

IP25-R

SMPTE ST 2110 IP, SDI, and HDMI Converter



Installation and Operation Guide

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Chapter 1 – Introduction



Overview

The IP25-R is a SMPTE ST 2110 (also referred to as ST 2110 in this manual) converter and monitoring product housed in AJA's latest mini-converter frame. IP25-R has two SFP28 cages that support 10 and 25 Gigabit (10/25GigE) SFPs to receive/transmit ST 2110.

ST 2110 to/from baseband is provided via 2x HDMI 2.0 outputs and 4x 12G-SDI capable BNC inputs/outputs. It also comes with a 1GigE RJ-45 connector for setup and control.

AJA's IP25-R is designed for point of use applications for reception of up to six IP based video sources and decoding to four 12G SDI and two HDMI outputs; or four SDI sources to up to four IP and two HDMI outputs. Rugged and compact, the IP25-R provides the bridge between Baseband and IP video for a range of applications, such as receiving/transmitting video over IP from remote facilities in post production, source monitoring, digital signage, and video walls. IP25-R eases the cost of extensive monitoring distribution in a facility.

The IP25-R can be toggled between ST 2110 Receiver (Rx) or Transmitter (Tx) mode:

- In Rx mode, the IP25-R decodes ST 2110 and formats the data for SDI and HDMI outputs. The ST 2110 audio associated with each video stream is extracted, aligned, and then embedded in the selected SDI and HDMI signal. The ST 2110 ancillary data associated to each input video stream is also embedded in the selected SDI output signal.

NOTE: HDMI output does not support ancillary data embedding.

- In Tx mode, the IP25-R decodes SDI inputs and formats the data for IP and HDMI outputs. The SDI audio associated with each video stream is extracted, aligned, and then embedded in the selected IP and HDMI output signal.

NOTE: Ancillary Data is not currently supported for IP Tx.

The IP25-R can provide RGB (rather than YCbCr) to a compatible HDMI monitor.

IP25-R Features

- 2x SFP28 cages supports 10GigE and 25GigE SFPs for ST 2022-7 redundancy
- In-Band (via SFPs): PTPv2/ST2059-2, control via NMOS, AJA REST API and Ember+
- Out-of-band (via 1GigE RJ-45): control via NMOS, AJA REST API and Ember+
- ST 2110-20 Video Rx: Supports up to 6 Rx redundant streams at the same time, bandwidth dependent.
 - 10-bit 4:2:2 up to 4096x2160p

- ST 2110-20 Video Tx: Supports up to 4 Tx redundant streams at the same time, bandwidth dependent.
 - 10-bit 4:2:2 up to 4096x2160p
- ST 2110-30 Audio Rx: Supports up to 24 Rx redundant streams at the same time.
 - Up to 16 channels per stream
 - 1ms and 125us timing
- ST 2110-30 Audio Tx: Supports up to 16 Tx redundant streams at the same time
 - Up to 16 channels per stream
 - 1ms and 125us timing
- ST 2110-40 Ancillary Rx: Supports up to 6 Rx redundant streams at the same time
- ST2059-2 (PTPv2) accessed only via Media net SFPs
- LLDP
- DNS-SD, mDNS

Supported SFP Models

- AJA tests common SFPs in the market but does not make specific recommendations for SFP models. AJA has tested several SFP models from FS.com with good success. It is the responsibility of the customer to ensure the selected SFP models are validated in their systems.
- Ensure compatible SFPs are used on both ends of a fiber.
- Be sure the SFP brand and speed is supported by the Ethernet Switch.

IMPORTANT: Ethernet speeds must match: 25GigE must feed 25GigE, 10GigE must feed 10GigE. Multi-rate 10/25GigE SFPs can be used but ensure the speed is set correctly at each end.

- 25GBASE-SR SFPs (SR => Short range) use 850nm wavelength over Multimode fiber up to 100m of OM4 fiber (70m of OM3).
- 25GBASE-LR SFPs (LR => Long range) use 1310nm wavelength over Single Mode fiber up to 10km.

IMPORTANT: Only fiber SFPs are supported. Direct Attach Copper (DAC) are NOT supported. Other options exist so be sure to match SFP capabilities with the correct fiber type.

IP25-R I/O Connections

Figure 1. IP25-R Connections, Top View



Figure 2. IP25-R Connections, Front View

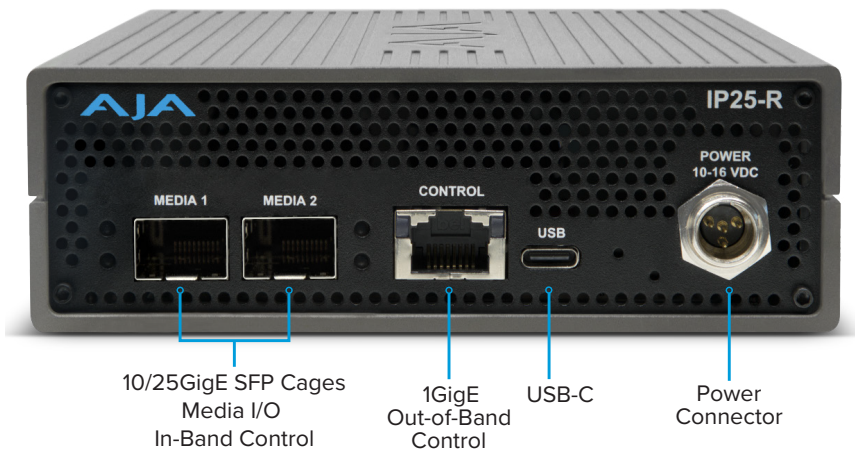
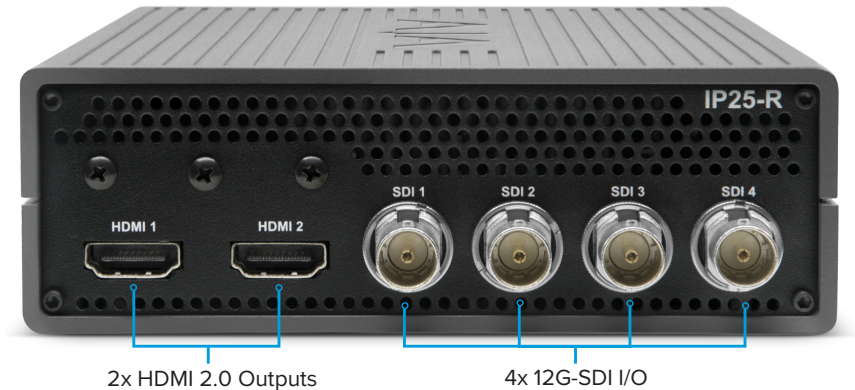
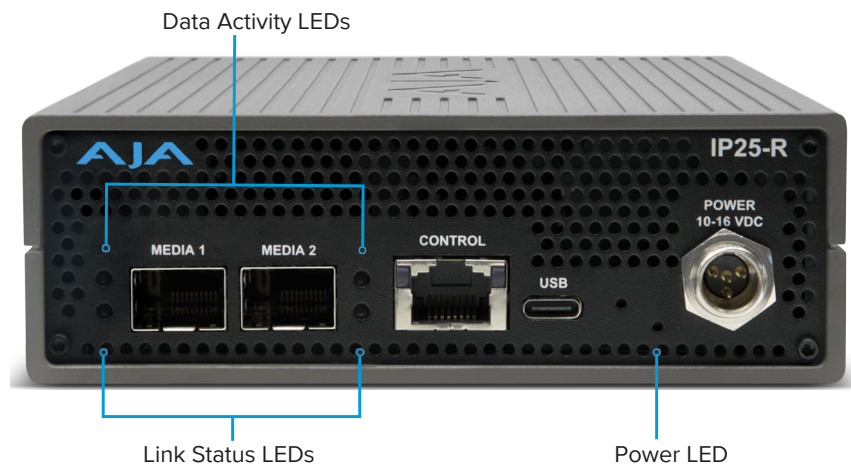


Figure 3. IP25-R Connections, Rear View



LEDs

Figure 4. IP25-R (Front View) LEDs



Media 1 & Media 2 Link Status LEDs

- Blue - 25GigE
- Green - 10GigE
- No Light - not connected

Media 1 & Media 2 Data Activity LEDs

- Flashes yellow when there is data activity

Power LED

- No Light - No Power (Off)
- Green - Power (On)

Safeboot Button

Figure 5. IP25-R (Front View) Safeboot Button



On the front of the IP25-R, next to the USB-C port, there is a recessed Safeboot button.

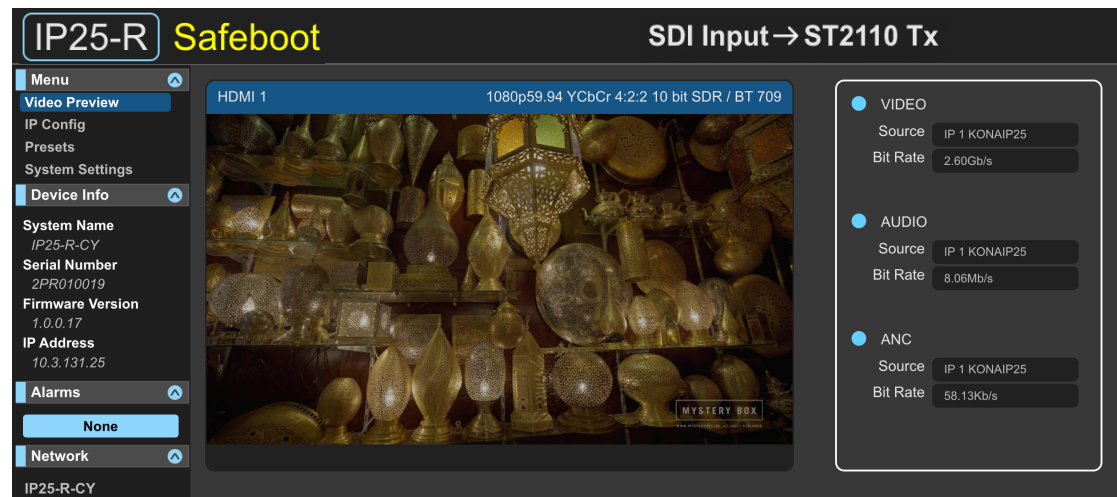
The Safeboot button provides two functions: it powers the IP25-R up into Safeboot mode, or, toggles the Test Pattern off/on which displays details of the IP25-R in case the IP is not known. Steps for both procedures are detailed below.

Safeboot Procedure

To start the IP25-R in Safeboot mode:

1. Disconnect power from the IP25-R.
2. Using a straightened paperclip, press and hold the recessed Safeboot button.
3. Apply power to the IP25-R, while continuing to hold the Safeboot button down.
4. Release the Safeboot button once the WebUI has come back up.
5. Once the IP25-R comes up in Safeboot mode, the top-left of the WebUI will display '**Safeboot**' in yellow. The **Firmware Version** under **Device Info** will show the firmware loaded by the Safeboot and which is currently running.

Figure 6. IP25-R WebUI showing Safeboot status



Test Signal Toggle Procedure

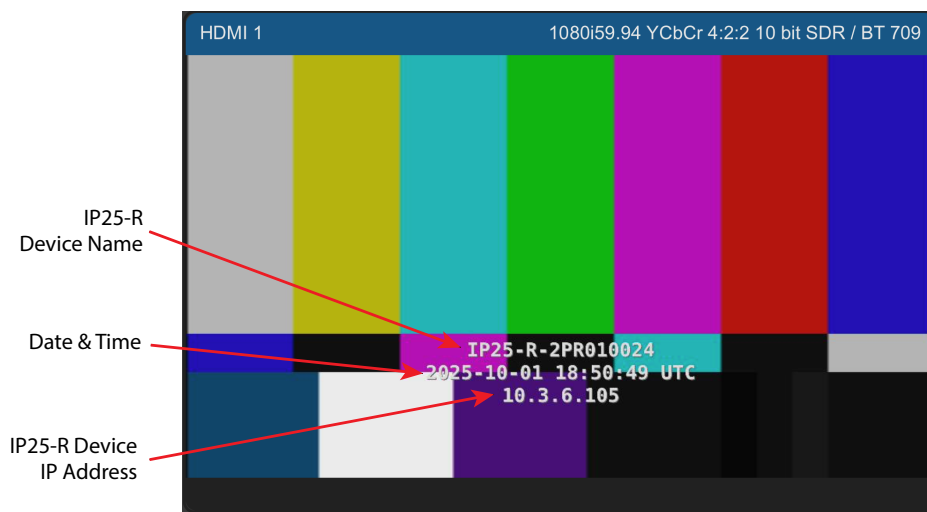
There may be times where the IP address of the IP25-R is not known and it is acceptable to temporarily set the unit offline in order to determine its IP address.

To Enable the Test Signal:

1. The IP25-R must be powered-up already.
2. Using a straightened paperclip, press and hold the recessed Safeboot button for 3 seconds until the outputs switch to the Test Signal.
3. The Test Signal will also include a useful information overlay:
 - **Name** given to the IP25-R
 - **Date and Time**
 - **IP Address** of the IP25-R Device (used to connect the WebUI)

NOTE: In Rx mode, all SDI and HDMI outputs will have the overlay turned on. In Tx mode, only the HDMI outputs will have the overlay turned on.

Figure 7. IP25-R Example Test Signal with Information Overlay



The above short procedure ensures that a subsequent WebUI instance will be in fact connected to the correct known physical device (i.e. the device having that IP address on its output Test Signal).

To Turn Off the Test Signal:

There are two methods for toggling off the Test Signal:

1. Using a straightened paperclip, press and hold the recessed Safeboot button until the outputs return to their normal Pipeline routing setup.
2. Navigate to the TSG (Test Signal Generator) node in a selected video processing pipeline and disable the Test Signal Generator.

Form Factor

The form factor of the IP25-R is 1RU high and 1/3RU wide, supporting up to three devices per 1RU. Six can be installed into the 3RU AJA DRM2-Plus which also offers redundant power supplies.

Figure 8. IP25-R Dimensions (oblique view)

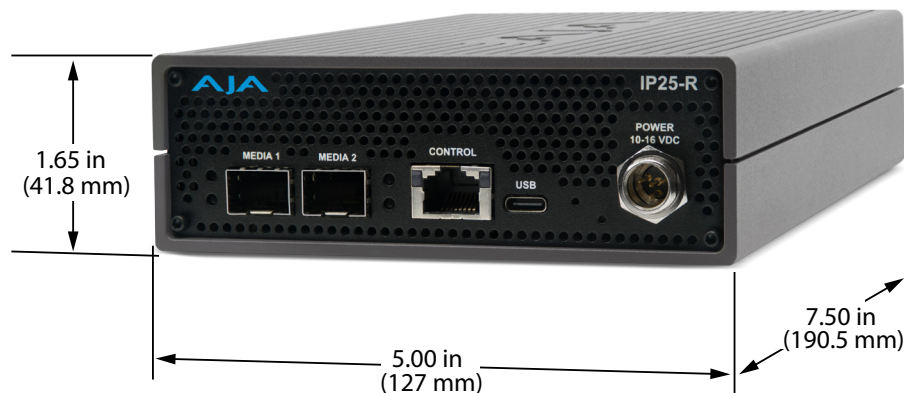
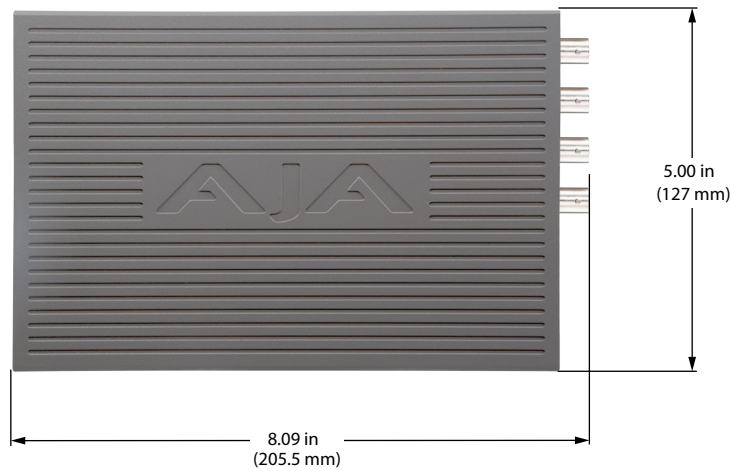
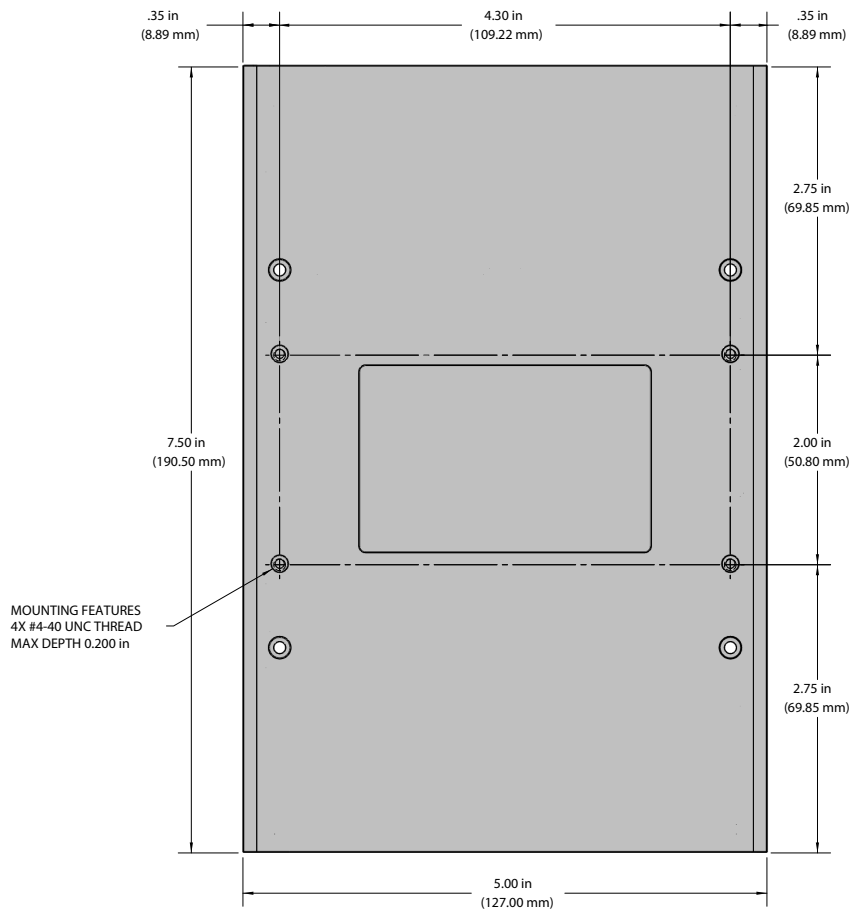


Figure 9. IP25-R Dimensions (top view)



Mounting Holes

Figure 10. IP25-R Mounting Holes (bottom view)



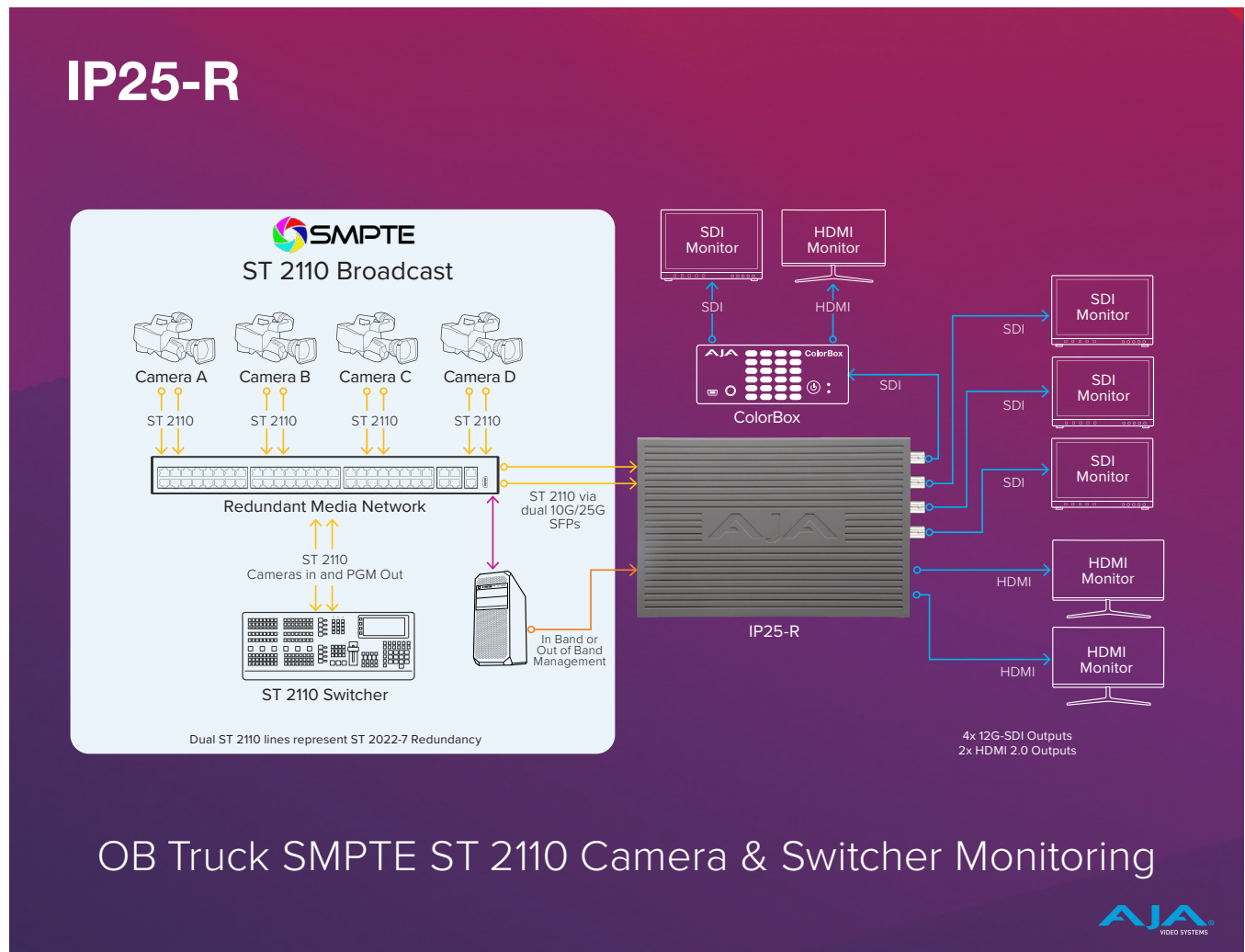
The bottom mounting holes for the IP25-R are shown above. They may be used for mounting to available third-party 1RU rack shelves.

