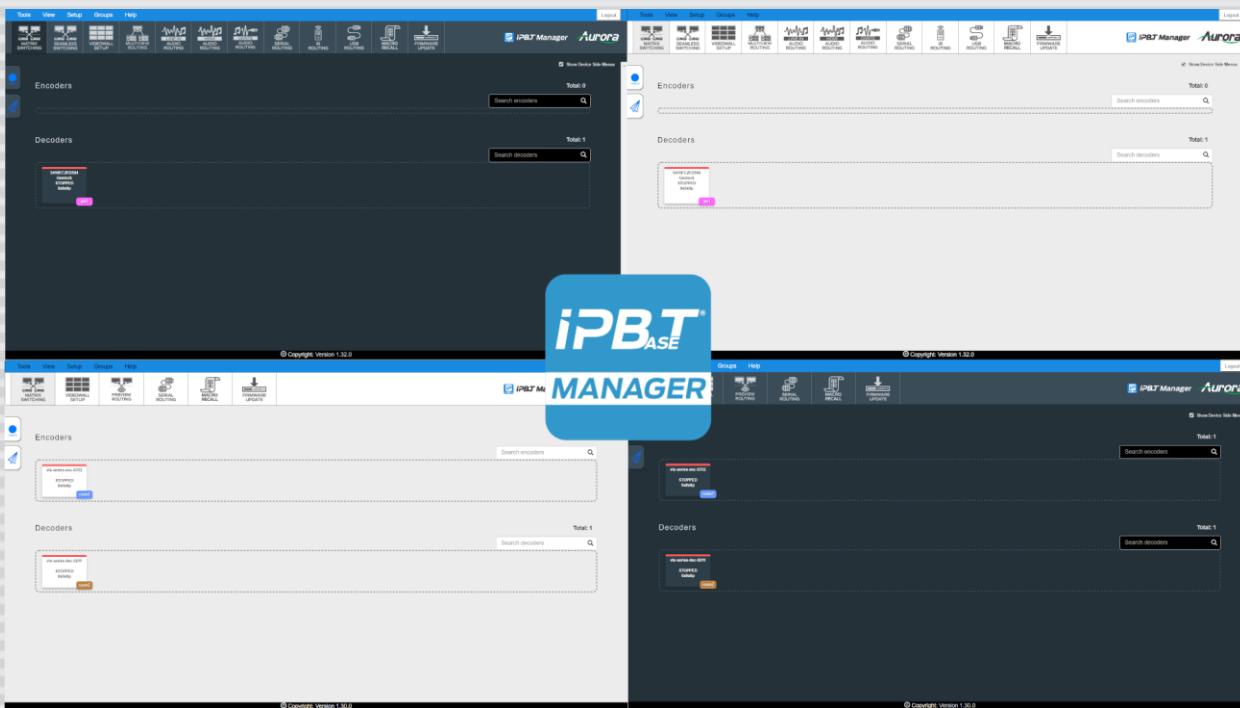


# IPBaseT Manager

## VLX & IPX Series Management Software



**Manual Number: 191213**

**Software Rev: 1.70.0 or Higher**

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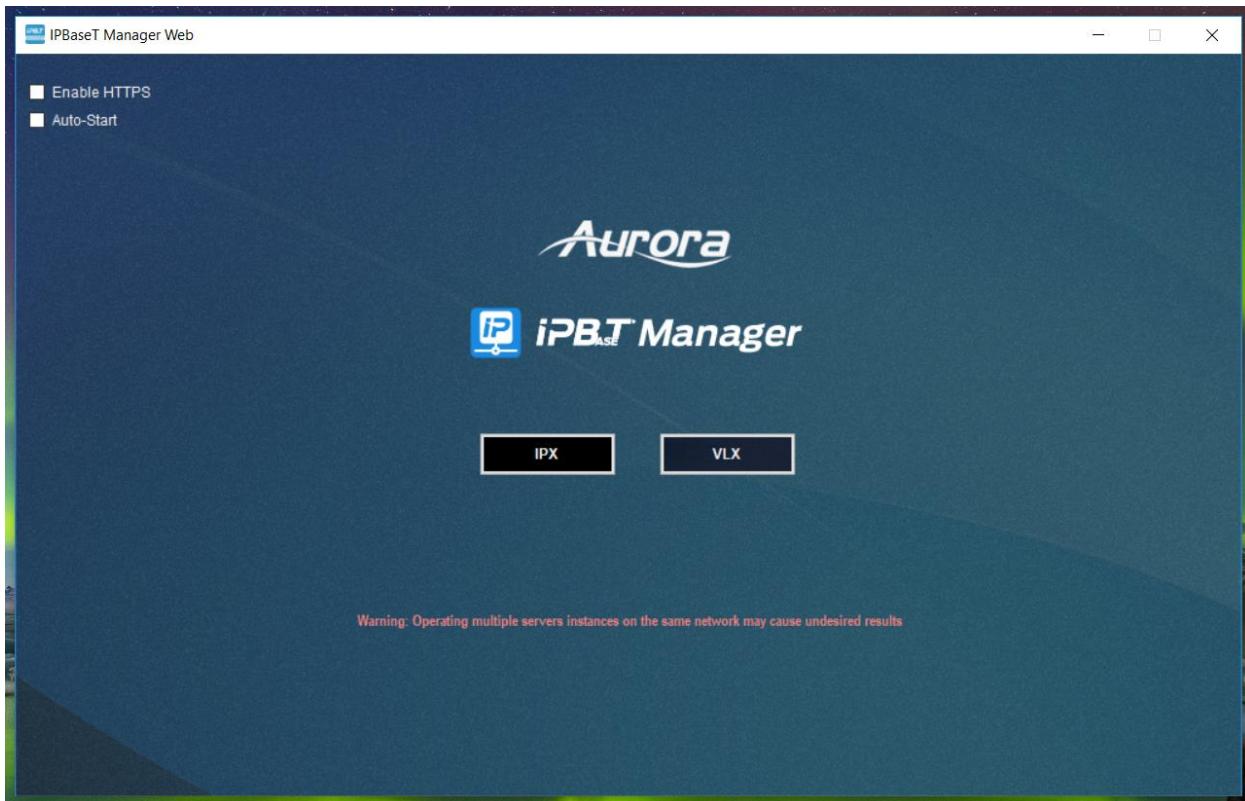
# Installation

To install the IPBaseT Web Manager, download and extract the zip file and run the installer program. This software is currently supported on Windows 64-bit operating system only. You can find the latest version provided you are an authorized dealer at the Aurora Customer Portal: [portal.auroramultimedia.com](http://portal.auroramultimedia.com)

# Startup

After installation, you can start the program by running it from your desktop shortcut. This will open the server selection window. Click the “Auto-Start” checkbox in the top-left to have the Manager startup automatically upon Windows boot into the last good used configuration.

(**NOTE: Auto-Start will only work once logged into Windows. We recommend setting up auto-login for systems that are in remote locations which cannot be accessed easily).**



Now you must select which server you would like to startup - either IPX or VLX depending on the devices on your network. (NOTE: Do not start multiple instances of IPBaseT Manager, such as one for VLX and one for IPX simultaneously. The servers will interfere with each other as they use the same network ports.)

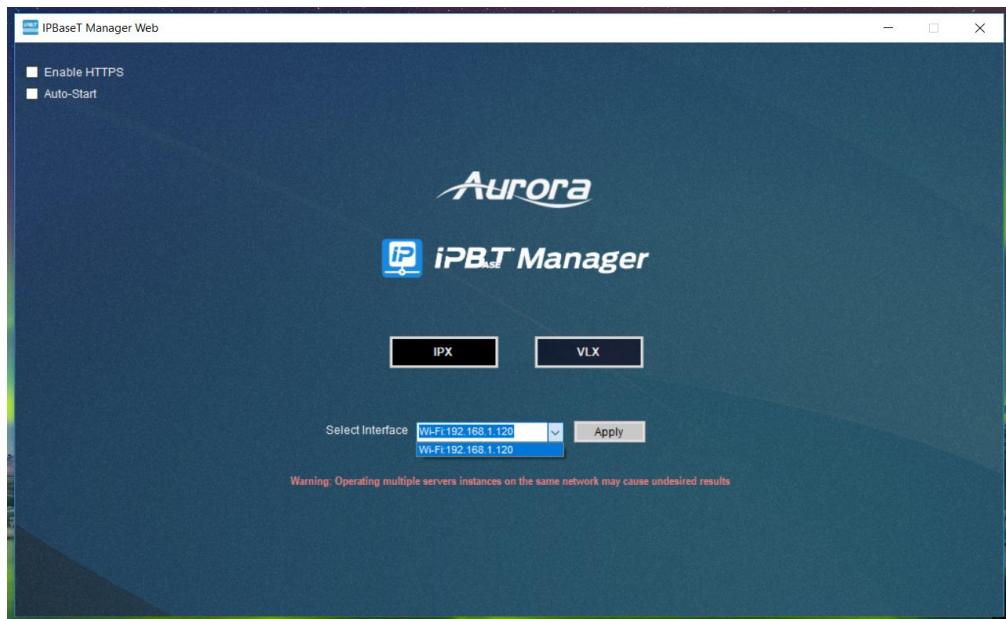
If you have a mixed device network, you will need to switch between device servers from this window. You can recall the server selection window from your System Tray.

## VLX Network Selection

When starting the VLX server you must select the network interface you want to use. Select the network that has the VLX devices on it. You do not need to select an interface for IPX as it will auto-detect the correct network.

## IPX Server Selection

When starting the IPX server, you can select between the BlueRiver server version 2.18 or 2.13. Use version 2.18 for IPX TC-2 and TC-3 models. Only select version 2.13 for compatibility with older IPX TC-1 models.



# Login

Once the server has started, your default browser will automatically open the Manager webpage. You will then be prompted to login. The default username and password for first-time use is:

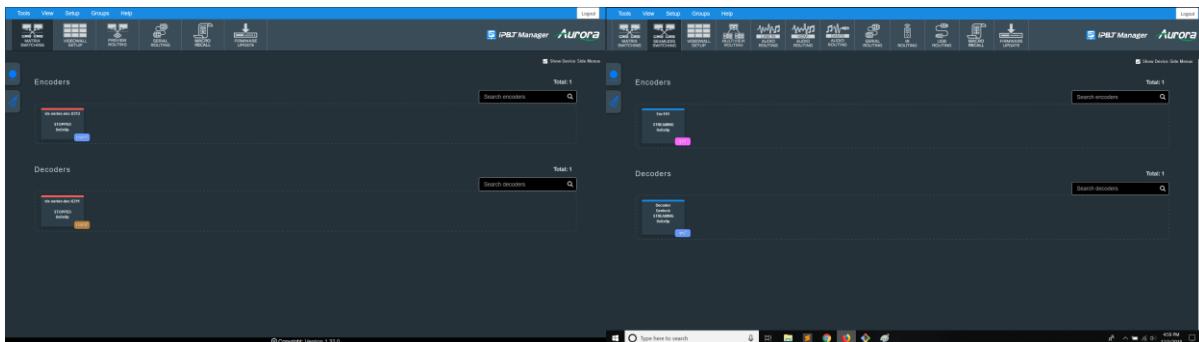
**Username: admin**

**Password: admin**

(NOTE: It is strongly suggested that you change your password after logging into the admin account for the first time. You can do this from the top menu “Setup” -> “Change Password”)

# Getting Started

Once logged in you will see the one of the following screens (VLX or IPX):



The Manager should auto-detect devices on the network and display a tile for each device found. If nothing appears, make sure the network is properly configured, and take a look at the Troubleshooting section of this document.

Let's take a look at the main UI elements.

## Top Menu



Located at the top-left, the top menu provides easy access to all parts of the application.

**Tools:** Rapid Deployment tool and links to all main tabs in the application.

**View:** Change view settings within the application, including theme, layout, full screen mode, etc.

**Setup:** Videowall setup, password change, user/group/profile management (admin only).

**Groups:** Lists all device groups and allows the selection of specific groups to view.

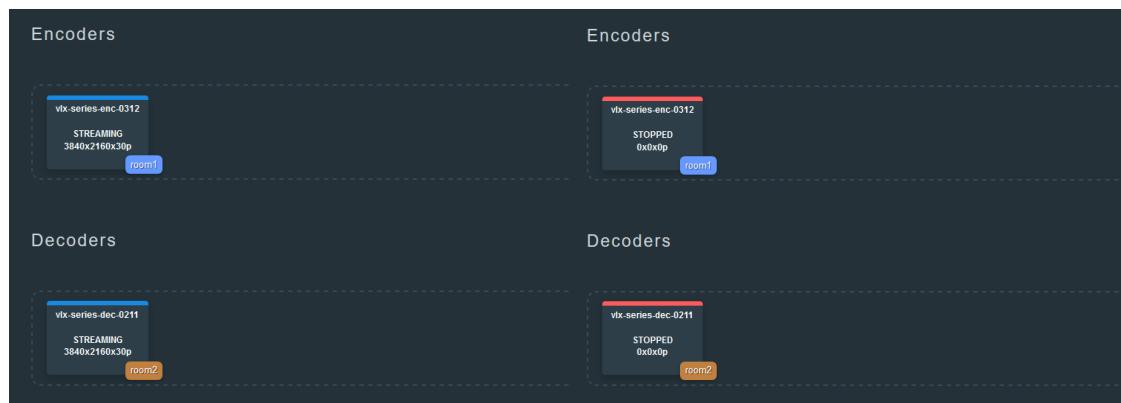
**Help:** Troubleshooting, user guide, logging and support links.

## Tab Menu



The tab menu stretches across the top of the application and provides quick access to all the main functionality. These tabs will be different depending on whether you are using VLX or IPX.

## Device Tiles



Device tiles are the main UI component you will be working with in the Manager. Each tile represents a device (in most cases). Information about the device is displayed on the tile, including the hostname, device status (streaming, stopped), resolution, color mode, and more. You can choose to see more or less information by selecting “Detailed View” or “Simple View” from the top “View” menu.

Devices can also be tagged in the lower-right corner of the tile with a name and color combination, as seen in the images above and below. This allows easier identification at a glance.

The top bar displays a color based on whether the device is streaming content or is stopped. If the device is streaming it will display as green, if stopped it will display as red, but it is dependent on which tab you have open. Default batch command tiles (such as no devices/all devices) have a blue top bar.

One of the main features used within the Manager is joining a decoder to an encoder stream, so that it can output the audio and video. This can be done in two ways using the device tiles:

**Drag and Drop:** Simply drag an encoder tile onto a decoder tile to join the devices.

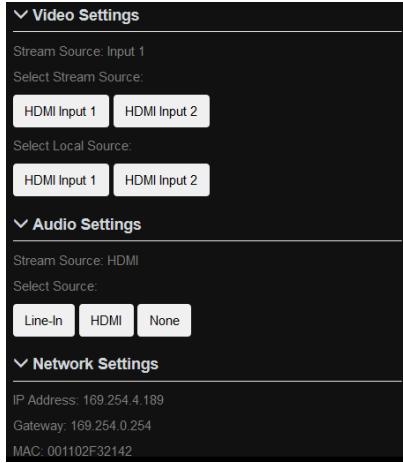
**Click then Click:** First click an encoder, and then click each decoder you want to join.

To see which devices are connected via a stream, simply click and select a device tile and it will highlight blue (primary selected device) and all devices that are joined with that device will highlight yellow. Here is an example picture to illustrate:



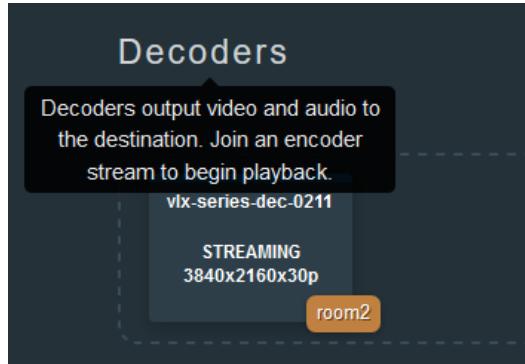
Here the encoder in the top row (blue border) is joined with the decoder in the bottom row (yellow border).

## Side Menu



Side menus contain additional information and quick actions for the currently selected device (blue highlighted device tile). You can open the side menu using the small arrow in the top-right of any routing page.

## Hints / Tooltips



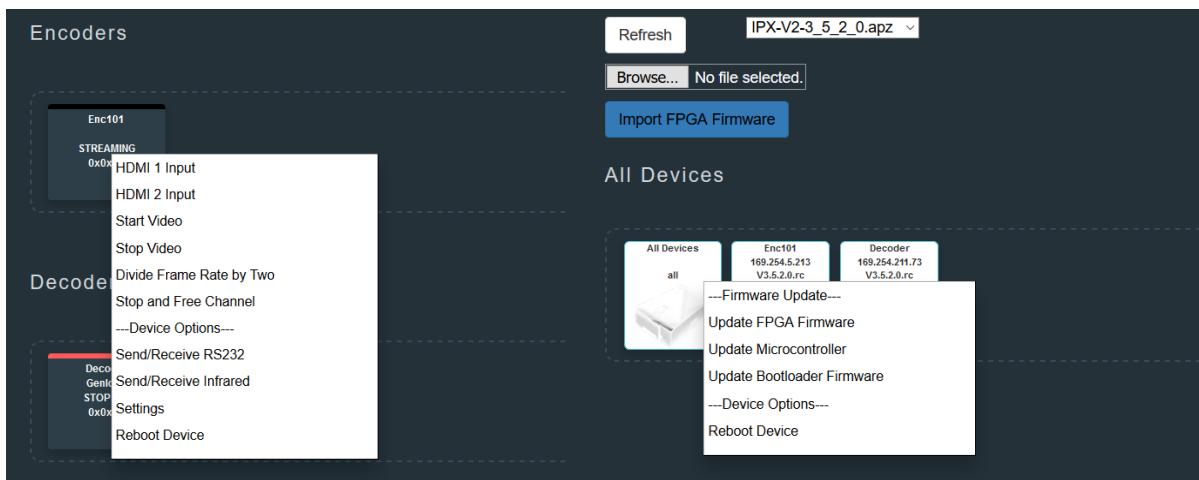
Putting the mouse over certain UI elements will show a tooltip describing the feature or terminology. These are being updated all the time and are typically found on text labels. If you are unsure of what a certain option does, mouse over to see if there is a hint available. You can enable and disable hints from the top "View" menu.

## Side Tabs



There are one or two tabs on the far-left side of the Manager, depending on the version. The first tab is for Macro Recording which is described later in this document. The second tab is not a currently implemented feature.

## Right-Click Menus



Nearly every device tile in the Manager has a corresponding right-click menu associated with it. The options available in the right-click menu vary depending on the device type (encoder or decoder), current tab (matrix switching, firmware update, etc.) or for other specific uses

(videowall and Multiview).

The right-click menus contain commonly used functions for quick and easy access. Here are some common functions available for encoders and decoders:

### Encoder Right-Click Menu

HDMI 1 Input: Switch the stream input to HDMI 1 channel.

HDMI 2 Input: Switch the stream input to HDMI 2 channel.

Start/Stop Video: Turn the encoder HDMI stream on and off.

Settings: View detailed device information and settings (see “Settings” section)

Reboot Device: Reboot the selected device.

### Decoder Right-Click Menu

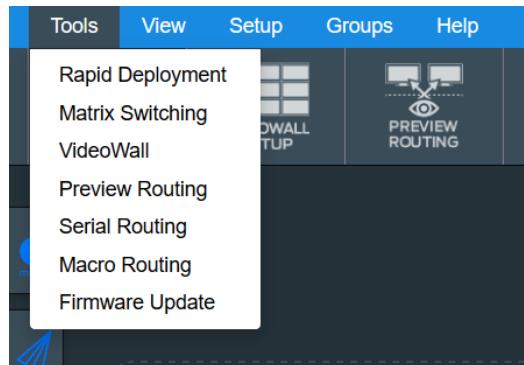
Leave Video Channel: Unjoin (leave) the current encoder stream.

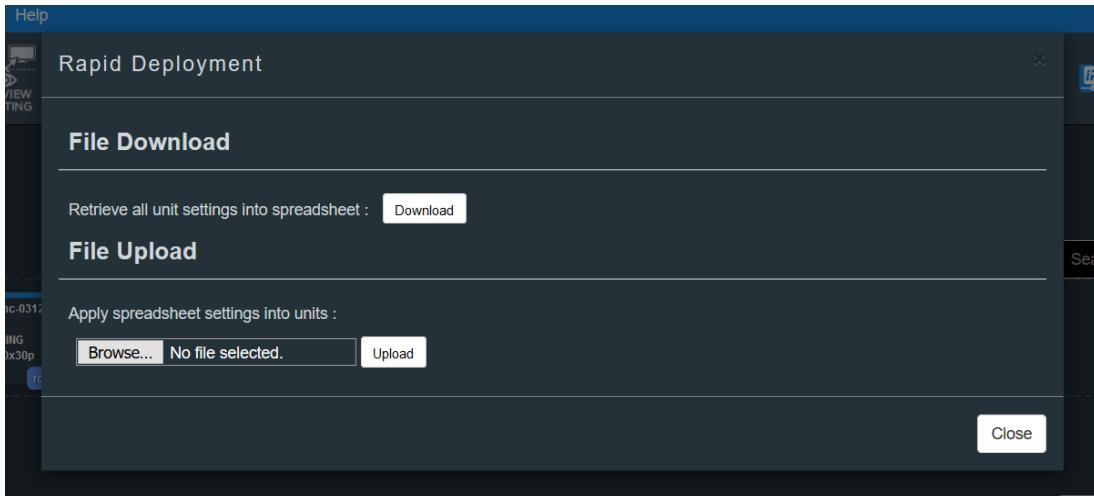
Send/Receive RS232: Turn on and send serial commands to the device.

