Operating Instructions

PIPM-R-7-Type C

"Plura IP Module" for SFP-H-7 Series

Select the required version

UI v 1.2.2

UI v 1.4.0

Operating Instructions Web UI 1.2.2

PIPM-R-7-Type C

"Plura IP Module" for SFP-H-7 Series

SFP-317-H-7
SFP-321-H-7
SFP-324-H-7
SFP-332-H-7
SFP-347-H-7
SFP-355-H-7

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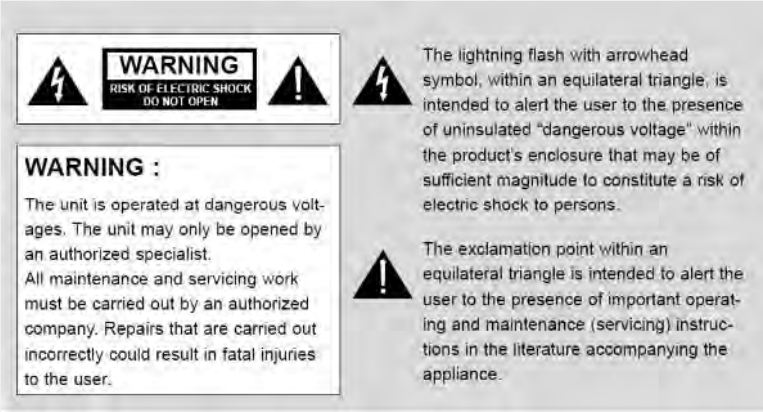
REVISION HISTORY

REVISION	DATE	CHANGES
1.00	2022-01-06	1st official release

• PRECAUTION

Before operating this unit, please read this manual carefully.



WARNING:

To reduce the risk of any electric shock, please do not remove the back cover. No user serviceable parts inside. Refer any service matters to qualified service personnel. To prevent fire or shock hazard, do not expose the rear of the set to rain or moisture. Do not rub, clean or hit the Active Matrix LCD with object that may scratch, mark, or damage the Active Matrix LCD permanently.

CAUTION:

Unauthorized tampering with the inside of the monitor invalidates the warranty.

The manufacturer shall not warrant for any damage caused by improper maintenance and/or repair or work by third parties.

Important safeguards for you and your new product:

Your product has been manufactured and tested with your safety in mind. However, improper use can result in potential electrical shock or fire hazards. Please read and observe the following safety points when installing and using your new product and save them for future reference.

1. ***Read Instructions***

2. ***Follow Instructions***
   All operating and use instructions should be followed.

3. ***Retain Instructions***
   The safety and operating instructions should be retained for future reference.

4. ***Notice Warnings***
   All warnings on the product and in the operating instructions should be adhered to.

5. ***Cleaning***
   Disconnect the unit from the mains before cleaning the unit. Do not use abrasive cleaners. Use a damp cloth ONLY for cleaning.

6. ***Water and Moisture***

Do not use this product near water surface.

7. ***Transporting Product***
   This product should be moved with care. Quick stops, excessive force and uneven surfaces may cause the product damages.

8. ***Accessories***
   Do not use accessories not recommended by PLURA Inc. as they may cause hazards.

9. ***Ventilation***

   Do not block any of the ventilation openings.

   Install in accordance with the manufacturer's instructions.

10. ***Power Sources***
    This product should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supply, consult your power supply company.

11. ***Power Lead Polarization***
    This product is equipped with a three-wire grounding-type cord. This is a safety feature. Do not use any other type power cord.

12. ***Power Cord Protection***
    Power-supply cords should be dressed so that they are not likely to be pulled or pinched by items placed upon or against them.

13. ***Lightning***
    For added protection for this product during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet. This will prevent possible damage to the product due to lightning and power-line surges.

14. ***Grounding the product***
    This product must be grounded properly to comply with the safety regulations in the country of use. If you are unsure of these regulations, please consult a qualified electrician.

15. ***Servicing***
    Do not attempt to service this product by yourself as opening or removing covers may expose you to dangerous voltages or other hazards. Refer all servicing to qualified service personnel.

16. ***Damage Service Required***
    Isolate this product from the mains and refer to qualified service personnel under the following conditions:

    A. *If the power-supply cord or plug is damaged.*
    B. *If the LCD front has been damaged.*
    C. *If the product does not operate correctly by following the operating instructions. Use only the user control buttons. Any improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to its normal operation.*
    D. *If the product has been dropped.*

E. If the product exhibits a distinct change in performance.

17. *Safety Check*

Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in proper operating condition and the warranty seal is provided.

18. *Mounting*

The product should be mounted on a wall as recommended in the instructions.

19. *Power*

This set operates on an AC supply; the voltage is as indicated on the label on the Manual. This appliance must be earthed at all times through the chassis as well as through the power lead.

1. *OVERVIEW*

Plura SFP-H-7 series with Type C Plura IP platform is the industry's trusted TRUE-IP 10GbE broadcast & media monitor solution, supporting uncompressed FHD based on SMPTE ST 2110, ST 2022-6Ŧ & ST 2022-7 and supports up to 1920 x 1080 resolutions and true 2K (2048 x 1080).

The flexibility and robustness of the SFP-H-7 platform is the ultimate solution for a wide range of broadcast and professional media SDI to IP transition projects. The SFP-H-7 platform is a powerful hybrid solution supporting SFP+ 10G (ST 2110, ST 2022-6Ŧ, ST 2022-7), 3G & 1.5G & HDM I 1.4 connectivity.

2. *GENERAL FEATURES*

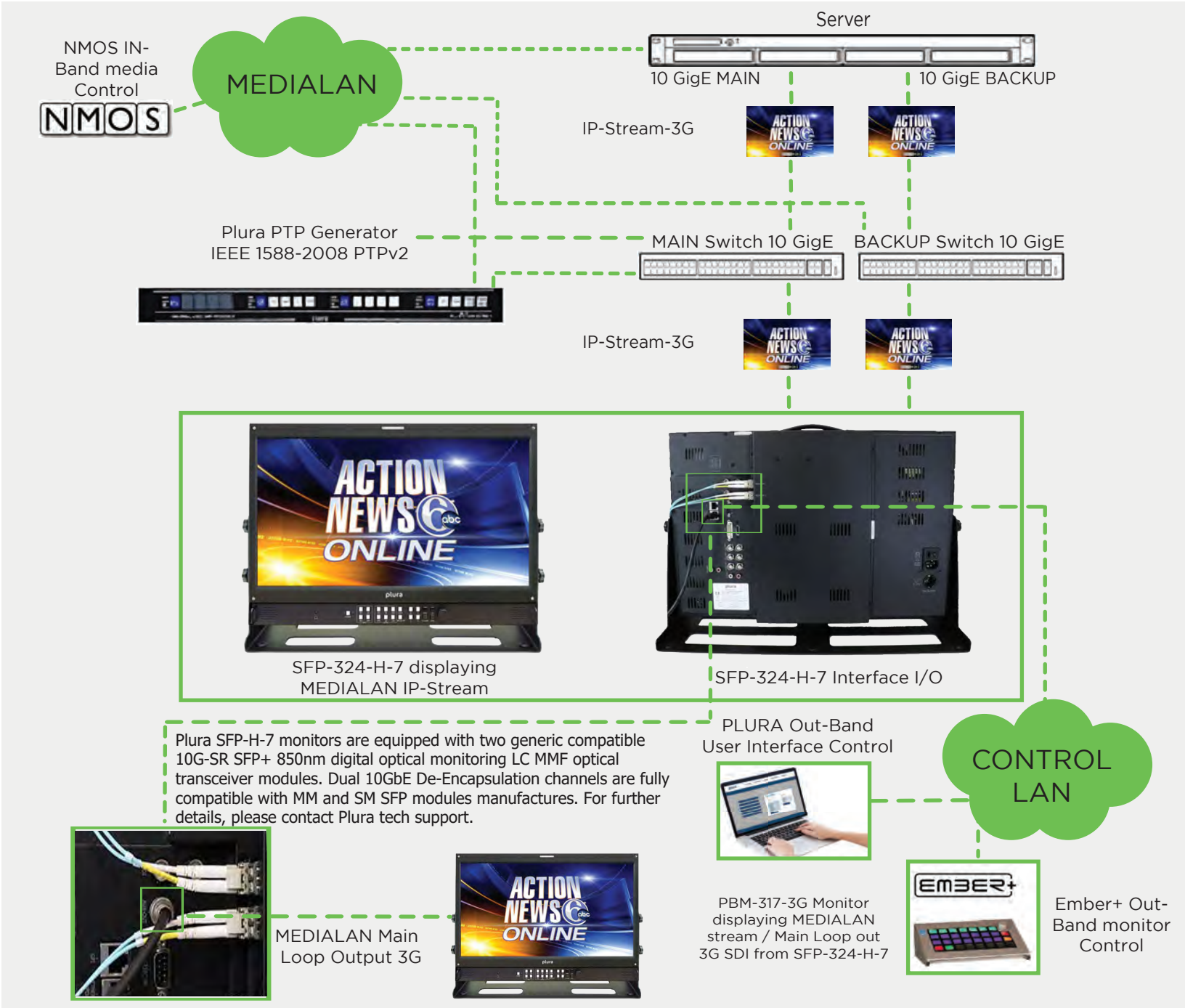
- Dual 10 GbE SFP+ interfaces as MEDIALAN1 and MEDIALAN2
- Two generic compatible 10G-SR SFP+ 850nm digital optical monitoring LC MMF optical transceiver modules included
- Dual 10GbE De-Encapsulation channels are fully compatible with many MM and SM SFP modules manufactures
- 1 x 3G/1.5G loop output for MEDIALAN1 main ST 2110 support
- 1 x 3G/1.5G Aux/2nd channel ST 2110 support
- Supports ST 2110, ST 2022-6Ŧ, ST 2022-7 & PTP/ST 2059 V2
- ST 2110-10, System architecture and synchronization: essences, RTP, SIP and PTP
- ST 2110-20, Uncompressed video transport, Wide / Narrow types
- ST 2110-21, Traffic shaping and network delivery timing
- ST 2110-30, Audio transport profile level C, 16CH, 48Khz sample rate, 1ms/.125us
- ST 2110-40, Transport of ancillary data
- ST 2022-7 seamless protection switching providing data loss protection
- SMPTE ST 2022-6Ŧ supported with optional license
- NMOS, JT-NM Interoperability support
- Management Interface support (NMOS & REST API In-band)
- Plura web UI / Ember+ Out-band control support
- NMOS IS-04 discovery and registration
- NMOS IS-05 device connection management
- JT-NM NMOS certification support
- JSON snippet for NMOS control support
- Ember+ monitor control support with extensive Ember+ tree control
- Session Description Protocol "SDP" file support
- IGMP V2 & V3 support
- Supports Coaxial 3G/1.5G BNC I/O connectivity
- Supports Coaxial SFP I/O connectivity
- 2xSFP+ cage supporting 10G/3G/1.5G SDI
- 1 x HDMI 1.4 / HDCP 1.2 input port
- Supports up to 2048 x 1080 resolutions
- RGB 12 bit Digital Signal Processing
- 178 degree Viewing Angle Display
- Gamma Selectable (0.8 – 3.0)
- Color Temperature – User, VAR, Adjustable (11000K TO 3200K)
- (ICAC) – Plura Intelligent Connection for Alignment & Calibration
- Display Advanced Waveform & Vector Scope simultaneously with line select
- Various and User defined Markers Display & Safe Area
- Programmable 6 User Front Pushbutton Controls & GPI
- Closed Caption (608/708) N. American Market
- Cutting edge De-interlacing and scaling Technology
- Fast Response Time for high motion video
- Internal Monitor Display (IMD)
- Ethernet & RS232 Remote Control
- Ember+ compliant control system capabilities
- Underscan / Overscan / Normal / Zoom
- Pixel to Pixel Mode, Tally, DC operation
- False Color and Peaking Filter / Focus Assist
- Video Range test with adjustable Y & C values
- Display LTC & DIVTC time code with line select
- Embedded Audio input, Digital Audio Decoding
- Internal Pattern Generator and Wall Control System

Ŧoptional

3. *Production Workflow and I/O Connections*

1) *Production Workflow*

The SFP-H-7 provides comprehensive interoperability capabilities with wide range of third-party IP-FHD media platforms with a seamless end-to-end production workflow. It can decode multiple SMPTE 2110 & 2022-7 media streams within any broadcast and professional media SDI & IP 2110 infrastructure.



[1]optional

- **SFP-324-H-7 / Front Keypad**

Figure 1. SFP-324-H-7 Monitor

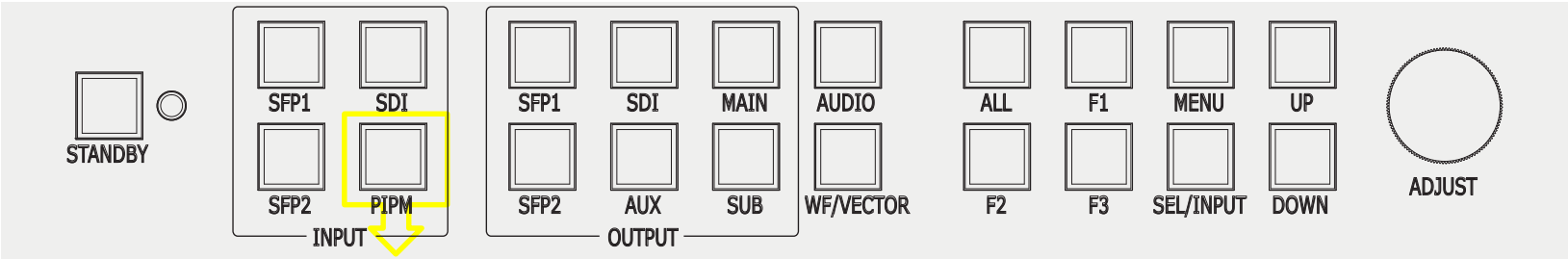


Figure 2. Front Keypad - Select and Display the PIPM-R-7 IP Stream (When PIPM-R-7 is installed inside SFP-H or SFP-H-7 unit)

▶ Select PIPM as Input channel and then select Main or SUB as Output channel.

- **Front Keypad Operations**

Key Name	Operation
STANDBY	• Power ON/OFF Button. This button is operated after being pressed about 3 seconds.
INPUT SFP1/SFP2/SDI/PIPM	• Modules Input CH selected. • Channels in the input signal, the key led light. • Select PIPM as Input channel when PIPM-R-7 is installed
OUTPUT SFP1/SFP2/SDI/AUX/ MAIN/SUB	• Modules Output CH selected.
ALL	• Modules ALL Output CH selected.
FUNCTION F1/F2/F3	• Executes functions of user selected. UNDEF, Aspect, Mono/Blue only, Audio Channel, Safety area marker, Time code, Analog Caption, Audio mute, Still image, Zoom, Flip, Gamma select, PIP func & Input, Sub win full, Sub win part
SEL/INPUT	• Activates OSD menu of input source selecting. • Changes input source by selecting. • Executes functions (by OSD help commands) in main OSD menu. • Activates child menu.
MENU	• Activates main OSD menu. • Navigates higher menu in main OSD menu. • Exits OSD menu.
Adjust	• Adjust Picture Menu(Brightness -> Contrast -> Color -> Sharpness->Phase & Tint) • Turn Right (with "UP" button is same) • Turn Left (with "DOWN" button is same)

Table 1. Front Keypad Operations

2) *I/O & Connectivity*

Figure 3. I/O & Connectivity

PIPM-R-7 I/O	Description
Ethernet Port GigE	• Control LAN out-band
Dual SFP+ 10GigE Ports	• 2x 10 GigE SFP+ cages for media LAN
SDI AUX O/P	• 1EA Serial Digital , 3Gb/s, 1.485Gb/s, 270Mb/s, BNC Jack

Table 2: SFP-H-7 (PIPM-R-7) I/O

4. *INSTALLATION OVERVIEW*

1) *Initial Setup by Web Browser*

All Plura monitors should be shipped with the latest versions of firmware/software at the time of production, but in the case where an update is available, follow the appropriate steps below, Each update is applied using the Control LAN UI. The Media LAN 2110 Control (out-band) is also accessed via the Control LAN UI. Follow the instructions below to access this interface. Chrome and Firefox browsers are recommended for control on Windows.

2) *Connecting to the Control LAN User Interface "UI"*

- Plug in the Ethernet cable to the Control LAN on the back of the monitor.
- Power on the unit and wait for the "PLEASE WAIT EMBER+ BOARD IS BOOTING" message to go away (Figure 4)

Figure 4. Ember+ Board Booting

- On your Plura monitor, press the "Menu" button.
  Select "Setup" → "Advanced" → "Network Config" to find the IP address of the Ember+ board (Figure 5).

Figure 5. Plura Monitor Network Config Menu

- On your computer, open your web browser and go to the IP address of the monitor (eg. 192.168.0.97 from the image above). You should see a landing page similar to that shown in Figure 6 below.

  Note: If the unit fails to establish a connection, add a port override to 8086 (suffix ':808 6/home' on the Control LAN IP address in the browser address line). If this connects properly, please contact Plura Support to get and install the latest web update.

  From the Control LAN UI landing page, the “Monitor Update” button is used to update Ember+ Control, Ember+/TSL License, Monitor FPGA (some models), Monitor Firmware (some models), and the Web UI itself. The “Media LAN 2110 Control (out-band)” button is used to access out-band control of the 2110 module.

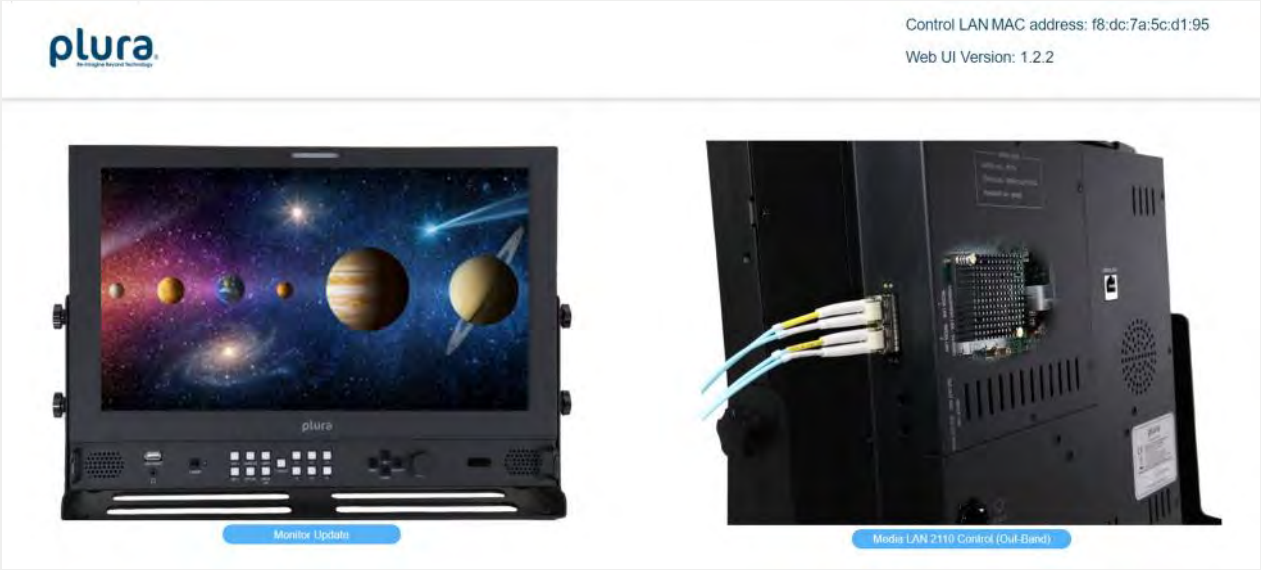


Figure 6. Plura Control LAN UI

5. *WEB CONFIGURATION & INTERFACE*

1) *Overview*

Once you have established network connectivity with the monitor, you can further configure and update the monitor and the IP 2110 module through its web interface.

2) *Ember+ Control Update*

- Download the Ember+ Update software to your computer.
- Open the Control LAN UI Monitor Update page. Refer to section 'Connecting to the Control LAN UI.

Figure 7. Monitor Update

- Click the “Ember+ Control Update” button.

