12GM Mini-Converter

12G-SDI to/from SDI Muxer/DeMuxer

Installation and Operation Guide

AJA
VIDEO SYSTEMS

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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:

Telephone	+1.530.271.3190
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 – Introduction

Overview

12GM is a compact SDI transport Mini-Converter that enables 12G-SDI to quad link 3G-SDI and quad link 3G-SDI to 12G-SDI conversion. The muxer/demuxer supports 4K, UltraHD, 2K, HD and SD workflows and conversions from quad link SDI signals to single link SDI signals, and vice versa at 12G, 6G, 3G and 1.5G bit rates. Both Square Division (Quadrant) and Two Sample Interleave (2SI) input and output mappings are supported.

Features

- Quad 3G-SDI (Level A and B-DL) to/from Single 12G-SDI
- Quad 3G-SDI (Level A and B-DL) to/from Dual 6G-SDI
- Dual 3G-SDI (Level A and B-DL) to/from Single 6G-SDI
- Quad 1.5G-SDI to/from Single 6G-SDI
- Dual 1.5G-SDI to/from Single 3G-SDI Level A
- Single 3G-SDI (Level A and B-DL) to Dual 1.5G-SDI
- Quad 3G-SDI Level A to/from Quad 3G-SDI Level B-DL
- Two Sample Interleave (2SI) to/from Square Division (Quadrant) pixel mapping, 3G
- Square Division (Quadrant) to Two Sample Interleave (2SI) pixel mapping
- Simple Frame Rate Conversion (FRC) 60 fps to 59.94 fps, and 59.94 fps to 60 fps
- HDR signaling metadata pass-through and optional override
- Pass-through of Single Link 12G, 6G, 3G, 1.5G and 270M SDI video
- Distribution Amplifier support (1x4)
- Input signal diagnostics and timing analyzer for quad link signals
- Automatic or manual control

- Detailed timing analysis for validating alignment of quad-link SDI inputs
- Passes SDI embedded audio, 24-bit, up to 16-Channels
- Recognizes and transmits High Dynamic Range (HDR) and Wide Color Gamut (WCG) signaling on VPID
- Configure via USB port and supplied AJA Mini-Config software for PC/Mac
- Uses 5-20 VDC power (DWP-U-R1 universal power supply included)
- Five year warranty

Block Diagram

Figure 1. 12GM Converter, Simplified Block Diagram
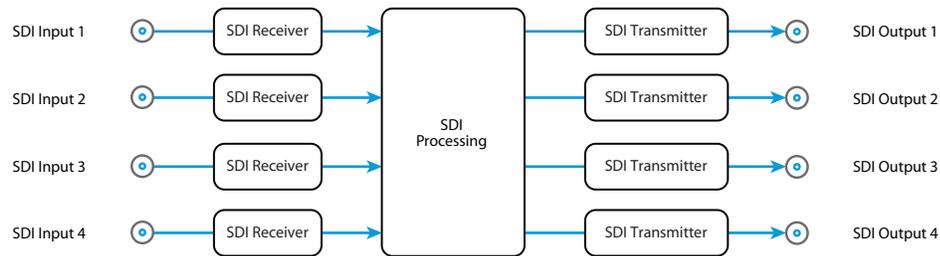
I/O Connections

Figure 2. 12GM Converter Connections
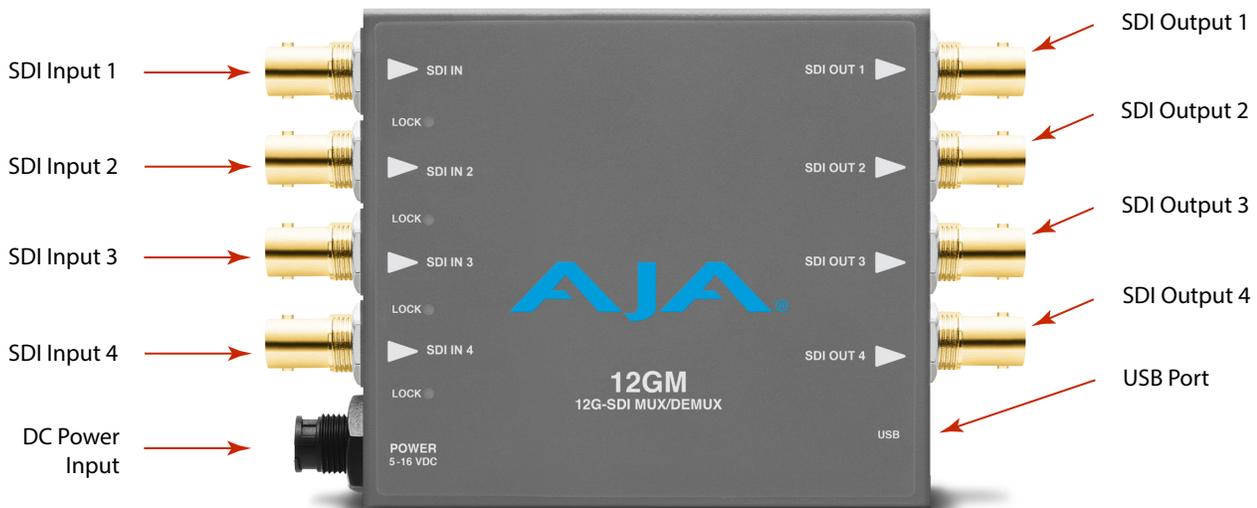
NOTE: *The LEDs adjacent to each SDI input connector indicate by color the detected SDI data rate. Off is no signal, Green is SD-SDI, Red is HD-SDI, Amber is 3G-SDI, Purple is 6G-SDI, and Blue is 12G-SDI.*

Installation

Typically, 12GM installation consists of the following steps:

1. Ensure the 12GM is disconnected from power.

2. Connect video equipment to the converter BNC connectors.

3. Apply power to the converter (AJA power supply included).

4. The 12GM will now run using the default factory settings. If you wish to alter the factory settings, you'll need to:

   • Install the AJA Mini-Config software on your computer
   • Attach the 12GM via USB
   • Make your changes using AJA Mini-Config setup screens.

This process is detailed in *"USB Control and Setup—Using AJA Mini-Config" on page 7.*

NOTE: *The 12GM packs an unprecedented feature set into a mini converter box. As a result, the unit uses approximately 12 watts of power. It will be very warm to the touch, which is normal. The unit is engineered to operate across the full temperature range, from 0 to 40 degrees C.*

NOTE: *For highest reliability, the mini converter relies on convection cooling instead of using a built-in fan. Therefore, when installing the unit, mount in a location where it has access to air for proper cooling. Do not stack the 12GM with other mini converters.*

Chapter 2 – Operation

USB Control and Setup—Using AJA Mini-Config

Your AJA Mini-Converter can be used right out of the box for some applications since it is designed to recognize inputs and perform standard actions automatically by default. However, to use its full capability, you must use AJA's Mini-Config software application for PCs and Macs. This same application can be used to update to new Mini-Converter software released by AJA.

Acquiring AJA Mini-Config

AJA's Mini-Config application is available for download from the AJA website.

To download the latest AJA Mini-Config package, which includes the AJA Mini-Config application, Mini-Converter firmware, and documentation, go to:

https://www.aja.com/en/products/mini-converters/mini-config-software

Select either the Windows or Mac icon to download the desired version.

CAUTION: *If you are running Mini-Config on macOS Catalina, please make sure you are using Mini-Config v2.24.1 or later. Earlier versions of Mini-Config are not compatible with macOS Catalina.*

Mini-Converter Documentation

Included with the AJA Mini-Config package is a complete set of documentation for all Mini-Converters supported by AJA Mini-Config. A .PDF of the *Installation and Operation Guide* for the currently connected Mini-Converter can be accessed from the AJA Mini-Config UI via the **Help/Manual** drop-down menu.

Documentation for all AJA Mini-Converters that use AJA Mini-Config can also be accessed directly in the AJA Mini-Config download package Documentation folder, and via the Documentation icon available on the Mac installer.

Documentation (and firmware) included with the AJA Mini-Config application are the versions available at the time of distribution. However, Mini-Converter software, firmware and documentation are updated regularly, so newer versions may exist.

