

HELO Plus

H.264 Advanced Streaming and Recording Encoder



Installation and Operation Guide

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Telephone	+1.530.271.3190
Web	https://www.aja.com
Support Email	https://www.aja.com/support/contact
Sales Email	sales@aja.com

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Chapter 1 – Introduction



Overview

HELO Plus is a compact, advanced H.264 streaming and recording stand-alone appliance. HELO Plus offers both SDI and HDMI I/O with the capability to stream up to 1080p60 to a Content Delivery Network and record the program simultaneously. Two separate streaming destinations can be set up and recordings can be made to a combination of SD card, USB storage and NFS or SMB network storage. The PlayToStream feature allows streaming from any previously recorded program file, including optional control by a user-defined scheduling calendar. HELO Plus also provides Picture-In-Picture and graphics functionality in hardware for compelling presentations made simple.

Hardware

HELO Plus has a very small desktop footprint. It offers stand-alone capabilities with stream and record buttons on the front of the unit as well as LED indicators. Audio level meters provide valuable feedback about incoming audio. HELO Plus is fan-less and silent, allowing it to be used almost anywhere without fear of introducing noise. SD card and USB ports are also situated on the front of the unit for easy access.

Dual Streaming Outputs Plus Record

HELO Plus has dual encoders and dual stream outputs, giving the flexibility to create different output settings from a single input source. The two streams can have different packaging settings and different output frame size which means that a single content stream can be presented in two ways to serve a wider audience. It can be duplicated across both encoders for added resilience. Either of these encoder outputs can serve as the source for the HELO Plus recording system as well.

With the PlayToStream option, the user may stream two different programs where one is live, and the other is prerecorded at the same time - one to each output.

Layouts for Picture-in-Picture

HELO Plus brings the exciting layouts feature, allowing multiple inputs to be combined into a single screen with a graphic element overlay. A layout enables the user to combine the SDI input and the HDMI input into a single output stream and then add a graphic (video + key) into that composite. Additionally, each live video source can be used in its own independently adjustable picture-in-picture (PIP) element.

Web Server Built-In

HELO Plus can be easily configured remotely on a standard web browser, via the Ethernet connection, and using a desktop or laptop computer. Every function of HELO Plus is accessible in the web UI, with multiple HELO Plus devices being easily controllable via a tabbed browser window. HELO Plus can also be controlled via the stream and record buttons on the front of the device.

Scheduler and Automation Control

HELO Plus opens up a world of new streaming workflows for AV, live events, houses of worship, webcasting, corporate communications, production, and post. HELO Plus offers a scheduler that triggers pre-planned start and stop recording and streaming events simplifying projects requiring definitive schedules.

For more complex situations, achieve full automation with an easy-to-script control API.

Features

Streaming and Recording

- Simultaneous independent streaming and recording of 3G/HD/SD video formats from a single input
- HLS streaming (HTTP Live Streaming) to reduce buffering and stuttering, allowing for consumer devices such as iPhones and iPads to connect directly to HELO Plus for streaming
- PlayToStream - chargeable option. Allows you to stream out a previous recording to either/both streaming outputs
- Simultaneous dual recording to local storage devices and/or Network storage
- Closed captioning streaming from SDI input
- Support for two channels of HDMI or SDI embedded audio or two channels of consumer level analog audio I/O
- Support for an additional two channels of audio using a chargeable 4-channels option
- Optionally segmented recording to onboard USB or SD card storage or a network file store
- Recordings directory in web UI to view, sort, download or delete recorded files
- FaceBook Live integration
- HDMI & SDI overlay of system information
- Integrated Calendar to schedule automatic streaming and/or recording of events
- Enhanced HTTPS security
- Error logging for quick analysis of streaming issues

Audio

- Audio sample rate conversion to 48 kHz for all audio channel inputs
- 32, 96, 128, 192, and 256 kbps output AAC-LC MPEG-4 audio bit rate

2-Channel* Audio

- Selections for Audio Source 1
 - HDMI
 - SDI 1,2
 - Analog
 - Audio Signal Generator
 - None
- Stereo VU meters appear for Audio 1 in the web UI and Audio 2 VUs are grayed-out
- The Audio 2 Selection pull-down menu will display "None" and can't be changed

4-Channel audio

- The chargeable license option is activated). which adds a second audio pair for streaming/recording
- Selections for Audio Source 2 (and also for Audio Source 1 when the 4-channel option is activated)
 - HDMI
 - SDI 1,2
 - SDI 3,4
 - SDI 5,6
 - SDI 7,8
 - Analog
 - Audio Signal Generator
 - None
- Select Audio source 1 or Audio Source 2 for the HELO Plus front panel VU meters
- In the HELO Plus WebUI, stereo (L/R) VU meters appear and operate independently for Audio 1 and Audio 2

*NOTE: *2-Channel Audio here meaning the 4-channel audio license option is not active.*

Video Processing

- HDMI and SDI BNC inputs
- AV Mute with user graphics support for pre-live feeds
- De-interlacing
- Video geometry down-scaling
- Color space conversion, RGB 4:4:4 to Y'Cb'Cr' 4:2:0 (HDMI input only)
- Low frame-rate video confidence monitor in web UI
- VSG Auto mode
 - Automatically sets the format and frame rate of the test signal generator to match the last valid input video format. The format is saved as part of the config , so it will be held across reboots/power cycles. After a factory reset, it defaults to 1080i29.97 until the first input arrives.

Enhanced RTMP logging

The system logs multiple parameters of any RTMP streaming session:

- RTMP instance creation
- Closing the RTMP payload
- Error regarding the active state
- Chunk size configuration
- Metadata publication
- RTMP record negotiation
- Failures sending RTMP audio and video headers
- Failures sending video frames
- Stopping the RTMP payload

Hardware Streaming & Recording

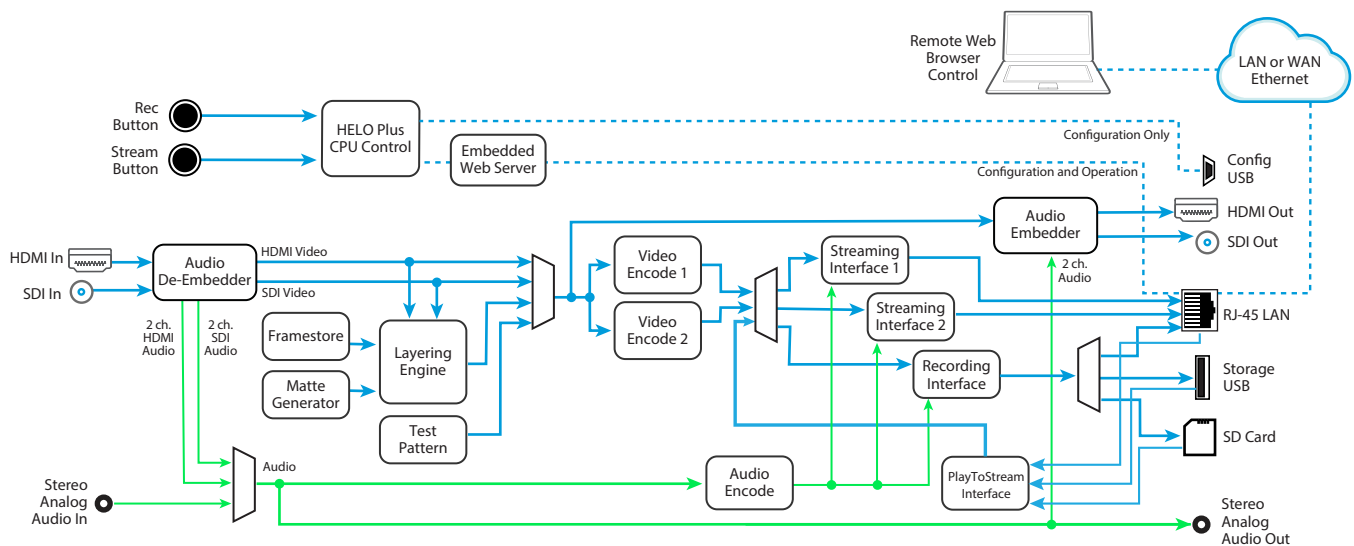
- Hardware H.264 encoding, streaming and recording

User Interface Software

- Built-in web server for full remote control and configuration
- eMini-Setup can be used with a USB connection for initial HELO Plus configuration

Simplified Block Diagram

Figure 1. HELO Plus Simplified Block Diagram



About Video Reference (Genlock)

HELO Plus has internal framesync circuitry for the SDI and HDMI signal paths. HELO Plus uses its SDI input signal for its video reference, which means changes to that input signal (for example, disconnecting and reconnecting that BNC cable) can affect downstream video synchronization. When HELO Plus loses its SDI source it enters a free run state, and will stay in free run until the SDI input returns and the current streaming or recording session has terminated.

HELO Plus REST API Documentation

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

REST programming documentation is stored in the unit itself and can be accessed by entering <IP address of machine>/rest.tmpl into a web browser that is running on a computer connected to the unit.

AJA REST documentation is also available at the following link:

https://gitlab.aja.com/pub/rest_api

Chapter 2 – Product at a Glance

Front Panel

Figure 3. HELO Plus Front Panel



Buttons

Once HELO Plus is powered up, configured, and properly connected, the two buttons on the front panel are used to start and stop recording and streaming.

Record Button

Pressing the Record button initiates recording to the configured local media types (SD card, USB Thumb drive, USB SSD drive) and/or Network Share, or stops all recordings in progress .

NOTE: Safeboot software recovery can be performed by pressing and holding the Record button while powering up the HELO Plus. See ["HELO Plus Safeboot" on page 19](#) for more information.

Stream Button

Pressing the Stream button initiates the enabled streaming outputs, or stops any streams in progress.

NOTE: The Record and Stream buttons can be linked using the HELO Plus web server screen. When linked, pressing either button will start and stop both recording and streaming.

Reset Button (Hardware)

A recessed hardware reset button is located next to the front USB port. This button can be pressed using a paper clip, and has two functions.

Soft Reset - Pressing and immediately releasing the button performs a soft reset. This soft reset does not clear layouts, saved images, or network information. The following information is retained.

Retained Settings With Soft Reset	
System name	Scheduler last remote sync
System password	Storage status
User authentication	SSDP enable host
Time source	HTTPS enable
NTP server	IP address type
Time, date (formats are reset, time/date values are not)	IP address
Time zone	Subnet mask
Daylight savings	Default gateway

NOTE: The Soft Reset function above can also be performed using the HELO Plus's web browser UI (Presets Screen). See "[Default Preset \(Web UI\)](#)" on page 56 for more information.

Hard Reset - Pressing and holding the recessed hardware button for five seconds performs a hard reset that returns all settings to their factory defaults and then reboots the device. Network connection parameters will be reset (DHCP), and all layouts, graphics, saved presets, and calendars will be deleted. Hard reset is intended for factory use to ensure a system is in a new state before shipment, and for use by equipment loan or rental houses that need to put units into a new state, and also to ensure any saved passwords are erased.

Ports/Slots

USB 3.2 Gen 1 Storage Port

USB port for connecting a flash drive for recording.

SD Card Slot

Cards and Formatting

- SDHC (FAT32)
- SDXC (exFAT)

Front Panel Status LEDs

Record LEDs

These two LEDs report the status of the Main and Backup recordings.

Green - Configured media is mounted and ready

Flashing Green - Recording in progress

Amber - Recording is not configured or no network connection for recording

Flashing Amber - Loss of signal

Stream LEDs

These two LEDs report the status of the two streaming outputs.

Green - Configured stream is ready

Flashing Green - Streaming in progress

Amber - Streaming is not configured, network error or no network connection

Flashing Amber - Loss of signal

USB LED

Storage Available Indicated by Color

Solid (on or off) - Safe to remove media

Green - Plenty of storage space available

Yellow - Storage space running low

Red - Storage media full. New recordings are not possible until more space is made available.

Activity Indicated by Blinking and On/Off Behavior

Blinking On/Off - Media in use, do not remove

Solid off - Media not selected or not present

Solid on - Media mounted and ready

Slow flashing - Recording in progress

Medium flashing - Media being scanned for recordings

Fast flashing - Other file access in progress (file download or delete)

SD LED

Storage Available Indicated by Color

Solid (on or off) - Safe to remove media

Green - Plenty of storage space available

Yellow - Storage space running low

Red - Storage media full. New recordings are not possible until more space is made available.

Activity Indicated by Blinking and On/Off Behavior

Blinking On/Off - Media in use, do not remove

Solid off - Media not selected or not present

Solid on - Media mounted and ready

Slow flashing - Recording in progress

Medium flashing - Media being scanned for recordings

Fast flashing - Other file access in progress (file download or delete)

Power LED

Green - Power on and normal operation

Amber - Safeboot, intended only for recovery from software installation failure
(see ["HELO Plus Safeboot" on page 19](#)).

Flashing Green - Identify feature on

Audio Level Meter

The Audio Level Meter in the center of the front panel indicates the level of the two audio output channels being streamed or recorded.

The meter's LEDs are colored to indicate the amount below 0dBfs when averaged over a one millisecond time interval.

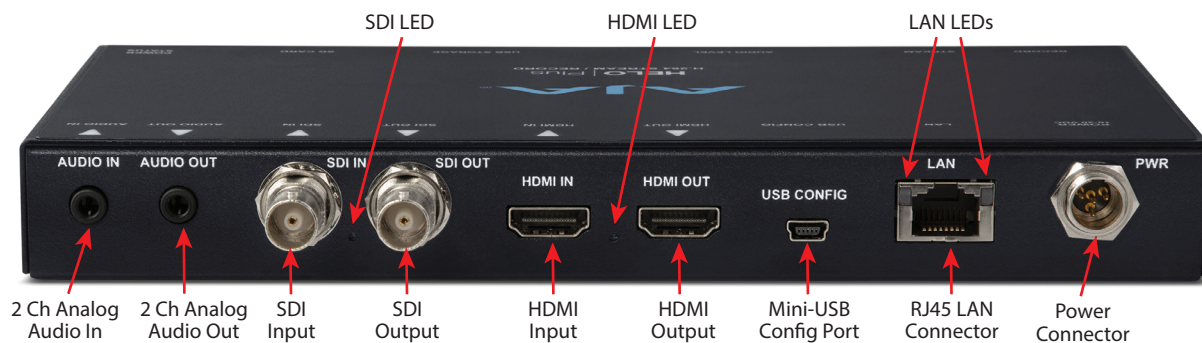
dBfs	LED Color and Location
-2 db	Red LED 1 (top)
-12 db	Yellow LED 2
-20 db	Yellow LED 1
-30 db	Green LED 4
-40 db	Green LED 3
-50 db	Green LED 2
-60 db	Green LED 1 (bottom)

If the system is licensed for the 4 channel audio option or is operating during the trial period of that option, the source being monitored by the Audio Level Meter may be selected in the Web Interface. If the system is not licensed for 4 channel audio, then the Audio Level Meter will monitor Audio Source 1.

NOTE: These audio level meters are for guidance only. Third-party audio metering should be employed when doing critical audio editing and mixing.

Rear Panel

Figure 4. HELO Plus Rear Panel



Connections

Audio

- Audio Input (2 channel stereo pair, 3.5mm TRS connector)
- Audio Output (2 channel stereo pair, 3.5mm TRS connector)

NOTE: Embedded audio from SDI or HDMI is also supported.

SDI Video

- 3G SDI Video Input (BNC connector)

NOTE: The SDI Video input connector is used as the HELO Plus's external video reference (see "[About Video Reference \(Genlock\)](#)" on page 9).

- 3G SDI Video Output (BNC connector)

HDMI Video

- HDMI Video Input (HDMI 1.4a connector)
- HDMI Video Output (HDMI 1.4a connector)

Mini-USB Config Port

USB connection for use with eMini-Setup for initial configuration and firmware update.

LAN Port

10/100/1000 Ethernet port (RJ45 connector), including network communications status LEDs.

Power

Uses universal input +12V power supply (included)

Rear Panel Status LEDs

SDI In LED

This LED indicates the status of the SDI video input signal by color:

Off - No input or invalid input

Green - Lock to SD

Red - Lock to HD

Amber - Lock to 3G

HDMI In LED

This LED indicates the status of the HDMI video input signal by color:

Off - No input or invalid input

Green - Lock to SD

Red - Lock to HD

Amber - Lock to 3G

LAN LEDs

The LED on the right lights amber when there is an Ethernet link.

The LED on the left flashes green when data is being transferred.

Chapter 3 – HELO Plus Installation

Overview

HELO Plus requires a network connection and is shipped from the factory with DHCP enabled. If your network has a DHCP server, by simply connecting HELO Plus to your network with an Ethernet cable, the DHCP server will assign HELO Plus a compatible IP address. However, you will need to know that IP address before you will be able to access HELO Plus's internal web server for initial configuration.

The eMini-Setup application, available as a free download from the AJA website, lets you identify the current HELO Plus IP address and, if necessary, configure its network settings so the unit can operate in your work environment. See "[Chapter 5 eMini-Setup](#)" on page 86 for more information.

For streaming or recording to a network drive, additional HELO Plus configuration is required. A properly configured HELO Plus can stream and record simultaneously or perform each task individually.

HELO Plus was also designed for stand-alone operation. Once configured, you can operate your HELO Plus without a computer, using only its front panel buttons to start and stop streaming and/or recording. HELO Plus can even record directly to inserted formatted media (USB stick or SD card) without a computer or a network connection.

CAUTION: *Please use caution and take security into account when configuring your HELO Plus unit on your network. It is recommended that you place your HELO Plus behind a firewall so that it is not accessible on the open Internet by unauthorized users. If you have questions or concerns about how to configure HELO Plus in a way that is appropriate for your security needs, please consult with your IT staff or a qualified network security consultant.*

HELO Plus Initial Configuration Summary

1. Acquire eMini-Setup from the AJA website and install it onto your computer (see "[Chapter 5 eMini-Setup](#)" on page 86).
2. Connect the HELO Plus's USB Config port on the rear of the unit to that computer's USB port.
3. If you will be using HELO Plus on a network, connect the HELO Plus's Ethernet connector to that network. If no network will be used (possible for recording only), you can connect the HELO Plus directly to your computer's Ethernet port.
4. Launch the eMini-Setup application on your computer. The eMini-Setup Network tab will display the HELO Plus's current IP network settings.

NOTE: *HELO Plus ships from the factory configured by default for DHCP operation.*

- A. If your HELO Plus is connected to a network using DHCP, the DHCP assigned IP address is shown. Enter that IP address into a web browser on your connected computer. The HELO Plus's internal web page will be displayed, allowing complete control of the device.
- B. If your HELO Plus is not connected to a network, or your network does not use DHCP, the HELO Plus will configure itself to use a default static IP address and display those values. Use that information to make the

required network configuration changes that will allow you to connect your computer to the HELO Plus via Ethernet. See "[Static IP Address Configuration Using eMini-Setup](#)" below.

Static IP Address Configuration Using eMini-Setup

IMPORTANT: Record your computer's existing TCP-IP settings before you change any of those network settings so that you can easily return your computer to normal network operation.

1. Ensure the HELO Plus's USB Config port is connected to your computer, and the HELO Plus's Ethernet port is also connected to your computer, either directly or via a non-DHCP network.
2. Launch the eMini-Setup application and go to the eMini-Setup Network tab.
3. If necessary, select **Static** as the IP Address Type.
4. You now should now be able to make any necessary network configuration changes.
 - A. You can use eMini-Setup to edit the HELO Plus's static IP address to be compatible with your computer's current network settings.
 - B. Alternatively, you can change your computer's IP settings to be compatible with the HELO Plus's static IP address.

NOTE: Typically compatible static IP settings will have identical values for the first three IP address numbers, different values for the last IP address number, and identical Subnet Masks.

5. Once the IP addresses are compatible, enter the HELO Plus's IP address into a web browser on your connected computer. The HELO Plus's internal web page will be displayed, allowing complete control of the device.

CAUTION: If you leave the DNS field empty or its value is invalid, HELO will display an Alarm if streaming destinations or network recording destinations are referenced by URLs.

HELO Plus Recording Quick Start

HELO Plus is shipped from the factory configured with the following basic recording settings:

- Input - (SDI, Video Source on HELO Plus web browser Config screen)
- Audio Input Source - (SDI, Audio Source on Config screen)
- Recording Target - (USB, Recording Media Type on Record Output screen)
- Recording default format is Selected Input Video Geometry. Full Frame Rate, 10Mb MOV

The easiest way to record is to simply apply power to HELO Plus, connect HELO Plus's SDI IN port to a valid video/audio source, insert formatted SD media into HELO Plus's SD slot, and then press the Record button on HELO Plus's front panel. The Record button and SD LEDs will blink green while recording. Pressing the Record button again stops the recording.

To change HELO Plus's configuration settings (other than IP address) requires a network connection to HELO Plus and a computer running a web browser, as described above. You can then change the input source (SDI or HDMI), recording target (USB, SD card or network drive), and the recording format.

NOTE: After deleting files from a USB thumb drive, SSD drive or SD card on an external computer, you must also empty the trash to make that space available on the media.

HELO Plus Streaming Quick Start

HELO Plus is shipped from the factory configured with the following basic streaming settings:

- Input - (SDI, Video Source on HELO Plus web browser Config screen)
- Audio Input Source - (SDI, Audio Source on Config screen)
- Both Stream 1 and Stream 2 channels enabled using Encoder 1 as input.
- HLS Stream Type - (HLS on Stream 1/2 Output Screen)
- Streaming default format is Selected Input Video Geometry Full Frame Rate 10Mb HLS

HLS streaming requires no additional configuration. With default settings you can simply connect a valid video/audio source to HELO Plus's SDI input and press the Stream button on HELO Plus's front panel.

HELO Plus Firmware Update

Visit the AJA website (<https://www.aja.com>) to locate and download the latest firmware. The following page provides support information and includes links to locations where you can download updates:

<https://www.aja.com/products/helo-plus#support>

NOTE: See "Firmware Screen" on page 68.

HELO Plus Safeboot

HELO Plus has a safety feature where an internal "safeboot" copy of minimal system software is retained in the event the update process fails or the loaded software becomes corrupted. The safeboot software provides minimal system operation and is intended only to restore the unit to a known configuration (the last network configuration settings are retained) with which you can successfully connect to the device over the network and download and reinstall fully functional system software.

HELO Plus Safeboot is initiated by holding in the front panel **Record** button while powering up the unit, which launches the safeboot software version. When running safeboot software a red Safeboot warning alarm is shown on the web UI.

With the safeboot software running, you will now be able to update your HELO Plus to the latest version using the Web UI or eMini Setup.

Chapter 4 – HELO Plus Web Interface

Overview

Direct Front Panel Control

Once installed and configured for operation, HELO Plus can be controlled by simply pressing the front panel Record and Stream buttons. To change HELO Plus's configuration settings and for remote control of HELO Plus, use HELO Plus's web interface.

Remote Control

An optimized web server in HELO Plus allows remote control and parameter adjustments via a web browser client running on a network connected computer. The network can be a closed local area network, a straight computer-to-HELO Plus cable, or even exposed through a firewall to a broadband WAN.

HELO Plus uses a standard RJ45 LAN connection, and communicates via standard "straight-through" CAT 5 Ethernet cables or null-modem (cross-over) cables without any configuration or strapping required.

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.

To connect to HELO Plus, simply attach HELO Plus to your network and enter HELO Plus's IP address into the web browser. If authentication has been configured, you may need to enter a password.

Web Browser via Ethernet

Figure 5. HELO Plus Web Browser Screen Areas

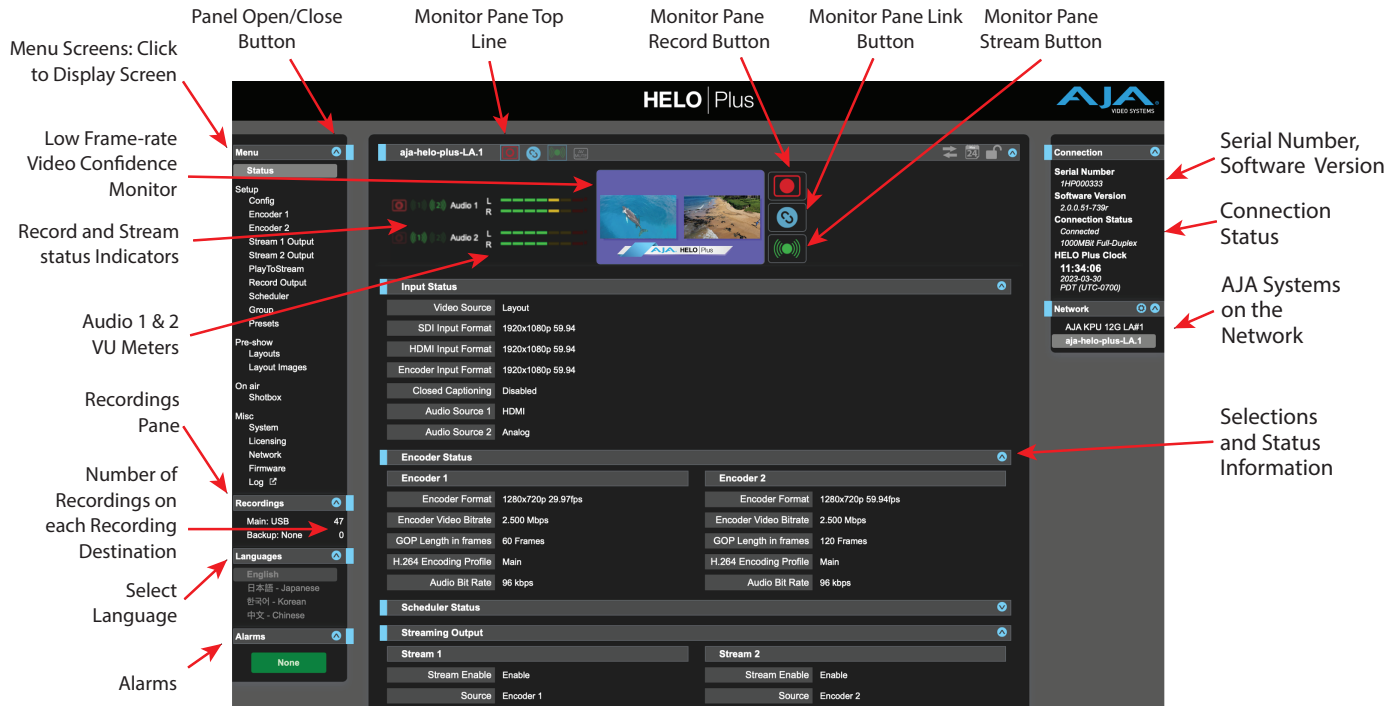
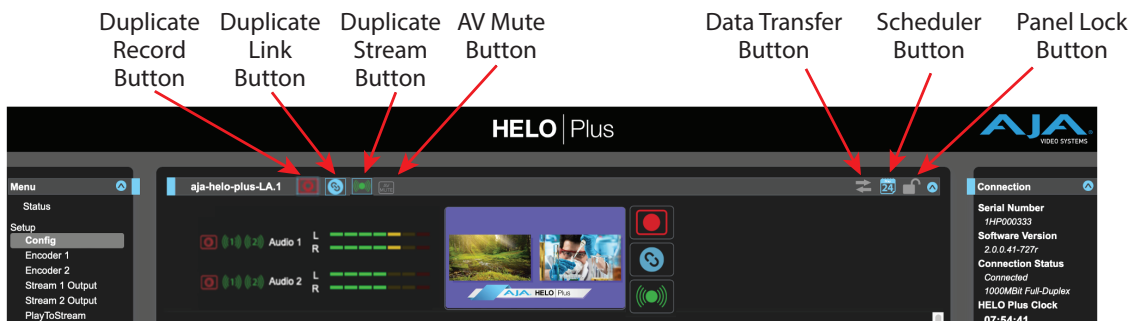


Figure 6. HELO Plus Web Browser Monitor Pane Top Line Buttons



General Screen Description

All HELO Plus web screens have certain areas and controls in common. Vertical and horizontal scroll bars appear when information extends past the border of a panel.

