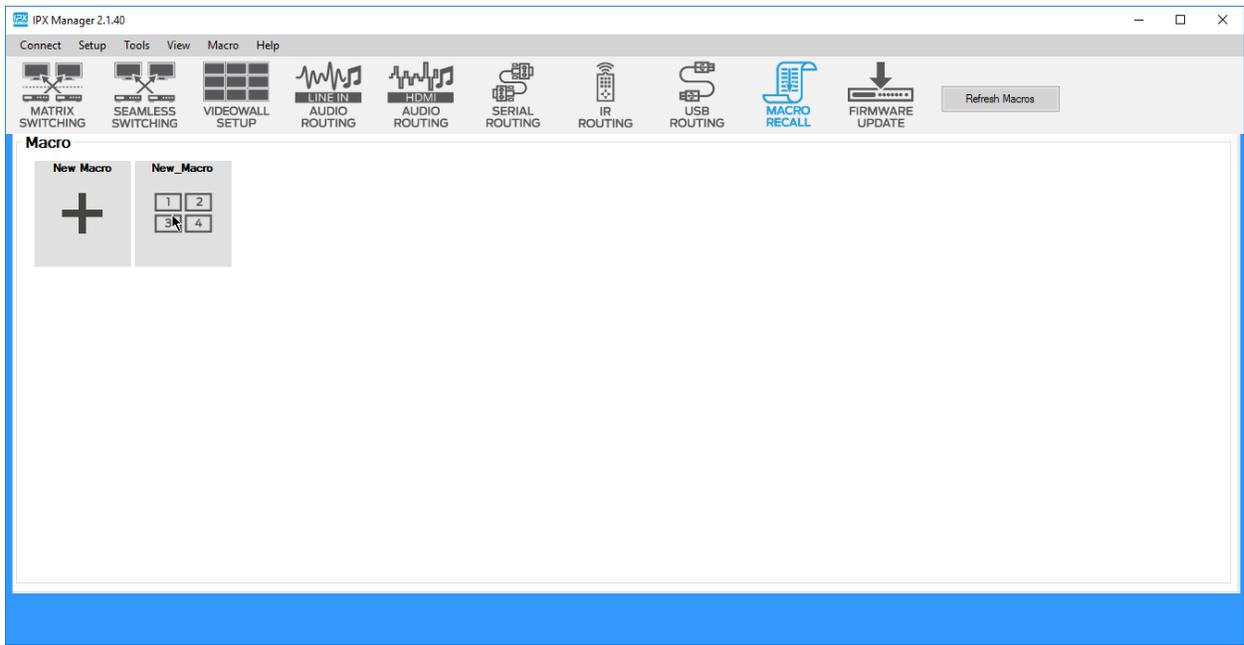
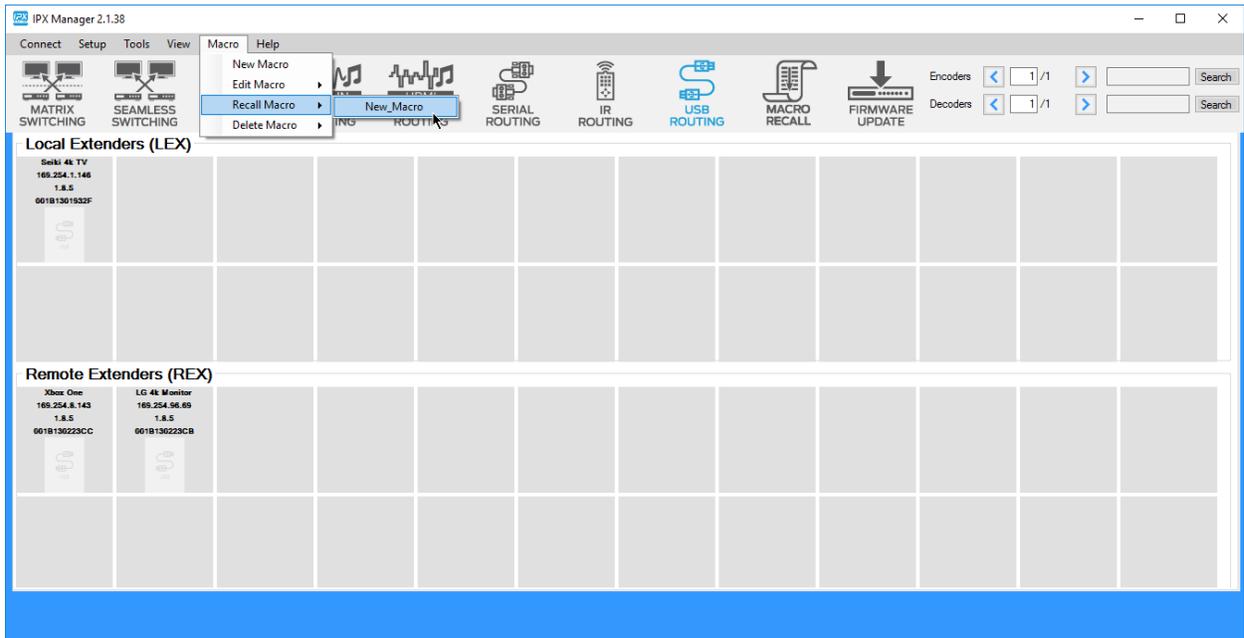


## Recalling & Saving Macros

Before recalling macros, it must be created first. Under Macro at the top select New Macro on the pull-down, or click "New Macro" on the Macro Recall tab. Notepad will open allowing you to enter a macro script based on the API.

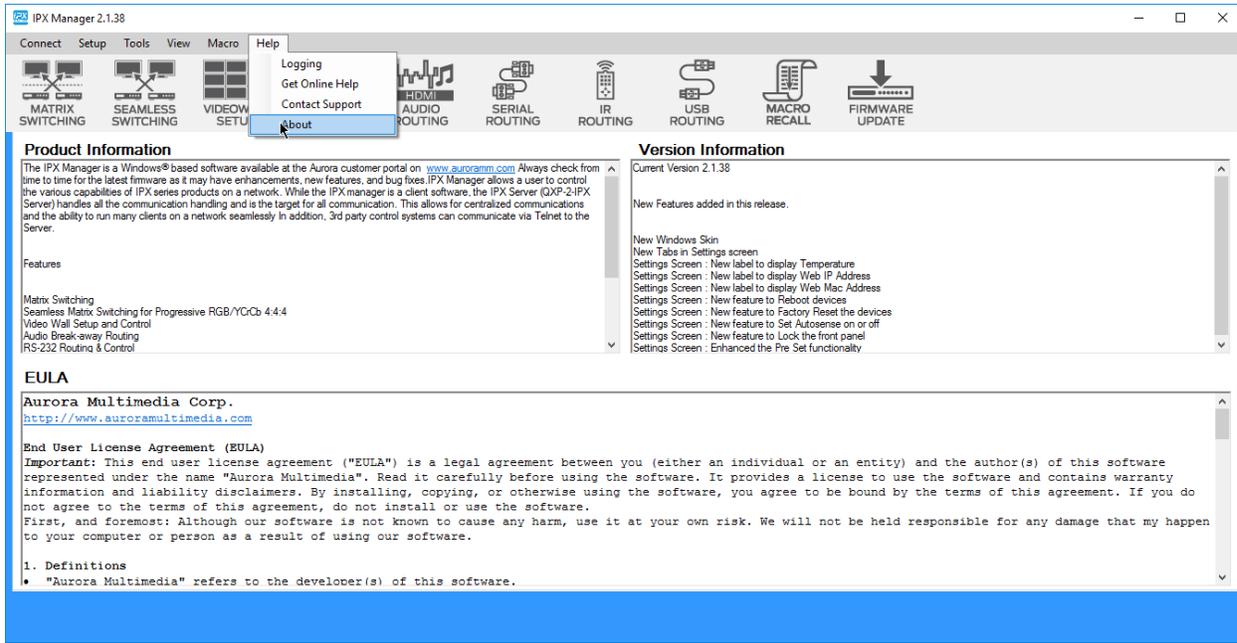


To apply the macro, click on the newly created icon after clicking "Refresh Macros". When the preset is recalled, the macro script will be sent directly to the control server.

