

AJA and Adobe Applications



Adobe® Creative Cloud™

Quick Start Guide

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Contacting AJA Support

When calling for support, have all information at hand prior to calling. To contact AJA for sales or support, use any of the following methods:

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FAX	+1.530.271.3140
Web	https://www.aja.com
Support Email	support@aja.com
Sales Email	sales@aja.com

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Chapter 1 – AJA and Adobe Overview

Adobe Applications Supported

The AJA Desktop Software package is tightly integrated with the following Adobe applications:

- Premiere Pro CC
- Photoshop CC
- After Effects CC
- Audition CC

NOTE: Adobe SpeedGrade was supported up to CC 2015.1 (Adobe announced SpeedGrade product End Of Life in August 2017).

AJA Desktop Software package default installation includes plug-ins for both Mac and Windows versions of the Adobe applications, with their functions being mostly the same.

This manual does not provide operational information for Adobe applications except as related to AJA hardware operations. Please read the Adobe user documentation for Adobe application configuration and operation.

NOTE: AJA recommends using the latest AJA software in combination with the current version of Adobe Creative Cloud. For demanding workflows, AJA also recommends using the latest OS with up to date high performance host system hardware. See the recommended specs per your AJA hardware device manual.

Please be aware that in some cases AJA software may be compatible with macOS or Windows versions that are older than those Adobe recommends. In this case, when working with Adobe CC applications, you should follow the recommendation of Adobe over the recommendation of AJA.

AJA makes host system recommendations for using AJA hardware here:

<https://www.aja.com/support/kona-pc-system-configuration>

<https://www.aja.com/support/kona-system-configuration>

<https://www.aja.com/support/kona-pc-graphics-system-configuration>

<https://www.aja.com/support/legacy-support-systems>

Adobe also hosts setup guidance here:

<https://helpx.adobe.com/premiere-pro/using/setting-system.html>

Hardware Products Supported

AJA in association with Adobe provides a range of hardware that supports Adobe applications courtesy of installing the AJA desktop software package:

- Io 4K Plus, Io IP, Io 4K, Io XT, Io Express
- KONA 5, KONA 4, KONA IP, KONA 1, KONA HDMI, KONA LHi, KONA LHe Plus
- T-TAP

AJA desktop software installer, and associated Adobe compatibilities are also available with:

- Avid Artist | DNxIV
- Avid Artist | DNxIP

Other products may support Adobe Plug-ins in the future. In this manual all supported hardware devices are referred to as "AJA hardware".

All features described in this manual may not be available with all AJA hardware. For example, the Audio Mixer functionality introduced to AJA Control Panel with AJA Desktop Software v14, is only available when running Io 4K Plus, Io IP, Io 4K, KONA 4, KONA 1 and KONA IP. It is this Audio Mixer architecture which enables full duplex Voice Over to Timeline inside Adobe Premiere Pro with zero latency. The Audio Mixer also enables access to all audio inputs available on the AJA device, meaning that available inputs for Voice Over to Timeline will vary like so:

- Io 4K Plus – Choose between Analog (DB25 line level), SDI or HDMI
- Avid Artist | DNxIV – Choose between Mic Input (XLR), Analog (DB25 line level), SDI or HDMI
- Io 4K – Choose between SDI or HDMI
- KONA 4, KONA 5 – Choose between AES or SDI

NOTE: If you wish to execute a Voice Over to Timeline using an analog Mic, but the AJA device you are using only has inputs for audio via SDI embedded, HDMI embedded or AES, then you will likely require an analog audio embedder and / or a digital mixing board, with either having an A to D converter.

Table 1. AJA Hardware Feature Summary, Thunderbolt Devices

	Io 4K Plus	Io IP	Io 4K	Io XT	T-TAP	Avid Artist DNxIV	Avid Artist DNxIP
Tbolt Ports	Tbolt 3	Tbolt 3	Tbolt 2	Tbolt 1	Tbolt 1	Tbolt 3	Tbolt 3
Max Input Resolution	4K	HD	4K	2K		4K	HD
Max Output Resolution	4K	HD	4K	2K	2K	4K	HD
SDI In	12G/6G/3G	3G	3G	3G		12G/6G/3G	
SDI Out	12G/6G/3G	3G (monitor)	3G	3G	3G	12G/6G/3G	
HDMI In	2.0		1.4	1.3		2.0	
HDMI Out	2.0	2.0	1.4b	1.4	1.3	2.0	2.0
HDR	√	√	√			√	√
Closed Captions	√	√	√			√	√
SMPTE 2022-6 (10GbE)		√					√
SMPTE 2022-7 (10GbE)		√					√
IP Video In/Out		√					√
IP Audio in/Out		√					√
Analog Video In							
Analog Video Out				√			
Analog Audio In	√	√				√	√
Analog Audio Out	√	√	√	√		√	√
Control Room Audio Mixer	√	√	√			√	√
XLR Mic Input						√	√
	√ = Supported (blank) = Unsupported						

Table 2. AJA Hardware Feature Summary, PCIe Devices

	KONA 5	KONA 4	KONA IP	KONA 1	KONA HDMI	KONA LHi	KONA LHe Plus	Io Express
PCIe	3.0 8-lane	2.0 8-lane	2.0 8-lane	2.0 2-lane	2.0 8-lane	1.0 4-lane	1.0 4-lane	1.0 1-lanes
Max Input Resolution	4K	4K	HD	2K	4K	2K	HD	HD
Max Output Resolution	4K	4K	HD	2K		2K	HD	HD
SDI In	12G/6G/3G	3G		3G		3G	1.5G	1.5G
SDI Out	12G/6G/3G	3G		3G		3G	1.5G	1.5G
HDMI In				1.3	2.0/1.4b	1.3		1.3
HDMI Out	2.0	1.4b	1.4	1.3		1.3		1.3
HDR	√	√	√					
Closed Captions	√	√	s2022 only					
SMPTE 2022-6 (10GbE)			√					
SMPTE 2022-7 (10GbE)			√					
SMPTE 2022-7 (10GbE)			√					
IP Video In/Out			√					
IP Audio in/Out			√					
Analog Video In						√	√	
Analog Video Out		√				√	√	√
Analog Audio In						√	√	
Analog Audio Out		with K3G box				√	√	√
Control Room Audio Mixer	√	√	√	√				
XLR Mic Input								
	√ = Supported (blank) = Unsupported							

Chapter 2 – AJA and Adobe Installation

NOTE: There is no longer any requirement to separately install the AJA Adobe Plug-ins. Performing a Standard Install of AJA Desktop Software, by default, also installs the AJA Adobe Plug-ins.

Installing AJA Software

Download

Go to the AJA website and download the latest AJA Desktop Software package containing the AJA Control Panel application, other related applications, drivers and plug-ins.

<https://www.aja.com/en/support/downloads/>

System software updates may occasionally become available to AJA product owners on our website (www.aja.com). We recommend checking occasionally for both software updates and additional product information.

NOTE: If your computer has previously had another video capture or multimedia device installed, ensure you uninstall any related software before installing the AJA Desktop Software package. This will prevent any hardware or software conflicts.

IMPORTANT: Please read the brief Release Notes PDF file that accompanies your AJA software. The Release Notes describe important features and fixes.

Software Package Installation and Re-installation

NOTE: Always uninstall previous versions of AJA software before updating your computer with new software. Go to your AJA Utilities (on the Mac) or Windows Control Panel to uninstall existing AJA software. This helps prevent hardware/software conflicts.

IMPORTANT: If you install AJA software for the first time on a Mac running High Sierra, the application developer must be identified. See the AJA product manuals or Release Notes for specific instructions.

You cannot use AJA hardware with Adobe applications until the AJA Desktop software has been installed on your computer. Make sure the Adobe software is installed and launched at least once on your computer before installing AJA Desktop software.

IMPORTANT: If you install or update a supported Adobe application at a later date, you must run the AJA installer program again.

AJA Desktop Software Package Components

Drivers

AJA device drivers for tightly integrated hardware/software operation.

AJA Control Panel

The Control Panel provides:

- Source selection and control of your AJA hardware.

- A block diagram to show visually what routing and processing is being performed.

AJA Control Room

Control Room is a cross-platform software application for capture, playback and output with AJA products. Files captured in AJA Control Room can be used by Adobe applications, in the same way as those files captured directly using Adobe Premiere Pro CC.

AJA System Test

System Test provides accurate and detailed evaluations of drive and PCIe performance statistics, allowing you to measure the capabilities of your system for recording and playing back various resolutions and codecs.

3rd-Party Plugins

AJA provided plugins for popular 3rd-party Professional Video Applications from Adobe, Avid, Apple, Telestream, and others.

Documentation

PDFs of AJA hardware and software manuals are also installed (by default) at the following computer locations:

Mac - Applications / AJA Utilities / Docs

PC - Program Files / AJA / windows / documentation

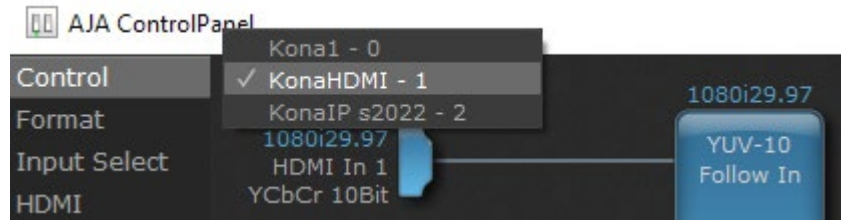
AJA Hardware Firmware Update

After the AJA Software Package has been installed on a computer with your AJA hardware installed, the firmware on that AJA device can be updated if a newer version of firmware is included with that software package.

AJA Desktop Software firmware and software versions are tightly integrated. If back-revving to an earlier version for example, then you may be prompted to update your firmware to match; i.e. update to an earlier version of the firmware than you currently have installed. AJA Control Panel firmware update notification language has now changed to reflect this more accurately.

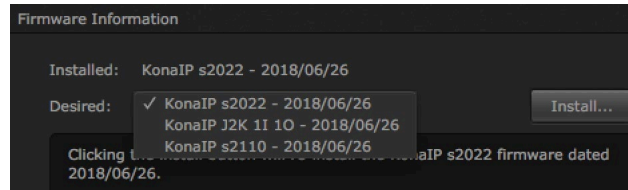
1. Open the AJA Control Panel application.
2. If more than one AJA device is connected, choose the device you want to update by selecting its name from the drop-down menu at the top of the screen.

Figure 1. Control Panel Screen Showing Multiple AJA Devices



3. Go to the Control Panel Firmware Screen.
4. Select the firmware version (if multiple versions exist) in the **Desired** dropdown.

Figure 2. Control Panel Screen Showing Multiple Firmware Versions



5. Click on **Install**. Messages appear and when finished, firmware update completed messages are shown.
6. Click **Shutdown** to power down the computer.
7. Restart the computer.
8. Open AJA Control Panel. The AJA hardware with the updated firmware should be recognized by the Control Panel application.