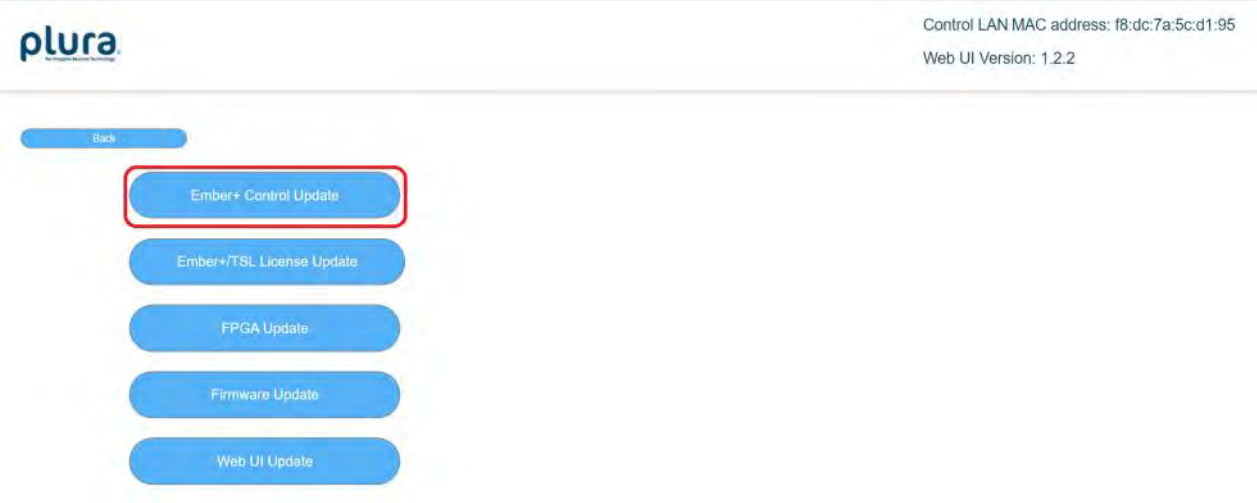


Figure 8. Ember+ Control Update

- Click inside of the white box “Select your Ember+ Control Update file”.

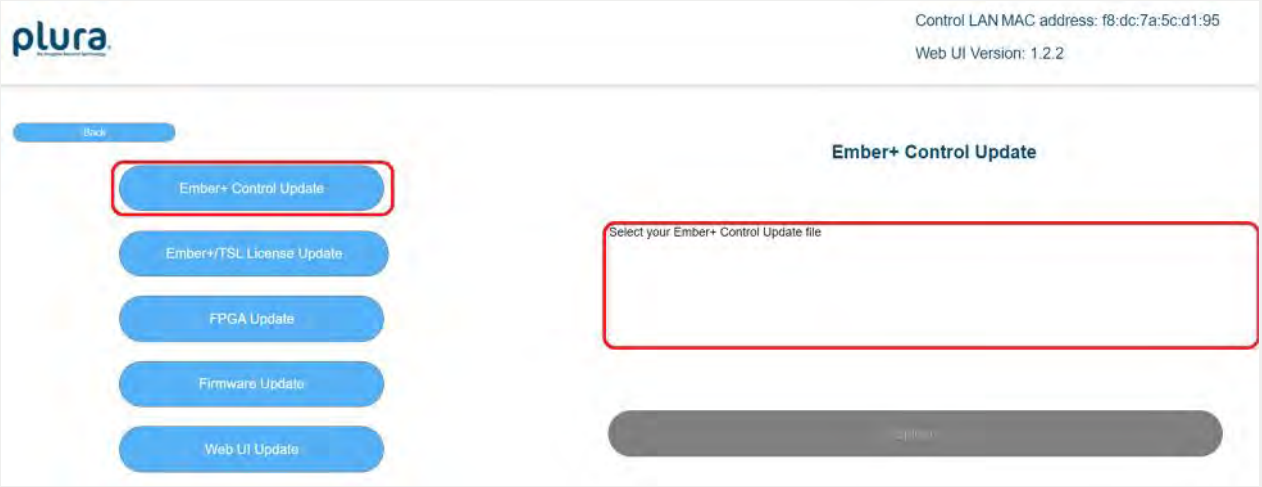


Figure 9. Click inside the box to load a file

- Navigate to the folder with the Software and select the file.
- Once the file is selected, it will show up in the white text box and the Upload button will now be clickable (no longer grayed out).
- Click the Upload button.

Figure 10. Upload the file

- Once the file is uploaded, the browser will go to a white page with a Reboot button.
- Click the reboot button then wait approximately 30 to 40 seconds before trying to reconnect to the Control LAN UI.
- The Ember+ Control Update is now complete.
- To check if the Software was updated properly on your Plura monitor, press the “Menu” button. Select “Setup” → “Advanced” → “Network Config” the F/W version is shown at the bottom (Figure 11 below, “v.126” in this case).

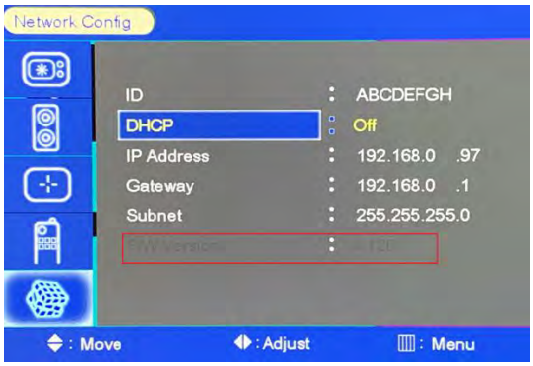


Figure 11. Network Config

3) *Monitor FPGA and Firmware*

- Download Firmware and FPGA update files to your computer.
- Open the Control LAN UI. Refer to section 'Connecting to the Control LAN UI'.
- Click on the Left Monitor labeled “Monitor Updates” to access the UI monitor update.
- Click the “FPGA Update” button.
- Click inside of the white box “Select your FPGA File”.
- Navigate to the folder with the FPGA and select all.
- Click on the “Upload” button.

Figure 12. FPGA File Update

- Once the file is uploaded, the browser will go to a white screen with a “reboot” button.
- Click reboot.
- After 30 seconds to a minute, the screen will go black and the standby light may flash to show that the unit is updating. Wait until the unit resets itself, this may take a few minutes.
- Click the “Firmware Update” button.
- Click inside of the white box “Select your Firmware File”.

- Navigate to the folder with the Firmware file and select it.
- Click on the “Upload” button.

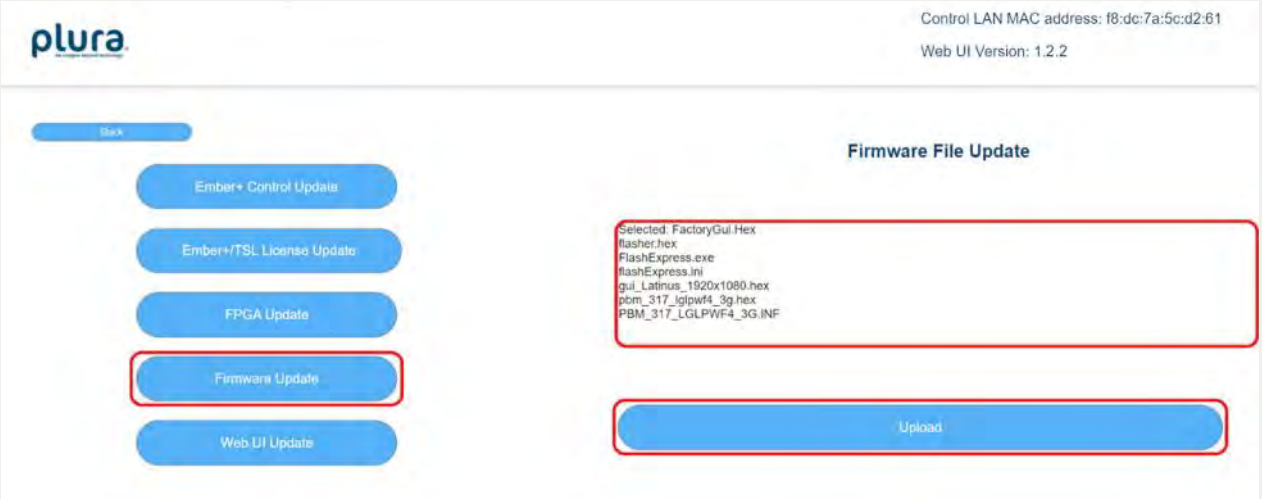


Figure 13. Firmware Update

- Once the file is uploaded, the browser will go to a white screen with a “reboot” button.
- Click reboot.
- After 30 seconds to a minute, the screen will go black and the standby light may flash to show that the unit is updating. Wait until the unit resets itself, this may take a few minutes.
- On your Plura monitor, press the “Menu” button.
  Select “Setup” → “Advanced” → “Information” to check the information page and ensure that both FPGA and Firmware have been successfully updated (Figure 14).

Figure 14. FPGA and Firmware information menu

4) *Ember+/TSL License Update*

To update the license please contact Plura Support. Have the MAC address for your monitor available prior to contacting the support team. The MAC address can be found on the UI's top right corner of the page (shown in Figure 15 below).

- Download the Ember+/TSL License Update file to your computer.
- Open the Control LAN UI Monitor Update page. Refer to section 'Connecting to the Control LAN UI'.
- Click the "Ember+/TSL License Update" button.

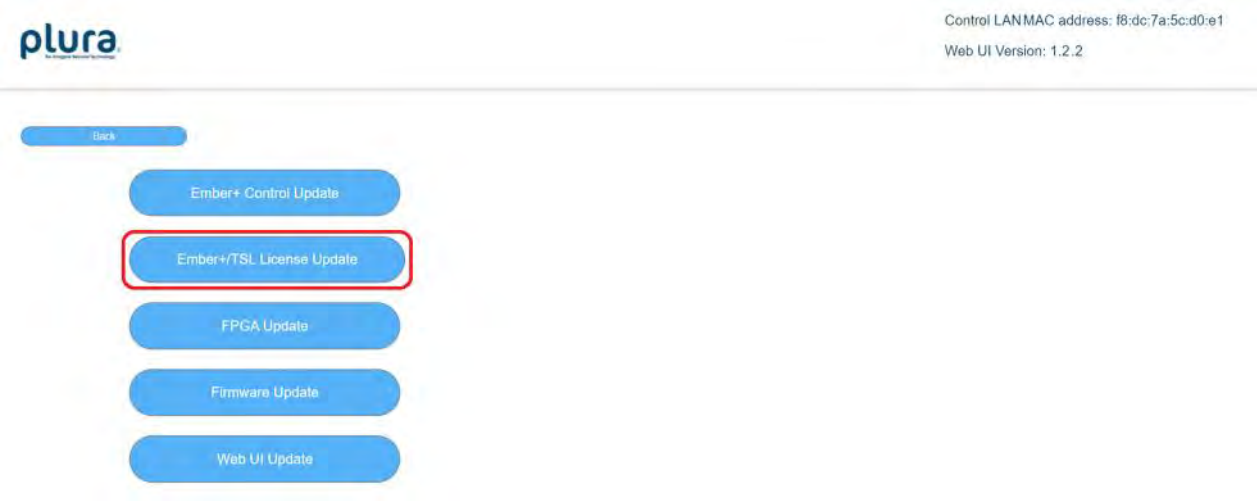


Figure 15. Ember+/TSL License Update

- Click inside of the white box "Select your Ember+/TSL License files".

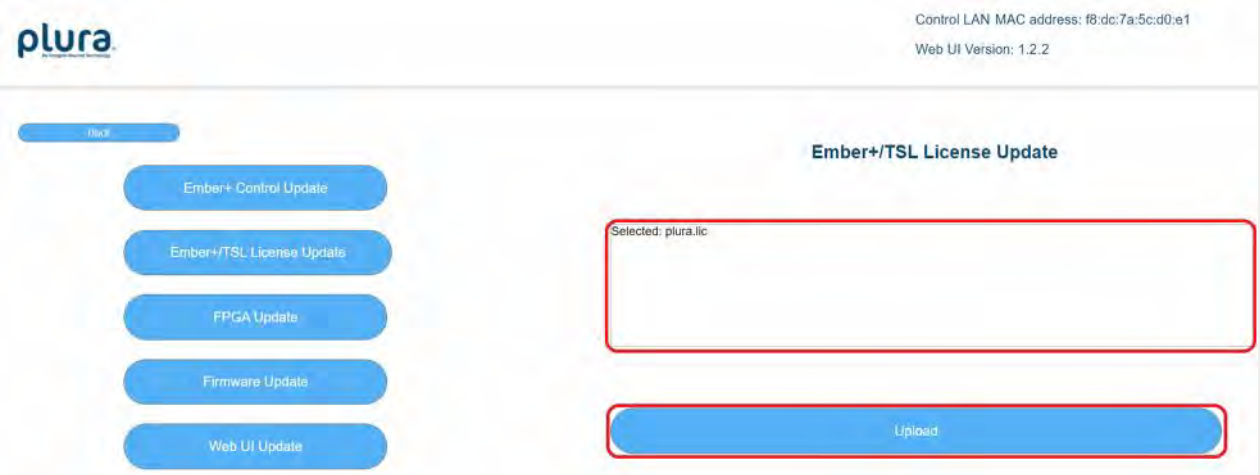


Figure 16. Ember+/TSL License File Upload

- Once the file is uploaded, the browser will go to a white page with a Reboot button.
- Click the reboot button then wait approximately 30 to 40 seconds before trying to reconnect to the Control LAN UI.
- The Ember+/TSL License Update is now complete.

5) *Web UI Update*

- Download the Web Update file to your computer
- Open the Control LAN UI Monitor Update page. Refer to section 'Connecting to the Control LAN UI'.

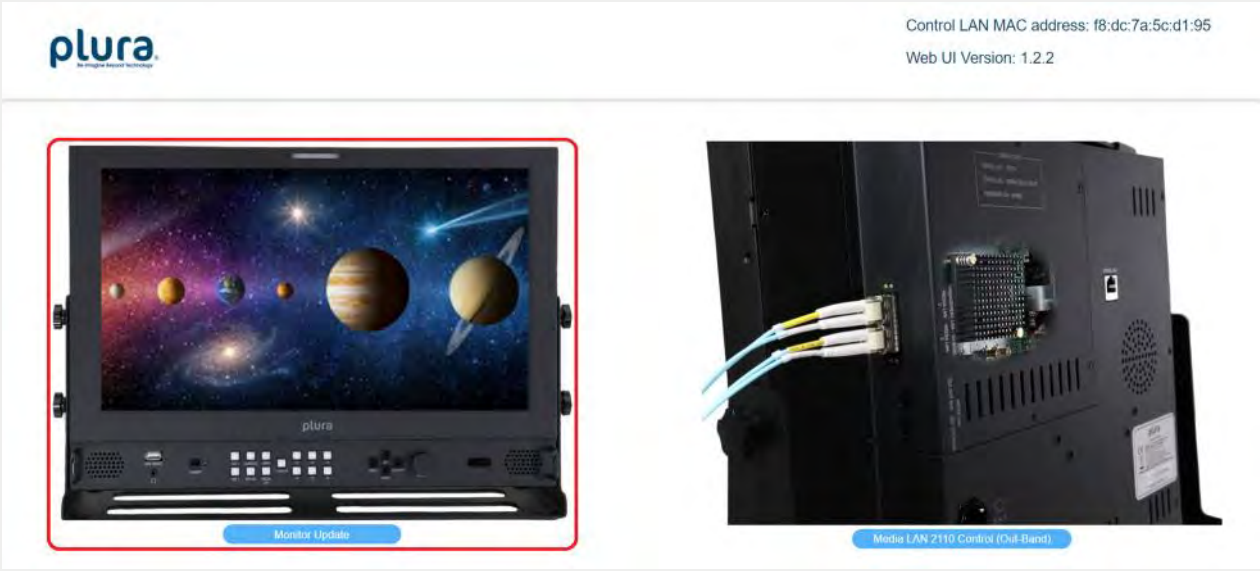


Figure 17. Plura UI

- Click on the Left Monitor labeled “Monitor Updates” to access the UI monitor update.
- Click the “Web UI Update” button.
- Click inside of the white box “Select your Web UI Update File”.

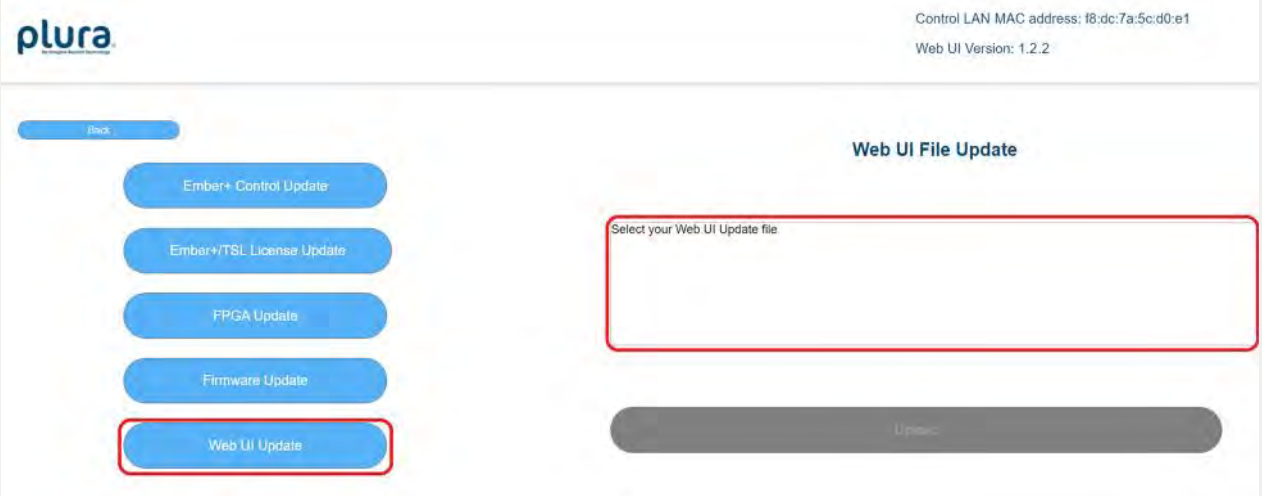


Figure 18. Web Update and File Selection

- Navigate to the folder where you saved the Web UI update file and select it.
- Once the file is selected, it will show up in the white text box and the Upload button will now be clickable (no longer grayed out).
- Click the Upload button.

Figure 19. Upload the Web UI Update File

- Once the file is uploaded, the browser will go to a white screen with a “reboot” button.
- Click reboot.
- The web UI is now upgraded to the latest version. To check the version of your UI, reconnect to the Control LAN UI. Once the UI is loaded, the version number will be located on the top right of the page (Figure 20 - it is Version 1.2.2 in this example).

Figure 20. Web UI Version Location

6. *MEDIA LAN 2110 CONTROL (out-band)*

1) *Overview*

Each SFP-H-7 Series Type C Plura monitor defaults to the PIPM input source which is set to display an internally generated 'blue screen' test signal from the 2110 module. The video format defaults to 1080i59.94

2) *Management via Control LAN UI*

- Open the Control LAN UI Media LAN 2110 Control (out-band) page. Refer to section 'Connecting to the Control LAN UI'.
- The Media LAN 2110 Control has two-tab options for out-band control: Main and Management. Figure 21 below shows the UI Main Tab.
- In the Main tab there are fields to set the Video, Audio, and the Ancillary flows' configuration. Each flow allows configuration of both its Primary and Secondary fields and has an Enable check box. Adjustable fields include the destination IP address, the destination port, and video format (for primary video only, secondary video format is always the same as the primary video format).

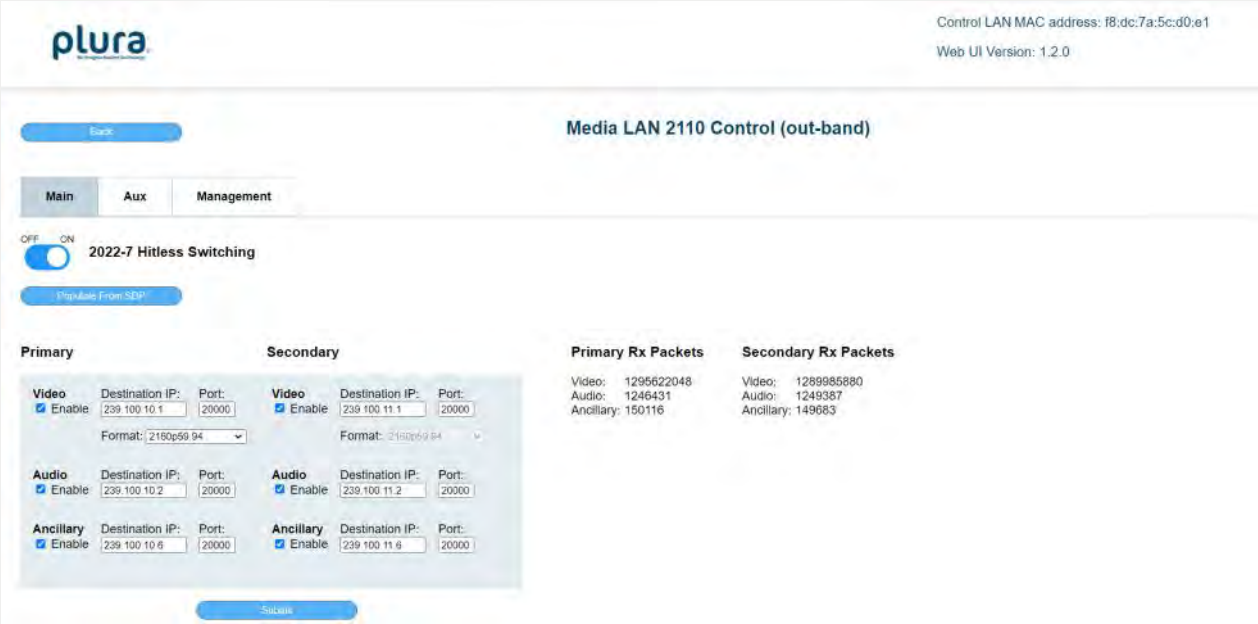


Figure 21. Main Tab

- The management tab offers both DHCP and Static IP configuration. To choose a Static IP uncheck the DHCP check box (Figure 22). Once the Static IP values are entered click on the submit button.