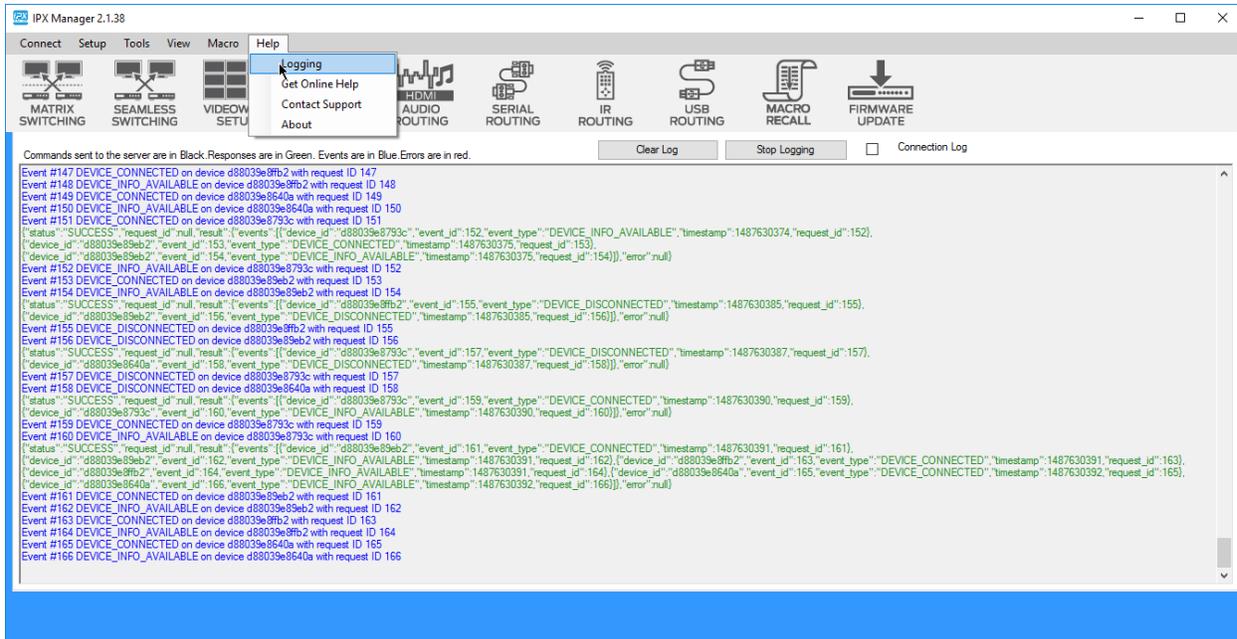


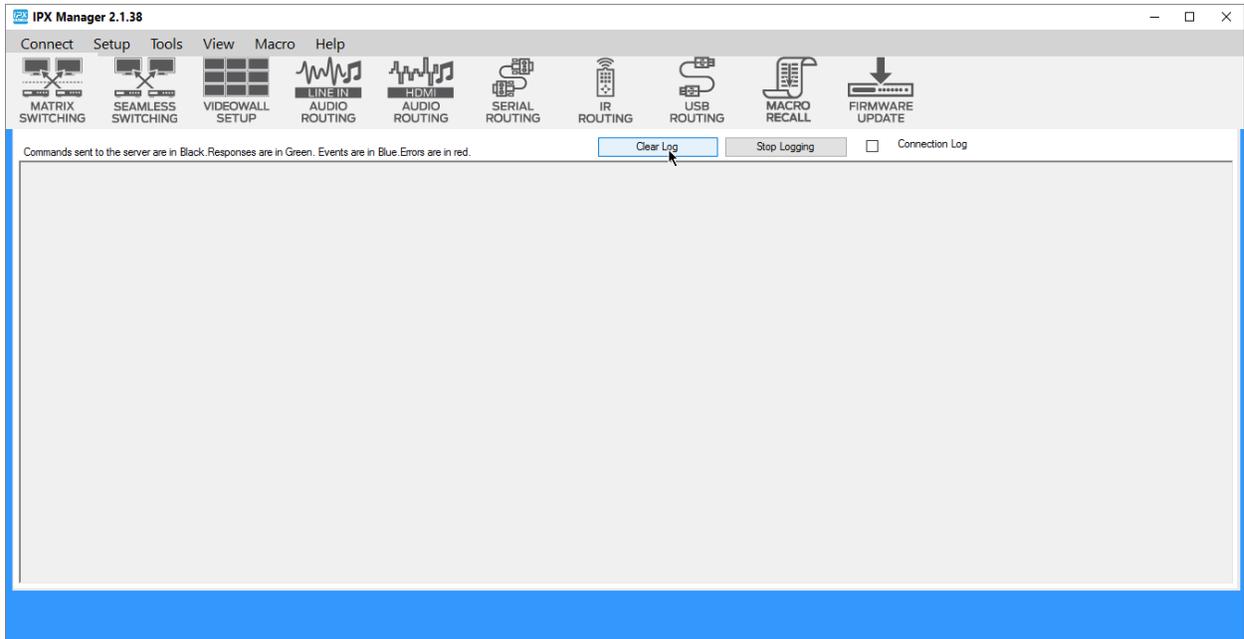
## Help

Help Icon currently brings a selection for support to the Aurora website. The Help selection on the top has more selections available for Logging, Online Help, Contact Support, and About. Under the About selection is Product Info, Version Info, and EULA.



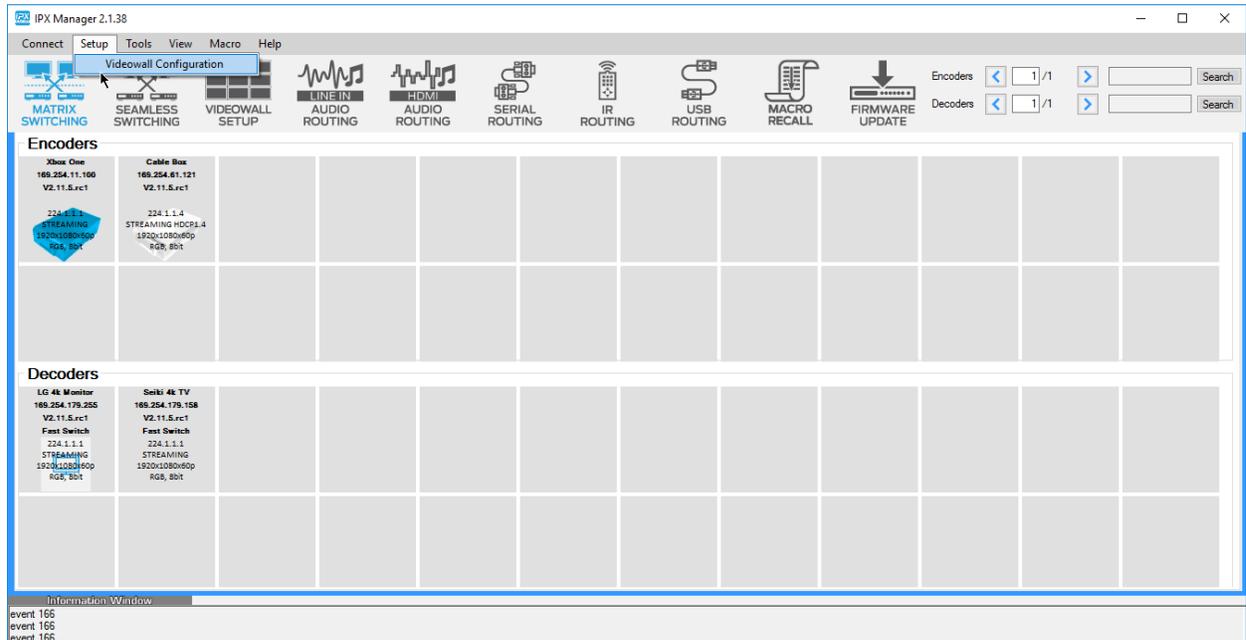
Logging selection will show commands going to and from the Server. This allows for debugging as well as 3<sup>rd</sup> party control development. There is a start logging button and a clear log button to start with a clean window.





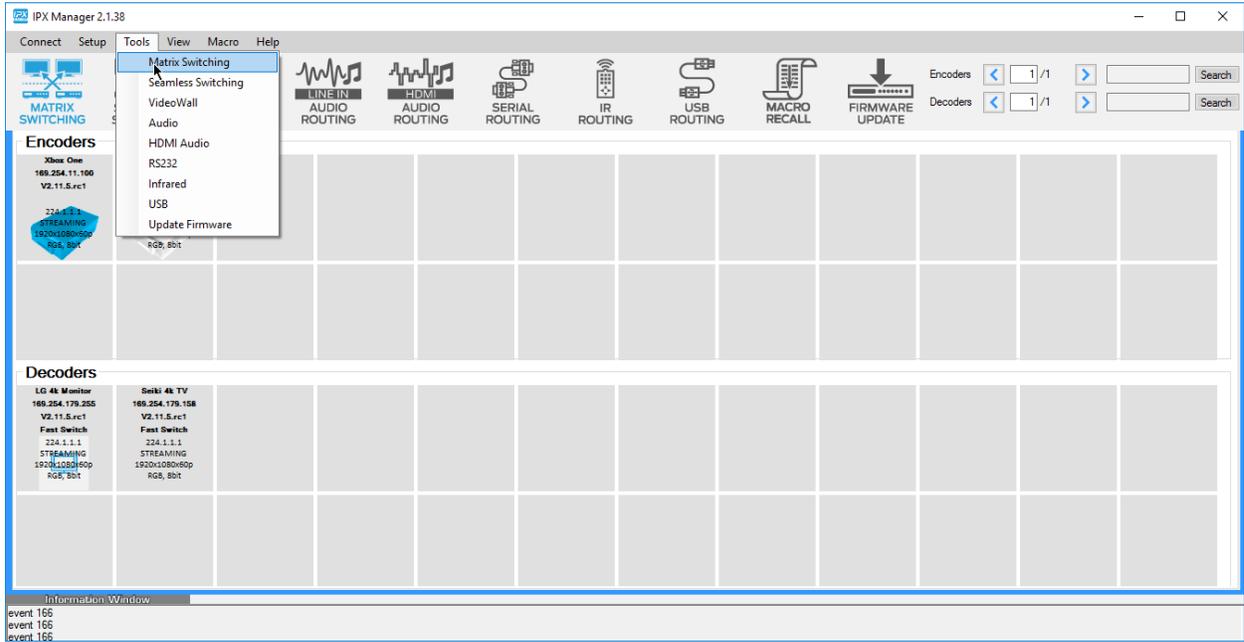
## Setup

Setup has the Videowall Configuration setup. Refer to this section for more details of this function.