OS Configuration

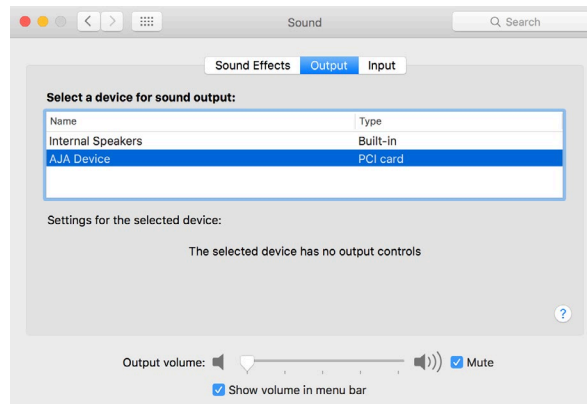
In most cases, using AJA hardware with Adobe applications is set and forget. Simply set your Non Linear Editor (NLE) or other application to point at AJA hardware for all input and output operations and that's it. No need to switch drivers, switch to desktop audio, etc.

NOTE: On first use, you will need to tell your operating system to use AJA hardware as the default Audio Input and Output device.

Mac OS

For Mac go to System Preferences > Sound and select AJA Device for both Input and Output.

Figure 3. Mac System Preferences, Sound



Windows OS

For Windows go to Control Panel > Sound and select AJA Audio Interface for playback or output.

Figure 4. Windows 7 Control Panel, Sound

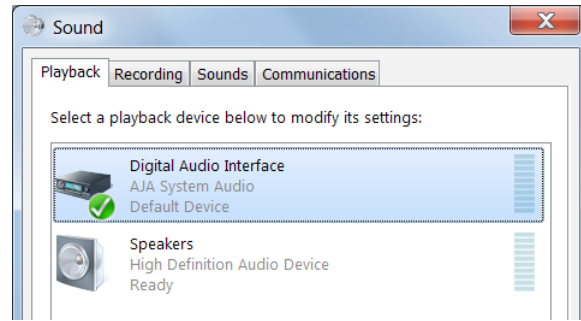
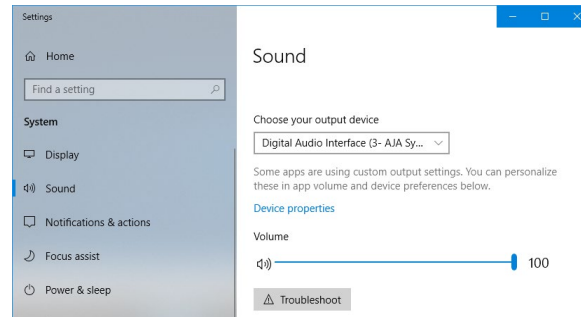


Figure 5. Windows 10 Control Panel. Sound



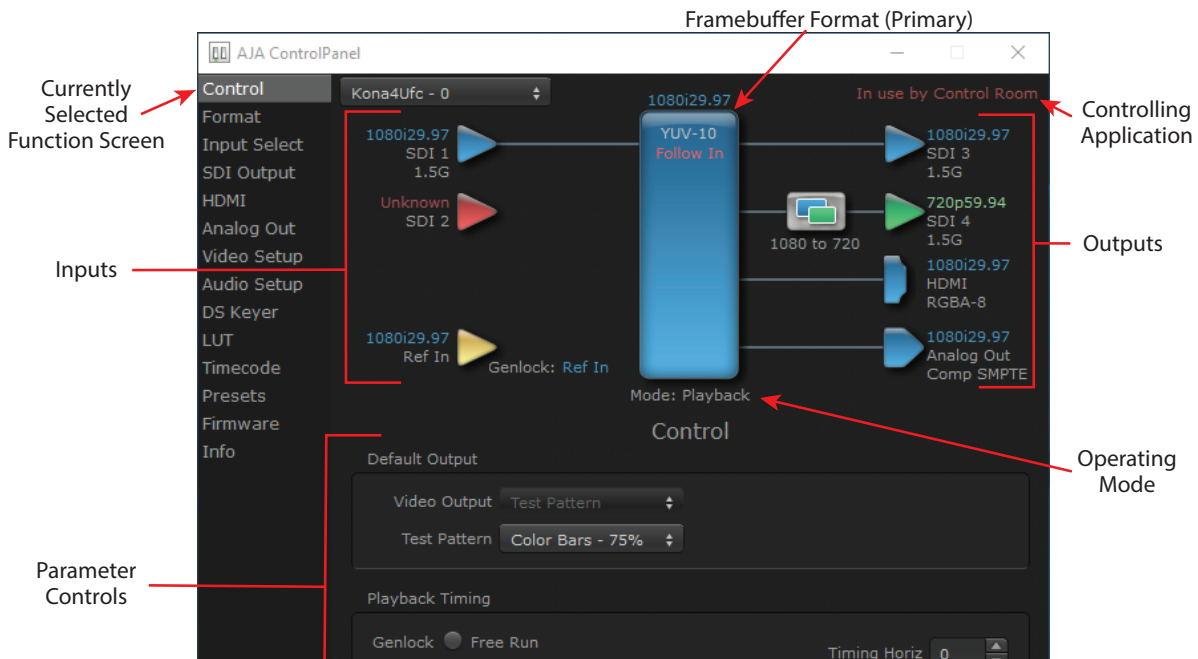
AJA Control Panel User Interface

The AJA Control Panel user interface includes a visual block diagram of the unit's current configuration. The current status, input and output settings, and many other details are depicted in the color-coded block diagram. Below this block diagram are various controls for changing operating parameters, which will vary depending on which function screen has been selected.

The left side of the AJA Control Panel provides a navigation list of available function screens. Clicking on a link (or alternatively, a related element in the block diagram) displays a function screen corresponding to that topic.

NOTE: Although AJA and Adobe Applications are sending and receiving video over IP, once that data is decoded to memory it is governed by the same video menus used for SDI and HDMI based AJA I/O solutions.

Figure 6. AJA Control Panel, Block Diagram and Controls



AJA Presets

Setups can be named and saved as a snapshot (Preset) for recall at any time. You can save various AJA device Control Panel configurations associated with your frequent tasks. You don't have to spend time resetting interface configurations, just load the previously saved Preset for each task.

If you work on multiple systems and want to carry your saved setups to another location, you can copy your saved Preset files on to movable storage and load them into any computer running the AJA Control Panel application.

Saving, Loading and Deleting Presets

To save a preset, simply go to the Presets screen and click "Save Preset". A dialog will be presented asking you for a file name. Enter a meaningful name and click "OK". Thereafter the preset will be available under the Control Panel "Presets" list.

From the Presets screen you can manage your collection of presets easily. To Load or Delete a stored preset, just select it with your mouse and then click the "Load Preset" or "Delete" button respectively.

Transferring Saved Presets

If you want to use a saved Preset on another workstation, you can simply copy the file on removable storage and install it at the new location. The Preset files are stored at:

Mac OS Preset Files Storage Location

- From the Finder, hold down the Option key (to display the Library directory) and click on Go/Library/Application Support/AJA/<device name>/Presets/

Windows Preset Files Storage Location

- c:\Users\<username>\AppData\Local\AJA\Control Panel\<device name>\Presets\

Chapter 3 – Using Adobe Premiere Pro

Playback Resolution

For best output resolution, use Full as your Playback Resolution setting. Use the fly-down menu in the Premiere Pro Source or Program Sequence to set Playback Resolution.

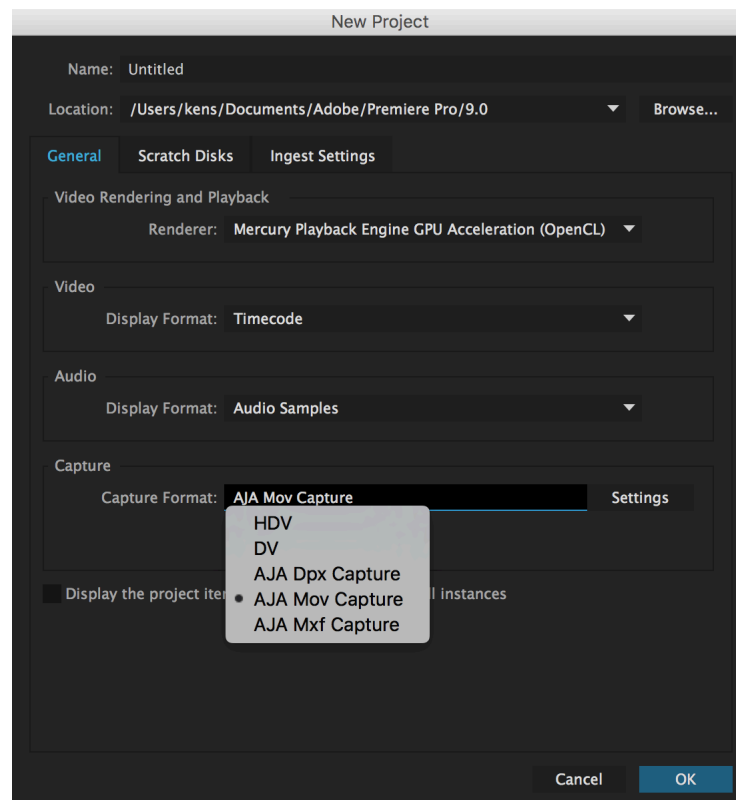
4K Output in Premiere Pro

If you are using AJA Hardware that supports UltraHD/4K, true UltraHD/4K will be output on the SDI outputs. If the AJA hardware device you are using does not support UltraHD/4K, the AJA hardware in Premiere Pro Match Sequence mode will automatically output the best resolution available.

Beginning a Project with Adobe Presets

Opening Adobe Premiere Pro, you will select New Project from the File Menu and choose an AJA Capture Format from the pulldown menu, name the project, and click OK.

Figure 7. Adobe Premiere Pro New Project panel



Options Set in Premiere Pro Preferences

Some settings that determine both capture and playback characteristics for AJA hardware are accessed through Premiere Pro Preferences.