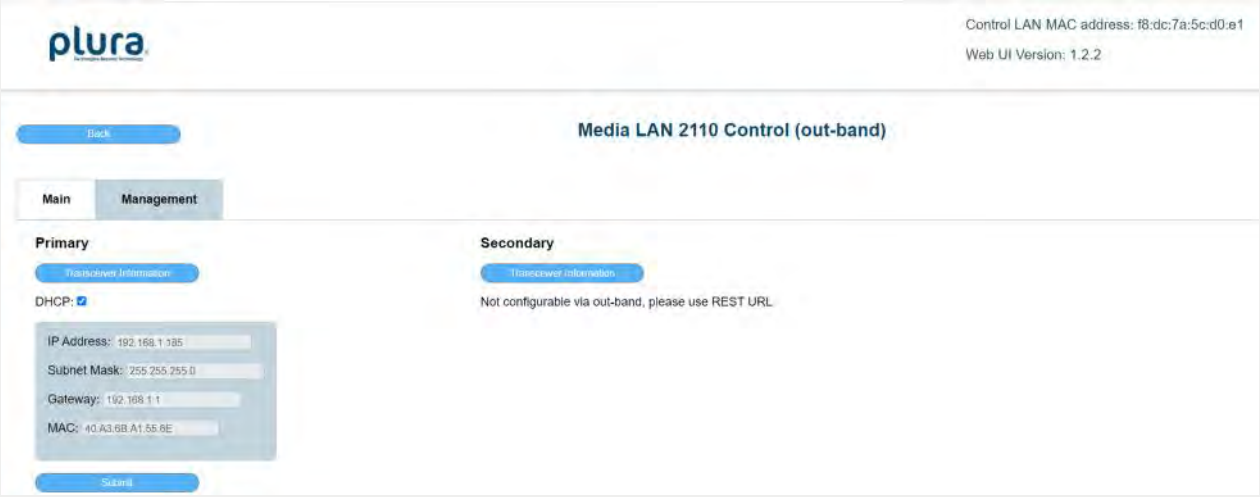


Figure 22. Management Tab

- The management tab also provides the primary and secondary transceiver information (Figures 23 & 24 below)

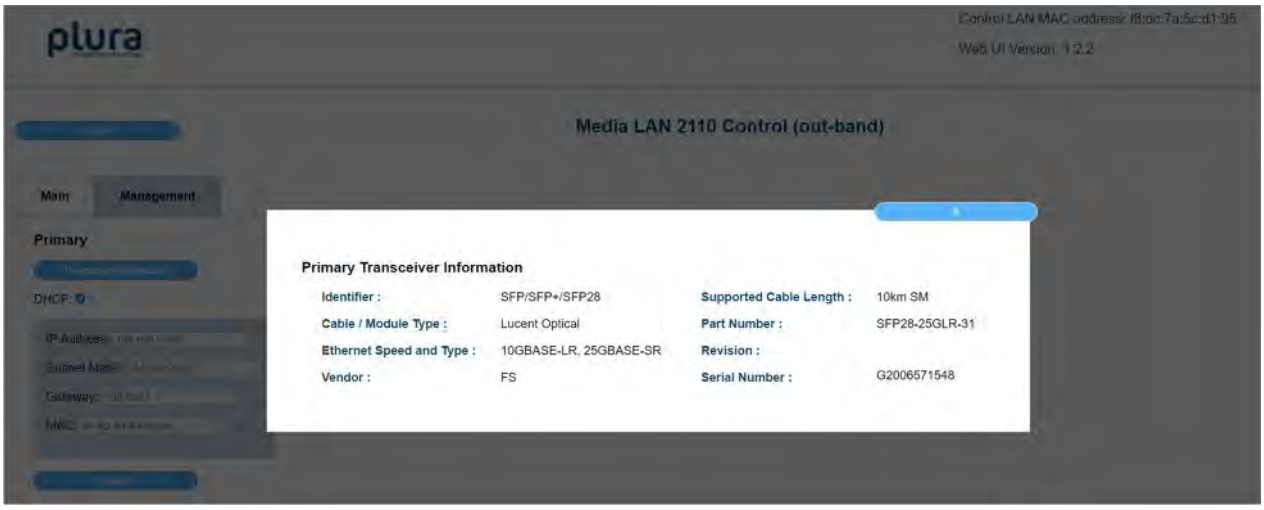


Figure 23. Primary Transceiver Information

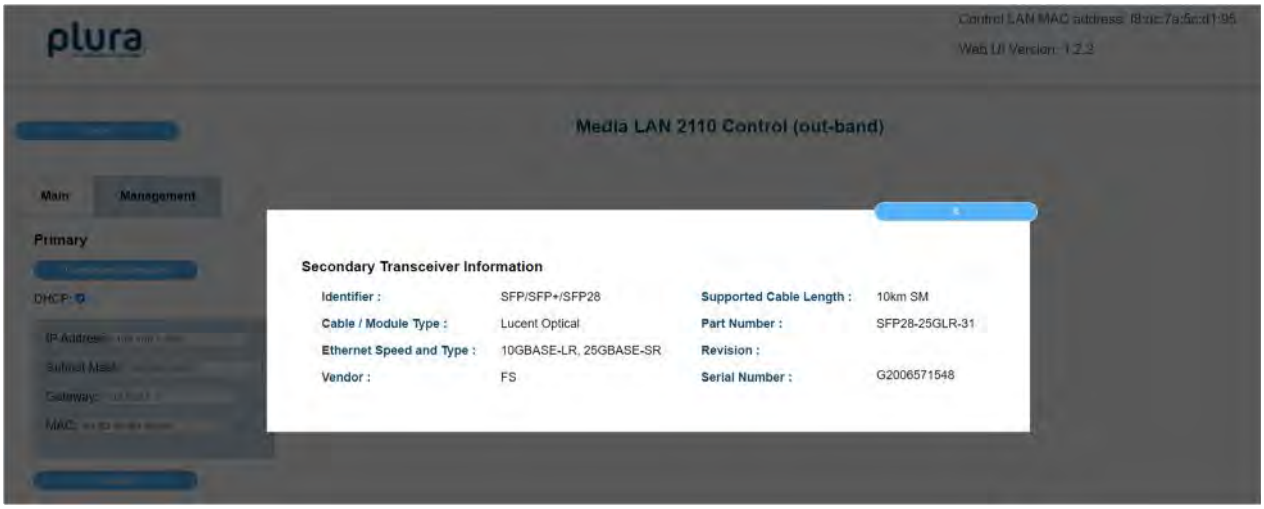


Figure 24. Secondary Transceiver Information

3) *10G/25G Switch Configuration Requirements*

- FEC must be disabled on all switch ports connected to the Plura monitor 2110 ports.
- PTP must be enabled on the switch and on all switch ports connected to the Plura monitor 2110 ports.

4) *2022-7 Hitless Switching Toggle ON - Configuring Flows for Redundancy*

- SMPTE 2022-7 redundancy is enabled when the 2022-7 Hitless Switching toggle is set to the ON position. This will enable use of the secondary flow configurations. Each channel (Main/Aux) has its own independent hitless toggle switch.
- The primary interface media flows (video/audio/ancillary) are always the main flows in a redundant pair upon start-up (enabling) of decapsulation when using 2022-7.
- The secondary interface media flows (video/audio/ancillary) are only ever used for 2022-7 hitless switching mode and cannot be used by themselves independently of the primary media flows.
- Conflicting destination IP addresses. All flows on all tabs must have unique destination IP addresses. Flows cannot share the same destination IP address as another flow. This is also true between primary and secondary and between the Main and Aux channel tabs. It does not matter if the flows are enabled or not, conflicts are not allowed.
- You must have PTP enabled in your Media LAN switch for 2022-7 to function properly.
- All flows must be synchronized and aligned (RTP sequence numbers) at encapsulation for 2022-7 hitless switching to function properly at the decap.
- The video flows for the primary and secondary must have the same video format. The content doesn't necessarily have to be identical but it usually is.
- A proper 2022-7 hitless switching configuration for a flow involves setting valid config values for both the primary and secondary for that flow. You must also enable both the primary and secondary for the flow. For example, to set up 2022-7 for the video flow on the Main channel (to monitor), you'd need to configure the primary video flow and secondary video flow on the Main tab and enable them both. The same goes for audio and ancillary.

5) *2022-7 Hitless Switching Toggle OFF - Clean Switch Mode*

- Clean Switch mode is enabled when the 2022-7 Hitless Switching toggle is set to the OFF position. Each channel (Main/Aux) has its own independent hitless toggle switch.
- All secondary flows are disabled for Clean Switch mode (no redundancy).
- Conflicting destination IP addresses. All flows on all tabs must have unique destination IP addresses. Flows cannot share the same destination IP address as another flow. This is also true between primary and secondary and between the Main and Aux channel tabs. It does not matter if the flows are enabled or not, conflicts are not allowed.
- To perform a clean switch, update the config values for each flow and hit submit. The new config values will be applied and a clean switch will occur to the new flow configurations.
- Note that it may take several seconds after submitting for the switch to occur.

6) *Importing SDP Files*

- SDP files may be used to populate the flow configurations for both primary and second ary (if enabled) flows. This is done using the “Populate From SDP” button at the top of each channels’ tab just under the 2022-7 Hitless Switching toggle (figure 25).

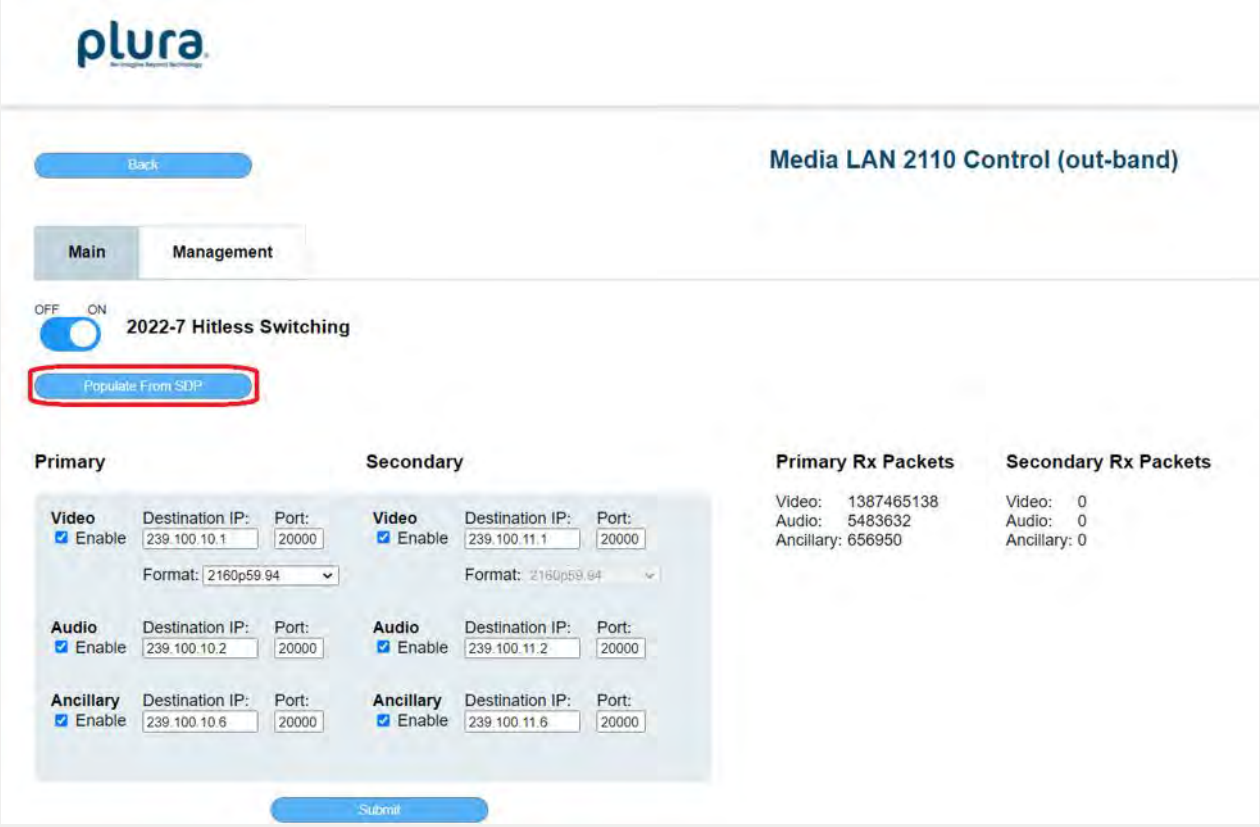


Figure 25. Main Populate From SDP Button

- Clicking the “Populate From SDP” button brings up the SDP URL import window (figure 26).

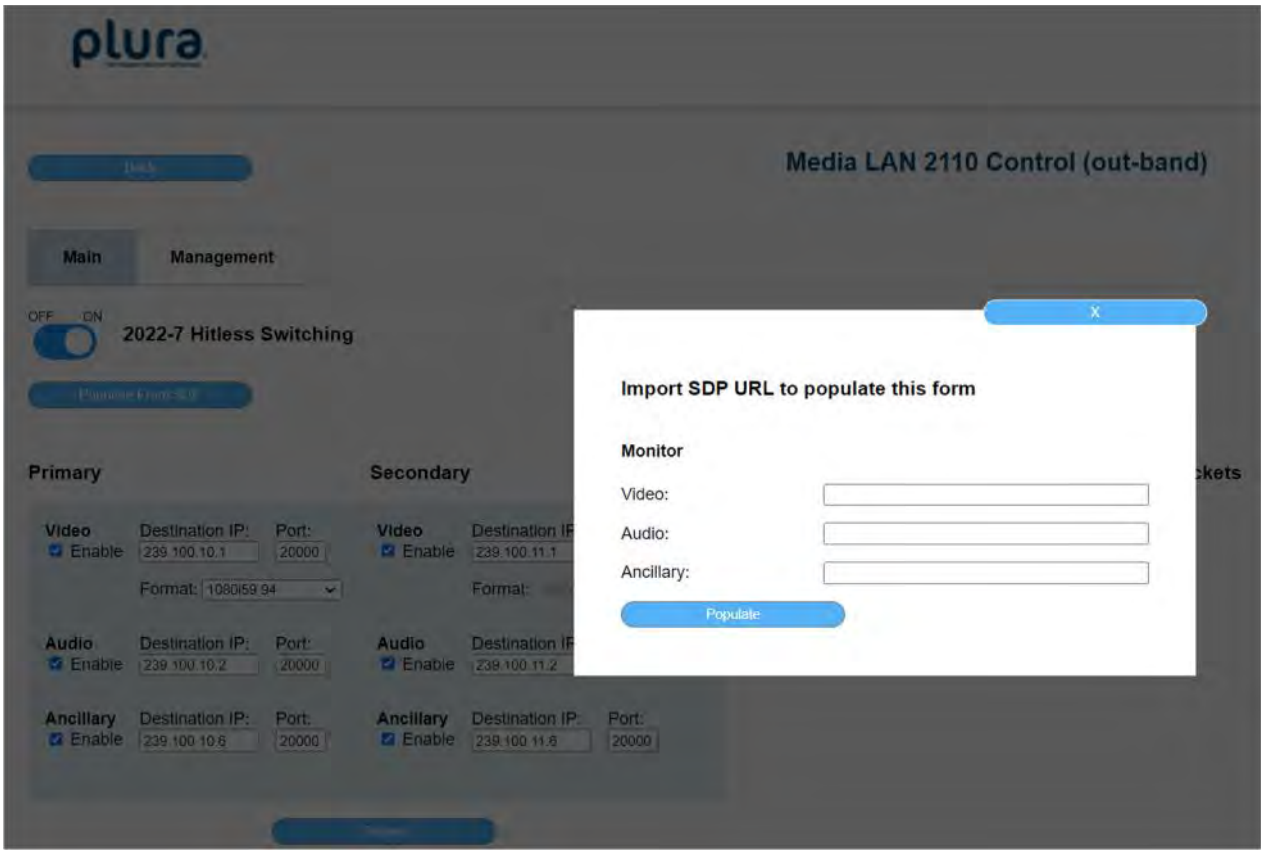


Figure 26. Import SDP URL

- Enter valid SDP URLs for each desired flow and click the populate button (figure 27).

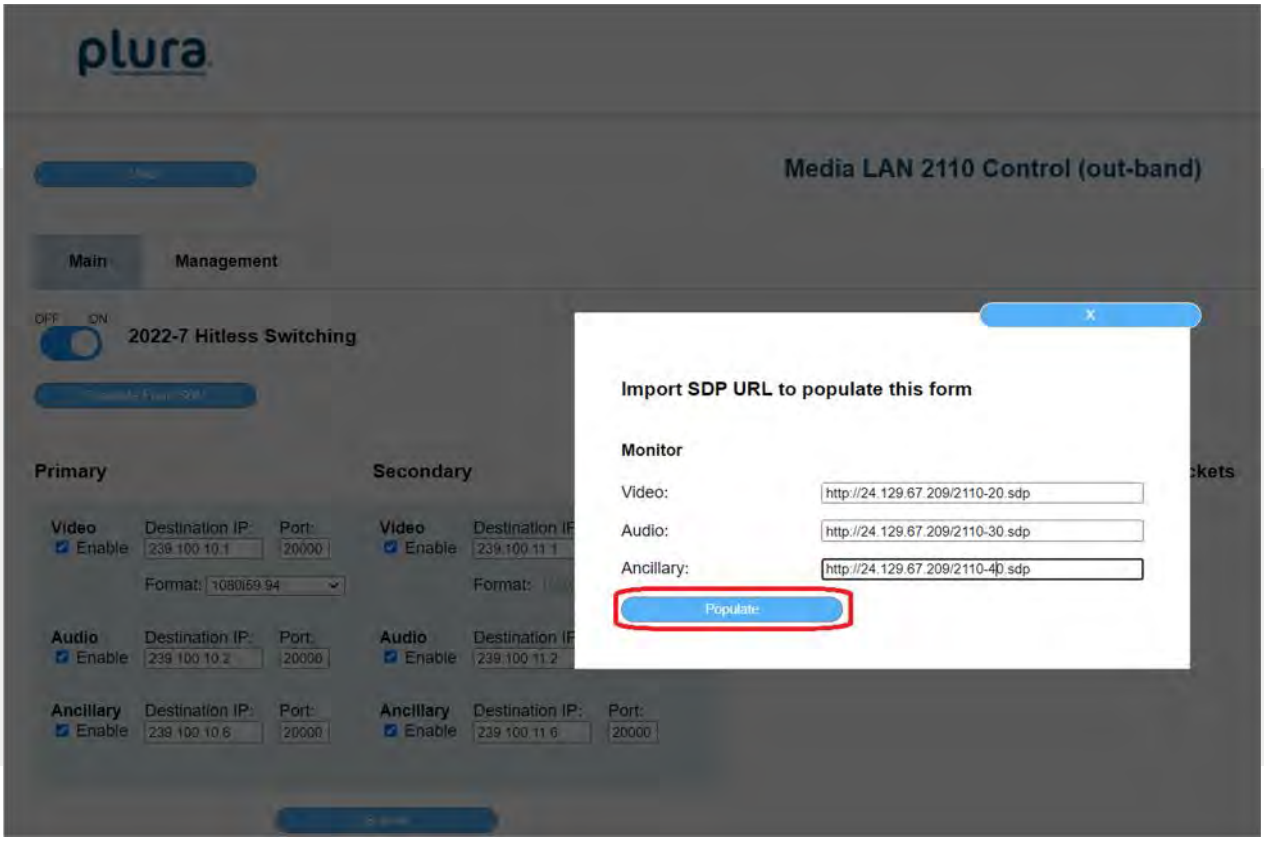


Figure 27. Example of SDP URLs

- If the SDP files can be fetched, they will be parsed and if valid each flow configuration will be populated with the destination IP address, port, and video format (for video flows).
- You may review and/or edit the values then hit submit to apply the new values (figure 28).