NOTE: Threads inside the holes have a maximum depth of 0.20 inches take 4-40 Phillips flat head screws.

Workflow Diagrams

OB Truck ST 2110 Camera & Switcher Monitoring

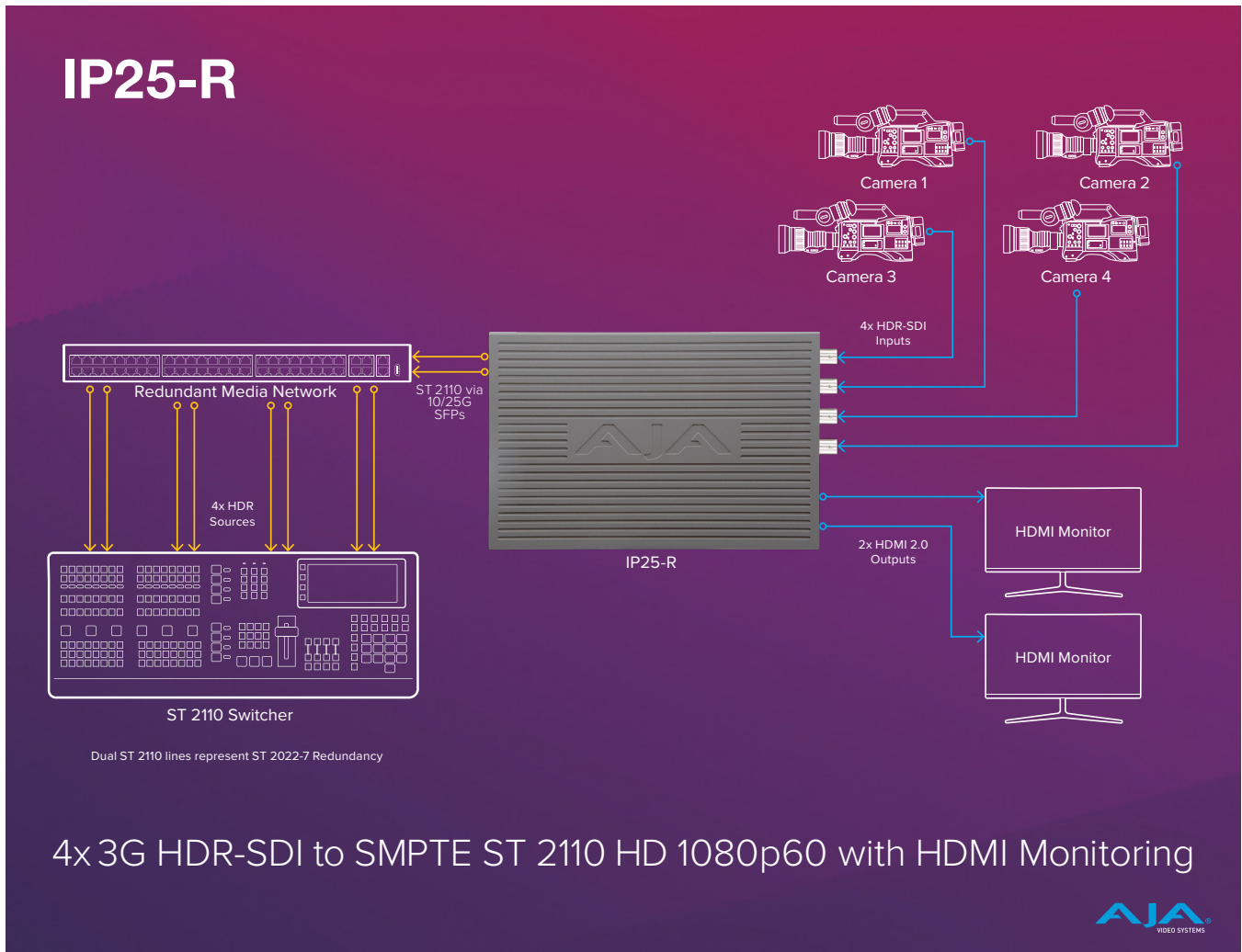
Figure 11. IP25-R Workflow Example #1



- IP25-R receives up to 6 HD ST 2110 sources via dual SFP 28 cages.
- IP25-R HDMI Out 1 and 2 feed directly to two HDMI monitors.
- IP25-R SDI Out 1-3 send directly to SDI Monitors.
- IP25-R SDI Out 4 feeds to an AJA Colorbox for Color verification.

4x HDR-SDI to ST 2110 HD 1080p60 with HDMI Monitoring

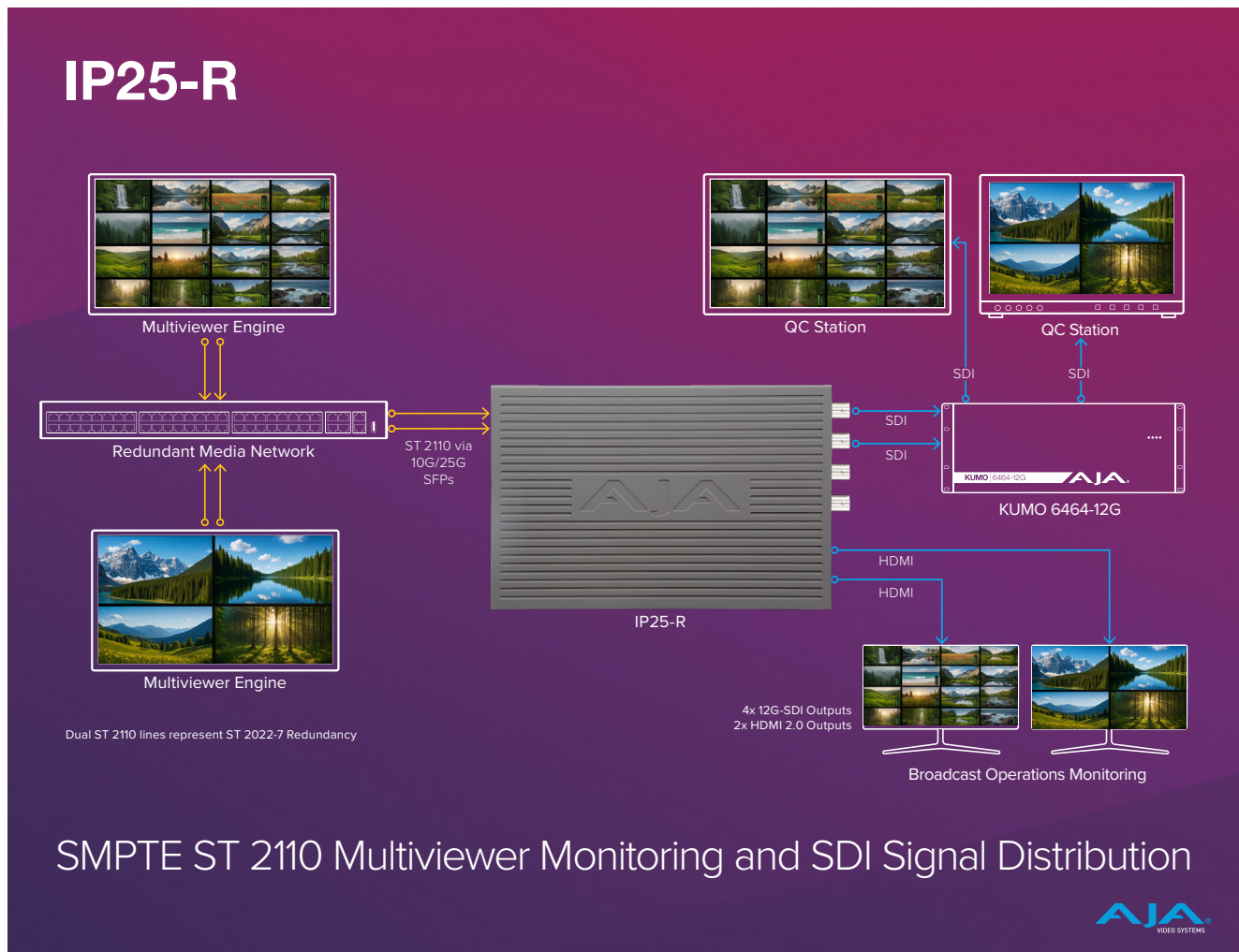
Figure 12. IP25-R Workflow Example #2



- IP25-R SDI inputs 1-4 receive 1080p HDR SDI signals.
- IP25-R converts and sends all 4 1080p SDI HDR signals to ST 2110 via dual SFP 28 cages.
- IP25-R routes desired SDI sources to HDMI outputs.

ST 2110 Multiviewer Monitoring and SDI Signal Distribution

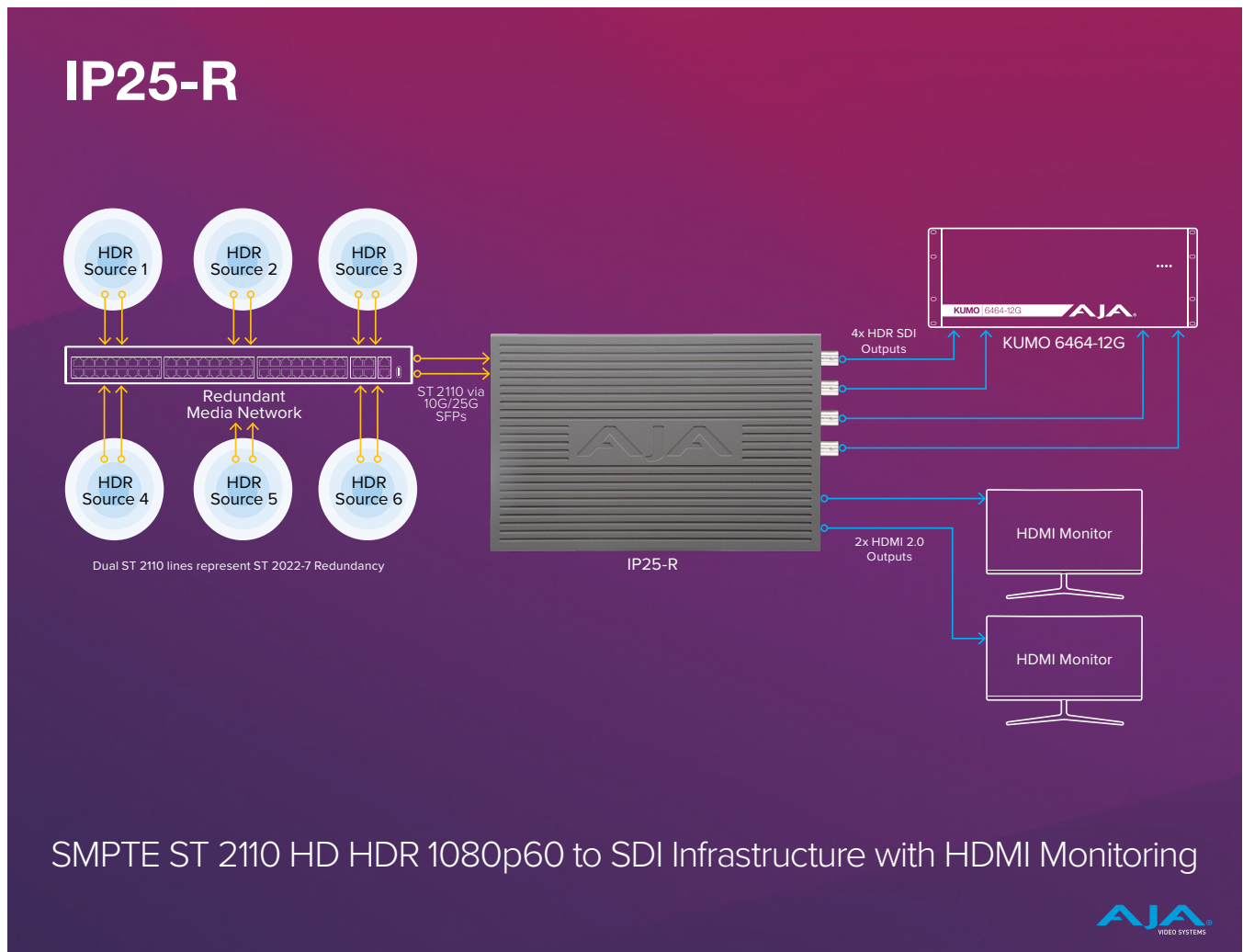
Figure 13. IP25-R Workflow Example #3



- IP25-R receives 2 UltraHdP60 ST 2110 sources via dual SFP 28 cages.
- IP25-R RX1 routes internally to HDMI Out 1 and sends to an HDMI Monitor.
- IP25-R RX1 routes internally to SDI Out 1 and sends to an SDI infrastructure (AJA KUMO 6464 12G Router).
- IP25-R RX2 routes internally to HDMI Out 2 and sends to an HDMI Monitor.
- IP25-R RX2 routes internally to SDI Out 2 and sends to an SDI infrastructure (KUMO 6464 12G Router).

ST 2110 HD HDR to SDI Infrastructure HDMI monitoring

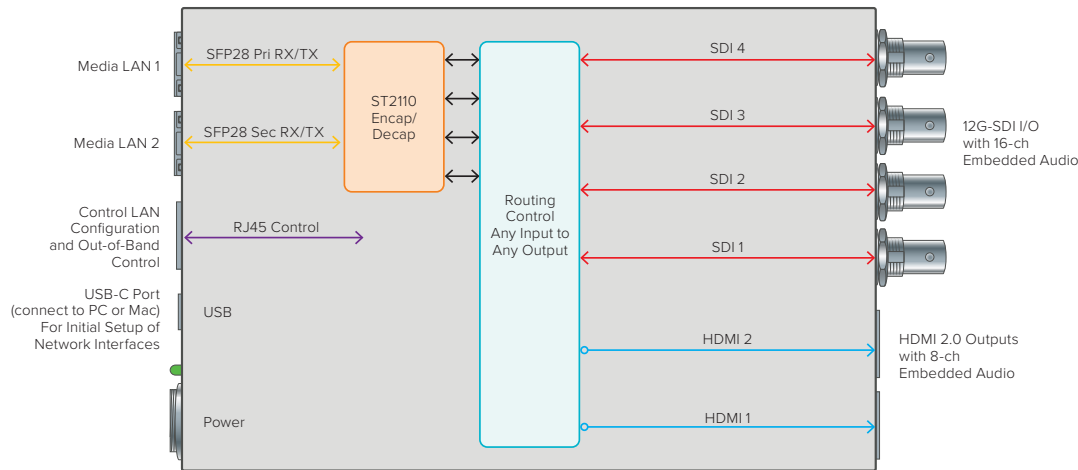
Figure 14. IP25-R Workflow Example #4



- IP25-R receives 6 HD ST 2110 sources via dual SFP 28 cages.
- 6 HD HDR sources are internally routed to desired SDI and HDMI outputs.

Simplified Block Diagram

Figure 15. IP25-R Simplified Block Diagram



IP25-R System Requirements

Remote computer configuration and control is accomplished using the internal web server (WebUI) of the IP25-R. A macOS or Windows computer with a web browser installed is all that is required. Additionally, initial configuration using eMini-Setup will require a USB cable between the host computer and the IP25-R.

NOTE: *Chrome and Firefox are the preferred web browsers for control on Windows. Safari is the preferred web browser for control on macOS. Other web browsers may work, but AJA cannot guarantee consistent operation for all web browsers or web browser versions.*

IP25-R Installation Overview

Detailed instructions are provided in ["Chapter 2 – eMini-Setup" on page 19](#) and ["Chapter 3 – WebUI Overview" on page 25](#).

There are two methods available for initial setup of the IP25-R:

- Using a web browser on the host computer connected to the same network as the IP25-R.
- Using the AJA eMini-Setup application running on the host computer that is directly connected to the IP25-R via USB.

Initial Setup By Web Browser

The IP25-R requires a network connection for initial configuration, control and firmware updates. The IP25-R is shipped from the factory with DHCP enabled, and supports automatic network discovery via SSDP and MDNS.

To Set Up the Unit with a Web Browser

1. Connect the IP25-R Control Port to the intended network with an Ethernet cable.

2. The intended network's DHCP Server will assign an IP address and the IP25-R will join that network.
3. Locate and connect to the IP25-R.

Windows PC Host

- A. Open Windows Explorer.
- B. Navigate to the Network.
- C. Click on the Network to enumerate network devices.
- D. Search for either "IP25-R" or the device's Serial Number.
- E. Double-click on the intended IP25-R. The host machine web browser will launch and display the WebUI for the IP25-R device.

macOS Host

- A. Go to System Preferences > Sharing and turn on File Sharing.
- B. Open the Finder Window.
- C. Navigate to Shared > All...
- D. Click on **All...** to enumerate network devices.
- E. Search for "IP25-R" or the device's Serial Number.
- F. Double-click on the intended IP25-R. The host machine web browser will launch and display the WebUI for the device.

NOTE: If the above does not work, download and install an MDNS browser to assist with discovering network devices on a macOS host.

Initial Setup By AJA eMini-Setup

1. Acquire AJA eMini-Setup (latest available version) from the AJA website for either macOS or Windows:
<https://www.aja.com/family/software#eminisetup>
2. Install eMini-Setup:
 - A. Unzip the Installer.
 - B. Run the .dmg file on macOS or the .msi file on Windows.
3. Connect Power to the AJA Ethernet equipped Converter.
4. Connect the USB config cable to the computer running eMini-Setup.
5. Open eMini-Setup and configure the device's network settings.

NOTE: DHCP is enabled by default, and if the device is connected to a DHCP server the IP address field will populate.

6. Enter the IP address into a browser window. The WebUI for the AJA device will display.
7. Use the WebUI to fully configure and control the AJA Device.

Hardware Installation

Temperature of Unit

The IP25-R packs an unprecedented feature set into the mini converter box.

As a result, the unit uses approximately 13 watts of power. It will be very warm to the touch, which is normal. The unit is engineered to operate across the full temperature range, from 0 to 40 degrees C.

Access to Air for Proper Cooling

The IP25-R uses front-to-back cooling. Ensure to mount it in a location where it has access to air for proper cooling.

Number of LAN Connections

Three LAN connections to the unit are not necessarily required on an ongoing basis. After the IP25-R is set up, all control parameters can be accessed through one of the Media LANs with the appropriate network configuration. See ["Networking Option" on page 25](#) for more information.

Settings Retained

The current IP25-R configuration settings are retained even when powered off, so subsequent installations for an identical decoding session can be done with the following simple steps:

1. Apply power to the IP25-R.
2. Connect the IP25-R to the network using the Control LAN, Media LAN 1 and Media LAN 2 and connect the unit's inputs and outputs.