The round blue Up/Down arrow button on each pane and many parameter groups opens and closes that pane or set of parameters.

Menu Pane

On the left of each screen is a Menu listing all the available screens. Click any of these links to jump to that screen.

Recordings Pane

The Recordings pane lists the Main and Backup recording destinations. Either destination can be selected to display and access the recordings residing on that destination.

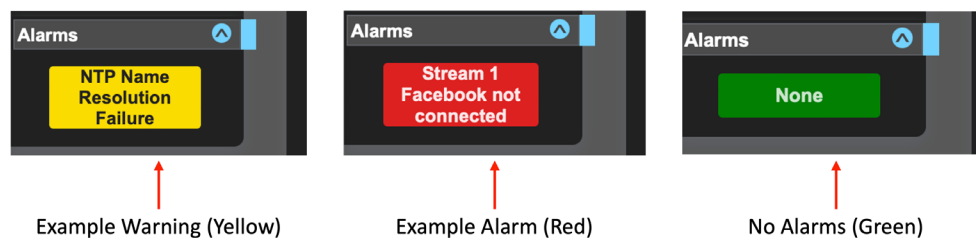
Languages Pane

The HELO Plus web-based interface (WebUI) may be displayed in English, Japanese, Korean or Chinese. Changing between languages takes a few moments, during which you will see a "Switching Locales" alert.

Alarms Pane

Alarms are displayed in a pane on the left side of each screen. Clicking on the arrow opens or closes this pane to show or hide the alarms. Hovering the mouse over an alarm (red) or warning (yellow) may provide additional detail about the condition. Alarms indicate that one or more features will not function given the configuration of settings that the user has entered. Warnings indicate that the feature(s) may function, but may not behave in the fashion that the user intended.

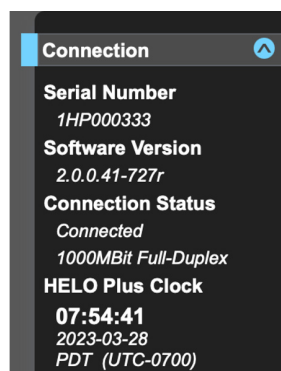
Figure 7. Example HELO Plus Alarm Panes, showing a Warning, an Alarm and None



Connections Pane

On the right side of every screen is a Connection pane listing information for the connected HELO Plus. Information includes HELO Serial Number and Software Version, the Connection Status and bitrate, and a HELO Plus Clock time-stamp.

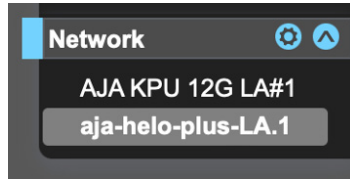
Figure 8. HELO Plus Connection Pane



Network Panel

On the right of the WebUI is a Network pane that lists any and all other AJA devices on the network. In this example, an AJA KiPro Ultra 12G device is also on the network.

Figure 9. HELO Plus Network Panel



Right-clicking on the name of a HELO Plus and then left-clicking on "Identify" turns on the Identify feature, which will blink the power LED of that HELO Plus. Repeating that procedure turns the blinking off.

Left-clicking on the name of any AJA device showing in the Network Panel will automatically open the WebUI for that AJA device.

The gear icon opens the Network Screen, and is the same as selecting Network from the Menu Pane.

Top Menu Line

Near the top of the screen is a top menu line, labeled with the assigned HELO Plus system name. This top menu line has duplicate Record, Link, and Stream function buttons on the left, so they can still be accessed if the Video Confidence Monitor pane is closed.

The following additional function buttons are also available. Click on the button to toggle it on or off.

Data Transfer Button

The HELO Plus's Data Transfer button is colored yellow when active, and gray when inactive. Recording and/or streaming is not available while in Data Transfer mode. Data Transfer mode must be turned on (yellow arrows) in order to download files from the Recordings panel.

Scheduler Button

The Scheduler button indicates whether the Scheduler is enabled or not. When colored gray, the Scheduler is disabled. When colored blue, the Scheduler is enabled.

Lock Button

The Lock button indicates the status of the front panel buttons, set using the Front Panel Button Lock parameter in the Config menu. When lock is On (yellow closed lock icon), the front panel buttons will not control recording or streaming; if pressed, they will briefly flash red.

Video Confidence Monitor

Below the top menu line a low frame rate video monitor can be displayed for signal confidence monitoring. Click the blue Up/Down arrow button to show or hide the video confidence monitor pane. When hidden, the duplicate Record, Link, and Stream function buttons will still be available for use on the top menu line.

Record, Link and Stream Buttons

The Record and Stream buttons are used to toggle Recording and/or Streaming on or off. These controls can be linked together with the Link button. Error conditions may deactivate these buttons (e.g. No Video Input). The Record, Stream, and Link buttons are also disabled when the HELO Plus is in Data Transfer mode.

Audio VU Meters

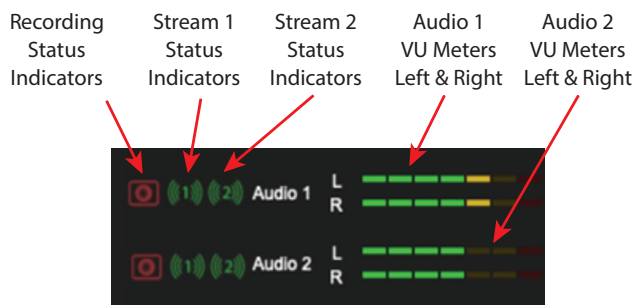
To the left of the Video Confidence monitor are VU meters indicating the level of the audio sources being used by the system. If the 4-channel audio option has been purchased (or is currently being used during a trial period), both stereo VU meters will be active. If the 4-channel audio option has not been purchased, or if the Audio Source 2 parameter has been set to "None", then the second stereo VU meter will not show any activity. It will still be visible, but it will be "grayed-out"

NOTE: These audio level meters are for guidance only. Third-party audio metering should be employed when doing critical audio editing and mixing.

Audio Destination Indicators

Immediately to the left of the VU meters are a set of destination indicators which indicate where a particular Audio Source is being used in the system. There are indicators for Recording, Output Stream 1 and Output Stream 2. If the 4 channel audio option has not been purchased, or if the Audio Source 2 parameter has been set to "None", then the indicators for the second stereo VU meter will be "grayed out".

Figure 10. Audio VU Meters, Destinations & Recording Status Indicators



Parameters and Information

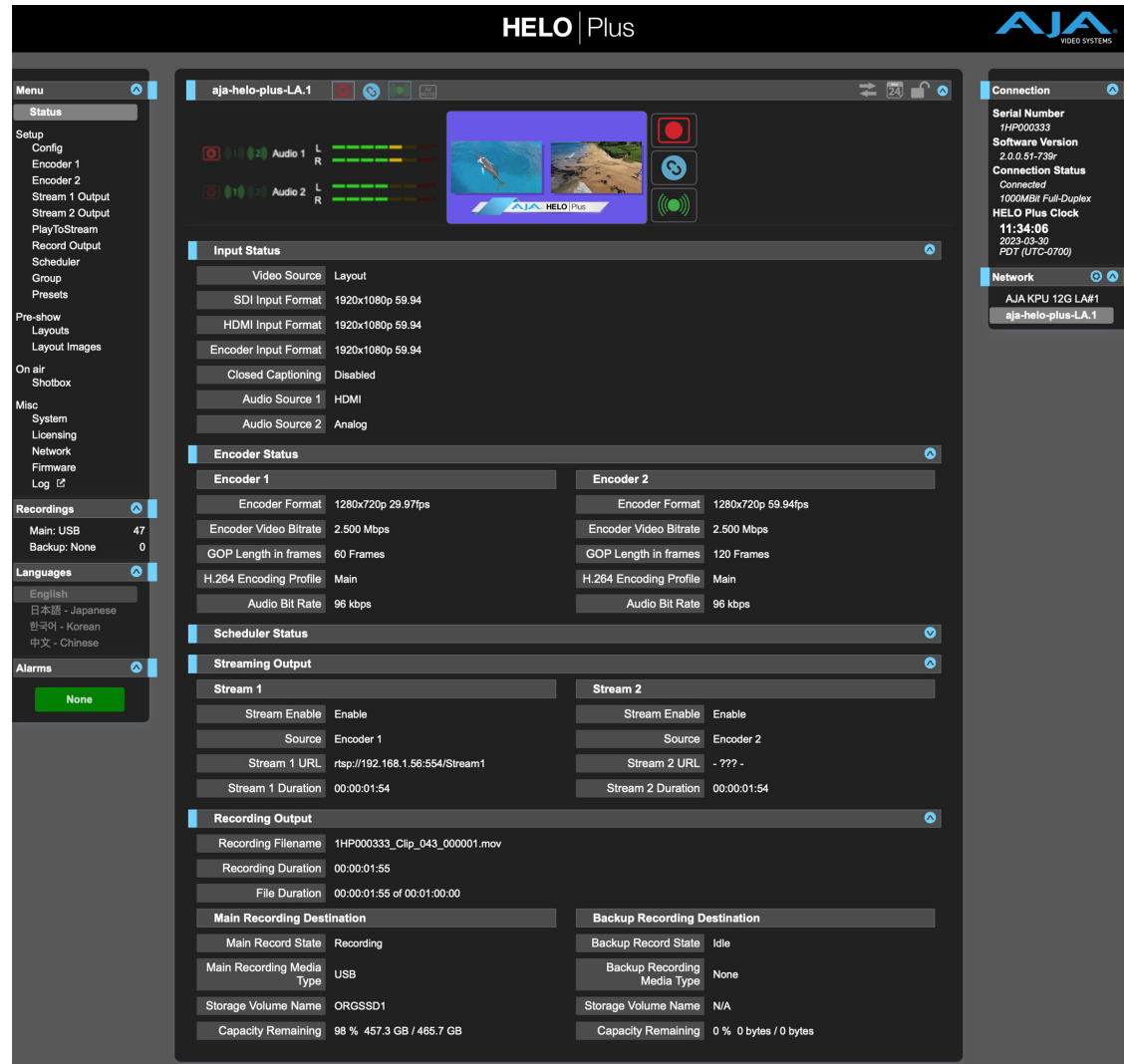
The rest of the screen displays all the parameter selections and information available for the selected HELO Plus screen.

Dynamic Controls

- Hovering the mouse on a parameter name displays a brief description of its function.
- Right clicking on the parameter name opens a dialog that lets you reset the parameter to its factory default.
- For values with sliders, fine control is achieved using the arrow keys on the keyboard to move the slider the minimum amount. The numeric value can also be clicked on to enter a specific value.

Status Screen

Figure 11. HELO Plus Status Screen



The Status screen reports the current status and settings for:

- Input Status
- Encoder Status
- Scheduler Status
- Streaming Output
- Recording Output

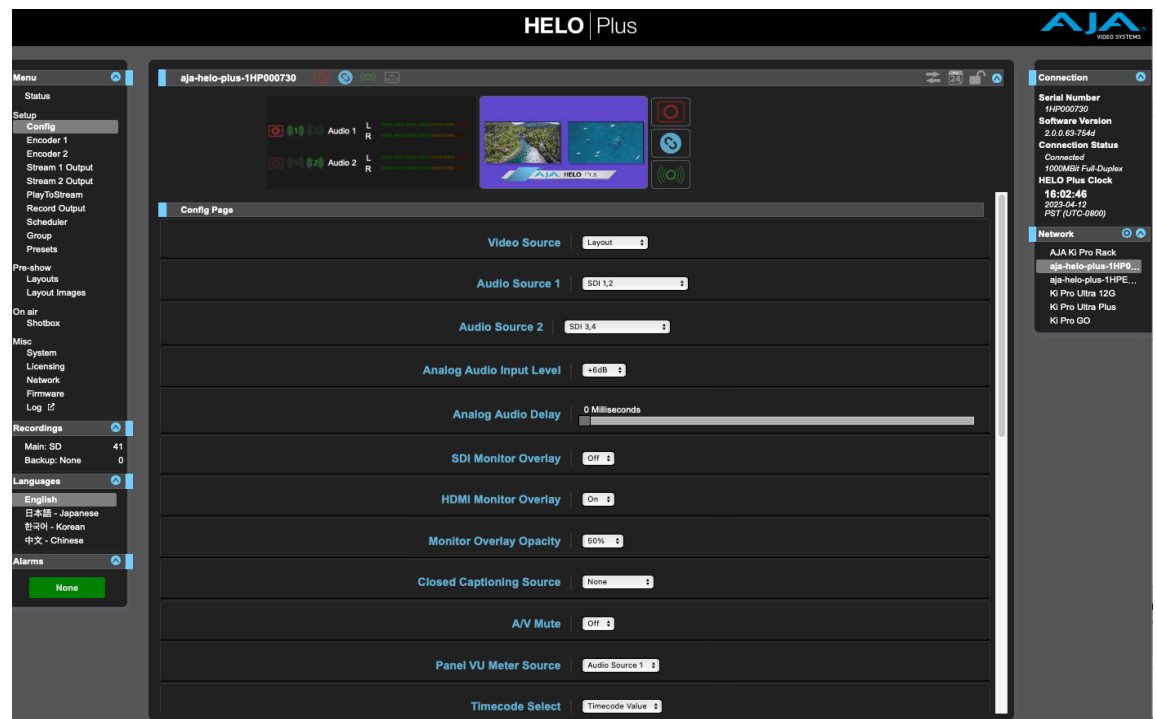
Each group of parameters can be expanded or collapsed.

Some of the parameters are editable using a right click. For example, right clicking on the Video Source selection will bring up a list of available inputs, allowing you to change it. Parameters cannot be changed when currently streaming or recording.

All available parameters are accessible by clicking on the Menu screens listed on the left.

Config Screen

Figure 12. HELO Plus Config Screen



The Config Screen has several parameters for HELO Plus general operation.

Video Source

Selects a video input source from the available video input connections. This is the video that will be recorded and/or passed through.

HDMI - Use the HDMI input as the video source.

SDI - Use the SDI input as the video source (factory default).

Test Pattern - Use the internally generated test pattern as the video source.

Layout - Use the currently active Layout.

The HELO Plus's SDI and HDMI video outputs will be synced to the SDI Video signal input when the HELO Plus has SDI selected as its Video Source parameter, or when the Video Source parameter is Layout and SDI Enable is On, and when a valid SDI Video input signal is present and has been stable for more than two seconds, and the SDI signal was valid and stable at the time recording/streaming began and it has never dropped or changed format since. Under all other circumstances the Sync generator will be in Free Run.

Audio Source 1/Audio Source 2

Selects an audio input source from the available audio input connections for each of the Audio Sources used by the system.

Input selection for Audio Source 2 is only available if the 4-channel audio option has been purchased (or is currently being used during a trial period). If the system is in an active trial period, it will be indicated as such, and the time remaining on the trial will be shown. See ["Licensing Screen" on page 70](#).

If the system is not licensed for the 4 channel audio option, the user may select from the following audio inputs for Audio Source 1: (Audio Source 2 will show "None" as the input choice):

HDMI - Use HDMI embedded audio channels 1&2 as the audio input.

SDI - Use SDI embedded audio channels 1&2 as the audio input (factory default).

Analog - Use the analog stereo input as the audio input.

Audio Signal Generator – Use the built-in 1KHz sine wave generator as the audio input.

None - No audio will be passed by this Audio Source.

If the system is licensed for the 4 channel audio option, then the user can select from the following audio inputs for both Audio Source 1 and Audio Source 2:

HDMI - Use HDMI embedded audio channels 1&2 as the audio input.

SDI 1,2 - Use SDI embedded audio channels 1&2 as the audio input (factory default).

SDI 3,4 - Use SDI embedded audio channels 3&4 as the audio input.

SDI 5,6 - Use SDI embedded audio channels 5&6 as the audio input

SDI 7,8 - Use SDI embedded audio channels 7&8 as the audio input

Analog - Use the analog stereo input as the audio source.

Audio Signal Generator – Use the built-in 1KHz sine wave generator as the audio source.

None - No audio will be passed by this Audio Source.

Analog Audio Input Level

This parameter can be used to adjust the level of the analog audio input. Choose from 0db, +6db, or +12db.

NOTE: The Analog Audio Input Level adjustment is for the analog inputs only and has no bearing on SDI or HDMI audio levels.

Analog Audio Delay

This parameter can be used to delay the analog audio output by a fixed number of milliseconds relative to the input.

NOTE: The Analog Audio Delay adjustment is for the analog inputs only and has no bearing on SDI or HDMI audio timing.

SDI Monitor Overlay

This parameter provides an overlay of system parameters including system name, streaming and recording state, timecode, main and backup recording capacity remaining, video and audio source information and audio VU meters on the SDI output.

HDMI Monitor Overlay

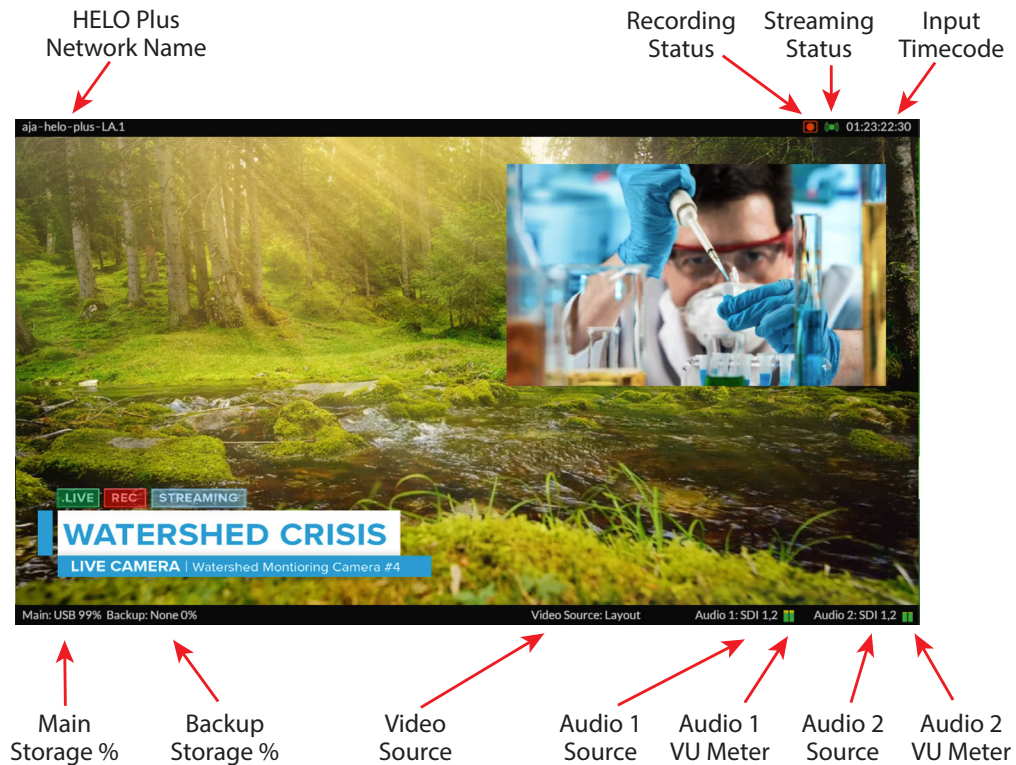
This parameter provides an overlay of system parameters including system name, streaming and recording state, timecode, main and backup recording capacity remaining, video and audio source information and audio VU meters on the HDMI output.

Monitor Overlay Opacity

This parameter adjusts the opacity of the Super Out timecode and transport state information. Available choices are: 100%, 75%, 50% (default) and 25%.

Monitor Overlay Information

Figure 13. Video Output Overlay Information



Closed Captioning Source

Determines the source for closed captioning data. Closed captioning is available when the video source is an SDI signal. When the video source is HDMI or Test Pattern, the Closed Captioning Source control is not displayed on the Config Screen. Select from the following:

None - Select when you do not want to include closed captioning in the stream or when closed captioning is not present in the SDI signal (factory default).

Auto - Select when you want HELO Plus to auto-detect the closed captioning source.

Ancillary data - Select when the closed captioning data has been encoded into the ancillary data of the signal.

Line 21 - Select when the closed captioning data has been encoded into line 21 of the signal.

AV Mute

Use AV Mute to mute both the video and audio while still maintaining a stream to the end viewer. Factory default is Off.

For example, you can personalize your pre-stream viewers' experience with your own program content instead of color bars or black, or replace the outgoing signal if technical difficulties occur in the studio while on air.

When AV Mute is On, HELO Plus mutes the audio and video from the input signal and instead shows the selected Video Test Pattern Type along with silent audio.

When AV Mute is Off, in instances when there is no input signal, HELO Plus shows the selected Video Test Pattern Type along with silent audio.

Uploading a Custom Video Test Pattern Image

To upload your own custom video test pattern image for HELO Plus to display instead of color bars or black:

1. Select Custom from the Video Test Pattern Type control on the Config page. The Custom Test Pattern Image control displays.
2. Click the Choose File button. A navigation window opens.
3. Navigate to the image to upload, select it, then click Open. Your selection will display as the Custom Test Pattern Image and will be sent to the end viewer when AV Mute is on or when there is no input signal present.

Custom Video Test Pattern File Requirements

Please observe these file requirements for custom video test pattern files:

- Must be in standard JPEG or PNG image file format.
- Cannot be larger than 4 MB in size.
- Image resolution must not be larger than HD (1920x1080).
- For best results, use an image that has the intended video capture resolution. (At any other resolution, the image will be anamorphically scaled to fit the capture size.)

Panel VU Meter Source

Select Audio Source 1 or Audio Source 2; (Audio Source 2 is only active if the 4-channel audio license has been purchased, or you're in an active trial period).

Timecode Select

This is where you select what source will be used for the timecode to be recorded and displayed: Timecode Value, Time of Day or SDI RP-188.

Timecode Value

Set the Timecode Start value to any hour, from 00:00:00:00 to 23:00:00:00.

Timecode Type

Select NDF or DF.

Loss of Video Behavior

This parameter controls what happens to HELO Plus's recording and streaming if an enabled input video signal is lost or changes. Select from:

Stop - Stops the recording and/or streaming when input video is lost.

Use Test Pattern - Record and/or stream the currently selected Video Test Pattern Type (100% Bars, Black, Custom) in place of the lost input video (factory default).

Auto-Recover Streaming

If there is a streaming disconnect, this control determines what will happen to the streaming function.

Off - After a streaming disconnect, the unit will not automatically attempt to reconnect and resume streaming. Stream {1,2} Failed alarm(s) will show in red when the respective stream fails.

On - After a streaming disconnect, the unit will automatically attempt to reconnect and resume streaming (factory default). Stream {1,2} Failed, Retrying" alarm(s) will show in yellow when the respective stream fails. The Retrying alarm disappears when the stream has recovered.

Group Mode

When the HELO Plus has been configured for Group operation as a Follower with another AJA device, this parameter determines what the HELO Plus does when it receives a Group trigger command. This parameter does not affect a HELO Plus if it is configured as a Group Leader.

Stream - The HELO Plus will stream when triggered.

Record - The HELO Plus will record when triggered (factory default).

Stream and Record - The HELO Plus will stream and record when triggered.

Power Up State

Selects what HELO Plus will do when powered on. Select "Idle" for normal use and when the scheduler is enabled.

Idle - Upon powering up, the unit will be in an idle state (factory default).

Record - Upon powering up, the unit will automatically start encoding and recording.

Stream - Upon powering up, the unit will automatically start encoding and streaming.

Record and Stream - Upon powering up, the unit will automatically start encoding, recording and streaming.

RTP/UDP Traffic Shaping

Allows control of traffic shaping for RTP or UDP stream output. Enabling this control will make the packet timing for RTP/UDP streams less "bursty" and may improve streamed video quality with some networks.