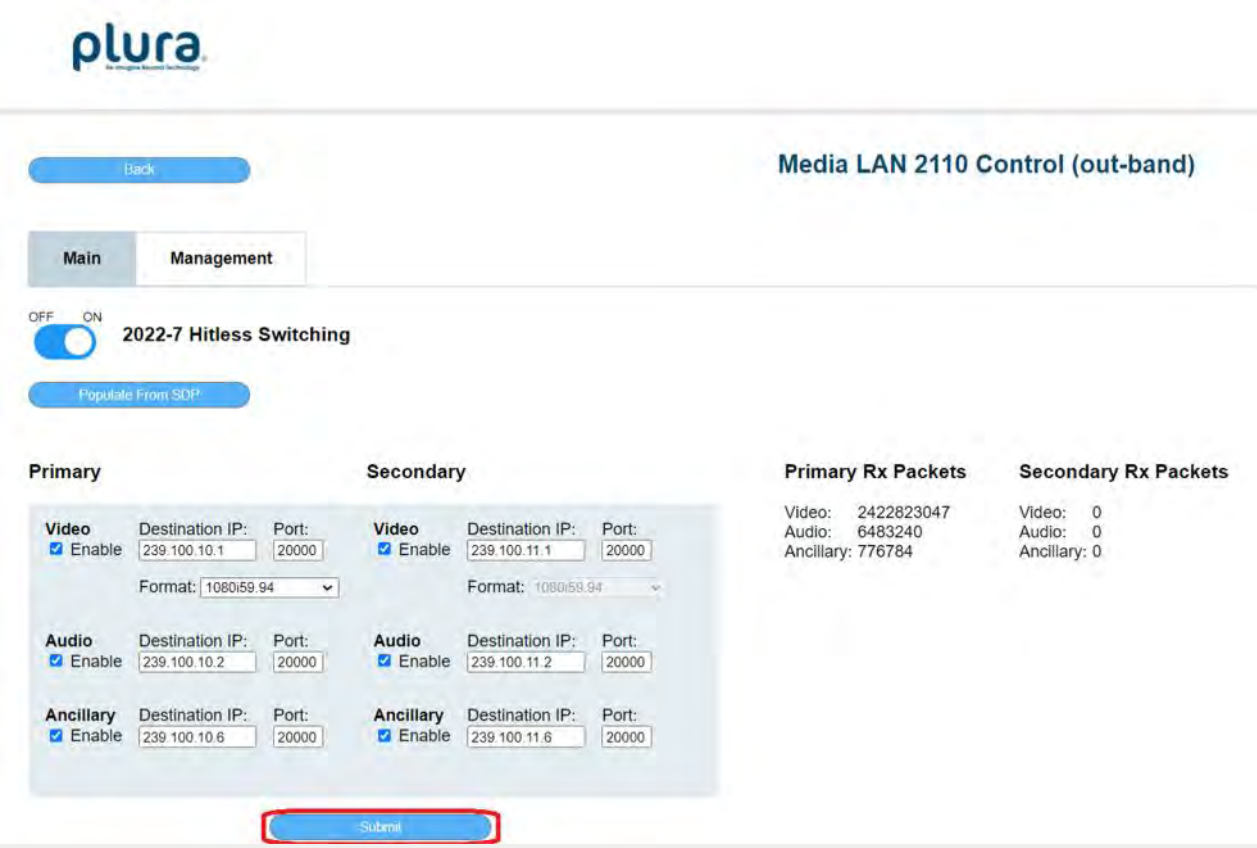


Figure 28. Submit the New Flow Configuration Values

- Any flow SDP URL fields left blank will result in its destination IP address and port set to 0's with the flow disabled. These flows can be edited manually before submitting.

7) *Specific Configuring Using REST URLs via REST API Client*

Some configurations and status are currently only available via in-band REST API. These will be added to the Control LAN UI in upcoming web UI updates. For now, you must use an in-band REST API client such as Insomnia or Postman to access these settings. Please contact tech support for further details or specific REST API information

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S. KOREA

Operating Instructions Web UI 1.4.0

PIPM-R-7-Type C

"Plura IP Module" for SFP-H-7 Series

SFP-317-H-7
SFP-321-H-7
SFP-324-H-7
SFP-332-H-7
SFP-347-H-7
SFP-355-H-7

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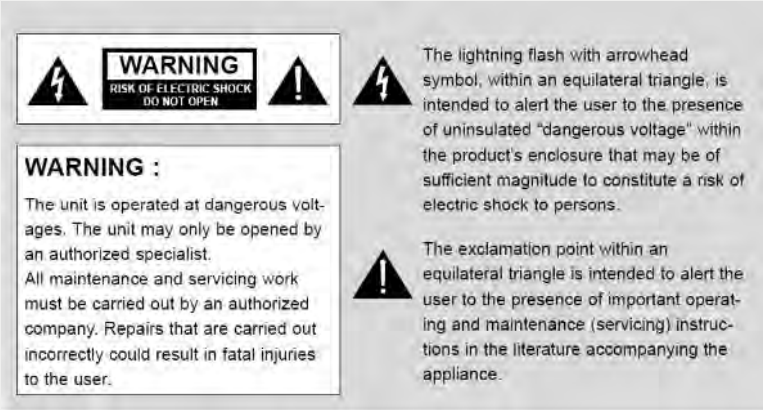
REVISION HISTORY

REVISION	DATE	CHANGES
1.00	2022- 01- 06	) 1st official release
1.01	2022- 04- 27	) 2nd official release) SFP LED show activity (blink)) RX packet counts are qualified based on flow enables (no pkt counts for non-enabled flows)) Wrong-speed SFP detect, LED indication (yellow/green railroad) and alarm (web server readable)) Add secondary NETWORK INTERFACE configuration) SDI Frame rates were added, Fractional/Integer no longer needed to be set via REST before selecting the frame rate.) A Control button was added to the Monitor Control and Update section that will now allow to switch the monitor remotely to standby mode.) Auto detect SOC reboot after Primary/Secondary NETWORK INTERFACE Config. Change.

• PRECAUTION

Before operating this unit, please read this manual carefully.



WARNING:

To reduce the risk of any electric shock, please do not remove the back cover. No user serviceable parts inside. Refer any service matters to qualified service personnel. To prevent fire or shock hazard, do not expose the rear of the set to rain or moisture. Do not rub, clean or hit the Active Matrix LCD with object that may scratch, mark, or damage the Active Matrix LCD permanently.

CAUTION:

Unauthorized tampering with the inside of the monitor invalidates the warranty.

The manufacturer shall not warrant for any damage caused by improper maintenance and/or repair or work by third parties.

Important safeguards for you and your new product:

Your product has been manufactured and tested with your safety in mind. However, improper use can result in potential electrical shock or fire hazards. Please read and observe the following safety points when installing and using your new product and save them for future reference.

1. ***Read Instructions***

2. ***Follow Instructions***
   All operating and use instructions should be followed.

3. ***Retain Instructions***
   The safety and operating instructions should be retained for future reference.

4. ***Notice Warnings***
   All warnings on the product and in the operating instructions should be adhered to.

5. ***Cleaning***
   Disconnect the unit from the mains before cleaning the unit. Do not use abrasive cleaners. Use a damp cloth ONLY for cleaning.

6. ***Water and Moisture***

Do not use this product near water surface.

7. ***Transporting Product***
   This product should be moved with care. Quick stops, excessive force and uneven surfaces may cause the product damages.

8. ***Accessories***
   Do not use accessories not recommended by PLURA Inc. as they may cause hazards.

9. ***Ventilation***

   Do not block any of the ventilation openings.

   Install in accordance with the manufacturer's instructions.

10. ***Power Sources***
    This product should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supply, consult your power supply company.

11. ***Power Lead Polarization***
    This product is equipped with a three-wire grounding-type cord. This is a safety feature. Do not use any other type power cord.

12. ***Power Cord Protection***
    Power-supply cords should be dressed so that they are not likely to be pulled or pinched by items placed upon or against them.

13. ***Lightning***
    For added protection for this product during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet. This will prevent possible damage to the product due to lightning and power-line surges.

14. ***Grounding the product***
    This product must be grounded properly to comply with the safety regulations in the country of use. If you are unsure of these regulations, please consult a qualified electrician.

15. ***Servicing***
    Do not attempt to service this product by yourself as opening or removing covers may expose you to dangerous voltages or other hazards. Refer all servicing to qualified service personnel.

16. ***Damage Service Required***
    Isolate this product from the mains and refer to qualified service personnel under the following conditions:

    A. *If the power-supply cord or plug is damaged.*
    B. *If the LCD front has been damaged.*
    C. *If the product does not operate correctly by following the operating instructions. Use only the user control buttons. Any improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to its normal operation.*
    D. *If the product has been dropped.*

E. If the product exhibits a distinct change in performance.

17. *Safety Check*

Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in proper operating condition and the warranty seal is provided.

18. *Mounting*

The product should be mounted on a wall as recommended in the instructions.

19. *Power*

This set operates on an AC supply; the voltage is as indicated on the label on the Manual. This appliance must be earthed at all times through the chassis as well as through the power lead.

1. *OVERVIEW*

Plura SFP-H-7 series with Type C Plura IP platform is the industry's trusted TRUE-IP 10GbE broadcast & media monitor solution, supporting uncompressed FHD based on SMPTE ST 2110, ST 2022-6Ŧ & ST 2022-7 and supports up to 1920 x 1080 resolutions and true 2K (2048 x 1080).

The flexibility and robustness of the SFP-H-7 platform is the ultimate solution for a wide range of broadcast and professional media SDI to IP transition projects. The SFP-H-7 platform is a powerful hybrid solution supporting SFP+ 10G (ST 2110, ST 2022-6Ŧ, ST 2022-7), 3G & 1.5G & HDM I 1.4 connectivity.

2. *GENERAL FEATURES*

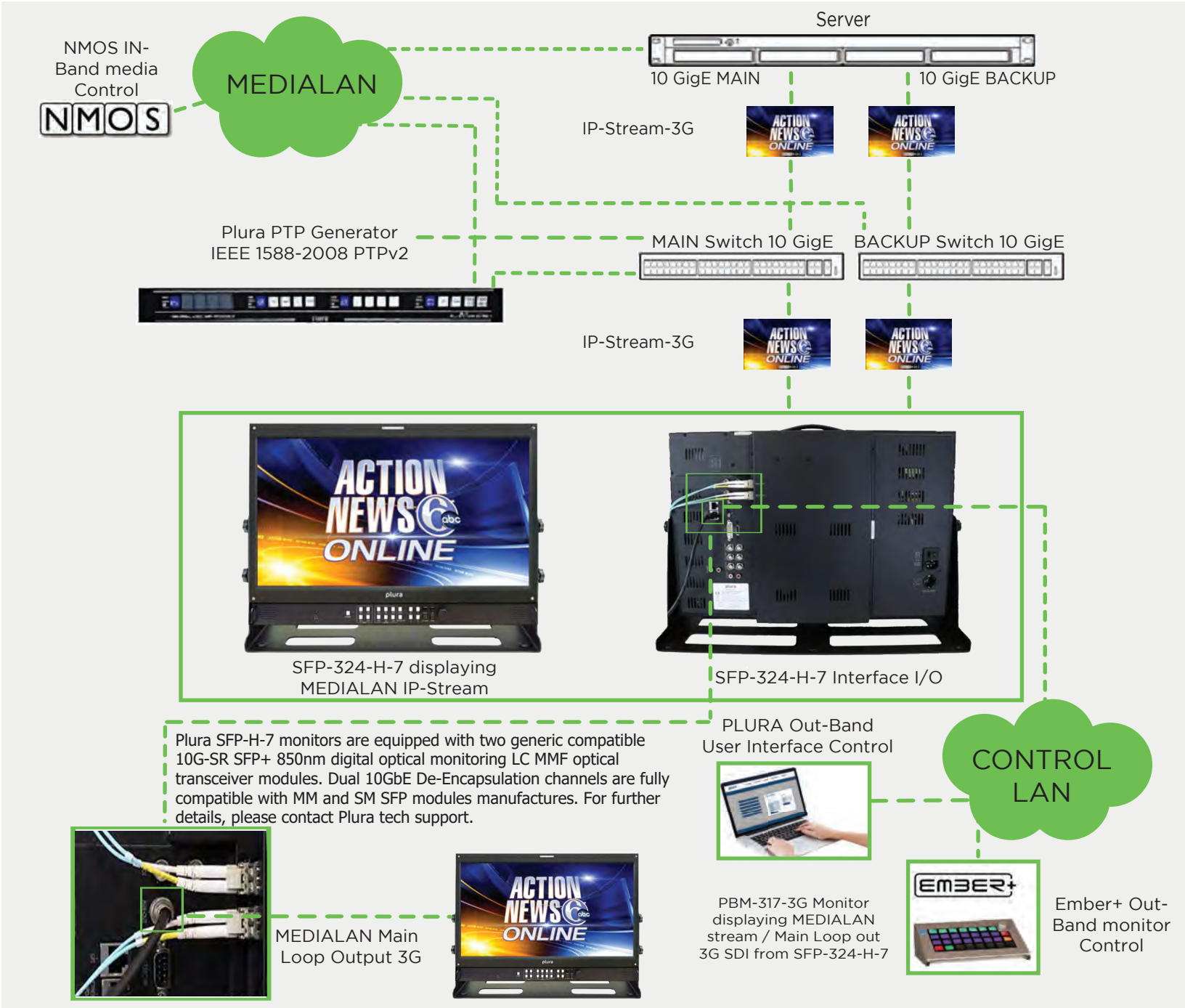
- Dual 10 GbE SFP+ interfaces as MEDIALAN1 and MEDIALAN2
- Two generic compatible 10G-SR SFP+ 850nm digital optical monitoring LC MMF optical transceiver modules included
- Dual 10GbE De-Encapsulation channels are fully compatible with many MM and SM SFP modules manufactures
- 1 x 3G/1.5G loop output for MEDIALAN1 main ST 2110 support
- 1 x 3G/1.5G Aux/2nd channel ST 2110 support
- Supports ST 2110, ST 2022-6Ŧ, ST 2022-7 & PTP/ST 2059 V2
- ST 2110-10, System architecture and synchronization: essences, RTP, SIP and PTP
- ST 2110-20, Uncompressed video transport, Wide / Narrow types
- ST 2110-21, Traffic shaping and network delivery timing
- ST 2110-30, Audio transport profile level C, 16CH, 48Khz sample rate, 1ms/.125us
- ST 2110-40, Transport of ancillary data
- ST 2022-7 seamless protection switching providing data loss protection
- SMPTE ST 2022-6Ŧ supported with optional license
- NMOS, JT-NM Interoperability support
- Management Interface support (NMOS & REST API In-band)
- Plura web UI / Ember+ Out-band control support
- NMOS IS-04 discovery and registration
- NMOS IS-05 device connection management
- JT-NM NMOS certification support
- JSON snippet for NMOS control support
- Ember+ monitor control support with extensive Ember+ tree control
- Session Description Protocol "SDP" file support
- IGMP V2 & V3 support
- Supports Coaxial 3G/1.5G BNC I/O connectivity
- Supports Coaxial SFP I/O connectivity
- 2xSFP+ cage supporting 10G/3G/1.5G SDI
- 1 x HDMI 1.4 / HDCP 1.2 input port
- Supports up to 2048 x 1080 resolutions
- RGB 12 bit Digital Signal Processing
- 178 degree Viewing Angle Display
- Gamma Selectable (0.8 – 3.0)
- Color Temperature – User, VAR, Adjustable (11000K TO 3200K)
- (ICAC) – Plura Intelligent Connection for Alignment & Calibration
- Display Advanced Waveform & Vector Scope simultaneously with line select
- Various and User defined Markers Display & Safe Area
- Programmable 6 User Front Pushbutton Controls & GPI
- Closed Caption (608/708) N. American Market
- Cutting edge De-interlacing and scaling Technology
- Fast Response Time for high motion video
- Internal Monitor Display (IMD)
- Ethernet & RS232 Remote Control
- Ember+ compliant control system capabilities
- Underscan / Overscan / Normal / Zoom
- Pixel to Pixel Mode, Tally, DC operation
- False Color and Peaking Filter / Focus Assist
- Video Range test with adjustable Y & C values
- Display LTC & DIVTC time code with line select
- Embedded Audio input, Digital Audio Decoding
- Internal Pattern Generator and Wall Control System

Ŧoptional

3. *Production Workflow and I/O Connections*

1) *Production Workflow*

The SFP-H-7 provides comprehensive interoperability capabilities with wide range of third-party IP-FHD media platforms with a seamless end-to-end production workflow. It can decode multiple SMPTE 2110 & 2022-7 media streams within any broadcast and professional media SDI & IP 2110 infrastructure.



[1]optional

- **SFP-324-H-7 / Front Keypad**

Figure 1. SFP-324-H-7 Monitor

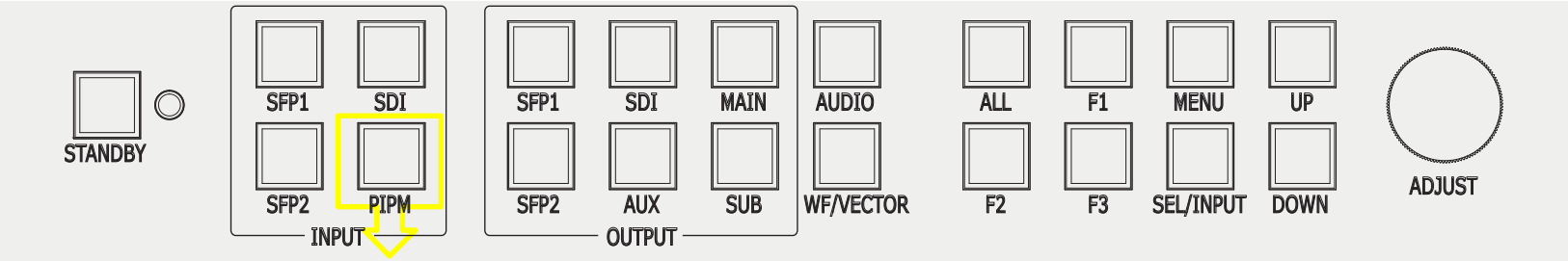


Figure 2. Front Keypad - Select and Display the PIPM-R-7 IP Stream (When PIPM-R-7 is installed inside SFP-H or SFP-H-7 unit)

►Select PIPM as Input channel and then select Main or SUB as Output channel.

- **Front Keypad Operations**

Key Name	Operation
STANDBY	• Power ON/OFF Button. This button is operated after being pressed about 3 seconds.
INPUT SFP1/SFP2/SDI/PIPM	• Modules Input CH selected. • Channels in the input signal, the key led light. • Select PIPM as Input channel when PIPM-R-7 is installed
OUTPUT SFP1/SFP2/SDI/AUX/ MAIN/SUB	• Modules Output CH selected.
ALL	• Modules ALL Output CH selected.
FUNCTION F1/F2/F3	• Executes functions of user selected. UNDEF, Aspect, Mono/Blue only, Audio Channel, Safety area marker, Time code, Analog Caption, Audio mute, Still image, Zoom, Flip, Gamma select, PIP func & Input, Sub win full, Sub win part
SEL/INPUT	• Activates OSD menu of input source selecting. • Changes input source by selecting. • Executes functions (by OSD help commands) in main OSD menu. • Activates child menu.
MENU	• Activates main OSD menu. • Navigates higher menu in main OSD menu. • Exits OSD menu.
Adjust	• Adjust Picture Menu(Brightness -> Contrast -> Color -> Sharpness->Phase & Tint) • Turn Right (with "UP" button is same) • Turn Left (with "DOWN" button is same)

Table 1. Front Keypad Operations

2) *I/O & Connectivity*

Figure 3. I/O & Connectivity

PIPM-R-7 I/O	Description
Ethernet Port GigE	• Control LAN out-band
Dual SFP+ 10GigE Ports	• 2x 10 GigE SFP+ cages for media LAN
SDI AUX O/P	• 1EA Serial Digital , 3Gb/s, 1.485Gb/s, 270Mb/s, BNC Jack

Table 2: SFP-H-7 (PIPM-R-7) I/O

4. *INSTALLATION OVERVIEW*

1) *Initial Setup by Web Browser*

All Plura monitors should be shipped with the latest versions of firmware/software at the time of production, but in the case where an update is available, follow the appropriate steps below. Each update is applied using the Control LAN UI. The Media LAN 2110 Control (out-band) is also accessed via the Control LAN UI. Follow the instructions below to access this interface. Chrome and Firefox browsers are recommended for control on Windows.