To download the latest documentation for an individual Mini-Converter, go to:

https://www.aja.com/en/category/mini-converters

and navigate to the Support webpage of that Mini-Converter.

Installing AJA Mini-Config

PC Installation

To install AJA Mini-Config on a Windows PC:

1. Download the application from the AJA website (select the Windows icon on the AJA Mini-Config Support webpage).

2. Open the AJA_MiniConfig.zip file

3. Double-click on the MiniInstaller.msi file.

4. A Setup Wizard will guide you through the installation.

Figure 3. AJA Mini-Config PC Setup Wizard
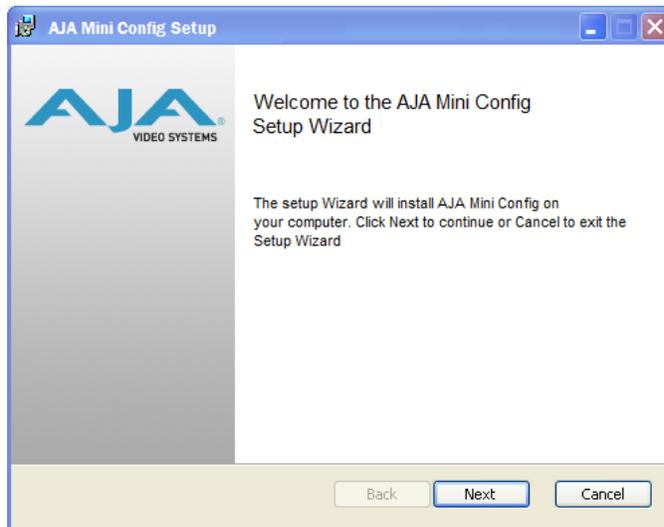
5. Click Next to begin. Answer the questions in the subsequent dialogues. When finished, an AJA Mini-Config shortcut will be installed on the desktop, and you will be able to locate the AJA Mini-Config application in the AJA folder in the Programs listing.

NOTE: If the AJA Mini-Config application already exists on the PC, a different Setup Wizard appears.

Figure 4. AJA Mini-Config Setup Wizard, Reinstallation
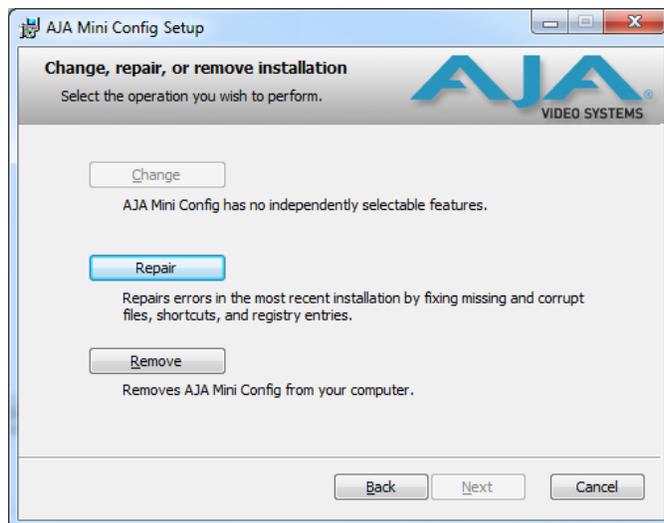
With this screen you can **Repair** (reinstall) or **Remove** (uninstall) AJA Mini-Config on the PC.

Mac Installation

To install the application on a Mac:

NOTE: Macintosh computers must be Intel-based (G5, G4 and earlier models will not work with AJA Mini-Config).

1. Download the application from the AJA website (select the Apple icon on the AJA Mini-Config Support webpage).

2. Open the AJA_MiniConfig folder.

3. Double-click on the AJAMiniConfig.dmg file.

4. Answer the prompt and a utility program will be launched.

Figure 5. AJA Mini-Config Mac Installer
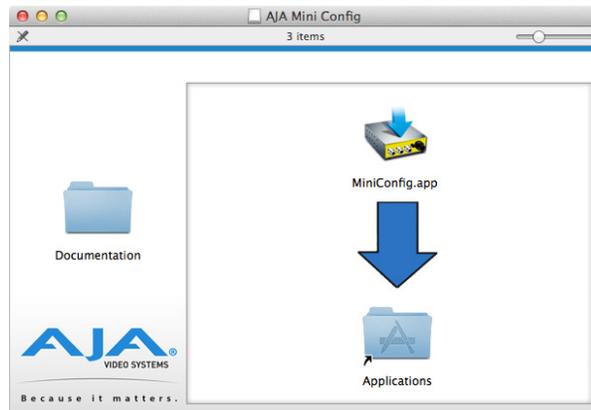
5. To complete the installation drag the "MiniConfig.app" icon to the Applications folder.

Running AJA Mini-Config

Connect the Mini-Converter to the PC or Mac via the supplied USB cable. Connect the external power supply (supplied) to the Mini-Converter.

PC Startup

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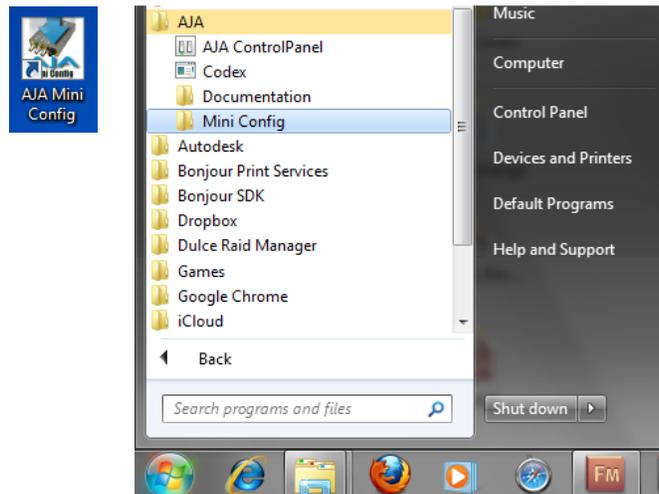
Mac Startup

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

Saving Setups

A **File** drop down menu on the AJA Mini-Config application bar allows you to save the current state of the Mini-Converter to a preset file for later recall.
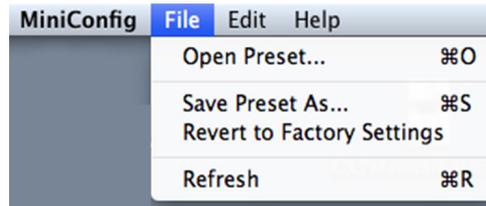
Using this feature you can set up the converter for different applications, storing each configuration (**Save Preset As...**) with a unique name for easy recall (**Open Preset...**).

A **Revert to Factory Settings** menu item similarly allows you to change the settings back to AJA's factory defaults.

Operating AJA Mini-Config

The AJA Mini-Config application provides a graphic interface for viewing settings and updating software. It consists of an information area at the top that shows the available Mini-Converters attached to the computer via USB, with a graphical rendering of the selected Mini-Converter showing all the connectors and their current state.

Colored text next to the connectors indicates the signal type and what the Mini-Converter is doing:

- Blue text indicates the values automatically selected
- Black text indicates values that you have manually selected
- Red text indicates the Mini-Converter is not detecting a signal, or cannot operate with the current user settings.

NOTE: *Even if no output device is detected, the SDI connector text still shows the signal it is outputting.*

NOTE: *Configuration settings in red will change based on the attached output device as well as input signals. For improved accuracy and reliability, you should configure the Mini-Converter only when the target output device is attached and input signals are supplied at the inputs.*

Screens are virtually the same on both PC and Mac, with subtle differences that reflect the general look of the platform environment.

Figure 6. Example AJA Mini-Config Screen

Select a USB port and an attached Mini-Converter (name in parentheses).

The status represents the aggregate signal currently detected by one or four connectors.