Disable - Disables RTP/UDP Traffic Shaping (factory default).

Enable - Enables RTP/UDP Traffic Shaping.

Video Test Pattern Format

Sets the video format output of HELO Plus's internal test pattern generator. Choose from:

- 525i 59.94
- 625i 50
- 720p 50, 59.94, 60
- 1080i 50, 1080i 59.94, 1080i 60
- 1080p 23.98, 24, 25, 29.97, 30, 50, 59.94, 60
- Auto (factory default)

Auto mode automatically sets the format and frame rate of the test signal generator to match the last valid input video format. The format is saved in non-volatile memory, so it is held across reboots/power cycles. After a factory reset, "Auto" defaults to 1080i59.94 until the first valid input stream is detected.

Video Test Pattern Type

Sets the output of HELO Plus's internal test pattern generator. Choose from:

- 100% Bars
- Black (factory default)
- Custom - Opens a browser from which you can choose a custom test pattern JPEG or PNG file.

NOTE: HELO Plus can be configured to display this custom image if input video is lost. See ["Loss of Video Behavior" on page 30](#) and ["Layout LOV" on page 59](#).

Custom Test Pattern Image

A Custom Test Pattern image may be uploaded.

Audio Bit Rate

Use this drop-down menu to select the audio bit rate of the encoded signal, because it affects both recording and the streaming outputs. The available selections are:

- 32 kbps
- 64 kbps
- 96 kbps
- 128 kbps (factory default)
- 192 kbps
- 256 kbps

Dropped Frames Stream Behavior

Selects the HELO Plus's behavior the when one or more input frames are lost due to error conditions.

Continue - Streaming continues after dropped frames (factory default).

Stop - Streaming stops after dropped frames.

Playlist Missing File Behavior

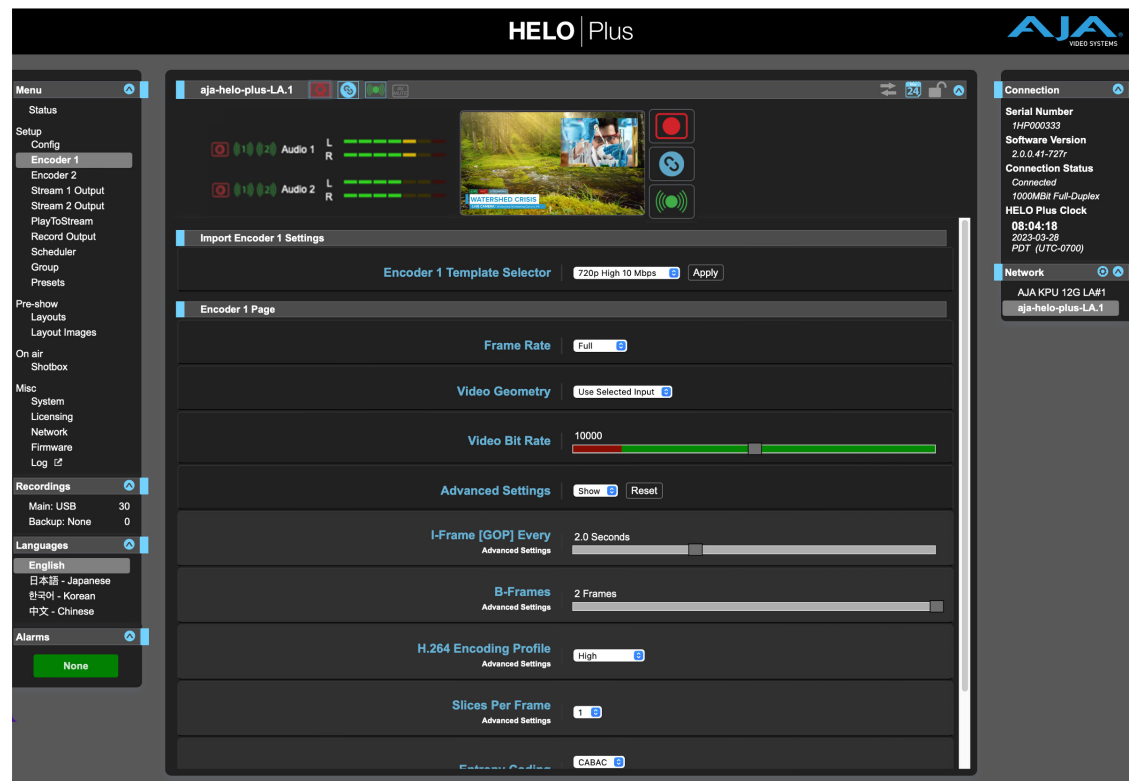
Selects the HELO Plus's behavior when the optional PlayToStream function has an m3u file selected, and one or more source clips that make up the media are missing.

Continue - The system will attempt to continue to replay the clip even in the absence of some clips - effectively "jumping across" the missing segment. Discontinuities at the clip boundaries may occur.

Stop - The PlayToStream operation will terminate when a missing segment is encountered.

Encoder 1, 2 Screens

Figure 14. HELO Plus Encoder 1,2 Screens



Two Encoder screens are available, one for each of HELO Plus's internal Encoders. The two Encoders allow simultaneously creating different encoded signal outputs for streaming and/or recording. For example, a high quality full frame high bit rate signal could be created with Encoder 1 for recording, and a half or quarter frame rate lower bit rate signal could be created with Encoder 2 for streaming. The settings on each screen are applied independently to only that Encoder's output.

Both Encoders are available for simultaneous use, with one exception.

NOTE: Only one HELO Plus Encoder is operational when the unit is encoding at higher than 720p resolution at more than 30fps (50, 59.94, 60) and is using Full frame rate. In that special case Encoder 2 will be disabled (UI controls unavailable). Both Encoders are available, however, at Half or Quarter frame rates.

Import Encoder Settings

Encoder templates are available for several commonly used scenarios. Factory default is 720p High 10 Mbps.

Figure 15. Encoder Templates

1080p High 20 Mbps	NTSC High 2.5 Mbps
1080p Mid 10 Mbps	NTSC Low 1 Mbps
1080p Low 5 Mbps	PAL High 2.5 Mbps
720p High 10 Mbps	PAL Low 1 Mbps
720p Mid 5 Mbps	VGA High 2 Mbps
720p Low 2.5 Mbps	VGA Low 1 Mbps
540p 1.5 Mbps	
360p 800 Kbps	
270p 400 Kbps	

Select the template from the list and then click **Apply**. Those settings will immediately be applied to that Encoder. The loaded template settings can be fine tuned, if desired, by adjusting the parameter values below.

Encoder Page

Each Encoder (1 and 2) has its own set of parameters that can be configured independently.

Frame Rate

Selects the encode frame rate relative to the input frame rate.

Full - The same frame rate as the incoming video will be encoded (factory default).

Half - Every other frame will be encoded.

Quarter - Every fourth frame will be encoded.

Video Geometry

Selects whether the encoded video geometry is the same as the input or is set manually.

Use Selected Input - Apply the incoming video aspect ratio to the recording (factory default).

Manual - Allows adjustment of the size and pixel aspect ratio of the recording. When Manual is selected, the Lock Aspect Ratio control (On, Off) and the Width and Height sliders become active.

Lock Aspect Ratio

Selects whether the encoded video's pixel aspect ratio is the same as the input video, or if the height and width can vary freely.

Off - The Width and Height sliders operate independently (factory default).

On - The Width and Height sliders are locked together. You can increase or decrease the size of the recorded image, maintaining its pixel aspect ratio.

NOTE: Pixel aspect ratio adjustments change the size of an image by varying the horizontal and vertical geometry of displayed pixels, which can change the apparent horizontal or vertical resolution of the resulting image.

Width

Use the slider to adjust the total width of the image, measured in pixels.

Height

Use the slider to adjust the total height of the image, measured in lines.

Video Bit Rate

This slider adjusts the desired bit rate of the encoded video recording in Kbps (kilobits per second) from a minimum of 100 to a maximum of 20,000 (factory default). The slider control is color coded to indicate optimum settings. Staying within the green range is optimum. Using video bit rates in the red range is not recommended, and may cause issues with some players.

Additional Advanced Settings

These settings are intended for advanced users only. Generally they should only be changed if directed by your CDN or Streaming Service Provider.

Advanced Settings

This parameter shows or hides the additional advanced encoding parameters.

Hide - Hides the advanced settings parameters (factory default).

Show - Displays the following advanced settings parameters for adjustment.

I-Frame [GOP] Every

Selects how often I-frames are encoded (the Group Of Pictures size). The factory default value is two seconds.

NOTE: The GOP size for streaming should be one second or longer.

B-Frames

Defines the B frame cadence. This refers to the cadence of Predictive (P) frames vs. Bidirectional (B) frames in the group of pictures. The parameter value sets how many B frames to insert after each P frame.

Select from:

- 0
- 1 frame
- 2 frames (factory default)

Higher values mean more efficient encoding and potentially better video quality, but will require more compute power to decode.

NOTE: Some decoders may not be able to decode video with any, or too many, B frames.

H.264 Encoding Profile

Selects the encoding profile from the H.264 standard to use for this stream.

Available selections are:

- Constrained
- Baseline
- Main - (factory default)
- High

Slices Per Frame

Selects the number of encoding slices per frame. Options are:

- 1 - (factory default)
- 2
- 4
- 8

If Slices Per Frame is greater than one, video will be encoded in a way that allows parallelized decoding. If the decoder is sufficiently powerful, it can decode 2, 4, or 8 sections of the frame simultaneously.

Entropy Coding

Selects the algorithm used for entropy encoding.

CABAC - Context Based Adaptive Binary Arithmetic Coding (factory default).

CAVLC - Context Adaptive Variable Length Coding. CAVLC is generally easier to decode, but can offer reduced image quality. CAVLC is always used when Constrained or Baseline H.264 Encoding Profiles are selected.

Display Aspect Ratio

Selects whether the input video should be coded for playback on a display device with a specific aspect ratio.

Auto - (factory default)

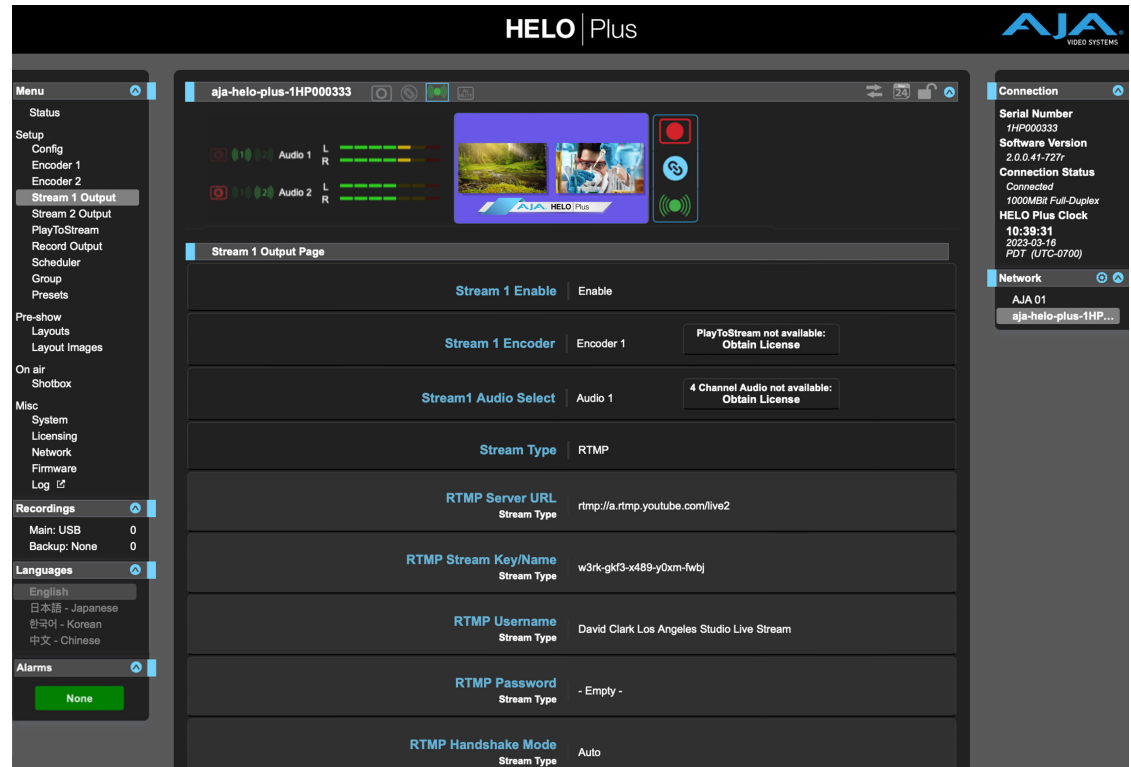
4:3

16:9

17:9

Stream 1, 2 Output Screens

Figure 16. HELO Plus Stream 1,2 Output Screen



HELO Plus supports two simultaneous streaming outputs. Each streaming output (1 and 2) can be independently configured with different streaming settings. In addition, each stream output can receive its input from either Encoder 1, Encoder 2 or PlayToStream– if the PlayToStream option has been purchased (or is currently being used during a trial period). This provides for a wide variety of applications.

One example would be to use Encoder 1 to drive both stream outputs but configure the Stream 1 output with RTMP and an RTMP end point on one CDN, and configure the Stream 2 output with HLS for a second CDN. Another example would be to configure the two Encoders differently, with Encoder 1 > Stream Output 1, and PlayToStream > Stream 2 output for use with another service.

Stream 1, 2 Enable

Enables (factory default) or Disables Stream (1 or 2).

Stream 1, 2 Encoder

This parameter selects the source to be used for Stream 1. Choices are:

- Encoder 1 (factory default)
- Encoder 2
- PlayToStream (if the system is licensed for the PlayToStream option).

Stream 1, 2 Audio Select

This parameter selects the Audio Source to be used for Stream 1 or Stream 2. The contents of the drop down will vary depending on whether the system is licensed for the 4-channel audio option. If the system is not licensed for the 4-channel audio option, the menu choice is simply Audio 1. If the system is licensed for the 4-channel audio option and the Stream Type is set to RTMP or HLS, the menu choices are:

- Audio 1 (factory default)
- Audio 2

If the system is licensed for the 4-channel audio option and the Stream Type is not set to RTMP or HLS, the menu choices are:

- Audio 1 (factory default)
- Audio 2
- Audio 1&2

NOTE: When PlayToStream is used. It's entirely possible that a recording was made using Audio 2 as the source. When launching PlayToStream, the audio is normally selected as Audio 1. What happens then? The HELO Plus will recognize the mis-configuration, and to the extent possible, will automatically re-route audio to make it "all work". In this case, the Audio 2 source from the PlayToStream recording will be used instead of Audio 1. A Warning will display: "PlayToStream Audio Misconfiguration", but the HELO Plus will play it out correctly anyway.

Stream Type

Selects the type of stream (factory default is HLS). Different parameters are available depending on the selection.

RTMP

RTMP is a "push" protocol usually used to deliver content to a CDN. In this case, HELO Plus starts and stops the connection and delivery. By default, outgoing connections are made on port TCP 1935 for RTMP streaming. A different port number may be specified in the RTMP URL. For example, to specify port number 1935, the URL would follow this format:

`rtmp://127.0.0.1:1935/live`

IMPORTANT: For RTMP streaming, HELO Plus must be configured to operate with a Content Delivery Network (CDN), using information provided for that specific network. See "[Chapter 4 CDNs and Clients](#)" on page 75 for more information.

When RTMP is selected, the following parameters are available:

- RTMP Server URL
- RTMP Stream Key/Name - If multiple streams are being sent to the same CDN at the same server URL (say, two HELO Pluses streaming from two different cameras), these stream key/names must be unique.
- RTMP Username - Applies when Adobe Authorization is used by the server.
- RTMP Password - Applies when Adobe Authorization is used by the server.
- RTMP Handshake Mode is designed to automatically try different ways of applying your RTMP stream name, URL, port, and key/name information in order to make a connection. RTMP Handshake Mode defaults to Auto. If it has a hard time connecting, it will try each successive mode (Mode 1, Mode 2, Mode 3, Mode 4). In the event that Auto mode does not succeed with your CDN, try the different modes by selecting them manually to see which one works.

NOTE: If the stream connects to the CDN and seems to be working, but the video is blank or missing, try using a different forced RTMP mode to correct it.

NOTE: If incorrect RTMP settings are entered, streaming won't occur and an Invalid Selection warning message appears until RTMP has a correct configuration.

NOTE: RTMP does not support multi-channel audio. Selecting RTMP as the Stream Type will automatically force the Audio Select for that stream to Audio 1.

RTMP/Facebook Live

NOTE: See ["Facebook Live" on page 76](#).

RTSP

RTSP is a pull protocol and is usually used when a viewer on a computer is using a client application like VLC to watch a stream. In this case HELO Plus always has the content ready and available (if it is actively streaming), but the client initiates and ends the viewing session.

NOTE: HELO Plus supports one RTSP session. Either stream 1 or stream 2 can be RTSP, not both. That one session can support up to 10 clients, but those 10 clients are shared between the RTSP and HLS streaming types. For example, stream 1 can have two RTSP clients and stream 2 can have eight HLS clients, or five clients for each, etc.

The following parameters are available when RTSP is selected:

- RTSP Stream Name - This name becomes part of the connection URL.
- RTSP Port - RTSP streaming is performed over incoming TCP connections to HELO Plus. Specify the port on which the incoming connection should be made by using the RTSP Port sliding control. The default port number used is 554.

NOTE: For RTSP, to avoid failure, the selected incoming port must not be port 80 or 443 because they conflict with HELO Plus's web interface http and https services.

- RTSP Authentication - Select from **None** (factory default, no user name or password required), **Basic** (username and password, but insecure unless used with SSL), or **Digest** (username and password, securely encrypted). If not set to None, the user must set a username and password. Viewers won't be able to access the RTSP stream without them.

RTP-TS

RTP-TS is a push protocol, typically used for multicast applications. No CDN is required. RTP (Real-time Transport Protocol) requires a numeric IP address and port number. Recipients of the stream have to have access to the destination port and use a video player like VLC. The following parameter is available:

- RTP-TS Destination URL - Defines the RTP-TS destination URL using a numeric IP address and port number.

The RTP protocol uses outgoing UDP ports for streaming. The port number must be specified in the streaming URL. For example, to specify port number 5432, the URL would follow this format:

rtp://10.0.0.1:5432

NOTE: RTP-TS and UDP-TS are basically identical, except for video player compatibilities.

UDP-TS

UDP-TS is a push protocol, typically used for multicast applications. No CDN is required. UDP-TS (User Datagram Protocol Transport Stream) require a numeric IP address and port number. UDP-TS is a raw MPEG transport stream sent out through UDP packets. Recipients of the stream have to have access to the destination port and use a video player like VLC. The following parameter is available:

- UDP-TS Destination URL - Defines the UDP-TS destination URL using a numeric IP address and port number.

The RTP protocol uses outgoing UDP ports for streaming. The port number must be specified in the streaming URL. For example, to specify port number 5432, the URL would follow this format:

udp://10.0.0.1:5432

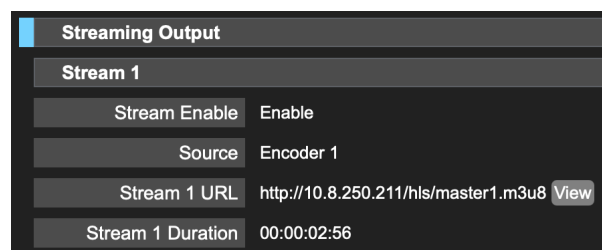
HLS

HLS (HTTP Live Streaming) is a media streaming protocol that reduces buffering, stuttering and other problems by chopping MP4 video content into short duration pieces. This allows the stream to be compatible with a wide range of devices, such as iPhones and iPads. When HLS is selected, it does not require parameters to be configured.

HLS streaming works over incoming HTTP/HTTPS connections to HELO Plus. When HTTP is in use, this is over incoming TCP port 80. When HTTPS is enabled, incoming TCP port 443 is also used. Clients connect to the HELO Plus using the Stream URL shown on the HELO Plus's Streaming Output status pane.

When HLS streaming is active, a View button is displayed on the HELO Plus's Status screen Streaming Output pane if the browser being used supports HLS decode directly. Clicking on the View button will open a new browser window that displays that currently active stream.

Figure 17. Status Page Streaming Output Pane with HLS View Button



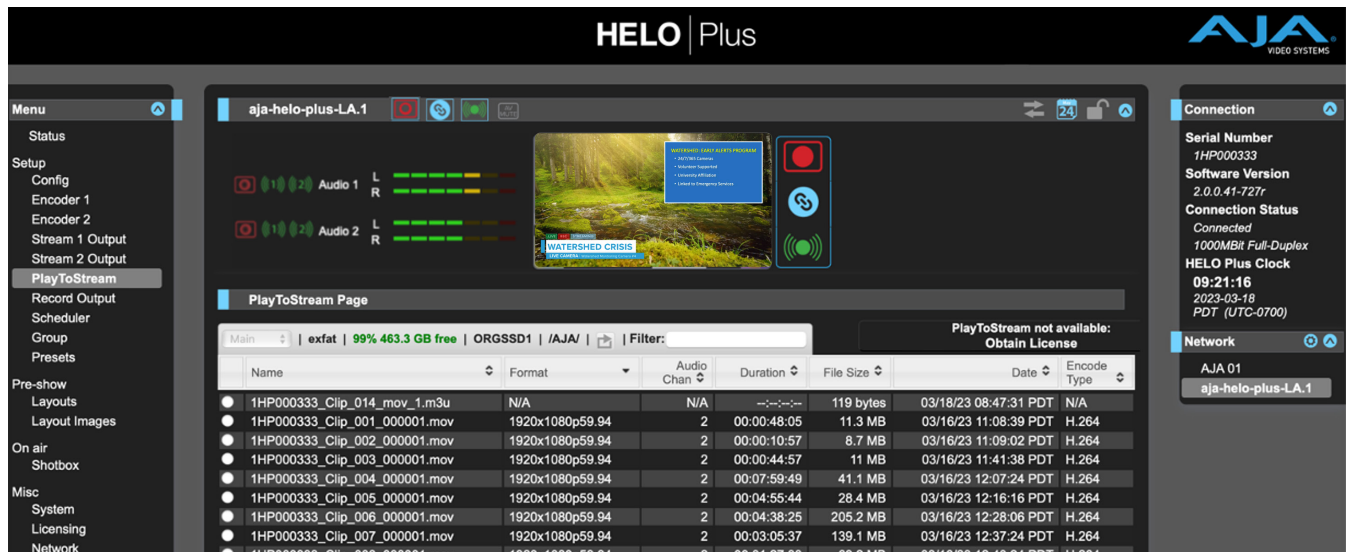
SRT

Secure Reliable Transport protocol (SRT) is an open source protocol similar to RTMP, but was designed to reduce end-to-end streaming latency while improving reliability and security.

- SRT Destination URL - Enter the destination host name or IP address for caller modes.
- SRT Security - select AES 128 or AES 256.

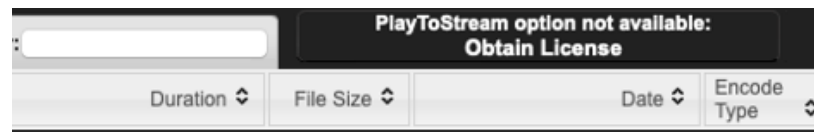
PlayToStream Screen

Figure 18. HELO Plus PlayToStream Screen



The PlayToStream screen gives information about the functions available in the PlayToStream option, if that option has been purchased, or is currently in an active Trial period. If the HELO Plus is not licensed for the PlayToStream option, or is not in the trial period for that option, the following additional text will be displayed in the header section:

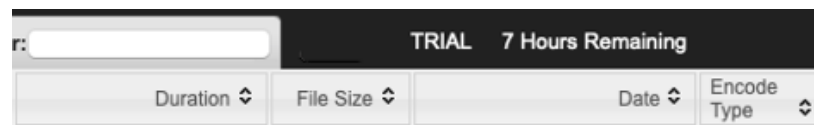
Figure 19. PlayToStream Option not Available



The user can then choose to purchase a license or start a trial (if a trial is available) by clicking on the “Obtain License” text.

If the HELO Plus is currently in an active trial period for this option, the following additional text will be displayed in the header section – indicating that the trial is active and how much time remains in the trial:

Figure 20. PlayToStream Trial Period Remaining



The PlayToStream page lists all the clips available on the currently selected media. A button to the left of each clip name allows the user to select a previously recorded clip to be used as the source of Stream Output 1, Stream Output 2, or both stream outputs simultaneously, if “PlayToStream” is selected in the relevant Stream Output stream.

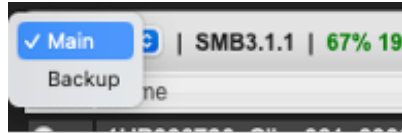
NOTE: Since the sources to the Stream Outputs can be individually selected, it is entirely possible for HELO Plus to be streaming live content out of Stream Output 1, while performing a PlayToStream operation on Stream Output 2.

NOTE: PlayToStream only works with clips that were recorded on a HELO Plus or HELO Classic.

Changing the PlayToStream Source

To change the storage media being used by the PlayToStream option (if enabled), click directly on the source button on the top of the pane. This will open up a drop-down menu, where you can select between the Main and Backup storage locations (as set in the "Record Output" screen).

Figure 21. Changing the PlayToStream Source



Viewing Recorded Files

Figure 22. Viewing Recorded Files Information

The screenshot shows a table of recorded files. Above the table, several labels with red arrows point to specific parts of the interface: 'Media Source' points to the 'Main' button; 'File System' points to 'SMB3.1.1'; 'Remaining Storage Capacity' points to '67% 19.6 TB free'; 'Volume Name' points to 'Media_Repository'; 'Recording Path' points to '/AJA/'; and 'File Search Filter' points to the 'Filter:' input field. The table itself has columns for Name, Format, Audio Chan, Duration, File Size, Date, and Encode Type. One row is highlighted with a blue circle, and a red arrow points to it with the label 'Selected Clip'.