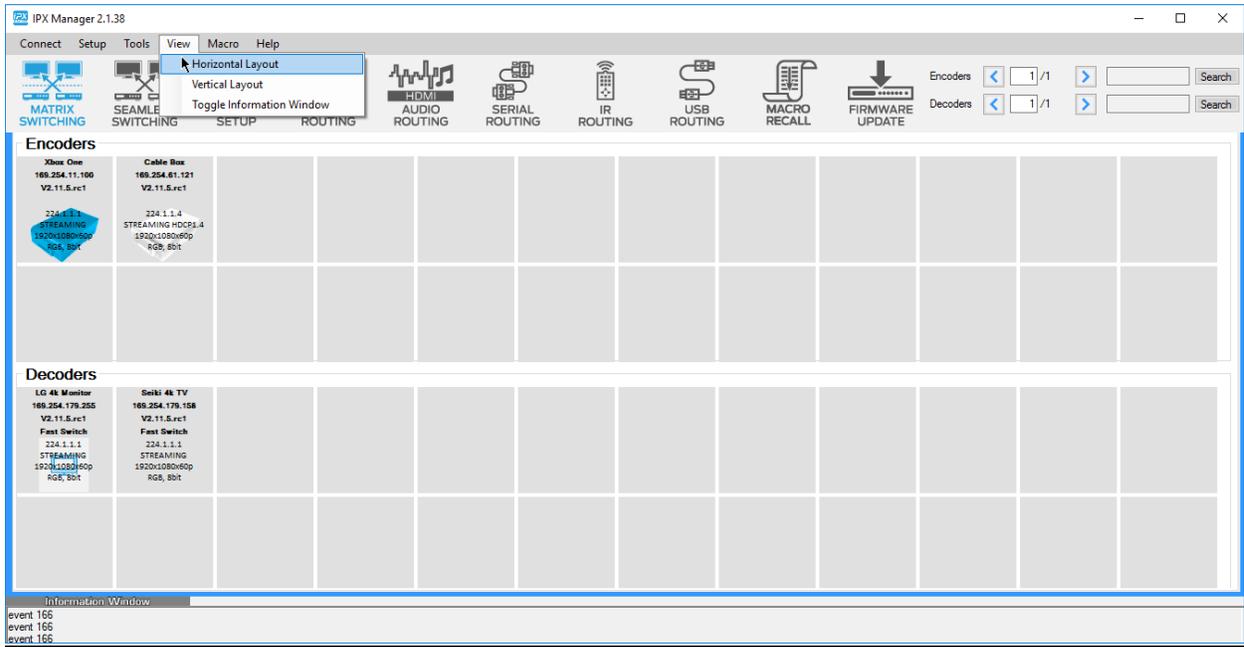
## Tools

Tools are the same selections listed in the main Icon selection bar.

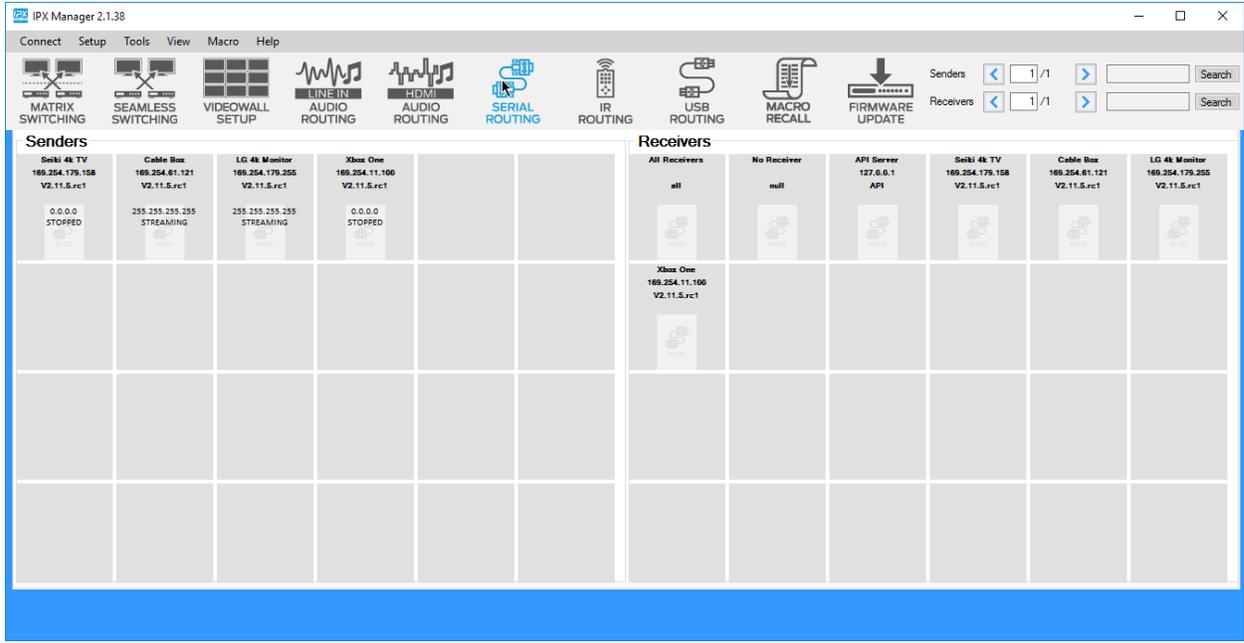


## View

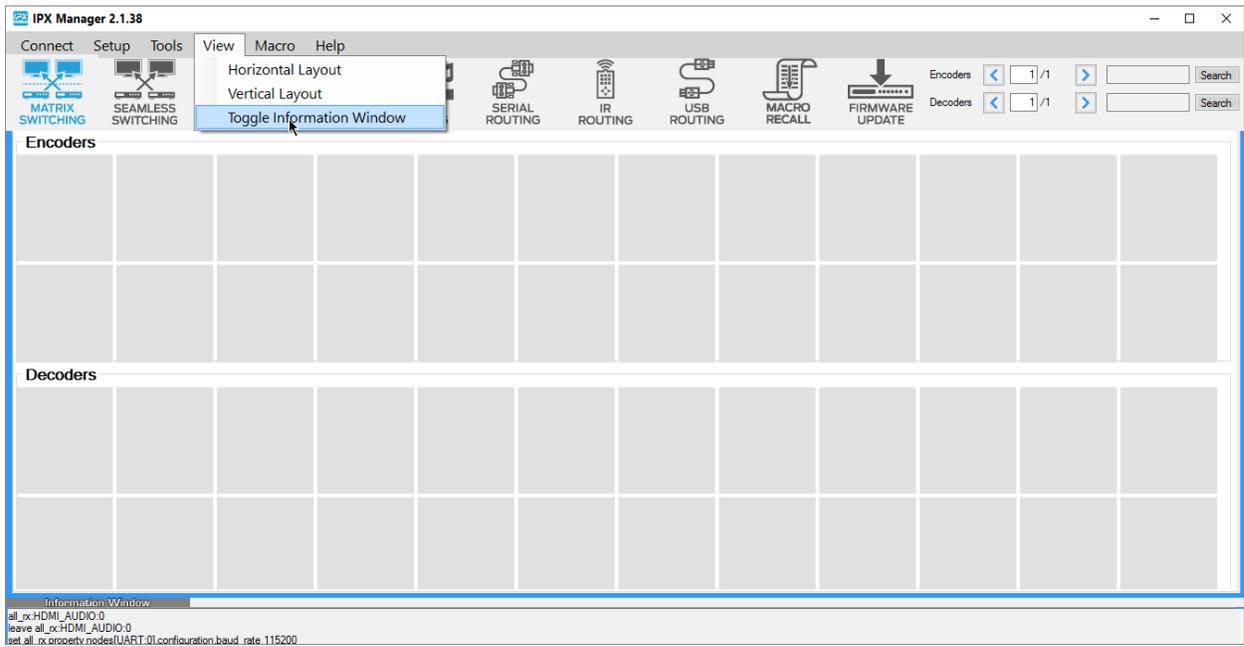
View allows the selection of Horizontal and Vertical viewing. Videowall mode is always a tri-view window. There is also a selection for Toggle the Information window which will appear at the bottom of the screen. The information window shows the Telnet commands being sent as the selections are being made. This is very useful when developing code for 3<sup>rd</sup> party control to the server as the commands will be the same and proves operation.