In Adobe Premiere Pro Preferences (under Premiere Pro>Preferences for Mac, and under Edit>Preferences for Windows,) you can set up global (default) settings for:

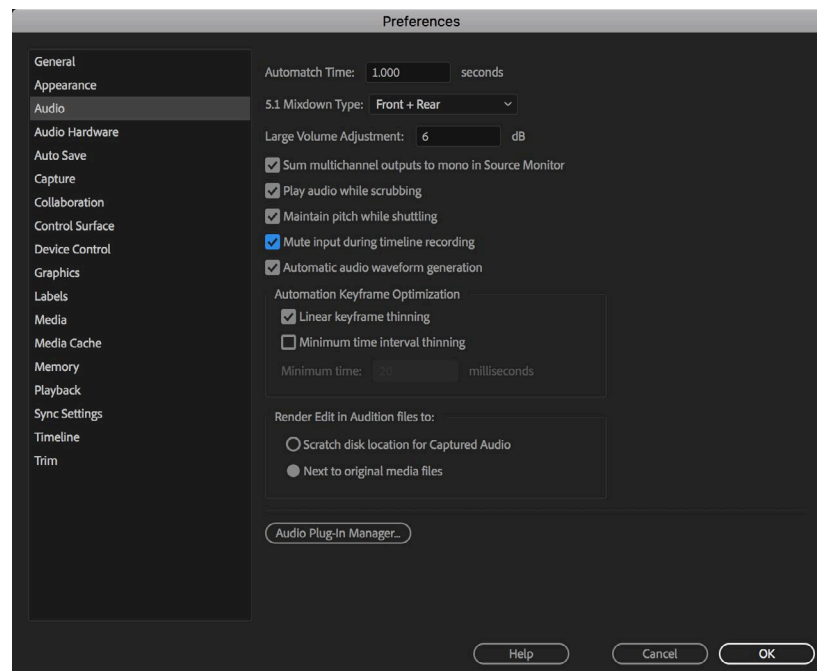
- Audio
- Audio Hardware
- Audio Output mapping
- Device Control
- Playback Settings

Audio for a Premiere Pro session can be configured differently, depending on your AJA hardware and if you will be performing voice-over recordings.

Audio Preferences

In Audio Preferences you control various audio settings, depending on your personal preferences and project requirements.

Figure 8. Audio Preferences



Mute input during timeline recording

If you will be performing voice-overs:

- Check this box to prevent audio echo and feedback during voice-over recording using AJA hardware and the AJA Control Panel Audio Mixer.
- Uncheck this box so you can hear the audio being recorded if you are using a USB or a built-in microphone for voice-over recording.

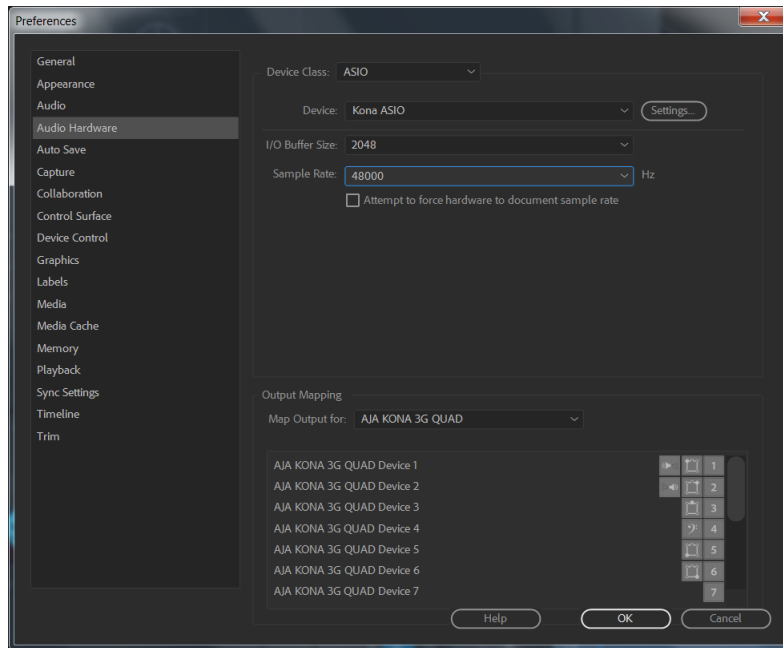
Audio Hardware Preferences

The following setups guarantee accurate AV output sync using the AJA hardware for input and output.

Windows Setup

In Audio Hardware, Adobe Desktop Audio menu for Windows, select the ASIO Device Class, and the AJA Hardware device.

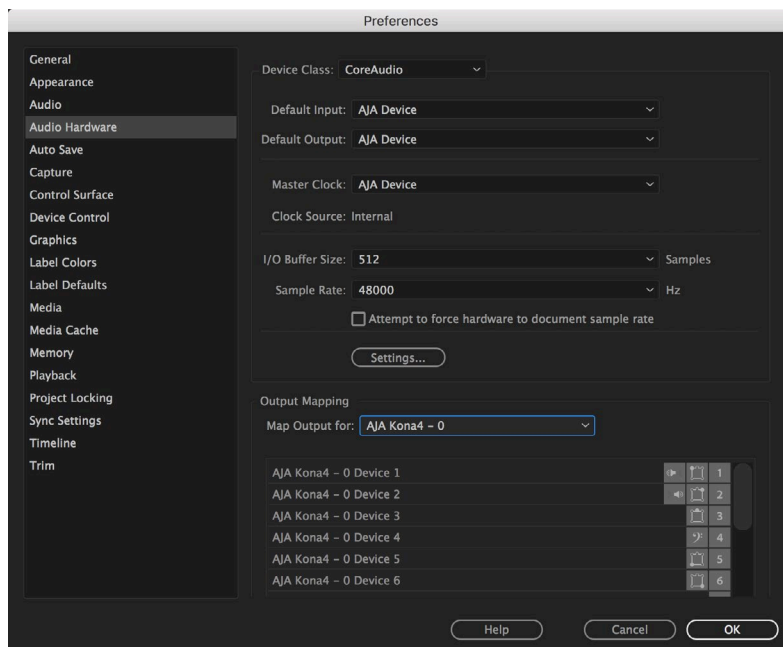
Figure 9. Audio Hardware Preferences, Windows



Mac Setup

On a Mac, in Audio Hardware select Core Audio and the AJA hardware device for input and output (if both are available).

Figure 10. Audio Hardware Preferences, Mac



NOTE: If you hear static on the AJA hardware output, adjust the audio buffer size in the Audio Hardware Preferences. The optimal size may vary for different systems or different setups based on CPU, RAM, and running applications.

Master Clock

Ensure AJA Device is selected for Master Clock.

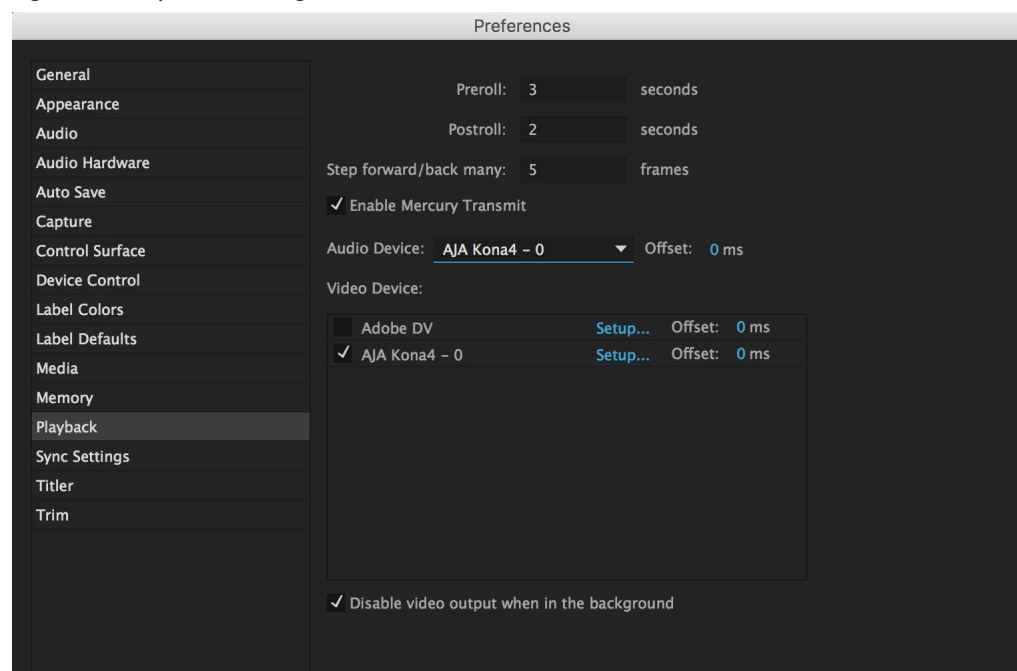
Output Mapping

In this Preferences window you can also map Stereo or 5.1 audio out channels. With your AJA device selected in the Map Output menu, simply drag and drop the right/left or 5.1 channel icons to the desired AJA hardware channel 1–16.

Playback Preferences

In Playback Preferences you will select your AJA hardware device in the Audio Device menu.

Figure 11. Playback Settings Panel in Premiere Pro Preferences



Audio Device

For Audio Device, select the AJA device you will be using.

Enable Mercury Transmit

Mercury transmit must be enabled (checked) in order for Premiere Pro to utilize the AJA hardware.

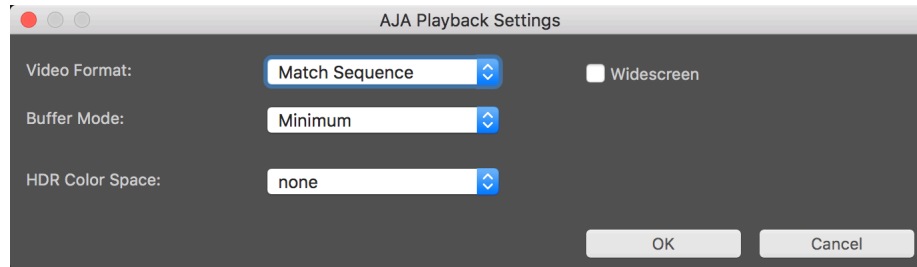
NOTE: Turning Enable Mercury Transmit off is a good way to tell if the external device is involved in an issue; if you still have an issue when it is unchecked then the problem is not related to the AJA hardware.

See ["Premiere Pro Audio Configurations" on page 21](#) for more information about configuring audio.

Video Device Setup

For Video Device, select the AJA device you are using and click Setup.

Figure 12. Premiere Pro Preferences Playback Format Settings



Video Format

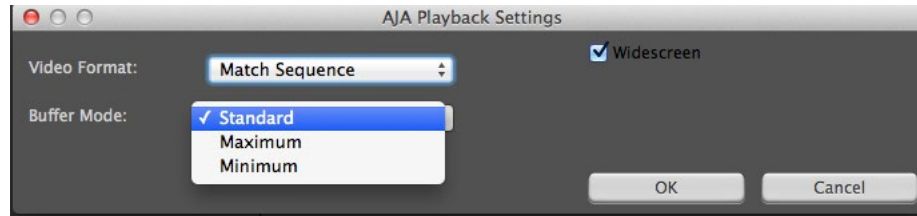
The default setting (expected to be what most users will want and use) is Match Sequence. When Match Sequence is selected, the transmit plug-in will try to put the card in a mode that matches the resolution and frame rate of the timeline you're working with. Alternatively, you can use Match Control Panel and then select a video format from the AJA Control Panel Format menu. Please refer to the Format Screen section of your AJA hardware's Installation and Operation Guide for additional information.

NOTE: Even with Match Sequence selected, it is possible to make other parameter adjustments (such as color space or up/down/cross conversions) using the AJA Control Panel.

Buffer Mode

Use the Buffer Mode menu to choose Standard, Minimum, or Maximum frame buffering.