2) *Connecting to the Control LAN User Interface "UI"*

- Plug in the Ethernet cable to the Control LAN on the back of the monitor.

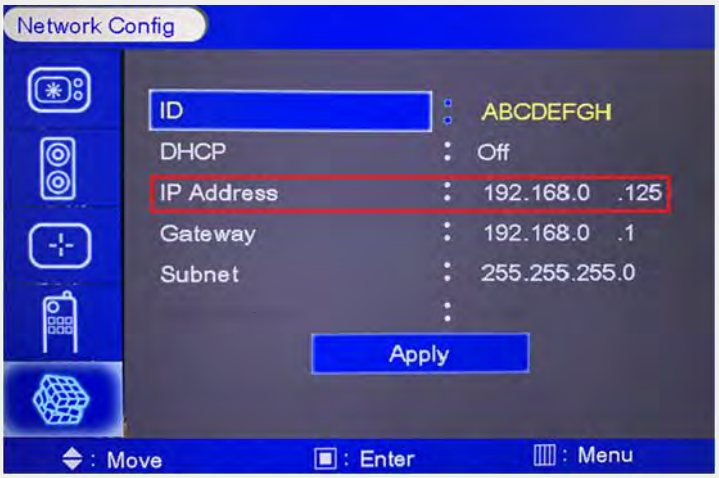
- Power on the unit and wait for the "PLEASE WAIT EMBER+ BOARD IS BOOTING" message to go away (Figure 4)

Figure 4. Ember+ Board Booting

- On your Plura monitor, press the "Menu" button. Select "Setup" → "Advanced" → "Network Config" to find the IP address of the Ember+ board (Figure 5).

Figure 5.

Plura Monitor Network Config Menu



- On your computer, open your web browser and go to the IP address of the monitor (eg. 192.168.0.125 from Figure 5 above). You should see a landing page similar to that shown in Figure 6 below.

  Note: If the unit fails to establish a connection, add a port override to 8086 (suffix ':8086/home' on the Control LAN IP address in the browser address line). If this connects properly, please contact Plura Support to get and install the latest web update.

  From the Control LAN UI landing page, clicking the “plura” logo will take you to the plura homepage. The “Control LAN” MAC address” and the current “Web UI Version” can be found at the top right corner of the page. The information icon (i) will allow users access to the current user manuals for their Plura monitor model. The “Monitor Control and Update” button is used to update Ember+ Control, Ember+/TSL License, Monitor FPGA (some models), Monitor Firmware (some models), and the Web UI itself. The “Media LAN 2110 Control (out-band)” button is used to access out-band control of the 2110 module.

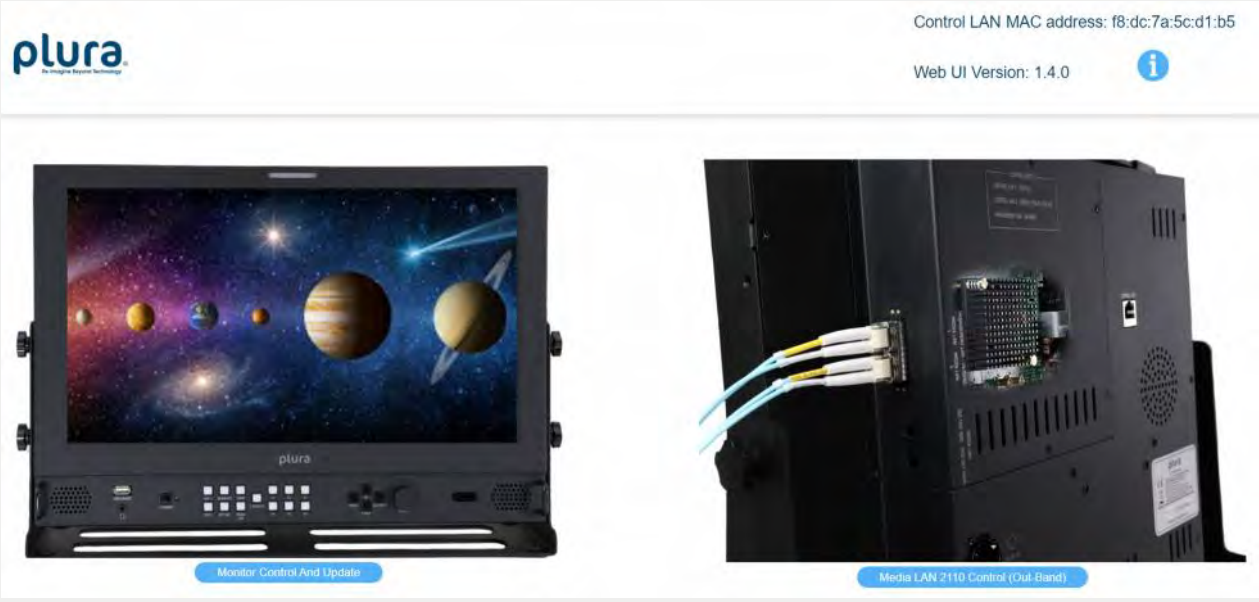


Figure 6. Plura Control LAN UI

5. *WEB CONFIGURATION & INTERFACE*

1) *Overview*

Once you have established network connectivity with the monitor, you can further configure and update the monitor and the IP 2110 module through its web interface.

2) *Monitor Control and Update*

- Enter the Monitor Control and Update page by clicking on the image or the button below.

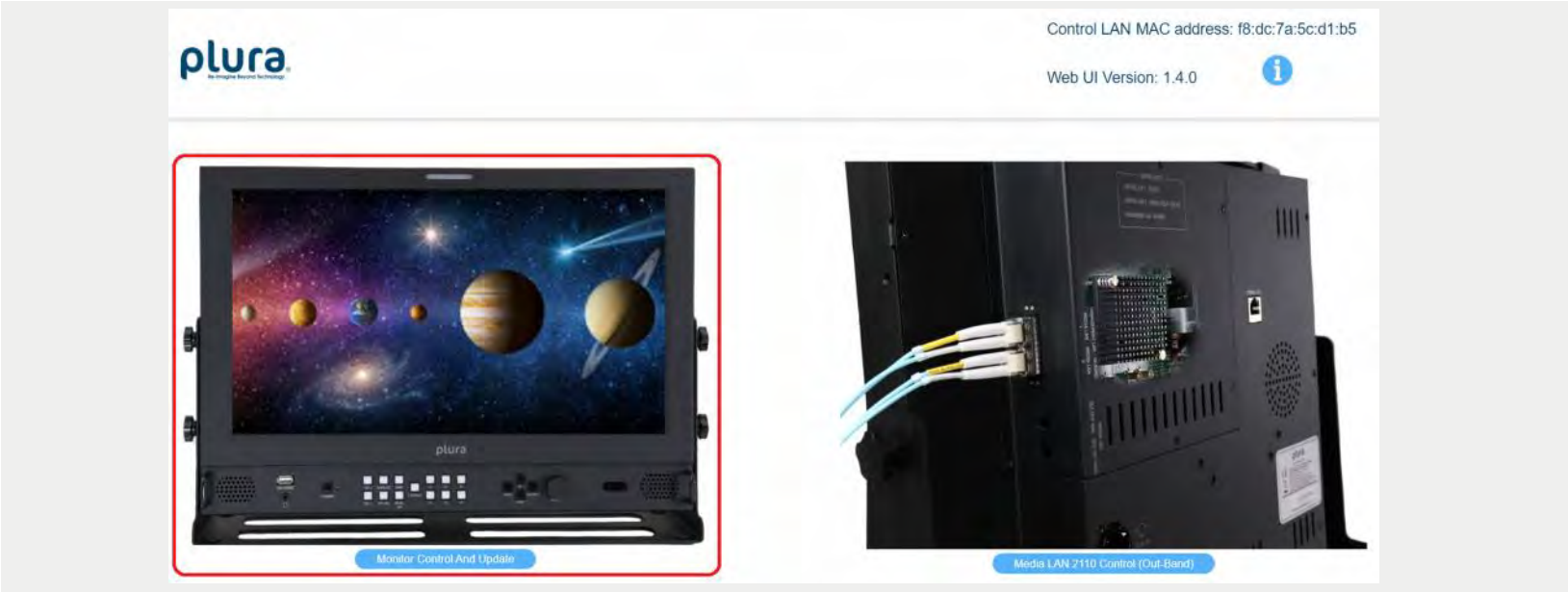


Figure 7. Monitor Control and Update

3) *Controls*

- The UI offers a feature that enables the user to put the monitor in standby mode.
- Click the “Controls” button and select the appropriate control ON/OFF.
- The Power OFF/ON buttons will be grayed out momentarily when selected, once the buttons come back up (turn blue) you can select the appropriate OFF/ON option.

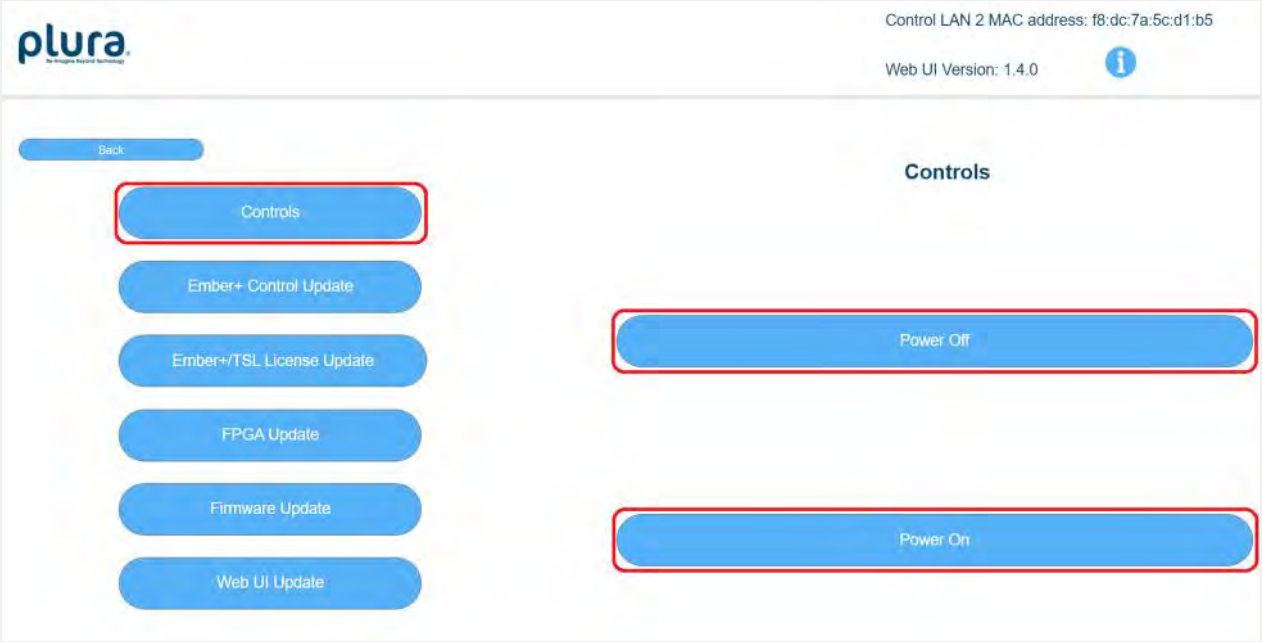


Figure 8. Controls

4) ***Ember+ Control Update***

Note: All of the Ember+ Control updates will be embedded in the Current Web UI Update file. If the Ember file is needed for specific cases, please contact Plura Support.

- Download the Ember+ Update software to your computer.
- Open the Control LAN UI Monitor Update page. Refer to section 'Connecting to the Control LAN UI.
- Click the “Ember+ Control Update” button.

Figure 9. Ember+ Control Update

- Click inside of the white box “Select your Ember+ Control Update file”.

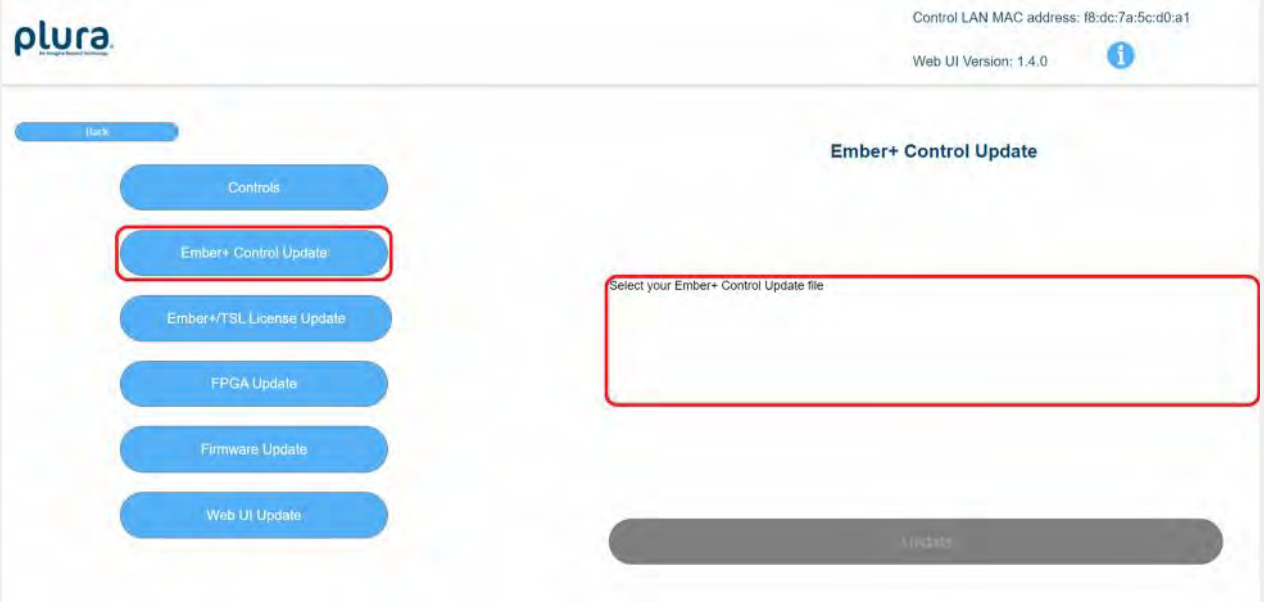


Figure 10. Click inside the box to load a file

- Navigate to the folder with the Software and select the file.

- Once the file is selected, it will show up in the white text box and the Update button will now be clickable (no longer grayed out).

- Click the “Update” button.

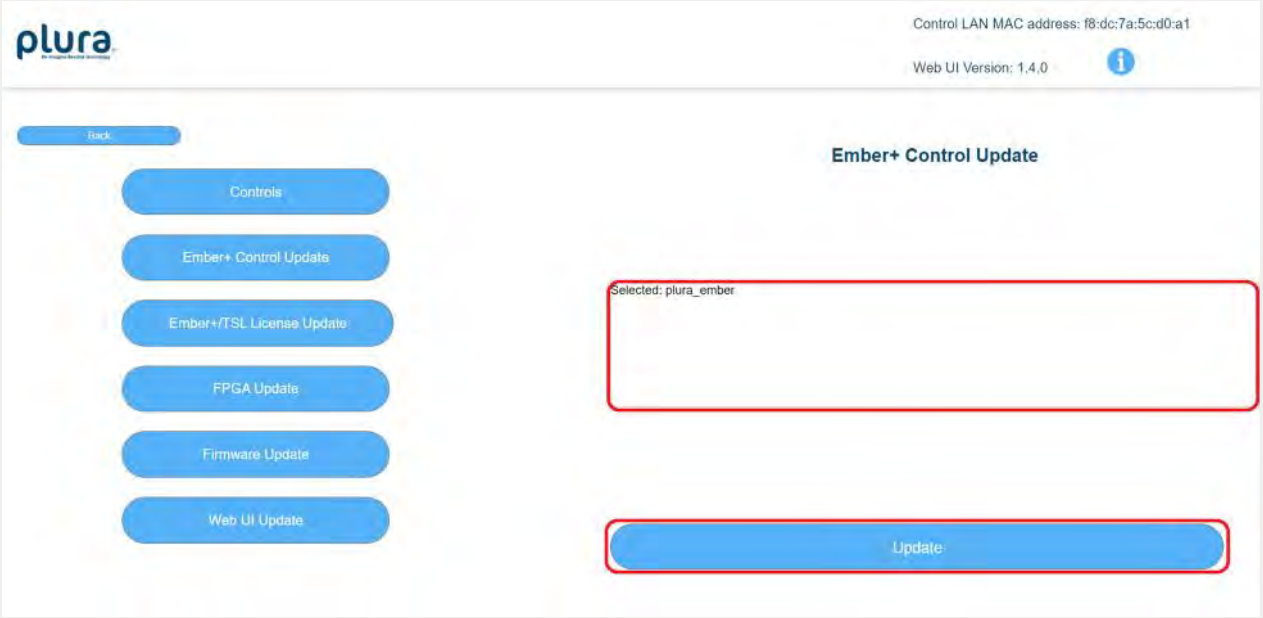


Figure 11. Upload the file

- Once the file is uploaded, a pop-up window will appear on the screen which reads "192.168.0.186 (IP address) says Ember Updated" (Figure 12 below).

Note: The actual IP address shown will be your current Control LAN IP address.

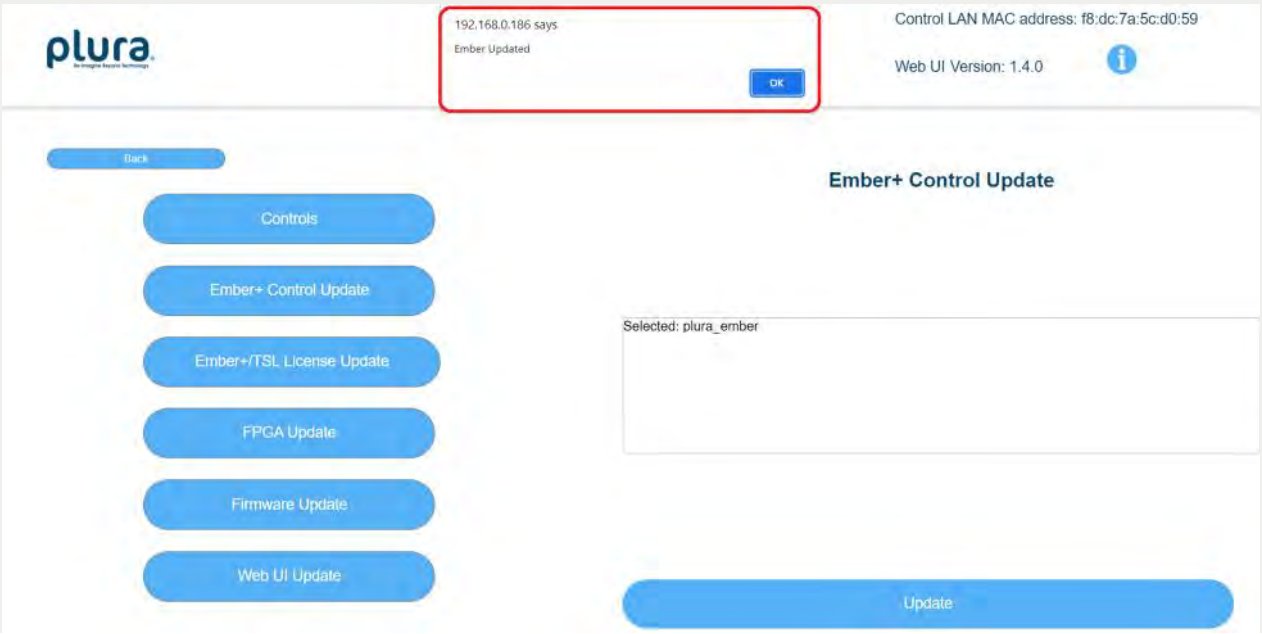


Figure 12. Notification Pop-Up

- Click the “OK” button.

- The Ember+ Control Update is now complete.

- To check if the Software was updated properly on your Plura monitor, press the “Menu” button. Select “Setup” → “Advanced” → “Network Config” the F/W version is shown at the bottom (Figure 13 below, “v.147” in this case).