Name	Format	Audio Chan	Duration	File Size	Date	Encode Type
1HP000730_Clip_001_000001.mp4	1920x1080p59.94	2	00:00:20:29	27.4 MB	03/14/23 08:05:23 GMT	H.264
1HP000730_Clip_002_000001.mp4	1920x1080p59.94	2	00:00:12:31	22.9 MB	03/14/23 08:37:17 GMT	H.264
1HP000730_Clip_003_000001.mp4	1920x1080p59.94	2	00:00:13:29	24.6 MB	03/14/23 08:38:32 GMT	H.264
1HP000730_Clip_004_000001.mp4	1920x1080p59.94	2	00:00:39:05	70 MB	03/14/23 12:49:03 GMT	H.264
1HP000730_Clip_005_000001.mp4	1920x1080p59.94	2	00:01:58:07	166 MB	03/14/23 12:51:20 GMT	H.264
1HP000730_Clip_005_000002.mp4	1920x1080p59.94	2	00:01:58:07	182.5 MB	03/14/23 12:53:18 GMT	H.264
1HP000730_Clip_005_000003.mp4	1920x1080p59.94	2	00:01:58:07	160.6 MB	03/14/23 12:55:16 GMT	H.264
1HP000730_Clip_005_mp4_1.m3u	N/A	N/A	---	293 bytes	03/14/23 12:57:14 GMT	UTF-8

Information about the media is shown in the top heading, and information for the clips on that media is listed below.

For each recorded file, you can view these characteristics:

- File Name
- Video Format
- Number of Audio Channels
- Duration
- File Size
- Date (YYYY-MM-DD HH:MM:SS AM/PM)
- Encode Type

Not all characteristics are available in the case of .m3u files.

The video file types displayed are .mov, mp4 and m3u (play list) files. For example, if you have recorded one hour's worth of 5-minute segments, you will see 12 video files (for a total of one hour of video) and one m3u playlist file. m3u files are text files that contain a list of all the segmented clips that go together.

Selecting a Clip

To select the clip to be used with the PlayToStream option (if enabled), simply click on the radio button to the left of the clip name. Any Stream Output which has PlayToStream selected as its input source will then start to output the selected clip when Streaming is started.

NOTE: *PlayToStream only works with clips that were recorded on a HELO Plus or HELO Classic.*

Sorting Columns

You can sort the files by clicking any of the column headings.

Click a column heading to toggle sorting of the table by ascending or descending order by that column. For example, repeatedly clicking the File Size column header will alternately sort the table from largest file to smallest, then smallest to largest.

Sorting can be slow if there are a large number of files in a folder. To improve responsiveness, use the "Recordings" screen to delete unwanted files and keep the number of files in a directory relatively low.

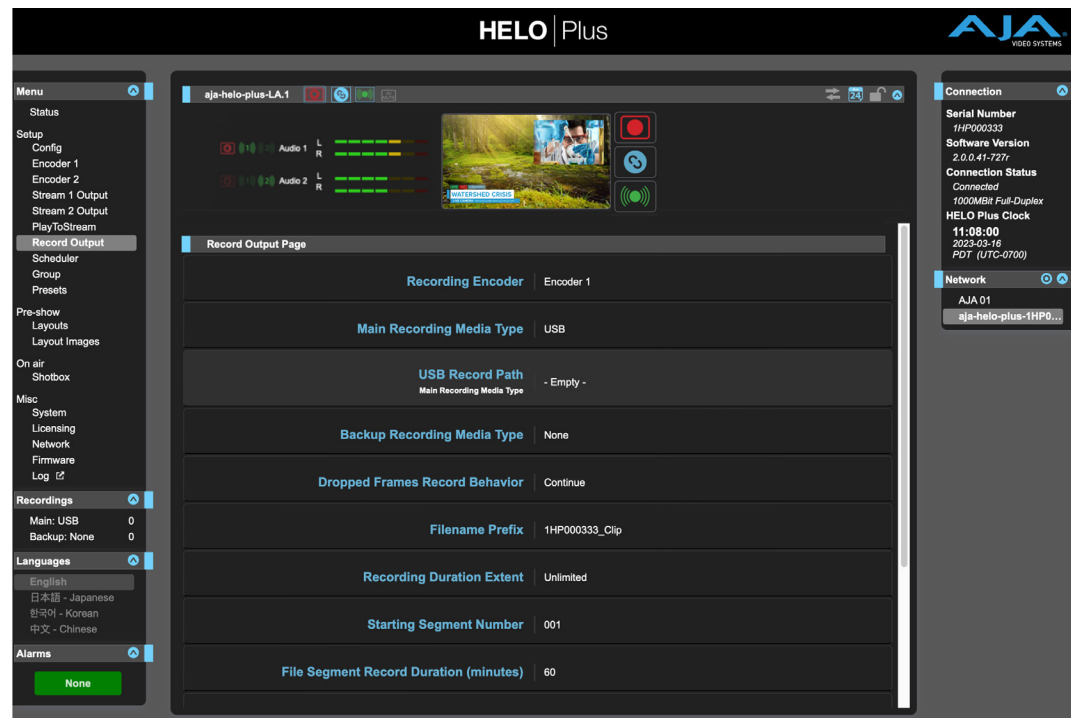
Filtering Field

Filter your view of the files by entering filter criteria in the Filter field in the upper right area of the Recordings file directory.

The filter works on all the fields for each file, not just the name. For example, filtering on ".mp4" will show only mp4 files, and filtering on "2017-10-01" will show all files recorded on October 1st, 2017.

Record Output Screen

Figure 23. HELO Plus Record Output Screen



Recording Encoder

Selects which Encoder (1 or 2) will be used for recording. Factory default is 1.

Main Recording Media Type

Selects whether Main recordings go to SD Card, USB, or an SMB or NFS Network file share. SMB shares are commonly used on Windows servers. NFS shares are commonly used on Unix-style servers, such as Linux and macOS X.

Different parameters are shown depending on the media type. Select from:

SD - Record to the media inserted into the SD Card slot.

USB - Record to the media connected to the standard size USB Storage port (factory default).

SMB Network Share - Record to Windows shares. When SMB Network Share is selected, additional controls display so you can enter your network credentials.

NOTE: To tell if the SMB server is writable, HELO Plus writes a test file to the remote server, then deletes it. If the process works, HELO Plus knows that the server is writable. However, it is possible to configure the server to allow HELO Plus to be able to write files, but not delete them. If you are seeing numerous test files on your SMB server, check your server configuration to make sure that HELO Plus has both write access and delete access.

NFS Network Share - Record to Network File System for Unix-based systems such as Linux and macOS.

NOTE: When using NFS Network Share, make sure that you take into account any file size limits on your file system. Configure your HELO Plus so that it doesn't make file sizes that your storage system cannot handle. For example, you can restrict the maximum file size by adjusting the bit rate, frame rate, and setting limits of duration so that clips will not be bigger than 4GB or 2GB. Be sure to set the buffer size on your NFS server to its maximum to avoid performance issues.

SMB and Record Path

In all cases (SD/USB/SMB/NFS), if the recording directory is not present, HELO Plus will create one. For SMB, this means HELO Plus **must** have write permission at the "bottom" of the SMB Server Address. If the top-level share is Read-Only and the desired subdirectory is Read/Write, and if the subdirectory is entered as the SMB Network Record Path instead of as part of the SMB Server Address, recording will fail.

For example, in a scenario in which there is a top-level READ-ONLY SMB Share on the network of //ServerName/AVDepartment, and it contains a Read/Write folder called "MyProject" where clips are to go, the following will work successfully:

SMB Server Address: //ServerName/AVDepartment/MyProject

SMB Network Record Path: - Empty -

In contrast, the following will **not** work because the SMB server address is read-only:

SMB Server Address: //ServerName/AVDepartment

SMB Network Record Path: MyProject

HELO Plus needs the SMB share mount point to be Read/Write so that it can create record paths if they do not exist already, since the user can change this parameter at any time.

Identical SMB or NFS Directory Used by Multiple HELO Pluses

If multiple HELO Plus devices are configured to record to the same directory on the same SMB/NFS network storage device, and the HELO Pluses have identical non-default Filename Prefix settings, it is possible (but unlikely) for more than one HELO Plus to simultaneously attempt to write to the same file on that SMB/NFS directory. This can result in failed recordings without warning, because the fault is not reported until the recording stops or a segment limit is reached.

This problem cannot occur if all the HELO Pluses have their Filename Prefix settings set to factory default (right click on Filename Prefix and select Reset to Factory). When set to default, HELO Plus automatically adds a unique device serial number to all clip filenames, to help ensure all clip filenames are unique.

This problem can also be prevented by making sure each HELO Plus is configured to write to different SMB/NSF directories, or by having each HELO Plus use different non-default Filename Prefix settings.

SMB Dialect

Use the SMB Dialect control to select a specific version of the Server Message Block (SMB) protocol to use with a remote SMB share. Start with Auto unless you experience long connection delays (two minutes or more), or if you must connect to a server that only supports SMB1 (also called CIFS or SMB with no version number), such as macOS X 10.8 Mountain Lion or earlier.

Auto (default) is recommended for most applications. When Auto is selected, HELO Plus will start with the most secure setting (SMB 3.0), and work its way sequentially through the list until a compatible setting is found. Generally, the higher the number, the higher the security.

WARNING: CIFS/SMB1.0 is not secure and should be avoided if at all possible. Use of CIFS/SMB1.0 may expose sensitive user credentials to anyone listening on your network.

Select from the following options:

- Auto (default)
- SMB 3.1.1
- SMB 3.0.2
- Automatic SMB3+
- SMB 2.1
- SMB 2.0
- SMB 1.0

NOTE: *If "Automatic SMB3+" is selected, but the SMB share is not capable of SMB3 and above, then the connection will fail (because "only use SMB3.0 or above" was selected, but the SMB share won't negotiate up that high).*

NOTE: *Some systems will not auto-negotiate to SMB3.0 and above unless explicitly told to do so.*

SD Card/USB Record Path

Defines a path (or directory name) for the Main recording location on an SD card or USB stick. Recordings will always be placed inside an /AJA directory. Factory default is "Empty".

Use forward slashes to create paths for subdirectories. For example, to create the path: "AJA/project_name", enter the following into the SD Card/USB Record Path field:

/project_name

NOTE: *Main and Backup recordings cannot be assigned to the same media.*

Backup Recording Media Type

If creating a Backup recording, use this control to select whether Backup recordings go to SD Card or USB storage.

None - Select "None" when not creating a Backup recording (factory default).

SD - Record Backup recording(s) to the media inserted into the SD Card slot.

USB - Record Backup recording(s) to the media connected to the standard size USB Storage port. This can be a thumb drive or a high-capacity SSD drive.

Backup SD Card/USB Record Path

Defines a path (or directory name) for the Backup recording location on an SD card or USB stick. Recordings will always be placed inside an /AJA directory. Factory default is "Empty".

Use forward slashes to create paths for subdirectories. For example, to create the path: "AJA/project_name", enter the following into the SD Card/USB Record Path field:

/project_name

Dropped Frames Record Behavior

Selects the HELO Plus's behavior when frames are lost due to errors.

Continue - Recording continues if dropped frames occur (factory default).

Stop - The recording stops if a frame is dropped.

Filename Prefix

Sets the prefix of the file name, which will be appended with the Segment Numbers specified below. UTF-8 (international) characters are supported.

The factory default prefix is "<Unit Serial #>_Clip". The Unit Serial# is also displayed on the right hand side of the UI window.

NOTE: When Filename Prefix is set to the factory default, HELO Plus automatically adds a unique device serial number to all clip filenames, to help ensure all clip filenames are unique.

Recording Duration Extent

Selects whether the recording will continue indefinitely, stop automatically after a fixed amount of time, or record as a long single segment.

Unlimited - Once started, recording will continue until the media becomes full, or until it is stopped by the operator, or stopped by a dropped frame (factory default).

Fixed - The Recording Duration (hours) and Recording Duration (minutes) sliders become active. They can be used to set the length of the recording (unless it is stopped manually or for another reason).

Long Single Segment - In this mode, you can record a long single clip up to a maximum of 720 minutes (12 hours). When the maximum duration has been reached, the unit will end the recording. Because a long single segment needs more information written to its header, the startup time will be delayed. When the recording has completed, you can initiate another recording manually.

NOTE: Long Single Segment recordings must use the exFAT format. Use a computer to format your media in exFAT. FAT32 file systems cannot be used for Long Single Segment recordings because of file length limitations.

IMPORTANT: The limits and behavior for various kinds of storage devices may vary. "Full" may mean different things depending on whether storage is local or on a network. "Full" may also mean different things depending on whether the HELO Plus is recording or is in idle. Some media may degrade in performance shortly before they are full, which can cause a recording to fail.

IMPORTANT: Consider the quality of your storage media if you are needing to push the limits of its storage capacity. When storage is near 90% full and you are recording at 20Mb/s, your media may hit its limit quickly starting at 11% free space, whereas recording at 10Mb/s may allow your media to fill more completely.

Media Limits When Not Recording

- Local warning limit at 15% storage remaining
- Network warning limit at 7% storage remaining
- Local full limit at 10% storage remaining
- Network full limit at 5% storage remaining

Media Limits When Recording

- Local warning limit at 15% storage remaining
- Network warning limit at 7% storage remaining
- Local full limit at 1% storage remaining
- Network full limit at 1% storage remaining

Starting Segment Number

This slider sets the number appended to the filename of the first recording. If a record duration is set, that number will be appended for each subsequent recording with that file name prefix ("001" is the factory default).

File Segment Record Duration (minutes)

This slider sets the maximum duration in minutes of each recording segment (factory default is 60 minutes). After one segment is finished, a new recording segment is initiated with the next segment number appended to the file name.

NOTE: This slider is limited to 360 minutes unless the Recording Duration Extent parameter is set to Long Single Segment, in which case the maximum is 720 minutes.

Longer duration files need higher performance media. For more detailed information, please navigate to <https://www.aja.com/products/helo-plus#support>. From there, select the Documents section to access the HELO Plus Media Recommendations document.

Recording File Type

MOV - An H.264 file with a .mov QuickTime wrapper (factory default).

MP4 - An H.264 file with an .mp4 (MPEG-4) wrapper.

Formatting Media

WARNING: Formatting media erases all the data on that media. Always be sure that any media you format containing important information has been properly backed up prior to formatting.

Formatting with HELO Plus

Inserted USB and SD media can be formatted as exFAT by HELO Plus. This is the recommended method for formatting media.

Format USB Media

Allows formatting the inserted USB media as exFAT. Choose from:

- Keep Media - No formatting occurs, data on that media is retained (factory default).
- Format - Will immediately format the inserted media as exFAT.

Format SD Media

Allows formatting the inserted SD media as exFAT. Choose from:

- Keep Media - No formatting occurs, data on that media is retained (factory default).
- Format - Will immediately format the inserted media as exFAT.

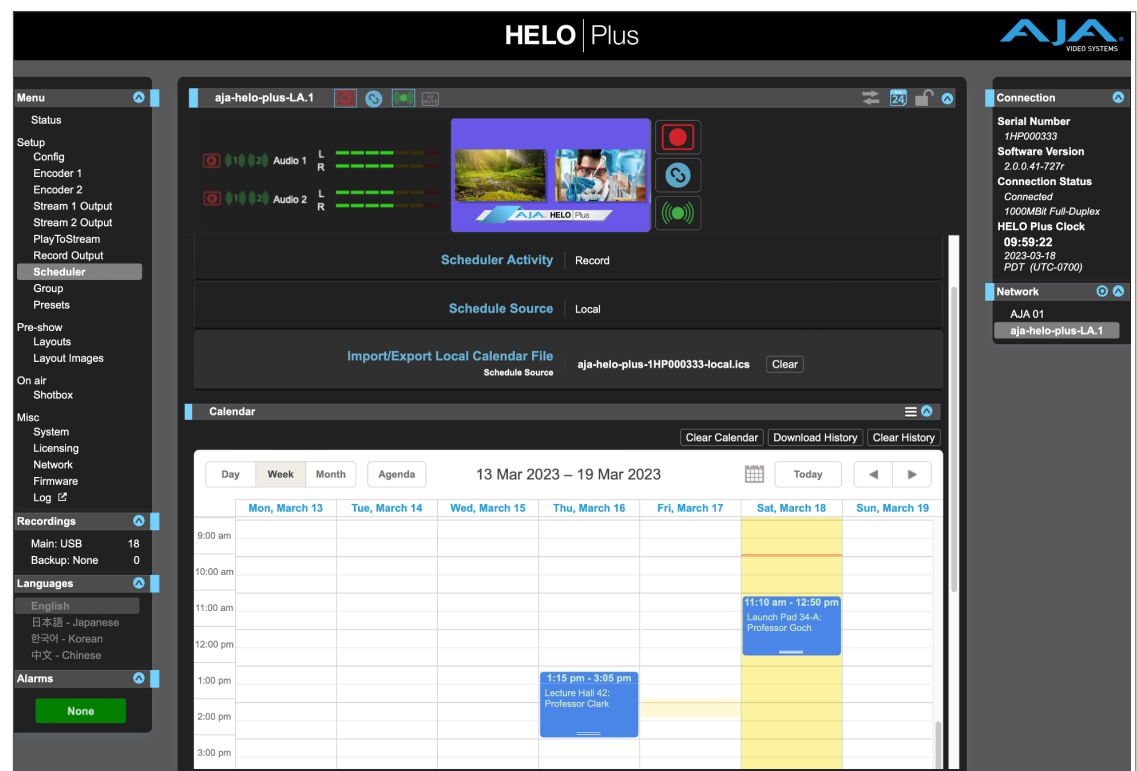
Formatting with a Computer

It is also possible to format USB and SD media using an external computer, but this practice is strongly discouraged. Whenever possible, format your media using a HELO Plus.

IMPORTANT: If you format media using a computer, ensure the media is formatted as a single exFAT partition that uses the entire capacity of the storage device. Using multiple partition media with HELO Plus can cause unintended consequences.

Scheduler Screen

Figure 24. HELO Plus Scheduler Screen



With the Scheduler, you can schedule one-time or recurring events for recording, streaming, or both. You can use local and remote calendars. You can also import and export calendar files, and export scheduler history logs.

Enabling the scheduler sets up HELO Plus for unattended operation. If the scheduler is enabled, HELO Plus will automatically start and stop streaming and/or recording for each event on the calendar.

When using this option, ensure that any required network connectivity is configured and functioning correctly, and that adequate storage is available on both the Main and Backup recording destinations.

General Calendar Description

Calendar Views

View the calendar by day, week, or month. In week and month views, the light blue dates are links. Clicking on a date link takes you to its corresponding day view.

Month-By-Month Mini Calendar Navigation

The small calendar icon next to the "Today" button is a navigational aid. Click on it to open a month-by-month mini calendar that facilitates rapid navigation to dates further away.

Agenda

Shows a list of scheduled events with their dates and times.

Scheduler Status

If a current event is active, it will display in the Scheduler Status portion of the Status page. The next scheduled event that isn't currently active will show up in the "Next Event" field right underneath it.

Scheduler Operator Controls

Scheduler

Disabled - When disabled (factory default), you can configure scheduler parameters such as Scheduler Activity, Schedule Source, and Import/Export Local Calendar file. When the scheduler is disabled, HELO Plus will ignore events, although it will still display them on the calendar.

Enabled - When enabled, you cannot modify the Scheduler Activity, Schedule Source, and Import/Export Local Calendar File.

Scheduler Activity

Record - The scheduled activity will record (factory default).

Stream - The scheduled activity will stream.

Record and Stream - The scheduled activity will both record and stream.

NOTE: If this Scheduler Activity setting conflicts with the Power Up State setting on the Config page, this parameter takes priority, and a "Scheduler Takes Priority" warning will display in the alarms list.

Schedule Source

To modify the Schedule Source, the Scheduler must be "Disabled." When disabled, a drop-down menu is displayed.

Local - The Import/Export Local Calendar File option displays (factory default).

Remote - The Remote Calendar URL option displays.

Local Calendar Operation

The Local Calendar is an internally hosted calendar that is fully editable.

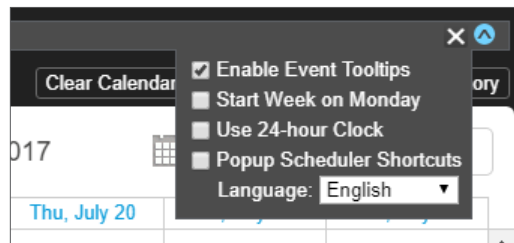
Local Calendar User Preferences

Click on the three line icon toward the right-hand side of the Calendar menu bar (next to the open/close icon) to access checkboxes for selecting local user preferences. These settings are saved by the browser in client-side local storage; they are not saved on HELO Plus. If you switch browsers or computers, or use incognito mode, these preferences will need to be set again.

These local calendar user preferences include the following:

- Enable Event Tooltips
- Start Week on Monday (otherwise week starts on Sunday)
- Use 24-hour clock (otherwise clock will be 12-hour AM/PM)
- View a pop-up window that shows Scheduler Keyboard Shortcuts
- Select language for the calendar

Figure 25. Local Calendar User Preferences



Import/Export Local Calendar File

When "Local" is selected for Schedule Source, the Import/Export Local Calendar File control displays. This control provides a method for downloading and uploading calendar files.

If you have uploaded a local calendar, its filename will display. If you have not uploaded a local calendar, the default name will be based on the factory default system name, and will be something like "aja-HELO Plus-1HE000277-local.ics."

You can download the calendar file to your computer by clicking on its filename. It will contain any events you have created on HELO Plus. This is true even if you have not first uploaded a calendar.

To upload a calendar, the Scheduler must be "Disabled." When disabled, a **Choose File** button displays directly beneath the calendar filename. Click the **Choose File** button to open a navigation window. Select the calendar file you want to upload, then click **Open**. The uploaded calendar filename now displays.

When importing and re-exporting local calendars, HELO Plus discards some fields it doesn't use the first time you make an edit, including attachments.

Creating, Editing or Deleting Local Calendar Events

You must be in "local" mode to create, edit, or delete events. In remote mode, the calendar is read-only.

To Create a New Local Event

1. Make sure you have selected "Enabled" from the Scheduler control.
2. Double-click on the calendar. A new event window pops up.
3. Enter a description in the Description field. Enter any details that would be useful to include in the Details field.
4. For a repeating event, click the **Disabled** button on the right side of the **Repeat event** section. **Repeat event** controls display.

NOTE: Exceptions to repeating events, such as changes to or deletions of a single event in a series, are not supported with v1.0 HELO Plus firmware.

5. Use the Full day checkbox to indicate whether or not it is a full-day event.
6. Select the start date field to bring up a calendar. Click the date you want to use.
7. Select the start time field to bring up a clock. Select the hour, minute and AM/PM settings. (AM/PM is a choice if you are not in 24-hour clock mode.)
8. At the bottom of the clock display, select Done.
9. Repeat this same process to select the ending date and time for your event.
10. Select Save. Your new event will display on the calendar.

Clear Local Calendar

Click the **Clear Calendar** button to clear the local calendar of all events. This clears the uploaded local events calendar file, or the one named after the default system name.

Remote Calendar Operation

A Remote Calendar is an external calendar that can be linked to the HELO Plus. This calendar is not editable, except for refreshing it with a newer calendar. Remote Calendar synchronization occurs automatically every 15 minutes.

Creating, Editing or Deleting Remote Calendar Events

If you want to edit a remote calendar, you will first need to export it from the remote source, such as Google, then upload it to HELO Plus as a local calendar.

To push any changes back, you will need to export the calendar from HELO Plus and upload it back to the original source.

Remote Calendar URL

When "Remote" is selected for Schedule Source, the Remote Calendar URL control displays. A URL needs to be entered into the Remote Calendar URL field. For example:

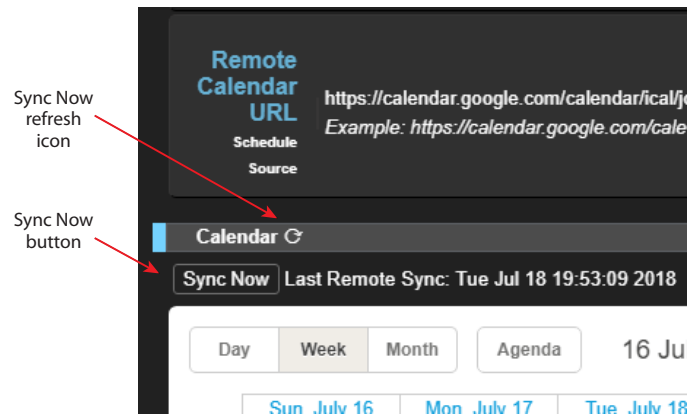
<https://calendar.google.com/calendar/ical/example@gmail.com/public/basics.ics>

HTTP and Webcal protocols are also supported. However, the URL must point to a file that is in ICAL format, and the file must be retrievable without authentication. "Private" Google calendar URLs (not publicized, but downloadable by anyone with the URL) will work, but anything that requires a login to retrieve will not.

Sync Now

Remote Calendar synchronization occurs automatically every 15 minutes, but you can synchronize the calendar manually at any time. When using a remote calendar, a Sync Now icon appears to the right of the Calendar heading. There is also a Sync Now button just below that. These both do the same thing. They retrieve the latest version of the remote calendar from the remote server hosting it. The date and time of the last sync is shown to the right of the Sync Now button.

Figure 26. Remote Calendar Sync Now Refresh Icon and Button



History Events Log

History events are created by HELO Plus to show what scheduled events were attempted and the result for each one. This is useful for creating a log of recordings and streaming events that have occurred and their outcomes.