### Vertical View Example.



### Information Window Example

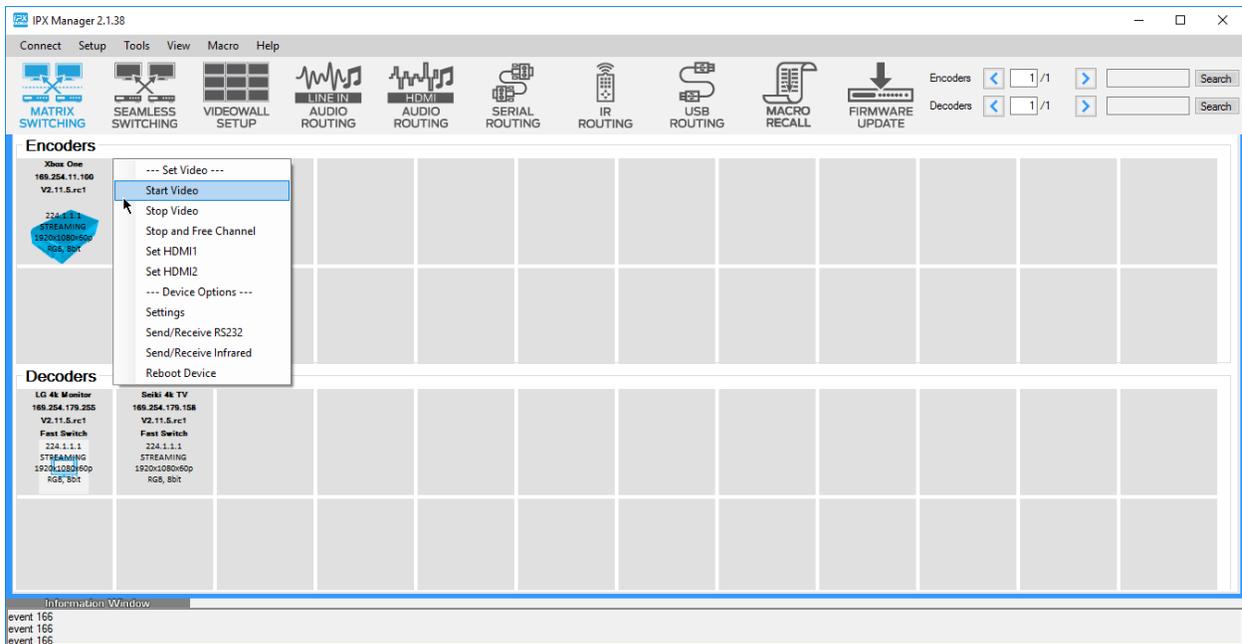


## Encoder & Decoder Setup

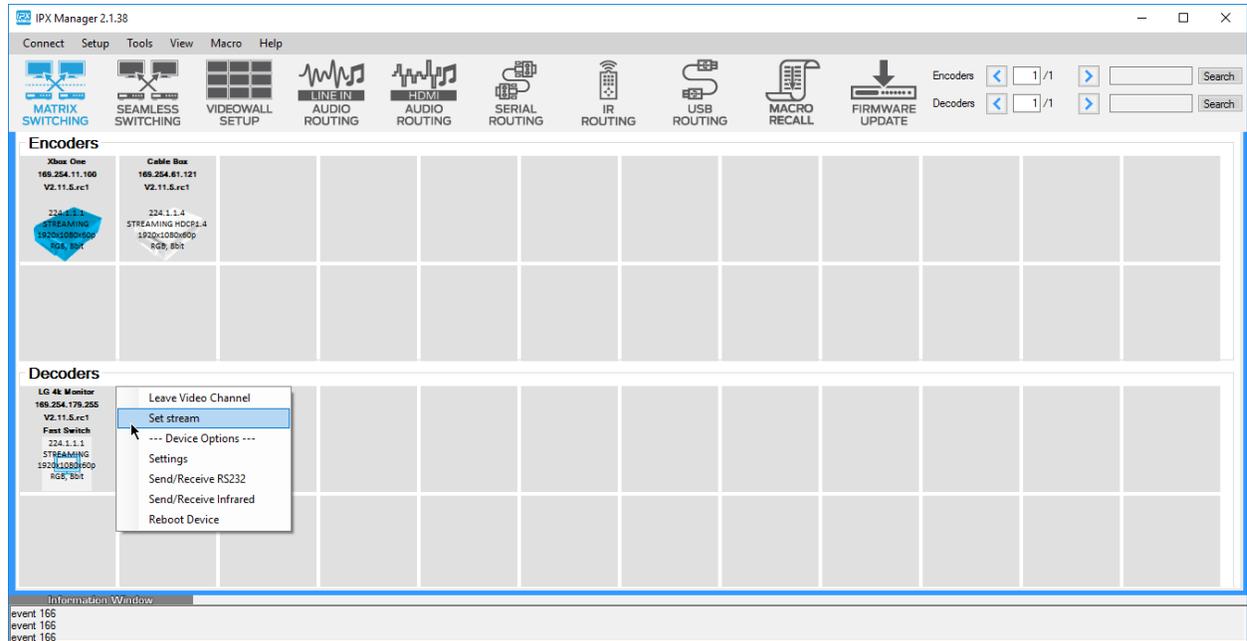
To setup a specific IPX, right click on the Encoder or Decoder to be modified and a pull-down with Setup will appear. Roll-over and select Setup and the dialog box will appear with tabs for the various settings available to the specific device. Always make certain the IPX unit has the latest firmware or certain features may not work.

It is also important to note if it is planned to have a specific unit switch between Encoder and Decoder mode the setup for the unit must be done once in both Encoder and Decoder mode so it is saved accordingly.

### Encoder Right Click Pull-down



## Decoder Right Click Pull-down

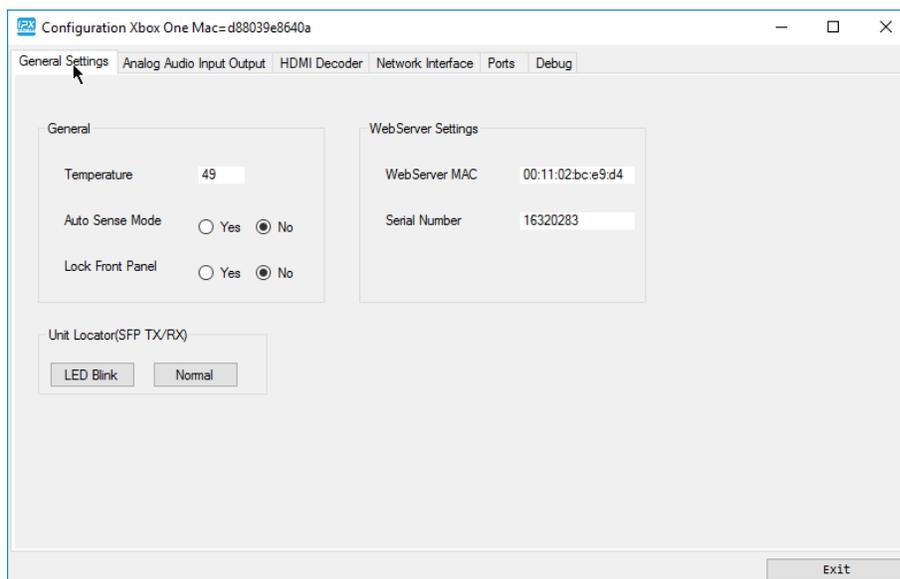


## Device Settings

There are six tabs to choose from each one containing various setup features. At the top bar of the window is the Host Name and the MAC Address of the unit.

The General tab consists of the following:

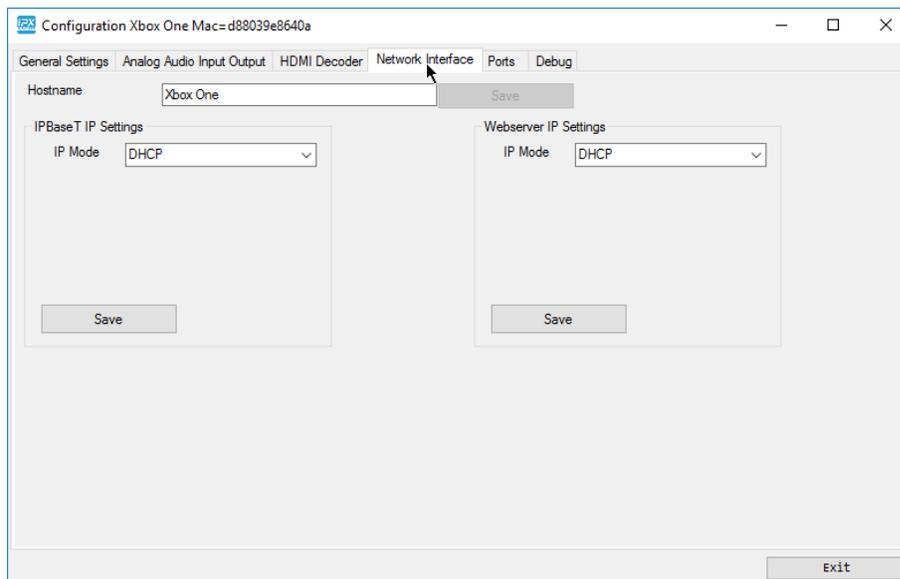
- **Unit Locator** – When set to blink the SFP TX/RX LEDs for the unit will both blink in sync at a rapid rate. This allows to find a unit by the front panel rather than looking at the printed MAC Address label on the unit.
- **Temperature** – Processor Temperature
- **Auto Sense** – Allows the HDMI inputs to change automatically based on last signal applied.
- **Front Panel Lock** – When enabled the front buttons will be disabled.
- **WebServer Info** – View device MAC address and serial number.