Send/Receive Infrared: Turn on and send IR data to the device.

## Rapid Deployment Tool

The Rapid Deployment Tool (RDT) is a quick and easy way to apply device configurations to all the devices on the network simultaneously. You can find the RDT in the top “Tools” menu.





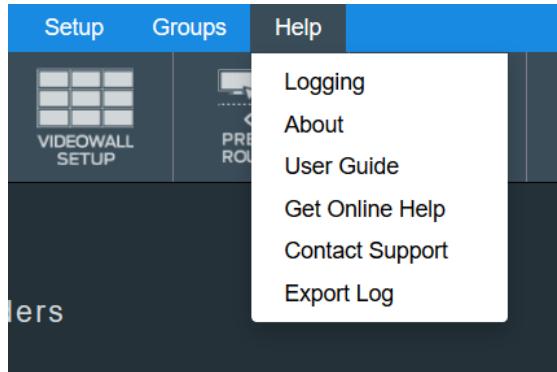
**File Download:** Downloads a CSV file containing the current configuration of all devices on the network. Useful for saving the current configuration for later use.

**File Upload:** Upload a CSV file with configuration information to be applied.

The CSV file can be modified in Excel or a similar program to create your own configuration that can be re-used when needed. After applying a configuration file, affected devices will disappear from the Manager for a brief time while the new settings are applied and will reappear once their new settings are received by the IPBaseT server.

As of version 1.64.2, all RDT fields are case-insensitive. Additionally, IPX now has the option of uploading USB settings via RDT when selecting the checkbox under the "Upload" button. This is a separate upload from the normal RDT, although the settings are contained in the same csv file. If you have issues uploading an RDT file, please check to make sure all fields are correctly filled (programs like Excel may try to auto-format the row values), and try uploading again.

# Logging



```

stop vlx-series-enc-0312.HDMI0 12/3/2018, 4:41:41 PM
{"status": "PROCESSING", "request_id": 134, "result": null, "error": null} 12/3/2018, 4:41:41 PM
{"status": "SUCCESS", "request_id": null, "result": {"events": [{"device_id": "vlx-series-dec-0211", "event_id": 37, "event_type": "SETTINGS_CHANGED", "timestamp": 1543873303, "request_id": 135}, {"device_id": "vlx-series-enc-0312", "event_id": 38, "event_type": "SETTINGS_CHANGED", "timestamp": 1543873304, "request_id": 136}], "error": null}} 12/3/2018, 4:41:44 PM
Event #37 SETTINGS_CHANGED on device vlx-series-dec-0211 with request ID 135 12/3/2018, 4:41:44 PM
Event #38 SETTINGS_CHANGED on device vlx-series-enc-0312 with request ID 136 12/3/2018, 4:41:44 PM
start vlx-series-enc-0312.HDMI0 12/3/2018, 4:41:46 PM
{"status": "PROCESSING", "request_id": 137, "result": null, "error": null} 12/3/2018, 4:41:46 PM
{"status": "SUCCESS", "request_id": null, "result": {"events": [{"device_id": "vlx-series-enc-0312", "event_id": 39, "event_type": "SETTINGS_CHANGED", "timestamp": 1543873313, "request_id": 138}, {"device_id": "vlx-series-dec-0211", "event_id": 40, "event_type": "SETTINGS_CHANGED", "timestamp": 1543873313, "request_id": 139}], "error": null}} 12/3/2018, 4:41:54 PM
Event #39 SETTINGS_CHANGED on device vlx-series-enc-0312 with request ID 138 12/3/2018, 4:41:54 PM
Event #40 SETTINGS_CHANGED on device vlx-series-dec-0211 with request ID 139 12/3/2018, 4:41:54 PM

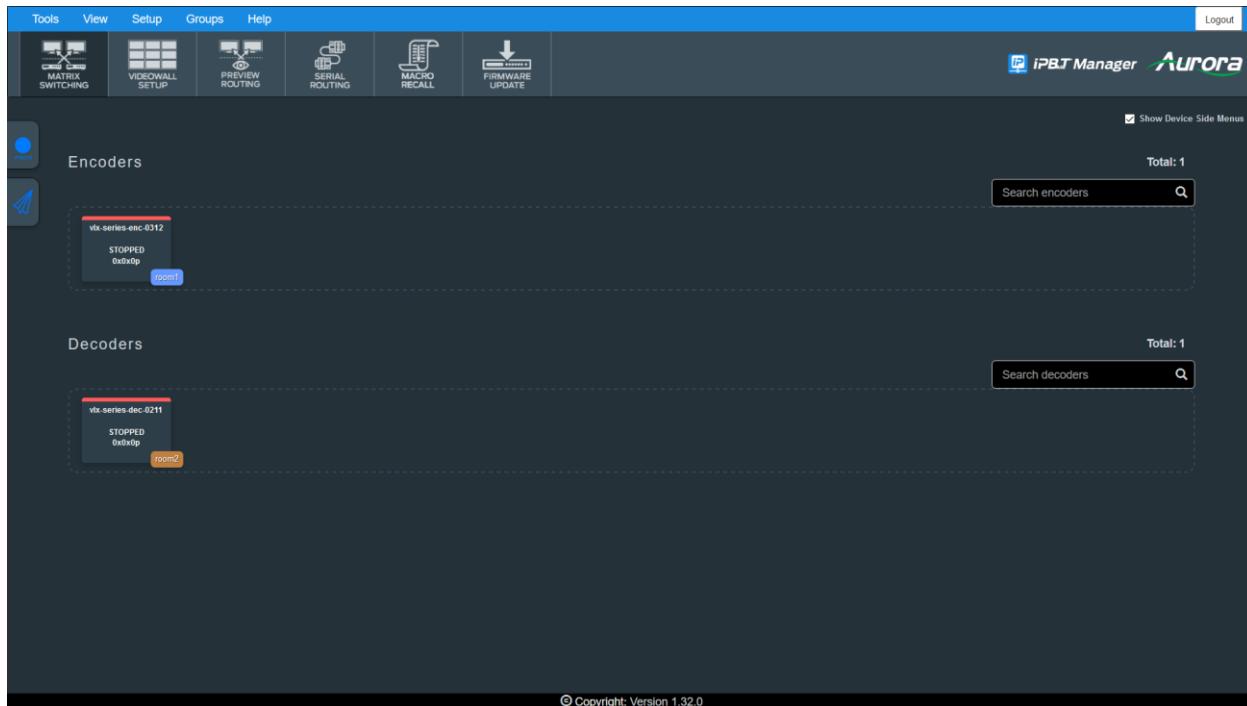
```

Device logging information can be found under the top “Help” menu. Logging is not on by default; it must be started from within the Manager. Click the “Start Logging” button to begin logging.

Any commands sent to the devices will appear in the log. In addition, events sent from the devices are also logged here. Logging can be useful if debugging is required. For example, if a command does not appear to be working, turning on logging and seeing the device response can help diagnose the issue. Common problems are congestion causing the device to drop the command from its buffer or an invalid syntax in the command itself.

Select the “Export Log” option from the top “Help” menu to download a copy of the log for later reference, as the logs are not saved automatically. You can clear the log by clicking “Clear Log” in the top right.

# Matrix Switching



Matrix Switching is the first tab that opens by default upon launching the Manager. It is also the first tab listed in the tab menu for both VLX and IPX server modes. It is used primarily to join device **video** streams.

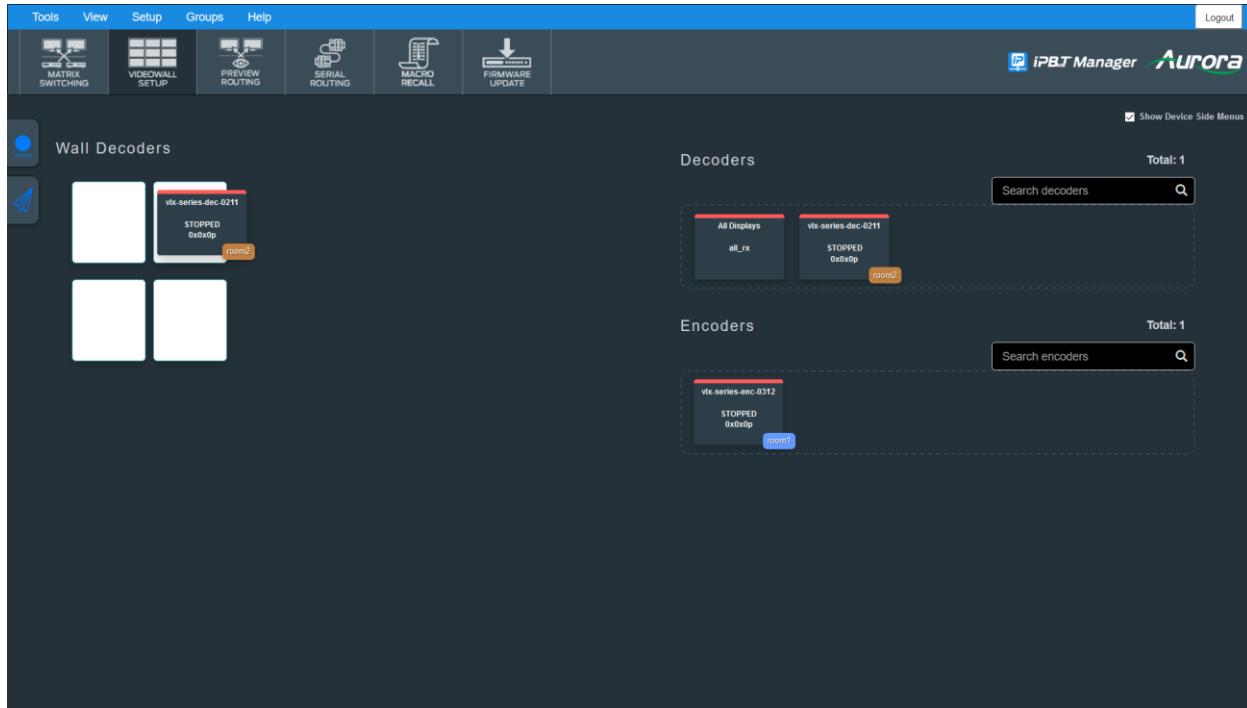
The flow within Matrix Switching is to first select an encoder and join it with a decoder device.

(NOTE: In reality, the decoder is the one “joining” the encoder stream, but the term join generally refers to two devices in a provider-subscriber relationship via a video, audio, or other type of stream. For video streaming, the encoder provides the stream, while the decoder subscribes to that stream and outputs the results.)

To join an encoder-decoder pair, simply drag an encoder to the desired decoder. This will apply a join command to that pair. If you want to join multiple decoders to the same encoder stream, you can first click the encoder so that it is highlighted green, and then click on each decoder you want to join the stream.

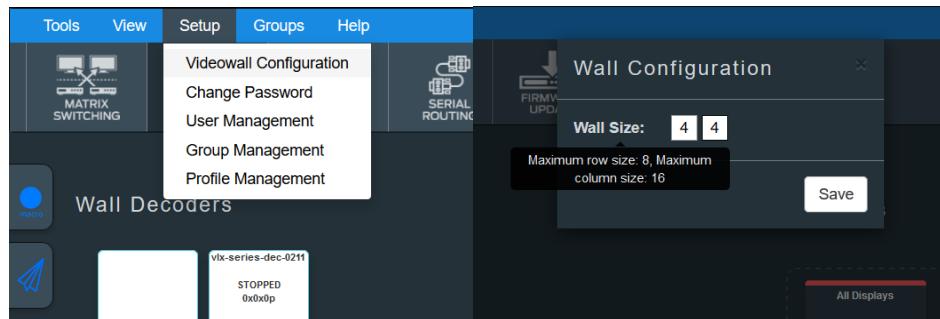
To confirm the devices are paired correctly, click on an encoder or decoder and see which devices are highlighted yellow - these devices are joined with the currently selected device.

# Videowall



The videowall feature can be used to divide and scale an encoder video stream between multiple decoders that are setup in a wall configuration. For example, a 4-monitor setup can be used in conjunction with videowall mode to have each monitor display one quadrant of the original video source, creating one extra-large display.

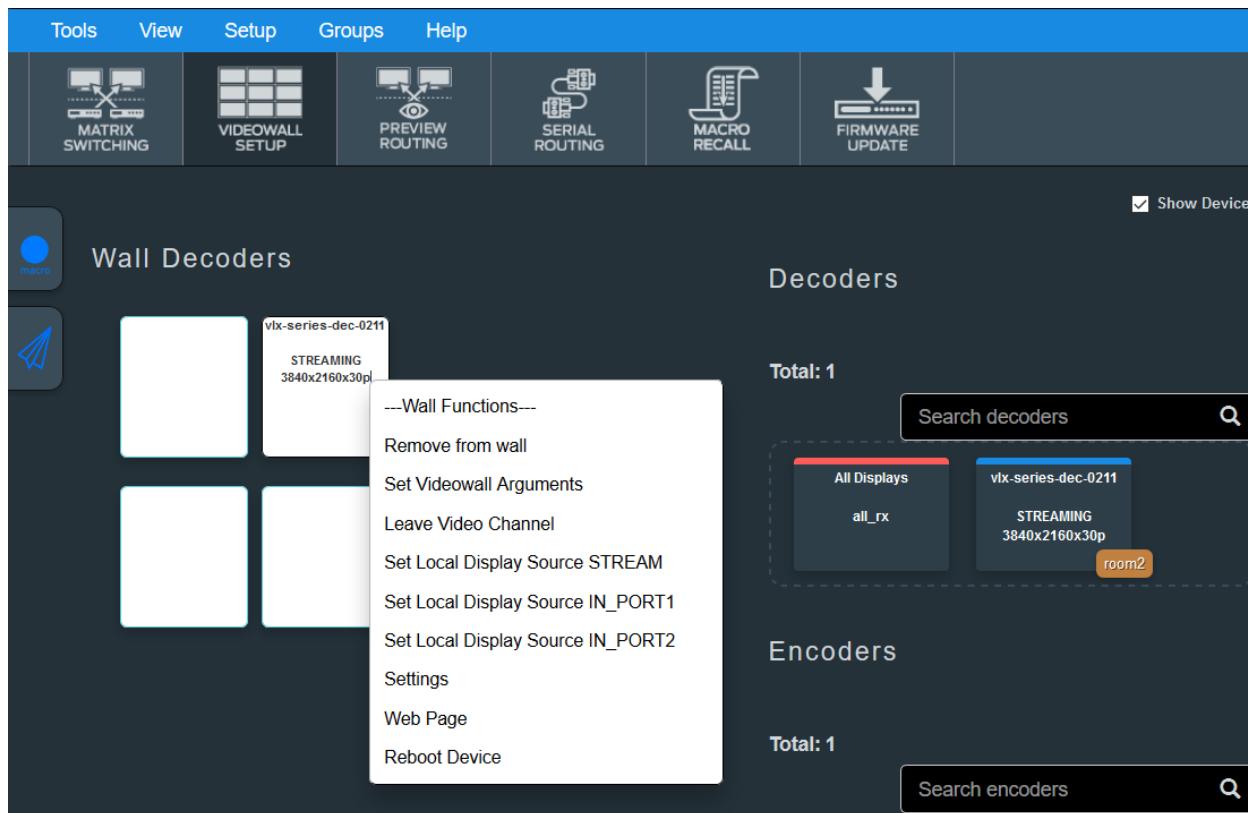
Videowall supports a maximum of 8 x 16 displays. To set the number of displays to use, go to the top “Setup” menu and select “Videowall Configuration”. You can then enter the dimensions in the popup dialog:



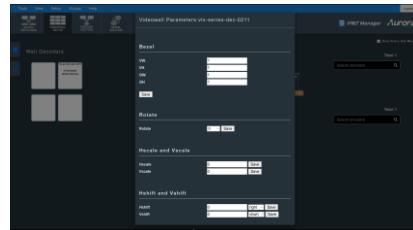
Once your dimensions are set, you can begin to add decoders to the wall. Simply drag and drop

your decoders onto the “Wall Decoders” section on the left side of the videowall screen. The decoder information will then appear in the videowall tile.

You can remove decoders from the wall tiles or set additional parameters by right-clicking the wall tile:



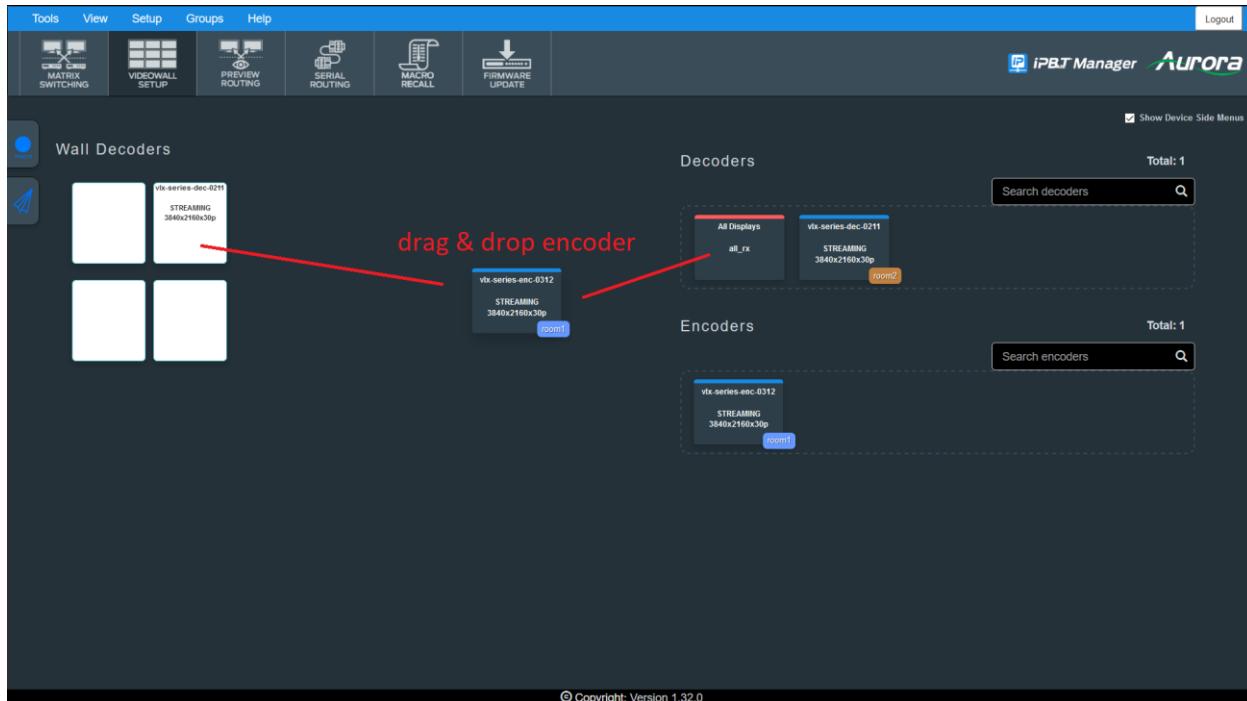
**VLX** - Selecting “Set Videowall Arguments” displays a dialog that allows the user to change videowall parameters for the selected decoder. Here the bezel, rotation, horizontal + vertical scaling, and horizontal + vertical shift properties can be set to create a custom look for the videowall.



**IPX** - Videowall bezel arguments can be set in the “Videowall Configuration” dialog. Additionally, you can set your monitor resolution to automatically calculate the full resolution of your

videowall for correct bezel compensation.