Each history event displays on the calendar using the following color scheme:

- Blue - Scheduled (upcoming)
- Green - Successful (completed)
- Red - Failed (completed)
- Yellow - Stopped by user (completed)
- Gray - Discarded due to overlap (completed)
- Animated oscillation between Blue and Green - Active (in progress)
- Animated oscillation between Blue and Red - Trying (something is not working correctly but the unit is still attempting to perform the event)

The record of history events is maintained in a separate .ics file, called something like "aja-helo-plus-1HPENG031scheduler-history". If you download the history, you will get an .ics file with just the history events in it. History events are scheduled events from a local or remote calendar that HELO Plus attempted to process automatically. If the Scheduler has never been enabled, it will be an empty calendar. The file will have the ICAL header but it will contain no events.

Download History Events

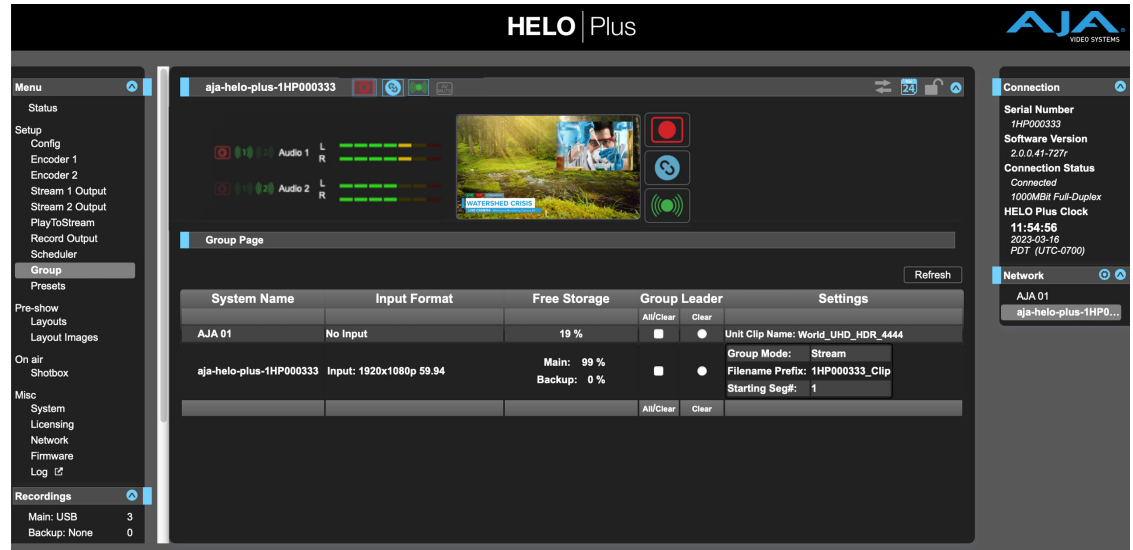
Click the **Download History** button to download all past events that are on the local calendar. The history file will be an .ics file.

Clear History Events

Click the **Clear History** button to clear the result of automatically attempted events in the past.

Group Screen

Figure 27. HELO Plus Group Screen



Multiple AJA devices can be used in unison via the Group Control feature. This feature is only available via the web UI when the devices have IP addresses configured under a common network and subnet mask and are connected via their LAN connections to an Ethernet switch or hub to a host computer. AJA recommends that all same device models in a Group use matching firmware versions.

At-a-glance you can see the AJA devices that are present on the same local LAN in the Network drop-down pane on the right side of the web UI screen. Click on the device's name to switch the browser to that particular AJA device.

The following AJA devices support Group recording:

- HELO Plus
- Ki Pro GO
- Ki Pro Ultra 12G
- Ki Pro Ultra Plus
- Ki Pro Ultra
- Ki Pro Rack

Group recording, including automatically matched clip names, operates by having a Leader send up to three items to the Follower(s) within a Group; a record start command, a record stop command, and also, if the Leader is a Ki Pro, clip name data. Ki Pro Followers can accept all three commands, permitting automatic clip name matching. HELO Plus devices, however, do not support clip name data sharing. If a HELO Plus is a Follower, it only accepts the record start and stop commands, not the clip name data. If a HELO Plus is the Leader of a Group, it can only send record start and stop commands to the Follower devices, so in this case automatic matched clip naming is not possible.

Parameters for each available device will appear in the Group Controls area. These include:

- System – displays devices that may be added to a Group
- Format – the input video format/frame rate each system is receiving
- Free Storage – at-a-glance view of the available capacity of the media in each device
- Group – devices can be added or removed from the Group
- Leader – allows the promotion of a device to the controlling role
- Settings – allows for the configuration of clip names on the Leader and Follower (Ki Pro units only).

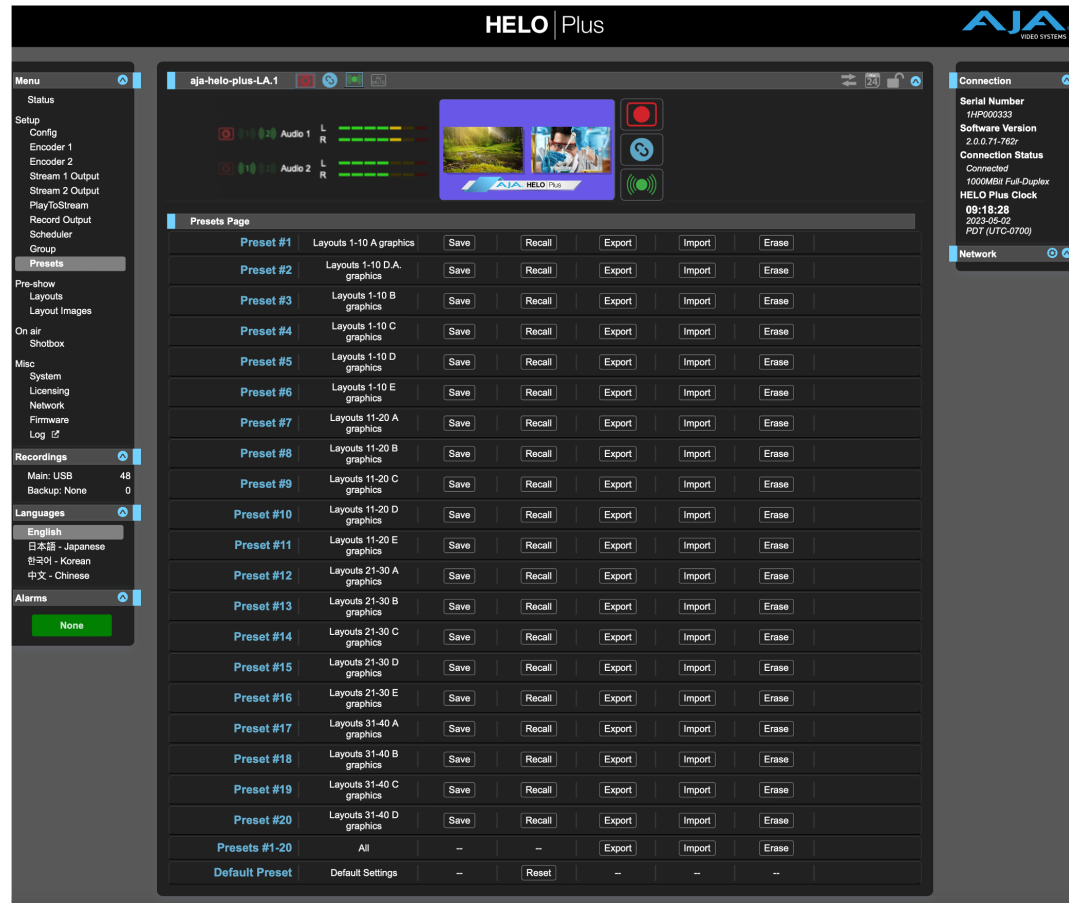
To add a device to a Group, simply select the check box for the device in the Group column. As a shortcut, if all available devices are desired for a Group, select the All item below Group. If you want to clear devices from a Group, deselect them or use the Clear option.

Only one Leader can be in a Group; typically, the IP address for the device you are viewing the web UI on is the one which should be promoted to the controlling role. If the device with the IP address that is currently being viewed via the web UI is selected, a red capitalized LEADER text will appear on the web page above the columns.

NOTE: AJA devices can initiate recordings among units quickly, but not all units will begin or end recordings precisely at the same time or the same frame.

Presets Screen

Figure 28. HELO Plus Presets Screen



The Presets screen allows you to save HELO Plus Preset Configurations into 20 separate files and recall the presets into HELO Plus memory registers whenever needed.

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

Presets Parameter Data

The HELO Plus Presets feature Save/Recalls and Exports/Imports most user-changeable settings and parameters of the HELO Plus. Below we identify exactly which parameters are and are not, stored in Presets:

Config - All parameters except the Custom Test Pattern Image.

Encoder 1 & 2 - All parameters except Encoder Template Selection.

Stream 1 & 2 - All parameters.

PlayToStream - Source select (Main or Backup); Loop enable.

Record Output - All parameters except Format SD and Format USB.

Scheduler - Enable/Disable; Schedule Activity; Schedule Source; Remote Calendar URL.

Layouts - All parameters.

Shotbox - Always corresponds to recalled/active Layouts.

Layout Images - All Layout Images.

Recordings - Media state (Record/Stream or Data Transfer).

Languages - Language selection.

Group, System, Licensing, Network, Firmware, Log - No user-changeable parameters are stored in Presets for any of these HELO Plus Screens.

Presets Screen Controls

Recall

The Recall buttons recalls the saved preset configurations.

CAUTION: When you recall a Preset Configuration, the recalled preset immediately replaces the system's existing configuration. All previous settings are lost unless you have previously stored them in another preset or an exported file.

Store

The Store buttons let you save 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 stored. Only editable parameters are saved in the presets. Non-editable parameters are not saved.

CAUTION: *HELO Plus Presets can contain streaming credentials. If that Preset is exported and shared with someone, that person can extract the credentials. Be aware of that possibility before you share presets with anyone. Before loaning the device to someone, or returning it as a rental, a hard reset should be performed to clear the device of sensitive information (see "[Reset Button \(Hardware\)](#)" on page 12).*

To change a preset name, click in the name's text field, type a new name, and press **Enter** to save the name. After entering text, you can click the mouse outside of the edit box to exit without changing the name.

Export

The Export buttons save the associated preset contents to a file on your computer. The file gets exported to the default download location specified in your browser options. The file name is the same as the preset name with the suffix ".presets". If you export multiple files for the same preset, a number gets appended to ensure a unique file name. The file size is small, usually less than 100 kilobytes, unless it also contains a layout image.

Import

The Import buttons let you browse for and import a preset file on your computer into the preset register associated with the selected button. A dialog box warns you that the operation will overwrite the current preset contents with the file contents. You can only import presets from a HELO Plus.

Erase

The Erase buttons erase the data in that preset.

NOTE: This function does not clear the current active settings, but rather clears the settings in the preset file. This is useful for example when the device is used for a temporary or client event, and it is desired to erase all presets to prevent subsequent unauthorized uses.

Export Presets 1–20 (All)

Export All lets you save the contents of all presets to a file on your computer.

The file gets exported to the default download location specified in your browser options with the name "all.presets". If you export multiple files, a number gets appended to ensure a unique file name.

Import Presets 1–20 (All)

Import All lets you browse for and import a previously exported all.presets file from your computer. A dialog box warns you that the operation will overwrite all 20 current preset contents with the contents stored in the file.

Erase Presets 1–20 (All)

Erase All erases all data from all the presets. A dialog box warns you that the operation will erase all 20 current presets.

Default Preset (Web UI)

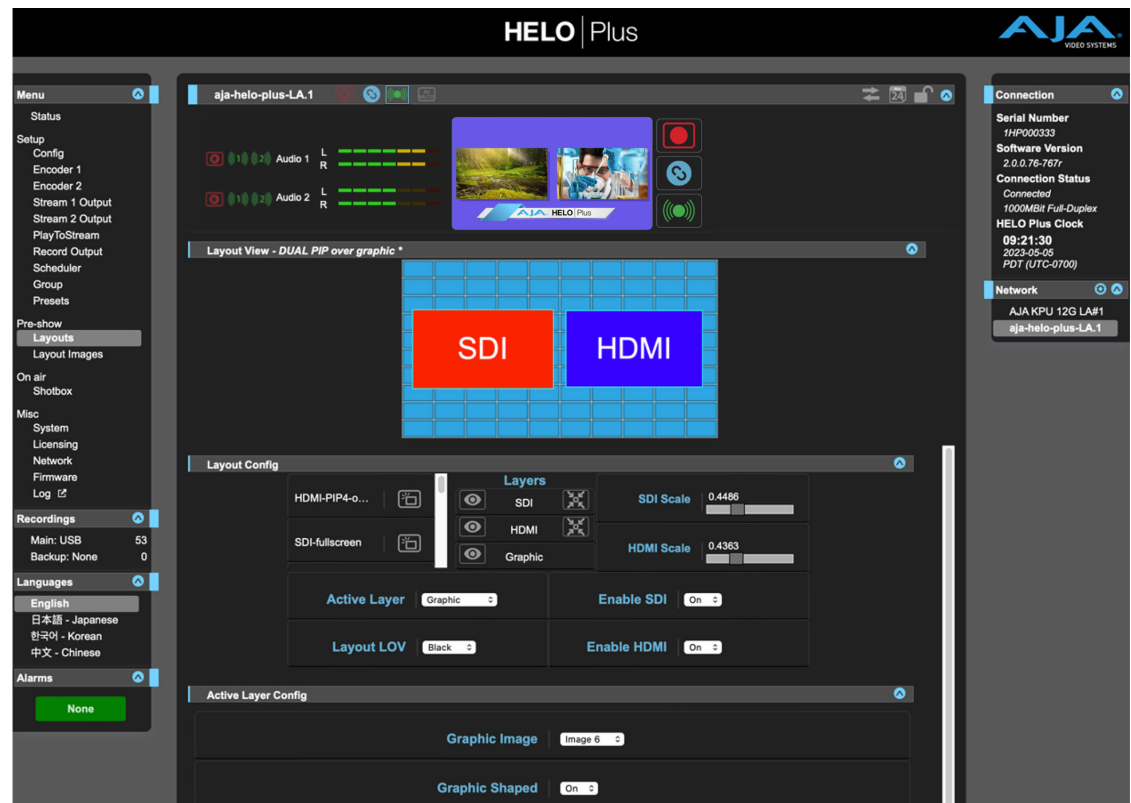
The Default Preset button does a soft reset, which resets most functional (audio and video) parameters, but leaves basic system configuration, like the network setup, intact. This allows the user to get HELO Plus into a known good state without losing its network connection settings.

NOTE: A soft reset will erase saved calendars. Export them before doing a reset if you want to save their contents.

NOTE: If you have significant Layouts configured, Export them into a Preset before doing a reset if you want to save their contents.

Layouts Screen

Figure 29. HELO Plus Layouts Screen



NOTE: The Layouts View and Layouts Images screens are grouped as Pre-show features, intended for creating and saving layouts in advance, for later use during streaming and recording. These controls are not available for adjustment during streaming or recording, or if Layout is not selected as the Video Source.

About Layouts

Using its internal Layering Engine, HELO Plus can combine the SDI and HDMI inputs into a single streaming and/or recording output. The sizes of the input signal raster can be reduced, positioned, and cropped, a graphic (video + key) file can be added to the composite, front to back display priority can be adjusted, and a color adjustable flat matte is also available for use as a background layer.

NOTE: The layout feature requires the HDMI and SDI sources have the same video geometry and frame rate.

A layout is a stored configuration defining the appearance of the final composite image. HELO Plus supports ten layouts at once, and a Shotbox feature allows frame accurate insertion of the selected layout onto the HELO Plus's output. Ten different layouts can also be stored into a single Preset for immediate use, and because HELO Plus supports 20 Presets, rapid access to up to 200 layouts is possible.

HELO Plus can store a maximum of 20 graphic file layout images at a time. These saved images are shared by the HELO Plus's 20 presets, so a maximum of 20 different images can be instantly recalled via layout and preset recall. Each layout can include one of these saved images, and the same image can be included in different layouts for immediate recall.

Layout View

A representation of the current layout is shown, with the SDI input raster represented in red, the HDMI input raster represented in blue, and the graphic layer represented by a rectangular grid. The display priority is shown with appropriate overlaps. The background matte layer is colored cyan in this view.

The video confidence monitor, if displayed above, is a low frame rate representation of the final layout, with the actual input video imagery and any included graphic and the actual matte color.

To use the Layout feature for streaming or recording, "Layout" must be selected as the video input source. This selection can be made on the "Config" screen of the menu system. For user convenience, if Layout is not currently selected as the input source and the user navigates to the Layout screen, a dialog is shown to the left of the Layout View, which allows the user to select "Layout" as the Video Source without having to navigate over to the "Config" screen to do so.

Layout Name on Layout Bar

The Layout name for the most recent recalled Layout appears in the Layout Bar. See "[HELO Plus Layouts Screen](#)" on page 57.

NOTE: *The Layout name will have an asterisk (*) appended to it if you've made any changes to the layout in the time since that layout was recalled. The asterisk will go away if you store the adjusted layout back into the same slot that you recalled it from.*

Layout Config

Below the Layout View is a pane of layout configuration controls. Changes to these settings are displayed above as the parameters are modified.

Layout Selection

The ten currently available layouts are listed by name in the scrolling pane on the left. Clicking on a layout icon to the right of the name loads that layout for display and adjustment.

Layers

The display order of the SDI, HDMI, and Graphic layers are listed from top to bottom in the center of the pane. The display order of any layer can be changed by dragging that layer up or down the list.

Show/Hide Layers

Each enabled input or graphic layer can be shown or hidden by clicking the eye icon on the left. This is intended for use as a temporary aid for identifying the layers during composition.

Center Layer

The arrows button on the right of each layer centers that layer horizontally and vertically.

SDI Scale, HDMI Scale

The size of the SDI source and HDMI source input can be reduced with the sliding scale, or by entering a reduction amount value. Range is 0.1680 to 1.000.

NOTE: *The graphics layer is always full raster and centered, and cannot be resized, cropped, or moved.*

Active Layer

Selecting a Layer here provides access to additional parameters affecting only that layer. These parameters are displayed immediately below (if that pane is open), and vary depending on the layer selected.

- HDMI and SDI Layers
 - X and Y Position, range -1.0000 to +1.000
 - Crop Left, Right, Top, and Bottom, range 0.0000 to 1.0000
- Graphic Layer
 - Graphic Image - Graphic file selection from the 20 available.
 - Graphic Shaped - Select **On** or **Off** (default). Select On if the source graphic is already shaped (multiplied by the key signal). An incorrect selection can create dark or light halos at the edges of the key.
- Background Layer
 - Matte Color Luma, Hue, and Saturation

Layout LOV

This parameter determines what occurs to the HELO Plus's output if a loss of SDI or HDMI input video occurs in an enabled layer of an active layout. This parameter only affects the HELO Plus's output when the Config screen Video Source parameter is set to Layout (see ["Video Source" on page 26](#)).

NOTE: *The Loss of Video Behavior parameter setting on the Config screen has priority. For example, if that Config Screen parameter is set to Stop, recording and/or streaming immediately stops if input video in a layout is lost, regardless of the setting of this Layout LOV parameter (see ["Loss of Video Behavior" on page 30](#)).*

Choose from:

- Black - (factory default) Displays black on loss of video. If the layout includes both SDI and HDMI video inputs and only one of the signals is lost, only the portion of the layout raster with the lost video switches to black. If both input signals are lost, the entire raster is replaced with the currently selected Test Pattern.

NOTE: *The HELO Plus Test Pattern can be a custom imported graphic, such as with a "Stand By" message (see ["Video Test Pattern Type" on page 31](#)).*

- Freeze - Displays the last good video frame on loss of video. If the layout includes both SDI and HDMI video inputs and only one of the signals is lost, only the portion of the layout raster with the lost video freezes. If both input signals are lost, the entire raster is replaced with the currently selected Test Pattern.
- Image - If any enabled input video signal is lost, the entire raster is replaced with the currently selected Video Test Pattern.

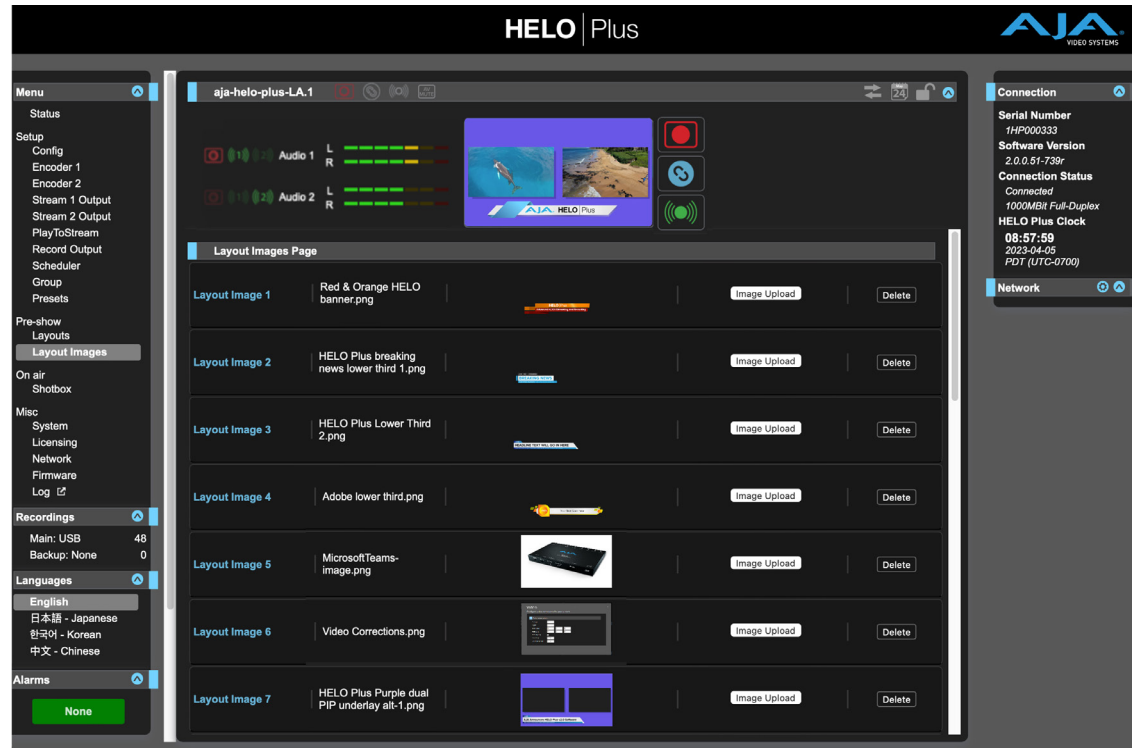
NOTE: *If the Config Screen's Video Test Pattern Type is set to Custom and no custom file has been uploaded, the factory default Black signal will be output on loss of video.*

Enable SDI, Enable HDMI

Enables (On, factory default) or removes (Off) the SDI or HDMI input from the layout. This setting applies to all ten layouts. When a different layout is selected, either from the list or with the Shotbox, only enabled layers will be visible.

Layout Images Screen

Figure 30. HELO Plus Layout Images Screen



NOTE: The Layouts View and Layouts Images screens are grouped as Pre-show features, intended for creating and saving layouts in advance, for later use during streaming and recording. These controls are not available for adjustment during streaming or recording, or if Layout is not selected as the Video Source

HELO Plus can store 20 images into its framestore. PNG files are supported.

NOTE: A Test Pattern Image cannot be used as a Layout Image.

The framestore supports video/key pairs, with the option of processing them as either shaped or unshaped input. Any of the images imported into the framestore can be assigned for use with layouts. These same 20 images are available to all layouts, one per layout. Layouts can also be saved to Presets, but only the currently loaded framestore images (up to 20) will be used with any layouts included in a Preset.

Layout Images Page

The currently available framestore images are listed. Clicking on the second column lets you name each image. A representation of a loaded image is displayed to the right.

Image Upload

Clicking on the Image Upload button opens a browser allowing you to select an available image. Image files must be .png format.

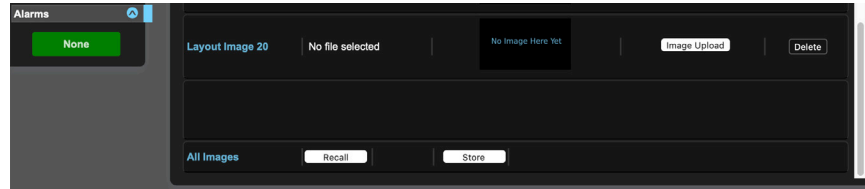
1. Click the Image Upload button. A navigation window opens.
2. Navigate to the image to upload, select it, then click Open.

Delete

Clicking on the Delete button opens a dialog box to confirm or cancel the deletion of that image file.