The Network tab consists of the following:

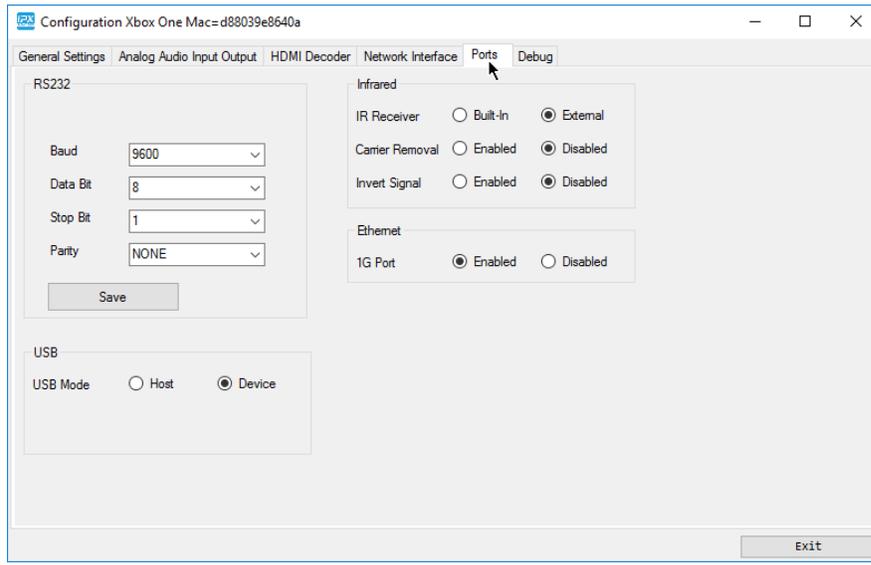
- **Host Name** – Must be unique for every unit. The default is the MAC Address but can be changed to a unique name for identity.
- **IPBaseT IP Address** – This is the IP Address for the IPBaseT video streaming engine.
- **Web Server IP Address** – This is the IP Address for the web server portion of the IPX. Each unit must have a unique IP address for the web server or there will be network collisions.

Keep in mind every IPX unit has 2 IP Addresses (IPBaseT Streaming Engine & Web Server).



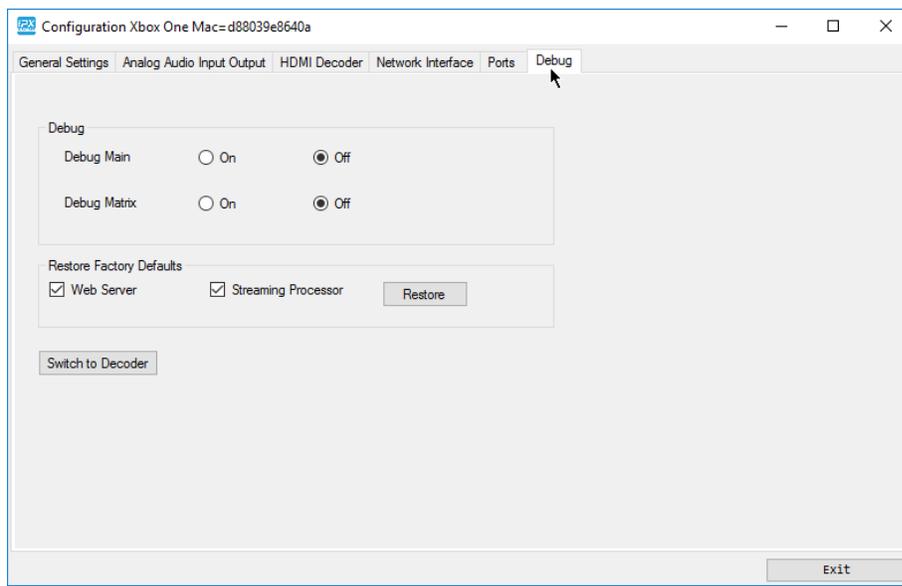
The Port Settings tab consists of the following:

- **RS-232** – This is the port settings for the RS-232 (Baud Rate, Data Bit, Stop Bit, and Parity)
- **USB** – Host or Device selection
- **Infrared** – Carrier removal and signal inversion.



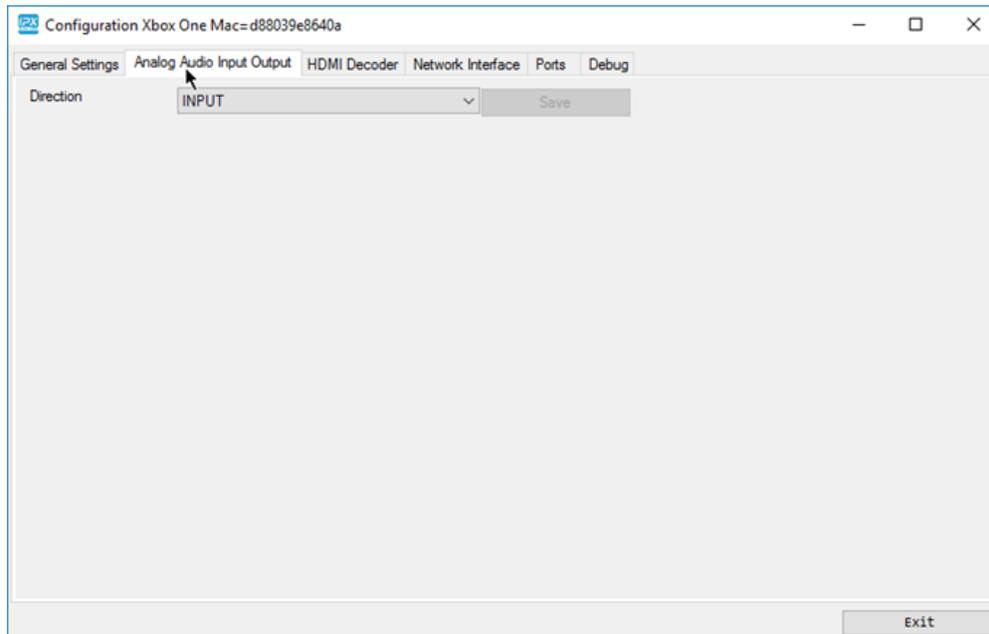
The Debug Settings tab consists of the following:

- **Debug Main Processor** – This is the port settings for the RS-232 Baud Rate, Data Bit, Stop Bit, and Parity.
- **Debug Matrix Processor** – This is the port settings for the RS-232 Baud Rate, Data Bit, Stop Bit, and Parity.
- **Restore Factory Defaults** – Restores factory defaults to the IPX Webserver engine or streaming processor.
- **Switch Mode** – Allows you to quickly switch from an Encoder to a Decoder or vice versa

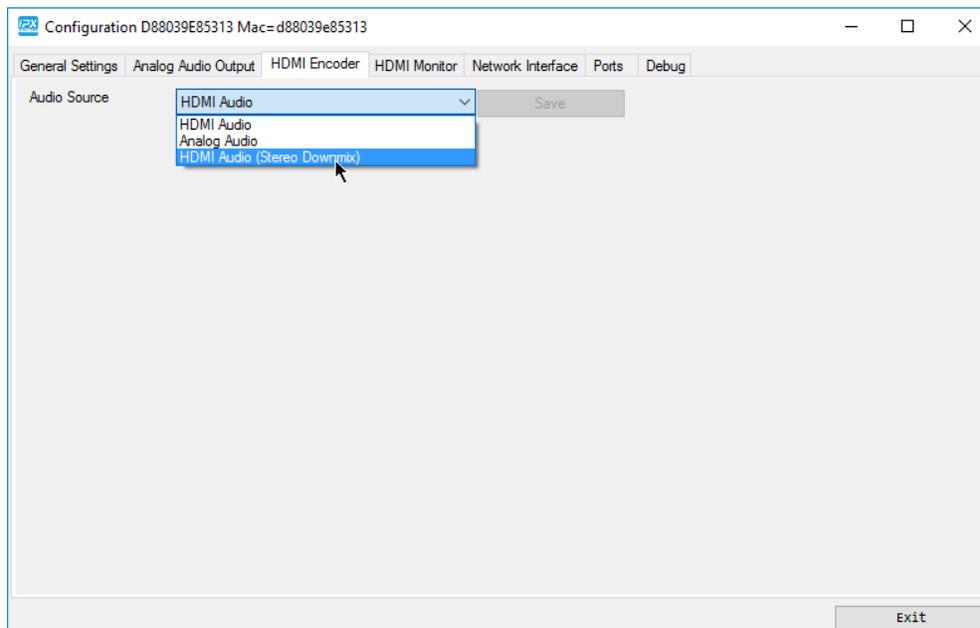


The Analog Input/Output tab consists of the following:

- **Direction** – Select whether to use the analog input or output of an IPX.

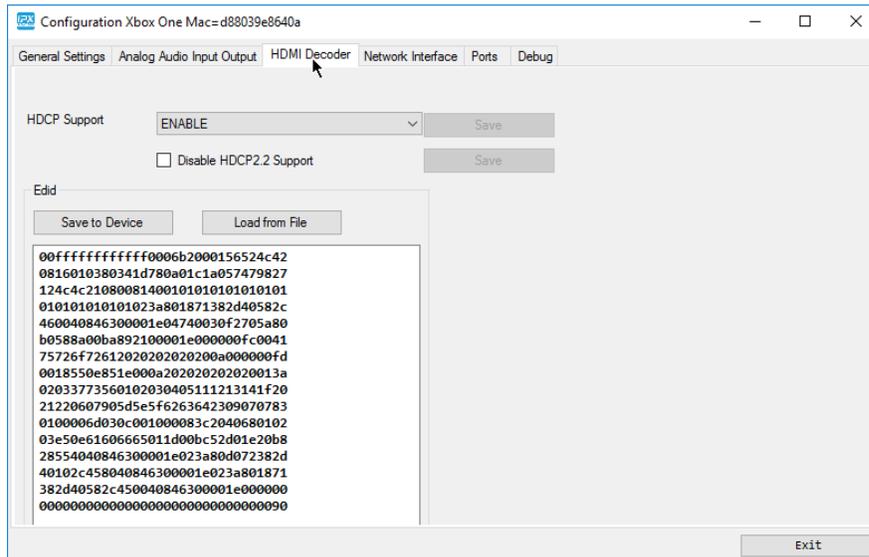


Decoders have an audio source tab to select the audio source of an attached encoder. Use stereo downmix to decode multi-channel audio streams to stereo speakers.