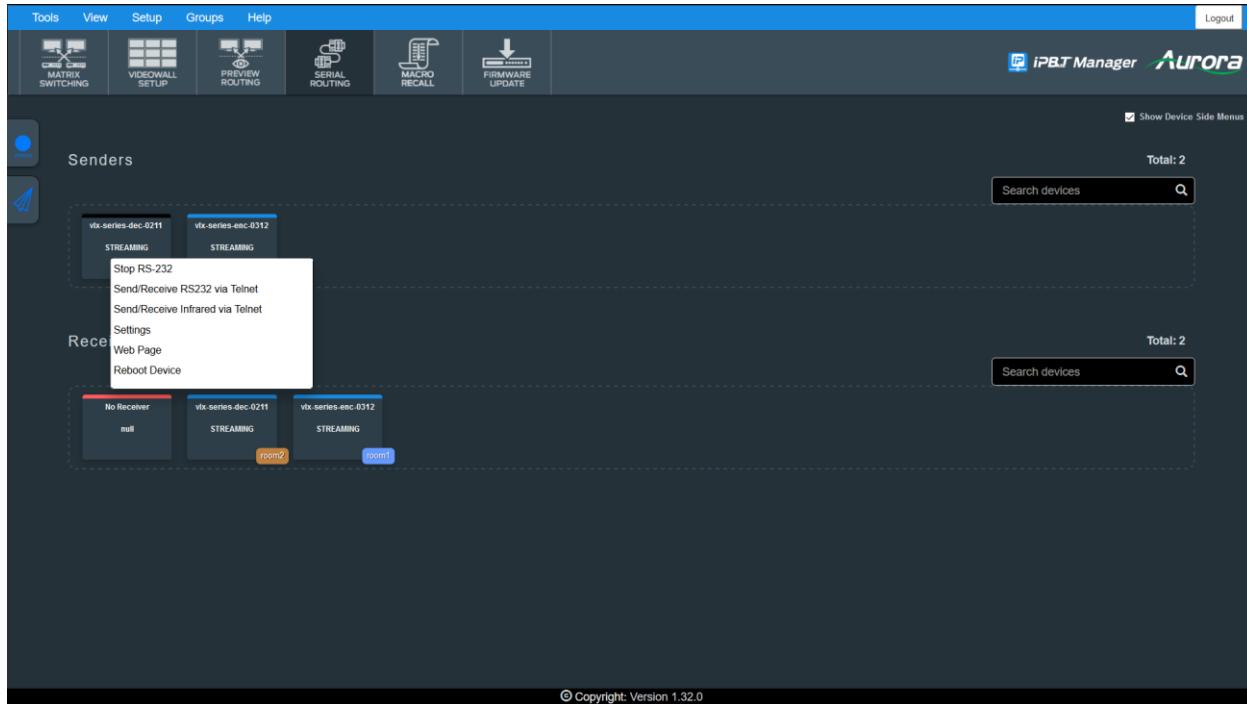
Once all decoders are placed and ready to stream, all that is left is to choose an encoder stream to join. This can be done by either dragging an encoder onto a videowall tile or dragging an encoder to the “All Devices” tile. Both trigger the commands to join all the videowall decoders to the encoder.



(NOTE: If you receive an error when trying to drop a decoder on to a videowall tile, try removing the decoder from the tile by right-clicking and selecting “Remove From Wall” and then drag and drop it again.)

(NOTE: A decoder can only be used once on the videowall. For a 4-monitor setup, you must have 4 decoders, each attached to the corresponding display monitor. The layout of the videowall in the Manager determines which portion or quadrant of the source video will be outputted to the decoder. If the picture looks jumbled, check to make sure the decoders are set to the correct positions in the videowall.)

# Serial Routing



The serial routing page allows the setup of RS232 (serial) routing between devices. The drag and drop and click functionality are similar to the Matrix Switching page, except here the stream is for serial data instead of video data.

(NOTE: You may be prompted to enable SOIP to allow RS232 routing, if so, select “Yes”.)

Serial data is commonly used to control other devices on the network that contain a serial interface. This could be a television, monitor or some other control device. A high baud rate of 9600 or greater is recommended as a lower baud rate can potentially flood the network with multiple serial data packets.

## Hex Serial Data:

To send hex values via the Manager, here are the available commands:

The parser shall check for the following sequence of characters in the receive packet and

replace it with the respective hex code and send to local RS232 out port:

\xnn - (where nn are two hexadecimal characters) hexadecimal representation of byte.

\0 - null character (0x00)

\n - line feed (0x0a)

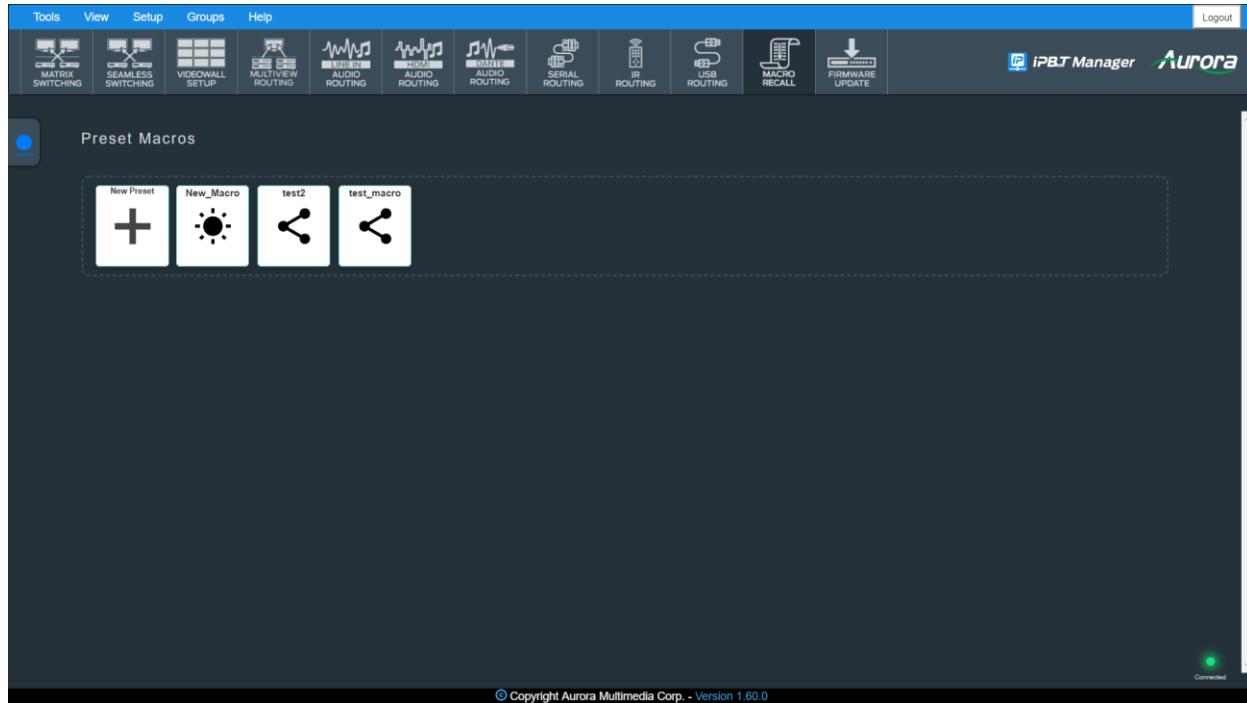
\r - carriage return (0x0d)

\t - horizontal tab (0x09)

\\\ - a single backslash

\(space) - space character(0x20)

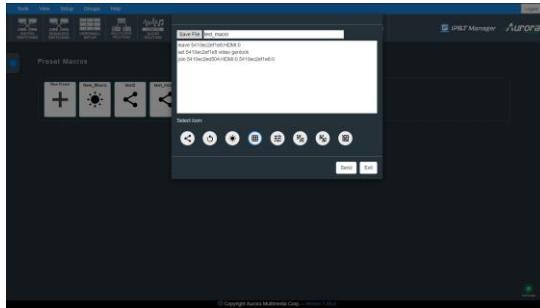
## Macro Recall



The Macro Recall page allows the user to create and send macro commands to specific or all devices on the network.

Macros are simply text files that contain a list of commands, separated by line. This can be used to automate certain processes, such as setting a device IP to static mode, setting all encoders to stream HDMI 2, or whatever else can be automated using commands.

To create a new macro, click “New Preset”:

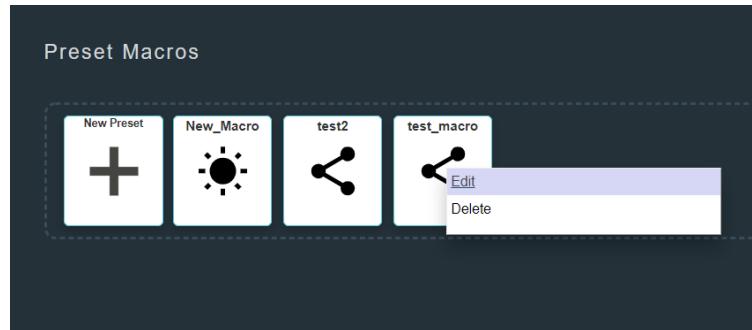


Enter the commands into the dialog that appears and make sure to save the file as a .txt file.

You can then send the command or exit the dialog. If saved, it should now appear in the list as its own macro tile with the icon you selected. (NOTE: It is recommended that you save the macro file to the default path provided. If the macro is not present in this directory it will not appear in the Manager.)

To send out a macro, simply click the tile.

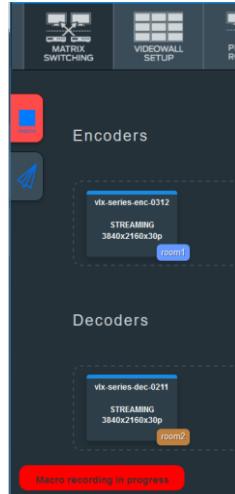
To delete or edit a macro, right-click the tile and select “Delete” or “Edit”.



There are two special macro commands that can be manually added for sending serial and IR data to a VLX device. Normally, you would send serial and IR using a direct Telnet connection to a device, but if you need to send data through a macro, use the following two commands  
**(NOTE: To send serial data via target\_serial, SOIP must be enabled on the device):**

```
target_serial <ip> <data>
target_ir <ip> <data>
```

## Macro Recording



Instead of having to manually enter a macro by hand, there is a handy recording tool that can be used to auto-generate a macro with whatever commands are sent during recording. To begin macro recording, select the tab on the left side of the Manager that has the circular “record” symbol. Once selected, it will turn red and a notice will appear in the bottom left. To stop recording, click the tab again. You will then be prompted to save the macro.

## Macro API Command

Starting with IPBT Manager v. 1.60.0, you can now send macro commands remotely via HTTP and IPX Telnet Wrapper setups. Simply connect to the machine hosting the Manager and send an HTTP POST to the ‘macro’ endpoint on port 3000 (with body content as ‘form-data’ or ‘x-www-url-encoded’) with the “macroname” parameter set to the name of the macro (case-sensitive), as shown in the IPBT Manager. Example call:

**http://<Manager IP>:3000/macro**

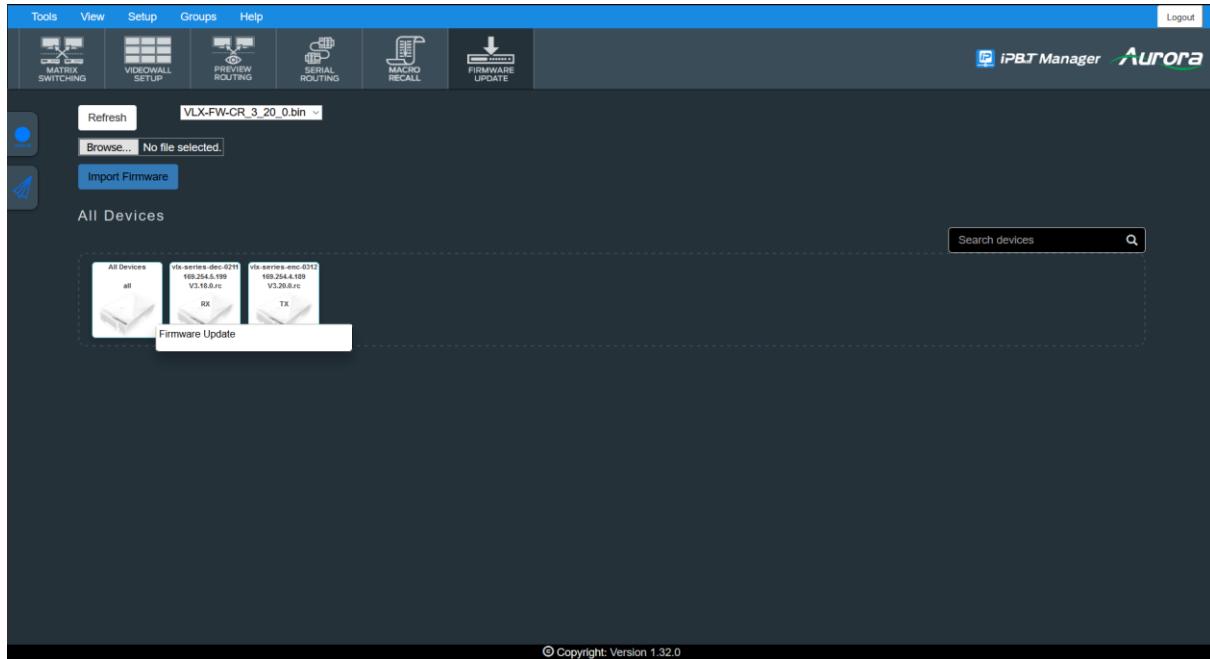
**Set body parameter ‘macroname’ to the name of the macro to recall**

Over the IPX Telnet Wrapper connection, simply send the command:

**macro <macroname>**

You will then receive a response from the server indicating if the macro was sent successfully or not found.

# Firmware Update



The firmware update page is the last tab in the menu in both VLX and IPX modes. Here we can update a device's individual firmware or do batch updating for all devices. The currently selected firmware to be uploaded is shown at the top, next to the "Refresh" button.

To add new firmware to the Manager, click "Browse..." and select the firmware file. Once it appears on the page, click "Import Firmware" (for IPX, "Import FPGA Firmware").

To upload the currently selected firmware onto the device, right-click the device tile and select "Update Firmware". To update all devices at once with the same firmware file (batch update), right-click the "All Devices" tile (the first tile on the left) and select "Update Firmware". Once started, the device tiles will begin updating, showing the current completion percentage.

**VLX** devices only have one type of firmware file.

**IPX** devices have multiple firmware types: FPGA, Controller, and Boot.

For the latest firmware releases, check the [Aurora Customer Portal](#).

(**NOTE: Do not send any commands to devices while they are updating. The devices will reboot after installation of the firmware is complete.**)

# Profile Management

The screenshot shows the iPB Manager software interface. At the top, there is a navigation bar with tabs: View, Setup, Groups, and Help. The 'Setup' tab is currently selected. A dropdown menu is open under the 'Setup' tab, listing: Videowall Configuration, Change Password, User Management, Group Management, and Profile Management. Below the navigation bar, there is a toolbar with icons for MATRIX SWITCHING, VIDEOWALL SETUP, PREVIEW ROUTING, SERIAL ROUTING, MACRO RECALL, and FIRMWARE UPDATE. To the right of the toolbar, the text 'iPB Manager Aurora' is displayed. The main content area is titled 'Profile Management'. It shows a table with two entries: 'admin' and 'User'. Each entry has 'Edit' and 'Delete' buttons next to it. Below the table, it says 'Showing 1 to 2 of 2 entries'. At the bottom left, there are 'Export Data' and 'Import Data' buttons. On the far right, there is a 'Logout' button.

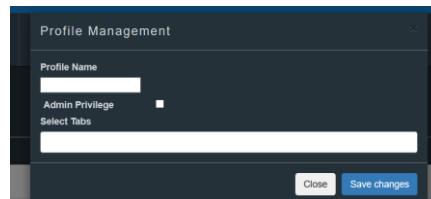
Profiles are configurations that can be applied to specific users of the Manager software. This allows the administrator the ability to limit access to specific parts of the application and apply the same rules to multiple users. To access Profile Management, select it from the top “Setup” menu.

To create a new profile, click “Add Profile” in the upper right.

To edit an existing profile, click “Edit” under the options column.

You can also import or export profile data as a CSV, which can be useful if a hardware migration is needed by using the buttons in the bottom left.

When creating a profile, you can set the profile name, admin privileges, and the tabs/features that are available to any users inheriting the profile.



# Group Management

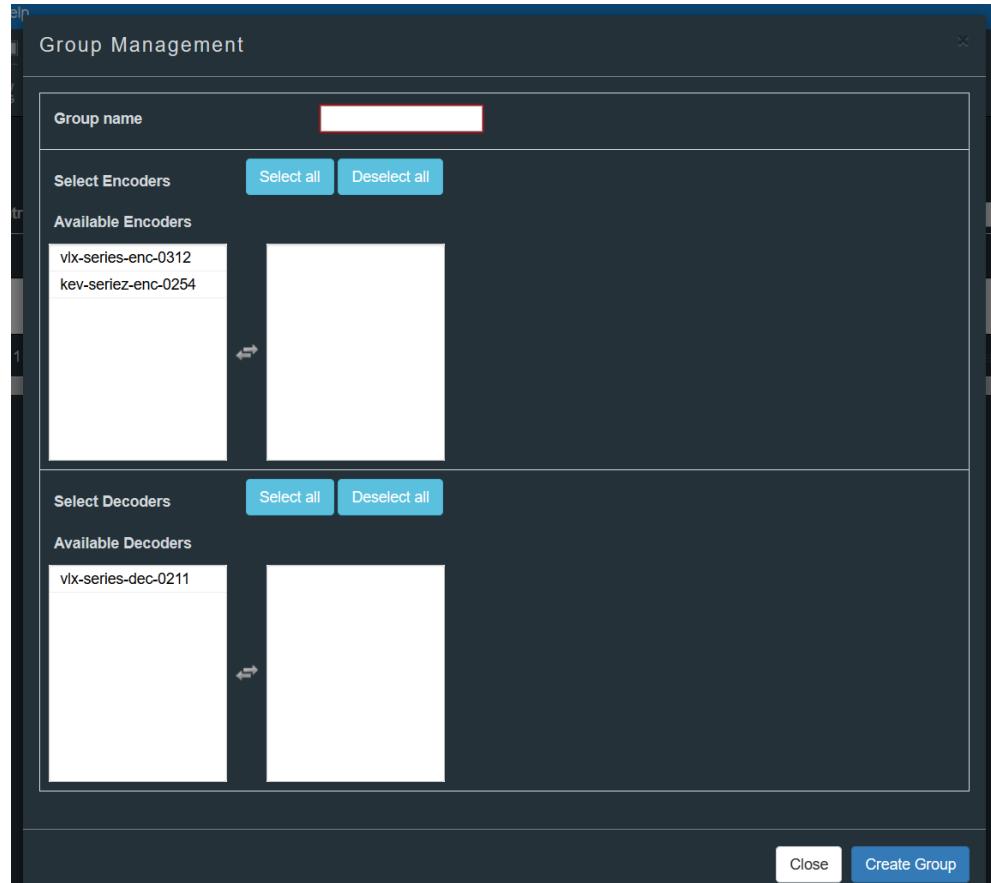
Groups are collections of devices that can be applied to a user. For example, if a user should only have access to devices in their room, a group can be created with only these devices and applied to that user. That way, the user cannot change configurations of any devices not in their jurisdiction. Admin users have access to all groups by default.

To add a new group, click “Add Group” in the upper right.

To edit a group, click “Edit” under the options column.

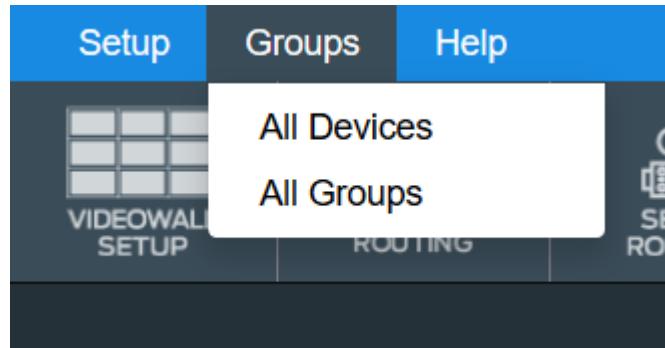
You can also import or export group data as a CSV, which can be useful if a hardware migration is needed by using the buttons in the bottom left.

When creating or editing a group, simply select which encoders and decoders will be part of the group as well as create a name for the group (screenshot on next page).



Multiple groups can be assigned to one user. When the user is logged into the Manager, they can select which group to view, or all groups at once, by using the top “Groups” menu.

(NOTE: “All devices” option only available to administrators or users with admin privilege.)



# User Management

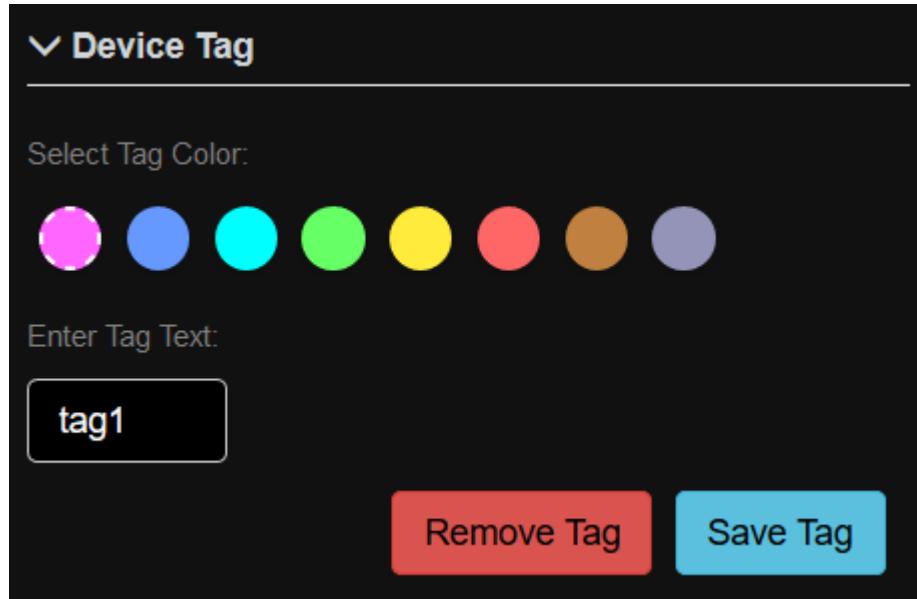
User management allows the administrator to add new user accounts for access to the Manager application. Users have an associated username, password, group(s) and a profile. This allows the administrator to allow users access to only specific devices and features of the application.