REST API Documentation

AJA's REST automation API provides a platform from which commands can be issued to an AJA device's internal WebUI, allowing remote systems the ability to control AJA embedded or networked devices. With this control framework, integration and automation scripts can be built, using any scripting language, allowing full advantage of the device's functionality.

Please reach out to AJA customer support for more details.

Chapter 2 – eMini-Setup

Overview

AJA's eMini-Setup is an easy way to set up an AJA device's network settings for AJA products that lack a front panel display, which prevents easy observation of the device's current IP address.

The eMini-Setup application, available as a free download from the AJA website, allows for identification of an AJA device's IP address and, if necessary, reconfiguration of its network settings so the unit can operate in a network environment.

Once configured, the IP25-R can be accessed via an Ethernet network using a web browser. It can then be managed and controlled over that network, using the address of the IP25-R and built-in web server (WebUI), to access all of its user-configurable controls.

NOTE: The latest version of eMini-Setup must be used with the IP25-R.

Downloading & Installing eMini-Setup

A USB-connected host computer is required. Connect the host computer to the IP25-R using the USB-C port on its front panel.

Download the eMini-Setup installer from the AJA website:

<https://www.aja.com/products/aja-eminisetup>

Follow the prompts in the eMini-Setup installer.

Launch eMini-Setup, open the Control Tab Window and configure the IP Address.

Once the IP25-R IP address has been set, thereafter the WebUI may be used.

If desired, the USB cable may be removed and eMini-Setup app closed.

Running eMini-Setup

If not connected, connect the IP25-R device to the PC or Mac via the supplied USB cable, and also connect the external power supply (supplied) to the IP25-R.

If not already done, Download and Install eMini-Setup (see "[Downloading & Installing eMini-Setup](#)" on page 19).

Windows Startup

To run eMini-Setup on a Windows PC, double-click on the AJA eMini-Setup icon on the desktop. Or use the Windows Task Bar Search to enter "eMini-Setup" and the icon to launch the installed application will appear.

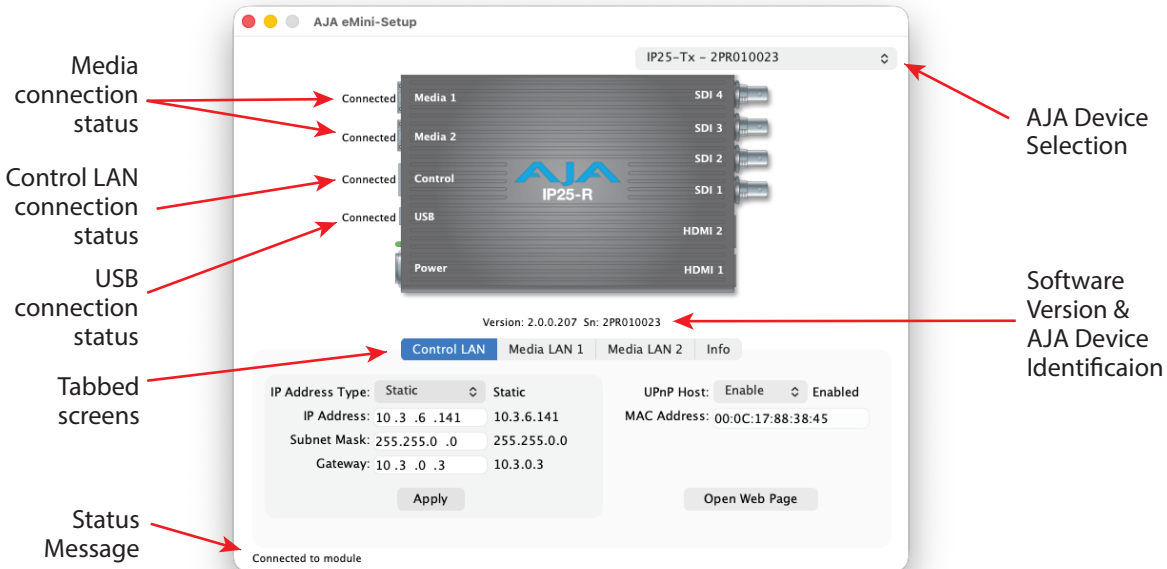
macOS Startup

To run eMini-Setup on a Mac, open the Applications folder and locate the AJA eMini-Setup application. Double-click the application to launch it.

Operating eMini-Setup

The eMini-Setup application provides a graphical user interface for viewing settings, modifying settings, and updating software.

Figure 16. Example eMini-Setup Screen (Control Tab)



AJA Device Selection

Selecting an AJA device with the pull down menu on the upper right connects eMini-Setup to that AJA device.

Software Version & AJA Device Identification

- **Version** - The version of firmware installed in the AJA device is displayed below the graphic.
- **Sn** - This is the factory set unique serial number of the AJA device. When calling AJA Support for service, this number may be required.

File Menu

The File drop-down menu on the eMini-Setup application bar has a Revert to Factory Settings menu item that allows changing the settings back to the AJA device's factory defaults.

Edit Menu

The Edit drop-down menu has standard Cut, Copy and Paste functions for editing text.

Help Menu

The Help drop-down menu has a link to the AJA device's manual.

Media 1 & Media 2 Connection Status

Shows as either Connected or Disconnected, for Media LAN Tabs 1 & 2.

Control LAN Connection Status

Shows as either **Connected** or **Disconnected**.

USB Connection Status

Shows as either **Connected** or **Disconnected**.

Tabbed Screens

Choose from four tabs:

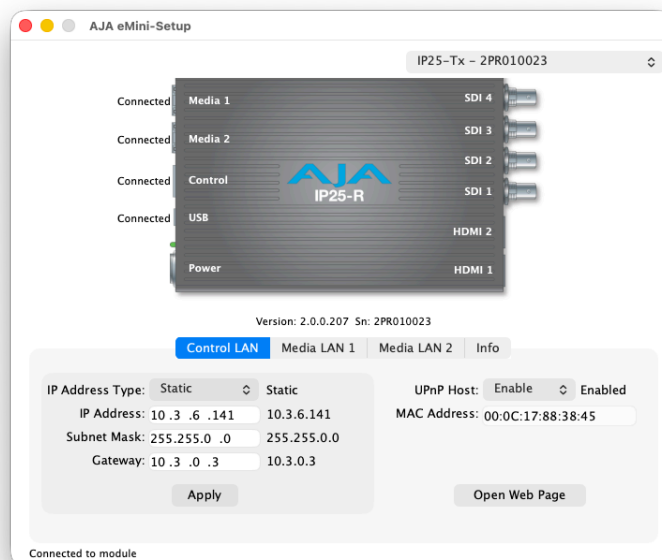
- **Control**
- **Media LAN 1**
- **Media LAN 2**
- **Info**

Status Message

Shows the status of the eMini-Setup applications connection with the IP25-R.

Control LAN Tab Screen

Figure 17. eMini-Setup Control LAN Tab Screen



Use the Control LAN Tab to change the network setup on the IP25-R. Click the **Apply** button to initiate any network configuration changes.

IP Address Type

Choose from:

- **DHCP**
- **Static IP Address.**

IP Address

The current IP address is displayed when an IP Address Type of **Static** is selected. A different static IP address can be entered.

Subnet Mask

The current Subnet Mask is displayed. A different netmask can be entered.

Gateway

The current Gateway address is displayed. A different IP address can be entered.

If the IP25-R needs to communicate to servers on another LAN or WAN, enter the address of the computer/router that is making that external connection. If all of the devices, and the systems they need to talk to, are on a single LAN, then enter any unused LAN address as the Gateway here.

UPnP Host

Select **Enable** or **Disable** to control whether the AJA device makes itself visible for Windows network browsing.

MAC Address

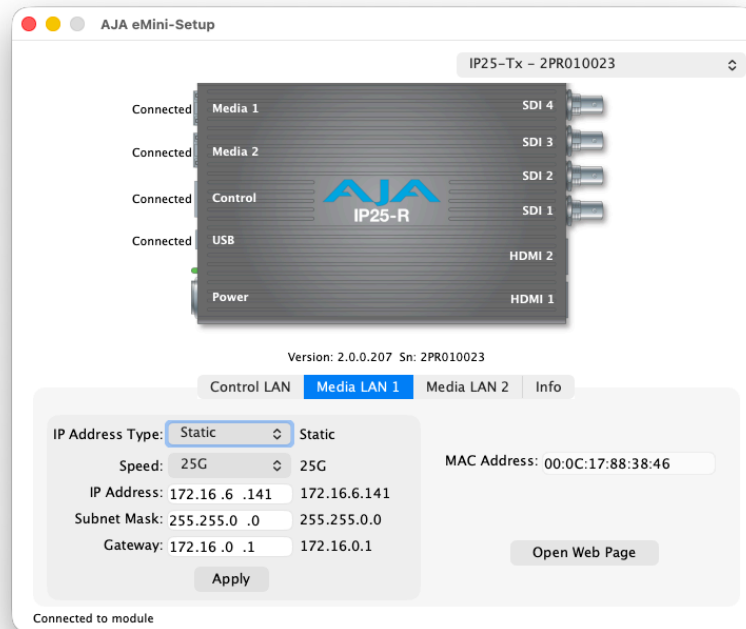
This is the permanent MAC address of the AJA device.

Open Web Page

After successfully configuring the IP25-R's network settings and while connected to the network, clicking on this button opens the IP25-R's internal web page, allowing complete remote control of the device.

Media LAN 1 & 2 Tab Screens

Figure 18. eMini-Setup Media LAN 1 Tab Screen



Use the Media LAN 1 or Media Lan 2 Tabs to change the corresponding media network setup on the IP25-R. Click the Apply button to initiate any network configuration changes.

NOTE: *The Media LAN 1 and Media LAN 2 tab screens work identically as to their respective controls and status fields, so we illustrate those once below:*

IP Address Type

Choose from:

- Static
- DHCP

Speed

Choose from:

- 10G (10GigE, No FEC*)
- 25G (25GigE, No FEC*)
- 25G FEC74 (25GigE, IEEE 802.3 CL74 FireCode FEC*)
- 25G FEC108 (25GigE, IEEE 802.3 CL108 Reed Solomon FEC*)

NOTE: ** In some networks FEC is utilized and therefore requires products on the network to support FEC. It's use case is typically for reliability improvement where more overhead is acceptable or WAN environments over long distances.*

NOTE: *IP25-R does not auto-detect SFP bandwidth. This must be manually set.*

IP Address

The current IP address is displayed when an IP Address Type of **Static** is selected. A different static IP address can be entered.

NOTE: *If directly connecting an IP25-R to another IP25-R, use sequential static IP addresses for both units (Transmit and Receive)*

Subnet Mask

The current Subnet Mask is displayed. A different netmask can be entered.

Gateway

The current Gateway address is displayed. A different IP address can be entered.

If the IP25-R needs to communicate to servers on another LAN or WAN, enter the address of the computer/router that is making that external connection. If all of the devices, and the systems they need to talk to, are on a single LAN, enter any unused LAN address as the Gateway here.

UPnP Host

Select **Enable** or **Disable** to control whether the AJA device makes itself visible for Windows network browsing.

MAC Address

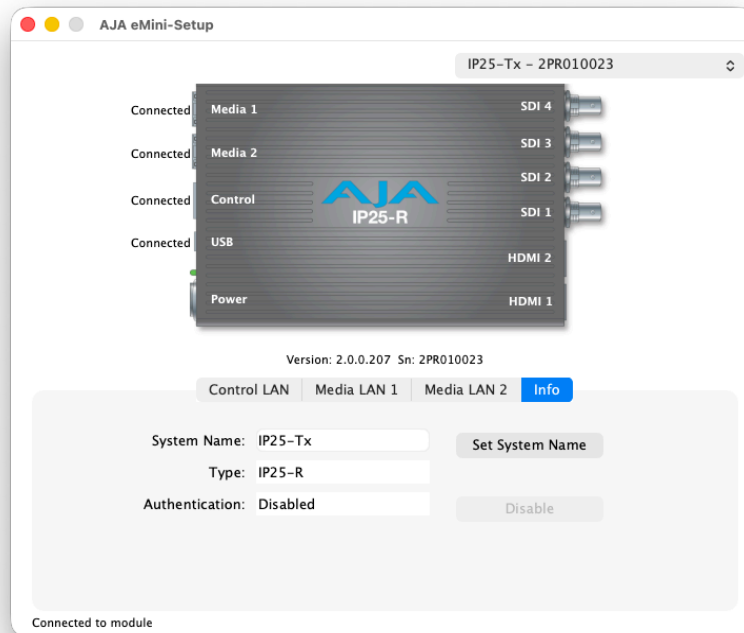
This is the permanent MAC address of the AJA device.

Open Web Page

After successfully configuring the IP25-R's network settings and while connected to the network, clicking on this button opens the IP25-R's internal web page, allowing complete remote control of the device.

Info Tab Screen

Figure 19. eMini-Setup Info Tab Screen



The Info Tab provides basic information about the connected AJA device. This information is mostly useful when calling AJA Support for service or technical support.

System Name

This field is used to give the AJA device a unique name. This can be useful if there are several devices attached to a Mac/PC via USB in order to distinguish between them easily.

IMPORTANT: Once the system name has been entered, the name change will not take effect until after the Set System Name button is clicked.

Type

This is the factory set model name of the AJA device.

Authentication

If Authentication has been Enabled on the web browser Access tab, click the Disable button to disable the security feature.

Chapter 3 – WebUI Overview

Introduction

Once network connectivity has been established with the IP25-R, configure and more fully control the unit through its web interface ('WebUI'). Subsequently, eMini-Setup is no longer required to interface with the unit.

NOTE: It is often best to remove the USB connection once the web interface has been acquired. This prevents accidentally using eMini-Setup to change parameters already set via the WebUI.

Remote Control

An optimized web server (WebUI) in the IP25-R allows remote control and parameter setting adjustments via a browser client running on a network wired computer. The network can be a closed local area network, a direct connection between a IP25-R and a computer, or even exposed through a firewall to a WAN.

Each IP25-R uses a standard RJ-45 connector for the Control LAN connection, and two SFP28 cages for the 10/25 GigE Ethernet Media LAN connections.

NOTE: Safari is the preferred web browser for control on the Mac, and additionally Chrome and Firefox on Windows. Other web browsers may work, but AJA cannot guarantee consistent operation for all web browsers or web browser versions.

After using eMini-Setup to establish the IP address for the IP25-R, connect it to the network and enter its Control Network IP address into the web browser. If authentication has been configured, a password may need to be entered.

Networking Option

Using Only the Media LAN Port for Control & Media Settings

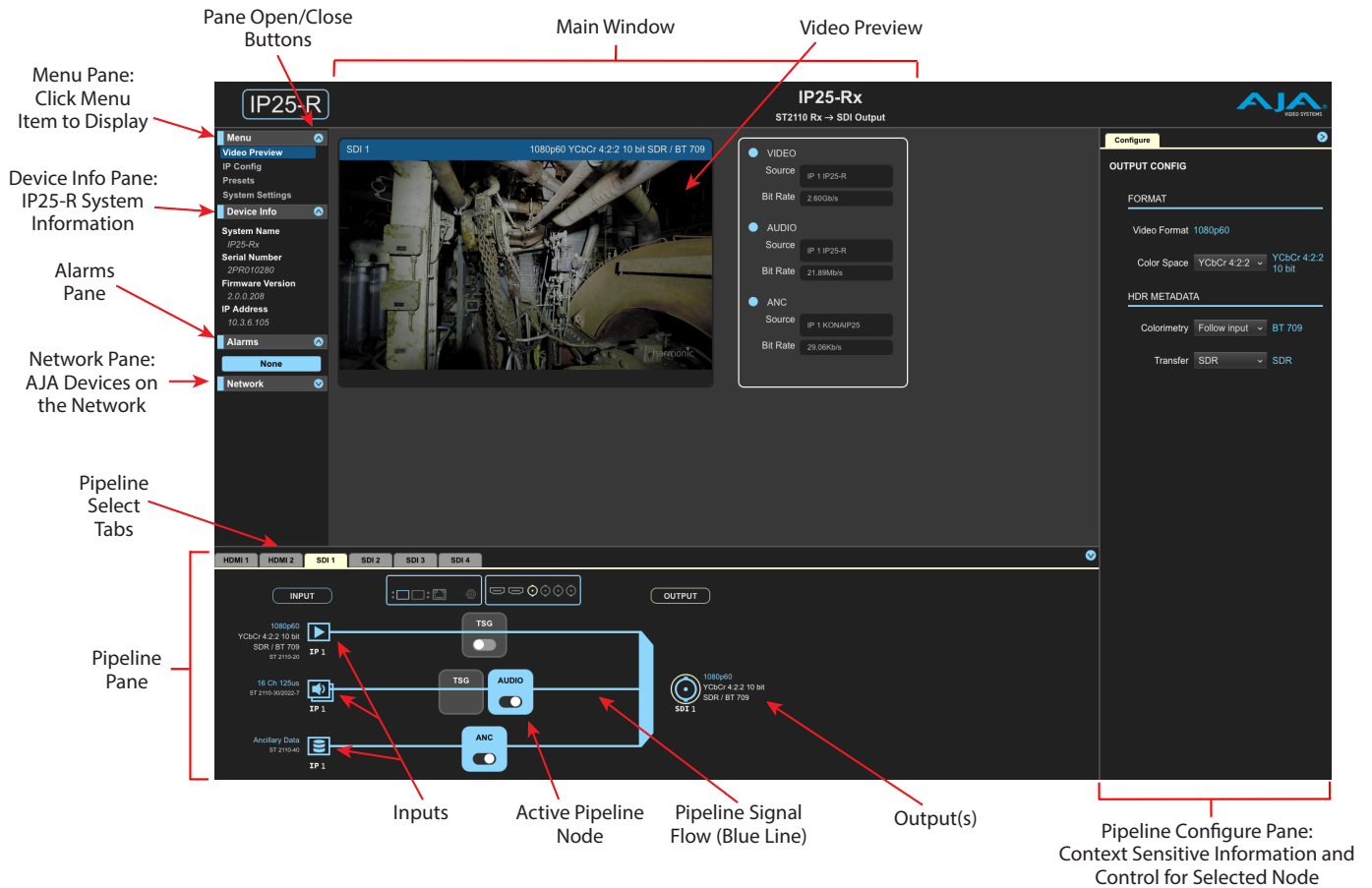
To reduce facility cabling to the IP25-R, it is an option to setup a network connection through an Ethernet switch via the Media LAN ports (rather than using the dedicated Control Port). This means that there will be just one or two cables to the unit, instead of two or three.

To implement this approach, follow these general steps:

1. Note the IP address of the unit's Media LAN 1 or Media LAN 2 port.
2. Connect the controlling computer's Ethernet port that is being used to control the unit into the desired Media network.
3. Connect the Media LAN ports of the unit into the Media Net switch.
4. Set the controlling computer's Ethernet port that is being used to control the IP25-R to either Static or DHCP, depending on the network topology.
5. From the controlling computer, point a web browser to the IP address noted in step 1. The IP25-R's web user interface displays in the browser.

IP25-R WebUI Overview

Figure 20. IP25-R WebUI Overview

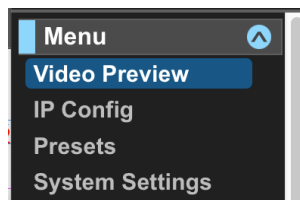


All IP25-R web screens have certain areas and controls in common. Vertical and horizontal scroll bars appear when information extends past the border of a screen panel. The round blue Up/Down or Left/Right arrow button on each pane opens and closes that pane.

Menu Pane

The IP25-R Menu Pane is used to select what will be displayed in the Main Window of the screen.