Firmware Version and Serial Number

Tabbed Screens

Status Message
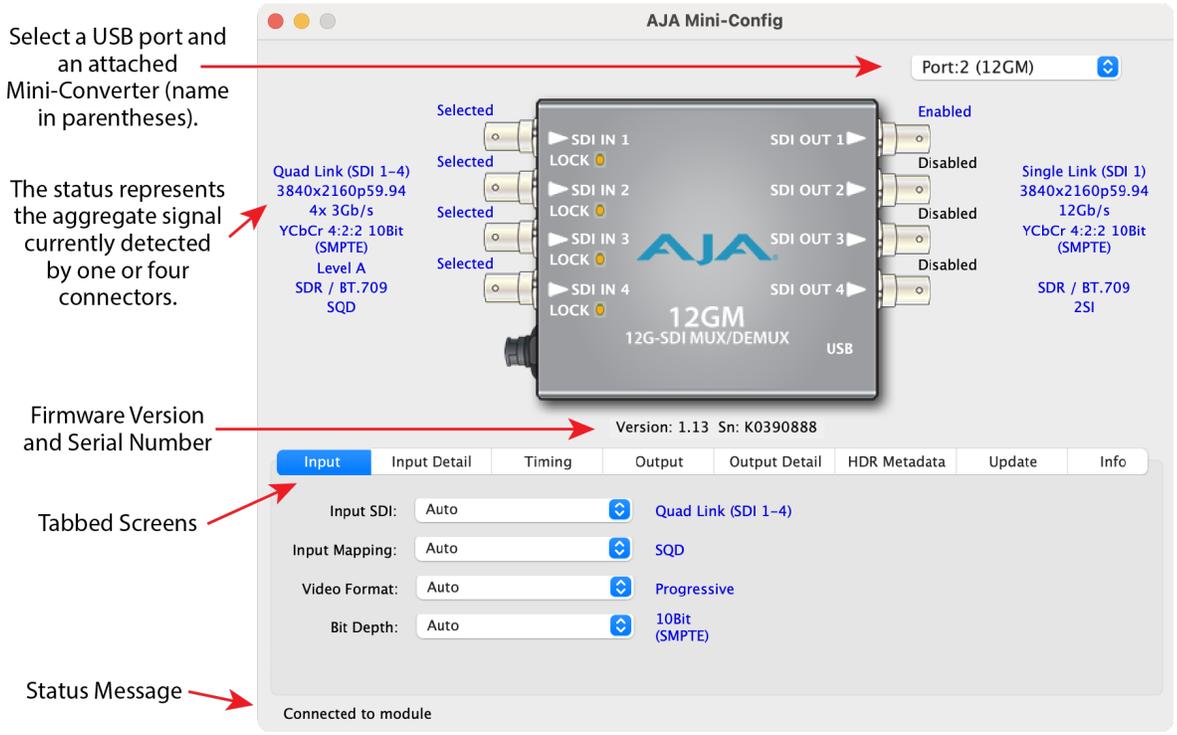
NOTE: The LEDs adjacent to each SDI input connector indicate by color the detected signal type. Off is no signal, Green is SD-SDI, Red is HD-SDI, Amber is 3G-SDI, Purple is 6G-SDI, and Blue is 12G-SDI.

Selecting a Mini-Converter with the pulldown menu causes this application to connect to the selected converter. The graphic of Mini-Converter and text below it provides:

- Type of converter
- Firmware version
- Serial number of the unit.

A status field at the bottom of the screen shows if your application is connected and communicating with the Mini-Converter.

When configuring the Mini-Converter, select it from the top pulldown, view the current settings and change any values. Making a change communicates that new value to the Mini-Converter's non-volatile memory.

Tabbed Screens

The Tabs delineate control screens with groups of controls for each type of task to be performed. The controls for the actual configuration parameters are specific to each Mini-Converter type. When you Click on any of the tab buttons, the pane below the tabs will change to match your tab selection. Any changes you make are immediately applied and will be saved, overwriting previous settings.

Input Tab Screen

Figure 7. Example of Input Tab Screen showing Quad 3G-SDI to Single 12G-SDI conversion using Square Division (Quadrant) to Two Sample Interleave (2SI) pixel mapping.
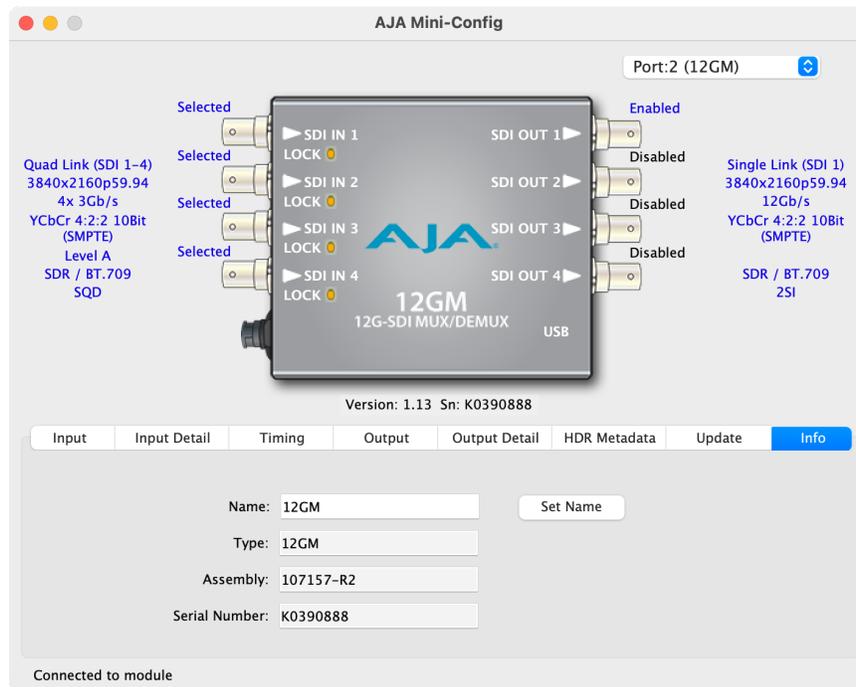
Click on the Input tab to view and make changes to the converter's input settings.

Input SDI

Selects the input video format. Choose from the following:

- Auto - Automatically selects the format based on the detected input video parameters. To the right of the drop-down menu, the status display reflects the current Input SDI behavior. In order for "Auto" to select Quad Link (SDI 1-4), all four inputs must match in terms of data rate, link mapping, raster, frame rate, scan type, sampling, bit depth, and pixel mapping.
- Single Link (SDI 1) - Select this option if you have a Single Link UltraHD/4K signal coming in through SDI In 1.
- Single Link (SDI 2) - Select this option if you have a Single Link UltraHD/4K signal coming in through SDI In 2.
- Single Link (SDI 3) - Select this option if you have a Single Link UltraHD/4K signal coming in through SDI In 3.
- Single Link (SDI 4) - Select this option if you have a Single Link UltraHD/4K signal coming in through SDI In 4.
- Dual Link 1.5G (SDI 1-2) - Select this option if you have Dual Link 1.5G signal coming in through SDI In 1-2.
- Dual Link 3G/6G (SDI 1-2) - Select this option if you have Dual Link 3G/6G signal coming in through SDI In 1-2.
- Quad Link (SDI 1-4) - Select this option if you have a Quad Link UltraHD/4K signal coming in through SDI In 1-4.

Input Mapping

NOTE: Input pixel mapping applies only to 4K/UltraHD signals being transported on Quad Link 4 x 3G inputs, as 6G and 12G SDI are always Two Sample Interleave (2SI), and Quad Link 1.5G SDI is always Square Division (Quadrant).

For 4K/UltraHD signals using Quad Link 3Gbps transport, the Video Payload Identifier (VPID) embedded in each link indicates whether the pixel mapping is 2SI or not. If 2SI is not indicated, the 12GM assumes that the input signal is mapped Square Division (Quadrant). Note that there are no specific VPID bits to indicate Square Division (Quadrant).

Use the Input Mapping control to select the input mapping. Choose from the following:

- Auto - Analyzes details of each input. The VPID from each input signal indicates whether its pixel mapping is Two Sample Interleave (2SI) or Square Division (Quadrant). In order for "Auto" to select 2SI pixel mapping, the video input (whether single link 6G-SDI or 12G-SDI, or Quad Link 3G-SDI) must indicate 2SI with its embedded VPID(s).
- 2SI - Select this option if you are inputting a Two Sample Interleave (2SI) pixel mapped signal.
- SQD - Select this option if you are inputting a Square Division (Quadrant) pixel mapped signal.