Figure 13. Premiere Pro Preferences Playback Buffer Modes



This mode determines how many frames of buffering are to be used in the AJA hardware:

- Standard is 4 frames late, which may be close enough for voice-over.
- Maximum will store either the maximum number of frames allowed by the hardware or 14, whichever is smallest. Not recommended for voice-over.
- Minimum is 1 frame early. Required for accurate voice-over recording.

Minimum vs. Standard Mode

The Minimum setting will provide the best scrubbing and JKL keyboard control performance on the timeline. The Standard setting insures that frame drops are less likely by providing more frame buffering. It also allows optimum audio sync for voice-over recording.

For editing, use Minimum mode most of the time. Then, when mastering a tape or playing out live (to air or theater) where no scrubbing will occur, you can switch to the Standard mode to avoid frame drops.

For T-TAP users, Standard mode is preferred in both cases.

NOTE: Use Standard mode for any projects in which the sequence framerate does NOT match the framebuffer framerate. The most common example is using 23.98 source material but playing out at 29.97. In this situation a larger than minimum buffer size is required for the added 3:2 frame rate pull up.

HDR Color Space

This appears when a selected AJA hardware device is running in 4K mode. This setting allows you to define which colorspace Premiere Pro uses for output. See [Table 1 on page 7](#) to identify which AJA hardware devices support HDR.

You can select from:

- 12bit PQ 709
- 12bit PQ P3
- 12bit PQ 2020
- 10bit HGL
- 12bit HGL

The setting of this control in the Premiere Pro Plug-in is ignored if the AJA device is not set to 12 bit RGB.

Other HDR Settings

High Dynamic Range video requires use of supported HDR media files, such as OpenEXR.

Control Panel settings required for HDR operation include:

- Format: RGB-12
- SDI Output: RGB Full (greatest color range) or RGB SMPTE

Premiere Pro Sequence Settings recommended for HDR operation are:

- Maximum Bit Depth
- Maximum Render Quality

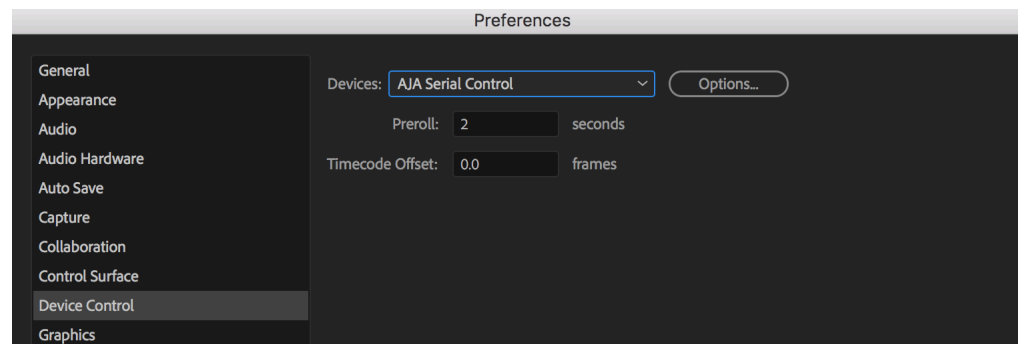
Widescreen Checkbox

Check the Widescreen box if the project is widescreen standard definition NTSC or PAL format.

Device Control Preferences

Device Control Preferences are settings for Export to Tape and Capture functions using the RS-422 machine control interface on AJA hardware (not applicable to T-TAP). Always use the AJA Serial Control setting and the AJA hardware RS-422 port for capture. There are two ways to access Device Control in Premiere Pro—in Preferences (shown below) and in the Capture window Settings tab.

Figure 14. Preferences > Device Control



Enter the desired value for:

Preroll

0 to 15; the number of seconds required to start the source machine before capture. AJA recommends 4 seconds of preroll for device control.

Timecode Offset

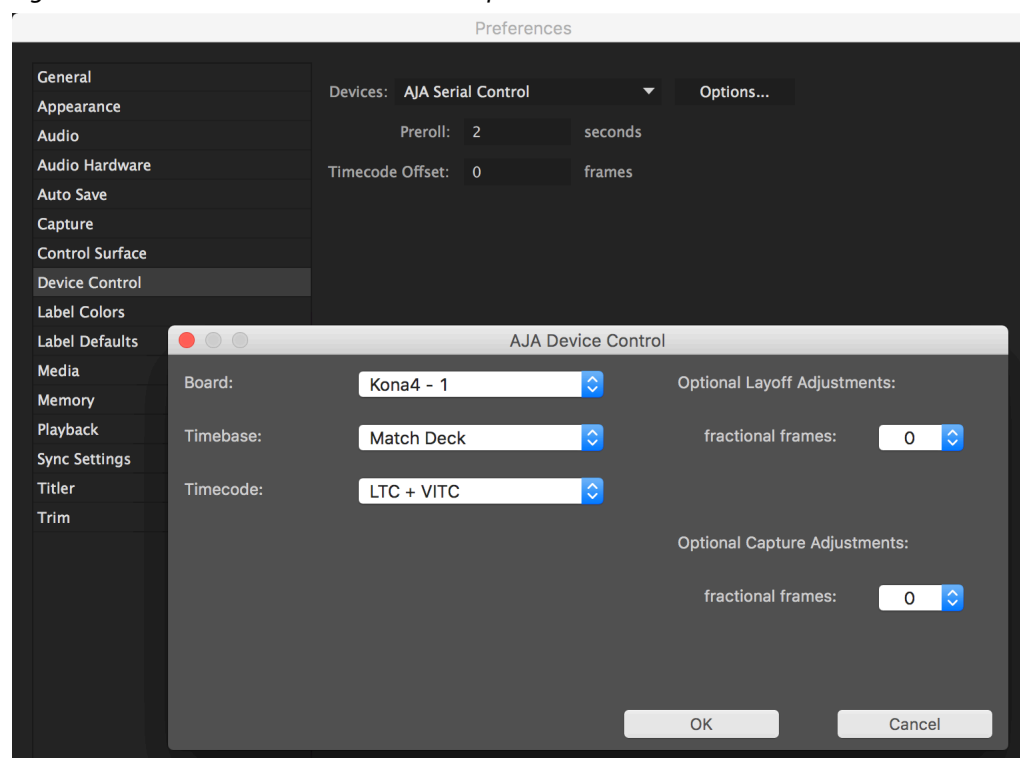
-30 to +30; timecode adjustment (in seconds) forward or back to compensate for discrepancies between the source's burned-in timecode and that of the captured sequence.

Always verify Premiere Pro and AJA offset settings for Capture and Export are in agreement. Device Control settings made in the Capture window or Export window menus may override Preference settings.

Device Control Options

Click on the Options button to pull up the AJA Device Control window.

Figure 15. Preferences > Device Control > Options



Board

This menu allows you to select from multiple AJA hardware devices if you have them installed in your system.

Timebase

Use this pull-down to select the timecode base supported by your VTR.

- Match Deck—this is the AJA default setting. It accesses the connected VTR deck to get the current framerate of the tape.
- Base 24
- Base 25
- Base 29.97 NDF (no drop frame)
- Base 29.97 DF (drop frame)
- Base 30

The timecode format is used for both monitoring the RP-188 timecode embedded in the digital data stream and for selecting a timecode offset (if required) for the attached VTR (connected to the AJA hardware's RS-422 port).

NOTE: *Not all decks support the default Match Deck function. If you are using a Panasonic deck (especially a D5) you should set the frame rate match manually.*

Timecode Source

Choose between a separate-channel Longitudinal Timecode (LTC) or Vertical Interval Timecode (VITC) transported in the video signal's vertical interval or include both (LTC + VITC).

Optional Layoff Adjustments

The fractional frames settings (1/10 frame increments) are available as optional offset adjustments that can be applied in situations where layoffs are intermittently off by a frame. For example, if a layoff deck is missing its edit in point 1 out of 10 times, try adjusting the layoff by .1 frames and see if it locks in the accuracy.

NOTE: *If you find an adjustment that works consistently with your deck, reporting that information to AJA support can allow AJA to hard code that adjustment for that specific deck into future versions of the plug-in.*

Optional Capture Adjustments

Same as above, but applies to adjusting fractional frames for capture.

Premiere Pro Audio Configurations

A Premiere Pro session can be configured for audio in different ways. Which method you use depends on the audio task at hand, the AJA hardware's audio capabilities, and the audio sources to be used. Some example configurations are:

Example 1 - If your AJA hardware supports the AJA Control Panel Audio Mixer, you can use the AJA hardware for video and audio input and output with optimum A/V sync, including zero latency voice-over recording and monitoring. Leaving your system configured this way maintains A/V sync in your entire video editing session.

NOTE: *In the three examples below, after completing the voice-over you will need to re-configure your system away from using Adobe Desktop Audio to restore proper A/V sync for the remainder of your video editing session.*

Example 2 - If your AJA hardware does not support the Control Panel Audio Mixer (for example, LHe Plus and LHi), you can still use the AJA hardware for video and audio input and output, including audio monitoring using Adobe Desktop Audio. However, zero latency voice-over recording and audio monitoring is not available.

Example 3 - You can also completely bypass the AJA hardware for audio input and monitoring, using your host computer's audio system and Adobe Desktop Audio. The AJA hardware is only used for video, and zero latency voice-over recording and audio monitoring is not available.

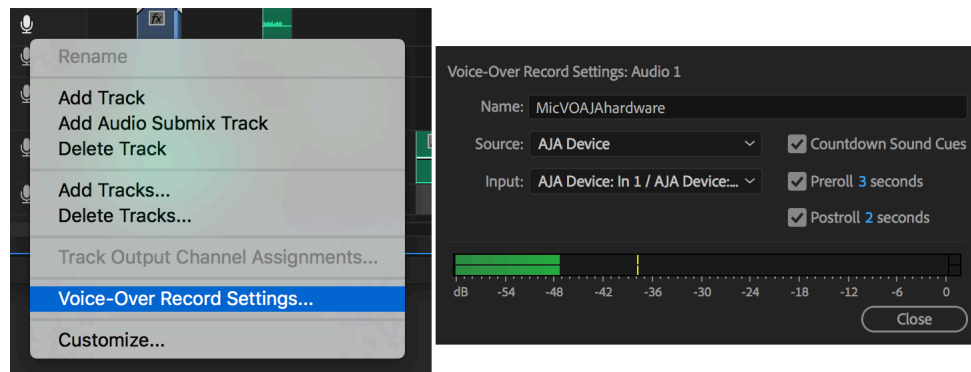
Example 1: Voice-over with Control Panel Audio Mixer

If your AJA hardware supports the Audio Mixer feature you can use one of the AJA hardware audio inputs (selected in AJA Control Panel) to add an ultra-low latency voice-over track to your project timeline. For example, when using the AJA Io 4K Plus, Voice Over to Timeline can make use of Analog Audio In (DB25 Line Level), embedded HDMI Audio In, or embedded SDI Audio In. On the Avid Artist | DNxIV there is additional support for an Analog Mic input via the front panel (Line, Mic, Phantom 48V).