All Images Recall and Store

Figure 31. All Images Recall and Store



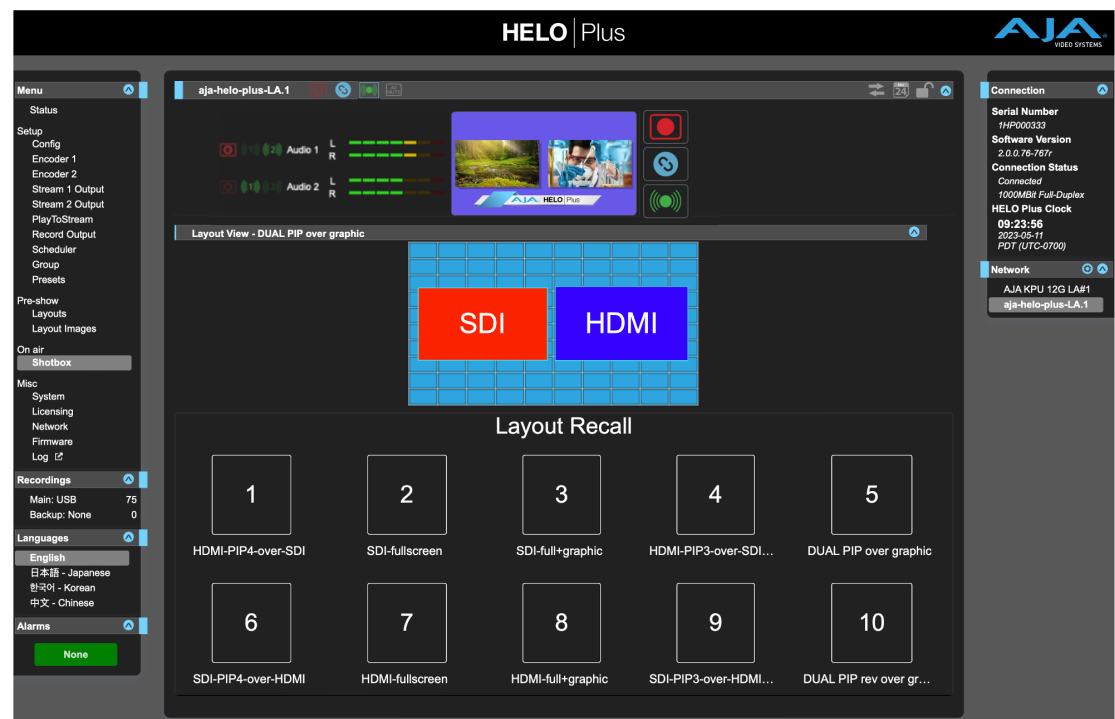
All Images **Recall** and **Store** buttons, located at the bottom of the Layout Images page (scroll down to view), allow you to download and upload a package of all twenty Layout Images using a single command. Package images files are named "aja_<device serial number><system name>-n.layoutimgpkg", with the trailing number incremented with each store.

Recall - Opens a browser for you to navigate to a previously stored package image file that you can select for recall. All images are recalled back to the slot positions from which they were stored. HELO Plus posts a warning if existing images files will be overwritten, and gives you the option to Confirm or Cancel.

Store - Stores all twenty images as a package image file to your computer's file download location.

Shotbox Screen

Figure 32. HELO Plus Shotbox Screen



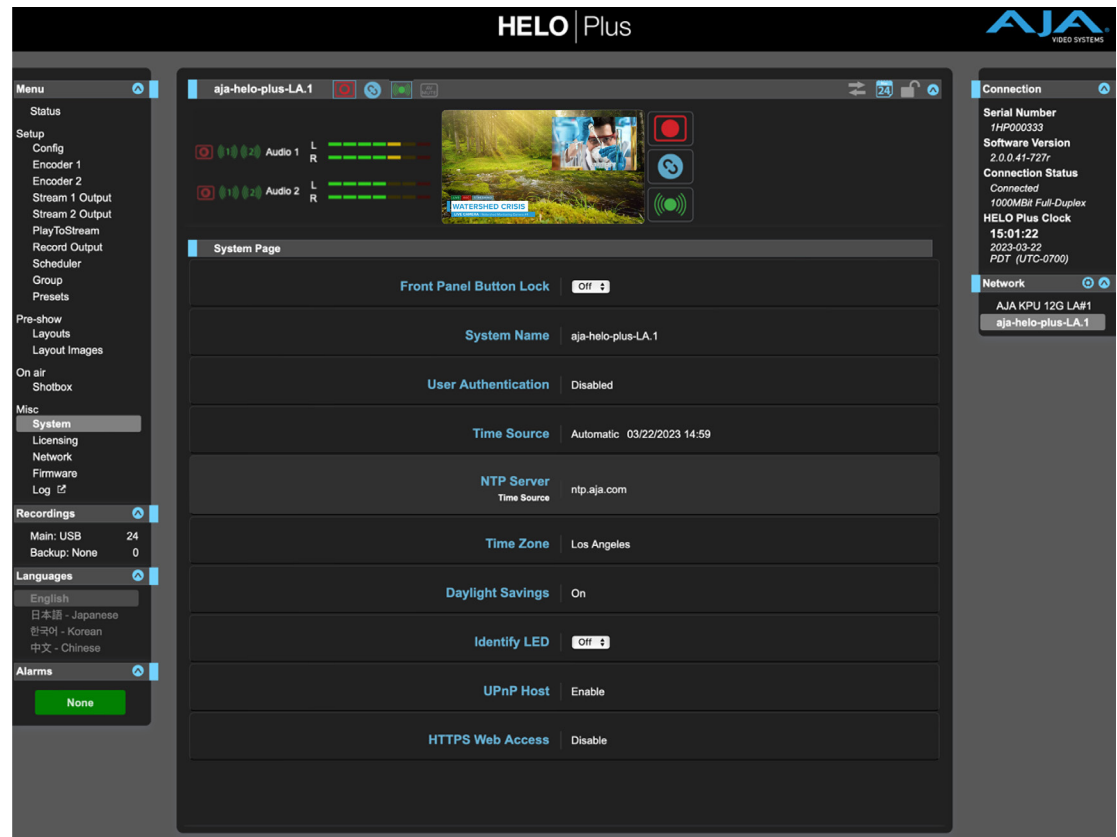
The HELO Plus Shotbox feature allows you to quickly recall any of the most recently recalled ten (10) layouts. This can be useful during streaming and/or recording to bring up lower third graphics or alternative layouts quickly and reliably. Simply click on the desired layout button to immediately switch to that layout.

NOTE: The Shotbox screen is listed as an On-Air feature, intended for use during actual streaming and recording.

NOTE: You can use the [Elgato Stream Deck](#), coupled with the [BitFocus Companion](#) plug in, as a hardware shotbox.

System Screen

Figure 33. HELO Plus System Screen



NOTE: Several System Screen settings (for example Date and Time values) are not affected by a soft reset performed using the HELO Plus's front panel Reset button or with the Default Preset. See "[Reset Button \(Hardware\)](#)" on page 12 for more information. Right clicking on a parameter name brings up a Reset to Factory button that can be used to restore the default value for that parameter.

Front Panel Button Lock

Determines whether the physical buttons on the front panel are ignored. When a front panel button is pressed while the front panel lock is "On," the LED next to the button will flash red briefly to indicate that the button press is being ignored.

Off - The Record and Stream buttons on HELO Plus's front panel are active (factory default).

On - Disables the Record and Stream buttons on HELO Plus's front panel.

System Name

This field defines a name for the HELO Plus unit and gives it a unique identifier. The name appears at the top of the screen, and also in the Network panes of the web screens of other HELO Plus units on the LAN.

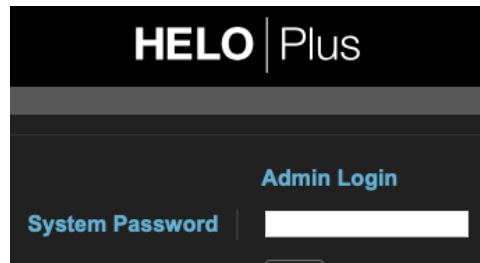
NOTE: International characters are fully supported in the system name.

User Authentication

For security, you may require a password to login to HELO Plus from the network. The factory default is "Disabled."

To enable User Authentication, select **Login**. Parameters appear for you to Set Password and Confirm Password. After entering the password, select **Enable Authentication**, and then click **Confirm**. The HELO Plus web browser will go to a login screen, where you can enter the password to reconnect.

Figure 34. Administrator Login



You can disable User Authentication from the browser after logging in by choosing Disabled. If you forget the password, you can use eMini-Setup (Info Tab) while directly connected to HELO Plus via USB to disable User Authentication.

Logging Out

When authentication is enabled and you are logged into HELO Plus in a browser session, you must quit the browser application in order to log out. Please note that merely closing the browser tab or window will not log you out.

Time Source/Date Set

Manual - When set to Manual, the Date Set parameter displays below. You can enter the date and time in DD/MM/YYYY HH:MM format (24-hour clock format). Or click in the Date Set field to display a pop-up calendar. Use the calendar controls to set the date and time, or click the **Now** button to set HELO Plus to your computer's time. Then click **Apply** to set HELO Plus's date and time to your selected settings.

Automatic - When set to Automatic (factory default), the NTP Server parameter displays below. The factory default is ntp.aja.com, a public timeserver offered for free by AJA Video Systems, Inc. If your network has a Network Time Protocol Server running, you can enter the network name of the NTP server to synchronize HELO Plus's internal clock with the network time. Synchronization of HELO Plus's internal clock and calendar requires a correctly set up network configuration and an active network connection.

Time Zone

This drop-down menu lets you choose your local time zone based on nearest city location. The factory default setting is "Grass Valley."

Daylight Savings

On - HELO Plus's internal clock will use Daylight Savings Time.

Off - HELO Plus's internal clock will use Standard Time (factory default).

WARNING: *If using the Scheduler, you must correctly configure the time, date, timezone and daylight savings settings in order for scheduled events to occur at the correct time. These settings do not change automatically.*

Identify LED

Off - Factory default.

On - When On is selected, the power LED on the connected HELO Plus's front panel will blink. This can help you identify a particular HELO Plus unit if more than one is connected.

UPnP Host

Enable - UPnP is enabled, allowing easier connection to HELO Plus over the network via discovery through Bonjour or Windows network browsing (factory default).

Disable - UPnP is disabled. HELO Plus will not advertise itself for discovery via Bonjour or Windows networking. This HELO Plus will not appear in any AJA product web UI Network lists, and cannot be a member of a Group.

HTTPS Web Access

For greater security, use HTTPS if you require the communications between your HELO Plus unit and client web browsers to be encrypted. If you are not sure whether you need secure, encrypted sessions, consult with your system administrator.

Disable - HTTPS Web Access is disabled (factory default).

Enable - When HTTPS Web Access is enabled, an Upload Certificate control displays. Use the Choose File button to upload a certificate.

Prerequisites

For HELO Plus and the HTTPS protocol to work together, a few prerequisites need to be in place:

- A fully qualified domain name
- A digital certificate and key from a Certificate Authority
- Digital certificate and key uploaded to your HELO Plus

Fully Qualified Domain Name

A fully qualified domain name has both a host name and a domain name. Blank spaces are not allowed. For example:

HELO Plus-st.aja.com

In this case, "HELO Plus-st" is the host name, followed by "aja.com" which is the domain name.

The Domain Name System (DNS) maps the domain name to the specific IP address of a HELO Plus unit's internal web server. The domain name and the digital certificate must match.

NOTE: When accessing a secure internal HELO Plus web server from a web browser, always use its domain name rather than its IP address. Accessing it through its IP address will result in a web browser certificate error.

Acquiring a Digital Certificate

You can acquire a digital certificate, such as an SSL (secure socket layer) certificate, from a trusted Certificate Authority. A Certificate Authority assigns a digital certificate to a fully qualified domain name and provides both the certificate and its key as a digital download.

Uploading Certificate and Key to HELO Plus

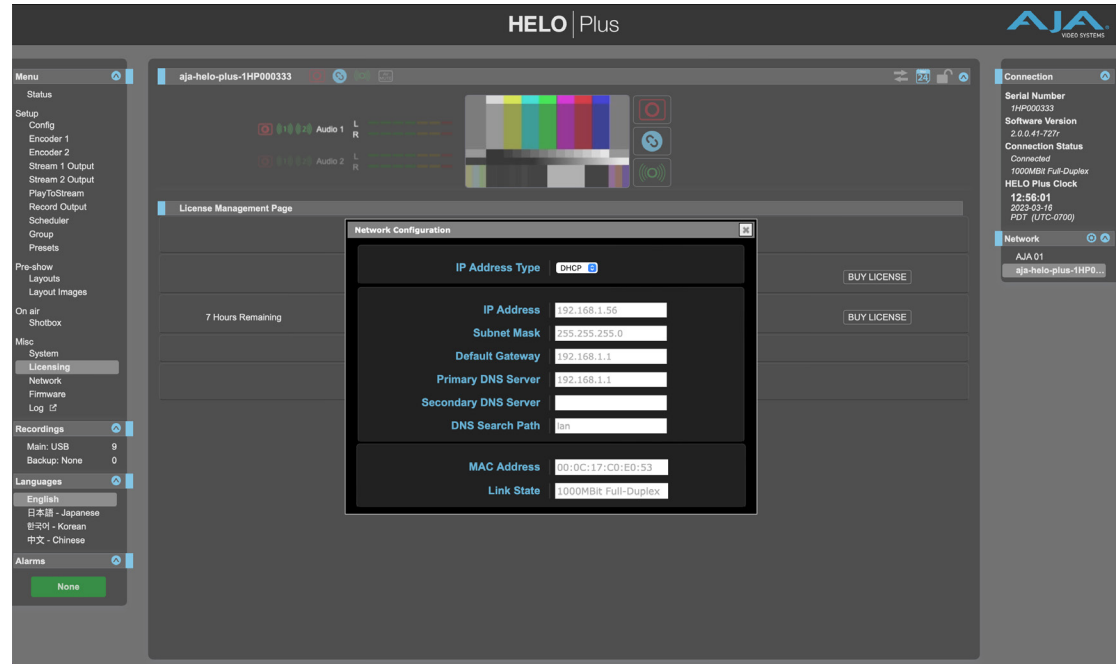
Once you have acquired your digital certificate and key, upload them in PEM format to your HELO Plus unit. Contact your Certificate Authority if you need more information about the PEM format.

The certificate and key residing on HELO Plus provides verification of your organization's identity to web browser clients. The presence of a valid digital certificate activates the padlock and the HTTPS protocol, creating a secure and encrypted connection between HELO Plus's internal web server and the client web browser.

NOTE: Enabling HTTPS does not disable HTTP. HTTP blocking should be achieved via router/gateway, if needed.

Network Screen

Figure 35. HELO Plus Network Screen



The Network screen allows you to view and change your HELO Plus's network settings. When using a static address, click Apply to activate any changes.

IP Address Type

IP Address Type 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 lets you set these parameters manually.

NOTE: If the IP Address Type is DHCP, the IP Address, Netmask, and Default Gateway are gray, indicating they are set automatically and cannot be changed unless IP Address Type is first set to Static. Changes are saved and activated upon confirmation using the Apply button.

DHCP (default) - Selects automatic IP address assignment from the LAN DHCP server. If a DHCP server cannot be found, HELO Plus will fall back to the previously entered Static IP address. If no Static IP address had been entered, the system fails over to a link local static IP address (169.254.x.x).

Static - Assigns a static IP address manually.

IP Address

IP Address determines a static IP address to be used for TCP/IP networking. Consult your 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 and cannot be entered here.
- If IP Address Type is set to Static, enter an IP address compatible with your LAN here. Also enter a netmask and default gateway address in the following two parameters. Click Apply when you are ready to apply all three entries.
- 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.

- Enter a subnet mask compatible with your 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.

Default Gateway

Default Gateway determines the gateway or router used on your LAN for TCP/IP networking.

Without a properly configured default gateway (whether you have a router/gateway or not), your HELO Plus will be unable to see other HELO Pluses on the network, although you may still be able to control this HELO Plus 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.

- Enter 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 HELO Plus specifies machines by name (servers in recording destinations, URLs in streaming destinations (such as Facebook Live or YouTube Live), NTP servers), the names won't work, although numeric IP addresses will still work.*

CAUTION: *When using Static IP addressing for HELO Plus, 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 (such as Facebook or YouTube), NTP servers, won't work and an Alarm will be displayed:*

DNS Search Path

Defines the Domain Name System search path for the HELO Plus.

MAC Address

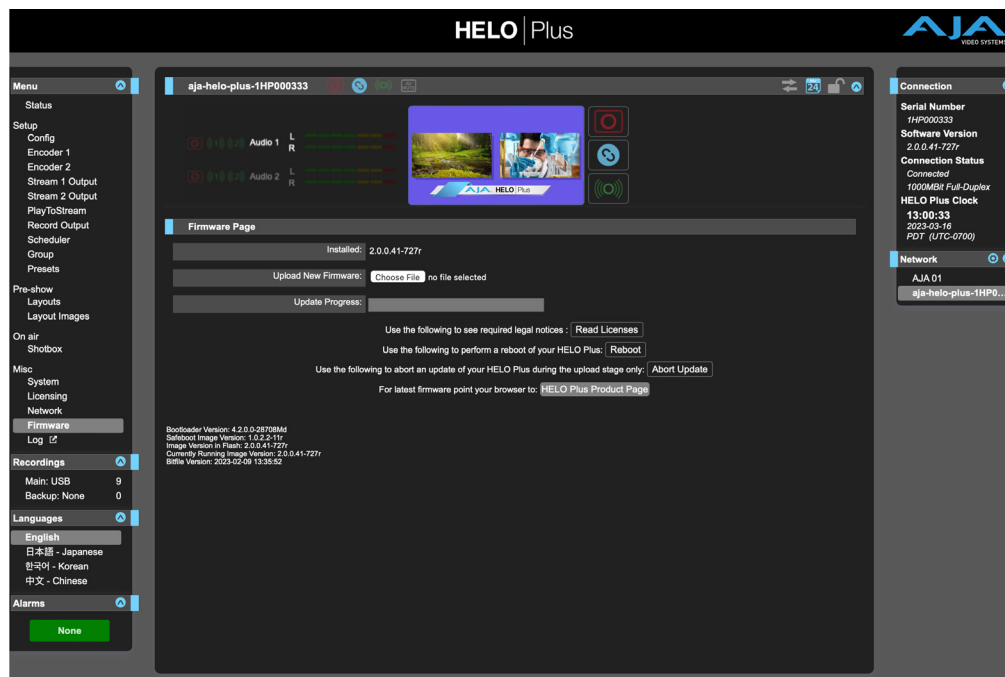
Reports the connected HELO Plus's Media Access Control Address.

Link State

Reports the link speed of the Ethernet connection.

Firmware Screen

Figure 36. HELO Plus Firmware Screen



The Firmware screen allows you to download and install a firmware update from AJA.

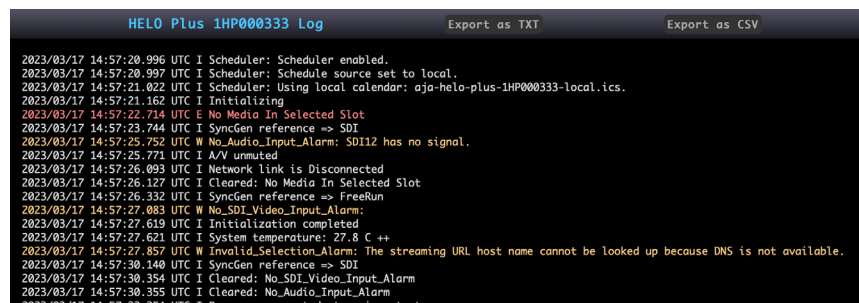
Visit the AJA website (aja.com) to locate and download the latest firmware. The following page provides support information and will include links to locations where you can download updates:

<https://www.aja.com/products/helo-plus#support>

After downloading the update to your local drive, use the Browse or Choose File button to locate the local copy. Follow the prompts to load the new firmware into your unit.

Log Screen

Figure 37. Log Screen



Selecting the Log menu in the left navigation panel opens a new browser tab in the web user interface that displays a technical event log.

The current log history is cleared when the HELO Plus is power cycled.

Technical Event Log

The technical event log lists activity that has taken place on your HELO Plus unit. This information can be useful for analyzing and diagnosing any potential service issues that may be otherwise challenging to pinpoint for fault analysis.

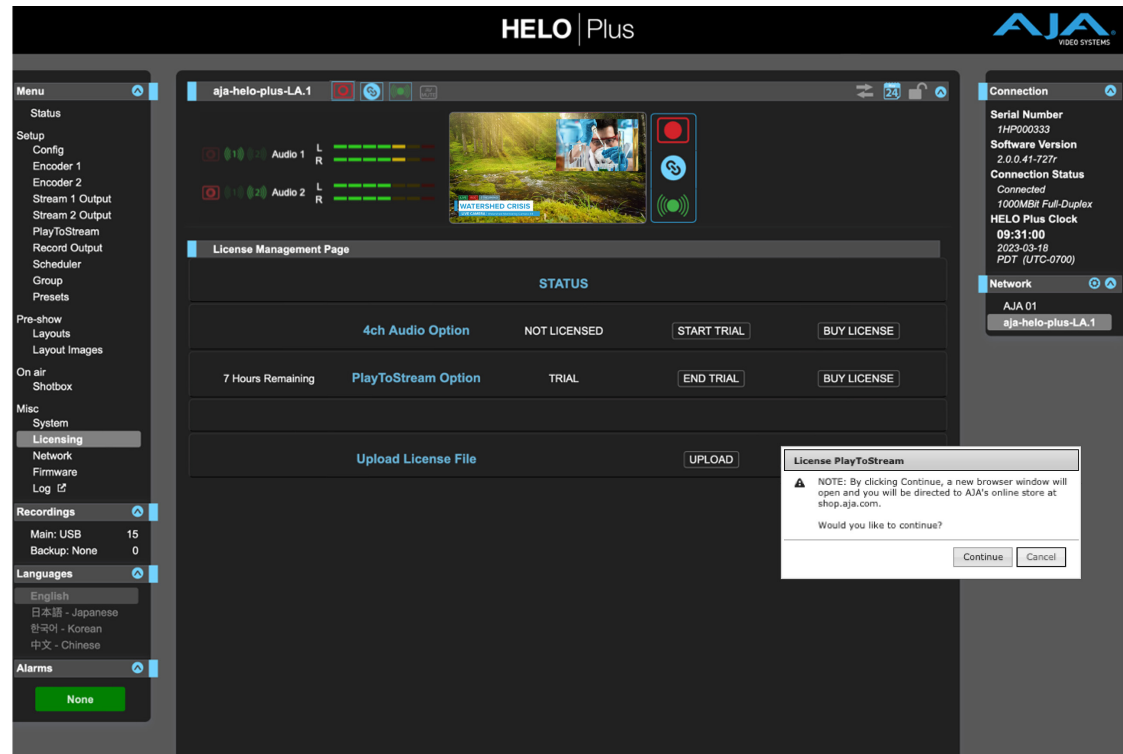
You can view the log directly from the newly opened browser tab, or export it as a .TXT file or .CSV file.

NOTE: The technical event log in HELO Plus is a tool intended to help you troubleshoot basic configuration issues. Exporting this file as a .TXT or .CSV file may be helpful when contacting AJA support.

Licensing Screen

HELO Plus v2.0 adds some new features which are enabled via licenses which may be purchased from <https://shop.aja.com>. These licenses are managed via the "Licensing" menu screen.

Figure 38. HELO Plus Licensing Screen



The Licensing screen allows users to see the current state of their licenses, purchase a license for a particular option, or enable the trial of an individual option. A pop-up dialog will appear.

Trial Licenses

HELO Plus will allow the user to use any purchasable option – free of charge – for a period of 15 operational hours within 15 days of starting that trial, in order to allow them to determine if a specific option meets their operational needs. The system monitors the number of hours that it has been physically streaming or recording and will terminate the trial once the trial period has expired. At any point during that trial period, the user may elect to purchase and install a permanent license for the option without interrupting operation of the system.

A trial period of an option starts when the user clicks on the "start trial" button for that option in the HELO Plus's Licensing page. At that point, an internal timer starts for that option. Points to note:

1. The timer measures the operational time of the system for any activity that **could** make use of the option. So, for PlayToStream, the timer measures time that the unit has been streaming since the trial was started. For the 4-channel audio option, the timer counts the time that the system has either been streaming or recording. It doesn't matter if the system was

making use of the option, the system is tracking the amount of time that it could have been using the option.

2. The trial period is defined as 15 hours of potential use within 15 days of turning on that specific trial. The trial will end whenever either of those limits are exceeded.
3. When a trial period expires, the HELO Plus will terminate its current activity, be that streaming or recording or both, and disable the option. The user may then restart any activity, but the option will no longer be available.
4. The WebUI always indicate the amount of time remaining on each possible trial period, across multiple UI pages.
5. The WebUI will put up a yellow warning when any trial is within 2 hours of termination, so a user can determine if a trial period will terminate during the next streaming or recording session which – as is detailed in item (3) – will terminate that session when the trial runs out. The user may manually terminate the trial in advance if it would timeout during the next session.
6. Trial licenses are one-off items. Once a trial times out (or is terminated manually), it cannot be turned on again on that HELO Plus.

NOTE: Terminating a trial is the same as having the trial period expire – the trial for that particular option cannot be re-enabled, as Trial Licenses are available for a single continuous use period only.

Purchasing a Permanent License

At any time, a user can choose to purchase a permanent license for any option by clicking on the "Buy License" button to the right of the option listing. The method of completing the purchase will vary depending on whether the host running the browser has access to the Internet or not.

If the Host Computer Has Access to the Internet

Pressing on the "Buy License" button will automatically open a new browser window and connect the browsing computer to <https://shop.aja.com>. From here, the user can complete the purchase transaction, at which point a license file will be delivered to the user via email. The user can then transfer the license file over to the Host Computer (or to a location which can be accessed by the Host Computer) and import the license file into the HELO plus system by pressing the "UPLOAD" button at the bottom of the Licensing Screen.

NOTE: The option will be enabled without impacting the current operation.