Video Format

This control can be used to force the 12GM's input video receiver to interpret that incoming video signal as either Progressive, interlaced, or PsF (Progressive Sequential Frame).

The default setting is Auto, in which the 12GM examines the incoming video signal to determine which format is appropriate.

Choose from Auto, Progressive, Interlaced, or PsF.

- Auto - Automatically selects the format based on the input video parameters and the payload ID.
- Interlaced - Forces the 12GM to interpret the incoming video as Interlaced.
- Progressive - Forces the 12GM to interpret the incoming video as Progressive.
- PsF - Forces the 12GM to interpret the incoming video as PsF.

Under normal circumstances you should always run in Auto mode. However, because interlaced and PsF formats are essentially the same signal, the 12GM might confuse them. For example, if you know for sure that you receiving a PsF signal, but the 12GM is interpreting it as an Interlaced signal while running in Auto mode, setting this control to PsF will force the receiver to interpret that signal as PsF. However, if the 12GM is receiving a Progressive signal and you force it to interpret it as Interlaced, an invalid output video signal will be created.

Bit Depth

Selects the input video bit depth. Choose Auto, 10-bit, or 12-bit. Choosing "Auto" automatically selects the bit depth based on the input video parameters and the payload ID.

Input Detail Tab Screen

Figure 8. Example of Input Detail Tab Screen showing Quad 3G-SDI to Single 12G-SDI conversion using Square Division (Quadrant) to Two Sample Interleave (2SI) pixel mapping.
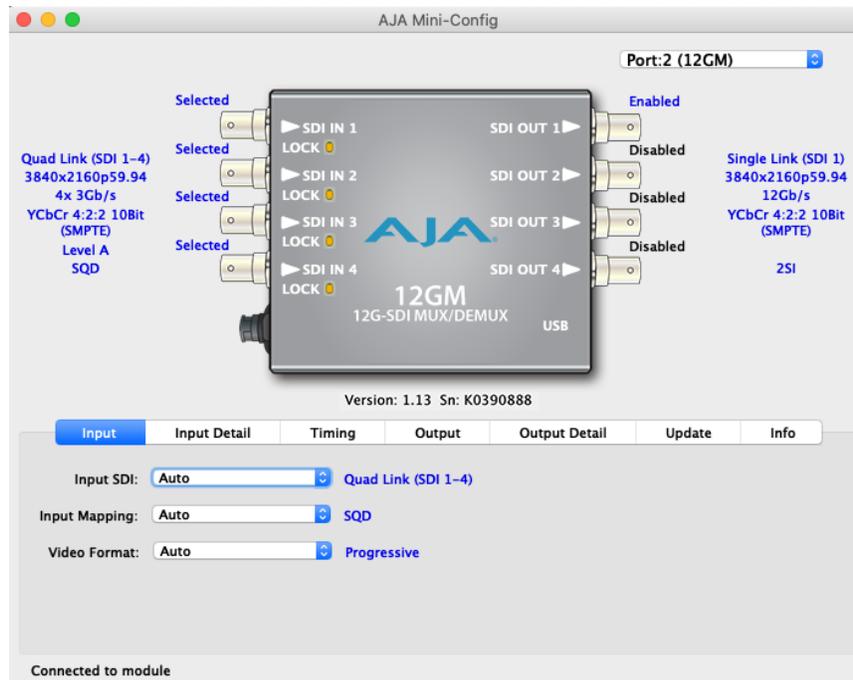

Figure 9. Example of Input Detail Tab Screen showing Single 12G-SDI to Quad 3G-SDI conversion.
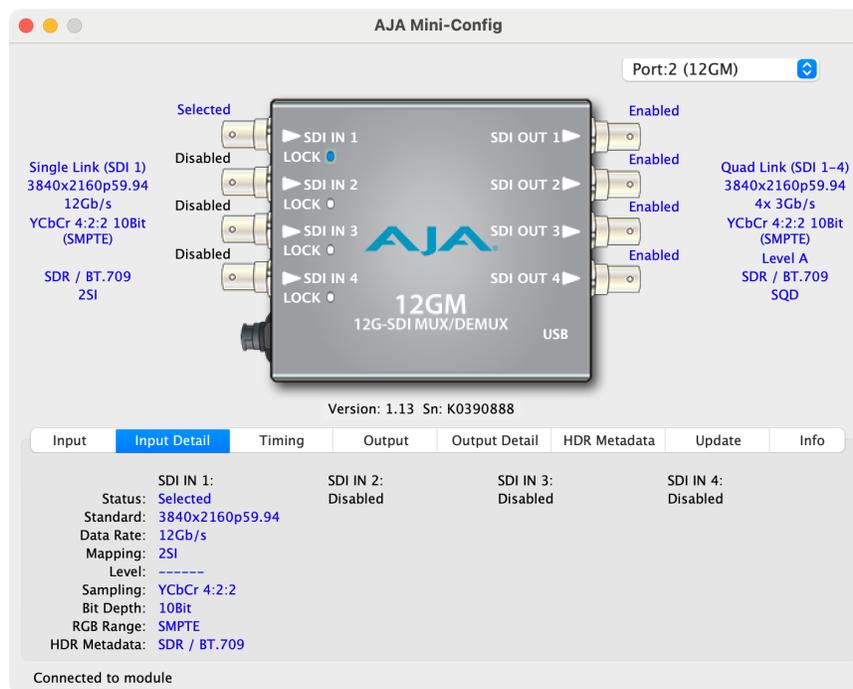
Click on the Input Details tab to view detailed input signal diagnostic information. This can be useful for trouble-shooting and debugging. Input details detected include Status, Standard, Scan Type, Frame Rate, Data Rate, Level, Sampling, Bit Depth, and Mapping for each input BNC.

Timing Tab Screen

Figure 10. Example of Timing Tab Screen showing Quad 3G-SDI to Single 12G-SDI conversion using Square Division (Quadrant) to Two Sample Interleave (2SI) pixel mapping.
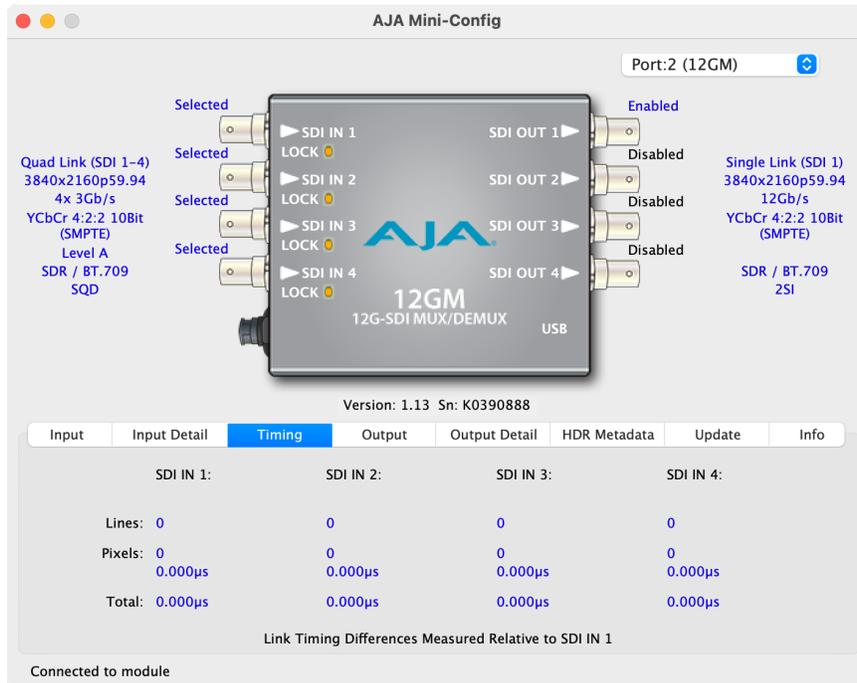

The purpose of the Timing Tab Screen is to validate that all four links of a Quad Link input signal meet the required 400ns link-to-link timing, and if not, which link(s) are not meeting this specification.