Recommended settings for Adobe Premiere Pro when using AJA hardware for voice-over using the AJA Control Panel Audio Mixer are:

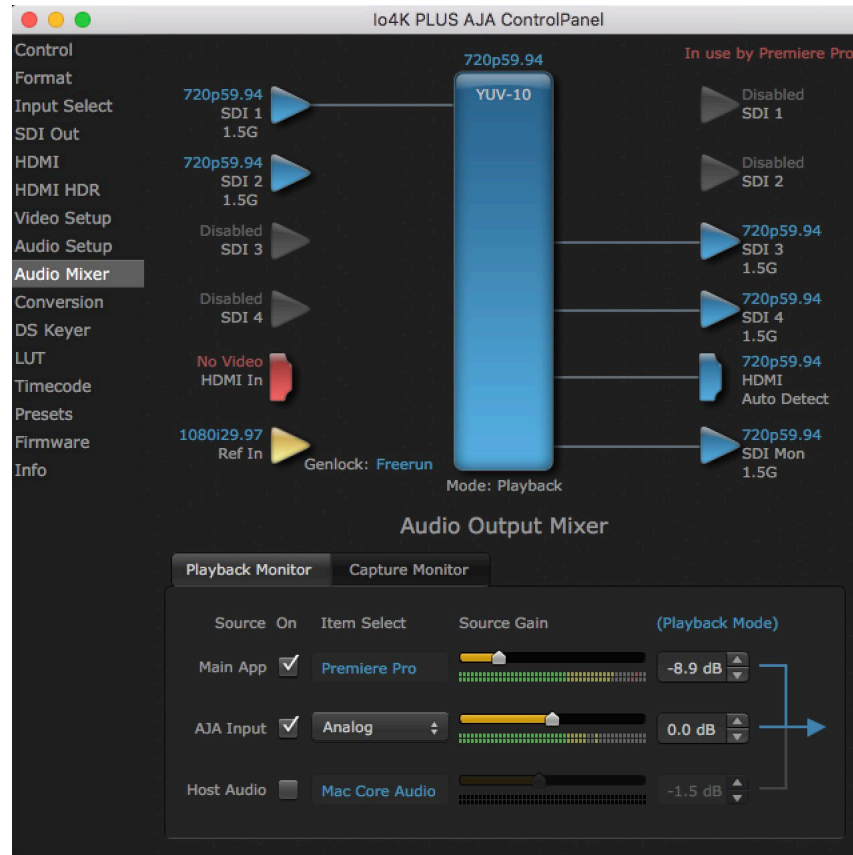
1. Mac or Win OS: Set the Audio / Sound to default to using AJA device for both input and output (see ["OS Configuration" on page 11](#)).
2. Premiere Pro Audio Hardware Preferences (Windows OS only): Set Device Class to ASIO.
3. Premiere Pro Audio Hardware Preferences: Set AJA Device for Default Input, Default Output and Master Clock.
4. Premiere Pro Audio Preferences: Check Mute input during timeline recording. This prevents monitoring echos of the voice-over being recorded.
5. Premiere Pro Playback Preferences: Select the AJA Device for both the Audio Device and Video Device.
6. Premiere Pro Playback Preferences/Video Device Setup: Set Buffer Mode to Minimum.
7. Premiere Pro Timeline: Right click on the microphone Voice-over record icon on the desired track on the timeline and choose Voice Over Record Settings. Select the AJA Device as the source (see [Figure 16](#)). You can see the voice-over input levels on the meter, and you can adjust them up or down externally from Premiere Pro and AJA Control Panel, using an external mixer (or the mic gain knob on a DNxIV).

Figure 16. Premiere Pro Voice-Over Record Settings



8. AJA Control Panel: Audio Mixer Screen/Playback Monitor: Check AJA Input, choose from Item Select the AJA device's input to be used, if desired check the Main App to hear the already recorded session audio, and adjust monitoring levels (see [Figure 17](#)). This Control Room screen is active even when controlled by an external application.

Figure 17. AJA Control Panel Audio Mixer Screen



9. In the Premiere Pro timeline, place the cursor on the timeline where you wish to begin the voice-over recording, then click on the microphone Voice-over record icon for the track and record your audio.

These settings simultaneously provide Premiere Pro Voice Over to Timeline with full-duplex zero latency monitoring and capture to the timeline.

Example 2: Voice-over Without Control Panel Audio Mixer

Some KONA and Io devices do not support the Control Panel Audio Mixer. You can use one of these device's audio inputs (selected on the AJA Control Panel) to add a voice-over track to your project timeline. For example, if your device supports analog audio input your source could be a microphone connected to an audio mixer, with the line-level mixer output connected to a KONA/Io breakout audio input.

NOTE: This method should not be used when precise A/V sync is required on the output. A slight, measurable delay may be induced.

The settings below are intended for use with an audio input connected to an AJA hardware device to perform a voice-over recording without using the AJA Control Panel Audio Mixer.

1. Mac or Win OS: Set the Audio / Sound to default to use the AJA device for both input and output (see ["OS Configuration" on page 11](#)).
2. Premiere Pro Audio Hardware Preferences (Windows OS only): Set Device Class to ASIO.
3. Premiere Pro Audio Hardware Preferences: Set AJA Device for Default Input, Default Output and Master Clock.

4. Premiere Pro Audio Preferences: Uncheck Mute input during record. This allows you to listen to the voice-over recording as it happens, but there may be a delay.
5. Premiere Pro Playback Preferences: Select Adobe Desktop Audio as the Audio Device. This lets you use the current selection in the Audio Hardware preferences for monitoring.
6. Premiere Pro Timeline: Right click on the microphone Voice-over record icon on the desired track on the timeline and choose Voice Over Record Settings. Select the AJA Device as the source (see [Figure 16 on page 22](#)). You can see the voice-over input levels on the meter, and you can adjust them up or down externally from Premiere Pro and AJA Control Panel, using an external mixer.
7. Premiere Pro Timeline: Place the cursor on the timeline where you wish to begin the voice-over recording, then click on the microphone Voice-over record icon for that track and record your audio.

These settings provide voice-over record and audio monitoring on the timeline, but exact A/V sync is not guaranteed.

IMPORTANT: When finished with the voice-over recording, return the Premiere Pro Preferences (see [Step 5 on page 22](#) above) to use AJA hardware as the playback device, to ensure the remainder of your work in the session has the proper A/V sync.

Example 3: Voice-over with USB Device and Computer Monitoring

If you wish to use a USB mic or computer audio source and monitor through the computer, you can use Adobe Desktop Audio for voice-over and monitoring, using use the AJA hardware only for video.

NOTE: This method should not be used when precise A/V sync is required on the output. A slight, measurable delay may be induced.

The settings below are intended for use with a USB headset Mic and headphones (Logitech headset, for example) to perform a voice-over recording.

1. Mac or Win OS: Set the Audio / Sound to default to use the AJA device for both input and output.
2. Premiere Pro Audio Hardware Preferences (Windows OS only): Set Device Class to MME.
3. Premiere Pro Audio Preferences: Uncheck Mute input during record.
4. Premiere Pro Audio Hardware Preferences: Set Logitech Headset for Default Input, Default Output, and Master Clock.
5. Premiere Pro Playback Preferences: Select Adobe Desktop Audio for the Audio Device and AJA Device for the Video Device.
6. Premiere Pro Timeline: Right click on the microphone Voice-over record icon on the desired track on the timeline and choose Voice Over Record Settings. Select Logitech Headset as the source. You can see the voice-over input levels on the meter, and you will adjust them up or down externally from Premiere Pro and AJA Control Panel (possibly on the USB mic itself).
7. Premiere Pro Timeline: Place the cursor on the timeline where you wish to begin the voice-over recording, then click on the microphone Voice-over record icon for that track and record your audio.

These settings provide voice-over record and audio monitoring on the timeline, but exact A/V sync is not guaranteed.

IMPORTANT: When finished with the voice-over recording, return the Audio Hardware and Playback Preferences to use AJA hardware, to ensure the remainder of your work in the session has the proper A/V sync.

Premiere Pro Capture Settings

In Premiere Pro you can access Capture settings in a number of ways. For initial project settings, go to File> Project Settings> General and set AJA Capture Format and settings.

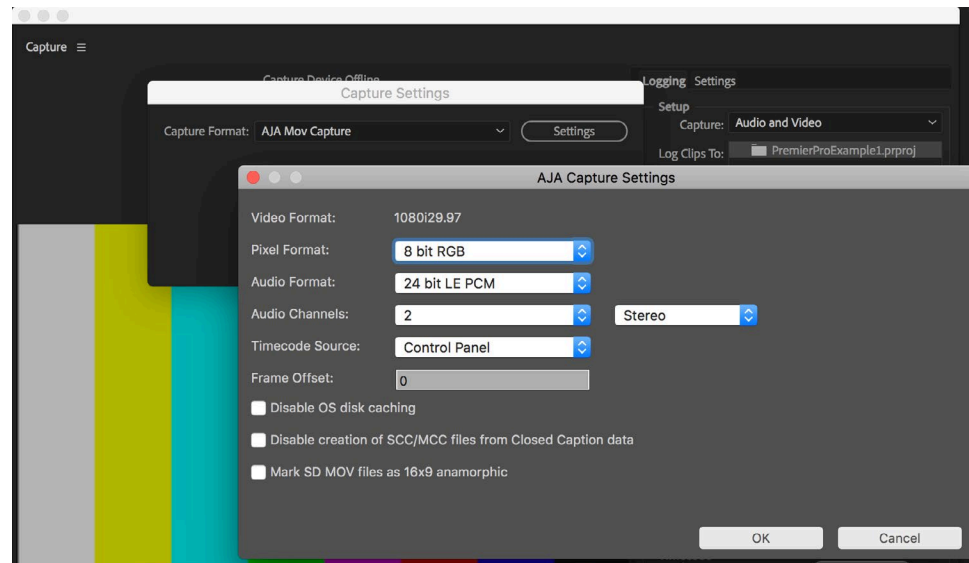
To access the Adobe Capture Settings panel, do one of the following:

- Go to Window>Capture (or F5 function key) to launch the Capture Window and click on the Settings tab>Edit
- Use the Flydown menu >Capture Settings
- Right-click in the Capture window for context-sensitive menu.

In the Capture settings, you can select either AJA Dpx, AJA Mov or AJA MXF file format for the capture. Click on Settings to see that Premiere Pro detects the current video input format and then allows you to set:

- Pixel Format
- Audio Format
- Audio Channels (number, and whether mono or stereo)
- Timecode Source
- Frame Offset
- Disable creation of SCC/MCC files from Closed Caption data
- Mark SD MOV files as 16:9 anamorphic

Figure 18. AJA Capture Settings Panel



Pixel Format Choices

Supported pixel formats vary depending on the video input format. Available Pixel Format will vary according to the video input resolution. For example, if the AJA device has an HD input, the DV/DVCPro formats won't be displayed but the DVCProHD formats will. All pixel formats are listed in the following table.