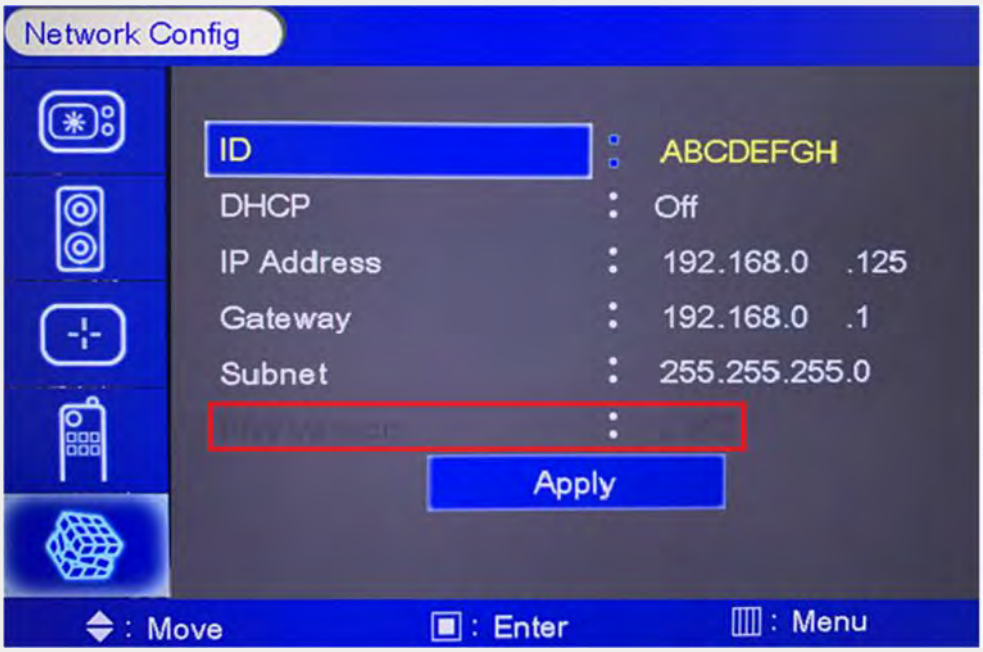


Figure 13. Monitor Network Config

5) *Ember+/TSL License Update*

To update the license please contact Plura Support. Have the MAC address for your monitor available prior to contacting the support team. The MAC address can be found on the UI’s top right corner of the page (shown in Figure 14 below).

- Download the Ember+/TSL License Update file to your computer.

- Open the Control LAN UI Monitor Update page. Refer to section 'Connecting to the Control LAN UI'.

- Click the “Ember+/TSL License Update” button.

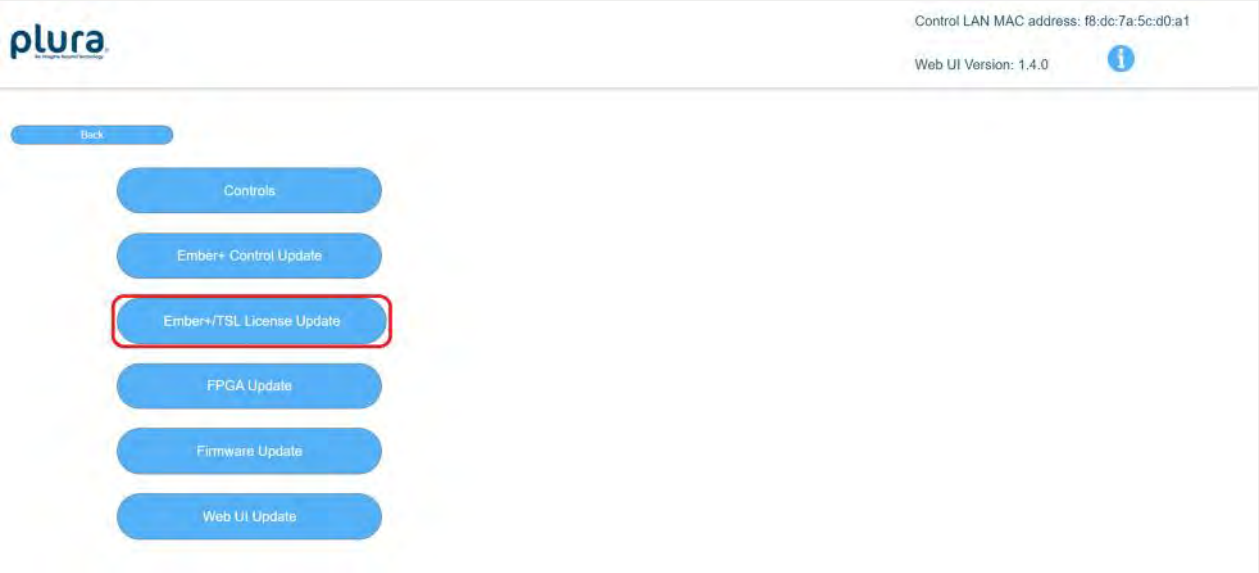


Figure 14. Ember+/TSL License Update

- Click inside of the white box “Select your Ember+/TSL License files”.

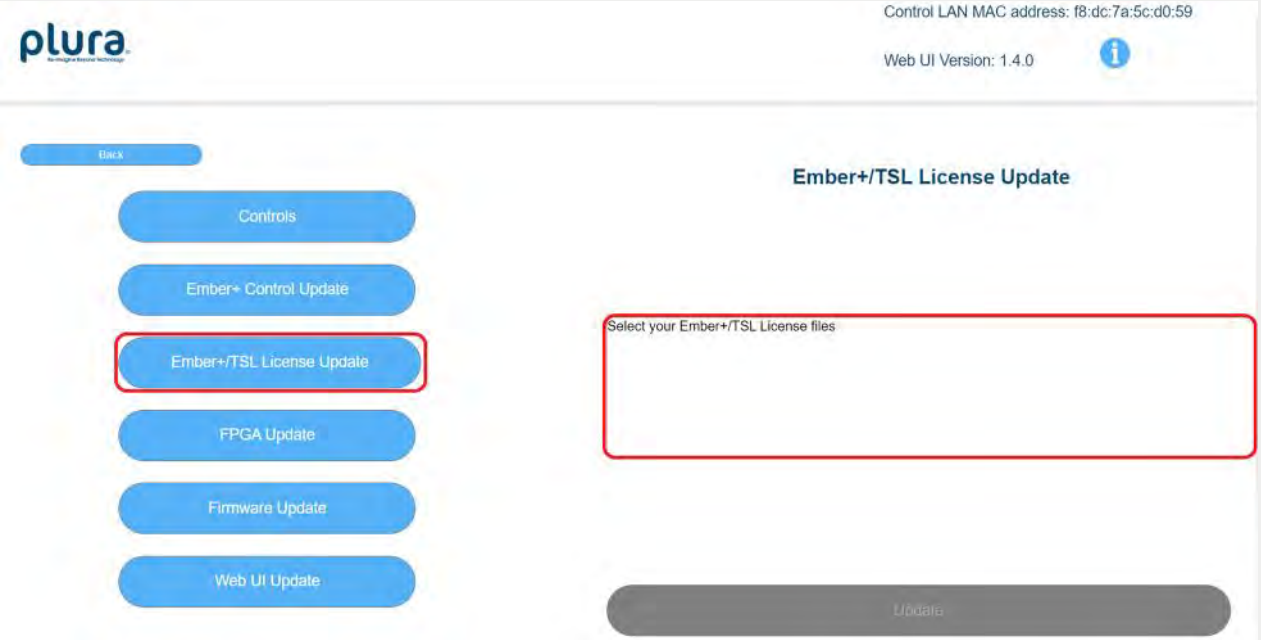


Figure 15. Ember+/TSL License File Upload

- Navigate to the folder where you saved the License update file and select it.

- Once the file is selected, it will show up in the white text box and the Update button will now be clickable (no longer grayed out).

- Click the “Update” button.

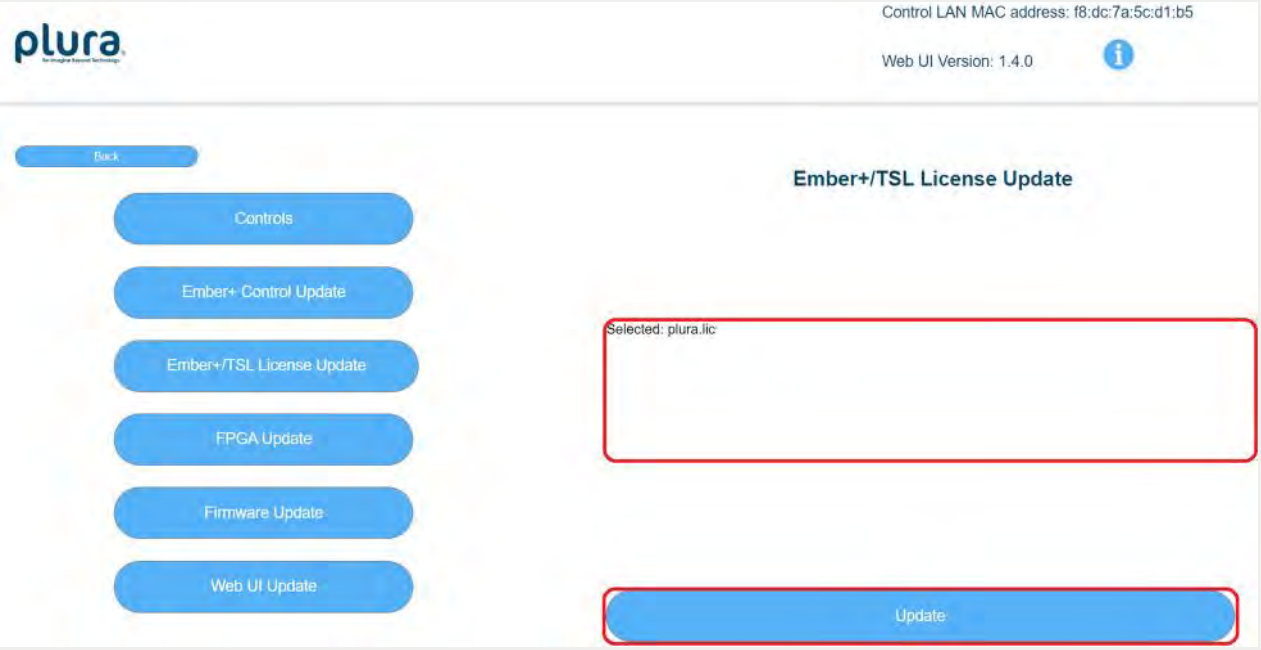


Figure 16. Ember+/TSL License File Upload

- Once the file is uploaded, a pop-up window will appear on the screen which reads “192.168.0.186 says License Updated”

  Note: The actual IP address shown will be your current Control LAN IP address.

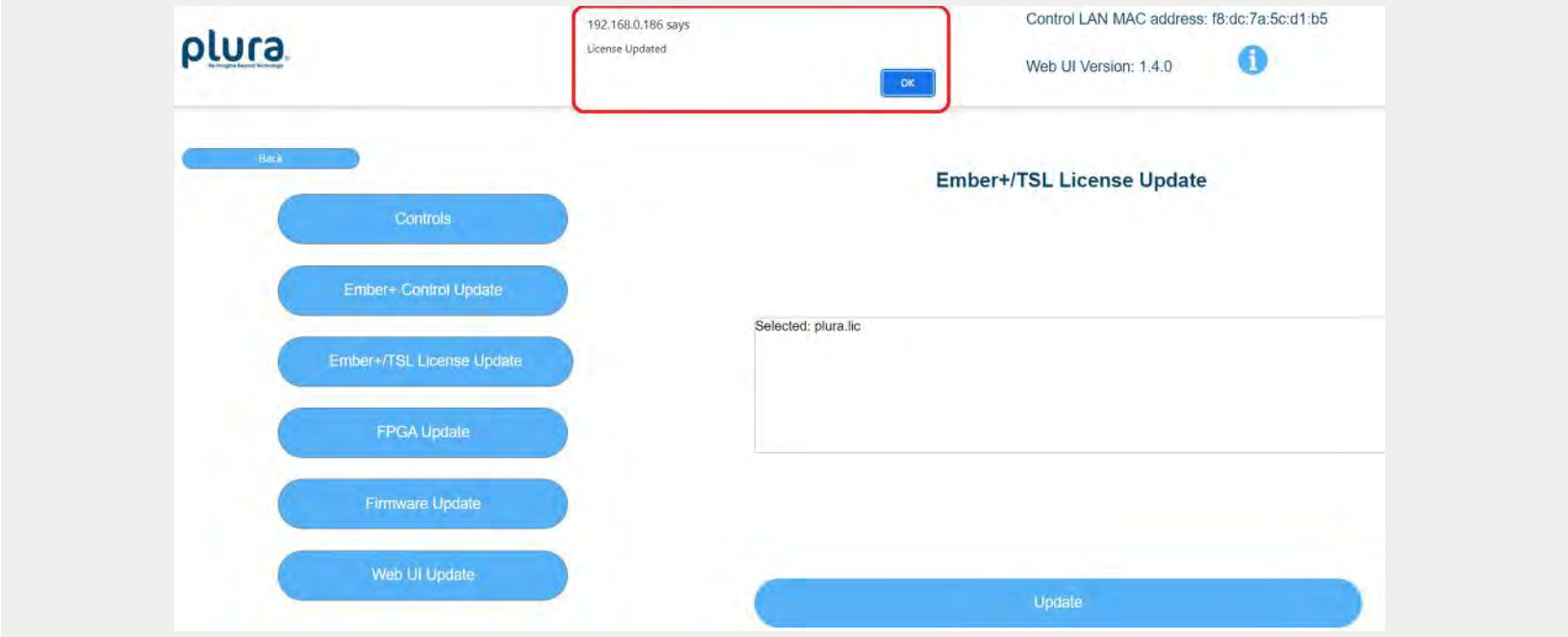


Figure 17. Notification Pop-Up

- Click the “OK” button.

- The Ember+/TSL License Update is now complete.

6) *Monitor FPGA and Firmware*

- Download Firmware and FPGA update files to your computer.

- Open the Control LAN UI. Refer to section 'Connecting to the Control LAN UI'.

- Click on the Left Monitor labeled “Monitor Control and Update” to access the UI monitor update.

- Click the “FPGA Update” button.

- Click inside of the white box “Select your FPGA File”.

- Navigate to the folder with the FPGA and select all files.

- Click on the “Update” button.

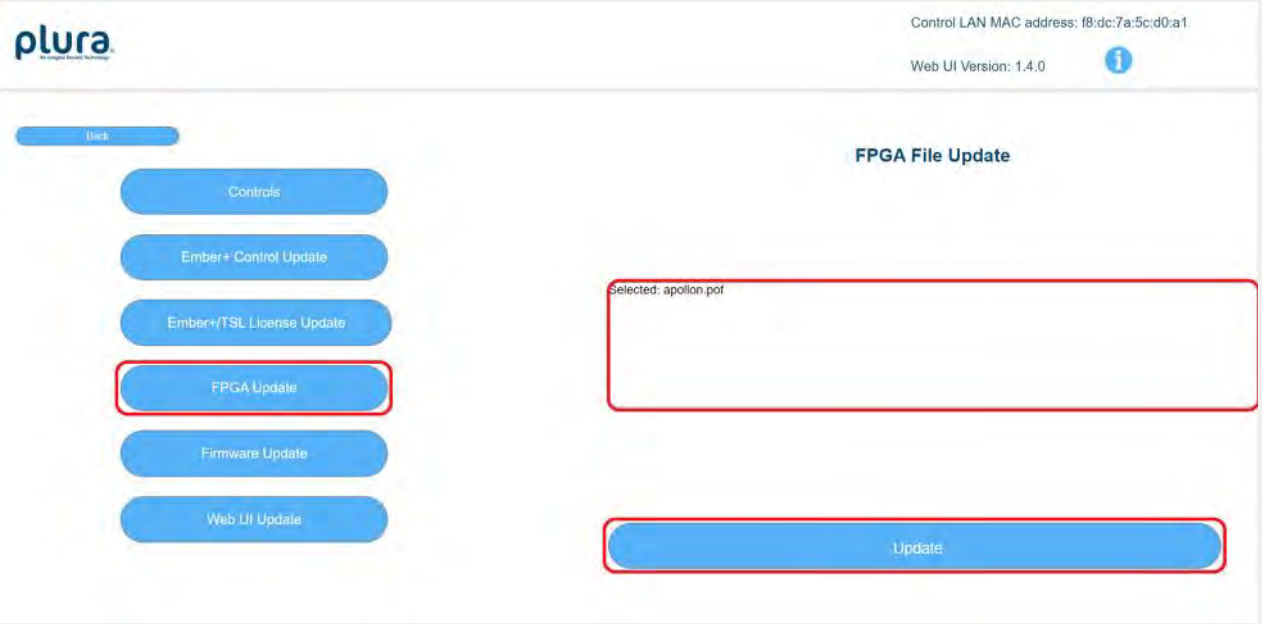


Figure 18. FPGA File Update

- As the file is uploaded you will see a message “The update may take a few minutes. Please do not power off the monitor or refresh the page while the update is in progress!”. The message and spinner will block access to the Web Page.

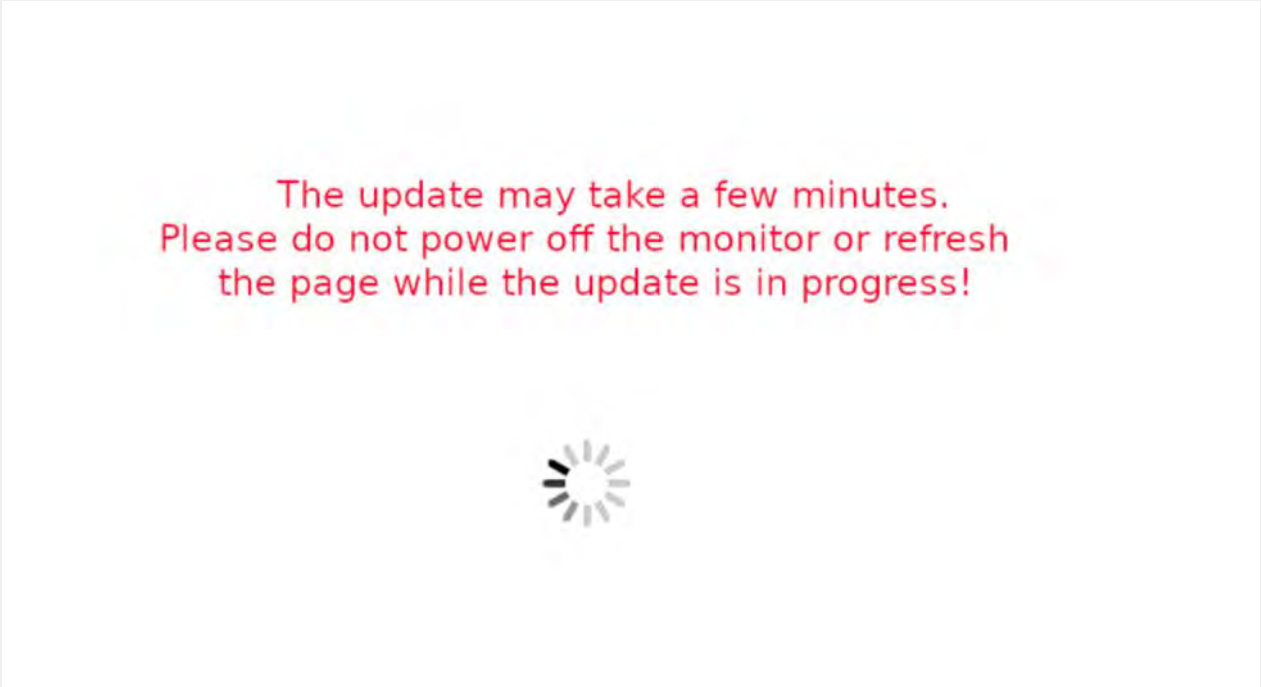


Figure 19. Update Message and Spinner

Note: Once the spinner and the message are removed, the FPGA update is complete and you cant start the Firmware Update.

- Click the “Firmware Update” button.

- Click inside of the white box “Select your Firmware File”.

- Navigate to the folder with the Firmware file and select all files.

- Click on the “Update” button.