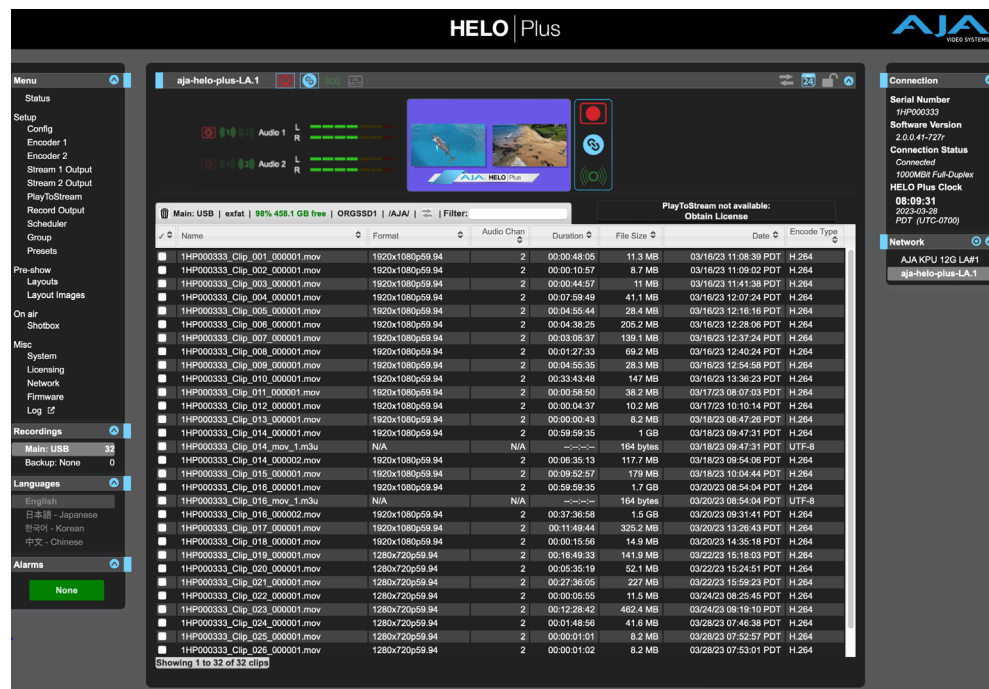
If the Host Computer Does Not Have Access to the Internet

Option licenses can be obtained by using a different computer than the host computer, by its accessing <https://shop.aja.com> and navigating to the HELO Plus licensing page from any browser that has access to the Internet. The user will need to provide the HELO Plus' serial number (displayed in the upper right hand corner of the WebUI) to complete the purchase transaction at which point a license file will be delivered to the user via email. The user can then transfer the license file over to the Host Computer (or to a location which can be accessed by the Host Computer) and import the license file into the HELO plus system by pressing the "UPLOAD" button at the bottom of the Licensing Screen.

NOTE: The option will be enabled without impacting the current operation.

Recordings Panel

Figure 39. HELO Plus Recordings Panel



Using the Recordings panel, you can access recordings that have been made to the Main and/or Backup recording media destinations.

When local media is being scanned for recordings, the associated front panel LED will blink at moderate speed. This happens upon insertion of media, when it is first selected as a record destination, and when it is checked after a recording completes.

Do not eject media when the storage LEDs are flashing.

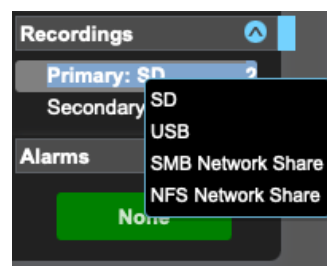
NOTE: Recording Destination cannot be changed while a recording or streaming operation is taking place.

Changing the Recording Destination

To change the recording destination from the Recording Panel, right-click directly on the Main or Backup menu in the left column under the Recordings panel, then select one of the options from the pop-up menu.

The Main destination can be SD, USB, SMB Network Share, or NFS Network Share.

Figure 40. Main Recording Destination Pop-up Menu

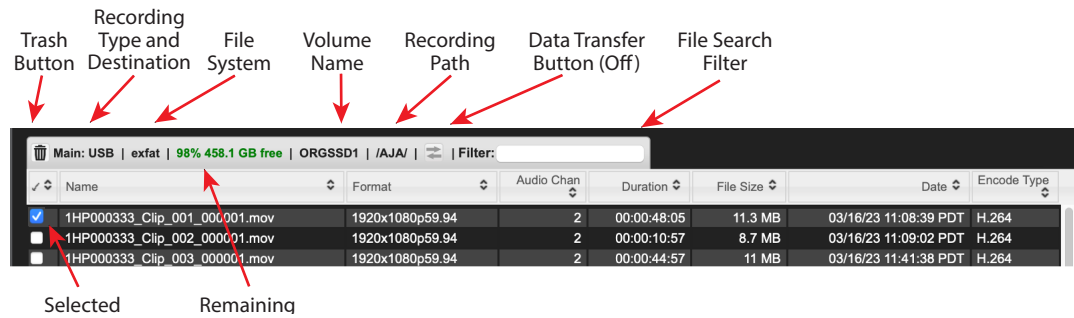


The Backup destination can be None, SD, or USB.

NOTE: Recording Destinations can also be changed from the Record Output screen.

Viewing Recorded Files

Figure 41. Recordings Directory Headings with Data Transfer Mode Off



Information about the media is shown in the top heading, and information for the clips on that media is listed below.

For each recorded file, you can view these characteristics:

- File Name
- Video Format
- Number of Audio Channels
- Duration
- File Size
- Date (YYYY-MM-DD HH:MM:SS AM/PM)
- Encode Type

Not all characteristics are available in the case of .m3u files.

The video file types displayed are .mov, mp4 and m3u (play list) files. For example, if you have recorded one hour's worth of 5-minute segments, you will see 12 video files (for a total of one hour of video) and one m3u playlist file. m3u files are text files that contain a list of all the segmented clips that go together.

When a recording starts, the clip name and m3u will appear in the listing. The clip will show initial information, which will remain unchanged until recording is complete. Once finished, it will be updated with the final file size and duration of the complete recording. If the recording only contains a single segment, the .m3u file is automatically deleted.

If HELO Plus detects an issue with a file, it will be listed in orange italic text. Hovering over the file with the mouse will show a popup that gives more details about the issue. One common issue is a clip that contains zero frames. This applies to audio-only files not created by HELO Plus, so warnings for such files can be safely ignored.

If a clip displays in orange italic text, you can check its validity using a computer.

Sorting Columns

You can sort the files by clicking any of the column headings.

Click a column heading to toggle sorting of the table by ascending or descending order by that column. For example, repeatedly clicking the File Size column header will alternately sort the table from largest file to smallest, then smallest to largest.

Sorting can be slow if there are a large number of files in a folder. To improve responsiveness, delete unwanted files and keep the number of files in a directory to a few screens.

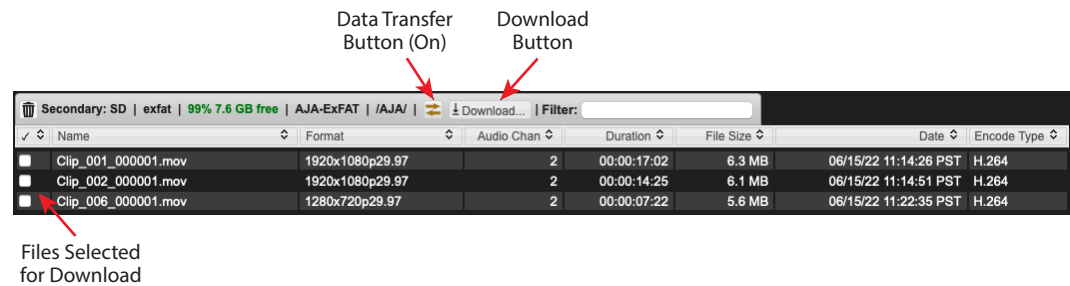
Filtering Field

Filter your view of the files by entering filter criteria in the Filter field in the upper right area of the Recordings file directory.

The filter works on all the fields for each file, not just the name. For example, filtering on ".mp4" will show only mp4 files, and filtering on "2017-10-01" will show all files recorded on October 1st, 2017.

Data Transfer Mode

Figure 42. Recordings Directory Headings with Data Transfer Mode On



Any of the files shown in the directory can be downloaded.

Click on the Data Transfer Mode button to turn on Data Transfer Mode. The Download button appears. HELO Plus cannot record or stream when transferring data. When on, the Data Transfer button turns yellow, and the Record, Stream, and Link buttons turn gray.

When Data Transfer Mode is turned on, the Data Transfer Mode button arrows are yellow and the Download button displays.

Select the check boxes corresponding to the files you want to download. Once checked, select the Download button. The selected files will download to your computer immediately.

Click the Data Transfer Mode button again when all downloads are complete to return to normal operation and re-enable recording and streaming.

Do not click the Data Transfer Mode button before downloads complete, or any that are in progress will be aborted.

Deleting Files

Similarly, if you want to delete files, select them with the check boxes, then select the Trash button. The selected files will be deleted.

Files can be deleted at any time. Entering Data Transfer mode is not required.

You cannot delete the file currently being recorded.

Be careful before confirming the deletion of files, especially if using the checkmark to select all files. Double-check to ensure the selection is correct, including files that may require scrolling down to see. Deleted files cannot be recovered.

When files are being downloaded or deleted, the media LED corresponding to that storage, if there is one—there is no LED for network shares—will flash rapidly, indicating the storage is in use and should not be removed.

In the case of small numbers of small files, the operation may complete before the flashing becomes apparent.

CDNs and Clients

Introduction

HELO Plus must be configured to operate with a Content Delivery Network (CDN) when streaming via RTMP, using information provided for that specific network. Similarly when using RTSP specific client information is required.

CAUTION: *Do not share your streaming credentials with anyone. That information allows anyone to access and stream to your channel without your knowledge or permission. CDNs will not ask for a stream key by email, so ignore any such requests.*

CAUTION: *HELO Plus Presets can contain streaming credentials. If that preset is exported and shared with someone, that person can extract the credentials. Be aware of that possibility before you share presets with anyone. Before loaning the device to someone, or returning it as a rental, a hard reset should be performed to clear the device of sensitive information (see "[Reset Button \(Hardware\)](#)" on page 12).*

Akamai

Akamai Configuration Summary

1. From the Akamai web site (<https://www.akamai.com/>), sign in to your Akamai account with your username and password.
2. From the Configure tab, select Media Services Live.
3. On the Media Services Live page, the information entered for Primary Entrypoint must match the information entered on your HELO Plus unit for the RTMP Server URL.
4. On your HELO Plus unit, enter the RTMP Stream Name. This is a combination of the stream name, camera angle, stream number. See Akamai documentation for details.
5. On your HELO Plus unit, enter your RTMP Username and RTMP Password that correspond to your Akamai account.

Amino Set-Top Boxes

Unicast

1. Decide which UDP port you would like to use. In this example, we will use port 11000.
2. Set the set-top box to play video from URL `udp://0.0.0.0:11000`.
3. In the HELO Plus Stream 1/2 Output configuration, select Stream Type = RTP/UDP-TS.
4. Set UDP-TS Destination URL to `udp://stb-ip-address:11000`.
For example, if the IP address of the set-top box is 192.168.0.200, set this to: `udp://192.168.0.200:11000`.

Multicast

1. Decide which UDP port and multicast address you would like to use. In this example, we will use port 12000 with multicast address 239.0.0.1.
2. Set the set-top box to play video from URL `igmp://239.0.0.1:12000`.
3. In the HELO Plus Stream 1/2 Output configuration, select Stream Type = RTP/UDP-TS.
4. Set UDP-TS Destination URL to `udp://239.0.0.1:12000`.

Elemental Encoder Appliances and Elemental Cloud

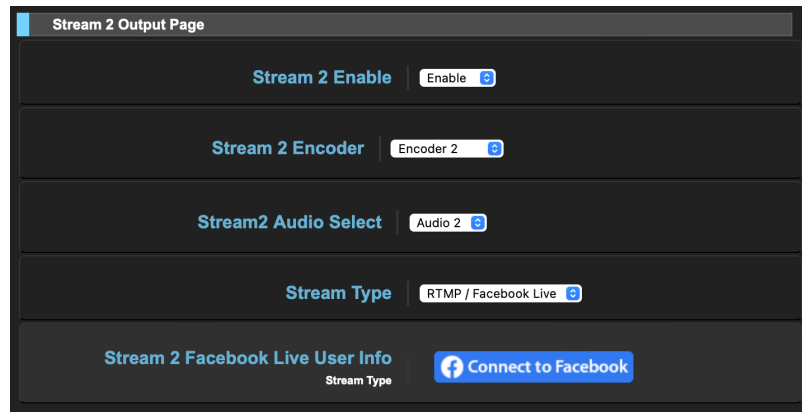
NOTE: See website <https://www.elemental.com/>

Facebook Live

Facebook Live lets you stream live, and lets your followers receive notifications when you go live so they know to tune in to your broadcasts. Since Facebook Live is a popular choice, and because it is easy to do with the HELO Plus, we have provided detailed screenshots in the procedure below.

Facebook Live Configuration

1. On either the Stream 1 or Stream 2 output page, select RTMP/Facebook Live as the Stream Type. The “Connect to Facebook” button appears:



2. Press the “Connect to Facebook Live button. The button is replaced by a dialog.

Stream 2 Output Page

Stream 2 Enable Enable

Stream 2 Encoder Encoder 2

Stream2 Audio Select Audio 2

Stream Type RTMP / Facebook Live

Stream 2 Facebook Live User Info
 Stream Type: 9HABEKVD
 Next, visit <https://www.facebook.com/device> and enter this code:
 Code expires in 6 minutes, 47 seconds

3. Right-click on the code (also sometimes called a "key") and select "Copy"

Stream 2 Output Page

Stream 2 Enable Enable

Stream 2 Encoder Encoder 2

Stream2 Audio Select Audio 2

Stream Type RTMP / Facebook Live

Stream 2 Facebook Live User Info
 Stream Type: 9HABEKVD
 Next, visit <https://www.facebook.com/device> and enter this code:
 Code expires in 6 minutes, 47 seconds

Look Up "9HABEKVD"
 Translate "9HABEKVD"
 Search with Google
Copy
 Share...

4. Click on the "Next, visit..." link. You'll be taken to the "Facebook for devices" URL:

(60) Facebook for Devices

Search

David Home

Enter the Code

9HABEKVD

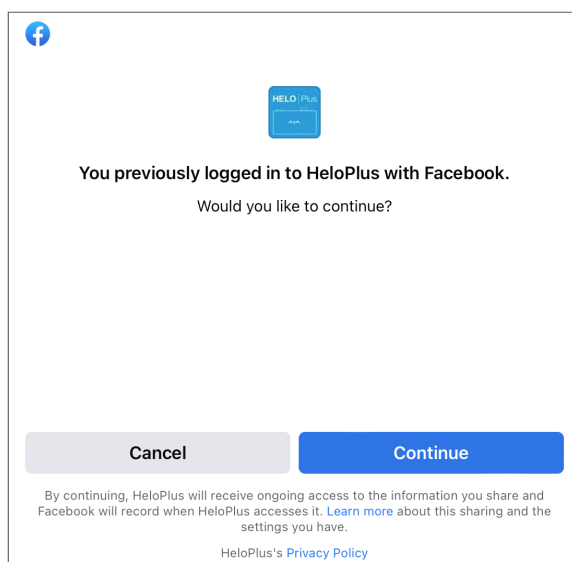
Only use a code from a source that you trust.

Continue

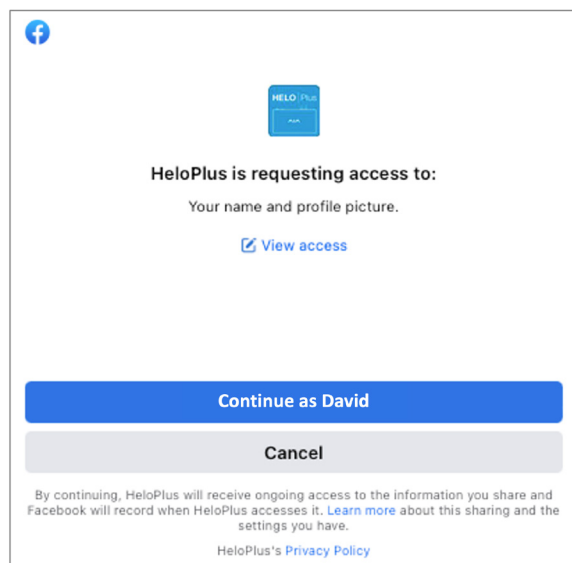
What is this?

Facebook for Devices helps you use your Facebook account to access apps and services on smart TVs, cameras, printers and other devices. You can use Facebook for Devices to log in, share and more.

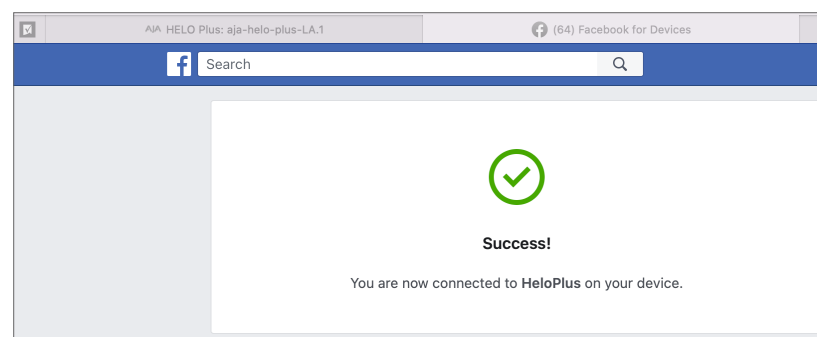
5. Paste the code into the box.
6. Press continue.
7. If you are returning to Stream on Facebook Live after the first time with this HELO Plus device, then you'll see the below dialog. Click "Continue."
 Otherwise, continue on to Step #8 below.



8. When streaming this HELO Plus device to Facebook Live for the first time, you'll see the below dialog. Press the "Continue as (Facebook name)" button.

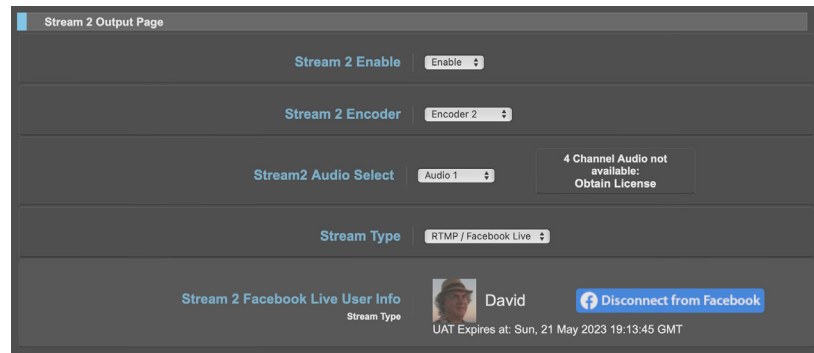


9. You will next see a "Success - You are now connected..." announcement:



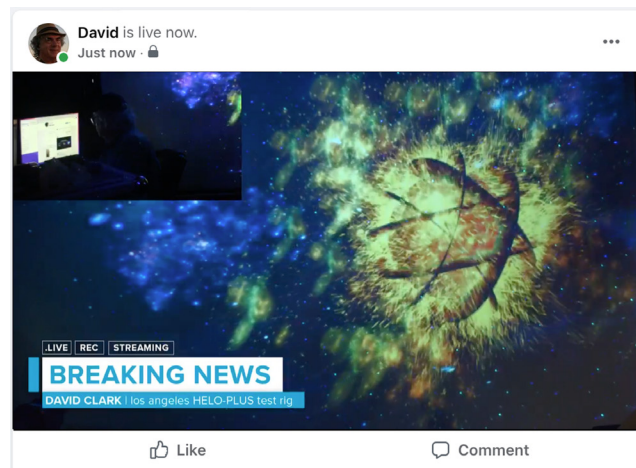
10. Close the Facebook for Devices window or browser tab (optional) and return to the HELO Plus web interface.

You'll now see that you're connected to Facebook, and the expiry date of your UAT (user authentication token). You have to start streaming before that token expires, or you'll have to re-authorize.

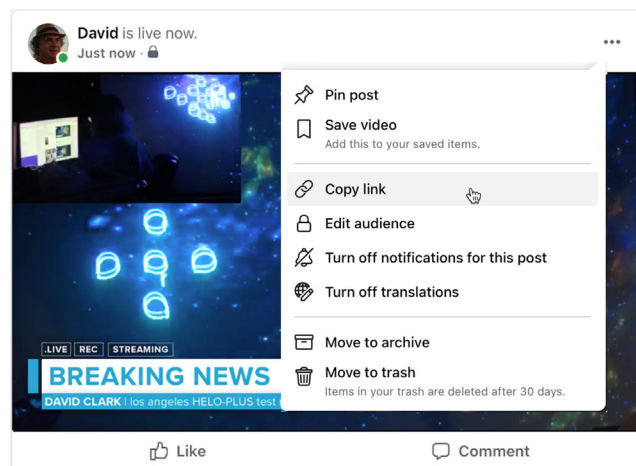


11. Press the Stream button on HELO Plus's front panel or in the web interface.
12. You may now view the Facebook Live stream simply by going to your Facebook page in a browser. Sometimes a page refresh is needed for the live stream to show.

NOTE: The Facebook.com captures shown in this procedure may vary when using various Internet browsers, or if Facebook changes its design in the future.



13. To obtain a link to share the Live Stream outside of Facebook, simply copy link from the pull down menu at the upper-right of the streaming window:



You may disconnect at any time to prevent the HELO Plus from being able to stream to your Facebook page, by using the (Start/Stop) Stream toggle at the top of the HELO Plus web interface, or using the HELO Plus front panel stream button.

Instagram via Third Party Application Yellow Duck

1. Download and install Yellow Duck from the Yellow Duck website: (<https://yellowduck.tv/>).
2. Launch the Yellow Duck application. The **Login to Instagram** page displays.
3. Enter your Instagram username and password, then click **Login**. Yellow Duck displays a page showing the **RTMP URL** and **Stream key** fields.
4. From Yellow Duck, copy the **Stream URL (RTMP URL)**.
5. From the HELO Plus web UI Stream 1/2 Output page, paste the **Stream URL (RTMP URL)** into the HELO Plus **RTMP Server URL** field.
6. From Yellow Duck, copy the **Stream key**.
7. From the HELO Plus web UI Stream 1/2 Output page, paste the **Stream key** into the HELO Plus **RTMP Stream Name** field.
8. Enter your Instagram username into the HELO Plus **RTMP Username** field.
9. Enter your Instagram password into the HELO Plus **RTMP Password** field.
10. From the HELO Plus web UI, click the Stream button to start streaming.

NOTE: You are not able to watch your stream from your account directly. However, you can use other accounts or create a new account to monitor your stream.

Your video will be adjusted to fit into Instagram's aspect ratio.

Kaltura

Website

<https://corp.kaltura.com/>

OBS (Open Broadcaster Software)

OBS is a free and open source software application for video recording and live streaming.

OBS can accept an RTSP stream from HELO Plus, provided that the following two conditions are met:

1. The computer that is running OBS must reside on the same network as HELO Plus.
2. HELO Plus is streaming with the RTSP protocol.

To configure your HELO Plus to stream with the RTSP protocol, from the Stream 1/2 Output Screen, select RTSP under the Stream Type control.

Website

<https://obsproject.com/>

OBS Configuration Summary

1. From OBS Studio, under Sources, click "+" to add a source.
2. Select Media Source.
3. Select Create New.
4. Enter a name for it, then click OK.
5. Uncheck Local File. An Input window becomes available.
6. From your HELO Plus unit, copy the Stream URL and paste it into the Input Window of OBS Studio, then click OK.
7. By default, OBS will automatically include any available audio source.

StreamShark.io

Website

<https://streamshark.io/>

Twitch

Twitch is a social video platform and community for gamers.

Encoder Information

To find your stream key, log into Twitch.TV, navigate to the Dashboard, and click the Stream Key tab.

- Server URL
- Stream name/key

HELO Plus Stream 1/2 Output Screen Required Settings

Stream Type	RTMP
RTMP Server URL	<Server URL> Use closest Ingest Point below.
RTMP Stream Name	<Stream name/key>

Twitch Ingest Point

For the best performance with Twitch.Tv, select the Ingest Point that is geographically closest to you. When streaming to Twitch, find your Stream Key via the web dashboard. Add the Stream Key text to the end of the RTMP address you are using.

Name	RTMP address (add Stream Key text)
South America: Argentina	rtmp://live-eze.twitch.tv/app/
South America: Chile	rtmp://live-scl.twitch.tv/app/
South America: Sao Paulo, Brazil	rtmp://live-gru.twitch.tv/app/
Asia: Hong Kong	rtmp://live-hkg.twitch.tv/app/
Asia: Seoul, South Korea	rtmp://live-sel.twitch.tv/app/

Name	RTMP address (add Stream Key text)
Asia: Singapore	rtmp://live-sin.twitch.tv/app/
Asia: Taipei, Taiwan	rtmp://live-tpe.twitch.tv/app/
Asia: Tokyo, Japan	rtmp://live-tyo.twitch.tv/app/
Australia: Sydney	rtmp://live-syd.twitch.tv/app/
EU: Amsterdam, NL	rtmp://live-ams.twitch.tv/app/
EU: Stockholm, Sweden	rtmp://live-arn.twitch.tv/app/
EU: Paris, FR	rtmp://live-cdg.twitch.tv/app/
EU: Frankfurt, Germany	rtmp://live-fra.twitch.tv/app/
EU: London, UK	rtmp://live-lhr.twitch.tv/app/
EU: Prague, CZ	rtmp://live-prg.twitch.tv/app/
EU: Frankfurt, Germany	rtmp://live-fra.twitch.tv/app/
EU: Warsaw, Poland	rtmp://live-waw.twitch.tv/app/
US West: San Francisco, CA	rtmp://live.twitch.tv/app/
US West: Los Angeles, CA	rtmp://live-lax.twitch.tv/app/
US West: San Jose, CA	rtmp://live-sjc.twitch.tv/app/
US West: Seattle, WA	rtmp://live-sea.twitch.tv/app/
US Central: Dallas, TX	rtmp://live-dfw.twitch.tv/app/
US East: Ashburn, VA	rtmp://live-iad.twitch.tv/app/
US East: New York, NY	rtmp://live-jfk.twitch.tv/app/
US East: Miami, FL	rtmp://live-mia.twitch.tv/app/
US East: Chicago	rtmp://live-ord.twitch.tv/app/

Link to Twitch Recommended Settings

<https://help.twitch.tv/s/article/broadcast-guidelines>

NOTE: H.264 Main Profile is recommended, which is the HELO Plus factory default (parameter located under Advanced Settings).