Figure 21. IP25-R Menu Pane, Video Preview Selected

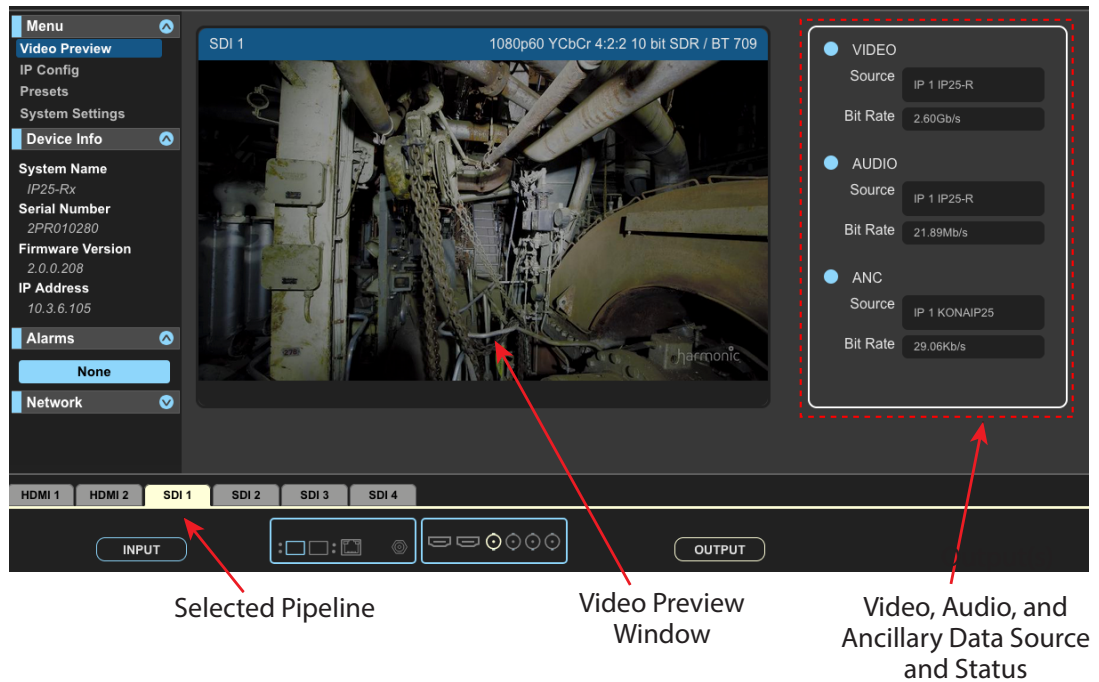


Video Preview Pane

When Video Preview is selected from the menu, click on a Pipeline Select Tab to view the respective preview. The last WebUI instance that selects a pipeline to preview will show the video.

IMPORTANT: Multiple instances of WebUI looking at preview will show the same video. It is preferable that only one instance of the UI has Video Preview selected at a time.

Figure 22. IP25-R Video Preview and Status

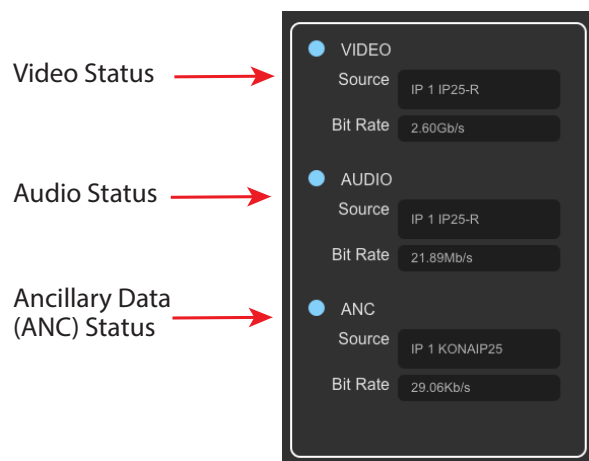


Video Preview Window

The IP25-R has one video preview decoder. The video will be shown for the last instance of UI that selected an output pipeline for preview.

Video, Audio & Ancillary Data Status

Figure 23. IP25-R Video Preview Status Pane



Source - Status of which receiver and source is routed to output.

Bit Rate - Current Bit rate of stream.

IP Config Pane

The IP25-R IP Config screen has three tabs: Inputs or Outputs (depending on Product Mode), Global Ctrl and PTP. For configuration options, see ["IP Config Pane" on page 37](#).

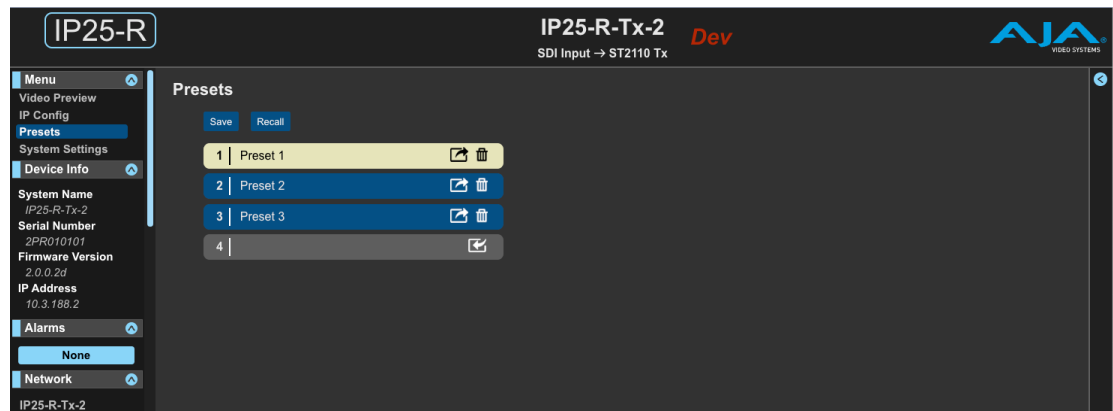
Presets Pane

The Presets screen allows saving of preset configurations into 20 separate internal registers and recall the presets whenever needed. The preset is a set of all device parameters as they were set at the time the preset was stored. Only editable parameters are saved in the presets. Note that stored preset registers have no effect on device configuration nor operation until they are explicitly recalled.

The Presets panel also includes Export and Import functions that allow exporting one or all presets to a computer as files and importing exported preset files from a computer. A displayed message indicates successful or failed saves, recalls, exports, and imports.

NOTE: Presets are saved per Product Mode and can only be recalled if the mode of the IP25-R is set the same.

Figure 24. IP25-R Presets Window



Save - The Save button saves the current configuration into the preset register with the associated name and number. A preset is a set of all parameters as they were set at the time the preset was saved. Only editable parameters are saved in the presets

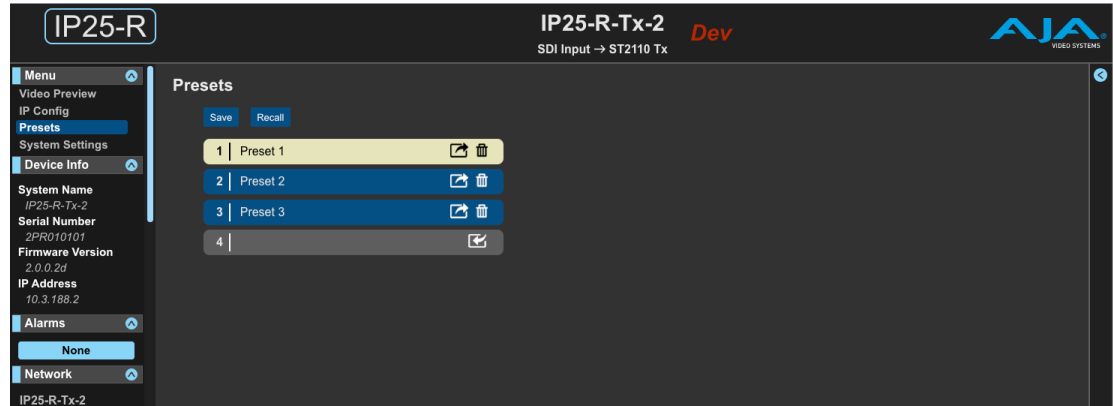
To change a preset name, click in the name's text field, type a new name, and press Enter to save the name. A 'Storing...' message may flash for a few seconds while a preset is being saved.

CAUTION: IP25-R stored presets may contain a web server access password. Before loaning out the device or returning it as a rental, it is recommended to clear the device of sensitive information.

Recall - The Recall button recalls a previously saved preset configuration into the internal registry of the IP25-R. When recalling a preset, a dialog may be displayed allowing specification of what aspects of the preset to recall.


NOTE: The IP25-R must be set to the same Product Mode as the preset being recalled. If import and recall of a preset from a different mode is attempted, the preset will not be loaded.

Figure 25. IP25-R Presets Window





CAUTION: When a preset configuration is recalled, the recalled preset immediately replaces the system's existing configuration. All previous settings are lost unless they have been previously stored in another preset configuration or an exported file.

Import/Export/Delete options for Presets:

-  Import - Browse for and import a preset file into the preset register associated with the selected button.

NOTE: Ensure that the IP25-R is set to the same Product Mode as the preset being imported.

-  Export - Export the associated preset contents to file as specified by default location set in browser options. The filename is the same as the preset name with the suffix `.json`. Multiple files exported for the same preset append a number to the export for unique filenames.
-  Delete - Removes the preset from the registry.

Using Presets

Presets are stored internally on the IP25-R and can be imported/exported to/from a host computer. Presets use a name format of '[presetname].json'.

Powering off the IP25-R will not erase the presets stored internally on the IP25-R.

CAUTION: The Active Device Configuration and Preset Registers are subject to the Erase and Recall Factory Settings functions which will overwrite previous user data.

System Settings Pane

The System Setting pane displays various IP25-R system parameters: System, Network, Firmware, and Statistics.

System Tab

Figure 26. System Settings: System Tab

The screenshot shows the 'System' tab selected in a web interface. At the top, there are four tabs: 'System' (highlighted), 'Network', 'Firmware', and 'Statistics'. Below the tabs, the 'System' section contains several settings and buttons:

- System Name:** A text input field containing 'IP25-R-Rx-3' and a checkbox labeled 'Use for Title' which is checked.
- Resources:** Three buttons: 'Product', 'Support', and 'About...'.
- Factory Settings:** A button labeled 'Reset...'.
- Support Log:** A button labeled 'Download'.
- System Restart:** A button labeled 'Restart...'.
- Product Mode:** A dropdown menu currently showing '2110 Input to SDI' with a downward arrow.
- Restore Default Routes:** A button labeled 'Apply...'.

System Name - Default or custom name of the device.

Use for Title - When enabled, system name will appear in the top panel above the device mode (Rx or Tx).

Product - Under Resources. Opens IP25-R page on the AJA website for an overview of the product.

Support - Under Resources. Opens IP25-R page on the AJA website and presents Contact Support information.

About... - Under Resources. Opens the About IP25-R information panel. This includes firmware version and copyright information.

Factory Settings - Click on the Reset button to reset the IP25-R to factory settings.

NOTE: Factory reset clears user configurations and cannot be undone.

Support Log - Click on the Download button to generate and download a support log for the IP25-R. This may be required when working with an AJA Customer Support representative.

System Restart - Click on the Reboot button to reboot the IP25-R.

Product Mode - Toggles the IP25-R between Receive mode and Transmit mode:

- Receive Mode (Rx) - (default) 2110 Input => SDI
- Transmit Mode (Tx) - SDI Input => 2110

NOTE: Switching between modes (Rx > Tx, Tx > Rx) will change the IP25-R mode and force the device to reboot.

See "[Product Mode Configuration](#)" on page 37

Restore Default Routes - Click on the Apply button to restore internal matrix to defaults.

NOTE: Restore Default Routes clears user configurations and cannot be undone.

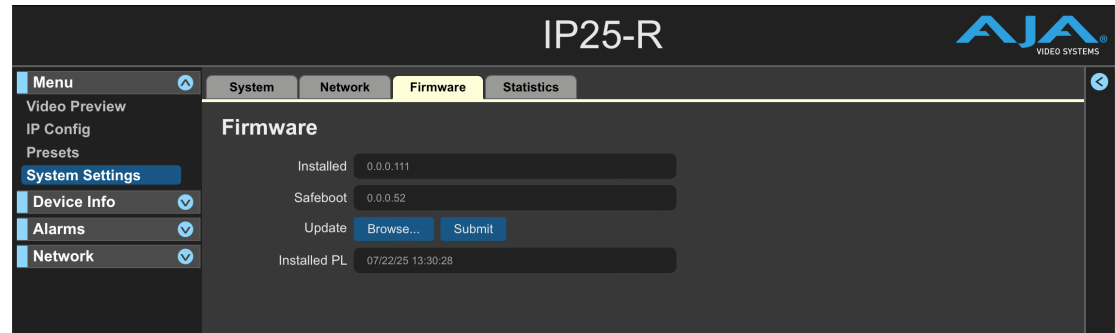
Network Tab

The Network Tab gives information about the IP25-R's network settings, and allows changing them to meet needs of the network environment. The Media 1, Media 2, and Control Networks each have their own respective controls and status information. For configuration options, see "[Network Configuration](#)" on page 35.

Firmware Tab

The Firmware Tab gives information about the IP25-R's firmware, and is used to update its firmware. A restart is required after the firmware is loaded.

Figure 27. System Settings: Firmware Tab



Installed - Indicates currently installed firmware version.

Safeboot - Indicates version of firmware to be used if a Safeboot is performed on the IP25-R. See "[Safeboot Procedure](#)" on page 9 for details on safeboot procedure.

Browse - Browse file storage locations for firmware files.

Submit - Submit selected file to be used for a firmware update.

Download Firmware

Visit the AJA website (aja.com) to locate the updated software.

1. Go to: <https://www.aja.com/products/ip25-r#support>
2. Select the **Software** option.
3. **Download** the most recent AJA Software file for the IP25-R.

NOTE: The download location on the host computer is determined by the web browser download preferences.

Install Firmware

1. In the IP25-R WebUI, select **System Settings > Firmware**.
2. Click **Browse**.
3. Select the downloaded AJA firmware file ('filename'.ajas). Click **Upload**.
4. On the IP25-R Firmware tab screen, click **Submit**.
5. A Firmware Update Progress Bar will appear, and after several moments it will complete and then disappear.

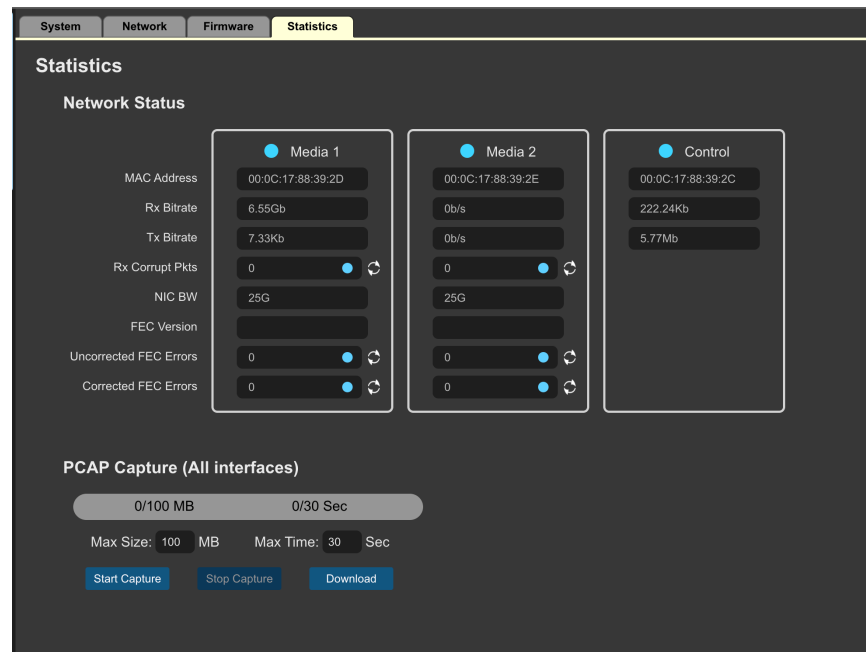
CAUTION: Never disconnect an IP25-R power cable or AC source during a firmware update. Doing so could cause firmware corruption and thus trigger a subsequent 'Safeboot' which restores the "safe" firmware version noted in the **Safeboot** field.

6. When prompted, click **Restart** to reboot the IP25-R with the updated firmware.
7. During the reboot, the web browser will lose its connection to the IP25-R.
8. After the IP25-R has rebooted (approximately 1-2 minutes), refresh the web browser.

The IP25-R WebUI will be available as soon as the restart has completed.

Statistics Tab

Figure 28. System Settings: Statistics Tab



The round indicator at the top of the Media 1, Media 2, and Control panes will indicate network status:

- Enabled and Active
- Disabled / Inactive
- Enabled but Not Active

Media 1 and Media 2 Network Statistics

Mac Address - Reports the connected IP25-R's Media Access Control Address.

Rx Bitrate - Shows the RX bitrates for all data on the port.

Tx Bitrate - Shows the TX bitrate for all data on the port. Media TX may have some usage due to connections such as PTP.

Rx Corrupt Pkts - Provides incrementing count of corrupt packets. Reset button returns count to 0. Status is indicated as follows:

- No Rx Corrupt Packets
- Number of Rx Corrupt Packets



NIC BW - Status of programmed NIC bandwidth.

FEC Version - Status of FEC version active: Firecode or Reed Solomon.

Uncorrected FEC Errors - Status of Uncorrected FEC errors. Only active when FEC is enabled. Reset button returns count to 0. Status is indicated as follows:

- No Uncorrected FEC Errors
- Number of Uncorrected FEC Errors

Corrected FEC Errors - Status of Corrected FEC errors. Only active when FEC is enabled. Reset button returns count to 0. Status is indicated as follows:

-  No Corrected FEC Errors
-  Number of Corrected FEC Errors

Control Network Statistics

Rx Bitrate - Shows the RX bitrate for all data on the port.

Tx Bitrate - Shows the TX bitrate for all data on the port.

PCAP Capture (All Interfaces)

Allows for packet capture (PCAP) of RTP header for all interfaces in a single PCAP file on the IP25-R.

NOTE: PCAP Capture only captures RTP header information for analysis in tools such as Wireshark. No media capture is performed.

Max Size - Maximum size of file (up to 200 MB) to be captured. Default is 100 MB. Max time is 30 minutes or 1800 seconds.

Start Capture - Starts PCAP file capture.

Stop Capture - Stops PCAP file capture.

Download - Downloads the PCAP file to the PC downloads folder.

NOTE: IP25-R supports 1 PCAP capture file at a time. When a capture is initiated, it will overwrite the previous capture.

Device Info Pane

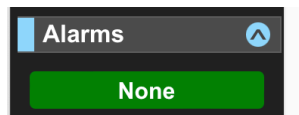
Figure 29. IP25-R Device Info Pane



The Device Info pane provides name, device serial number, firmware version and IP Address for the IP25-R.

Alarms Pane

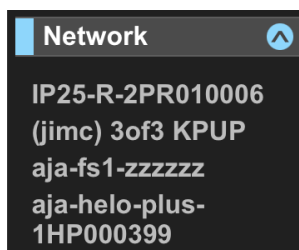
Figure 30. IP25-R Alarms Pane



Alarms are displayed in a panel on the left side of each screen. Clicking on the arrow opens or closes this panel to show or hide the alarms. Hovering the mouse over an alarm (red) or warning (yellow) in most cases provides additional detail about the condition and thus making the issue easier to resolve.

Network Pane

Figure 31. IP25-R Network Pane



The Network pane lists other AJA devices currently on the network. There is no particular limit to the number of devices which might be shown.

Pipeline Pane

The IP25-R Pipeline pane is used for setup of video processing pipelines. See ["Pipeline Overview" on page 49](#) for details.

Pipeline Configure Pane

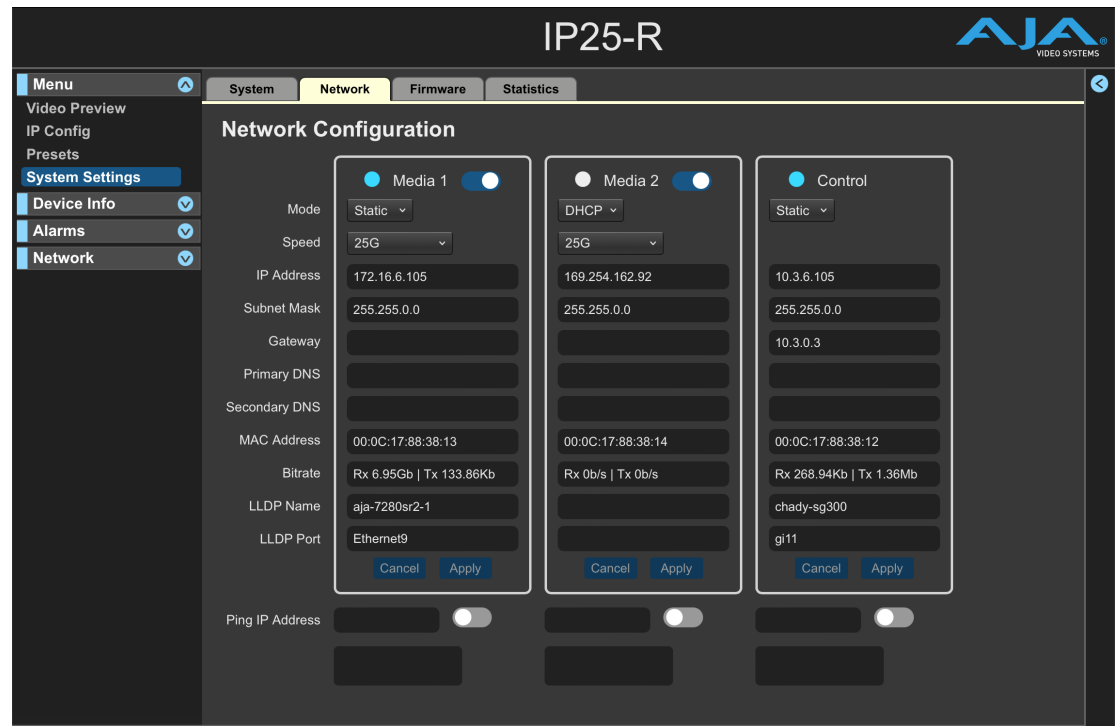
The IP25-R Pipeline Configure pane is used for configuration of pipeline inputs, outputs, and nodes. See ["Pipeline Configuration" on page 50](#) for details.