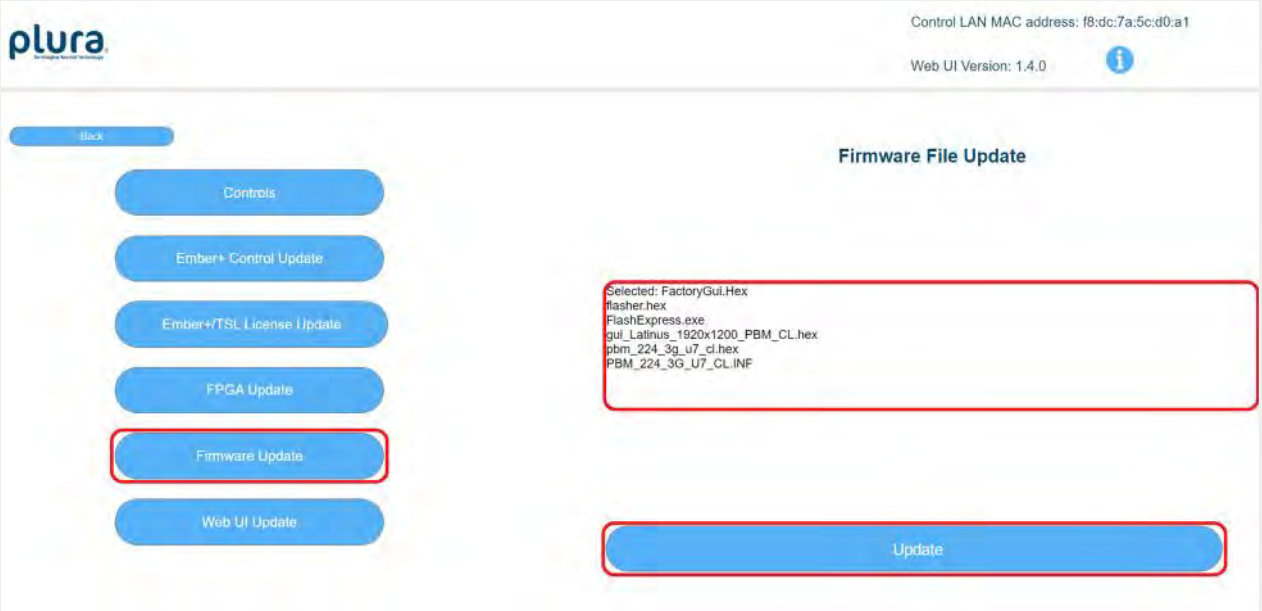


Figure 20. Firmware Update

- As the file is uploaded you will see a message “The update may take a few minutes. Please do not power off the monitor or refresh the page while the update is in progress!”. The message and spinner will block access to the Web Page.

Figure 21. Update Message and Spinner

- On your Plura monitor, press the “Menu” button. Select “Setup” → “Advanced” → “Information” to check the information page and ensure that both FPGA and Firmware have been successfully updated (Figure 22).

Figure 22. FPGA and Firmware information menu

7) *Web UI Update*

Note: All of the Ember+ Control updates will be embedded in the Current Web UI Update file. If the Ember file is needed for specific cases, please contact Plura Support.

- Download the Web Update file to your computer

- Open the Control LAN UI Monitor Update page. Refer to section 'Connecting to the Control LAN UI'.

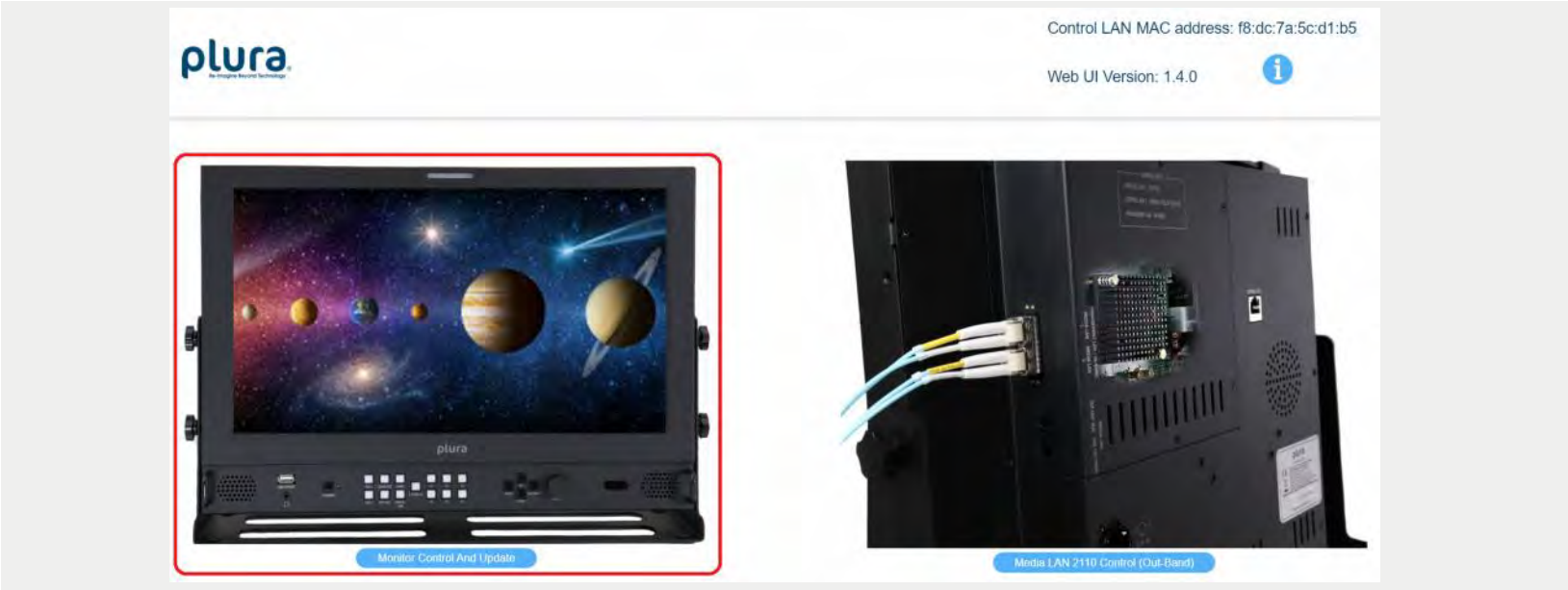


Figure 23. Plura UI

- Click on the left Monitor labeled “Monitor Control and Update” to access the UI monitor update.

- Click the “Web UI Update” button.

- Click inside of the white box “Select your Web UI Update File”.

Figure 24. Web Update and File Selection

- Navigate to the folder where you saved the Web UI update file and select it.
- Once the file is selected, it will show up in the white text box and the Reboot button will now be clickable (no longer grayed out).
- Click the “Reboot” button.

Figure 25. Upload the Web UI Update File

- As the file is uploaded you will see a message “The update may take a few minutes. Please do not power off the monitor or refresh the page while the update is in progress!”. The message and spinner will block access to the Web Page.

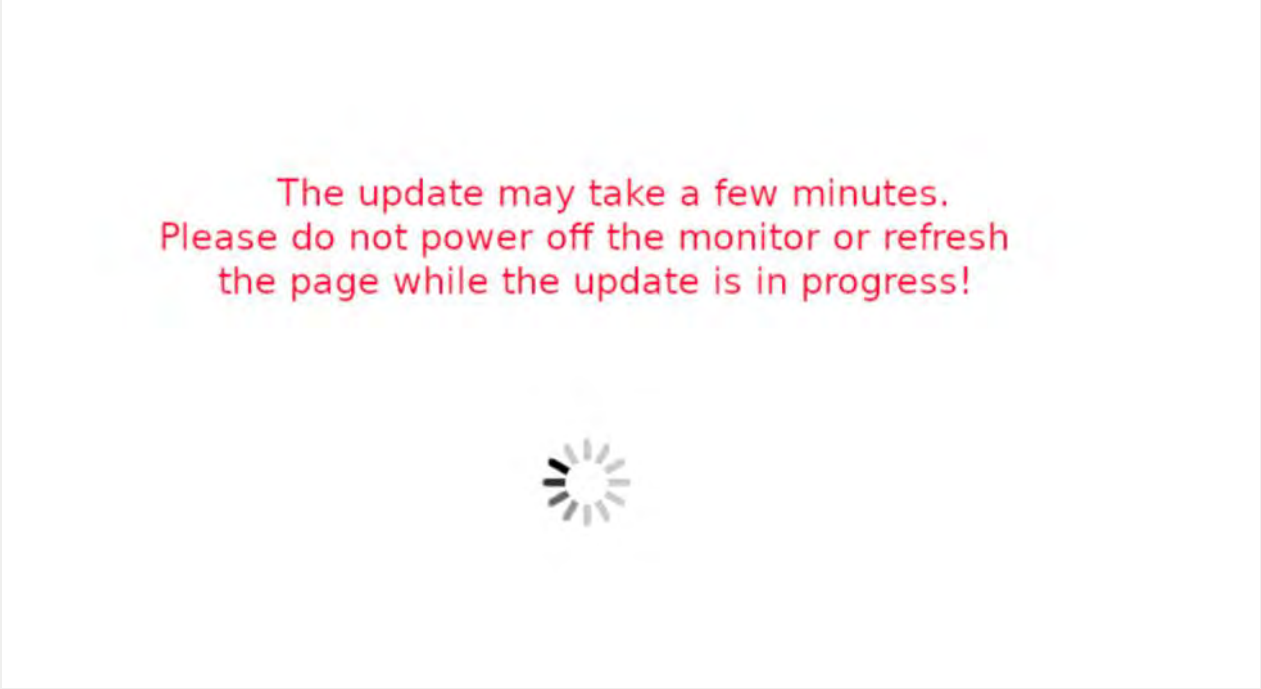


Figure 26. Update Message and Spinner

- Once complete, the web UI page will refresh back to the Landing Page.

- The web UI is now upgraded to the latest version. To confirm the version of your UI, once the Control LAN UI refreshes back to the Landing Page, the version number will be located on the top right of the page (Figure 27 - it is Version 1.4.0 in this example).

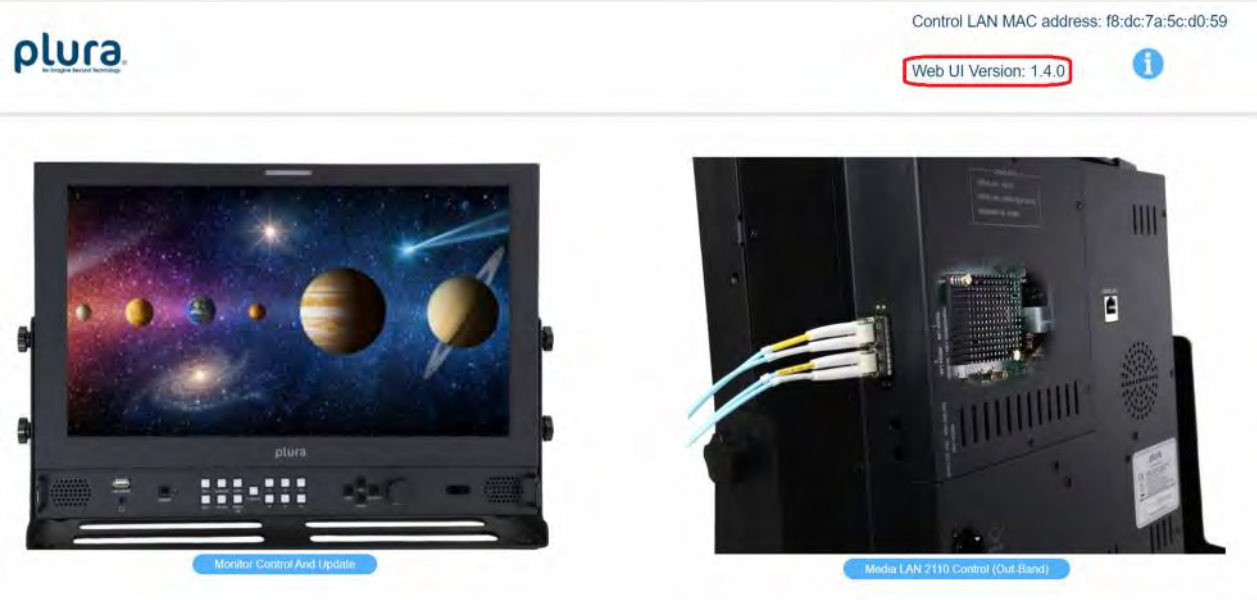


Figure 27. Web UI Version Location

6. *MEDIA LAN 2110 CONTROL (out-band)*

1) *Overview*

Each SFP-H-7 Series Type C Plura monitor defaults to the PIPM input source which is set to display an internally generated 'blue screen' test signal from the 2110 module. The video format defaults to 1080i59.94

2) *Management via Control LAN UI*

- Open the Control LAN UI Media LAN 2110 Control (out-band) page. Refer to section 'Connecting to the Control LAN UI'.

- The Media LAN 2110 Control has three-tab options for out-band control: Main, Aux, and Management. Figure 28 below shows the UI Main Tab and Figure 29 shows the UI Aux Tab.

- In the Main tab there are fields to set the Video, Audio, and the Ancillary flows' configuration. Each flow allows configuration of both its Primary and Secondary fields and has an Enable check box. Adjustable fields include the destination IP address, the destination port, and video format (for primary video only, secondary video format is always the same as the primary video format).

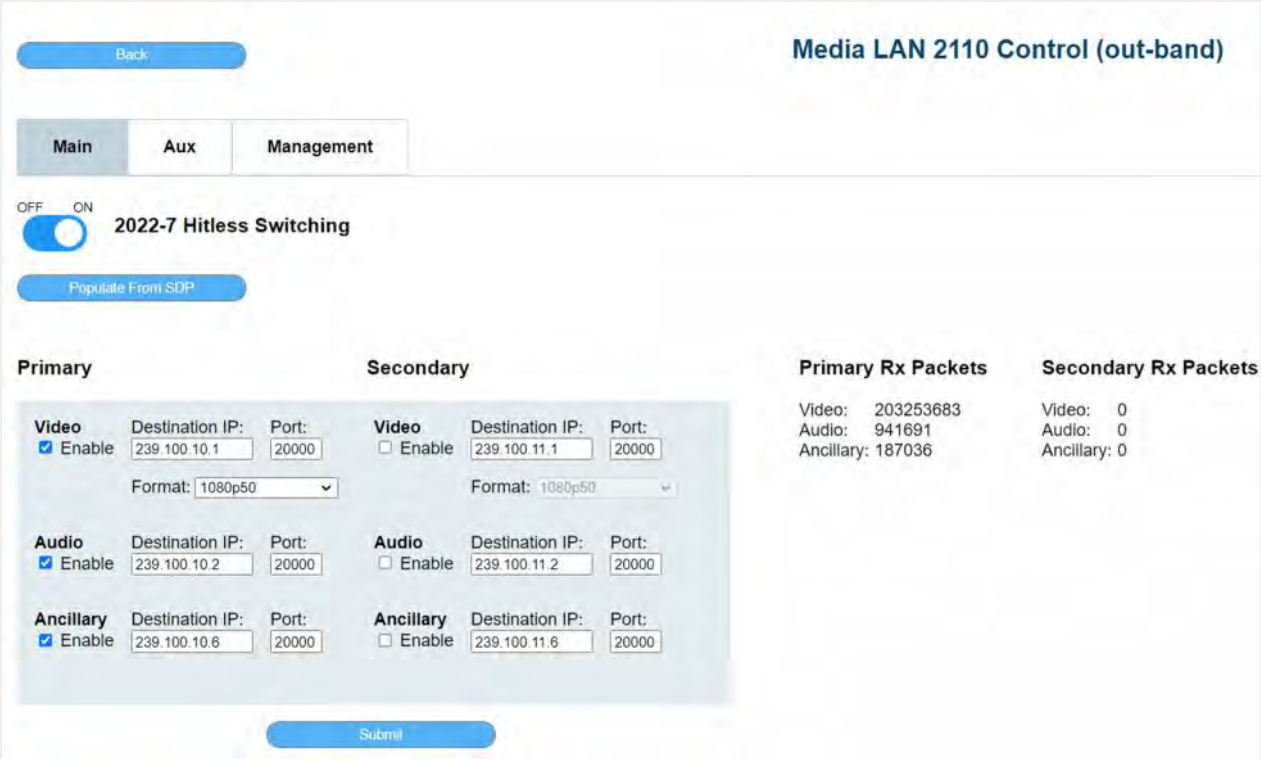


Figure 28. Main Tab

- The Aux tab (Figure 29) allows configuration of the auxiliary decapsulation channel similar to the Main channel.

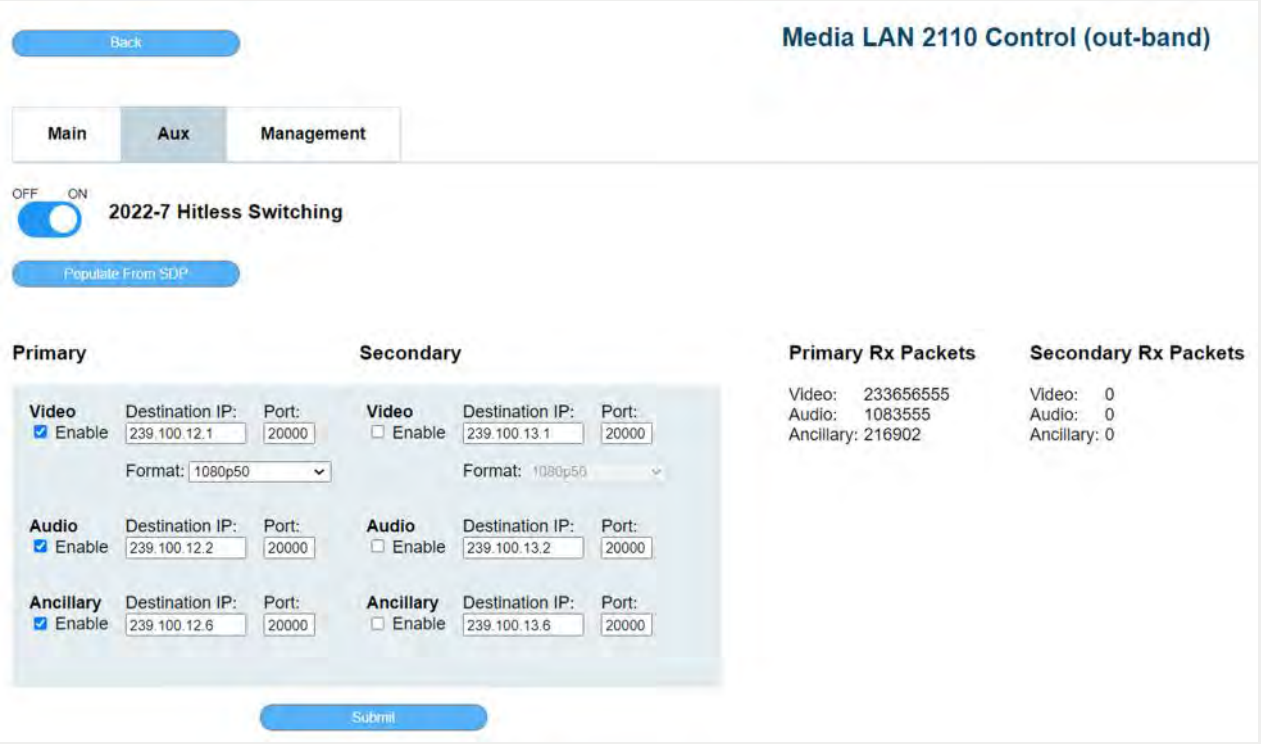


Figure 29. Aux Tab

- The management tab offers both DHCP and Static IP configuration for each Media LAN network interface. To choose a Static IP uncheck the DHCP check box (Figure 30). Once the Static IP values are entered click on the submit button to apply the changes. The Primary and Secondary configurations need to be submitted separately.

- Once the unit is done rebooting, the page will be redirected back to the landing page. Navigate back to the Management tab to verify the Primary Static IP configurations and submit the Secondary configuration.