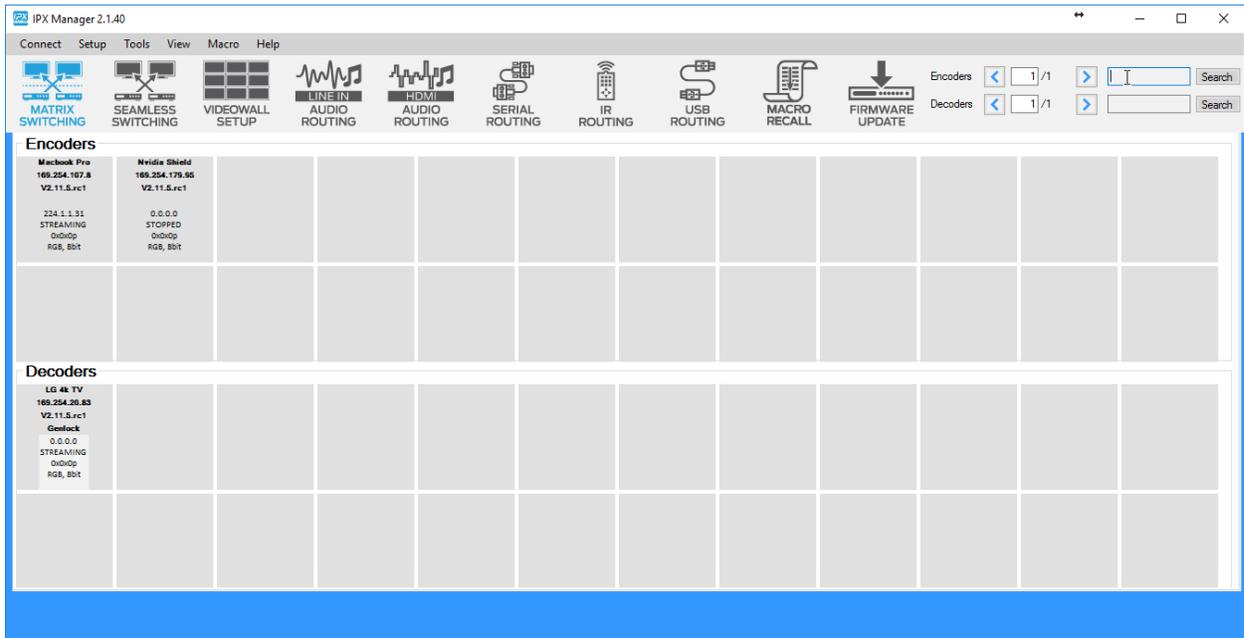
The HDMI Decoder tab consists of the following:

- **HDCP Support** – Allows you to enable or disable HDCP support.
- **EDID Management** – Allows you to save the EDID of a display or load a saved EDID from a file.



## Search

The search box at the top right allows you to filter your Encoders and Decoders by Hostname.



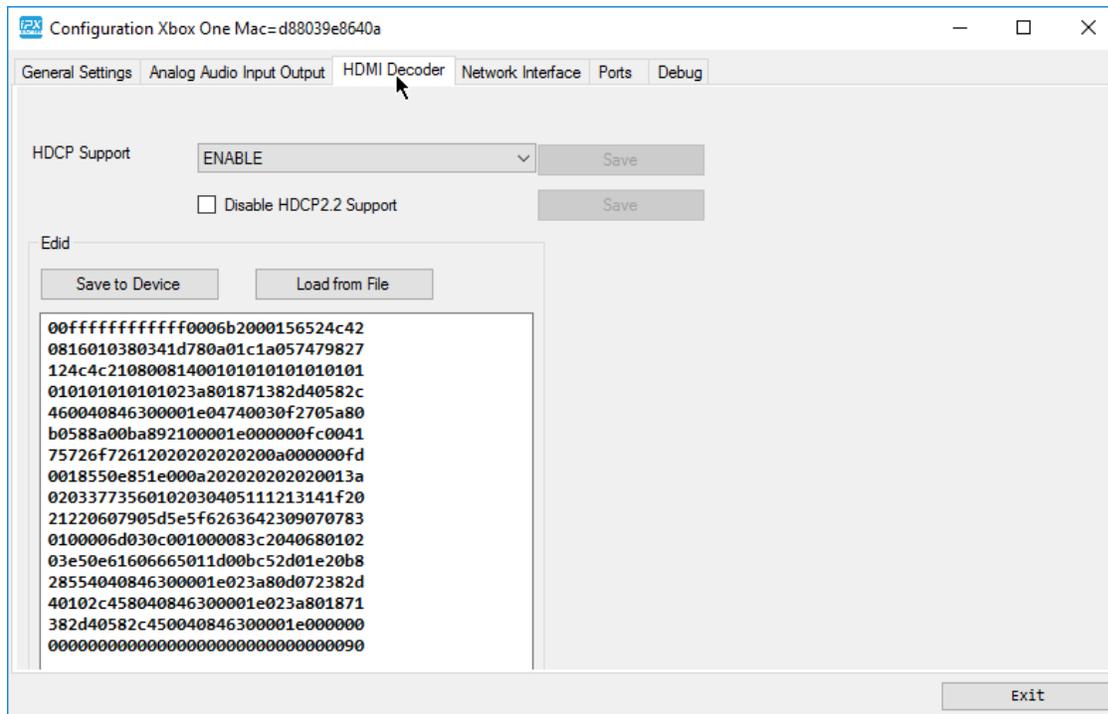
## EDID Setup and its Importance

One of the most forgotten setup procedures in AV systems is the EDID. The EDID comes from the destination (display, VTC, recorder, etc.) and must be saved into the encoder and decoder HDMI input ports. This allows the source (Blu-ray, computers, etc.) to know the capabilities of the destination. This includes the audio type if any, video resolution and timing, color space, color depth, and more. If no EDID is present an HDMI device will revert to lowest resolution in DVI mode which also means no audio. If the wrong EDID is used, the image may look pink, green, or have no image at all. To make matters more complex, if different destinations/displays are in use in a matrix configuration, then it is important to use an EDID with a common denominator or only one or the other destination may work. In an ideal installation, all the destinations should have the same capabilities for optimal performance. If this is not possible a scaler may have to be implemented to assist in the compatibility.

For example, there are 2 displays one 1080p the other 4k UHD. If the EDID of the 4K display is used, the 1080p will not see an image if the source is capable of 4K. If the 1080p EDID is used, then both will see the image but the 4K will never benefit from 4K content. In a situation where this is unacceptable, a 4K scaler can be used on the 1080p screen to down scale the 4K content so the 4K EDID can be used and the better screen can have a benefit. Note scalars do add frame latency and can affect image quality based on the quality of the scaler. This is why it is always ideal to use destinations with similar capabilities for optimal performance.

Audio can be impacted just as easily. If a destination is 6-channel surround sound capable and the other destination is not, then the EDID from the 5.1 destination cannot be used, or there will be no audio on the other destination. In most commercial installations, it should not be an issue to choose the lowest common denominator, which is 2-channel audio, but in cases where you must have surround sound then a down-mixer for the 2-channel destination must be used.

In some cases, a custom EDID could be created, as the audio and video are mismatched between the destinations. This can occur for example, when one destination has 4K 2-channel audio and the other 1080p with multichannel surround sound. If the EDID of the 1080p destination is used, audio will not be present on the 4K destination. If the 4K EDID is used, there will be no video present on the 1080p destination. The only way to solve this issue, is a new EDID combining the common features. In this case an EDID which is set at 1080p with 2-channel audio is the solution.



When you right click on an encoder there is a selection to save or send the EDID. The decoder has only the ability to save the EDID as the EDID is always used for the Encoder as it is the reflection of the display connected to the decoder.

First pick the Decoder with the display having the most in common with all displays. Next, save the EDID into a file. Then select each encoder and select Send EDID then the file to transfer the EDID.