To add a new user, click “Add User” in the upper right.

To edit a user, click “Edit” under the options column.

You can also import or export user data as a CSV, which can be useful if a hardware migration is needed by using the buttons in the bottom left.

# Device Tagging



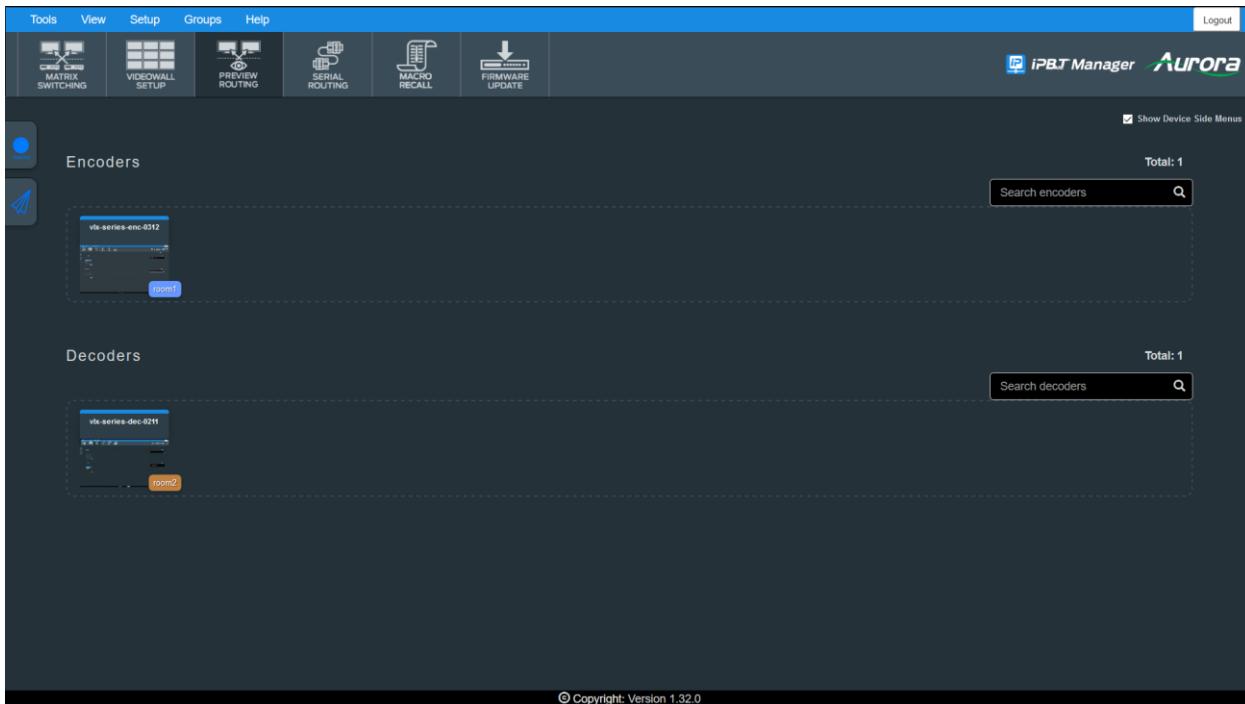
Device tags are a handy tool to help quickly identify devices within the Manager without having to remember complicated hostnames. To add or remove a device tag, click on the device you would like to tag and find the “Device Tag” section of the side menu.

You can choose from 1 of 8 tag colors and enter a custom tag name (limited to 5 characters). Once set, click “Save Tag” and it will now appear on the device tile within all pages of the application. To remove, simply click “Remove Tag”.

(NOTE: Device tags are paired to the hostname of the device. If the hostname of a device is changed for any reason, the tag will not appear for that device until a new tag is saved for the new device hostname.)

This ends the common features section of the user guide. The next sections detail features exclusive to either VLX or IPX modes.

# Preview Routing



The Preview Routing page contains live low-fps feeds of active video streams for instant feedback on what's playing through a device.

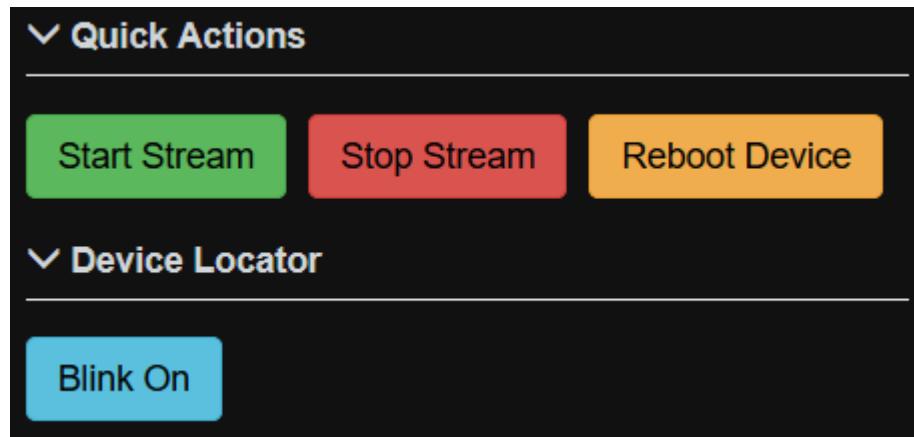
The quality of a VLX preview stream can be modified to be high-res or low-res, along with the fps of the stream. This setting can be changed by right-clicking a device, going to "Settings" and navigating to the "Preview" tab.

For IPX previews, an external program is used to process the video stream. Due to resource and bandwidth concerns, only 5 preview streams will start automatically when navigating to the Preview Routing tab. Right-click a device to start or stop the preview stream.

(NOTE: High-resolution previews only available on VLX devices with firmware version 3.20 and above.)

(NOTE: Previews only available on IPX devices with FPGA firmware 4.0.0.0 or higher, and require a 10G connection. At the time of writing, enabling the preview stream first requires a factory default of the IPX encoder [can be performed under right-click -> "Settings" -> "Debug" tab.])

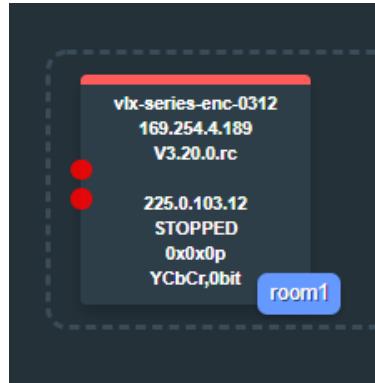
## Device Locator (VLX Only)



The Device Locator is a very simple feature that turns on two blinking LEDs on the front plate of the VLX device. This can help physically locate a specific device if it needs to be swapped or reconnected.

To turn on Device Locator, open the side menu and find the corresponding section. Press “Blink On” to turn on LED blinking, and “Blink Off” to turn off LED blinking.

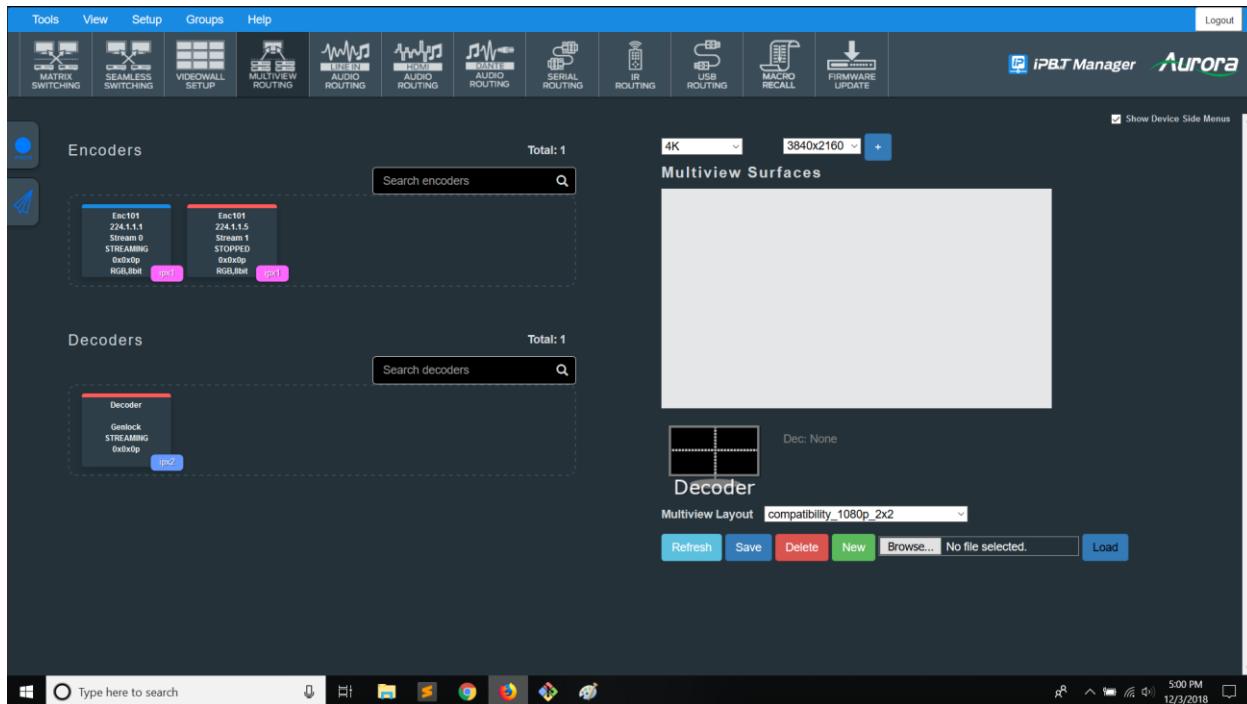
When the Device Locator is active for a device, the device tile will show two blinking red dots within the Manager application.



(NOTE: IPX devices also support blinking LEDs which can be used in the same way to physically locate the device, and it is available under “Quick Actions” in the side menu.

However, unlike VLX there will be no flashing icon to tell that the Device Locator is on within the Manager.)

# Multiview (IPX Only)



Multiview is an IPX-only feature that allows one decoder to accept multiple encoder streams simultaneously and output all streams to the same display. The encoder streams can be modified to be specific resolutions and positions on the output display.

The IPBaseT Manager comes with many preset Multiview configurations to choose from. To select a layout, use the dropdown select on the right side underneath the Decoder graphic.

Once a layout is selected, adding an output decoder to the layout will then autofill the “Multiview Surfaces” view with the layout configuration.

To create a custom layout, click “New” on the lower right of the page, or to load a custom layout file, select “Browse” and then click “Load”.

To find new layouts dropped into the layouts folder, click “Refresh”.

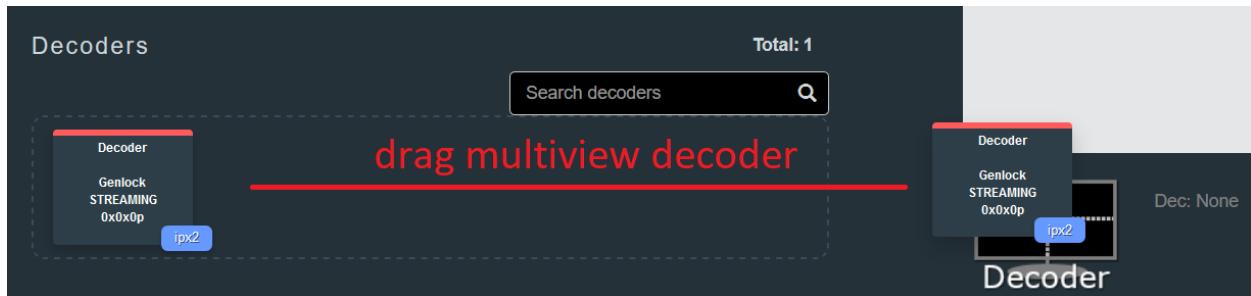
To save a layout, click “Save”.

To delete a layout, click “Delete”. Default layouts cannot be deleted.

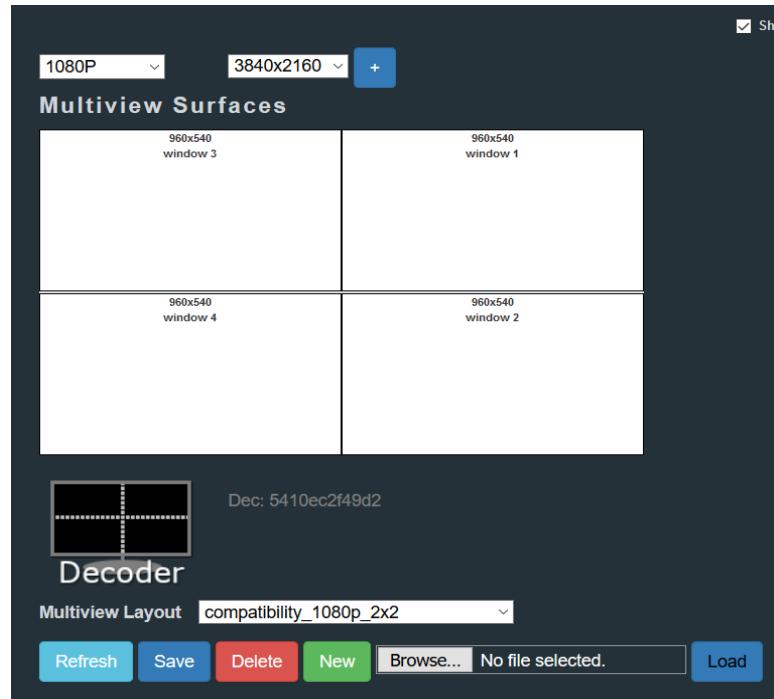
See next page for step-by-step setup of a Multiview layout:

## Step-by-Step Setup:

1. To start, first select the Multiview Layout you wish to use by using the dropdown selector.
2. Select the decoder you want to use for the output display.
3. Drag and drop the decoder onto the “Decoder” graphic underneath the “Multiview Surfaces” area. The device ID will appear next to the decoder after it’s attached.



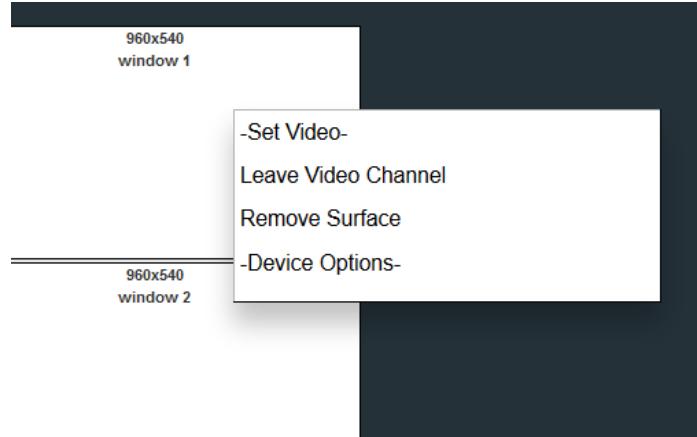
4. The surfaces will now appear for the selected layout.



Now that your layout is setup, you can add encoder streams and add/remove surfaces to the layout.

To remove a surface, right-click on the surface window and select “Remove Surface”.

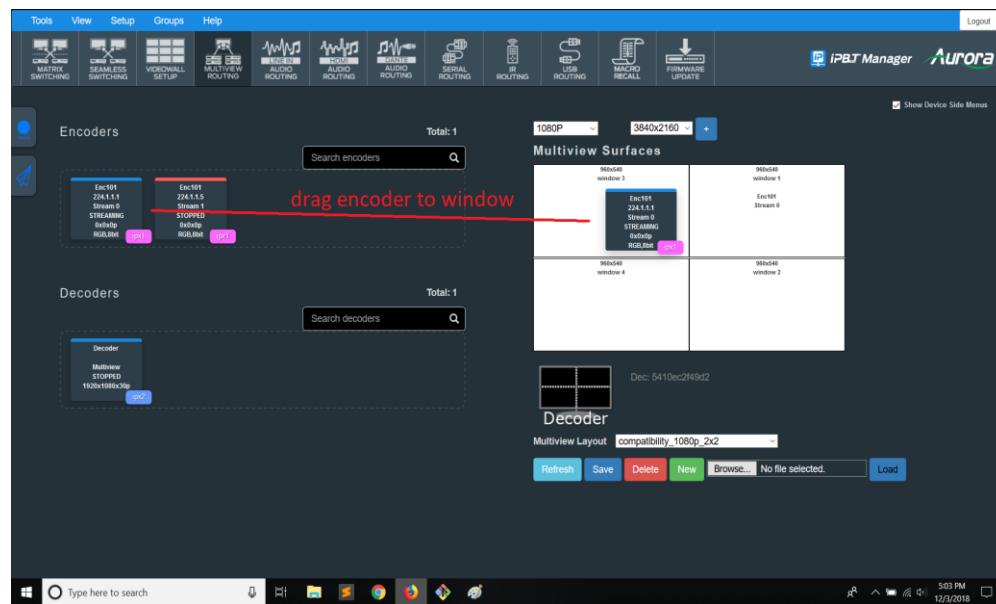
To remove an encoder stream from a surface, but not the surface itself, right-click and select “Leave Video Channel”.



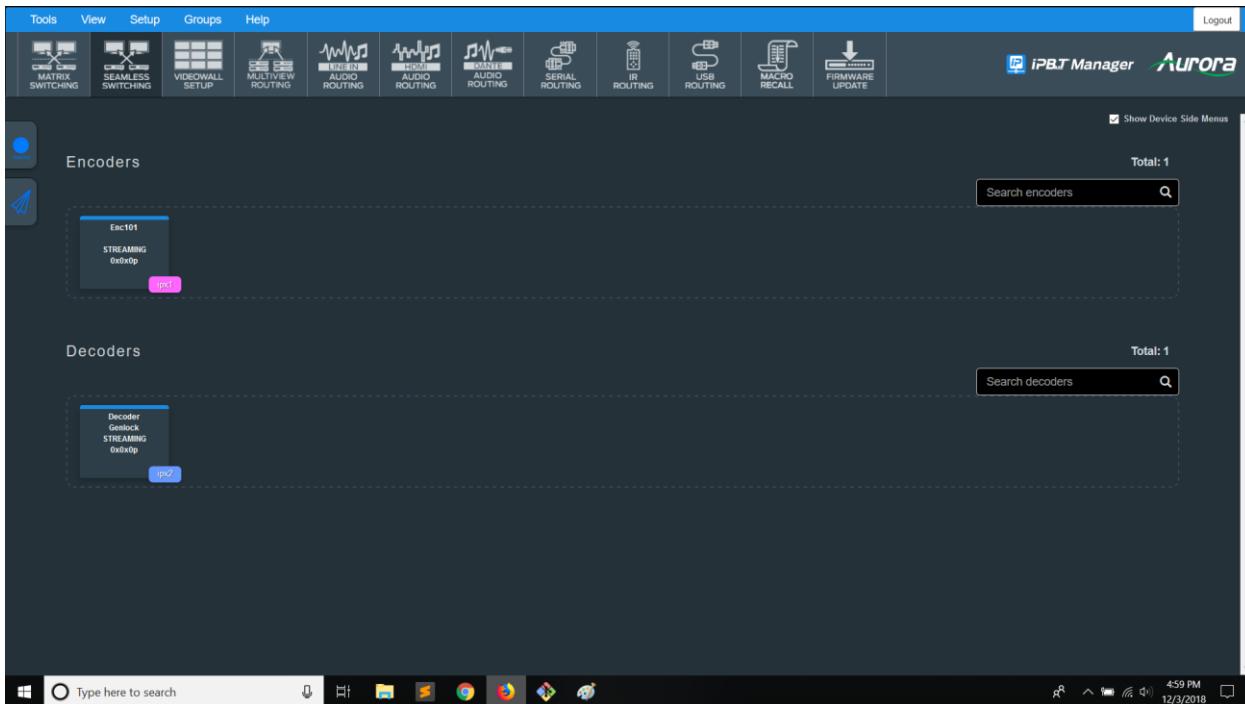
To add an encoder stream to a surface, simply drag and drop the encoder to the surface. The surface window will now show the encoder hostname and stream index attached.

(NOTE: Stream 0 is the raw video stream input to the encoder device. It will not be scaled.

Stream 1 is the scaled video stream that passes through the scaler chip, it is recommended to use Stream 1 for Multiview displays. Right-click Stream 1 to edit the display mode.)