Chapter 4 – IP25-R Configuration

Network Configuration

The Network Tab gives information about the IP25-R's network settings, and allows changing them to meet the needs of the network environment. The Media 1, Media 2, and Control Networks each have their own respective controls and status information.

Figure 32. System Settings: Network Tab



Network Tab Controls

Network status indicates the following:

- Enabled and Active
- Disabled / Inactive
- Enabled but Not Active

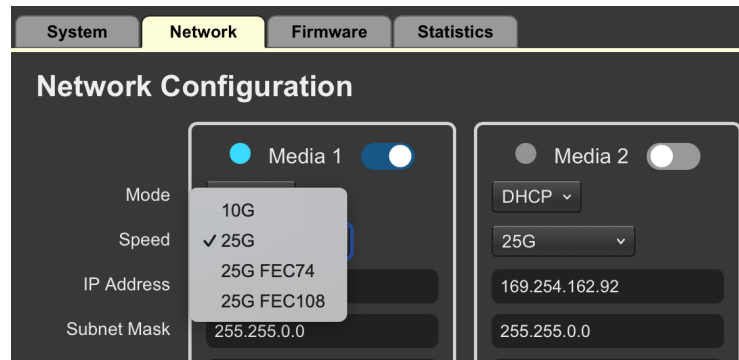
Media 1, Media 2 & Control Network Panes

Mode - Static or DHCP. Mode determines the type of TCP/IP network configuration to be used. DHCP enables connecting to the network DHCP server, which assigns the IP Address, Netmask, and Gateway automatically. Static allows the setting of these parameters manually. Network interface settings are maintained through the different modes.

- DHCP (default) - Selects automatic IP address assignment from the DHCP server. If a DHCP server cannot be found, IP25-R will fall back to a link local static IP address (169.254.x.x).
- Static - Assigns a static IP address manually.

Speed (Media 1 and Media 2 networks only) - 10G, 25G, 25G FEC74 or 25G FEC108

Figure 33. Media 1 & 2 Network Speed pull-down Menu



IP Address - IP Address determines a static IP address to be used for TCP/IP networking. Consult a network administrator about how to set this value.

- If IP Address Type is set to DHCP, the IP address is set automatically by the network DHCP server.
- If IP Address Type is set to Static, enter an IP address compatible with the LAN.
- If IP Address Type is set to DHCP and there is a DHCP failure, the IP address is set to a link local static IP address.

Subnet Mask - Subnet Mask determines the subnet mask to be used for TCP/IP networking.

- Use a subnet mask compatible with the LAN. This is only needed for Static IP configurations. The factory default Subnet Mask is 255.255.255.0.
- If IP Address Type is set to DHCP, the Subnet Mask is set by the DHCP server and cannot be changed by the user

Gateway - Gateway determines the gateway or router used on the LAN for TCP/IP networking. Without a properly configured default gateway (a router/gateway is present or not), the IP25-R will be unable to see other IP25-R devices on the network, although this IP25-R may still be controllable via a web browser. Also, without a proper gateway defined, the discovery feature on the Network web page will not list other units on the network.

- Use a default gateway or router address. This is only needed for Static IP configurations.
- If IP Address Type is set to DHCP, the Default Gateway is set by the DHCP server and cannot be changed by the user.

Primary and Secondary DNS Servers - In DHCP mode, reports the current DNS Server IP addresses. In Static mode, allows entry of DNS Server IP addresses.

CAUTION: *If DNS servers are not present or have incorrectly entered IPs, then wherever IP25-R specifies machines by name the names won't work, although numeric IP addresses will still work.*

CAUTION: *When using Static IP addressing for IP25-R, be sure to also enter a valid DNS server address in the "Primary DNS Server" field. If the DNS Server address is not entered or is invalid, URLs in streaming destinations won't work and an Alarm will be displayed:*

MAC Address - Reports the connected IP25-R's Media Access Control Address.

Bitrate - Shows the RX/TX bitrates for all data on the port. Media TX may have some usage due to connections such as PTP

LLDP Name - Presents Link Layer Description Protocol Name.

LLDP Port - Link Layer Discovery Protocol: allows network devices to discover each other's identity, capabilities, and configuration by sending Type-Length-Value (TLV) packets on the data link layer.

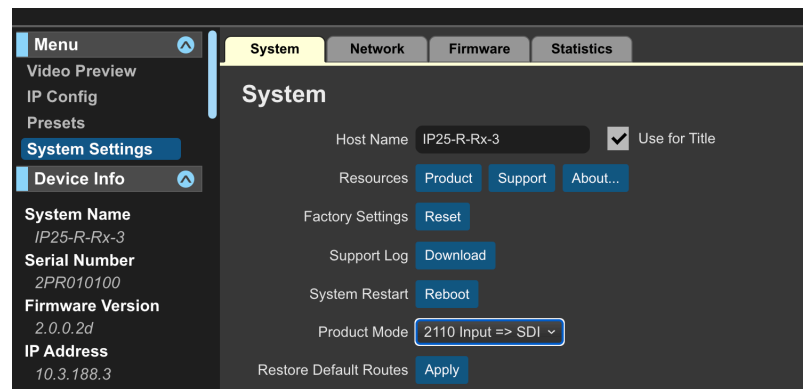
Ping IP Address - Troubleshooting tool to find IPs on the network. When enabled, it will continuously ping the entered IP and show status of response.

Product Mode Configuration

The IP25-R allows for specification of Product Mode, either Receive (Rx) or Transmit (Tx):

- Receive Mode (default) – 2110 Input => SDI. Sets ST 2110 IP as Input to SDI / HDMI Output(s)
- Transmit Mode – SDI Input => 2110. Sets SDI Input(s) to ST 2110 IP / HDMI Output(s)

Figure 34. IP25-R Product Mode Selection



The mode to be used for the IP25-R must be set before IP Config configurations or setting up Pipeline workflows as the mode will affect what Inputs, Outputs and Nodes are available for configuration.

Network settings, PTP, and Global Control configurations are maintained through mode changes.

IP Config Pane

The IP25-R IP Config Screen screen has three tabs: Inputs or Outputs (depending on Product Mode), Global Ctrl and PTP.

Inputs or Outputs

Depending on the ST 2110 Product Mode selected (see "[Product Mode Configuration](#)" on page 37 for details on toggling product modes) either an Input or Output tab will be displayed.

- The Inputs Tab will be displayed when the IP25-R is set to Rx mode and gives information and configuration options for the IP25-R input settings via .sdp file or manual configuration and allows defining parameters for receiving inputs to the IP25-R from another device on the network.
- The Outputs Tab will be displayed when the IP25-R is set to Tx mode and gives information and configuration options for the IP25-R output settings via .sdp file or manual configuration and allows defining parameters for transmitting outputs from the IP25-R from another device on the network.

Many of the settings and parameters for Input/Output are similar and differences will be noted in the following descriptions.

Multicast Rx View (Inputs)

Provides manual entry of all multicast settings. If an SDP is delivered to the receiver, the entries shall be loaded from SDP. Entries can be overwritten and will not automatically reapply previous settings, unless the SDP is reapplied. All settings must be accurate to receive the incoming multicast stream.

Figure 35. IP Config: Inputs Tab - Multicast Rx View Selected

The screenshot shows the 'IP25-R' interface with the 'Inputs' tab selected. The interface is divided into several sections:

- Receiver Classification:** A dropdown menu at the top center, currently set to 'A: Low-Skew (10ms)'.
- SDP / Multicast:** A dropdown menu at the top right, currently set to 'Dev'.
- IP Signal Indicator:** A red arrow points to the 'IP' column header in the 'VIDEO' section.
- Multicast IP:** A red arrow points to the 'Multicast IP' column header in the 'VIDEO' section.
- Enable (Primary):** A red arrow points to the 'Enable' checkbox in the 'VIDEO' section.
- Tools:** A red arrow points to the 'Tools' column header in the 'VIDEO' section.
- Enable 2022-7:** A red arrow points to the 'Enable' checkbox in the '2022-7' section.
- Edit Settings:** A red arrow points to the 'Edit' column header in the '2022-7' section.

The 'VIDEO' section contains a table with columns: IP, Format, PL, Enable, Multicast IP, Port, Tools, Enable, Multicast IP, Port, Edit. The '2022-7' section contains a similar table. The 'AUDIO' section also has a table with columns: IP, Format, PL, Enable, Multicast IP, Port, Tools, Enable, Multicast IP, Port, Edit. The 'ANC' section also has a table with columns: IP, Format, PL, Enable, Multicast IP, Port, Tools, Enable, Multicast IP, Port, Edit.

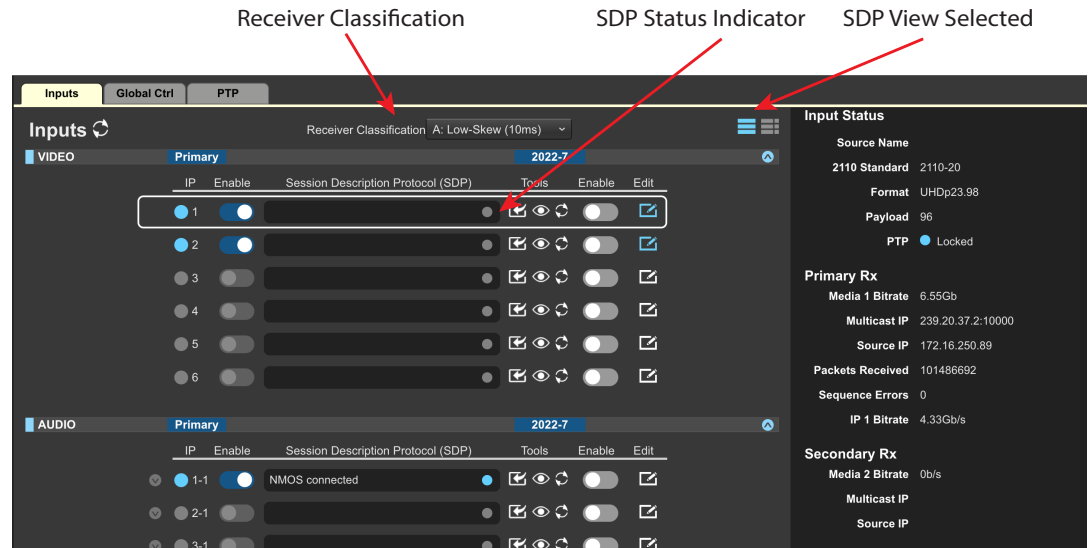
Receiver Classification - Used to specify difference in timing or synchronization between two or more signals or data streams within a network. Default is A: Low-Skew @ 10ms.

NOTE: When changing Receiver Classification settings, it is recommended to disable then re-enable primary and secondary Input streams.

SDP Rx View (Inputs)

SDP Rx View provides configuration when SDP URLs will be pasted into receivers to receive the multicast source.

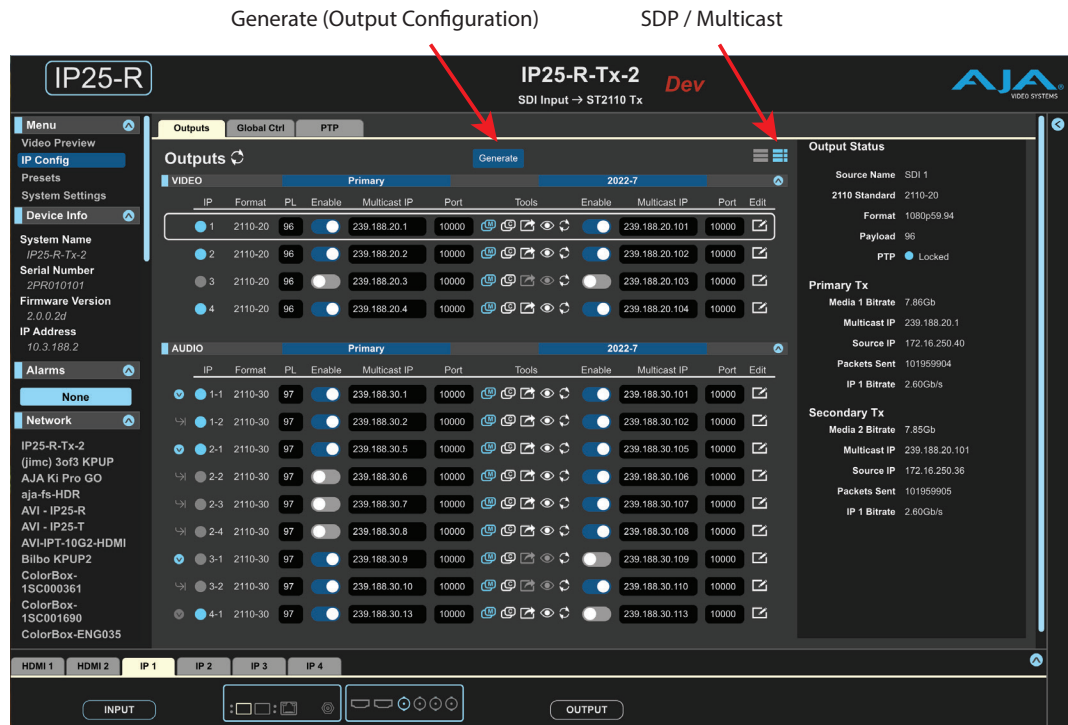
Figure 36. IP Config: Inputs Tab - SDP Rx View Selected



Multicast Tx View (Outputs)

Provides manual entry and status of all multicast settings. Entries can be overwritten and will not automatically reapply previous settings, unless the SDP is reapplied. All settings must be accurate to receive the incoming multicast stream.

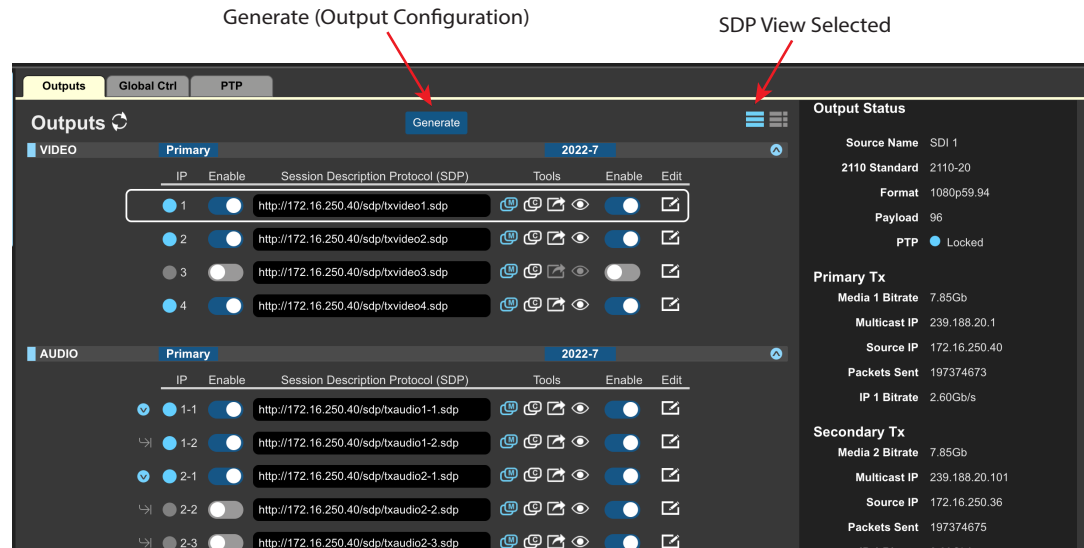
Figure 37. IP Config: Outputs Tab - Multicast Tx View Selected



SDP Tx View (Outputs)

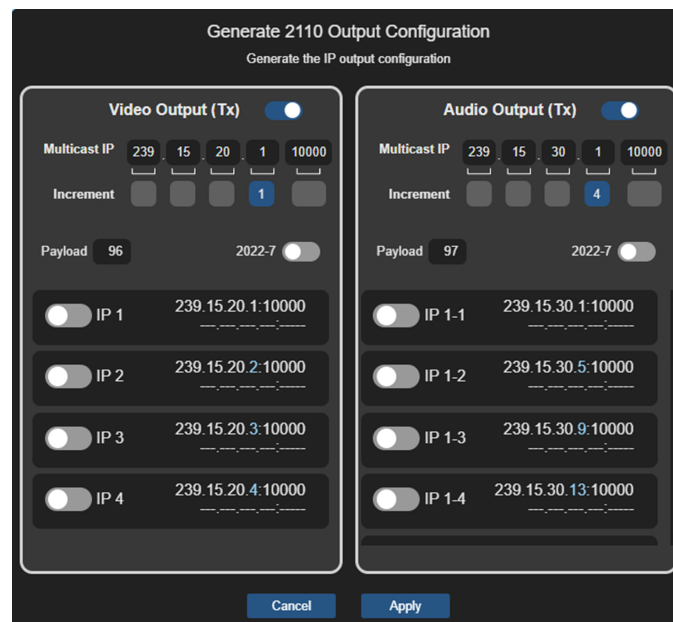
SDP Tx View provides SDP configuration and status of multicast senders.

Figure 38. IP Config: Outputs Tab - SDP Tx View Selected



Generate - Automates Multicast Tx IP creation. Provides capability to increment by Port and IP Octet to meet network design.

Figure 39. Generate Multicast Tx IP



IP Config Shared Controls and Fields

The following apply to both Rx and Tx modes:





PL - Presents Payload ID received/transmitted from SDP

Primary Port - Manual Port entry for Primary Multicast to be received/transmitted

Secondary Multicast IP - Manual IP entry for Secondary Multicast to be received/transmitted

Secondary Port - Manual Port entry for Secondary Multicast to be received/transmitted




IP Signal Indicator- Indicates the following:

-  Valid Signal Detected and Active
-  Signal Inactive or Disabled
-  Nearing Maximum Bandwidth
-  Duplicate Signal or Exceeded Bandwidth/'oversubscribed'





NOTE: *Oversubscribed refers to when traffic from all connected sources/destinations exceeds the available network bandwidth. When oversubscribed, all streams on the interface will be affected. It is the customer's responsibility to manage network traffic and routing, to ensure a given network path is not oversubscribed.*

SDP / Multicast IP - Displays SDP (in SDP view mode) or Multicast (in Multicast view mode) primary and secondary IP details.

SDP Status - Indicates SDP / Multicast status

- When in SDP view mode
 -  SDP is Found / Valid
 -  SDP is Not Found / Invalid
 -  Duplicate Multicast IP

Tools - The following tools are available:

-  Import SDP
-  Export SDP
-  View SDP details
-  Reset selected stream

Enable (Primary) - When enabled, activates primary transmitter.

Enable 2022-7 - Enables ST 2022-7 redundant network operations.

NOTE: *Two 'enable' selections are provided, Primary and ST 2022-7. Primary must be enabled to activate the Transmitter.*


CAUTION: *Only enable transmitters for paths being used and with SFP bandwidth accounted for. If transmitters are enabled for unused paths, resources will still be assigned and may impact output streams. See table "IP25-R Tx Mode 25GigE SFP Format Support" and "IP25-R Tx Mode 10GigE SFP Format Support" for maximum allowable transmitter activation.*

Table 1. IP25-R Tx Mode 25GigE SFP Format Support

25GigE SFP					
Mode(s)	2x UHDp50/59.94/60	1x UHDp50/59.94/60	1x UHDp50/59.94/60	1x UHDp50/59.94/60	4x UHDp23.98/24 /25/29.97/30 or HD
		2x UHDp23.98/24 /25/29.97/30	1x UHDp23.98/24 /25/29.97/30	3x HD	
			2x HD		
Maximum Tx Enable	2	3	4	4	4

Table 2. IP25-R Tx Mode 10GigE SFP Format Support

10GigE SFP		
Mode(s)	1x UHDp23.98/24 /25/29.97/30	3x HD
Maximum Tx Enable	1	3

Edit Settings - Click on the  icon to configure various input IP settings as well as ST 2110-20 Video, ST 2110-30 Audio, and ST 2110-40 Ancillary parameters.