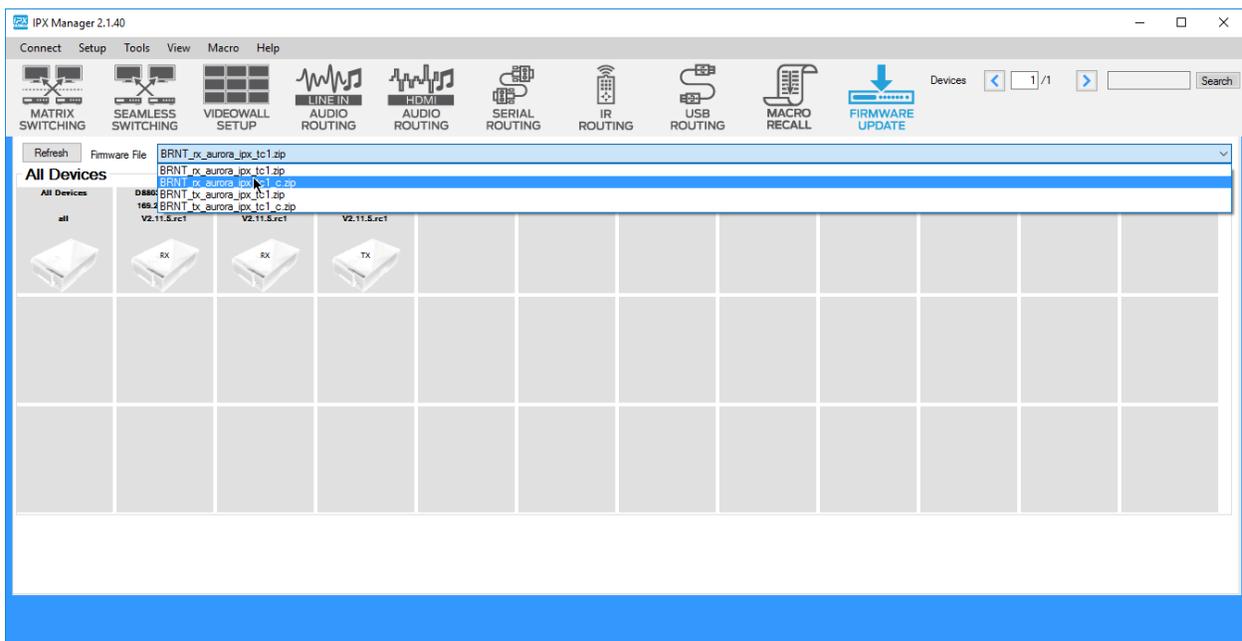
## Firmware Update

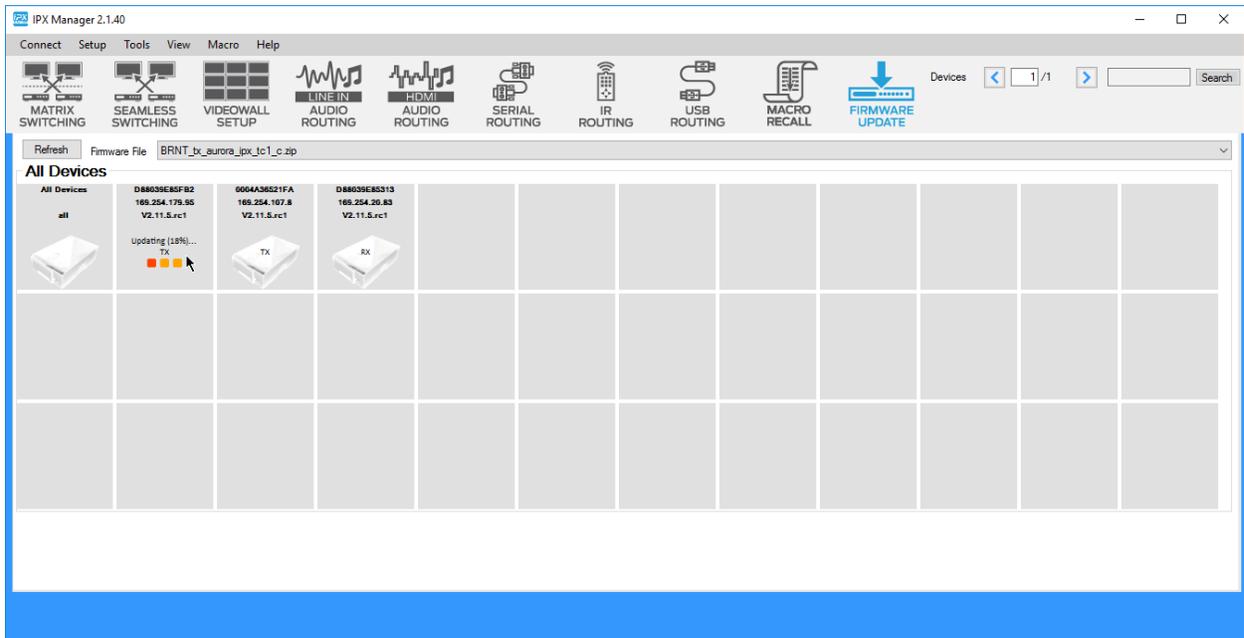
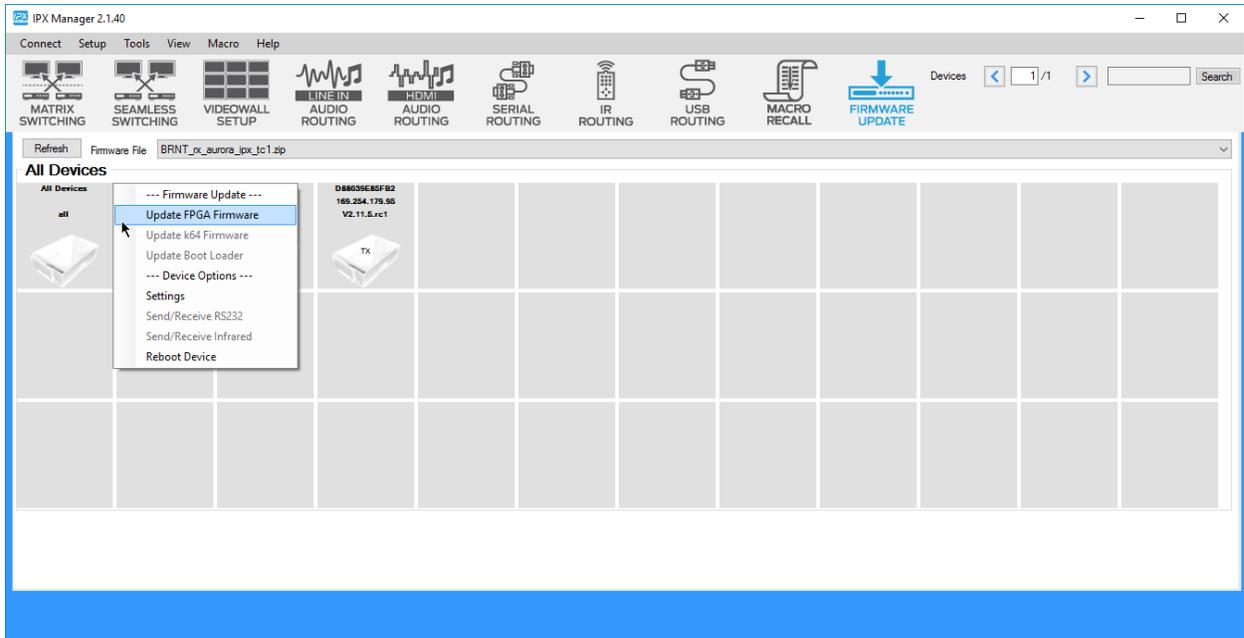
For the latest firmware updates please go [www.aurorammm.com](http://www.aurorammm.com)

You must be signed up to the Customer Portal in order to download firmware with instructions on how to update.

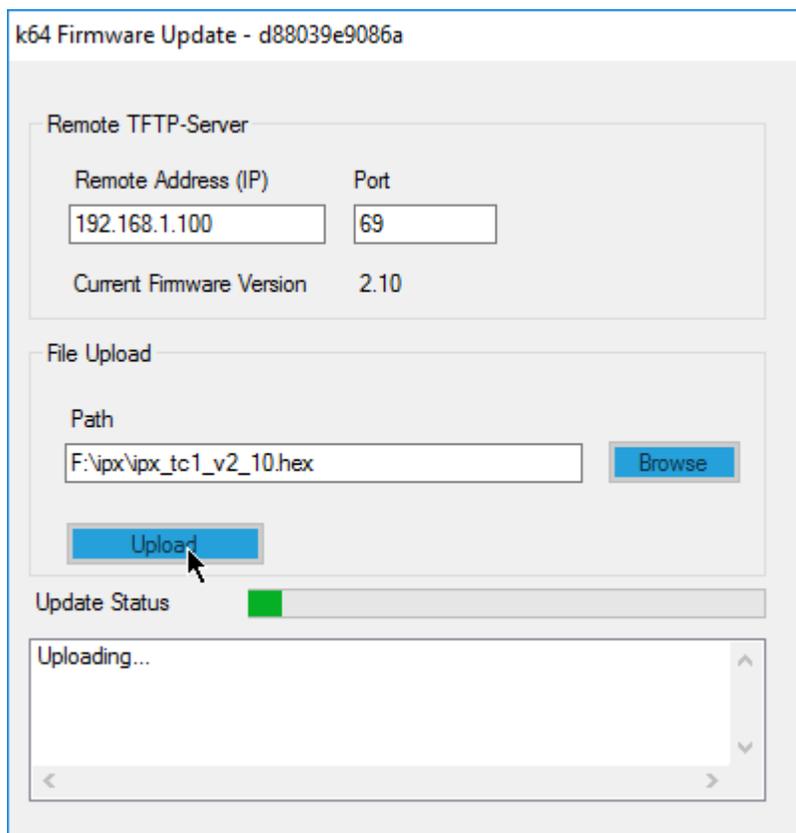
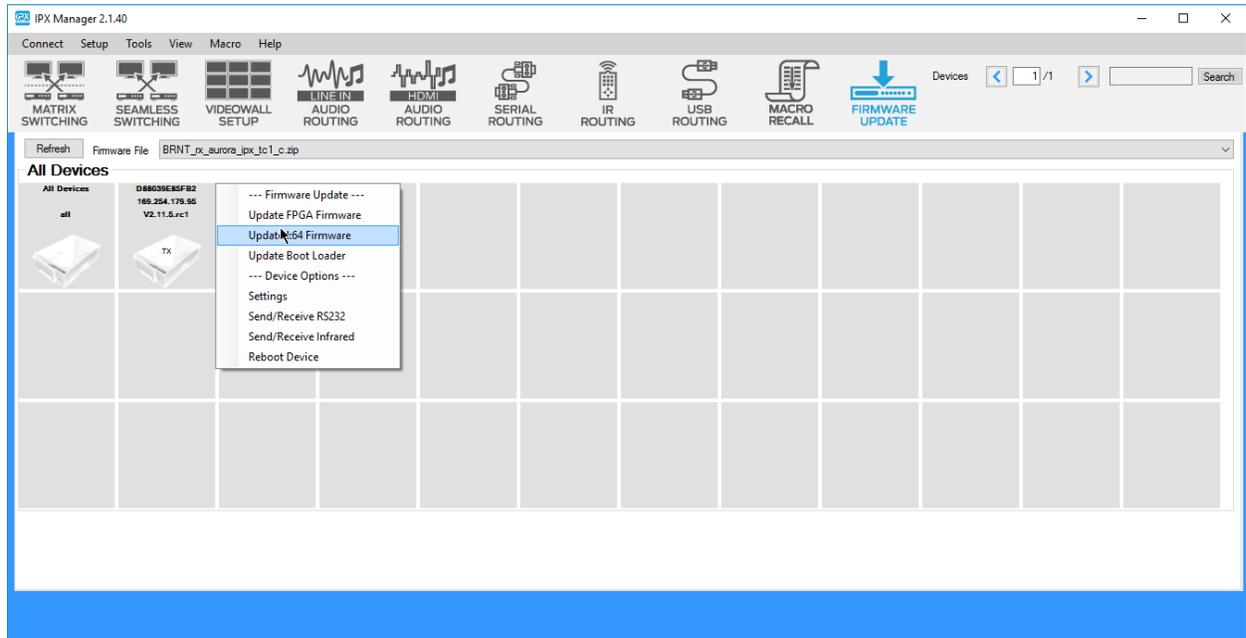
The Firmware Update tab allows you to batch update the FPGA on all of your devices, or individually update the K64 and Boot Loader.