# Seamless Switching (IPX Only)

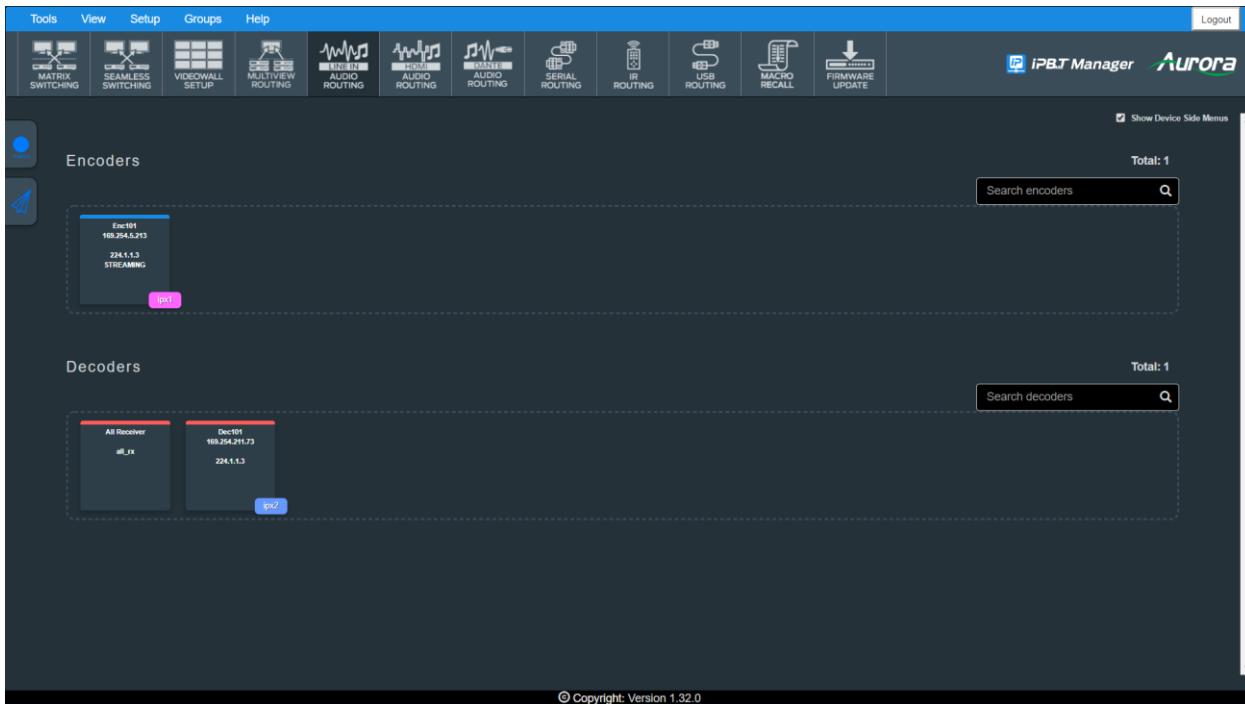


Seamless Switching works identically to the Matrix Switching page, but instead of joining streams in the normal way, it allows for extra-fast stream switching without the hiccup or delay found in regular Matrix Switching. This feature is only available to IPX devices.

To join an encoder-decoder pair, simply drag an encoder to the desired decoder. This will apply a join command to that pair. If you want to join multiple decoders to the same encoder stream, you can first click the encoder so that it is highlighted green, and then click on each decoder you want to join the stream.

To confirm the devices are paired correctly, click on an encoder or decoder and see which devices are highlighted yellow - these devices are joined with the currently selected device.

# Line-In Audio Routing (IPX Only)



Line-In Audio Routing allows for routing of analog audio sources.

To join an encoder-decoder analog audio pair, simply drag an encoder to the desired decoder.

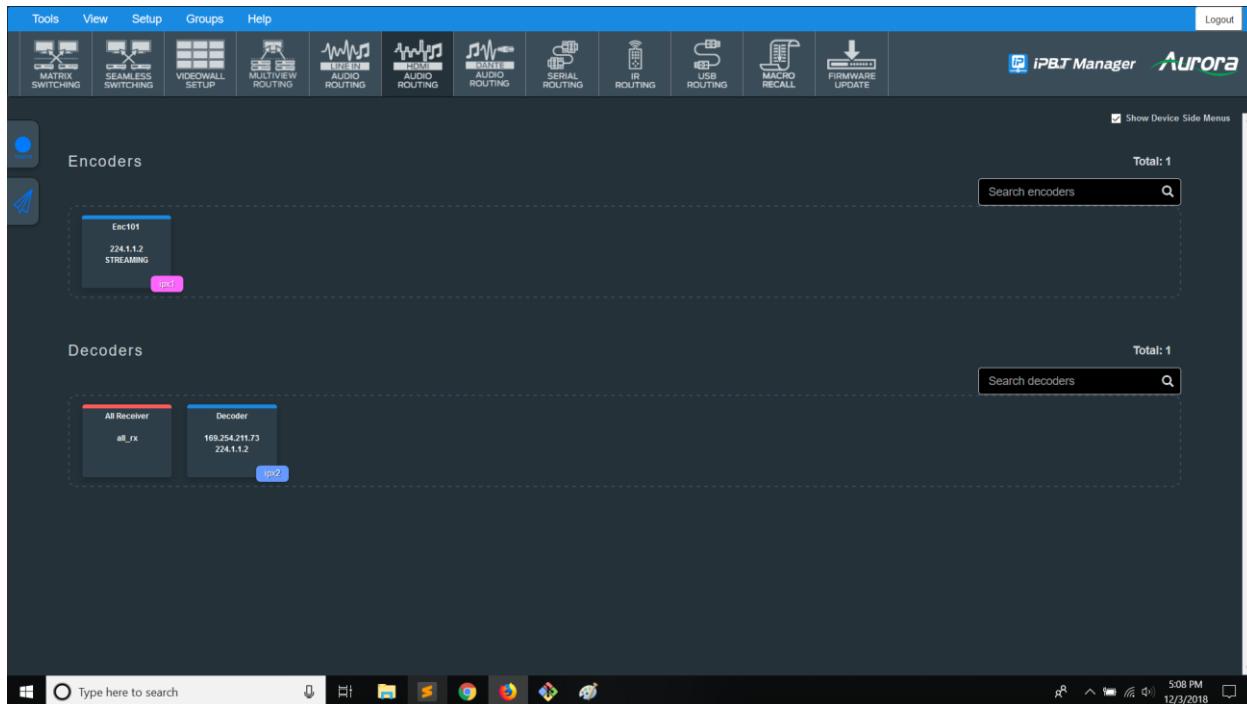
This will apply a join command to that pair. If you want to join multiple decoders to the same encoder stream, you can first click the encoder so that it is highlighted green, and then click on each decoder you want to join the stream.

To confirm the devices are paired correctly, click on an encoder or decoder and see which devices are highlighted yellow - these devices are joined with the currently selected device.

The “All Receiver” tile allows you to join one encoder analog audio source to all output decoders.

Right-click on a device tile to start or stop analog audio streaming.

# HDMI Audio Routing (IPX Only)



HDMI Audio Routing allows for routing of HDMI audio sources.

To join an encoder-decoder HDMI audio pair, simply drag an encoder to the desired decoder.

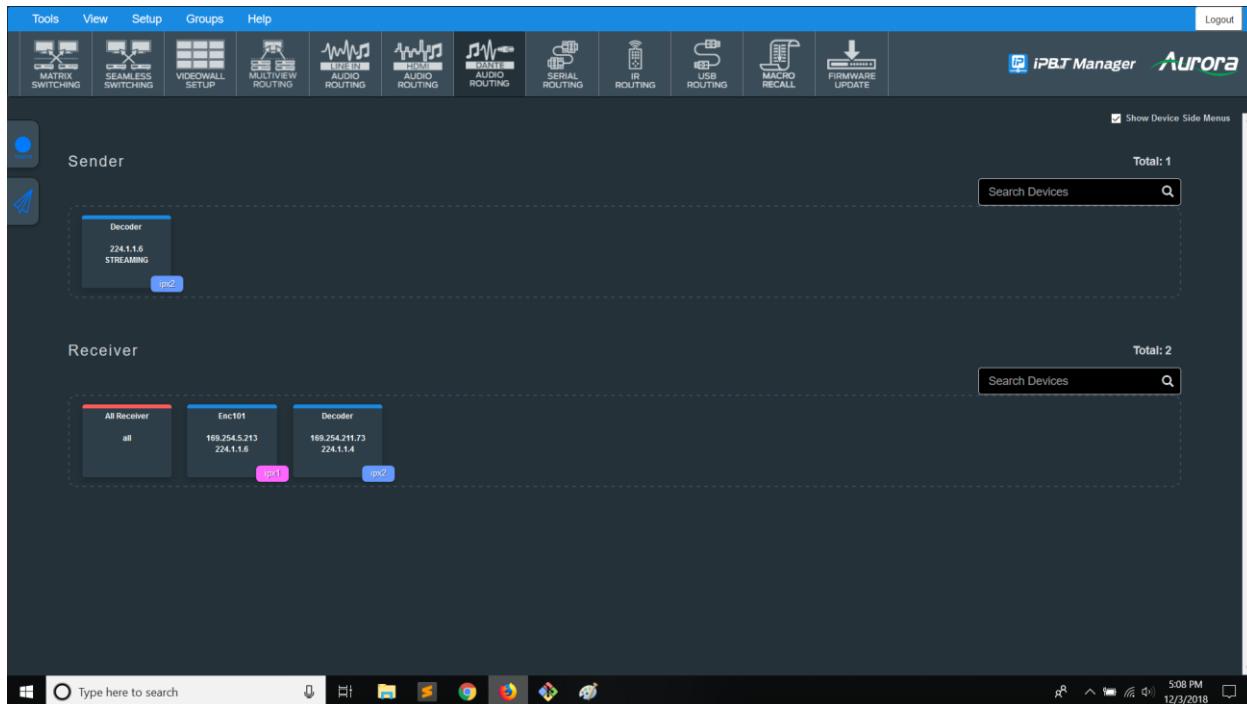
This will apply a join command to that pair. If you want to join multiple decoders to the same encoder stream, you can first click the encoder so that it is highlighted green, and then click on each decoder you want to join the stream.

To confirm the devices are paired correctly, click on an encoder or decoder and see which devices are highlighted yellow - these devices are joined with the currently selected device.

The “All Receiver” tile allows you to join one encoder HDMI audio source to all output decoders. Right-click on a device tile to start or stop HDMI audio streaming.

By default, HDMI audio is routed automatically with HDMI video streams. Starting in version 1.70.0, you can turn off this behavior using the checkbox on the Matrix Routing page to not require HDMI audio streams to be sent. You can do this to save bandwidth or use breakaway routing to route one source audio stream to a different receiver than the video stream.

# Dante [i2s] Audio Routing (IPX Only)



Dante (i2s) Audio Routing allows for routing of Dante (i2s) audio sources.

To join a sender-receiver Dante (i2s) audio pair, simply drag a sender to the desired receiver.

This will apply a join command to that pair. If you want to join multiple receivers to the same sender stream, you can first click the sender so that it is highlighted green, and then click on each receiver you want to join the stream.

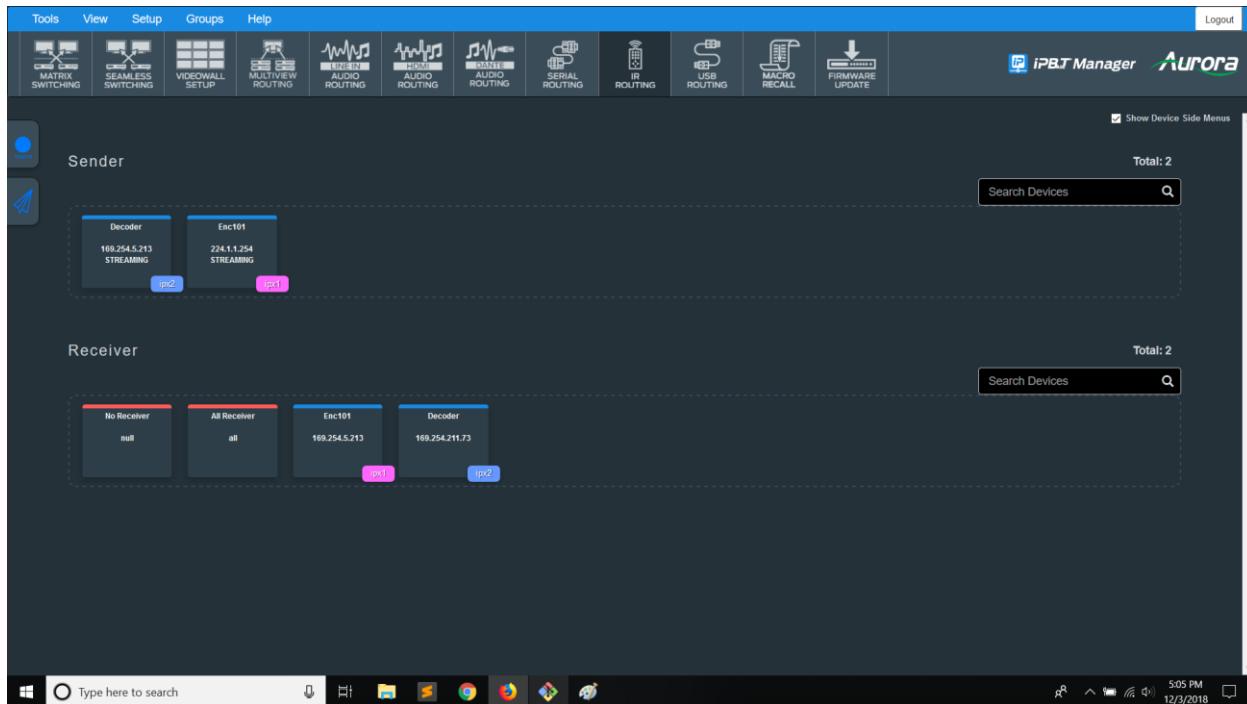
To confirm the devices are paired correctly, click on a sender or receiver and see which devices are highlighted yellow - these devices are joined with the currently selected device.

The “All Receiver” tile allows you to join one sender Dante (i2s) audio source to all output receivers.

Right-click on a device tile to start or stop Dante (i2s) audio streaming.

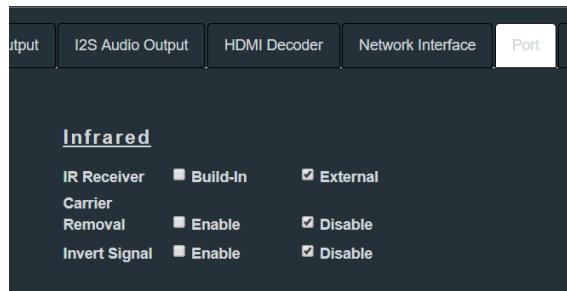
(NOTE: Dante (i2s) audio routing requires IPX model Dante expansion card [sold separately].)

# IR Routing (IPX Only)



The IR (Infrared) routing page allows the setup of IR routing between devices. The drag and drop and click functionality is similar to the Serial Routing page, except here the stream is for serial IR data instead of plain serial data.

Formatting for IR data may depend on the input IR device and the receiving IR device. The settings for IR can be changed by right-clicking on a device tile and selecting “Settings”->“Port” tab:



To begin sending and receiving IR data, right-click on the device and select “Send/Receive Infrared”. You can then send data through the IR receiver on the device itself or using an

external receiver.

(NOTE: VLX devices do not have an IR Routing page in the Manager, but are still able to send and receive IR data through the IR ports on the device. It operates as a simple pass-through.)

Currently, VLX has the ability to choose between different IR protocols, including Aurora, Crestron, AMX and custom protocols. IPX devices do not currently have explicit protocol support but do contain support for custom IR routing through the IR Routing page.

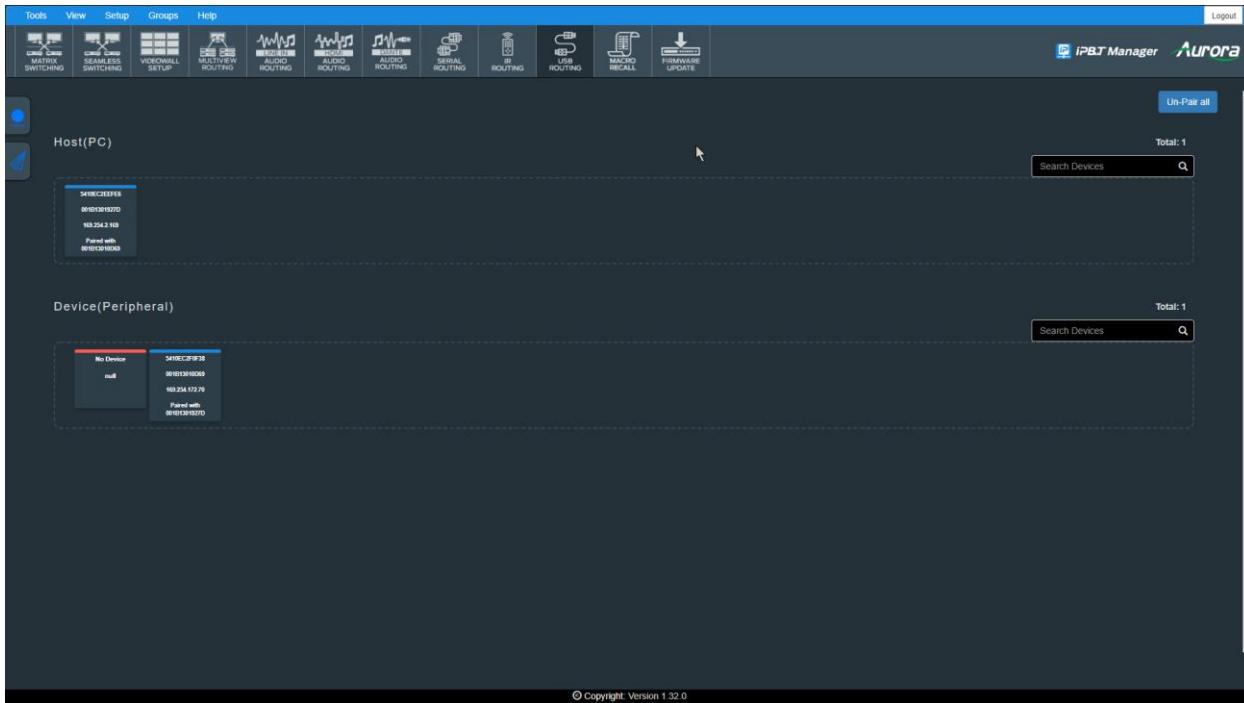
### Notes on IR:

- The <0D><0A> is a hexadecimal representation of an actual carriage return/line feed. When you send the command from the Manager, you need to include that. To read more about hex data, see [this article](#).
- If you use a Telnet client like Putty to learn IR from a VLX, you will not see that <0D><0A>. Instead, you will see the actual CR/LF (as a newline). Likewise, when sending in Putty, you will not need to transmit the <0D><0A>, but rather press 'Enter' on the keyboard after you have inputted the string.

The <0D><0A> is only a representation of the CR/LF. When sending via a control system, you will need to represent that CR/LF using the hexadecimal notation that the control system requires. A few examples:

- Aurora: %0D%0A
  - Crestron: \x0D \x0A
  - AMX: \$0D,\$0A
- 
- If you are learning an IR command, and you see additional data after the first <0D><0A>, this is extra data or perhaps the IR command repeating. This can be caused by pressing the IR remote button for too long. **This extra data is not needed and can be discarded.** For best results, when learning from an IR remote control, simply tap the button quickly (do not hold down).

# USB Routing (IPX Only)



USB Routing allows for routing of USB data between a Host and Peripheral pair.

To unpair all USB devices, click “Unpair All” on the top-right of the page.

(NOTE: IPX devices require an add-on ICRON USB chipset to use USB functionality [sold separately])

(NOTE: VLX devices support USB data pass-through but does not have a USB Routing option.)

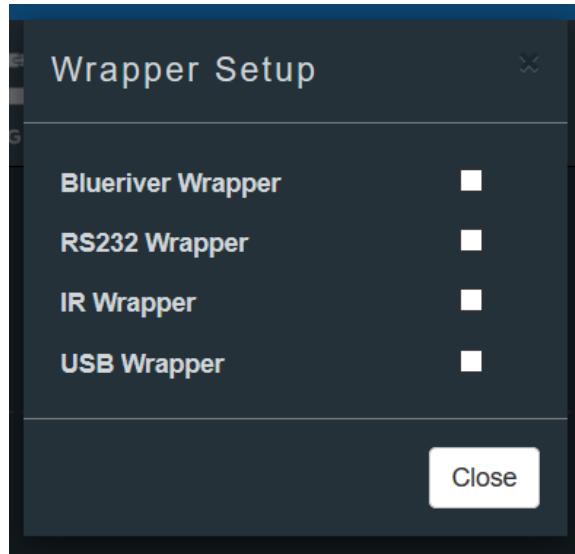
For VLX, the rear Host and Device ports can be used to connect USB communication automatically.)

IPX devices have one USB port on the rear of the device. This USB can be set to be the Host or Device connection from the Manager. Typically, encoders are used as the host port and decoders are used as the device port, but this is not required. To set USB network settings, right-click the device and go to “Settings” -> “Port” tab.

The IPX-TC3 has additional USB ports for host and device connections on one unit.

(NOTE: A WiFi internet connection can interfere with the USB configuration, including resetting USB devices to DHCP mode. It's recommended to disable Wi-Fi connections on the Manager machine if using USB routing.)

## Telnet Wrapper Setup (IPX Only)



The Telnet Wrapper feature of IPX allows for Telnet transmission of device (BlueRiver) commands, RS232 (Serial) commands, IR commands and USB commands with support for MAC address, Hostname and IP address parameters to be used for device lookup. This expands the interfacing ability of IPX devices over Telnet. To enable a wrapper, navigate to the top "Setup" menu -> "Wrapper Setup" and click the checkbox of any wrapper you would like to enable.