Video, Audio and Ancillary Panes on Input/Output

Three sections provide separate Video, Audio, and Ancillary configurations. Each item in these sections has identical parameter entry windows. If external control is established (NMOS, Ember+, REST API), the Input window will populate as configured externally.

There are two configuration modes to provide control for the preferred method, SDP view and Multicast view.

Settings shared between both views:

Primary Enable - Setting to enable or disable the IP input/output.

NOTE: When disabled, the receiver/transmitter still presents as an available receiver/transmitter to NMOS.

If a new source destination is sent to the receiver/transmitter, it will turn on.

Primary Session Description Protocol (SDP) - URL of SDP. Can be typed or pasted in.

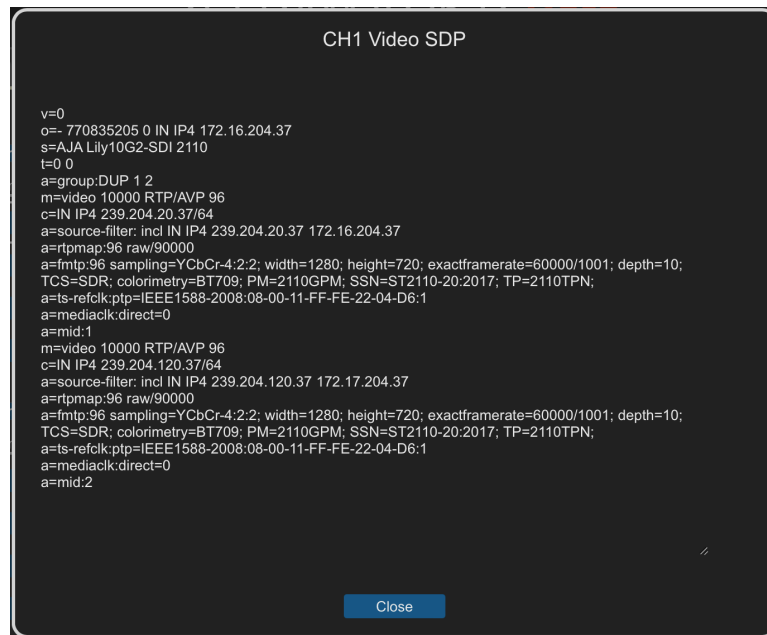
Secondary Enable - Enabling will establish ST2022-7 redundancy. Note: Primary multicast must be active to enable.

Secondary Edit - Opens edit window to configure all receiver/transmitter settings.

CH1 Video SDP (Input/Output)

Clicking on the View SDP icon (👁️) opens the CH1 Video SDP I popup.

Figure 40. CH1 Video SDP Popup



SDP is the Session Description Parameter, which contains the configuration details of a sender or receiver. SDP allows for automated configuration of a receiver to accept the senders signal.

Video Input (2110-20)

When in Rx mode, clicking on an IP input's 'Edit' opens the Video Input window.

CAUTION: Any changes made in this window will impact the input stream. This window can be useful for making manual changes or troubleshooting. Proceed with caution.

Figure 41. Inputs Tab: CH1 Video Input Popup Window

Primary & Secondary Rx

Multicast IP - Multicast source IP

Multicast Port - Multicast source Port

Source IP (SSM) - Senders IP. Utilized when Source Specific Multicast is implemented

Source Port - Sender's port.

Payload - Payload ID. Must match between SDP and stream.

Restore SDP Button - If any settings are changed, selecting 'Restore SDP' will read the SDP and reapply the settings.

Match - Checked by default for settings read from SDP. If a setting is unchecked, the receiver will ignore that setting and attempt to receive the multicast. This is useful for troubleshooting.

ST 2110-20 Video Configuration

Video Format - Provides status of current Video format as read from SDP and provides manual selection, if needed.

Colorimetry - Provides status of current Colorimetry setting as read from SDP and provides manual selection, if needed.

Pixel Format - Provides status of current Pixel format as read from SDP and provides manual selection, if needed.

HDR EOTF - Provides status of current HDR setting as read from SDP and provides manual selection, if needed

Restore SDP Button - Restores to settings as read from SDP.

Audio Input (2110-30)

When in Rx mode, clicking on an IP input's 'Edit' opens the Audio Input window.

Figure 42. Inputs Tab: CH2-1 Audio Input Popup Window

Multiple ST 2110-30 Audio Groups on Inputs

The IP25-R provides multiple ST 2110-30 Audio Channel Grouping modes on Inputs for expanding audio flows and channel counts, as needed in some infrastructures. Three modes are available:

- Single Flow (default): Provides 1x ST 2110-30 audio flow (ex. 1-1) with up to 16 channels @ 125us and up to 8 channels with 1ms timing.
- 4x4: Provides 4x ST 2110-30 audio flows (ex. 1-1, 1-2, 1-3, 1-4) with 4 channels each @ 125us or 1ms timing, totaling 16 channels.
- 2x8: Provides 2x ST 2110-30 audio flows (ex. 1-1, 1-2) with 8 channels each @ 125us or 1ms timing, totaling 16 channels.

To change the mode, select 'Edit' on the first stream of the audio group. The window will show the three modes at the top. When the desired mode is selected, the audio stream configuration will be available only for the valid stream numbers.

When these multi stream Channel Grouping modes are selected, a selection arrow to the left of the stream expands the view of the audio streams, when needed.

ANC Input (2110-40)

When in Rx mode, clicking on an IP input's 'Edit' opens the ANC Input window.

Figure 43. Inputs Tab: CH1 ANC Input Popup Window

CH1 Anc Input (2110-40)

Primary Rx		Match	Secondary Rx		Match
Multicast IP	239.6.40.203	<input checked="" type="checkbox"/>	Multicast IP		<input checked="" type="checkbox"/>
Multicast Port	10000	<input checked="" type="checkbox"/>	Multicast Port		<input type="checkbox"/>
Source IP (SSM)	172.16.250.167	<input checked="" type="checkbox"/>	Source IP (SSM)		<input type="checkbox"/>
Source Port		<input type="checkbox"/>	Source Port		<input type="checkbox"/>
Payload	98	<input checked="" type="checkbox"/>	Payload	98	<input checked="" type="checkbox"/>

[Restore SDP](#)

* Modifications will override previous settings

[Cancel](#) [Apply](#) [Ok](#)

Video Output (2110-20)

When in Tx mode, clicking on an IP output's 'Edit' opens the Video Output window.

Figure 44. Outputs Tab: CH1 Video Output Popup Window

CH1 Video Output (2110-20)

Primary Tx		Secondary Tx	
Multicast IP	239.188.20.1	Multicast IP	239.188.20.101
Multicast Port	10000	Multicast Port	10000
Media 1 IP	172.16.250.40	Media 2 IP	172.16.250.36
Source Port	10000	Source Port	10000
Payload	96		

ST2110-20 Packing Mode

[General \(GPM\)](#) [Block \(BPM\)](#)

[Multi Line](#) [Single Line](#)

[Cancel](#) [Apply](#) [Ok](#)

Packing Mode

Specifies mode for packing pixel data:

General (GPM) - (default) Flexible, general-purpose method for packing pixel data.

Block (BPM) - Groups pixels into specific block sizes.

Multi Line - (default) Linear/Wide. Spreads packets evenly across the entire frame time.

Single Line - Gapped/Narrow. Sends packets during the active portion of the video line, mimicking the timing of traditional SDI.

Audio Output (2110-30)

When in Tx mode, clicking on an IP output's 'Edit' opens the Audio Output window.

Figure 45. Outputs Tab: CH1 Audio Output Popup Window

The image shows a 'CH1-1 Audio Output (2110-30)' configuration window. At the top, 'Channel Grouping' has three buttons: 'Single Flow', '4 X 4', and '2 X 8'. Below these are 'Packet Interval' (set to 125us) and 'Number of Channels' (set to 8). The window is divided into two main sections: 'Primary Tx' and 'Secondary Tx'. Each section contains fields for 'Multicast IP', 'Multicast Port', 'Media 1 IP', 'Media 2 IP', 'Source Port', and 'Payload'. At the bottom are 'Cancel', 'Apply', and 'Ok' buttons.

Field	Primary Tx	Secondary Tx
Multicast IP	239.188.30.1	239.188.30.101
Multicast Port	10000	10000
Media 1 IP	172.16.250.40	172.16.250.36
Media 2 IP		
Source Port	10000	10000
Payload	97	

Multiple ST 2110-30 Audio Groups on Outputs

The IP25-R provides multiple ST 2110-30 Audio Channel Grouping modes on Outputs for expanding audio flows and channel counts, as needed in some infrastructures. Three modes are available:

- Single Flow (default): Provides 1x ST 2110-30 audio flow (ex. 1-1) with up to 16 channels @ 125us and up to 8 channels with 1ms timing.
- 4x4: Provides 4x ST 2110-30 audio flows (ex. 1-1, 1-2, 1-3, 1-4) with 4 channels each @ 125us or 1ms timing, totaling 16 channels.
- 2x8: Provides 2x ST 2110-30 audio flows (ex. 1-1, 1-2) with 8 channels each @ 125us or 1ms timing, totaling 16 channels.

To change the mode, select 'Edit' on the first stream of the audio group. The window will show the three modes at the top. When the desired mode is selected, the audio stream configuration will be available only for the valid stream numbers.

When these multi stream Channel Grouping modes are selected, a selection arrow to the left of the stream expands the view of the audio streams, when needed.

Global Ctrl

The Global Ctrl (Control) Tab gives information and configuration options for the IP25-R's NMOS and Ember+ settings.

Figure 46. IP Config: Global Control Tab



NMOS Configuration

Enable or disable network discovery for the device. NMOS uses the address of the unit's internal WebUI for communications. When the unit boots up, it actively scans the network for an NMOS registry using MDNS/DNS. If it finds one, it tells the NMOS registry what it is and what its capabilities are. If the unit does not find an NMOS registry, it continues to announce itself through MDNS so that it can be discovered. Once discovered, it registers itself with whatever has discovered the unit through MDNS.

NMOS Enable - Enable/Disable NMOS for the IP25-R.

Discovery mode - Sets mode for discovery of available NMOS registries.

Enable Host - Enables/Disables Media 1, Media 2, Control hosts.

Discovered Registries - Displays available NMOS registry details.



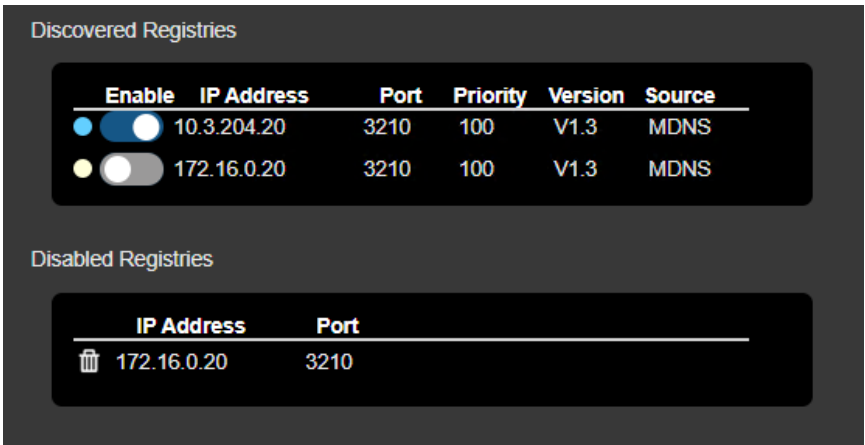
Enabled and available active registries will be marked with a  indicator and unavailable registries will be marked with an  indicator. Disabled registries will appear in a Disabled Registries window with a delete option.)

Figure 47. Discovered Registries



With NMOS enabled, IP25-R receivers support master_enable commands, as defined in the IS-05 specification.

When a master_enable: true is sent, the sender or receiver will be set to enabled and support programmed media. Similarly, if the sender or receiver is set to 'enable' in the UI, the it will report a master_enable:true to NMOS.

When a master_enable:false is sent, the sender or receiver will be set to disabled and media will stop on that sender or receiver. Similarly, if the sender or receiver is set to 'disable' in the UI, it will report a master_enable:false to NMOS.



If ST 2022-7 is enabled, both senders or receivers will abide to the same rules.

Ember+ Configuration

The following controls are available for Ember+ configuration with the IP25-R. AJA recommends consulting with an IT Administrator to properly configure and set up use of Ember+ with the IP25-R.

Ember+ Enable - Enable/Disable Ember+ for the IP25-R.

Ember+ status indicates the following:

-  Ember+ Enabled and Detected
-  Ember+ Disabled or Not Detected

NOTE: When Ember+ is enabled, a primary stream is required for 2022-7.

Ember+ Port - Allows specification of port to use.

PTP Tab

The PTP (Precision Time Control) Tab gives information and configuration options for the IP25-R's PTP settings.

Figure 48. IP Config: PTP Tab



PTP Control Pane

Domain Number - Select domain number 0 and 127 are reserved and should not be used.

Preferred Time Transmitter - Select Preferred Transmitter from available sources. Click Apply to apply modified Domain Number and/or Preferred Time Transmitter selections. Click Reset Controls to restore to default settings

Cancel Button - Reverts any not-applied changes to previous settings, within PTP Pane.

Apply Button - Applies any changes made in the PTP Pane.

Reset Counts - Resets incrementing Counts in PTP pane for Announce Count, Sync Count, Delay Request Count, Follow Up Count, Delay Response Count.

Pipeline Overview

The IP25-R makes use of a video processing 'Pipeline' which is a sequential path of configurable processing nodes through which an input signal or dataset (such as video, audio, or metadata) passes to achieve a specific transformation for output. Depending on the product mode selected (see ["Product Mode Configuration" on page 37](#)), different configurations and inputs/outputs will be available.

Figure 49. IP25-R Pipeline Pane (IP to SDI/HDMI)

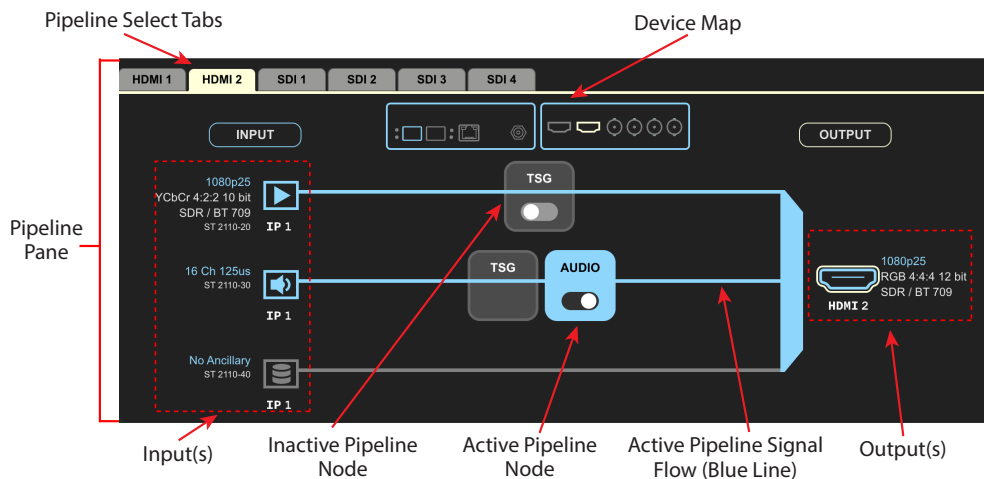
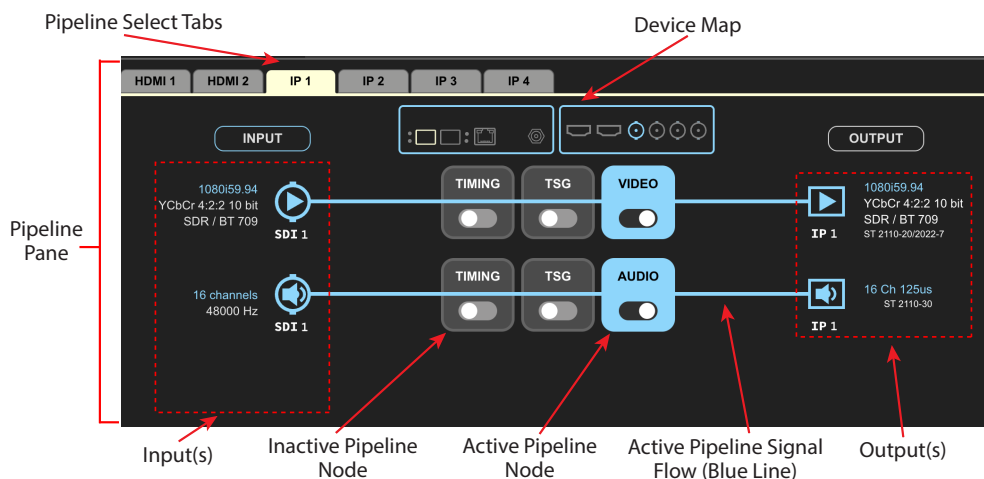


Figure 50. IP25-R Pipeline Pane (SDI to IP/HDMI)



Each tab in the pipeline panel represents IP, SDI, or HDMI outputs. When selected, the pipeline and configuration for the selected output is presented. Each pipeline panel shows input sources, pipeline signal flows, pipeline nodes, node toggles and output destinations, all in an intuitive graphical interface.

Pipeline Select Tabs

Clicking on a pipeline tab selects that pipeline and makes it active. Any video or audio processing configured in that pipeline will immediately be applied to the IP25-R's output. Different video processing pipelines will have different signal flow diagrams.

Device Map

Graphical representation of front and back of device showing ports. Ports being specified as inputs are highlighted in blue and ports specified as outputs are highlighted in light yellow.

Pipeline Node

Each selected pipeline has processing node boxes. Nodes indicate a processing function within a pipeline stream. Clicking on a node box selects that node for configuration, that box will be outlined in light yellow, and parameters available for that node will be displayed in the Pipeline Configure pane on the right side of the screen.

Nodes with a toggle switch can be enabled or disabled as required. Enabled nodes will be indicated in blue and disabled/unavailable nodes will be grey.

Input(s)

Shows the ST 2110 or SDI inputs assigned to the selected output. By selecting the input icon for a stream, the configuration can be modified. Provides status of incoming stream details.

Output(s)

Shows the configuration and status of the selected output. By selecting the output icon for a stream, the configuration can be modified. Provides status of outgoing stream details.

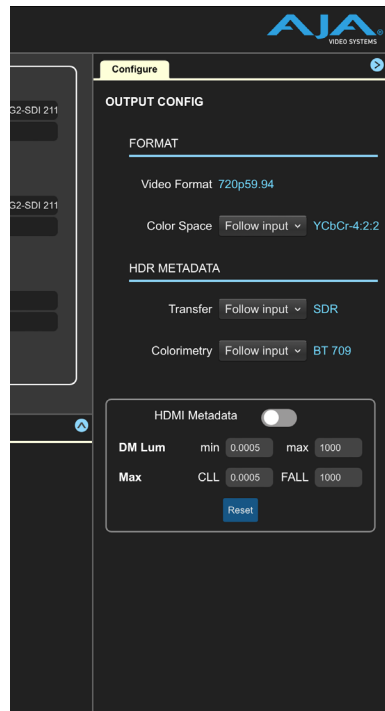
Signal Flow

Indicates active (blue) or inactive (grey) routed signal flow through a pipeline.

Pipeline Configuration

Clicking on an input, output, or node within the pipeline pane will open a corresponding Pipeline Configuration Pane on the right hand side of the WebUI. Available parameters, settings, and controls will vary depending on the item selected for configuration.

Figure 51. Pipeline Configure Pane



Pipeline Configure Pane:
Context Sensitive Information and
Control for Selected Node

Input Configuration

Clicking on an input icon (video, audio, ancillary) will bring up the corresponding configuration pane.

Audio Follows Video - When enabled (default), audio associated with source video signal will be used. When disabled, a separate audio source can be specified.