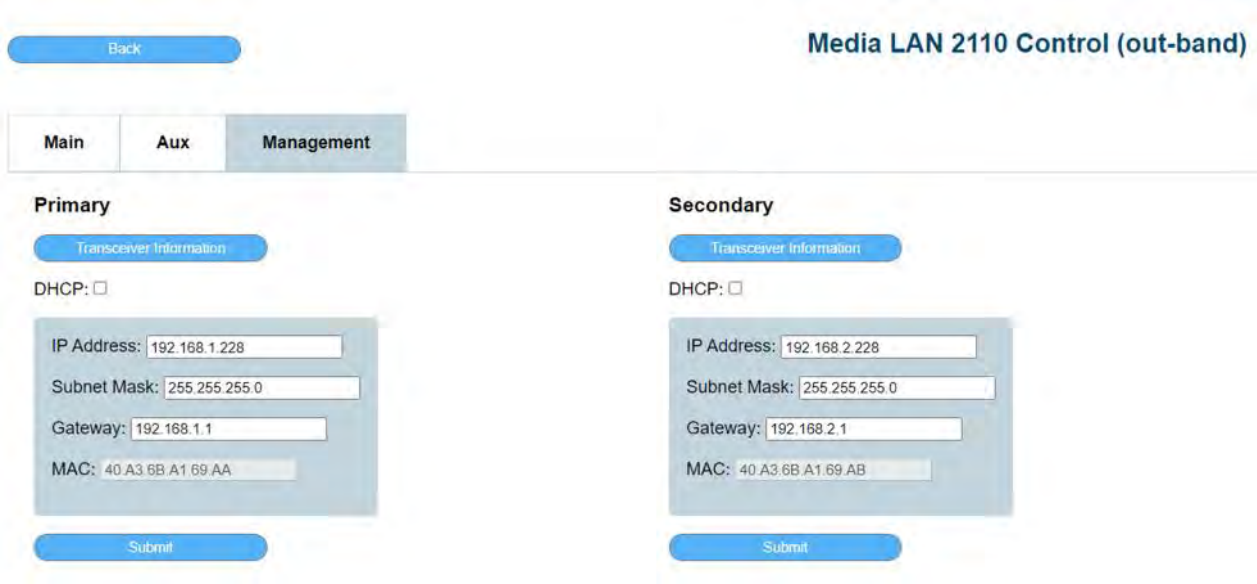


Figure 30. Management Tab

- The management tab also provides the primary and secondary transceiver information (Figures 31 & 32 below)

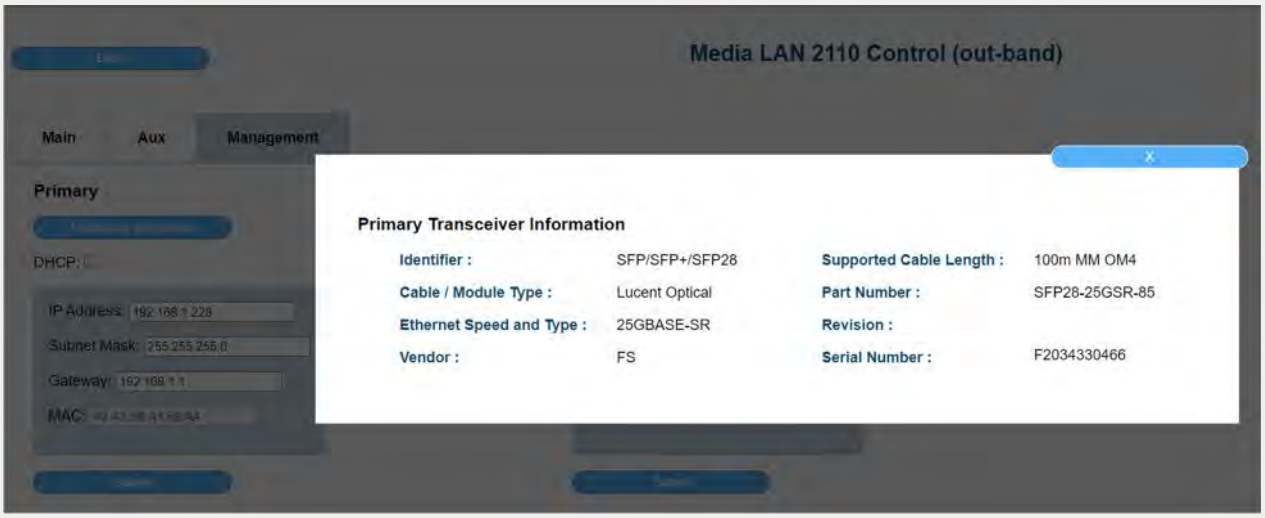


Figure 31. Primary Transceiver Information

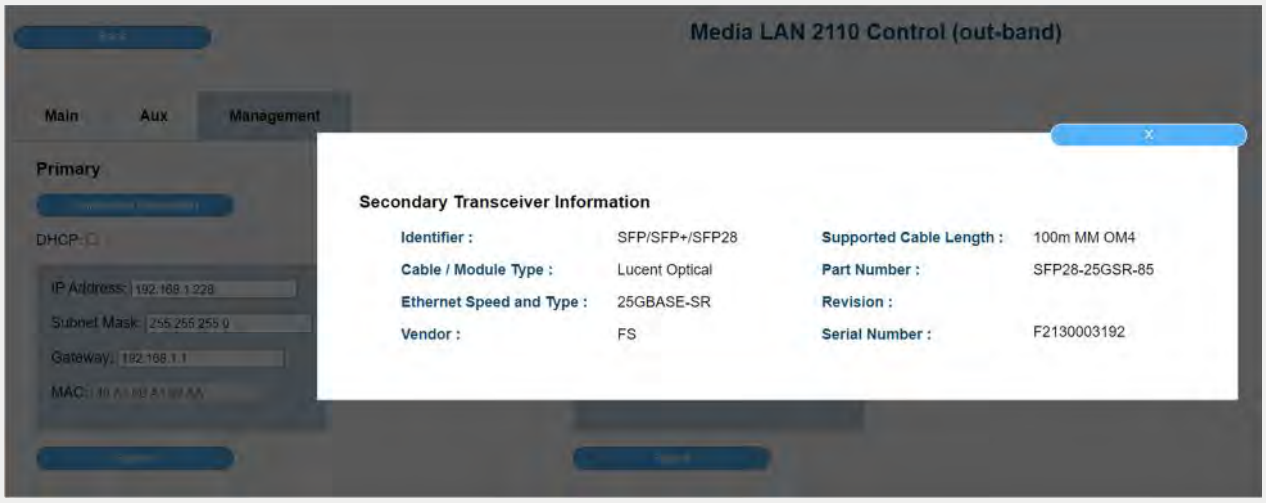


Figure 32. Secondary Transceiver Information

3) *10G/25G Switch Configuration Requirements*

- FEC must be disabled on all switch ports connected to the Plura monitor 2110 ports.
- PTP must be enabled on the switch and on all switch ports connected to the Plura monitor 2110 ports.

4) *2022-7 Hitless Switching Toggle ON - Configuring Flows for Redundancy*

- SMPTE 2022-7 redundancy is enabled when the 2022-7 Hitless Switching toggle is set to the ON position. This will enable use of the secondary flow configurations. Each channel (Main/Aux) has its own independent hitless toggle switch.
- The primary interface media flows (video/audio/ancillary) are always the main flows in a redundant pair upon start-up (enabling) of decapsulation when using 2022-7.

- The secondary interface media flows (video/audio/ancillary) are only ever used for 2022-7 hitless switching mode and cannot be used by themselves independently of the primary media flows.
- Conflicting destination IP addresses. All flows on all tabs must have unique destination IP addresses. Flows cannot share the same destination IP address as another flow. This is also true between primary and secondary and between the Main and Aux channel tabs. It does not matter if the flows are enabled or not, conflicts are not allowed.
- You must have PTP enabled in your Media LAN switch for 2022-7 to function properly.
- All flows must be synchronized and aligned (RTP sequence numbers) at encapsulation for 2022-7 hitless switching to function properly at the decap.
- The video flows for the primary and secondary must have the same video format. The content doesn't necessarily have to be identical but it usually is.
- A proper 2022-7 hitless switching configuration for a flow involves setting valid config values for both the primary and secondary for that flow. You must also enable both the primary and secondary for the flow. For example, to set up 2022-7 for the video flow on the Main channel (to monitor), you'd need to configure the primary video flow and secondary video flow on the Main tab and enable them both. The same goes for audio and ancillary.

5) *2022-7 Hitless Switching Toggle OFF - Clean Switch Mode*

- Clean Switch mode is enabled when the 2022-7 Hitless Switching toggle is set to the OFF position. Each channel (Main/Aux) has its own independent hitless toggle switch.
- All secondary flows are disabled for Clean Switch mode (no redundancy).
- Conflicting destination IP addresses. All flows on all tabs must have unique destination IP addresses. Flows cannot share the same destination IP address as another flow. This is also true between primary and secondary and between the Main and Aux channel tabs. It does not matter if the flows are enabled or not, conflicts are not allowed.
- To perform a clean switch, update the config values for each flow and hit submit. The new config values will be applied and a clean switch will occur to the new flow configurations.
- Note that it may take several seconds after submitting for the switch to occur.

6) *Importing SDP Files*

- SDP files may be used to populate the flow configurations for both primary and secondary (if enabled) flows. This is done using the "Populate From SDP" button at the top of each channels' tab just under the 2022-7 Hitless Switching toggle (Figure 33).

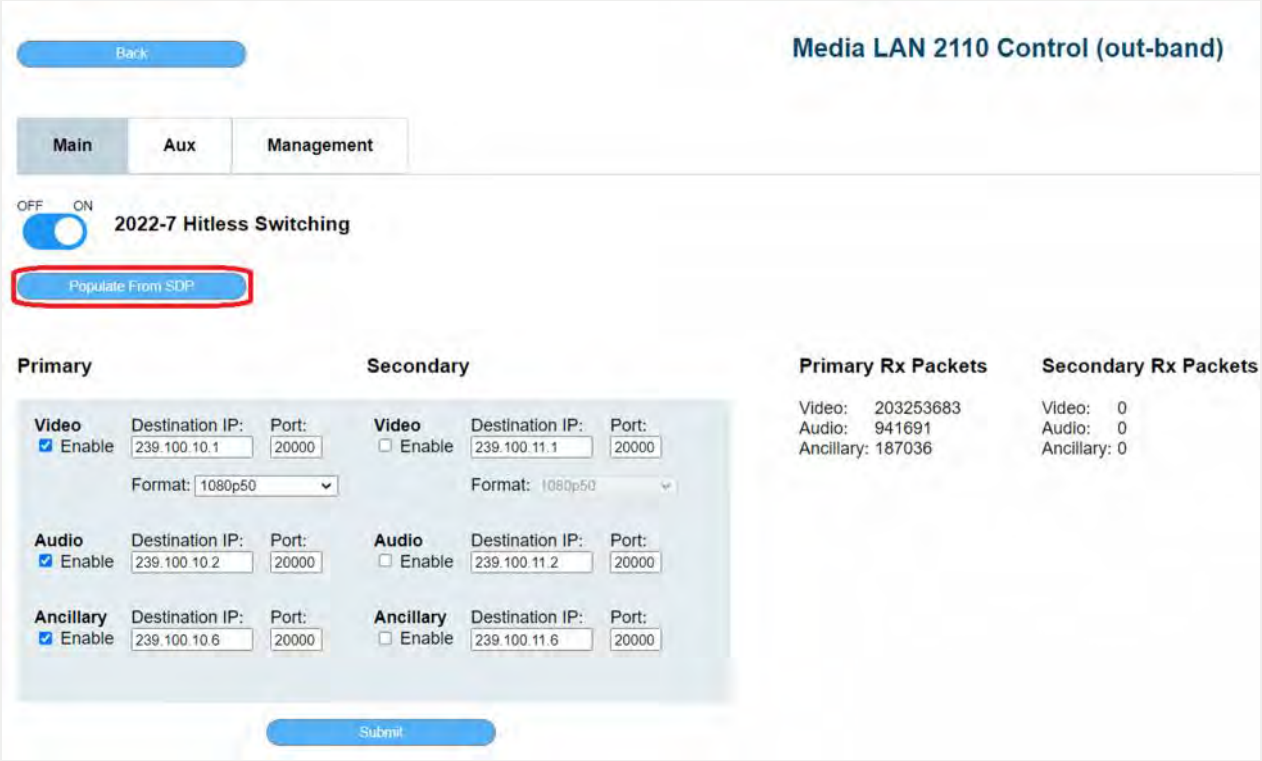


Figure 33. Main Populate From SDP Button

- Clicking the “Populate From SDP” button brings up the SDP URL import window (Figure 34).

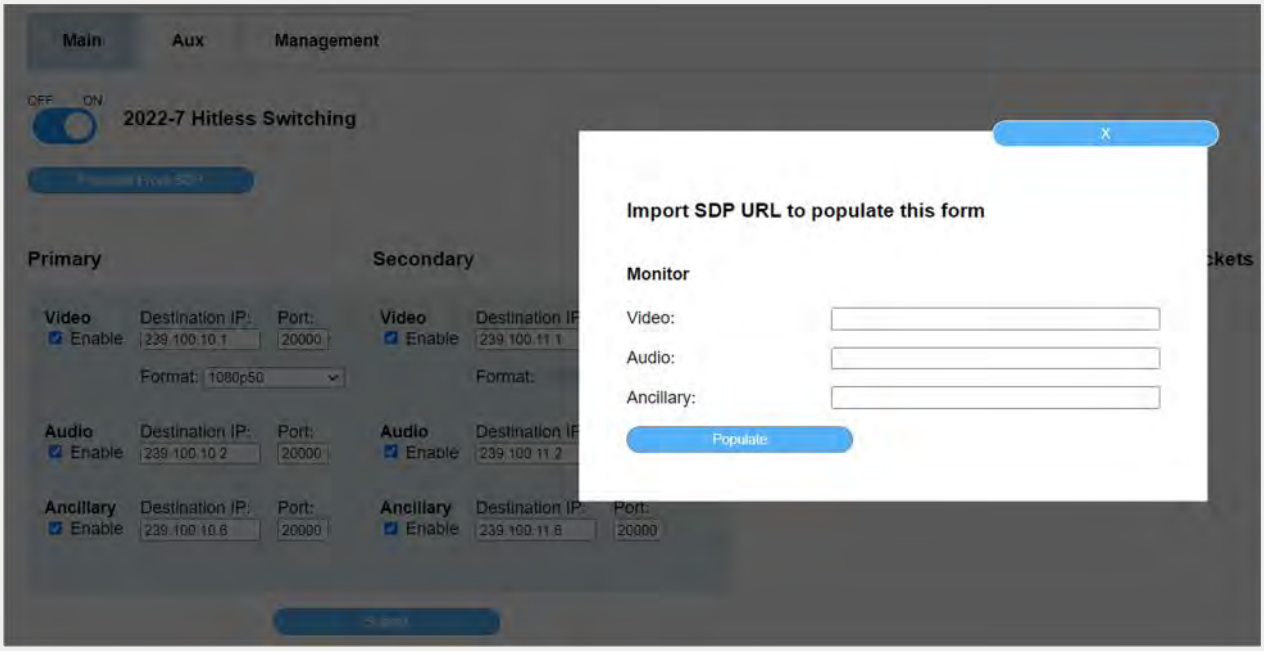


Figure 34. Import SDP URL

- Enter valid SDP URLs for each desired flow and click the populate button (Figure 35).

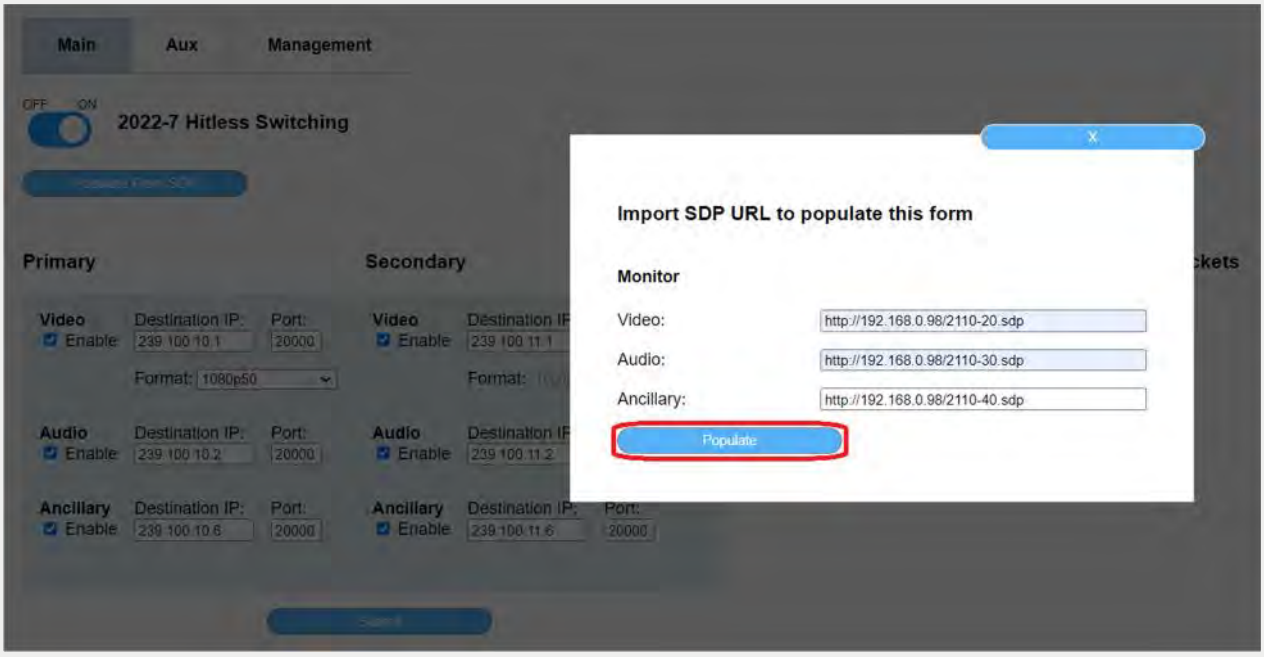


Figure 35. Example of SDP URLs

- If the SDP files can be fetched, they will be parsed and if valid each flow configuration will be populated with the destination IP address, port, and video format (for video flows).
- You may review and/or edit the values then hit submit to apply the new values (Figure 36).

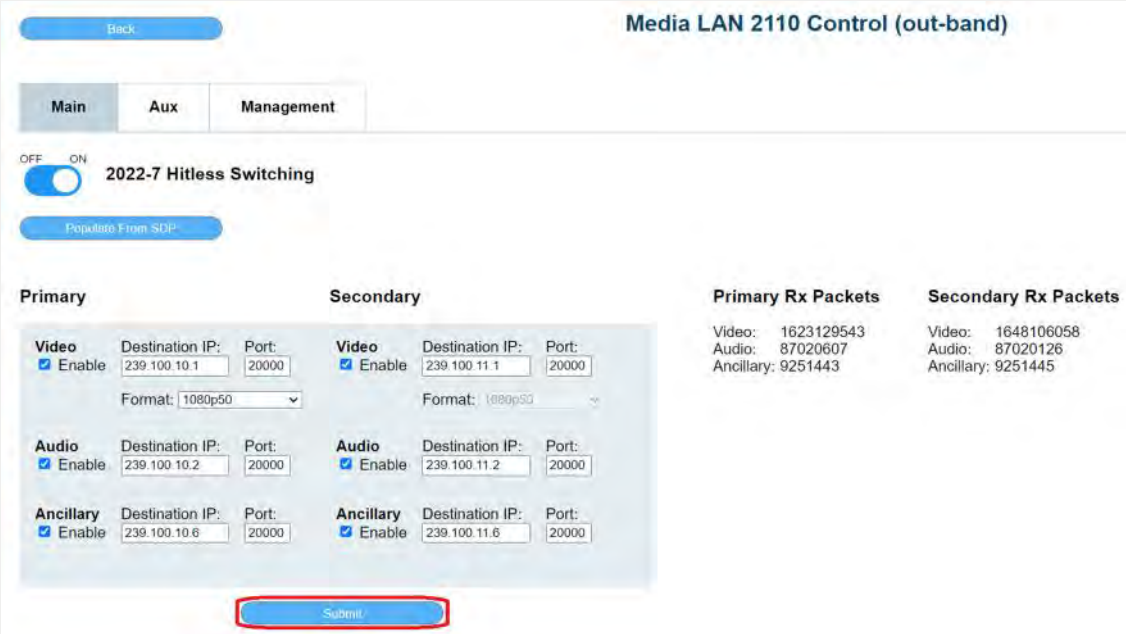


Figure 36. Submit the New Flow Configuration Values

- Any flow SDP URL fields left blank will result in its destination IP address and port set to 0's with the flow disabled. These flows can be edited manually before submitting.

7) *Specific Configuring Using REST URLs via REST API Client*

Some configurations and status are currently only available via in-band REST API. These will be added to the Control LAN UI in upcoming web UI updates. For now, you must use an in-band REST API client such as Insomnia or Postman to access these settings. Please contact tech support for further details or specific REST API information

Plura tech support contact information

Tel: +1 602-944-1044

Email: Tech@plurainc.com

8) *Management interface support (NMOS In-band)*

NMOS is always enabled. The input stream selection occurs through network discovery and communication with facility automation.

NMOS uses the address of the unit's in-band network interface for communications. When the monitor 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 Monitor 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.

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