Table 3. Available Pixel Formats

DPX format	
10-Bit BE (big endian) RGB	
Mov formats	
8-Bit RGB	Avid DNxHD HQX
8-Bit RGBA	Avid DNxHD HQ
10-Bit BE RGB	Avid DNxHD SQ
8-Bit Uncompressed	Avid DNxHD LB
10-Bit Uncompressed	Avid DNxHD 444
MC DV25	Avid DNxHR HQX
MC DVCPRO50	Avid DNxHR HQ
MC DVCPRO HD	Avid DNxHR SQ
Apple ProRes 4444	Avid DNxHR LB
Apple ProRes 422 (HQ)	Avid DNxHR 444
Apple ProRes 422	Avid DNxHR 444 12bit
Apple ProRes 422 (LT)	Note: Apple ProRes capture available on Mac OS only
Apple ProRes 422 (Proxy)	
MXF formats	
Avid DNxHD HQX	Avid DNxHR 444
Avid DNxHD HQ	Avid DNxHR 444 12bit
Avid DNxHD SQ	Avid DNxHR HQ
	Avid DNxHR HQX
	Avid DNxHD LB
	Avid DNxHD SQ

Audio Format

Use the Audio Formats pull-down menu to select the appropriate signal type for your input.

- 16-bit LE (little-endian) PCM (audio compression)
- 24-bit LE PCM
- 32-bit LE PCM
- 32-bit LE float PCM

Audio Channels

Select the number of audio channels to be captured. AJA hardware devices vary in the number of audio channels they support. Audio channels can be captured as discrete mono channels or stereo pairs.

Timecode Source

This setting tells the Adobe Premiere Pro Capture plug-in where to get the timecode information for insertion into the file.

- Control Panel—(default setting) uses the user-defined setting in the AJA Control Panel
- Device Control—uses the timecode from the RS-422 port
- Time of Day—use the computer time of day information
- Premiere—asks Premiere for timecode information

AJA Control Room Capture, Premiere Pro Editing

Alternatively, instead of using Premiere Pro, you can use AJA Control Room for capture. This lets you stay in the Premiere Pro editing environment.

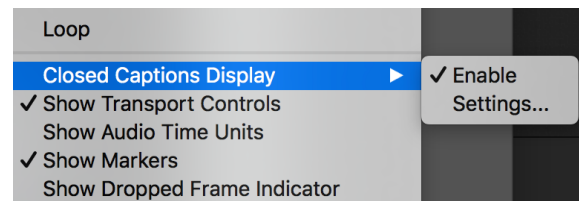
1. Launch AJA Control Room.
2. In the Control Room Device drop-down menu, select the AJA device configured for operation with Control Room.
3. In Control Room Preferences > Capture choose a capture path.
4. Click the Capture tab.
5. Enter the file name and any other information desired for the captured clip.
6. Play the source material.
7. Click the AJA Control Room red record button to start and stop the capture.

Closed Caption Support

To capture and output Closed Captions:

1. Click on the wrench icon on the lower right of the Program Monitor.
2. Select **Enable** for Closed Captions Display. This enables closed captioning output from any file type that Premiere Pro can read.

Figure 19. Closed Captions Display Enable



3. Click on **Settings...** for Closed Captions Display and select CEA-608 or CEA-708 captions for display.

By default, if closed captions are present in the Ancillary Data, the AJA capture plug-in in Premiere Pro will detect them, and automatically write them into a file. For QuickTime capture, the captions will be written into the clcp track in a MOV file, and .scc and .mcc files will also be created. For DPX capture, only .mcc and .scc files will be created.

NOTE: Newer AJA hardware devices (for example, KONA 4 or Io 4K) Closed Captions will always be active for capture and playback. If, however, you are using earlier AJA hardware models, you must enable vertical ancillary data (VANC) using AJA Control Panel.

Disable creation of SCC/MCC files from Closed Caption data

You can override this automatic file writing behavior if you wish. This option, in Adobe Premiere Pro CC 2018 onwards, gives you the ability to not automatically generate SCC/MCC Closed Caption files when capturing a signal with the data present. Default setting is OFF (files are automatically created).

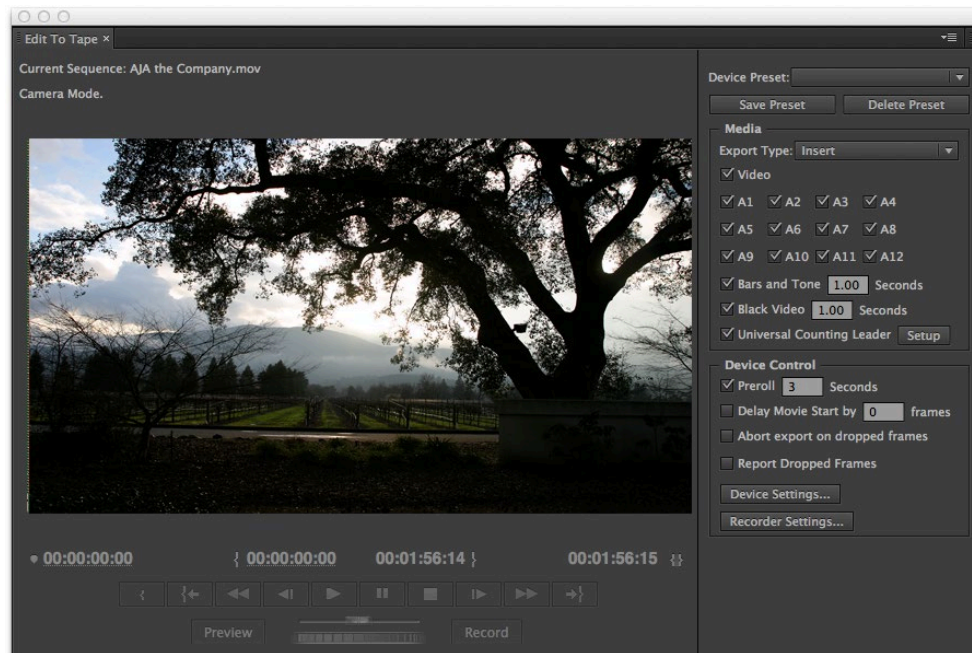
Disabling the creation of files does not prevent the recorded media from encoding the Closed Caption data. If the data is present in the captured signal, then it will be retained.

Export to Tape

NOTE: Adobe has worked closely with AJA to identify, test and fix some accuracy issues when outputting to tape with specific VTRs. Significant performance improvements have been made which should result in almost full eradication of errors when delivering on tape. We believe that the interaction between Adobe Premiere Pro CC and AJA Hardware is now tuned to the best interoperability possible given current OS, Adobe Software versions and AJA Software versions. As is standard for any software and / or hardware manufacturer though, we cannot make a 100% guarantee of perfection for all operations at all times."

To setup an Export to Tape, select (make active) the desired sequence in Premiere Pro and then go to File>Export>Tape (Serial Device). This will bring up the following Premiere Pro Serial Device panel which allows you to interface with the target tape machine through AJA serial control.

Figure 20. Edit to Tape Screen



In this window you will set up the following:

Export Type

- Insert—add new material from the timeline to tape with existing content, Video and Audio tracks are selectable and no timecode is written.
- Assemble—requires deck in regeneration mode, uses existing timecode from the tape to begin lay down, and generates new timecode from that point on using the deck's timecode clock.
- Print to Tape—outputs directly to tape without regard to existing timecode.

You also have access to these AJA device settings:

- Device Control Settings—AJA Device Control (see ["Device Control Preferences" on page 19](#)).
- Recorder Setting— AJA Capture Settings (see ["Playback Preferences" on page 17](#)). Premiere Pro uses the AJA Capture plug-in to display video from the tape deck.

NOTE: For precise A/V sync accuracy your audio setup should be in Standard configuration (see "Video Device Setup" on page 17).

- In Point, Out Point, and Duration when in applicable print mode
- Standard tape machine function controls

Best Practices for Tape Output Accuracy

IMPORTANT: AJA recommends you perform two or three test insert edits to establish a frame offset BEFORE doing a real insert. The frame offset may differ for different decks and even for different resolutions and frame rates on the same deck. You should test this before setting the offset. Also, note that the capture frame offset may not be identical to the layoff frame offset (refer to your AJA Mac or Windows release notes for the latest information).

Software Best Practice Checklist by AJA

- Adobe Software: Follow Adobe best practices in accord with the advice of your Adobe representative(s), when it comes to Adobe software versions, media storage, cache files, graphic cards, graphic card drivers, etc. Likewise, please follow Adobe best practices when it comes to rendering effects and / or dealing with source clips that may be utilizing a "heavy" codec; i.e. a codec which significantly taxes your CPU and GPU resources.
- AJA Software: Keep AJA software versions up to date, including device firmware. AJA device firmware is supplied within the main software package – if you are prompted to update your firmware please do so. Running mismatched firmware and software versions is not recommended.
- AJA Control Panel: Make sure you are familiar with AJA Control Panel and understand how to use it to get the most out of Adobe Premiere Pro CC. When editing using Adobe Premiere Pro CC and AJA hardware, it is highly recommended to always have AJA Control Panel open and set up before launching Adobe applications, and to leave AJA Control Panel open until you have finished editing / are ready to shut down the system.
- AJA Devices: If you believe you are troubleshooting an issue or behavior that is not expected, please always start by resetting the device and erasing all preferences using AJA Control Panel.
- Host System: Please follow Adobe guidelines when it comes to the minimum system specifications required for optimal performance based on the raster sizes and media types you predominately work with. AJA also provides slot recommendations for those systems we have tested in-house:
 - <https://www.aja.com/support/kona-pc-system-configuration>
 - <https://www.aja.com/support/kona-system-configuration>
 - <https://www.aja.com/support/kona-pc-graphics-system-configuration>
 - <https://www.aja.com/support/legacy-support-systems>
- OS: Use either Windows 10 with all updates, or else macOS 10.14, 10.13 or 10.12. Please also stay up to date with the latest OS recommendations from Adobe and AJA in accord with the advice of your Adobe representative(s). Periodic rebuilds of fresh system images may be necessary depending on how long host systems are kept in service.
- Performance inhibitors: Be aware of any potential resource hogs on your host system. For example, it is possible that running virus protection software could be causing the host CPU to slow down, which can then cascade into system wide issues affecting combined AJA and Adobe performance. Likewise, ensure you keep an eye on applications or devices that editors may be running simultaneously that may be restricting the amount of RAM or GPU processing power available for editing and playback / monitoring.