**FPGA** – Right click on an individual unit or “All Devices” and select “Update FPGA Firmware” to start the update. Only Tx units will update if a Tx FPGA is selected and vice-versa. The FPGA .apt files must be individually zipped (one for Tx and one for Rx) and placed in a folder named “update” located in the same folder that your control server is running from. (FPGA firmware that ends in \_c is for Copper units only)

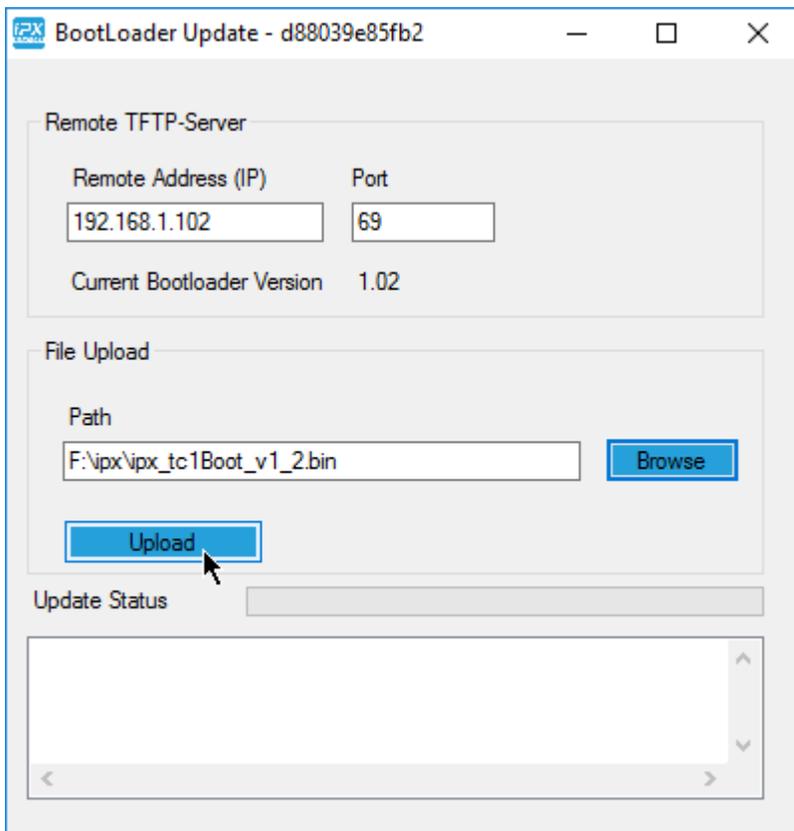
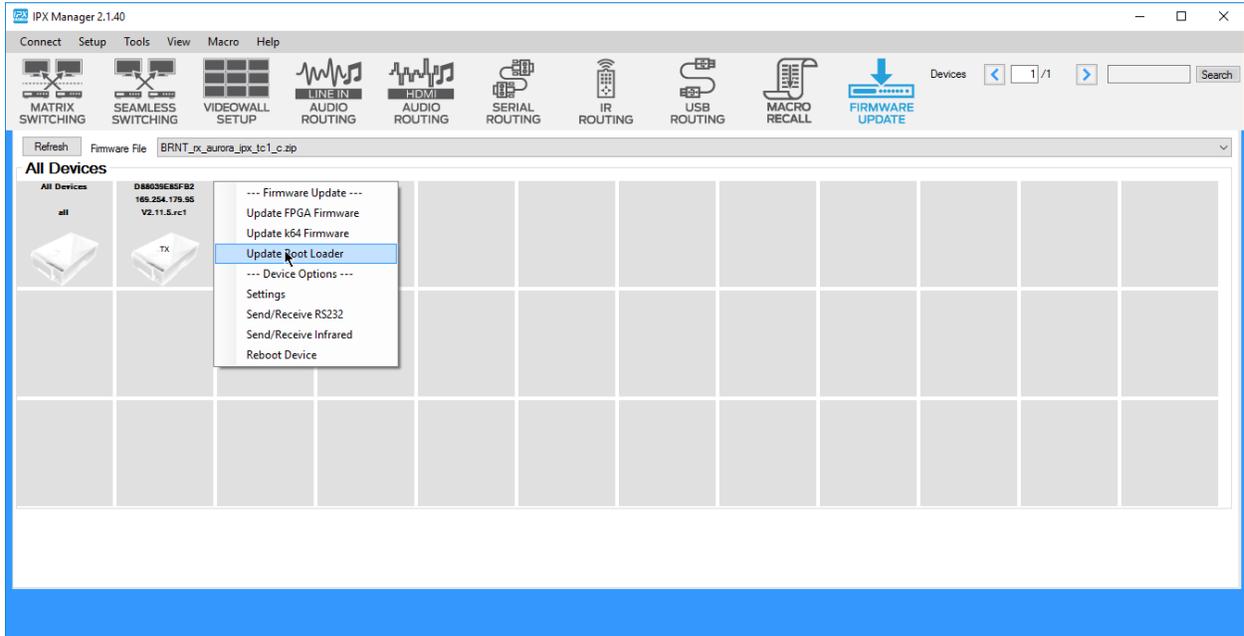




**K64** – Right click on an individual unit and select “Update k64 firmware”. The IP and current FW version will be displayed. Select the k64 hex file you wish to update your IPX with and click upload. This process can take a couple of minutes per device.



**Boot Loader** – This process is almost the same as the K64 update. Right click on an individual unit and select “Update Boot Loader”. The IP and current boot version will be displayed. Select the boot .bin file you wish to update your IPX with and click upload. This process can take a couple of minutes per device.



## APPENDIX 1 Troubleshooting

It is advisable to make certain all units are using the latest firmware before troubleshooting.

### **Why IPX Manager cannot find any devices?**

- Check the IP Address of the QXP-2-IPX server and make certain it is connected on the same network.
- Check the IP Address of the PC is set properly to work with the QXP-2-IPX server.
- Make certain the connection IP Address and port is set correctly in IPX Manager.
- Check the IGMP Snooping status in Switch. This function should be enabled.
- Multiple servers are communicating at the same time. Only one server can communicate at a time to the IPX units.

### **IPX Web Server is not responding**

- Make certain every IPX unit has a unique IP Address set for the webserver. Disconnect unit from 10G network and connect PC directly to 1G LAN and check to see if webserver appears in browser. If not trying restoring defaults and try again. Repeat this for every unit. Another method is using the server to issue commands to change the webserver IP settings over the 10G.

### **IPX Server is responding poorly**

- Check network switch is properly configured for IGMP with snooping

### **Seamless Switching not working properly**

- Seamless switching will only work if switching between two sources with the same resolution and refresh rate.
- Seamless switching will not work between inputs on the same unit only between units.
- Seamless will only work with RGB/YCrCb 4:4:4. The EDID will determine the color space the source will put out so changing the EDID could correct this issue.
- Seamless switching only works on progressive signals not interlaced.
- Ethernet switch does not support fast switching. This will cause a glitch when switching especially with 4K. Netgear XS708E copper 10G switch does not support this mode. The switch will still be instant but not as clean.

## **APPENDIX 2 Protocol**

For the latest protocol please go [www.auroramm.com](http://www.auroramm.com)

You must be signed up to the Customer Portal in order to download IPX protocol. The protocol is only available to authorized Aurora dealers.

## APPENDIX 3 EULA

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