UStream

UStream is a commercial streaming service.

Encoder Information

Log in to your UStream account, select the channel you want to broadcast to, select Broadcast Settings, and then click View on Encoder Settings:

- Server URL
- Stream name/key

HELO Plus Stream 1/2 Output Required Settings

Stream Type	RTMP
RTMP Server URL	<Server URL>
RTMP Stream Name	<Stream name/key>

Link to UStream Recommended Settings

<https://support.ustream.tv/hc/en-us/articles/207852117-Internet-connection-and-recommended-encoding-settings>

NOTE: H.264 Main Profile is recommended, which is the HELO Plus factory default (parameter located under Advanced Settings).

vMIX

vMix is a Software Video Mixer and Switcher that also functions as live streaming software that allows you to publish live productions directly to the Internet. HELO Plus can be used as an input source via RTSP stream.

vMix Configuration Summary

1. Add Input
2. Choose Stream
3. Select Stream Type RTSP over UDP
4. Enter URI rtsp://(IP Address/Stream Name)
5. Click OK

Additional information is available at <https://www.vmix.com>

Wirecast

TeleStream's Wirecast application lets you capture, produce, and stream to integrated streaming services & CDNs. HELO Plus can be used as an input source via RTSP stream.

Wirecast Configuration Summary

1. Add web stream
2. Change protocol to RTSP
3. Stream options: RTSP over UDP
4. Format Options: Auto Detect
5. Check Live Stream
6. Enter URI of the HELO Plus
7. Click Connect

NOTE: Wirecast may take a few seconds to initialize the incoming stream and show video in the Wirecast UI.

Additional information is available at <https://www.telestream.net/wirecast/overview.htm>

Wowza Media Systems offers a Streaming Server that can be run on either a local or cloud based server. For general information about Wowza Media Systems, see: <https://www.wowza.com/>

For instructions on installation and configuration, see the following: <https://www.wowza.com/docs/how-to-install-and-configure-wowza-streaming-engine>

NOTE: This section assumes that you have already installed and configured the local Wowza Streaming Engine media server.

Gather Wowza Application Connection Settings

Once you have installed and configured your local Wowza Streaming Engine media server, follow these steps to gather your Wowza Application Connection Settings, then enter them into your HELO Plus's Stream 1/2 Output configuration.

1. Launch a web browser, then navigate to your local server installation of the Wowza Streaming Engine Manager.
2. In the left column, under the "Selected Application" heading, select the application you want to use.
3. From the selected application sub-menu, select "Sources (Live)". The Sources (Live) page displays.
4. From the far right column of the Sources (Live) page, under the heading "Application Connection Settings," note the following:
 - Host Server IP Address
 - Host Port Number
 - Application Name

Enter Settings into HELO Plus Stream 1/2 Output Configuration

1. From your HELO Plus web user interface, select the Stream 1/2 Output menu.
2. In the Stream Type field, select RTMP.
3. In the RTMP Server URL field, enter the IP address (or URL) of the server followed by a slash, then the engine name. For example:
rtmp://10.3.0.75/livestream1

-or-

rtmp://wowza.aja.com/livestream1

It is not necessary to enter the port number if you are using the default port number (1935). For example, when using the default port number, these two addresses would be equivalent:

rtmp://wowza.aja.com/livestream1

rtmp://wowza.aja.com:1935/livestream1

However, if you are not using the default port number, it will be necessary to enter it explicitly.

4. In the RTMP Stream Name field, enter the name of the stream. You can name the stream anything you like, for example, "myStream".

Initiate HELO Plus Streaming Output

To initiate the HELO Plus streaming output, press the Stream button from your HELO Plus unit's front panel, or click the Stream button from the HELO Plus web user interface.

YouTube Live

YouTube Live is a free streaming service available to YouTube users.

YouTube Setup

Your YouTube channel must be verified, you need to enable live streaming, and your account cannot be restricted. See YouTube help for more information about setting up live streaming.

YouTube Encoder Information

Sign in to YouTube, go to your YouTube channel, click on Upload, and click on Live Streaming.

- Server URL
- Stream name/key

HELO Plus Stream 1/2 Output Page Required Settings

Stream Type	RTMP
RTMP Server URL	<Server URL>
RTMP Stream Name	<Stream name/key>

Link to YouTube Recommended Settings

<https://support.google.com/youtube/answer/2853702>

NOTE: *H.264 Main Profile is recommended, which is the HELO Plus factory default (parameter located under Advanced Settings).*

Chapter 5 – eMini-Setup

Overview

NOTE: You must use eMini-Setup v2.3 or higher with HELO Plus to ensure full compatibility.

AJA's eMini-Setup is an easy way to set up your 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, lets you identify an AJA device's IP address and, if necessary, configure its network settings so the unit can operate in your work environment.

NOTE: The eMini-Setup application is only used to setup selected Ethernet capable AJA devices. This application is not used to operate those devices.

Once configured, your AJA device can be accessed via an Ethernet network using a web browser, and can then be reconfigured over that network, using the AJA device's IP address and built in web server.

Acquiring eMini-Setup

AJA's eMini-Setup application is available for download from the AJA website:

<https://www.aja.com/family/software#eminisetup>

Click the **Download** button for the OS (macOS or Windows) you will use with eMini Setup.

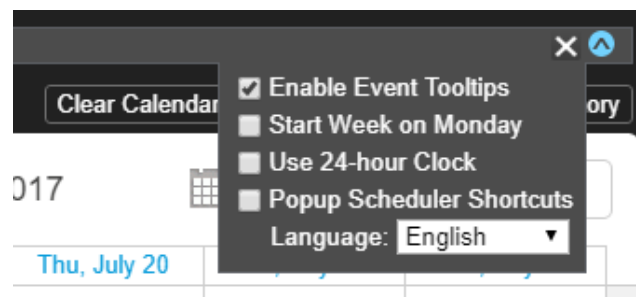
Installing eMini-Setup

PC Installation

To install eMini-Setup on a Windows PC:

1. Download the application from the AJA website. See "[Acquiring eMini-Setup](#)" on page 86.
2. Open the AJA_eMini-Setup_win.zip file.
3. Double-click on the AJA_eMini-Setup.msi file.
4. The Setup Wizard will guide you through the installation.

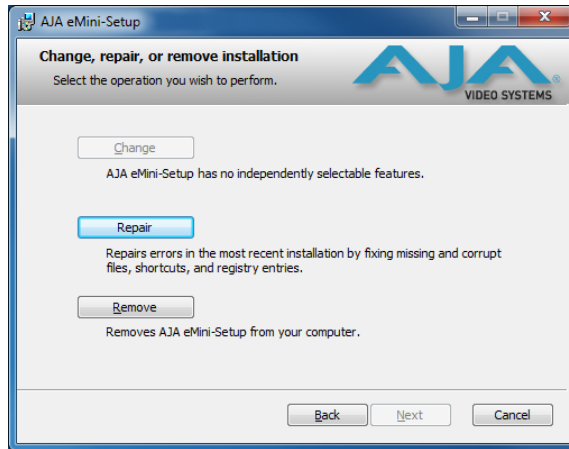
Figure 43. eMini-Setup PC Wizard



5. Click Next to begin. Answer the questions in the subsequent dialogues, including device software installation if displayed. When finished, an AJA eMini-Setup shortcut will be installed on the desktop, and you will be able to locate the eMini-Setup application in the AJA folder in the Programs listing.

NOTE: *If the eMini-Setup application already exists on the PC, a different Setup Wizard appears. (In some instances, Windows may require uninstalling an earlier version of eMini-Setup before installing a new version.)*

Figure 44. eMini-Setup Wizard, Re-installation



With this screen you can **Repair** (reinstall) or **Remove** (uninstall) eMini-Setup on the PC.

NOTE: *Windows OS application icons can sometimes become hidden on the desktop. Several possible solutions exist, perhaps the easiest being to right click on the desktop, select View, and checkmark Show Desktop Icons*

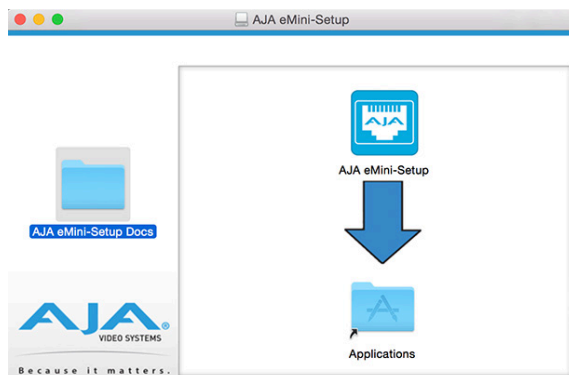
Mac Installation

To install the application on a Mac:

NOTE: *Mac computers must be Intel-based (G5, G4 and earlier models will not work with eMini-Setup).*

1. Download the application from the AJA website. See ["Acquiring eMini-Setup" on page 86](#).
2. Unzip the file.
3. Double-click on the AJA eMini-Setup.dmg file.
4. Answer the prompt and a utility program will be launched.

Figure 45. eMini-Setup Mac Installer



5. To complete the installation drag the “AJA eMini-Setup” icon to the Applications folder.

Running eMini-Setup

Connect your Ethernet capable AJA device to the PC or Mac via the supplied USB cable, and then connect the external power supply (supplied) to that AJA device.

PC Startup

To run eMini-Setup on a PC, double-click on the AJA eMini-Setup icon on your desktop, or open the AJA folder in the program list and click on the AJA eMini-Setup application located inside the eMini-Setup folder.

NOTE: Windows OS application icons can sometimes become hidden on the desktop. Several possible solutions exist, perhaps the easiest being to right click on the desktop, select View, and checkmark Show Desktop Icons.

Mac Startup

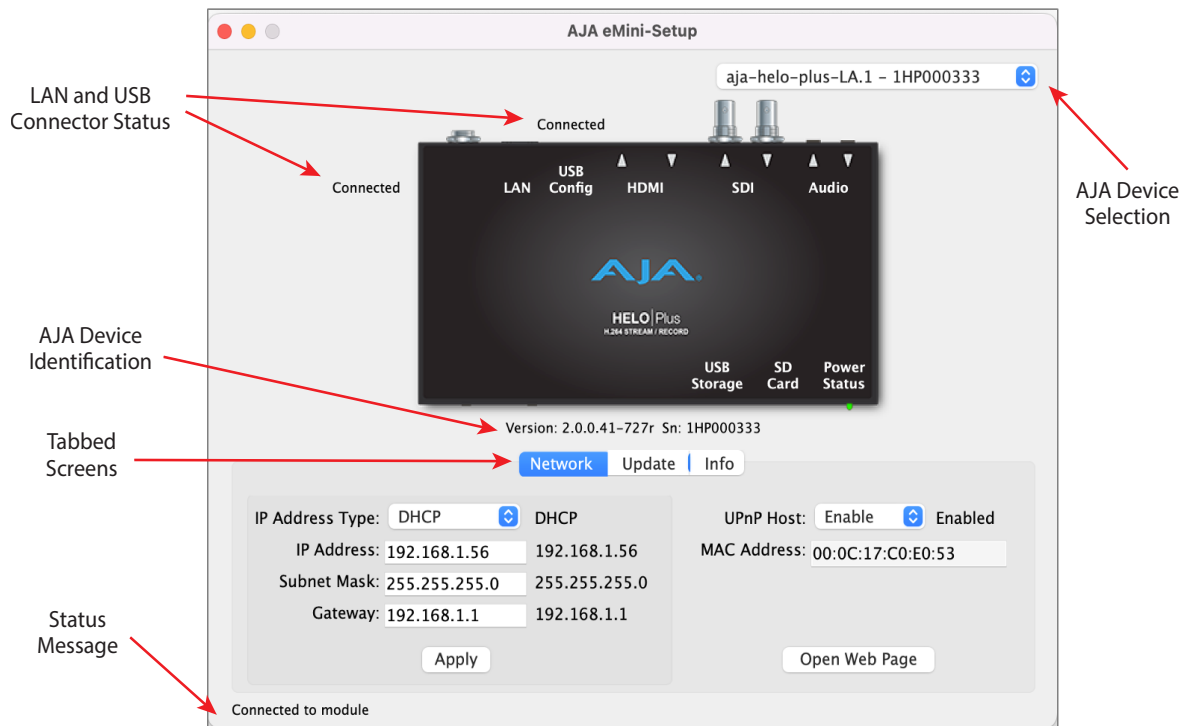
To run eMini-Setup on a Mac, open the Applications folder and locate the AJA eMini-Setup application. Double-click the application to launch it.

eMini-Setup User Interface

General Description

A status field at the bottom of the screen shows if the eMini-Setup application is connected and communicating with an AJA device.

Figure 46. Example eMini-Setup Screen



AJA Device Selection

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

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 your AJA device. If you ever call AJA Support for service, you may be asked for this number.

File Menu

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

Edit Menu

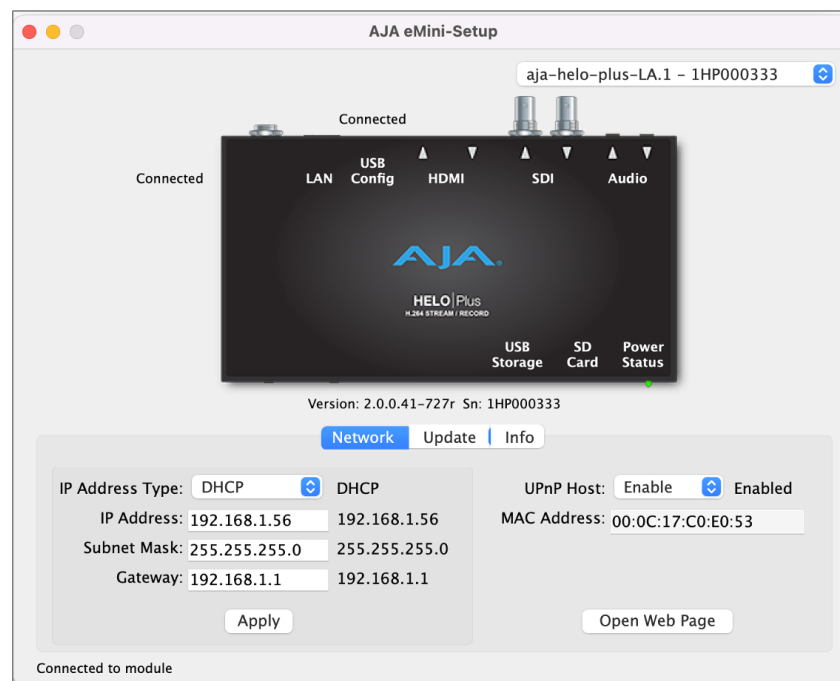
The Edit drop-down menu has standard Cut, Copy and Paste functions for editing text.

Help Menu

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

Network Tab Screen

Figure 47. HELO Plus Network Tab Screen



This tab lets you change the network setup on the connected AJA device. You must click the **Apply** button to initiate any IP address 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 your HELO Plus needs to communicate to servers on another LAN or WAN, you have to enter the address of the computer/router that is making that external connection. If all of your devices, and the systems they need to talk to, are on a single LAN, then you can enter any unused LAN address as the Gateway here.

NOTE: Group functionality requires all participating devices have the same valid Gateway address.

UPnP Host

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

MAC Address

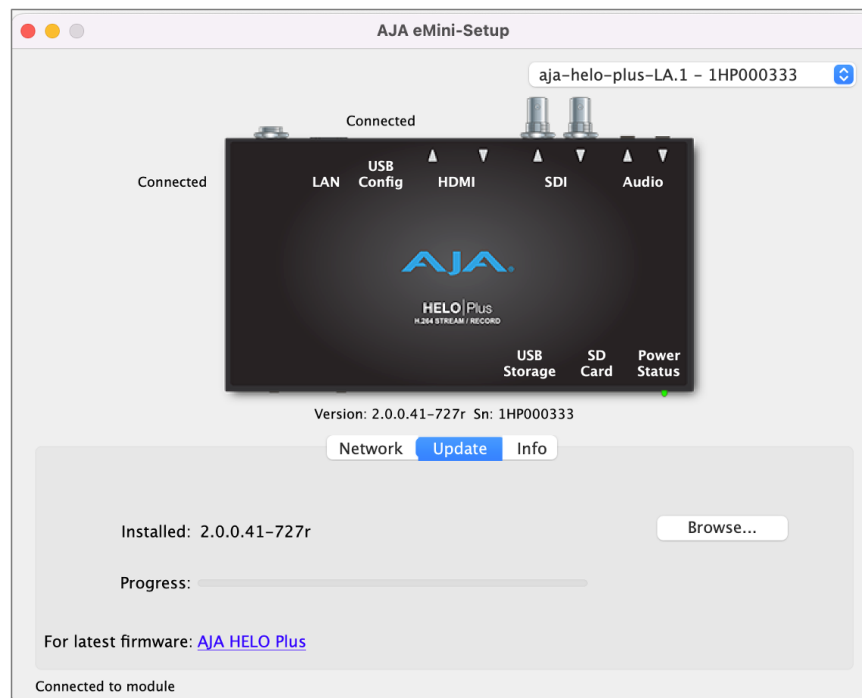
This is the permanent MAC address of the AJA device.

Open Web Page

After successful configuring the HELO Plus's network settings and while connected to the network, clicking on this button opens the HELO Plus's internal web page, allowing complete remote control of the device.

Update Tab Screen

Figure 48. HELO Plus Update Tab Screen



Use this Update tab to access and install new firmware.

- Installed - This field shows the version of the firmware currently installed.
- Progress - This indicator bar shows the progress of firmware installation.

Browse

Clicking on this button opens a navigation window, allowing you to select the firmware previously downloaded and load that version of firmware into the AJA device's non-volatile memory.

AJA HELO Plus Firmware

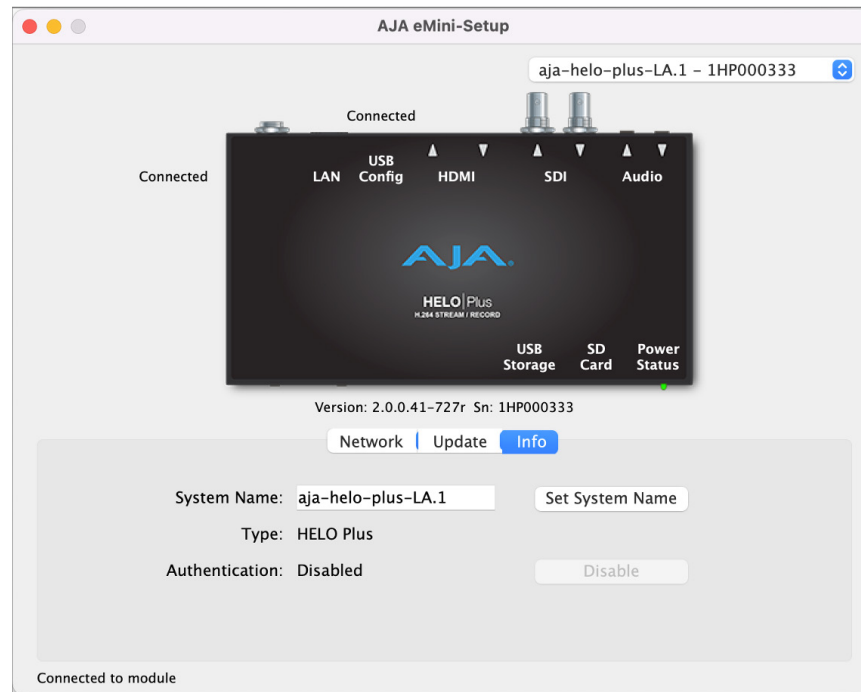
- Clicking on this link takes you to the AJA website where the AJA device's firmware is available for download.

Firmware Update Procedure

1. Check the AJA website for new firmware.
2. If new software is found, download it and uncompress the file archive (.zip).
3. Connect the device to a Mac or PC via a USB port on the computer.
4. Click on the **Update** tab, click on the **Browse** button, navigate to the firmware (.ajas extension), open it, and confirm the update. Progress will be shown via the "Progress" bar.
5. After the update, the AJA device must be rebooted by clicking on the Reboot button in the prompt window.

Info Tab Screen

Figure 49. HELO Plus Info Tab Screen



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

System Name

This field allows you to give your AJA device a unique name. This can be useful if you have several attached to a Mac/PC via USB so you can distinguish between them easily. Enter the desired name, then click Set System Name.

NOTE: International characters are fully supported in the system name.

Type

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

Authentication

If Authentication has been Enabled on the web browser Access tab, you can disable the security feature by clicking on the Disable button.

Appendix A – Specifications

HELO Plus Tech Specs

Video Formats

- (HD) 1080p 23.98, 24, 25, 29.97, 30, 50, 59.94, 60
- (HD) 1080i 50, 59.94, 60
- (HD) 720p 50, 59.94, 60
- (SD) 525i, 625i

Video Codec Support

- H.264/MPEG-4(part 10) Encoder

Video Encoding Parameters

- 100 kbps to 20 Mbps. Bit rate may be set independently for Encoder1 and Encoder 2.
- Up to 1080p60
- Supports Baseline, Main and High Profiles

Audio Encoding Parameters

- 32 kbps to 256 kbps
- 48 kHz 2-channel stereo
- MPEG-4 AAC-LC

Protocols

- RTMP, RTMPS, RTMPT, RTMPE, RTMPTE, RTMPTS, RTSP, HLS RTP-TS/UDP-TS Unicast and Multicast, SRT (caller mode). RTSP and HLS client sessions combined limited to a total of 10. RTSP limited to a single server session.

Storage

- 1x USB port (USB 2.0 and USB 3.0 media, exFAT or FAT32)
- 1x SD card slot, SD, SDHC, SDXC cards (exFAT)
- Mounted Network Share (SMB or NFS)

Video Input Digital

- 1x 3G-SDI, SMPTE-259/292/296/424, 10-bit
- Single Link 4:2:2 (1x BNC)
- 1x HDMI Standard Type A connector
- HDMI v1.4a, RGB or YCbCr

Video Output Digital

- 1x 3G-SDI, SMPTE-259/292/296/424, 10-bit
- Single Link 4:2:2 (1x BNC)
- 1x HDMI Standard Type A connector
- HDMI v1.4a, RGB or YCbCr

Audio Input Digital

- 2-channel, 24-bit SDI embedded audio, 48 kHz sample rate, synchronous
- 2-channel, 24-bit HDMI embedded audio, 48 kHz sample rate, synchronous

Audio Input Analog

- 2-channel, Analog (-10dBV Line Level, Unbalanced stereo 1x 3.5mm TRS connector)

Audio Output Digital

- 2-channel, 24-bit SDI embedded audio, 48 kHz sample rate, synchronous
- 2-channel, 24-bit HDMI embedded audio, 48 kHz sample rate, synchronous

Audio Output Analog

- 2-channel, Analog (Line Level, Unbalanced stereo 1x 3.5mm TRS connector)

Network Interface

- 10/100/1000 Ethernet (RJ-45)
- Embedded web server for Configuration and Control

User Interface

- Stream Button
- Record Button
- Web UI
- Simple Web Configuration via AJA eMini-Setup (macOS and Windows)
- Integrated calendar

Control and Automation

- Integrated calendar scheduler
- Support remote ICS calendars
- Scriptable REST control API
- Closed Captioning supported

Size (w x d x h)

- 8.50" x 5.5" x 1.02" (215.9 x 139.7 x 25.91 mm)

Weight

- 1.2 lb (0.52 kg)

Power

- External power supply required
- Enclosure: 12Vdc 4-pin mini XLR
- AC adapter included: 100-240 VAC 50/60 Hz, universal input, 12V– 60W Max

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 and European Free Trade Association (EFTA) 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, IRELAND, ITALY, LATVIA, LITHUANIA, LUXEMBOURG, MALTA, NETHERLANDS, POLAND, PORTUGAL, ROMANIA, SLOVAKIA, SLOVENIA, SPAIN, SWEDEN, UNITED KINGDOM, ICELAND, LICHTEINSTEIN, NORWAY, SWITZERLAND

Declaration of Conformity

Marking by this symbol 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:

EN 62368-1: 2014 + A11 (T-Mark License),

IEC 62368-1: 2014 (CB Certificate)

Additional licenses issued for specific countries available on request.

Emissions:

EN 55032: 2015 + A11: 2020, CISPR 32: 2015, EN 61000-3-2: 2014, EN 61000-3-3: 2013

Immunity:

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 61000-4-11: 2020

Environments: E2, E3 and E4

The product is also licensed for additional country specific standards as required for the International Marketplace.



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

사용자안내문

이 기기는 업무용 환경에서 사용할 목적으로 적합성평가를 받은 기기로서 가정용 환경에서 사용하는 경우 전파간섭의 우려가 있습니다.

Taiwan Compliance Statement

警告使用者：
這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

This is a Class A product based on the standard of the Bureau of Standards, Metrology and Inspection (BSMI) CNS 13438, Class A. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Japanese 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.

Chinese Compliance Statement

This product has been tested to the following Chinese standards:

GB 17625.1-2012; GB/T 9254.1-2021; GB 8898-2011

This is to certify that the above mentioned product(s) complies with the requirements of certification rules of CQC12-045800-2022 under certificate number CQC2017010805953353.

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

Avertissement! Débranchez cet appareil pendant les orages avec éclairsou 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 periodos de tempo.

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



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! 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.



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 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 energía 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! 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.

Warranty and Liability Information

Limited Warranty on Hardware

AJA Video Systems, Inc. (AJA Video) warrants that the hardware product, not including storage modules or software components, will be free from defects in materials and workmanship for a period of three years from the date of purchase. AJA Video warrants that the storage modules provided as part of the hardware product will be free from defects in materials and workmanship for a period of one year 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 or storage module (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.

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