(NOTE: IPBT Manager must be restarted before Wrapper changes take effect.)

## Bitmap Overlay (IPX Only)

Configuration: 5410EC2ED504 Mac: 5410ec2ed504

General Settings Analog Audio Output Dante Audio Input HDMI Audio HDMI Monitor Network Interface Port Debug Overlay

Note: Bitmap Overlay accepts only Monochrome Bitmaps. Max Size: 65536 pixels. Genlock display mode does not support Bitmap Overlay.

TX overlay uses scaled stream only (Stream 1), RX overlay uses HDMI output

Position X:	0
Position Y:	0
Foreground Color (RRGGBB):	008800
Background Color (RRGGBB):	008800
Foreground Transparency (0-100):	100
Background Transparency (0-100):	0
Scaling Factor (1, 2, or 4):	2
Invert Colors:	<input checked="" type="checkbox"/>

Upload Monochrome BMP:  
Choose File

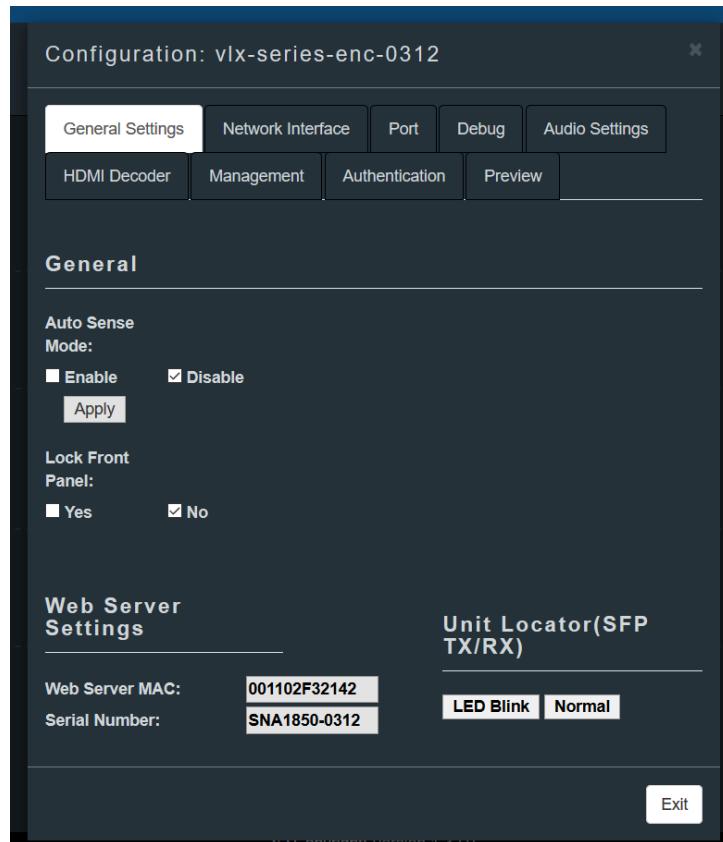
The bitmap overlay feature is a new feature only found on IPX TC-2 and TC-3 devices with FPGA firmware version 4.0.0.0 or greater installed and Blueriver Server version 2.18 or greater (bundled with IPBT Manager v. 1.60.0 or above). If a device is able to add a bitmap overlay to the stream, the “Overlay” tab will appear in the Settings menu as shown above.

On this tab you can select a monochrome bitmap image to upload to the IPX device to display over the stream video. You can set several parameters, including X and Y positions, foreground and background color (encoded as RRGGBB hex), foreground and background transparency (0-100), a simple scaling factor of 1, 2 or 4 and an inversion checkbox to switch foreground and background. By default, the foreground corresponds to the white pixels and the background corresponds to the black pixels of the monochrome bitmap.

Note that there are a few caveats to the bitmap overlay feature. A maximum image size of 65536 pixels is allowed to be uploaded for the overlay. In addition, overlays will not appear on Genlock decoder video streams, but works with all other display modes (e.g. Genlock Scaling, Fast Switch, Multiview). On encoder devices, overlays are only applied to the scaled HDMI stream (Stream 1) and on decoder devices they are only applied to the HDMI output stream.

This ends the VLX and IPX Manger-specific features section of this document. The next section covers device settings for VLX and IPX encoders and decoders.

## Device Settings - VLX Encoder



To access the device settings dialog, right-click the device tile and select “Settings”. The initial open tab will be the General Settings tab (shown above).

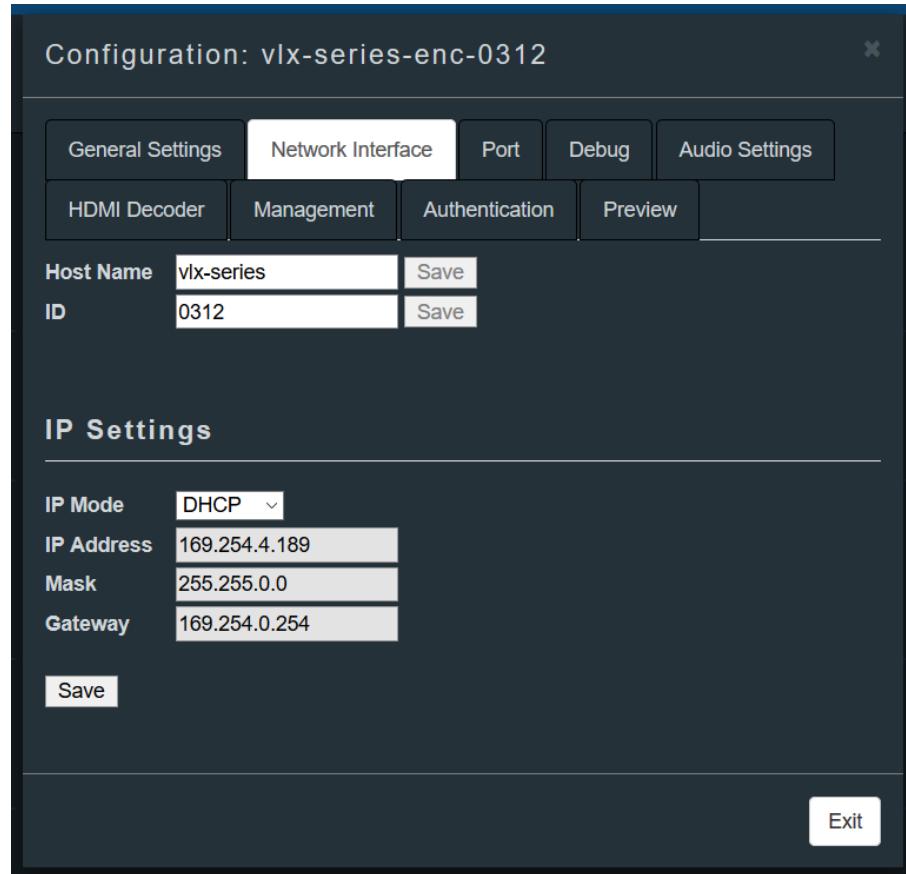
**Auto-Sense Mode:** Allows the device to detect connected inputs and outputs and set sources automatically.

**Lock Front Panel:** Toggles the hardware buttons on the front of the VLX device.

**Web Server MAC:** The MAC address of the web server on the VLX device.

**Serial Number:** The serial number of the VLX device.

**Unit Locator:** Allows changing front LED mode to blinking or normal. Works the same as “Device Locator” feature in the device side menu.



The second tab contains the Network Interface settings.

**Hostname:** The hostname of the VLX device. (NOTE: For encoder devices, “-enc-” will be automatically appended to the end of the hostname, and “-dec-” for decoder devices. This is required for the IPBaseT server interfacing.)

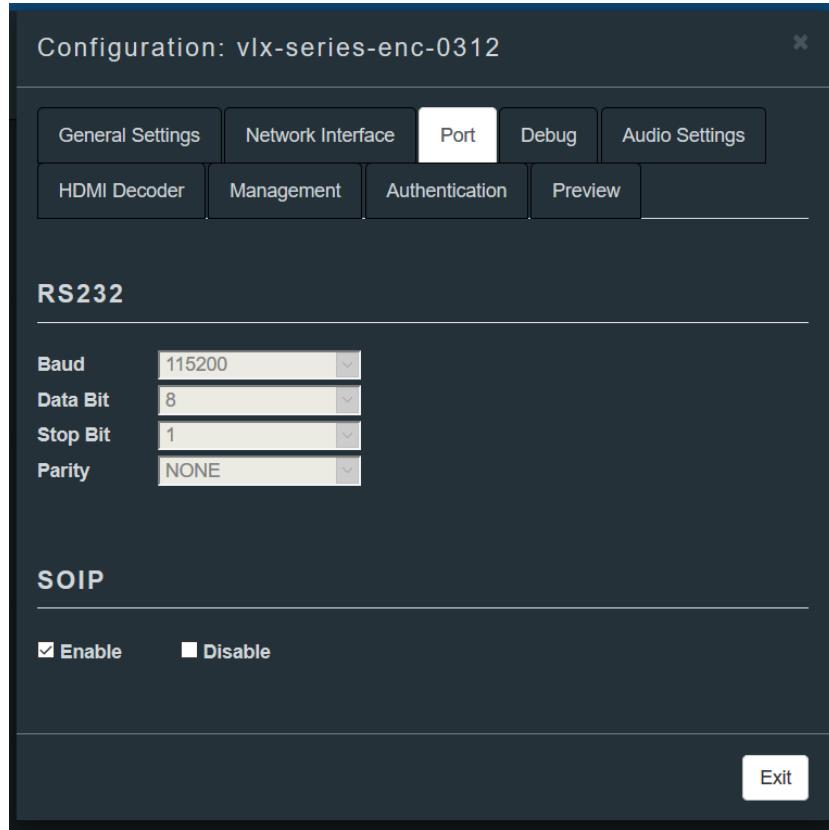
**ID:** The device ID number, appended to the end of the hostname. This ID number is based on the device’s serial number.

**IP Mode:** The IP mode of the device. DHCP and Auto-IP modes will automatically assign an IP address to the device. Static mode allows for a custom IP address, mask and gateway.

**IP Address:** The IP address of the device.

**Mask:** The IP subnet mask of the device.

**Gateway:** The gateway IP address of the device.



The third tab contains the Port settings.

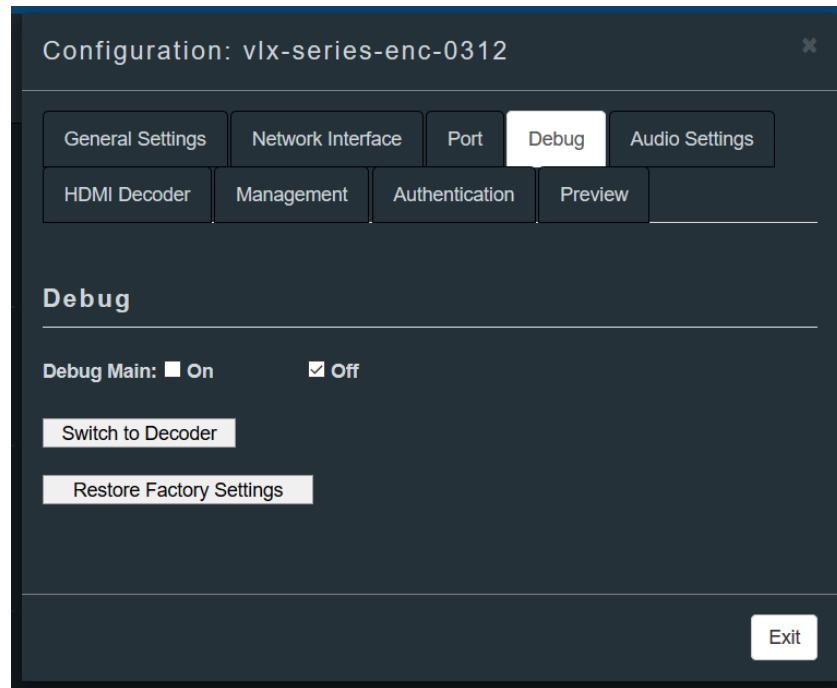
**Baud:** The baud (transmission) rate of the RS232 connection.

**Data Bit:** The number of bits per block of RS232 data. (8 is recommended)

**Stop Bit:** The number of stop bits sent after each character. (1 is recommended)

**Parity:** Sets the parity check to be NONE, EVEN or ODD. Parity check is used to detect data corruption.

**SOIP:** Enable or disable SOIP (Serial over IP). **(NOTE: SOIP must be enabled for RS232 telnet communication.)**

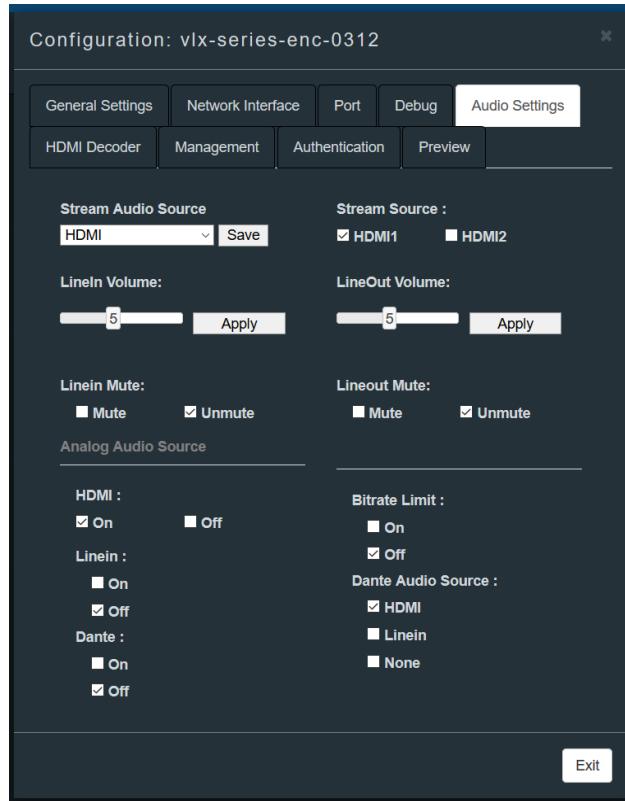


The fourth tab contains the Debug settings.

**Debug Main:** Toggle detailed debugging in the Manager log.

**Switch To Decoder:** Switch the current encoder device to a decoder.

**Restore Factory Settings:** Restores all device settings to default factory settings.



The fifth tab contains the Audio Settings.

**Stream Audio Source:** Audio source for the encoder stream.

**Stream Source:** HDMI audio stream input source.

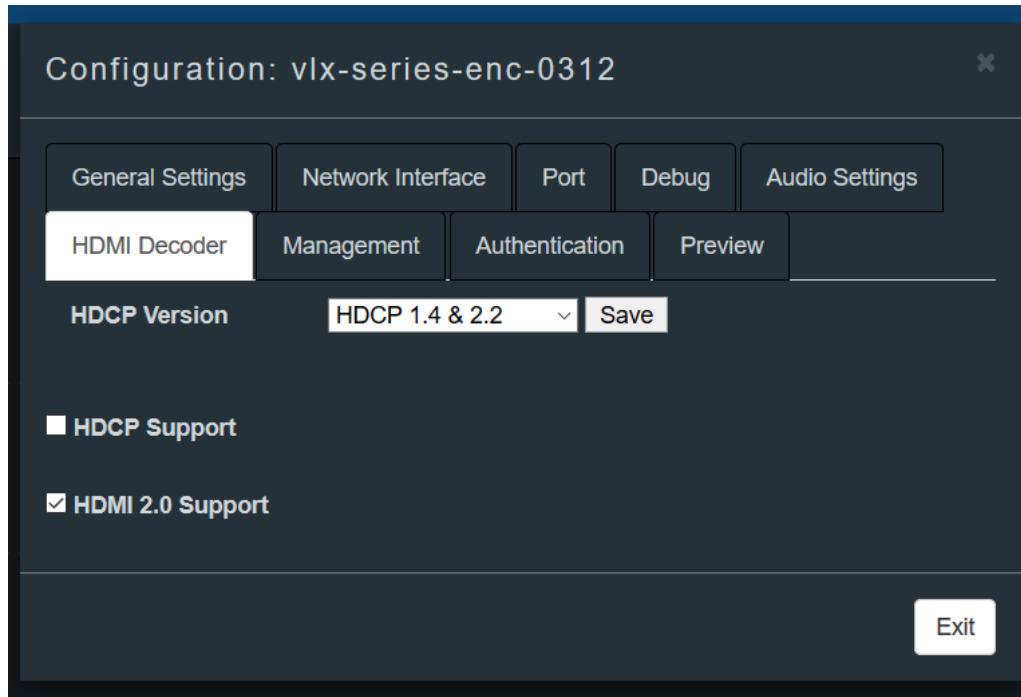
**LineIn/LineOut Volume:** Volume setting for line-in/line-out audio.

**LineIn/LineOut Mute:** Toggle volume mute for line-in/line-out audio.

**Analog Audio Source:** Toggle HDMI, Line-In and Dante audio modes for analog audio source.

**Bitrate Limit:** Toggle bitrate limiting for video transmission. Useful for slower networks.

**Dante Audio Source:** set the Dante audio source to be HDMI, Line-In or None.

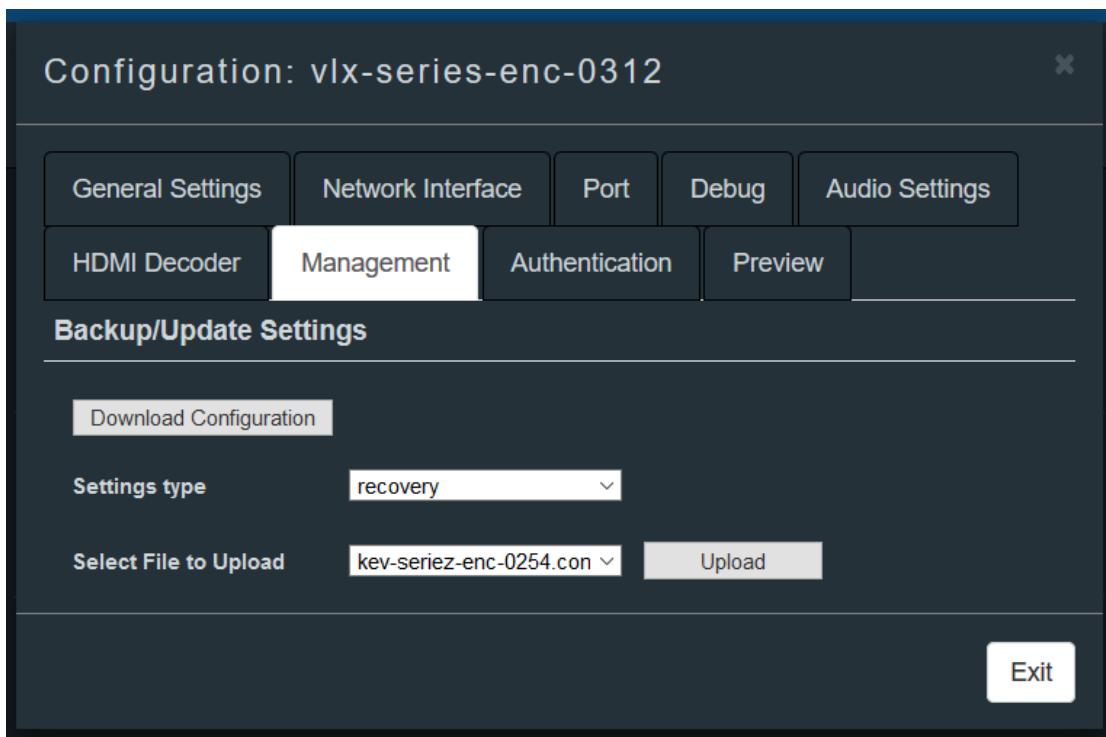


The sixth tab contains the HDMI Decoder settings.

**HDCP Version:** The version of HDCP (High-Definition Content Protection) to use when transmitting over HDMI.

**HDCP Support:** Toggle to enable/disable HDCP.

**HDMI 2.0 Support:** Toggle to enable/disable support for HDMI 2.0 protocol.

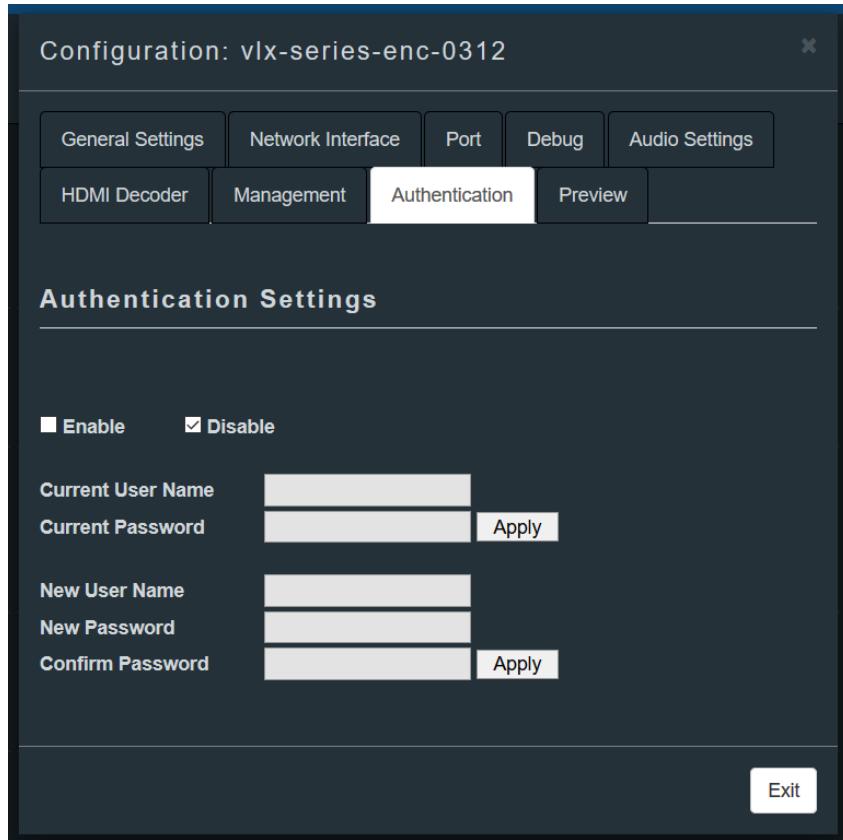


The seventh tab contains the Management settings.