The Timing Tab Screen measures timing differences link to link, but displays timing values relative to SDI 1 for ease of understanding and correcting timing issues. If the SDI In 1, 2, 3, and 4 links are within +/- 400ns relative to each other, then the text will be blue. If two or more links are determined to be more than +/- 400ns relative to each other, then the text is red. The Timing analyzer has a measurement range of +/- 1/2 frame.

The first row of the Pixels Timing information indicates any horizontal offset in terms of pixels for each link, while the second row of the Pixels Timing information indicates the horizontal offset in terms of microseconds. The two rows display the same information represented in different terms (pixels versus microseconds). The pixel information (pixels and time) indicates offset of up to 1 line. If the offset exceeds 1 line, then the line count is incremented.

The Total row displays each link's total offset (vertical timing plus horizontal offset) in terms of time.

Figure 11. Example of Timing Tab Screen showing Quad 3G-SDI to Single 12G-SDI conversion using Square Division (Quadrant) to Two Sample Interleave (2SI) pixel mapping. In this example, a timing error message displays.
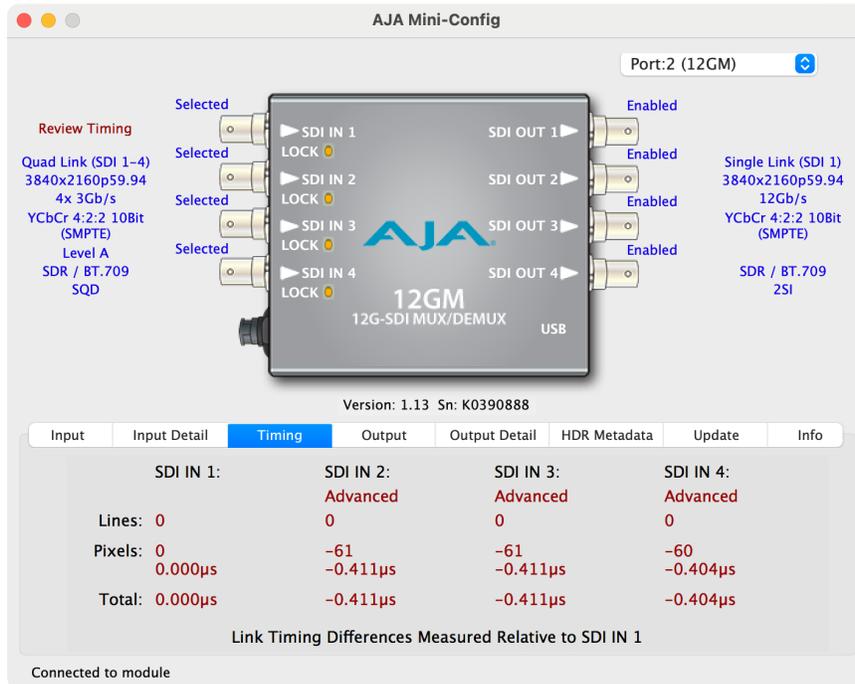
The above Timing Tab Screen shows that links 2, 3, and 4 are equally advanced with respect to link 1 by about 60 pixels. Since all three links are equally advanced, most likely link 1 has an additional function element (piece of processing equipment or additional processing function) which is delaying it 60 pixels, so links 2, 3, and 4 appear advanced.

To solve this error, the signal chain feeding SDI Input 1 needs to be analyzed to determine the cause of the delay. Once found, the delay should be reduced enough so that it is less than 400ns between links 1 and 2, 1 and 3, and 1 and 4.

Output Tab Screen

Figure 12. *Example of Output Tab Screen showing Quad 3G-SDI to Single 12G-SDI conversion using Square Division (Quadrant) to Two Sample Interleave (2SI) pixel mapping.*
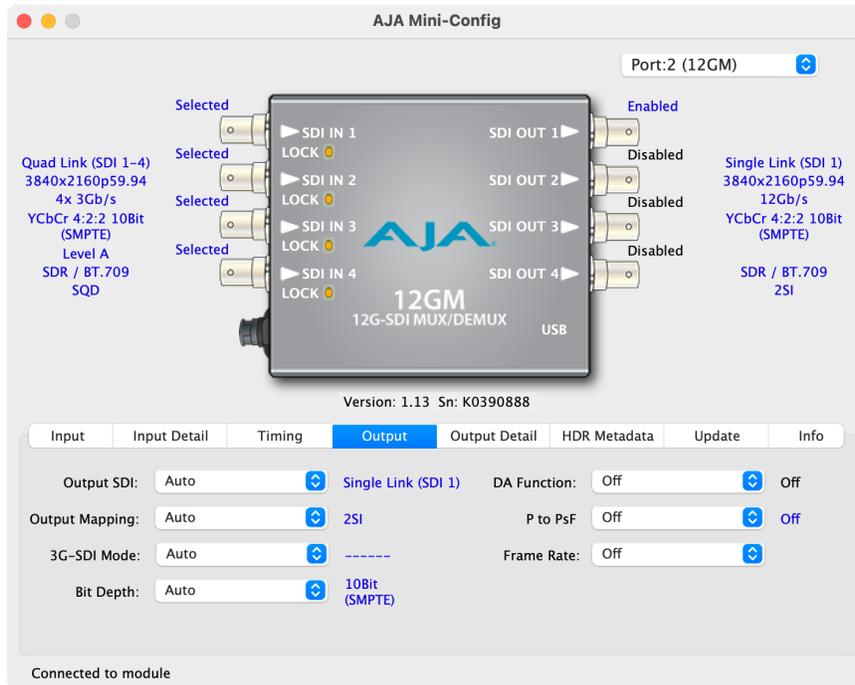
Click on the Output tab to view and make changes to the converter's output settings.

Output SDI

- Auto - Automatically selects the output format based on the inputs detected.
  - If Quad Link UltraHD/4K (SDI 1-4) is detected on the input, the output will auto-select to a Single Link (SDI 1) multiplex output.
  - If Dual Link UltraHD/4K (SDI 1-2) is detected on the input, the output will auto-select to Dual Link (SDI 1-2) using SDI Outputs 1-2.
  - If Single Link UltraHD/4K (SDI 1) is detected on the input, the output will auto-select to a Quad Link (SDI 1-4) to demux the signal to four outputs using SDI Outputs 1-4.
- Single Link (SDI 1) - Causes the 12GM to use only SDI Output 1. The combination of input and output settings determines whether the 12GM is muxing, demuxing or passing through.
- Dual Link (SDI 1-2) - Causes the 12GM to use SDI Outputs 1-2, if possible. The combination of input and output settings determines whether the 12GM is muxing, demuxing or passing through.
- Quad Link (SDI 1-4) - Causes the 12GM to use SDI Outputs 1-4, if possible. The combination of input and output settings determines whether the 12GM is muxing, demuxing or passing through.

Output Mapping

NOTE: *Output pixel mapping applies only to 4K/UltraHD signals being transported on Quad Link 4x 3G outputs. 6G and 12G SDI are always Two Sample Interleave (2SI), and Quad Link 1.5G SDI is always Square Division (Quadrant).*

Selects the output mapping for Quad Link 4x 3G outputs. Choose from the following:

- Auto - Automatically selects the output pixel mapping based on the input pixel mapping detected.
  - If Quad Link UltraHD/4K (SDI 1-4) 2SI is detected on the input, the output pixel mapping will be SQD.
  - If Quad Link UltraHD/4K (SDI 1-4) SQD is detected on the input, the output pixel mapping will be 2SI.
  - If Quad Link UltraHD/4K (SDI 1-4) SQD or 2SI 3G is detected on the input, the output pixel mapping will be 12G 2SI.
  - If Single Link UltraHD/4K (SDI 1-4) 12G is detected on the input, the output pixel mapping will be Quad 3G 2SI.
- 2SI - Causes the 12GM to output a Two Sample Interleave (2SI) pixel mapped signal.
- SQD - Causes the 12GM to output a Square Division (Quadrant) pixel mapped signal.