NOTE: IP input ancillary is always routed with the video

Figure 52. Input Configuration Pane (Audio Follows Video disabled)

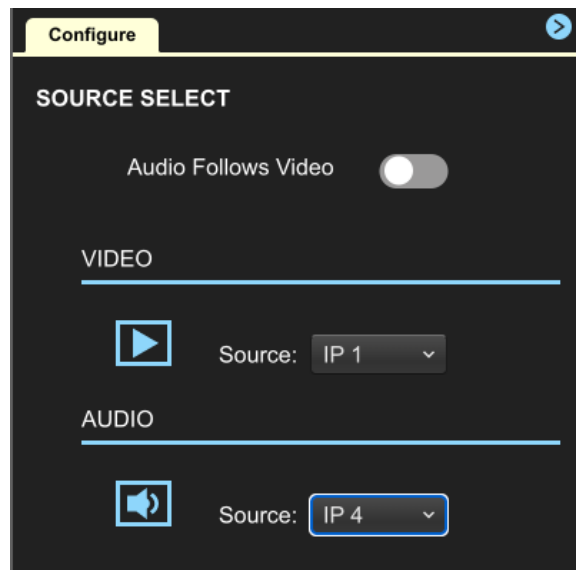
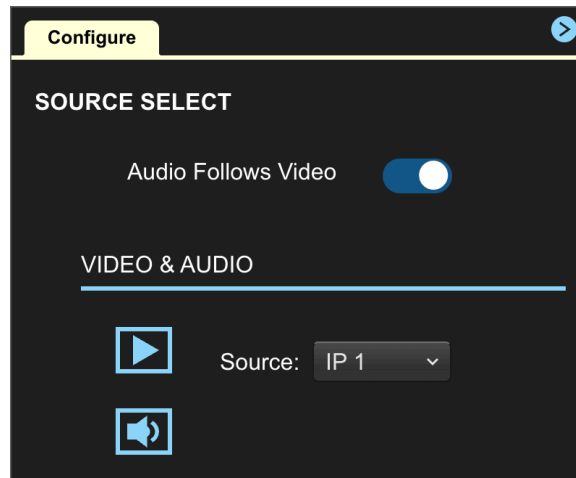


Figure 53. Input Configuration Pane (Audio Follows Video enabled)



Video and Audio

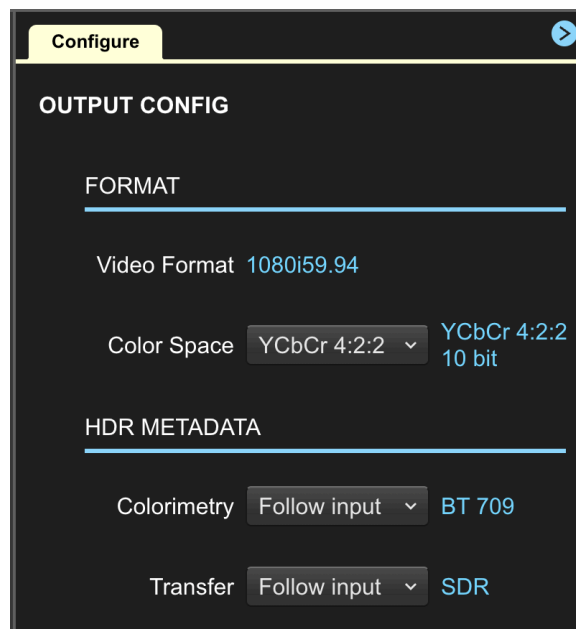
Source - Select from available IP (in Rx mode) or SDI (in Tx mode) source. Different sources may be selected for video and audio allowing for various routing combinations.

Output Configuration

Clicking on an output icon (IP, SDI, or HDMI) will bring up the corresponding configuration pane.

IP Output

Figure 54. Output Configuration Pane – IP



Format

Video Format - Provides status of received Video Format.

Color Space -Specify color space to apply to output. Blue text indicates input video color space. Options are:

- Follow Input (default): Sets color space from source.
- YCbCr 4:2:2

HDR Metadata

Colorimetry - Specify colorimetry value to apply to output. Blue text indicates Colorimetry from source. Options are:

- Follow Input (default): Passes the colorimetry value from source.
- BT.709 and BT.2020 values are passed through. If BT.709 is detected, the HDR Metadata Transfer shall be set to SDR.

NOTE: If a non-supported colorimetry value is received, then BT.709 is signaled for HD/ UltraHD formats and set to SDR.

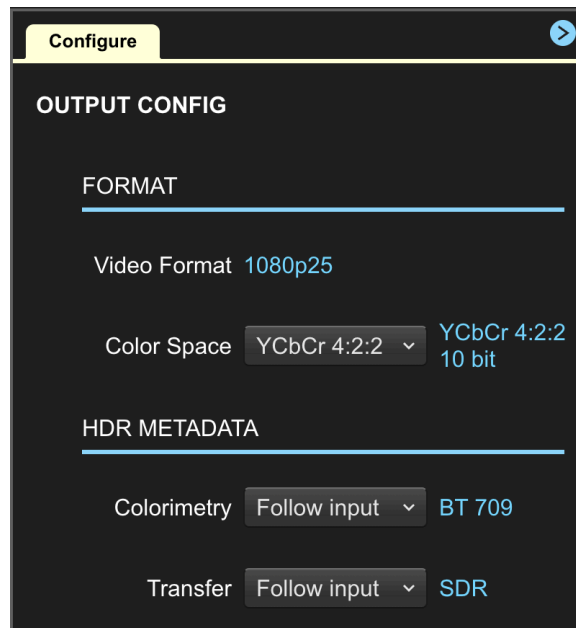
- BT.709: A BT.709 value is applied to the output. When BT.709 is selected, the HDR metadata transfer shall be set to SDR.
- BT.2020: A BT.2020 value is applied to the output.

Transfer -Specify transfer characteristic value to apply to output. Blue text provides transfer characteristic from source. Options are:

- Follow Input (default): Passes the SDR/HDR Transfer value from source.
- SDR - An SDR value is applied to the output.
- PQ - A PQ value is applied to the output.
- HLG - An HLG value is applied to the output.

SDI Output

Figure 55. Output Configuration Pane – SDI



Format

Video Format - Provides status of received Video Format.

Color Space -Specify color space to apply to output. Blue text indicates input video color space, as derived from SDP. Options are:

- Follow Input (default): Sets color space from SDP
- YCbCr 4:2:2
- RGB 4:4:4

HDR Metadata

Colorimetry - Specify colorimetry value to apply to output. Blue text indicates Colorimetry from SDP. Options are:

- Follow Input (default): Passes the Colorimetry value from SDP.
- BT.709 and BT.2020 values are passed through. If BT.709 is detected, the HDR Metadata Transfer shall be set to SDR.

NOTE: If a non-supported colorimetry value is received, then BT.709 is signaled for HD/ UltraHD formats and set to SDR.

- BT.709: A BT.709 value is applied to the output. When BT.709 is selected, the HDR metadata transfer shall be set to SDR.
- BT.2020: A BT.2020 value is applied to the output.

Transfer -Specify transfer characteristic value to apply to output. Blue text provides transfer characteristic from SDP. Options are:

- Follow Input (default): Passes the SDR/HDR Transfer value from the SDP.
- SDR - An SDR value is applied to the output.
- PQ - A PQ value is applied to the output.
- HLG - An HLG value is applied to the output.

HDMI Output

Figure 56. Output Configuration Pane – HDMI

Configure

OUTPUT CONFIG

FORMAT

Video Format 1080p25

Color Space RGB 4:4:4 RGB 4:4:4 12 bit

HDR METADATA

Colorimetry Follow input BT 709

Transfer SDR SDR

HDMI Metadata ☐

DM Lum min 0.0005 max 1000

Max CLL 0.0005 FALL 1000

Reset

Format

Video Format - Provides status of received Video Format.

Color Space -Specify color space to apply to output. Blue text indicates input video color space, as derived from SDP. Options are:

- Follow Input (default): Sets color space from SDP
- YCbCr 4:2:2
- RGB 4:4:4

HDR Metadata

Colorimetry - Specify colorimetry value to apply to output. Blue text indicates Colorimetry from SDP. Options are:

- Follow Input (default): Passes the Colorimetry value from SDP.
- BT.709 and BT.2020 values are passed through. If BT.709 is detected, the HDR Metadata Transfer shall be set to SDR.

NOTE: If a non-supported colorimetry value is received, then BT.709 is signaled for HD/ UltraHD formats and set to SDR.

- BT.709: A BT.709 value is applied to the output. When BT.709 is selected, the HDR metadata transfer shall be set to SDR.
- BT.2020: A BT.2020 value is applied to the output

Transfer -Specify transfer characteristic value to apply to output. Blue text provides transfer characteristic from SDP. Options are:

- Follow Input (default): Passes the SDR/HDR Transfer value from the SDP.
- SDR - An SDR value is applied to the output.
- PQ - A PQ value is applied to the output.
- HLG - An HLG value is applied to the output.

HDMI Metadata

When enabled (disabled by default), allows for specification of custom HDMI Metadata values.

DM LUM - Defines the Display Mastering Luminance. 'DM Lum min' defines floor of the SMPTE ST 2086 color volume (in the case of HDR) and is determined by the mastering environment.

- Range: 0.00000 cd/m² to 1.00000 cd/m² (default value: 0.0005)
- Step size: 0.00002 cd/m²

Max CLL -Represents the highest-value pixel component in an entire scene. It is determined by analyzing each frame of video, and can be determined in the post environment.

- Range: 1 cd/m² to 65535 cd/m² (default value: 0.0005)
- Step size: 1 cd/m²

Max FALL -Represents the maximum of frame-based average light levels taken over an entire scene, and can be determined in the post environment.

- Range: 1 cd/m² to 65535 cd/m² (default value: 1000)
- Step size: 1 cd/m²

Reset - Resets the DM Lum min/max, Max CLL, and Max FALL to defaults.

- DM Lum min = 0.0005
- DM Lum max = 1000
- Max CLL = 1000
- Max FALL = 400

Node Configuration(s)

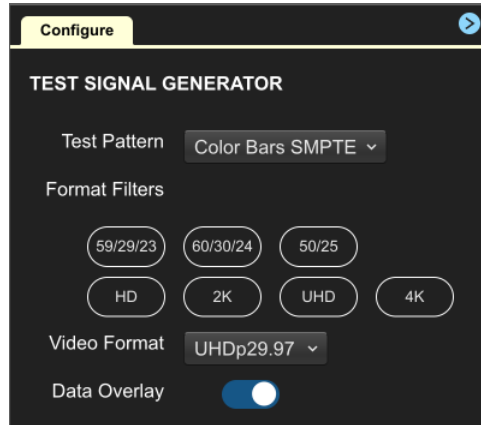
Clicking on a pipeline node will bring up the corresponding configuration pane.

TSG (Test Signal Generator) Node

In Rx mode, enabling the TSG will send the test signal to all SDI and HDMI outputs. This will affect all signal paths.

In Tx mode, enabling the TSG will send the test pattern to the output of the selected video processing path.

Figure 57. TSG Node Configuration



Test Signal Generator

Test Pattern - Select Desired Test Pattern. Options are:

- Black
- Color Bars 100%
- Color Bars 75%
- Color Bars SMPTE (default)
- Linear Ramp
- Slant Ramp
- Zone Plate
- Quad Border
- Circle

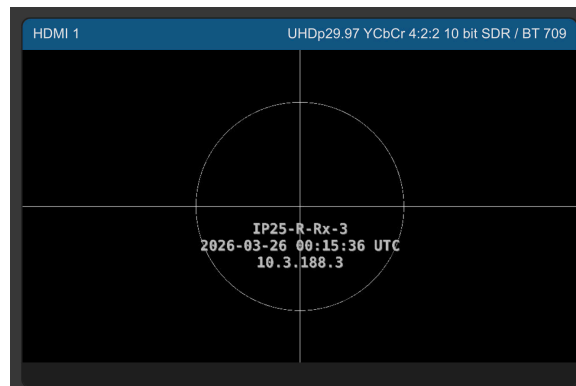
Format Filters - Click on filter groups to limit/expand the number of options displayed under Video Format. By default, all format filters are unchecked.

Video Format -Select from available video formats. By default, all formats will be displayed.

NOTE: If Format Filters are specified, only those subsets of filters will be displayed for Video Format.

Data Overlay -When enabled (default), test signal will include a data overlay showing device name, date and time, and device IP address.

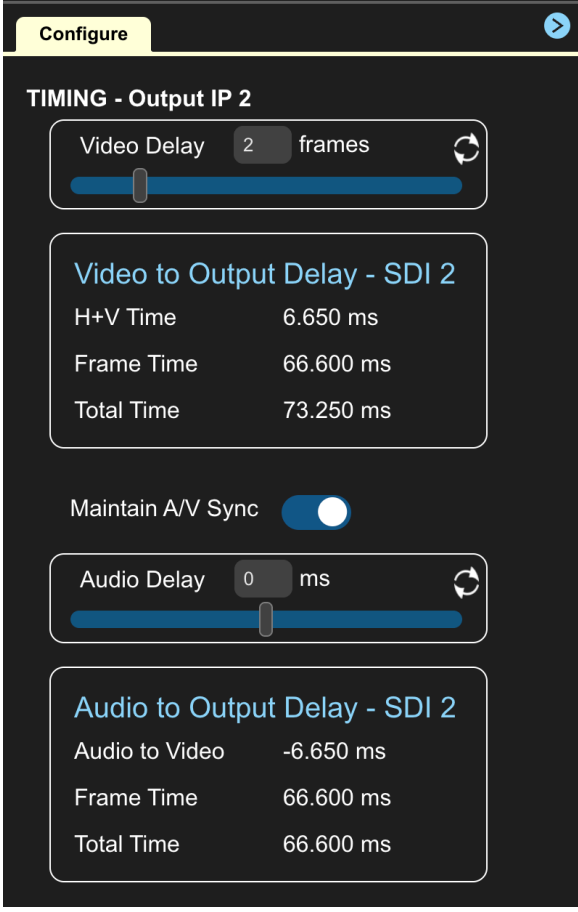
Figure 58. Data Overlay Enabled (Circle Test Pattern)



Timing Node

For SDI to IP / HDMI pipelines, allows for video and audio timing adjustments. Use cases include maintaining A/V Sync or individual video/audio stream timing offset adjustments.

Figure 59. Timing Node Configuration (SDI to IP)



The image shows a software interface for configuring the Timing Node for SDI to IP conversion. The interface has a dark background with white and blue text. At the top, there is a 'Configure' button with a right-pointing arrow. Below this, the section is titled 'TIMING - Output IP 2'. There are two main sections: 'Video Delay' and 'Audio Delay'. The 'Video Delay' section has a slider set to 2 frames, with a refresh icon. Below it, a box titled 'Video to Output Delay - SDI 2' contains a table with the following data: H+V Time: 6.650 ms, Frame Time: 66.600 ms, and Total Time: 73.250 ms. The 'Audio Delay' section has a slider set to 0 ms, with a refresh icon. Below it, a box titled 'Audio to Output Delay - SDI 2' contains a table with the following data: Audio to Video: -6.650 ms, Frame Time: 66.600 ms, and Total Time: 66.600 ms. A 'Maintain A/V Sync' toggle switch is located between the two delay sections and is currently turned on.

Video to Output Delay - SDI 2	
H+V Time	6.650 ms
Frame Time	66.600 ms
Total Time	73.250 ms

Audio to Output Delay - SDI 2	
Audio to Video	-6.650 ms
Frame Time	66.600 ms
Total Time	66.600 ms

Timing allows for frame synchronization and the capability to apply needed delay to incoming SDI signals that may not be genlocked. Frame synchronization is locked to PTP.

HDMI Output

Video always has Timing enabled. Audio timing is enabled by default.

SDI output

Video and audio have timing enabled by default. Disabling timing minimizes delay through the IP25-R but does not provide timing or frame synchronization.

Maintain A/V Sync is enabled by default. When enabled and Video frame delay is adjusted, the audio delay will adjust automatically to main A/V timing.

Video Delay

Can be delayed up to 12 frames.

- Video to Output Delay shows the output being measured.
- H+V time shows the processing delay.
- Frame time shows the delay applied.

- Total time shows the processing and additional delay applied

Audio Delay

Provides adjustment in ms. When Video Timing is enabled, the audio delay will show a 0ms delay compared to video. If a frame delay is added to video, it is possible to advance the audio by up to the same time.

- Audio to Output Delay shows the output being measured.
- Audio to Video shows the delay offset between audio and video.
- Frame time shows the delay applied to match the video + any additional audio delay added
- Total time shows the Audio to Video delay + the Frame time delay applied

Appendix A – Specifications

IP25-R Tech Specs

Video Formats

- (4K) 4096x2160p 23.98, 24, 25, 29.97, 30, 50, 59.94, 60
- (UltraHD) 3840x2160p 23.98, 24, 25, 29.97, 30, 50, 59.94, 60
- (2K) 2048x1080p 23.98, 24, 25, 29.97, 30, 50, 59.94, 60
- (HD) 1920x1080p 23.98, 24, 25, 29.97, 30, 50, 59.94, 60
- (HD) 1920x1080i 50, 59.94, 60
- (HD) 1280x720P 50, 59.94, 60

Media Transport Interfaces (In-Band)

- Uncompressed media (ST 2110-20, 30, 40)
- PTP
- Configuration & Control
- 2x SFP28 Cages (redundant only)- SFPs not included
- Supports 10 GigE and 25 GigE SFPs

RJ-45 1GigE Interface (Out-Of-Band)

- Configuration & Control

Input uncompressed IP

- ST 2110-20 Video
 - YCbCr 4:2:2 10-bit
 - 6-stream input*
 - Rx support for Narrow and Wide Senders
 - Rx support for Class-A,B,C,D SMPTE ST 2022-7 redundancy
- ST 2110-30 Audio
 - Up to 24 stream input*
 - 1, 2, or 4 streams per video*
 - Up to 16-channel audio per stream, 24-bit per channel, 48 kHz synchronous
 - 1ms and 125us timing
- ST 2110-40 Ancillary
 - 6-stream input

Output uncompressed IP

- ST 2110-20 Video
 - YCbCr 4:2:2 10-bit
 - 4-stream output*
 - Tx support for ST 2022-7
 - Tx senders are Narrow Gapped
- ST 2110-30 Audio
 - Up to 16 stream output*
 - 1, 2, or 4 streams per video*
 - Up to 16-channel audio per stream, 24-bit per channel, 48 kHz synchronous*
 - 1ms and 125us timing

* Format dependent

Discovery, Registration, and Control

- NMOS Tx/Rx support according to standards IS-04 v1.3 and IS-05 v1.1
- DNS-SD + mDNS
- LLDP
- In-Band and Out-of-Band
- L2, L3 with SSM
- IGMP v2, v3

Video Input and Output Digital

- 4x 12G-SDI Bi-directional BNC connectors, (ST-292/424/2081/2082)*
- HDR aware with pass-through and configuration for Colorimetry and Transfer Characteristic
- YCbCr 4:2:2
- 10-bit
- 4K/UltraHD/HD
- 2x HDMI Output Standard Type A connector
- HDMI v2.0b
- HDR aware with infoframe pass-through and configuration for Colorimetry and Transfer Characteristic
- YCbCr 4:2:2 10-bit
- RGB 4:4:4 8-bit
- 4K/UltraHD/HD

* Product Mode dependent

Audio Output Digital

- SDI embedded audio, 24-bit, 16-channel
- HDMI embedded audio, 24-bit, 8-channel

IP Clock

- PTP support compliant with PTP PTPv2, PTPv3 / IEEE 1588-2008
- SMPTE ST 2059-1 compliant

User Interface

- 1x RJ-45 1 GigE Ethernet
- Web and REST clients supported for remote network setup and configuration
- 1x USB-C port for initial Static IP configuration using AJA eMini-Setup
- Web and REST configuration is also supported in-band over media ports

Size (w x d x h)

- 5.0" x 8.09" x 1.65" (127 x 205.49 x 41.81 mm)

Weight

- 1.92 lbs (.87 kg)

Power

- Enclosure: 10-16VDC regulated, 4-pin mini-XLR, 16W typical 3G-SDI, 21W typical 12G-SDI, 25W max
- AC Adapter included: 100-240VAC, 50/60 Hz, universal input, 60W

Environment

- Safe Operating Temperature: 0 to 40 C (32 to 104 F)
- Safe Storage Temperature (Power OFF): -40 to 60 C (-40 to 140 F)
- Operating Relative Humidity: 10-90% noncondensing
- Operating Altitude: <3,000 meters (<10,000 feet)

Appendix B – Safety and Compliance

Federal Communications Commission (FCC) Compliance Notices

Class A Interference Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15, Subpart B of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution

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, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Canadian ICES Statement

Canadian Department of Communications Radio Interference Regulations

This digital apparatus does not exceed the Class A limits for radio-noise emissions from a digital apparatus as set out in the Radio Interference Regulations of the Canadian Department of Communications. This Class A digital apparatus complies with Canadian ICES-003.

Règlement sur le brouillage radioélectrique du ministère des Communications

Cet appareil numérique respecte les limites de bruits radioélectriques visant les appareils numériques de classe A prescrites dans le Règlement sur le brouillage radioélectrique du ministère des Communications du Canada. Cet appareil numérique de la Classe A est conforme à la norme NMB-003 du Canada.