**Download Configuration:** Downloads a configuration file with the current device settings. This can be used to back up the state of the device for later use if recovery is needed.

**Settings Type:** Set the type of settings to be downloaded/uploaded (Recovery, Encoder, Decoder, Enc/Dec, EDID)

**Select File To Upload:** Select a recovery file from the drop-down list to be uploaded to the device.



The eighth tab contains the Authentication settings. You can enable or disable authentication for the device webpage access.

(NOTE: To access the device webpage, right-click and select “Webpage” or enter the IP address of the device into your web browser.)

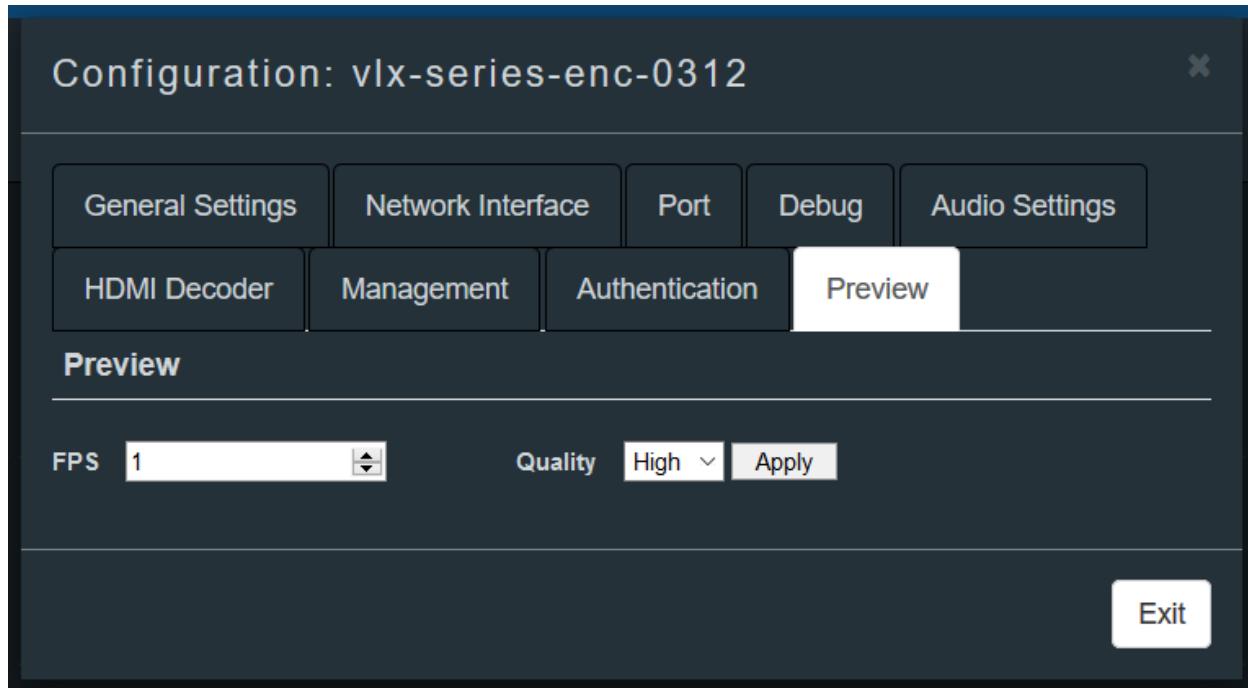
**Current User Name:** The current device auth username.

**Current Password:** The current device auth password.

**New User Name:** The new username to be applied to the device auth.

**New Password:** The new password to be applied to the device auth.

The default username and password for the device on first enable is **admin/admin**. First, apply those credentials for the current username and password. You will then be able to set a new username and password used to login to the device webpage.



The ninth tab contains the Preview settings.

**FPS:** Frames-per-second of the preview stream.

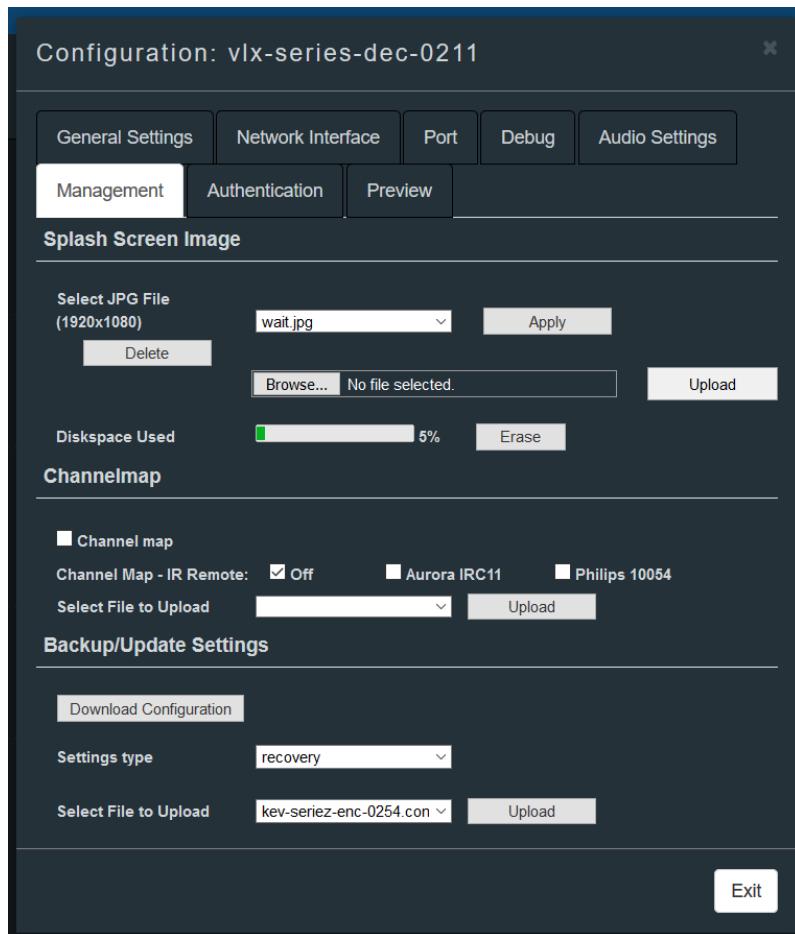
**Quality:** Low- or high-quality preview images.

(NOTE: For high-quality images, the recommended FPS is 1 to avoid overworking the device.

Firmware version 3.2.0 or higher is required for high-resolution previews.)

# Device Settings - VLX Decoder

The VLX decoder device settings share many similarities to the encoder device settings. This section will highlight the differences unique to the decoder. For reference to other settings, please see the previous section.



The Management settings tab has two decoder-specific settings: Splash Screen Image and Channelmap.

## Splash Screen Image:

When the decoder device has no stream signal to output, it will display a “No Signal” image on the output monitor by default. To set a new image, select a JPEG image file at the resolution of 1920 x 1080 (the device will not accept other types of uploads) and click “Upload”.

To apply the image as the splash screen, select the uploaded image from the drop-down and click “Apply”. To delete the image from the device, click “Delete”.

To clear all images from the device disk, click “Erase”.

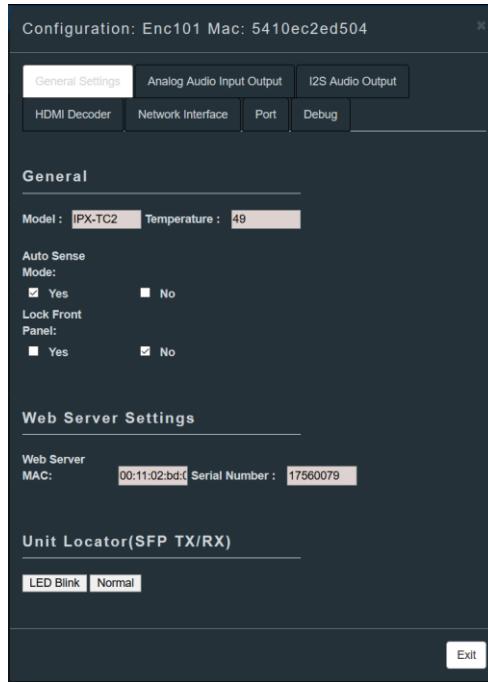
Starting in version 1.64.0, it is also possible to upload a custom splash screen to all decoders at once instead of one at a time. Use the checkbox titled “Send to All Decoders” – this applies to all splash screen commands, including “Apply” and “Delete”.

**Channelmap:**

To apply a channelmap for IR communication, check the box next to “Channelmap”. This will apply IR remote mappings to the decoder. Currently, there is native support for the Aurora remote and Philips remote channelmaps.

To upload a custom channelmap CSV, select the file from the drop-down and click “Upload”.

# Device Settings - IPX Encoder



To access the device settings dialog, right-click the device tile and select “Settings”. The initial open tab will be the General Settings tab (shown above).

**Model:** The model type of the IPX device. (e.g. TC1, TC2, TC3)

**Temperature:** The current temperature of the device in Celsius.

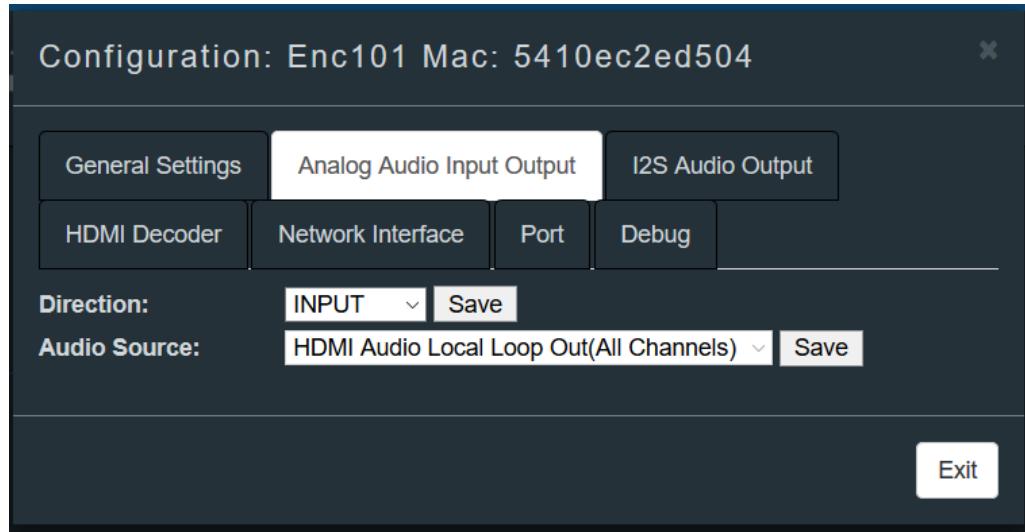
**Auto-Sense Mode:** Allows the device to detect connected inputs and outputs and set sources automatically.

**Lock Front Panel:** Toggles the hardware buttons on the front of the IPX device.

**Web Server MAC:** The MAC address of the web server on the IPX device.

**Serial Number:** The serial number of the IPX device.

**Unit Locator:** Allows changing front LED mode to blinking or normal.



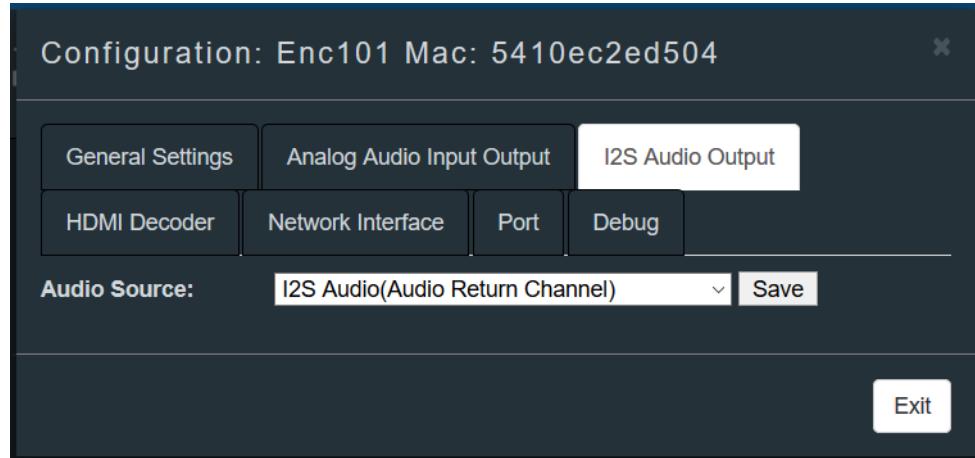
The second tab contains the Analog Audio Input Output settings.

**Direction:** Sets the analog audio port direction to either be an input or an output.

**Audio Source:**

HDMI Audio Local Loop Out (All Channels): Outputs the local HDMI audio stream to the analog port with full channel fidelity (For example, 5.1 Surround Sound audio).

I2S Audio (Audio Return Channel): Outputs the I2S (Dante) audio to the analog port (Output Direction only).



The third tab contains the I2S (Dante) Audio Output settings.

**Audio Source:**

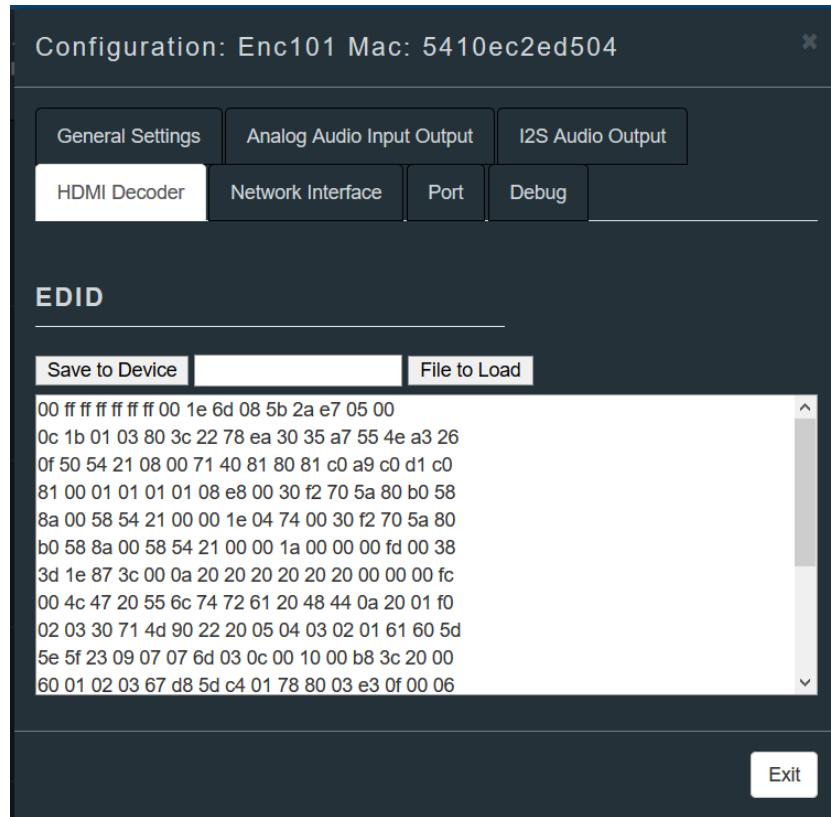
HDMI Audio Local Loop Out (Downmix): Output the HDMI audio stream to the I2S port.

Downmix simplifies audio channel output to a stereo signal. (For example, 5.1 Surround Sound -> Stereo) Used for outputting multi-channel audio to a limited speaker setup.

Analog Audio Loop Out: Output analog audio source to the I2S port.

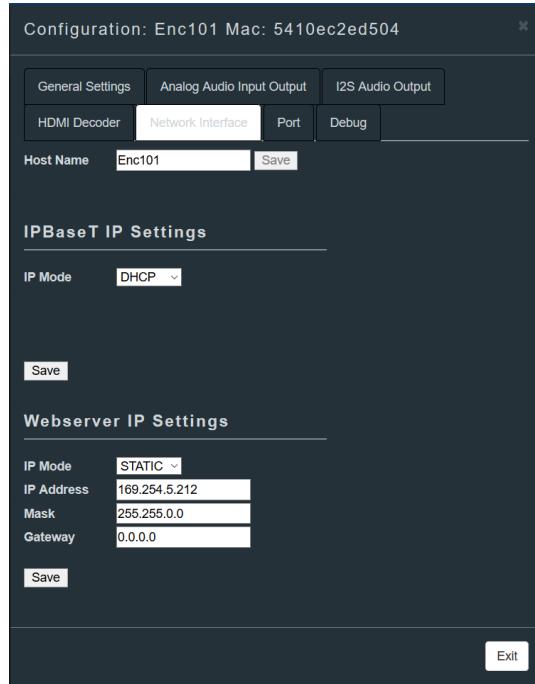
HDMI Audio Local Loop Out (All Channels): Output the HDMI audio stream to the I2S port with full channel fidelity.

I2S Audio (Audio Return Channel): Outputs I2S audio stream to the I2S port.



The fourth tab contains the HDMI Decoder settings. This tab allows you to edit the EDID value for the encoder video stream to be sent to the decoder device. You can load your own EDID file and click “Save to Device” to save the EDID on the encoder.

EDID (Extended Display Identification Data) gives the device a way to recognize the display settings of an output monitor so that it can output the properly formatted video signal to the monitor.

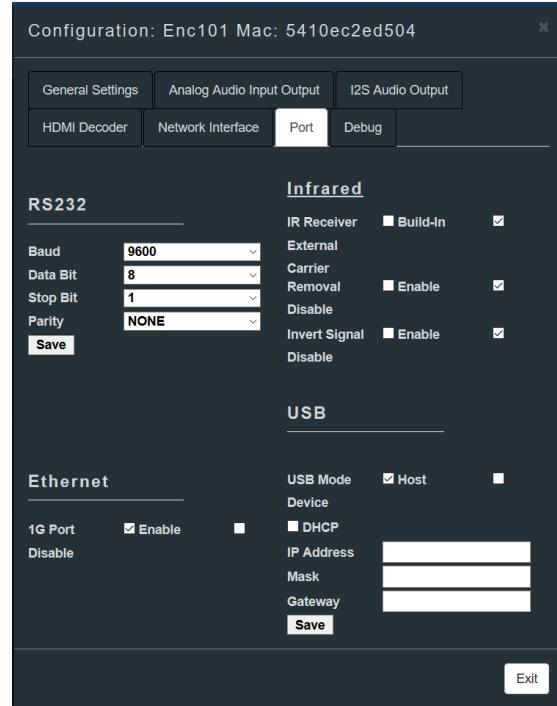


The fifth tab contains the Network Interface settings.

**Hostname:** Set the hostname of the IPX device.

**IPBaseT IP Settings:** DHCP or Static, this is the IP address used for the device by the IPBaseT server.

**Webserver IP Settings:** DHCP or Static, this is the IP address used by the device to host its web server. Entering the web server IP address in your web browser will open the device webpage for IPX.



The sixth tab contains Port settings.

**Baud:** The baud (transmission) rate of the RS232 connection.

**Data Bit:** The number of bits per block of RS232 data. (8 is recommended)

**Stop Bit:** The number of stop bits sent after each character. (1 is recommended)

**Parity:** Sets the parity check to be NONE, EVEN or ODD. Parity check is used to detect data corruption.

**Ethernet 1G Port:** Enable or disable the 1G fiber ethernet port on the IPX device.

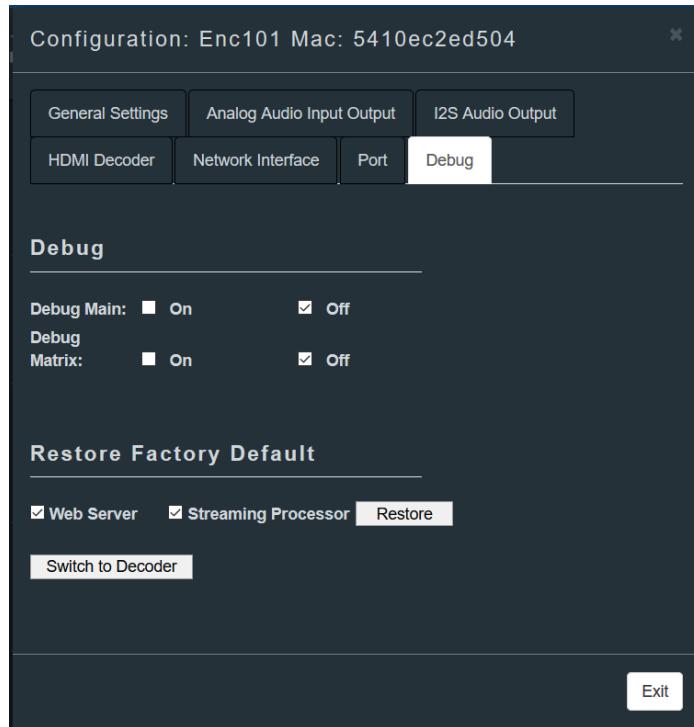
**IR Receiver:** Use the built-in IR receiver on the front of the device or the rear IR external input.