- Vigilance should also be extended to storage performance. If media storage bandwidth is either inadequate or else fluctuating, this can have a significant impact on editing system / software performance.
- Additionally, a full shut down and restart of the host computer is recommended at least twice during every 24 hour period and / or at the beginning of each 8-10 hour shift.
- Sleep/Wake: Avoid and / or disable any and all power save settings on the host connected to your AJA hardware.
- BIOS: For PC systems, keep the BIOS and systems drivers up to date.
- VTR: Ensure VTRs are in good working order with regular ongoing maintenance and cleaning. Also where firmware is applicable, make sure to be using the latest available VTR firmware from the manufacturer. Additionally, please take care to store both the tape stock and VTR in a temperature and humidity controlled environment according to manufacturer's specifications. Additionally, please ensure you are familiar with the VTR set up, operation and available controls.
- Reference: When capturing from tape, AJA recommends using AJA Control Panel to set Reference to follow Video In. When outputting to tape, AJA recommends using a common external reference signal (analog black burst or Tri-Level, depending on device) for both the VTR and AJA hardware. You can choose Reference In to utilize the incoming reference input source within AJA Control Panel.
- Software vs. System: Be aware of the difference between running Adobe Premiere Pro CC in "software only mode", vs. using as a "system" in conjunction with AJA hardware. For example, your host system is doing a lot less heavy lifting when you are only painting the video onto the application display (GUI). Once you begin to utilize hardware with your Adobe software, the advantage is that you get properly timed full broadcast quality outputs, but this does require pushing all of the data through your host architecture – something that is not happening to anywhere near the same extent as when you are not utilizing hardware. As such, comparisons between "software only" and "system" performance should be treated with an abundance of caution, and a clear appreciation that any such comparison is not comparing like with like.

Adobe Best Practice Recommendations

In addition, the Premiere Pro team strongly recommends following these steps to assure success with SDI tape exports.

- Ensure the media storage has a continuous read/write speed of at least 120 MB/sec – a lower rate may result in occasional dropped frames in insert to tape operations. Continuous rates of 220 MB/sec or higher are virtually assured of expected performance. AJA comes with speed tests as part of the software deployment.
- All timelines must be fully rendered or show native timeline support (no yellow or red bar in render indication). The advantage to rendering a timeline over full export is that simple changes require only a simple re-render of the changed segment, rather than a full re-export.
- Make sure to consult the manuals for the AJA solution, to track changes in settings for new versions of their drivers.
- To minimize the chance of tape export errors, it is best to use the standard Editing or Assemble workspaces, and ensure that Lumetri Scopes and Lumetri Color panels are closed. These panels can tax the ability to play back frames at highest efficiency.
- To assure maximum accuracy of insert In-Point edits, Premiere has found that using a Sequence timeline Start Time of 01:00:00:00 or 01:00:00:00 leads to the greatest accuracy across a variety of tape devices.

Chapter 4 – Using Adobe Photoshop

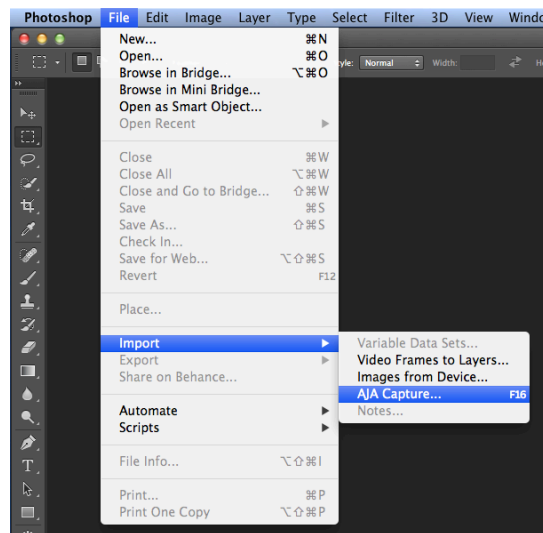
Adobe Photoshop accepts Adobe plug-ins and drivers to closely integrate the AJA hardware Export function into the application.

NOTE: Setup of Input and Output formats for AJA hardware are now performed using the AJA Control Panel rather than menus within the Adobe Plug-ins.

AJA Capture

With Photoshop open, go to the File pull-down menu and select Import>AJA Capture. Selecting AJA Capture performs an immediate capture of the current frame in the AJA hardware frame buffer.

Figure 21. AJA Image Capture in Photoshop, File>Import Menu

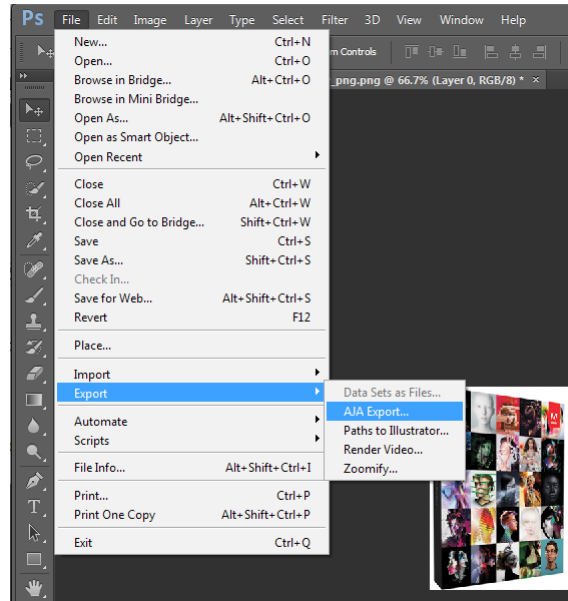


If you use the capture function regularly, we recommend that you set up a Keyboard Shortcut to trigger the capture (see Photoshop documentation).

AJA Export

To use the AJA Preview function, go to Export and choose AJA Export.

Figure 22. AJA Image Export in Photoshop, File>Export Menu



The specific options available to you are determined by the AJA hardware device that is installed in your workstation that you are currently controlling.

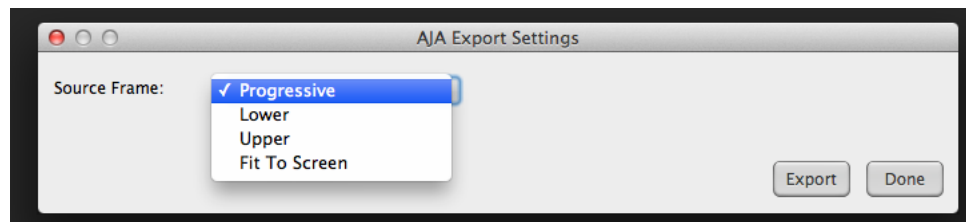
Use the AJA Control Panel to set Video Format and Pixel Format for your desired output.

Source Frame Setting

To setup Preview options, go to the Window menu and select AJA Preview. Select a Source Frame mode to define the video interlace for your image. Progressive is the default.

NOTE: If your source video is interlaced, you may select the appropriate (lower or upper) initial field to maximize AJA hardware output performance. This setting tells the AJA hardware which type of frame format it is receiving.

Figure 23. AJA Photoshop Export Setting Menu



In Fit To Screen mode, the AJA hardware automatically scales the image geometry until one of its borders fills the monitor screen. No cropping or distortion occurs.

When your Export Settings are selected, click on the Export button to output your image through the AJA hardware.

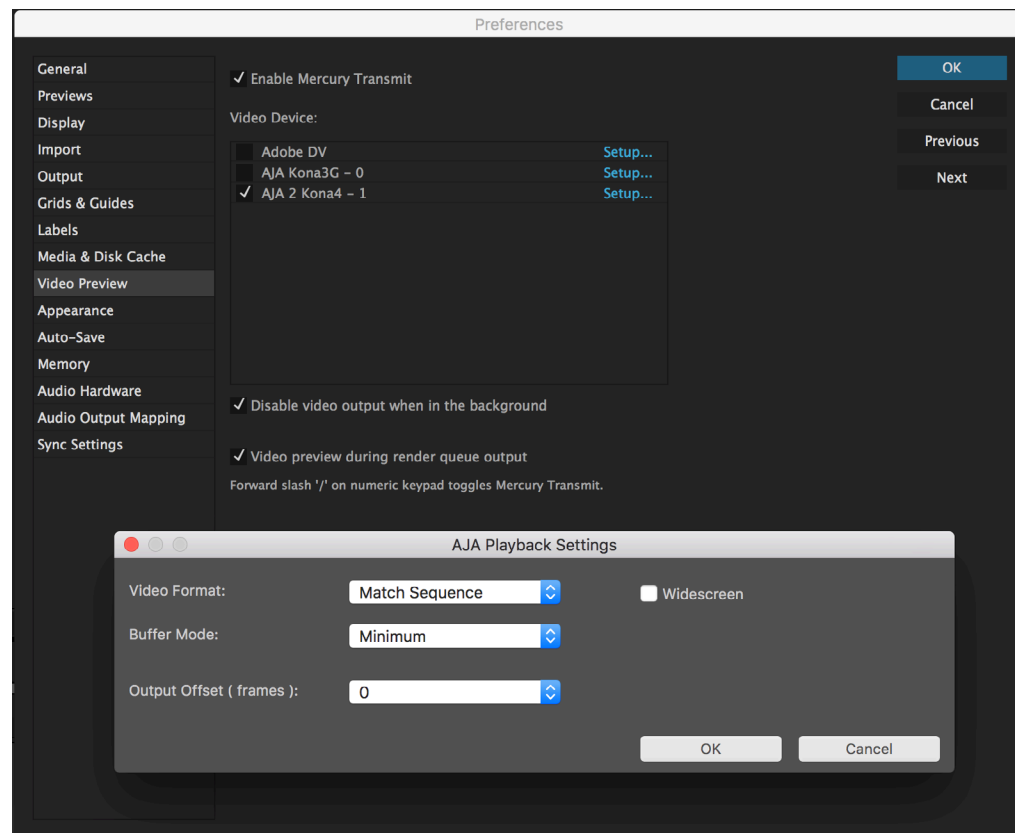
NOTE: When you output in Video + Key mode (set in AJA Control Panel), Video is output via SDI 1 and the Key channel is output on SDI 2. (This does not apply to KONA 4K Mode operation, see the KONA manual.)

Chapter 5 – Using Adobe After Effects

NOTE: Beginning with AJA's v12.4 Retail Software package, support for Adobe After Effects has changed. Previously two different plug-ins were being installed. The 'Blithook' plug-in is the legacy plug-in and is no longer installed by default. It must be deliberately chosen as an option in both the Mac and Windows installer. The Transmit plug-in is installed with the default installation options.