3G-SDI Mode

The 12GM's 3G-SDI Mode offers the choice between Auto, Level A and Level B-DL.

- Auto - The 12GM will automatically select Level A or Level B-DL based on the inputs detected.
  - For Single Link 12G input, Auto will select 4x 3G Level A for the output.
  - For a Single Link 6G input, Auto will select 4x 1.5G for the output.
  - For a Single Link 3G Level A input, Auto will select 1x 3G Level A for the output.
- Level A - The SDI Outputs will carry a 3G-SDI Level A signal to support these configurations:
  - 4x 3G-SDI Level B-DL to 4x 3G-SDI Level A
  - 1.5G-SDI to 3G-SDI Level A
- Level B-DL - The SDI Outputs will carry a 3G-SDI Level B-DL signal to support these configurations:
  - 12G-SDI to 4x 3G-SDI Level B-DL
  - 4x 3G-SDI Level A to 4x 3G-SDI Level B-DL
  - 3G-SDI Level A to 1.5G-SDI

Bit Depth

The Bit Depth control offers the choice between Auto, 10 bit, and 12 bit.

DA Function

The 12GM's Distribution Amplifier (DA) function is available for Single Link output signals.

- On - When turned on, the DA function will duplicate SDI Output 1's signal on SDI Outputs 2, 3, and 4.

NOTE: If the output is a Quad Link signal, the DA function is overridden and turned off.

- Off - When turned off, no signal duplication will occur.

P to PsF

Choose to convert incoming progressive format video to PsF SDI video.

- Off - (default) No conversion.
- On - Converts the video to PsF (if it is progressive format and low frame rate).

Frame Rate

The Frame Rate control can be set to convert an integer input frame rate (like p60) to the matching fractional or non-integer output frame rate (like p59.94). The frame rate converter accomplishes this by dropping a complete video frame every 1001 frames. This control can also be set to convert a fractional or non-integer input frame rate (like p59.94) to an integer output frame rate (like p60), accomplished by repeating a complete video frame every 1000 frames.

NOTE: *Because audio is disembedded prior to any video processing and then re-embedded after video processing, there will be no disruption to audio when the frame rate converter is working.*

- Off (default) - No frame rate conversion will be performed. The output frame rate will match the input frame rate.
- Fractional - If the input frame rate is an integer frame rate, the output frame rate will be converted to the matching fractional frame rate. Fractional frame rate input signals are unaffected.
- Integer - If the input frame rate is a fractional frame rate, the output frame rate will be converted to the matching integer frame rate. Integer frame rate input signals are unaffected.

Figure 13. Example of Output Tab Screen showing the output set to Single Link 12G-SDI. The DA Function is turned on, duplicating the 12G-SDI input signal and sending it out through all four SDI outputs.
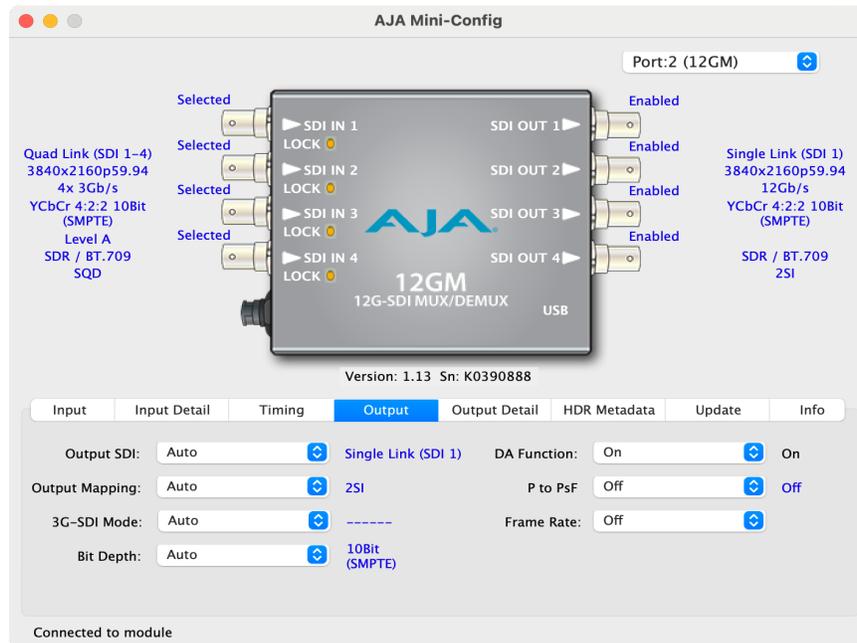
Output Detail Tab Screen

Figure 14. Example of Output Detail Tab Screen showing Quad 3G-SDI to Single 12G-SDI conversion using Square Division (Quadrant) to Two Sample Interleave (2SI) pixel mapping.
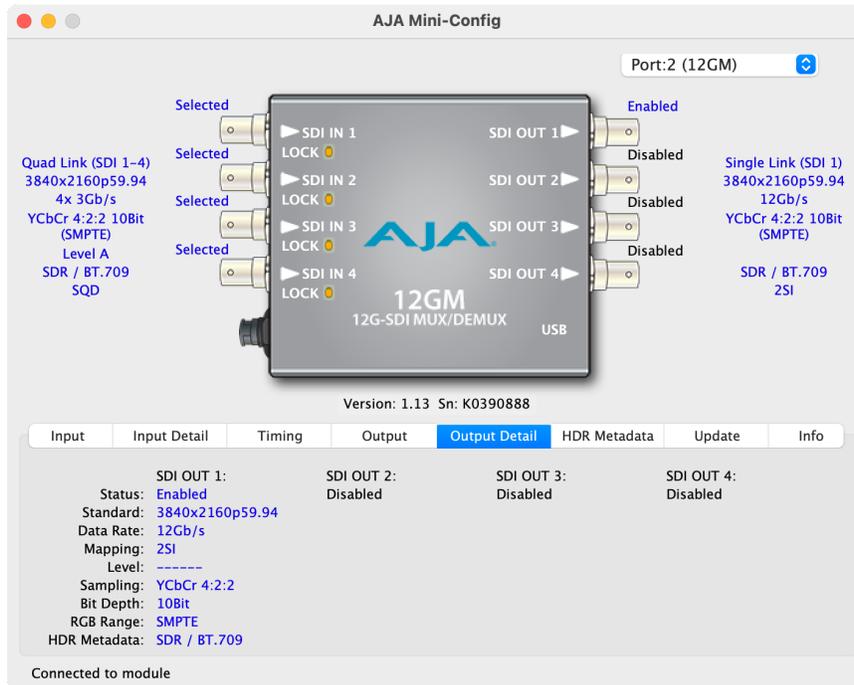
Click on the Output Details tab to view detailed output signal diagnostic information. This can be useful for trouble-shooting and debugging. Output signal details include Status, Standard, Scan Type, Frame Rate, Data Rate, Level, Sampling, Bit Depth, and Mapping for each output BNC.