European Union, European Free Trade Association (EFTA) and United Kingdom Regulatory Compliance

This equipment may be operated in the countries that comprise the member countries of the European Union and the European Free Trade Association. These countries, listed in the following paragraph, are referred to as The European Community throughout this document:

AUSTRIA, BELGIUM, BULGARIA, CYPRUS, CZECH REPUBLIC, DENMARK, ESTONIA, FINLAND, FRANCE, GERMANY, GREECE, HUNGARY, ICELAND, IRELAND, ITALY, LATVIA, LICHTENSTEIN, LITHUANIA, LUXEMBOURG, MALTA, NETHERLANDS, NORWAY, POLAND, PORTUGAL, ROMANIA, SLOVAKIA, SLOVENIA, SPAIN, SWEDEN, SWITZERLAND, UNITED KINGDOM

Declaration of Conformity

Marking by these symbols indicates compliance with the Essential Requirements of the EMC Directive of the European Union 2014/30/EU.



This equipment meets the following conformance standards:

Safety

IEC 62368-1: 2014 + A11 (T-Mark License),
EN 62368-1: 2014 (CB Scheme Report/Certificate)

Emissions

CISPR 32: 2015 + AMD1: 2019, EN 55032: 2015 + A11: 2020,
EN 61000-3-2: 2019,
EN 61000-3-3: 2013 + A2: 2021 + AC: 2022

Immunity

CISPR 35: 2016, EN 55035: 2017 + A11: 2020,
EN 61000-4-2: 2009,
EN 61000-4-3: 2006 + A1: 2008 + A2: 2010,
EN 61000-4-4: 2012,
EN 61000-4-5: 2014 + A1: 2017,
EN 61000-4-6: 2014, EN 61000-4-8: 2010, EN 61000-4-11: 2020

The product is also licensed, as required, for additional country specific standards for the International Marketplace. Additional issued licenses available upon request.



Warning! This is a Class A product. In a domestic environment, this product may cause radio interference, in which case, the user may be required to take appropriate measures.

Achtung! Dieses ist ein Gerät der Funkstörgrenzwertklasse A. In Wohnbereichen können bei Betrieb dieses Gerätes Rundfunkstörungen auftreten, in welchen Fällen der Benutzer für entsprechende Gegenmaßnahmen verantwortlich ist.

Attention! Ceci est un produit de Classe A. Dans un environnement domestique, ce produit risque de créer des interférences radioélectriques, il appartiendra alors à l'utilisateur de prendre les mesures spécifiques appropriées.

Recycling Notice



This symbol on the product or its packaging indicates that this product must not be disposed of with your other household waste. Instead, it is your responsibility to dispose of your waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste for recycling, please contact your local authority, or where you purchased your product.

Korea KCC Compliance Statement

사 용 자 안 내 문
이 기기는 업무용 환경에서 사용할 목적으로 적합성평가를 받은 기기로서 가정용 환경에서 사용하는 경우 전파간섭의 우려가 있습니다.

Taiwan Compliance Statement

警告: 為避免電磁干擾, 本產品不應安裝 或使用於住宅環境。

This is a Class A product based on the standard of the Bureau of Standards, Metrology and Inspection (BSMI) CNS 15936: 2016, Class A. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Taiwan RoHS Compliance Statement

設備名稱:網路 IP 視訊轉換器; 型號 (型式) : IP25-R						
Equipment name			Type designation(Type)			
單元 Unit	限用物質及其化學符號					
	Restricted substances and its chemical symbols					
	鉛Lead (Pb)	汞Mercury (Hg)	鎘Cadmium (Cd)	六價鉻 Hexavalent chromium (Cr ⁺⁶)	多溴聯苯 Polybrominated biphenyls (PBB)	多溴二苯醚 Polybrominated diphenyl ethers (PBDE)
電路板 PCB	○	○	○	○	○	○
外殼 Enclosure	○	○	○	○	○	○
風扇 Fan	-	○	○	○	○	○
連接器 Connector	-	○	○	○	○	○
備考1. “超出0.1 wt %” 及 “超出0.01 wt %” 係指限用物質之百分比含量超出百分比含量基準值。						
Note 1 : “Exceeding 0.1 wt %” and “exceeding 0.01 wt %” indicate that the percentage content of the restricted substance exceeds the reference percentage value of presence condition.						
備考2. “○” 係指該項限用物質之百分比含量未超出百分比含量基準值。						
Note 2 : “○” indicates that the percentage content of the restricted substance does not exceed the percentage of reference value of presence.						
備考3. “-” 係指該項限用物質為排除項目。						
Note 3 : The “-” indicates that the restricted substance corresponds to the exemption.						

Japan Compliance Statement

この装置は、クラスA情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

VCCI-A

This is a Class A product based on the standard of the VCCI Council (VCCI 32: 2016). If this equipment is used in a domestic environment, radio interference may occur, in which case, the user may be required to take corrective actions.

Translated Warning and Caution Messages

The following caution statements, warning conventions, and warning messages apply to this product and manual.



Warning Symbol



Caution Symbol

Before Operation Please Read These Instructions



Warning! Read and follow all warning notices and instructions marked on the product or included in the documentation.

Avertissement! Lisez et conformez-vous à tous les avis et instructions d'avertissement indiqués sur le produit ou dans la documentation.

Warnung! Lesen und befolgen Sie die Warnhinweise und Anweisungen, die auf dem Produkt angebracht oder in der Dokumentation enthalten sind.

¡Advertencia! Lea y siga todas las instrucciones y advertencias marcadas en el producto o incluidas en la documentación.

Aviso! Leia e siga todos os avisos e instruções assinalados no produto ou incluídos na documentação.

Avviso! Leggere e seguire tutti gli avvisi e le istruzioni presenti sul prodotto o inclusi nella documentazione.



Warning! Do not use this device near water and clean only with a dry cloth.

Avertissement! N'utilisez pas cet appareil près de l'eau et nettoyez-le seulement avec un tissu sec.

Warnung! Das Gerät nicht in der Nähe von Wasser verwenden und nur mit einem trockenen Tuch säubern.

¡Advertencia! No utilice este dispositivo cerca del agua y límpielo solamente con un paño seco.

Aviso! Não utilize este dispositivo perto da água e limpe-o somente com um pano seco.

Avviso! Non utilizzare questo dispositivo vicino all'acqua e pulirlo soltanto con un panno asciutto.



Warning! Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.

Avertissement! Ne bloquez aucune ouverture de ventilation. Suivez les instructions du fabricant lors de l'installation.

Warnung! Die Lüftungsöffnungen dürfen nicht blockiert werden. Nur gemäß den Anweisungen des Herstellers installieren.

¡Advertencia! No bloquee ninguna de las aberturas de la ventilación. Instale de acuerdo con las instrucciones del fabricante.

Aviso! Não obstrua nenhuma das aberturas de ventilação. Instale de acordo com as instruções do fabricante.

Avviso! Non ostruire le aperture di ventilazione. Installare in conformità con le istruzioni del fornitore.



Warning! Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.

Avertissement! N'installez pas l'appareil près d'une source de chaleur telle que des radiateurs, des bouches d'air de chauffage, des fourneaux ou d'autres appareils (amplificateurs compris) qui produisent de la chaleur.

Warnung! Nicht in der Nähe von Wärmequellen wie Heizkörpern, Heizregistern, Öfen oder anderen Wärme erzeugenden Geräten (einschließlich Verstärkern) aufstellen.

¡Advertencia! No instale cerca de fuentes de calor tales como radiadores, registros de calor, estufas u otros aparatos (incluidos amplificadores) que generan calor.

Aviso! Não instale perto de nenhuma fonte de calor tal como radiadores, saídas de calor, fogões ou outros aparelhos (incluindo amplificadores) que produzam calor.

Avviso! Non installare vicino a fonti di calore come termosifoni, diffusori di aria calda, stufe o altri apparecchi (amplificatori compresi) che emettono calore.



Warning! Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.

Avertissement! La sécurité de la prise polarisée ou de la prise de type mise à la terre ne doit en aucun cas être empêchée de fonctionner. Une prise polarisée a deux broches, l'une étant plus large que l'autre. Une prise de type mise à la terre a deux broches et une troisième broche pour la mise à la terre. La broche large ou la troisième broche sont fournies pour votre sécurité. Si la prise fournie ne s'insère pas dans votre prise femelle, consultez un électricien pour le remplacement de la prise femelle obsolète.

Warnung! Der Sicherheitszweck des gepolten bzw. Schukosteckers ist zu berücksichtigen. Ein gepolter Stecker verfügt über zwei Pole, von denen einer breiter als der andere ist. Ein Schukostecker verfügt neben den zwei Polen noch über einen dritten Pol zur Erdung. Der breite Pol bzw. der Erdungspol dienen der Sicherheit. Wenn der zur Verfügung gestellte Stecker nicht in Ihren Anschluss passt, konsultieren Sie einen Elektriker, um den veralteten Anschluss zu ersetzen.

¡Advertencia! No eche por tierra la finalidad del tipo de enchufe polarizado con conexión a tierra. Un enchufe polarizado tiene dos espigas, una más ancha que la otra. Un enchufe con conexión a tierra tiene dos espigas iguales y una tercera espiga que sirve para la conexión a tierra. La espiga ancha, o la tercera espiga, sirven para su seguridad. Si el enchufe suministrado no encaja en el tomacorriente, consulte con un electricista para reemplazar el tomacorriente obsoleto.

Aviso! Não anule a finalidade da segurança da ficha polarizada ou do tipo ligação terra. Uma ficha polarizada tem duas lâminas sendo uma mais larga do que a outra. Uma ficha do tipo de ligação à terra tem duas lâminas e um terceiro terminal de ligação à terra. A lâmina larga ou o terceiro terminal são fornecidos para sua segurança. Se a ficha fornecida não couber na sua tomada, consulte um electricista para a substituição da tomada obsoleta.

Avviso! Non compromettere la sicurezza della spina polarizzata o con messa a terra. Una spina polarizzata ha due spinotti, di cui uno più largo. Una spina con messa a terra ha due spinotti e un terzo polo per la messa a terra. Lo spinotto largo o il terzo polo sono forniti per motivi di sicurezza. Se la spina fornita non si inserisce nella presa di corrente, contattare un elettricista per la sostituzione della presa obsoleta.



Warning! Since the Mains plug is used as the disconnection for the device, it must remain readily accessible and operable.

Avertissement! Puisque la prise principale est utilisée pour débrancher l'appareil, elle doit rester aisément accessible et fonctionnelle.

Warnung! Da der Netzstecker als Trennvorrichtung dient, muss er stets zugänglich und funktionsfähig sein.

¡Advertencia! Puesto que el enchufe de la red eléctrica se utiliza como dispositivo de desconexión, debe seguir siendo fácilmente accesible y operable.

Aviso! Dado que a ficha principal é utilizada como a desconexão para o dispositivo, esta deve manter-se prontamente acessível e funcional.

Avviso! Poiché il cavo di alimentazione viene usato come dispositivo di sconnessione, deve rimanere prontamente accessibile e operabile.



Warning! Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the device.

Avertissement! Protégez le cordon d'alimentation pour que l'on ne marche pas dessus ou qu'on le pince, en particulier au niveau des prises mâles, des réceptacles de convenance, et à l'endroit où il sort de l'appareil.

Warnung! Vermeiden Sie, dass auf das Netzkabel getreten oder das Kabel geknickt wird, insbesondere an den Steckern, den Steckdosen und am Kabelausgang am Gerät.

¡Advertencia! Proteja el cable de corriente para que no se le pise ni apriete, en especial cerca del enchufe, los receptáculos de conveniencia y el punto del que salen del equipo.

Aviso! Proteja o cabo de alimentação de ser pisado ou de ser comprimido particularmente nas fichas, em tomadas de parede de conveniência e no ponto de onde sai do dispositivo.

Avviso! Proteggere il cavo di alimentazione in modo che nessuno ci cammini sopra e che non venga schiacciato soprattutto in corrispondenza delle spine e del punto in cui esce dal dispositivo.



Warning! Unplug this device during lightning storms or when unused for long periods of time.

Avertissement! Débranchez cet appareil pendant les orages avec éclairs ou s'il est inutilisé pendant de longues périodes.

Warnung! Das Gerät ist bei Gewitterstürmen oder wenn es über lange Zeiträume ungenutzt bleibt vom Netz zu trennen.

¡Advertencia! Desenchufe este dispositivo durante tormentas eléctricas o cuando no se lo utilice por largos periodos del tiempo.

Aviso! Desconecte este dispositivo da tomada durante trovoadas ou quando não é utilizado durante longos períodos de tempo.

Avviso! Utilizzare soltanto i collegamenti e gli accessori specificati e/o venduti dal produttore, quali il treppiedi e l'esoscheletro.



Warning! Refer all servicing to qualified service personnel. Servicing is required when the device has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the device, the device has been exposed to rain or moisture, does not operate normally, or has been dropped.

Avertissement! Référez-vous au personnel de service qualifié pour tout entretien. L'entretien est exigé quand l'appareil a été endommagé de quelque manière que ce soit, par exemple lorsque le cordon d'alimentation ou la prise sont endommagés, que du liquide a été versé ou des objets sont tombés dans l'appareil, que l'appareil a été exposé à la pluie ou à l'humidité, ne fonctionne pas normalement ou est tombé.

Warnung! Das Gerät sollte nur von qualifizierten Fachkräften gewartet werden. Eine Wartung ist fällig, wenn das Gerät in irgendeiner Weise beschädigt wurde, wie bei beschädigtem Netzkabel oder Netzstecker, falls Flüssigkeiten oder Objekte in das Gerät gelangen, das Gerät Regen oder Feuchtigkeit ausgesetzt wurde, nicht ordnungsgemäß funktioniert oder fallen gelassen wurde.

¡Advertencia! Consulte al personal calificado por cuestiones de reparación. El servicio de reparación se requiere cuando el dispositivo ha recibido cualquier tipo de daño, por ejemplo cable o espigas dañadas, se ha derramado líquido o se han caído objetos dentro del dispositivo, el dispositivo ha sido expuesto a la lluvia o humedad, o no funciona de modo normal, o se ha caído.

Aviso! Remeta todos os serviços de manutenção para o pessoal de assistência qualificado. A prestação de serviços de manutenção é exigida quando o dispositivo foi danificado mediante qualquer forma, como um cabo de alimentação ou ficha que se encontra danificado/a, quando foi derramado líquido ou caíram objectos sobre o dispositivo, quando o dispositivo foi exposto à chuva ou à humidade, quando não funciona normalmente ou quando foi deixado cair.

Avviso! Fare riferimento al personale qualificato per tutti gli interventi di assistenza. L'assistenza è necessaria quando il dispositivo è stato danneggiato in qualche modo, ad esempio se il cavo di alimentazione o la spina sono danneggiati, è stato rovesciato del liquido è stato rovesciato o qualche oggetto è caduto nel dispositivo, il dispositivo è stato esposto a pioggia o umidità, non funziona correttamente o è caduto.



Warning! Do not open the chassis. There are no user-serviceable parts inside. Opening the chassis will void the warranty unless performed by an AJA service center or licensed facility.

Avertissement! Ne pas ouvrir le châssis. Aucun élément à l'intérieur du châssis ne peut être réparé par l'utilisateur. La garantie sera annulée si le châssis est ouvert par toute autre personne qu'un technicien d'un centre de service ou d'un établissement agréé AJA.

Warnung! Öffnen Sie das Gehäuse nicht. Keine der Geräteteile können vom Benutzer gewartet werden. Durch das Öffnen des Gehäuses wird die Garantie hinfällig, es sei denn, solche Wartungsarbeiten werden in einem AJA-Service-Center oder einem lizenzierten Betrieb vorgenommen.

¡Advertencia! No abra el chasis. El interior no contiene piezas reparables por el usuario. El abrir el chasis anulará la garantía a menos que se lo haga en un centro de servicio AJA o en un local autorizado.

Advertência! Não abra o chassi. Não há internamente nenhuma peça que permita manutenção pelo usuário. Abrir o chassi anula a garantia, a menos que a abertura seja realizada por uma central de serviços da AJA ou por um local autorizado.

Avvertenza! Non aprire lo chassis. All'interno non ci sono parti riparabili dall'utente. L'apertura dello chassis invaliderà la garanzia se non viene effettuata da un centro ufficiale o autorizzato AJA.



Warning! Disconnect the external AC power supply line cord(s) from the mains power before moving the unit.

Avertissement! Retirez le ou les cordons d'alimentation en CA de la source d'alimentation principale lorsque vous déplacez l'appareil.

Warnung! Trennen Sie die Wechselstrom-Versorgungskabel vom Netzstrom, bevor Sie das Gerät verschieben.

¡Advertencia! Cuando mueva la unidad desenchufe de la red eléctrica el/los cable(s) de la fuente de alimentación CA tipo brick.

Advertência! Remova os cabos CA de alimentação brick da rede elétrica ao mover a unidade.

Avvertenza! Scollegare il cavo dell'alimentatore quando si sposta l'unità.



Warning! Only use attachments and accessories specified and/or sold by the manufacturer.

Avertissement! Utilisez seulement les attaches et accessoires spécifiés et/ou vendus par le fabricant.

Warnung! Verwenden Sie nur Zusatzgeräte und Zubehör angegeben und / oder verkauft wurde durch den Hersteller.

¡Advertencia! Utilice solamente los accesorios y conexiones especificados y/o vendidos por el fabricante.

Aviso! Utilize apenas equipamentos/acessórios especificados e/ou vendidos pelo fabricante.

Avviso! Utilizzare soltanto i collegamenti e gli accessori specificati e/o venduti dal produttore.

5-Year Warranty and Liability Information

Limited Warranty on Hardware

AJA Video Systems, Inc. (AJA Video) warrants that the hardware product, not including software components, will be free from defects in materials and workmanship for a period of five years from the date of purchase. AJA Video provides a separate software warranty as part of the license agreement applicable to software components.

If the Customer brings a valid claim under this limited warranty for a hardware product (hereafter, a “product”) during the applicable warranty period, AJA Video will, at its sole option and as the Customer’s sole remedy for breach of the above warranty, provide one of the following remedies:

- Repair or facilitate the repair the product within a reasonable period of time, free of charge for parts and labor.
- Replace the product with a direct replacement or with a product that performs substantially the same function as the original product.
- Issue a refund of the original purchase price less depreciation to be determined based on the age of the product at the time remedy is sought under this limited warranty.

To obtain service under this warranty, the Customer must notify AJA Video of the defect before expiration of the warranty period and make suitable arrangements for the performance of service by contacting AJA Video support through the channels set forth on the support contacts web page at <https://www.aja.com/support>.

Except as stated, the Customer shall bear all shipping, packing, insurance and other costs, excluding parts and labor, to effectuate repair. Customer shall pack and ship the defective product to a service center designated by AJA Video, with shipping charges prepaid. AJA Video shall pay to return the product to Customer, but only if to a location within the country in which the AJA Video service center is located. SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OF IMPLIED WARRANTIES OR LIMITATIONS ON APPLICABLE STATUTORY RIGHTS OF A CONSUMER, SO SOME OR ALL OF THE TERMS OF THIS PARAGRAPH MAY NOT APPLY TO YOU.

Limitation of Liability

Under no circumstances shall AJA video BE LIABLE IN ANY WAY FOR ANY LOST, CORRUPTED OR DESTROYED DATA, FOOTAGE OR WORK, OR FOR ANY OTHER INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES OR LOST PROFITS, OR FOR ANY THIRD PARTY CLAIM, IN CONNECTION WITH THE PRODUCT, WHETHER RESULTING FROM DEFECTS IN THE PRODUCT, SOFTWARE OR HARDWARE FAILURE, OR ANY OTHER CAUSE WHATSOEVER, EVEN IF AJA VIDEO HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. AJA VIDEO’S LIABILITY IN CONNECTION WITH THE PRODUCT SHALL UNDER NO CIRCUMSTANCES EXCEED THE PURCHASE PRICE PAID FOR THE PRODUCT. The foregoing limitations apply even if any remedy set forth in this LIMITED WARRANTY fails of its essential purpose. SOME JURISDICTIONS DO NOT ALLOW THE LIMITATION OF LIABILITY FOR PERSONAL INJURY, OR OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO SOME OR ALL OF THE TERMS OF THIS PARAGRAPH MAY NOT APPLY TO YOU.

Governing Law and Language; Your Rights

This limited warranty is the only warranty provided by AJA Video on the hardware product. It supersedes all prior or contemporaneous understandings regarding such subject matter. No amendment to or modification of this warranty will be binding unless in writing and signed by AJA Video. The laws of the State of California, USA will govern this warranty and any dispute arising from it. Any translation of this Agreement is intended for convenience and to meet local requirements and in the event of a dispute between the English and any non-English versions, the English version of this warranty will govern. This limited warranty gives you specific legal rights and you may have other rights that vary from jurisdiction to jurisdiction, some of which are noted above.

AJA Software License Agreement

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