After Effects Video Preview Preferences

Figure 24. AJA After Effects Video Preview Settings Menu, Transmit Plug-in

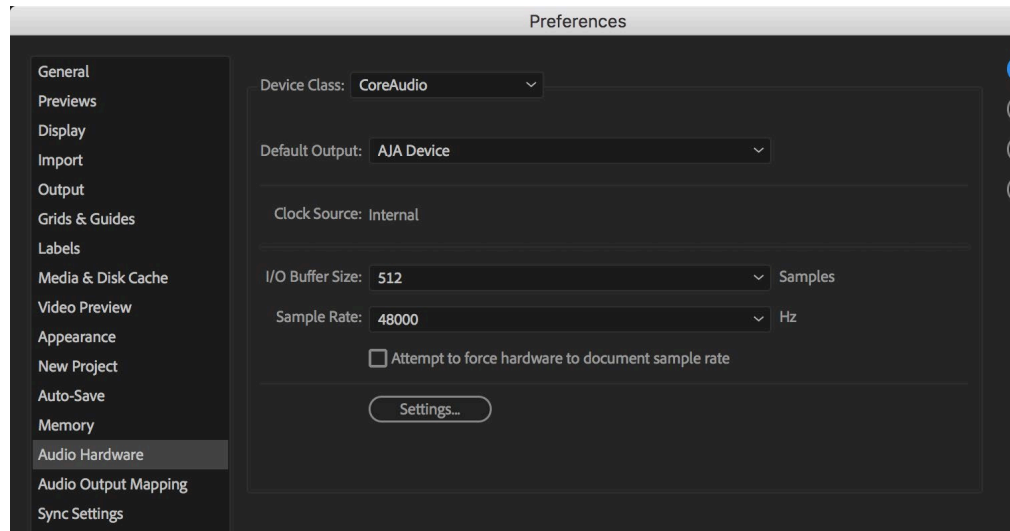


The After Effects Video Preview Preferences are similar to the Premiere Pro Playback Preferences. See ["Playback Preferences" on page 17](#) for more information.

Enable Mercury Transmit

Mercury Transmit must be enabled in order for the AJA Plugin to interface between Adobe Premiere and AJA Hardware. Disabling Mercury Transmit will disable ("eject") your AJA hardware until Mercury transmit is re-enabled.

After Effects Audio Hardware Preferences



The After Effects Audio Hardware Preferences are similar to the Premiere Pro Audio Hardware Preferences. See ["Audio Hardware Preferences" on page 15](#) for more information.

After Effects Realtime Performance

RAM Preview should be realtime for HD in After Effects. 4K RAM preview may even be possible with a high performance workstation. Please ensure you have the following settings for proper RT RAM preview.

1. Make sure that the frame buffer format of the AJA Control Panel matches the resolution and frame rate of your After Effects Composition. This can be set by launching AJA Control Panel, clicking on 'Format' in the left hand column, and selecting the correct resolution and framerate in the 'format' drop down menu.
2. Next, please ensure that the "Resolution" setting for "Time Controls" is set to "Full" in After Effects. If not set to "Full", the image that the AJA Preview Panel receives and sends to the AJA hardware during RAM Preview will not be sent at "Full Resolution" and thus will either be software resized to Full Resolution before sending to the AJA hardware for display, or will be center cropped before sending.
3. If RAM Preview is still not realtime, you can try some of the following – setting your Zoom to "100%" in your AE Composition, making sure the "Frame Rate" of the AE Time Controls matches the frame rate of the "Primary Format" in the AJA Preview Panel, and muting audio in the AE Time Controls.

NOTE: *In some cases the available bandwidth of the motherboard limits the cards ability to output realtime video. AJA tech support can show you how to use AJA System Test to test the bandwidth you are getting between the card and motherboard.*

Legacy AJA Preview Plug-in

The Legacy Preview plug-in allows you to view the current frame of your working timeline in various formats on a monitor connected to an AJA hardware output.

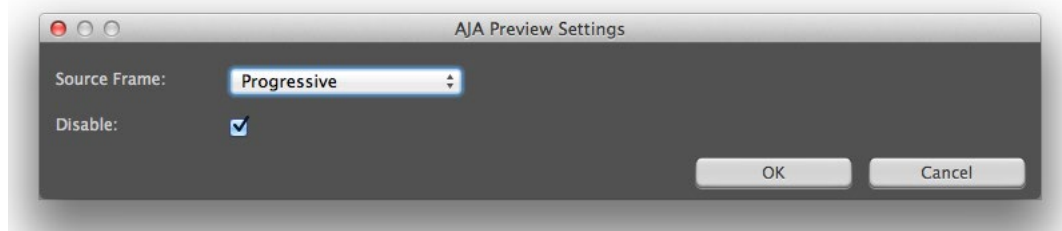
Video & Pixel Format

Use the AJA Control Panel to set Video Format and Pixel Format for your desired output. After Effects does not set these parameters within the application.

Source Frame Setting

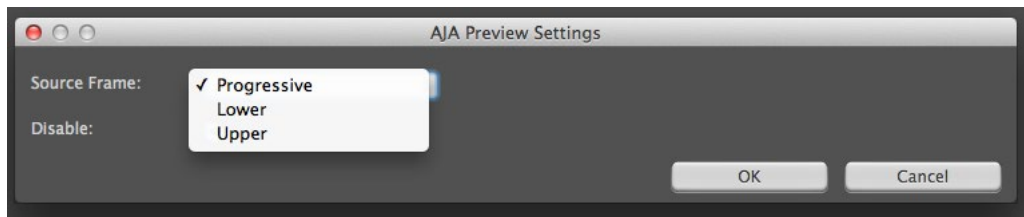
To set up Preview options for After Effects, go to the Window menu and select AJA Preview.

Figure 25. AJA After Effects Preview Settings Menu, Legacy Plug-in



Here you can choose to disable the AJA Plug-in by checking the Disable box or select a Source Frame mode to define the video interlace for your video input. Progressive is the default.

Figure 26. AJA After Effects Source Frame Setting Menu, Legacy Plug-in

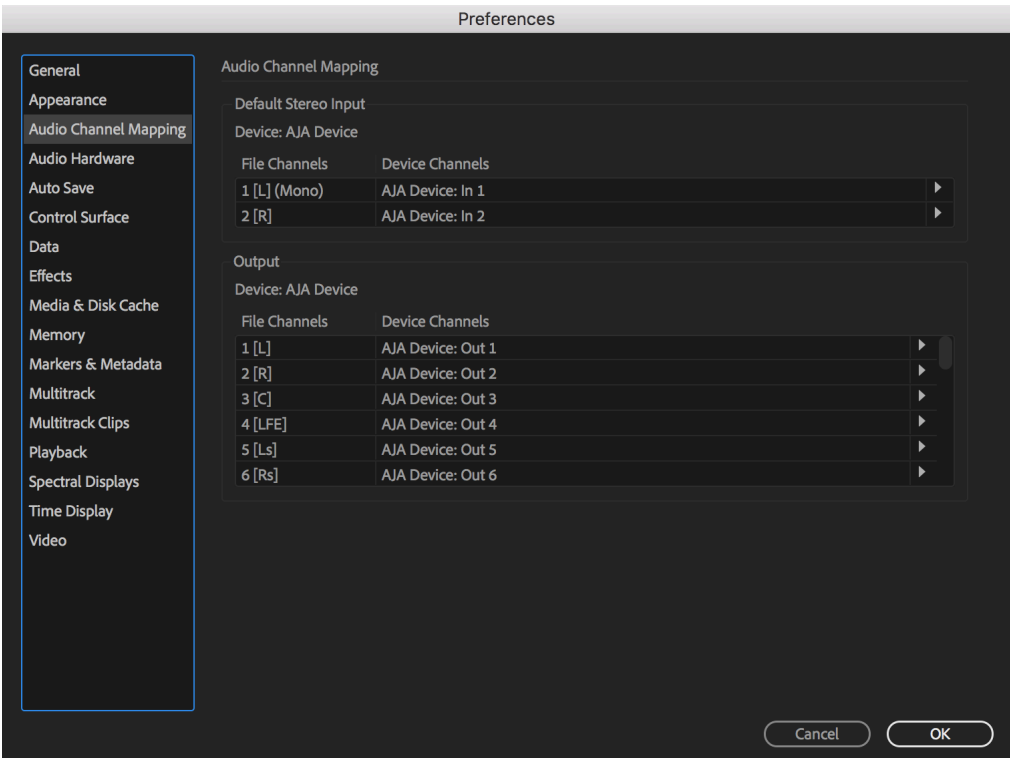


NOTE: If your source video is interlaced, you may choose to select the appropriate field dominance (lower or upper) to maximize AJA hardware output performance. This setting tells the AJA hardware which type of frame format it is receiving.

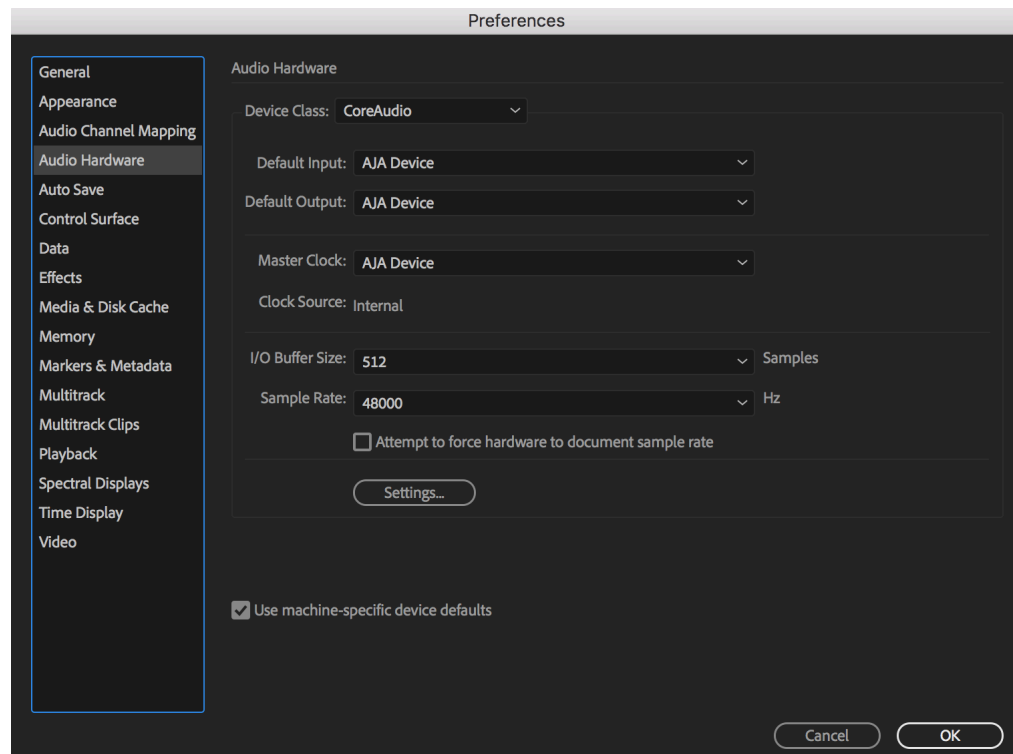
Chapter 6 – Using Adobe Audition

The Audition Audio Channel Mapping Preferences and Audio Hardware Preferences are similar to the Premiere Pro Audio Hardware Preferences. See ["Audio Hardware Preferences" on page 15](#) for more information.

Audition Audio Channel Mapping Preferences



Audition Audio Hardware Preferences



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