Figure 15. Example of Output Detail Tab Screen showing Single 12G-SDI to Quad 3G-SDI conversion to Two Sample Interleave (2SI) pixel mapping.
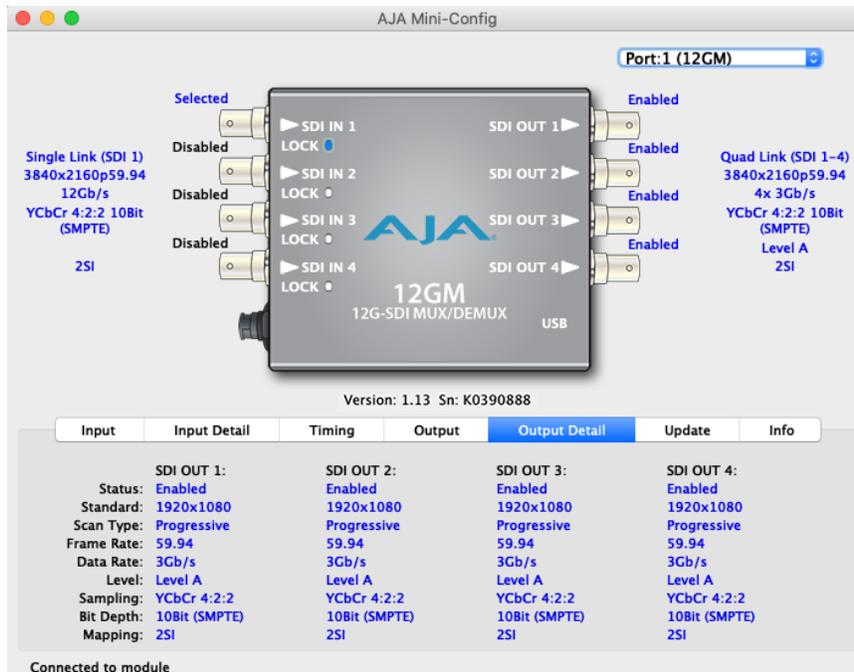
HDR Metadata Tab Screen
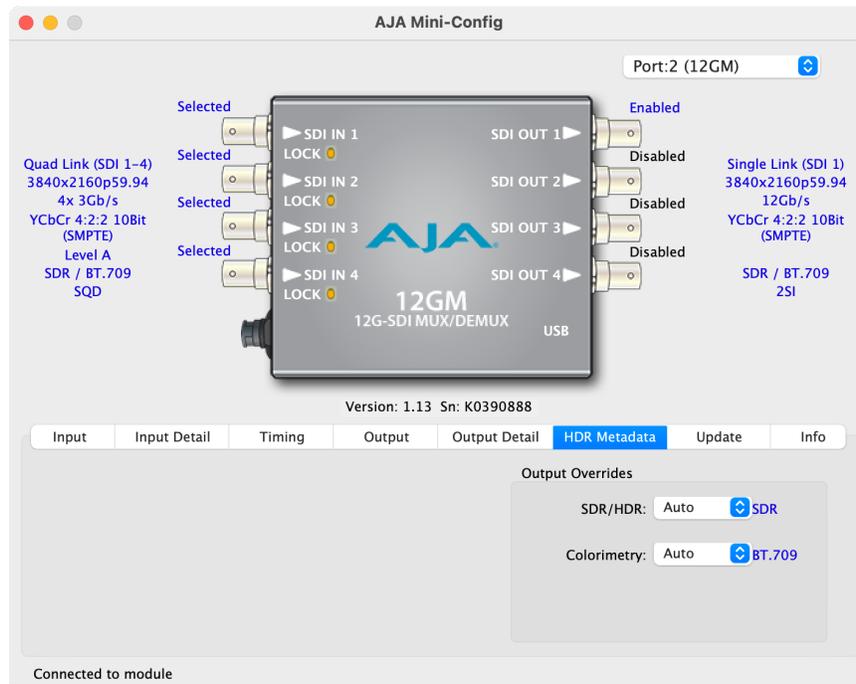
Click on the HDR Metadata tab to view and, if necessary, make changes to the 12GM High Dynamic Range metadata. For SDI, this metadata defines the VPID (Video Payload Identifier) for Transfer Characteristic and Colorimetry.

NOTE: *HDR Metadata values do not modify video image data. They define the HDR metadata included in the video output.*

For most workflows the Auto settings for the Output Overrides parameters are appropriate, which will automatically pass incoming HDR metadata, if present, through to the output. However, this metadata may need to be edited for a specific workflow, or to correct inaccurate incoming metadata.

NOTE: *You can hover the cursor over each parameter field to view its corresponding description in a pop-up window.*

Output Overrides

The override controls on the right can be used to replace incoming or missing HDR metadata with alternative values for the 12GM's SDI output.

SDR/HDR

This setting controls what Transfer Characteristic value is used for the SDI output VPID.

- Auto - Passes the Transfer Characteristic value from the video input through to the output.
- SDR - Overrides and sets the SDI output VPID for Transfer Characteristic to SDR.
- PQ - Overrides and sets the SDI output VPID for Transfer Characteristic to PQ.
- HLG -Overrides and sets the SDI output VPID for Transfer Characteristic to HLG.

Colorimetry

This setting determines what Colorimetry metadata values are applied to the SDI output.

- Auto - Passes the Colorimetry value from the input to the output.
  - If the incoming value is BT.709, Color VANC Packet, or Unknown, then BT.709 values are passed to the output.
  - If the incoming value is BT.2020, BT.2020 values are passed to the output.
- BT.709 - Overrides and sets the SDI VPID to BT.709.
- BT.2020 - Overrides and sets SDI VPID to BT.2020.

Update Tab Screen
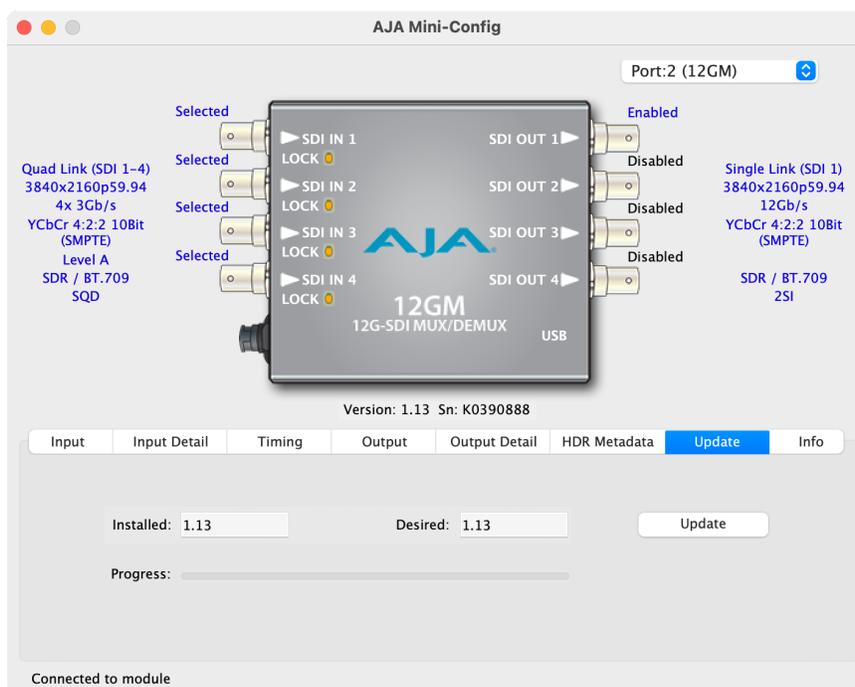
Use this Update tab screen to view the software version currently installed on the converter or to install new software.

NOTE: When discussing Mini-Converters, "Firmware" is software that will be stored in the Mini-Converter's non-volatile memory and used when it is powered up. This is something different than the AJA Mini-Config application software. The version numbers shown in the Update screen refer only to the firmware.

- Installed - This field shows the version of the firmware currently installed inside the Mini-Converter.
- Desired - This field shows the version of firmware embedded in the AJA Mini-Config application which you can install into the Mini-Converter by clicking the Update button.

Update

This button initiates a software update operation loading the "Desired" version of firmware into the Mini-Converter's non-volatile memory.

Progress - This indicator bar shows the progress of firmware installation.

Software Update Procedure

1. Check the AJA website for new AJA Mini-Config software for your Mini-Converter. If new software is found, download it and uncompress the file archive (zip). Here is the URL to use when checking:

   http://www.aja.com/en/products/mini-converters/mini-config-software

2. Connect the Mini-Converter to a Mac or PC via a USB port on the computer and run the new AJA Mini-Config software just downloaded.

3. Click on the Update tab screen.

4. Check the Installed version level against the Desired version level. If the Desired is newer, then click the Update button to download the new firmware to the Mini-Converter; progress will be shown via the "Progress" thermometer bar.