**Carrier Removal:** Enable or disable the removal of IR carrier frequency data.

**Invert Signal:** Enable or disable inversion of IR data.

**USB Mode:** Act as a USB host or as a USB device.

**USB Network:** Select from DHCP or a static set IP address for USB connections.



The seventh tab contains the **Debug settings**.

**Debug Main:** Set debug logging for this device.

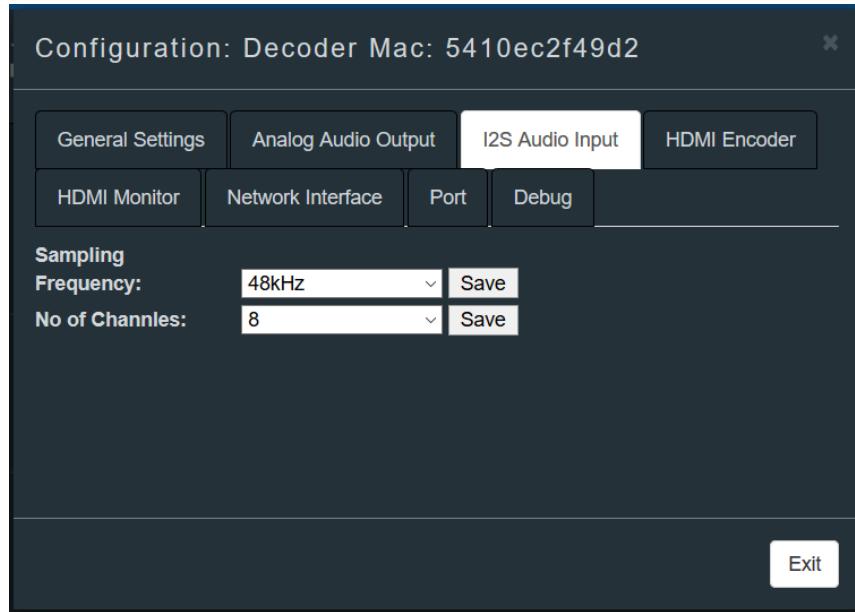
**Debug Matrix:** Set debug logging for the device matrix setup.

**Restore Factory Default:** Click “Restore” to set factory default settings for the device web server and/or the device’s streaming processor.

**Switch to Decoder:** Switch device mode from Encoder to Decoder.

## Device Settings - IPX Decoder

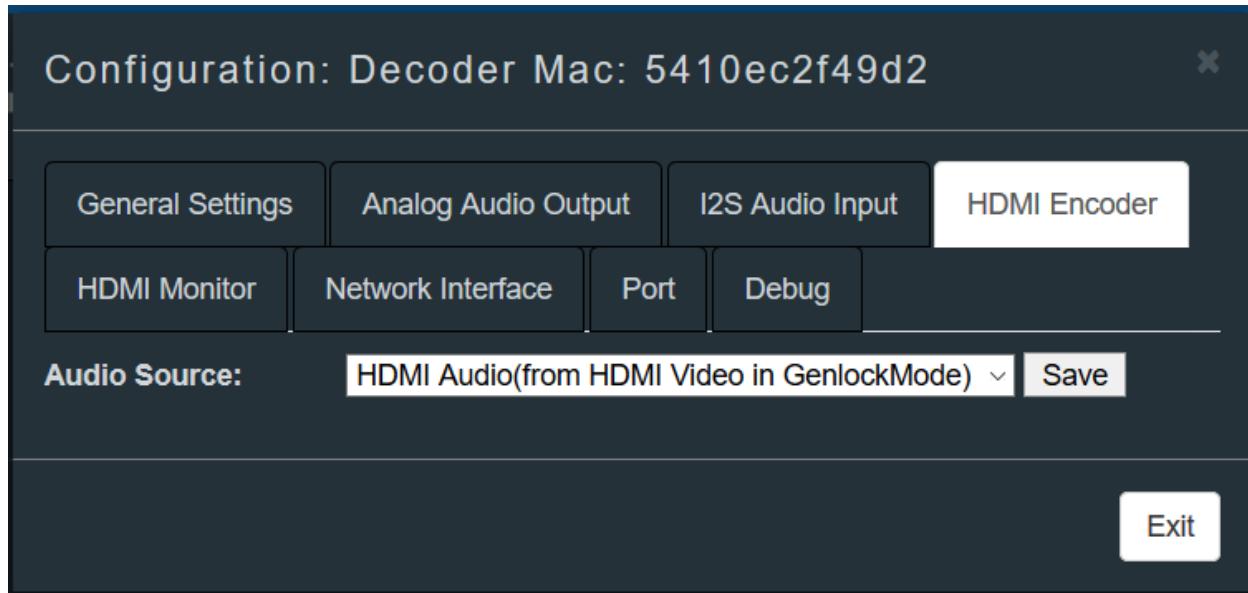
The IPX decoder device settings share many similarities to the encoder device settings. This section will highlight the differences unique to the decoder. For reference to other settings, please see the previous section.



The third tab contains the I2S (Dante) Audio Input settings.

**Sampling Frequency:** The sampling rate of the I2S (Dante) audio input signal.

**No. of Channels:** The number of audio channels of the I2S (Dante) audio input signal.



The fourth tab contains the HDMI Encoder audio source settings.

**Audio Source:**

HDMI Audio (from HDMI Video in GenlockMode): Output the HDMI audio from the HDMI video stream using genlock (synchronized transmission).

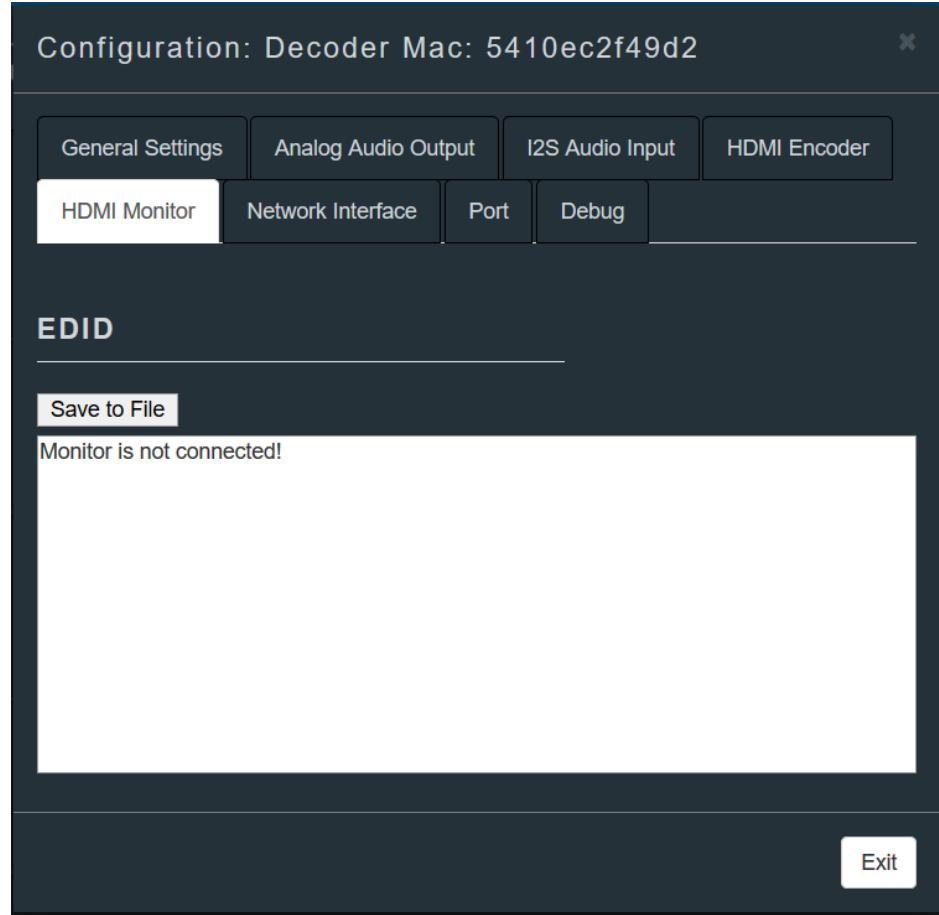
HDMI Audio (from all available channels): Output the HDMI audio with full channel fidelity.

HDMI Audio (Stereo Downmix): Output the HDMI audio with downmixing to stereo. (e.g. 5.1 Surround Sound -> Stereo). Used for output speakers that do not support full channels.

I2S Audio: Output the HDMI audio from the I2S (Dante) audio stream.

I2S Audio Local Loop Out: Output the HDMI audio from the local I2S (Dante) audio input.

Analog Audio: Output the HDMI audio from the analog audio stream.



The fifth tab contains the HDMI Monitor EDID (Extended Display Identification Data) settings.

You can save the EDID information to a file on the local system. This EDID should be automatically received by the device from the output monitor (if connected).

This ends the section on VLX and IPX device settings. The next section of this document describes how to download and modify EDIDs for compatibility with a variety of output displays.

# Audio Settings – IPX-TC3

The IPX-TC3 series of devices has a different settings interface for routing audio compared to the IPX-TC2 and TC1 series of devices, starting in version 1.70.0:

## (Encoder Audio Settings)

OUTPUT				
	HDMI	Line Out (Local)	Dante/AES67 (TX)	FPGA Audio
HDMI	<input type="button" value=""/>			N/A
Line In				
Dante/AES67 (RX)			N/A	<input type="button" value=""/>

LineIn Volume:  Apply

LineOut Volume:  Apply

Linein Mute:  Mute  Unmute

Lineout Mute:  Mute  Unmute

Exit

## (Decoder Audio Settings)

OUTPUT			
	HDMI	Line Out	Dante/AES67 (TX)
HDMI	<input type="button" value=""/>		
Line In (Local)			
Dante/AES67 (RX)			N/A
FPGA Audio	N/A	<input type="button" value=""/>	<input type="button" value=""/>

Input HDMI Audio Source:  Save

LineIn Volume:  Apply

LineOut Volume:  Apply

Linein Mute:  Mute  Unmute

Lineout Mute:  Mute  Unmute

The new IPX-TC3 audio settings includes an audio routing matrix for both encoder and decoder devices. This can be used to control the flow of audio through a particular device, in a more user-friendly way. For example, selecting the input “Line In (Local)” and sending it to the output “HDMI” on a decoder will play any audio coming into the line-in port out through the HDMI port. Each input can be sent to multiple outputs, but each output can only have one input source.

Decoders have an additional option for “Input HDMI Audio Source”, located under the audio routing matrix. This changes the “HDMI” input signal shown in the audio routing matrix. By default, the HDMI audio will be taken from the HDMI video stream in Genlock mode. If you want to separate HDMI audio streams from the video (breakaway routing), or play a separate audio stream on a decoder, first you must change the “Input HDMI Audio Source” to a different HDMI Audio source taken from the multicast stream.

A combination of audio routing via the audio routing matrix and the separate routing pages for Analog, HDMI and Dante audio multicast streams will allow the user to configure their audio streaming as required by their system design.

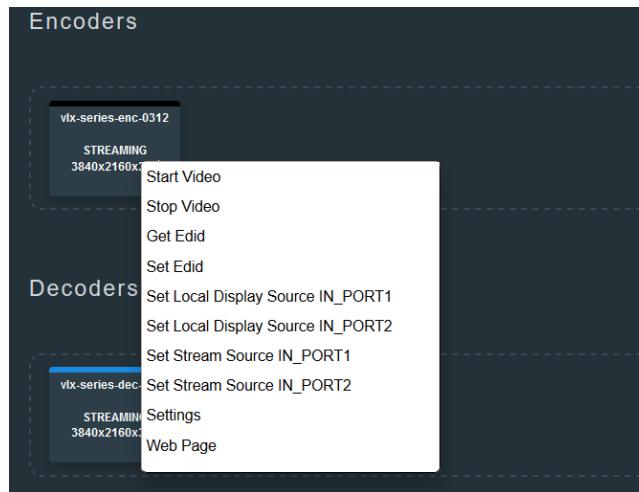
Finally, there are additional line-in and line-out audio volume and mute settings under the audio routing matrix.

# EDID Settings

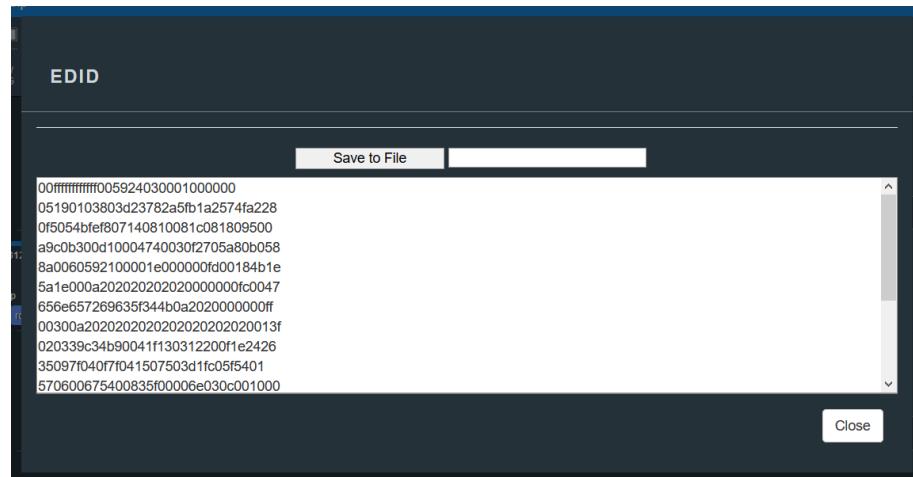
EDID (Extended Display Identification Data) gives the device information on how to format the video data for displaying on an output monitor. EDID information is sent automatically to devices attached to a monitor during the HDMI handshake exchange.

## VLX

To modify and apply EDID settings for a VLX device, right-click on the device tile and select “Get EDID” or “Set EDID” options. VLX uses a generic 4K EDID for encoders by default.



### Get EDID:

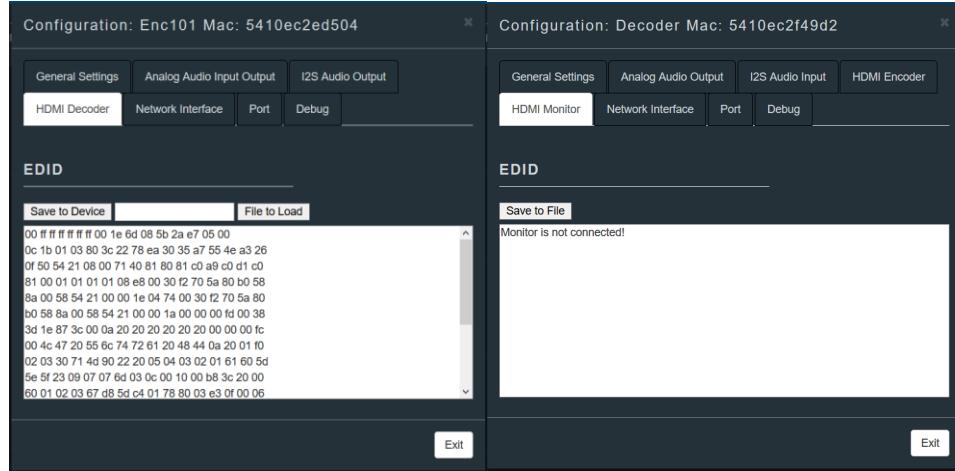


The “Get EDID” dialog displays the EDID information in HEX format. Click “Save to File” to save the EDID on your local filesystem.

## Set EDID:

The “Set EDID” dialog allows the user to input custom EDID information in HEX format and upload it to the device.

## IPX



IPX EDID information can be found under device settings “HDMI Decoder” and “HDMI Monitor” tabs (see previous section for more detail). To access device settings, right-click the device tile and select “Settings”. IPX uses a generic 4K EDID as the default encoder EDID value.

For detailed information on how to set EDIDs for IPX and VLX, take a look at these guides:

[Sending EDID to Transmitters With IPX](#)

[Sending EDID To Transmitters With VLX](#)

This ends the EDID Settings section of the user guide.

The next section of this document details the IPX display modes available.

# Display Modes - IPX

IPX devices contain multiple display mode capabilities that can be used to help fit a video signal onto an output monitor or sync video streams across many monitors.

The IPX decoder device tile lists the display mode on the video routing tabs (Matrix Switching, Seamless Switching, Videowall and Multiview):

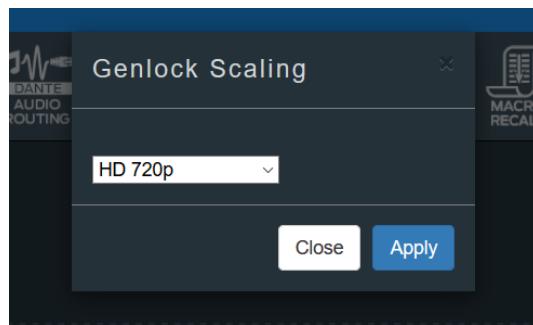


## Genlock

Genlock (or Generator Locking) will use the automatically sync the output video across all decoders on a frame-by-frame basis to help compensate for network and processing delays. Matrix Switching automatically puts the decoder into genlock mode.

## Genlock Scaling

Genlock scaling provides genlock capability with video scaling. To enable genlock scaling mode, right-click the decoder device and select “Genlock Scaling”. Select the scaled resolution and hit “Apply”.



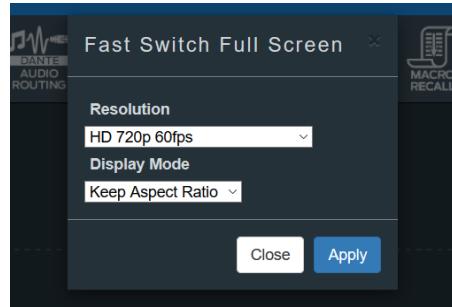
## Fast Switch Full Screen

Fast switch mode allows for rapid video source switching. To enable fast switch mode, right-click the decoder device and select “Fast Switch Full Screen”. Select the video resolution and

the display mode (Keep Aspect Ratio, Stretch To Fit, Crop To Fit) and hit “Apply”.

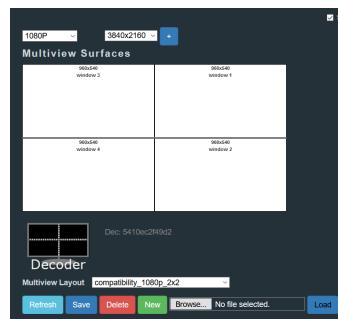
(NOTE: We recommend keeping original aspect ratio. Once Fast Switch is selected, all inputs (from TX units) will be scaled to this resolution. Also, all input color space will be converted to RGB 8 bit. If you want to keep original color space, you need to use Genlock mode.)

Joining video streams in the Seamless Switching tab will automatically set the display mode to fast switch.



## Multiview

Multiview display mode is used when one decoder device is outputting a composite image of multiple stream sources. Multiview mode is automatically enabled when attaching a decoder source within the Multiview tab.



This ends the IPX display mode section of the user guide. The next section covers common troubleshooting procedures.

# Troubleshooting

## My device is not showing up in the Manager.

If a device does not automatically appear after starting the Manager software, first check that all devices are plugged into the proper network switching device and that the network adapter settings of the local system running the Manager are setup properly. For additional information on setting up your network switch, see this article: [Connecting to IPBaseT Devices](#). Firewall settings on Windows may also block communication to the Manager - make sure all Manager applications are allowed through the firewall. These include:

- TFTP Server.exe
- IPBT Manager.exe
- Node.js
- Blueriver\_control.exe
- ipbt\_server.exe

If everything looks correct, the device may have an undiscoverable IP address or network configuration. The easiest way to reset the IP/network configuration is to do a factory reset of the device which will put it into the default DHCP mode.

For VLX, factory reset the device by pressing the Power and Menu buttons simultaneously for 5 seconds. The USB Host LED will blink to indicate factory default and the unit will reboot.

For IPX, factory reset can be accomplished the following ways:

1. Option to restore factory defaults in Streaming Processor: Press and hold buttons DOWN and LEFT together for 10 seconds or send serial command !\*\*SPROC\_DFLT
2. Option to restore factory defaults in Web Server. Press and hold buttons LEFT and RIGHT together for 10 seconds or send serial command !\*\*WPROC\_DFLT
3. Option to restore factory defaults in both Streaming Processor and Web Server together with serial command !\*\*FACTORY\_DFLT
4. In IPBaseT Manager, factory default option is given under Debug tab of the device Settings.

[www.auroramm.com](http://www.auroramm.com)

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