Info Tab Screen
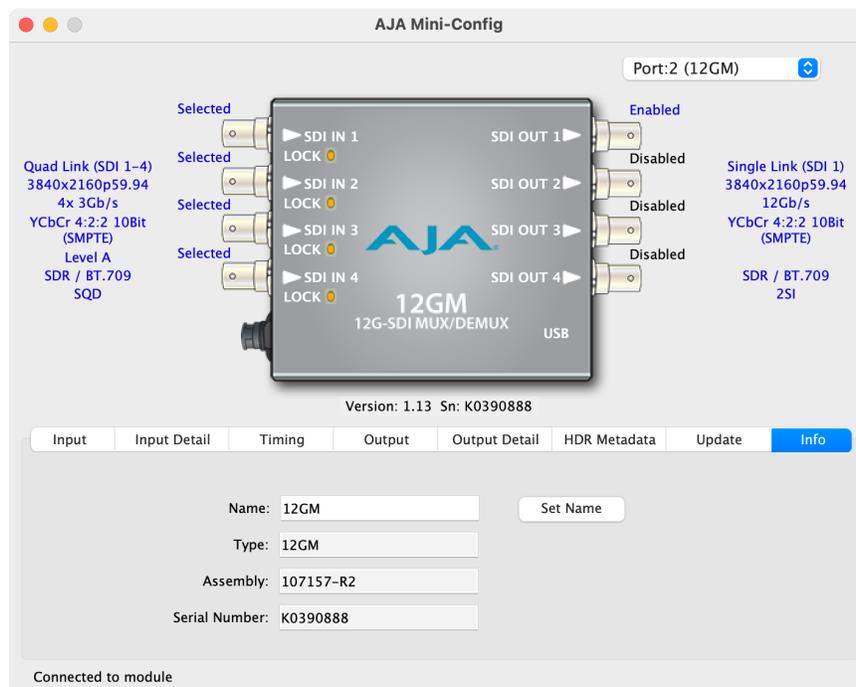
This screen provides basic information about the Mini-Converter. This information is useful when calling AJA Support for service or technical support.

- Name - This field allows you to give your Mini-Converter a name. This can be useful if you have several Mini-Converters attached to a Mac/PC via USB so you can distinguish between them easily (especially if they're the same model).

- Type - This is the factory set model name of the Mini-Converter.

- Assembly - This is the factory assembly number.

- Serial Number - This is the factory set unique serial number of your Mini-Converter. If you ever call AJA Support for service, you may be asked for this number.

Appendix A – Specifications

12GM Tech Specs

Video Formats

- (4K) 4096 x 2160p 23.98, 24, 25, 29.97, 30, 47.95, 48, 50, 59.94, 60
- (4K) 4096 x 2160PsF 23.98, 24, 25, 29.97, 30
- (UltraHD) 3840 x 2160p 23.98, 24, 25, 29.97, 30, 50, 59.94, 60
- (UltraHD) 3840 x 2160PsF 23.98, 24, 25, 29.97, 30
- (2K) 2048 x 1080p 23.98, 24, 25, 29.97, 30, 47.95, 48, 50, 59.94, 60
- (2K) 2048 x 1080PsF 23.98, 24, 25, 29.97, 30
- (HD) 1920 x 1080p 23.98, 24, 25, 29.97, 30, 50, 59.94, 60
- (HD) 1920 x 1080PsF 23.98, 24, 25, 29.97, 30
- (HD) 1920 x 1080i 50, 59.94, 60
- (HD) 1280 x 720p 50, 59.94, 60
- (SD) 625i 50
- (SD) 525i 59.94
- YCbCr 4:2:2/4:4:4
- RGB 4:4:4, SMPTE or Full level
- 8, 10, or 12-bit

NOTE: *Raster and Frame Rate Dependent, please see 12GM Video Formats in Documents and Manual*

Video Input and Output Digital

- 4x 12G-SDI BNC, SMPTE 259/292/372/424/2081/2082
  - Single Link 12G/6G/3G/1.5G-SDI
  - Dual Link 2x6G/2x3G/2x1.5G-SDI
  - Quad Link 4x3G Level A or B DL/4x1.5G-SDI I

Supported Conversions and Functions

- Quad 3G-SDI Level A to Single 12G-SDI
- Quad 3G-SDI Level B DL to Single 12G-SDI
- Single 12G-SDI to Quad 3G-SDI Level A
- Single 12G-SDI to Quad 3G-SDI Level B DL
- Quad 3G-SDI Level A to Dual 6G-SDI
- Quad 3G-SDI Level B DL to Dual 6G-SDI
- Dual 6G-SDI to Quad 3G-SDI Level A
- Dual 6G-SDI to Quad 3G-SDI Level B DL
- Dual 3G-SDI Level A to Single 6G-SDI
- Dual 3G-SDI Level B DL to Single 6G-SDI
- Single 6G-SDI to Dual 3G-SDI Level A
- Single 6G-SDI to Dual 3G-SDI Level B DL
- Quad 1.5G-SDI to Single 6G-SDI
- Single 6G-SDI to Quad 1.5G-SDI
- Dual 1.5G-SDI to Single 3G-SDI Level A
- Dual 1.5G-SDI to Single 3G-SDI Level B DL
- Single 3G-SDI Level A to Dual 1.5G-SDI
- Single 3G-SDI Level B DL to Dual 1.5G-SDI
- Quad 3G-SDI Level A to Quad 3G-SDI Level B DL

- Quad 3G-SDI Level B DL to Quad 3G-SDI Level A
- Two Sample Interleave (2SI) to Square Division (Quadrant) pixel mapping
- Square Division (Quadrant) to Two Sample Interleave (2SI) pixel mapping
- HDR VPID pass-through or override for Colorimetry and Transfer Characteristic
- Pass-through of Single Link 12G, 6G, 3G, 1.5G, and 270M SDI video
- Distribution Amplifier support (1x4)
- Input signal diagnostics
- Input timing analyzer for Quad link signals

Cable Equalization

(Belden 1694A coax)
- 12 Gbps, 70m
- 6 Gbps, 100m
- 3 Gbps, 140m
- 1.5 Gbps, 200m
- 270 Mbps, 300m

Audio Input/Output Digital

- Passes SDI embedded audio, 24-bit, up to 16-channels

User Interface

- USB port used with supplied cable and Mini-Config software application to configure the device and access diagnostics via macOS or Windows.

Size (w x d x h)

- 5.76" x 4.02" x 0.90" (146.31 × 102.11 × 22.86 mm)

Weight

- 0.6 lb (0.3 kg)

Power

- 5-16 VDC regulated, 12 watts, power supply required, included with purchase
- AC Adapter: 100-240VAC, 50/60 Hz, universal input

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)

*12GM uses approximately 12 watts of power and convection cooling. It will be very warm to the touch, which is normal. When installing the unit, mount in a location where it has access to air for proper cooling. Do not stack the 12GM with other Mini-Converters.

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, LICHTENSTEIN, 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.

CE This equipment meets the following conformance standards:

Safety

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

IEC 62368-1: 2014 (CB Scheme Report/Certificates))

Additional licenses issued for specific countries available on request.

Emissions

EN 55032: 2015 +AC: 2020, CISPR 32: 2015,

EN 61000-3-2: 2014, EN 61000-3-3: 2013

Immunity

EN 55103-2: 2009

EN 61000-4-2: 2009, EN 61000-4-3: 2006 + A1: 2008 + A2: 2010,

EN 61000-4-4: 2004 + A1: 2010, EN 61000-4-5: 2006, EN 61000-4-6: 2009,

EN 61000-4-11: 2004

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

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

Taiwan Compliance Statement

警告使用者：
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.

Japan Compliance Statement

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

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

Translated Warning and Caution Messages

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

Warning Symbol　　　　Caution Symbol

Before Operation Please Read These Instructions

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

¡Advertencia! No eche por tierra la finalidad del tipo de enchufe polarizado con conexión a tierra. Un enchufe polarizado tiene dos espigas, una más ancha que la otra. Un enchufe con conexión a tierra tiene dos espigas iguales y una tercera espiga que sirve para la conexión a tierra. La expiga 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 rimane 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! 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 períodos 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! Disconnect the external AC power supply line cord(s) from the mains power before moving the unit.

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

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

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

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

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

Warning! 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! 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.

Warranty and Liability Information

Limited Warranty on Hardware.

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

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

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

To obtain service under this warranty, the Customer must notify AJA Video of the defect before expiration of the warranty period and make suitable arrangements for the performance of service by contacting AJA Video support through the channels set forth on the support contacts web page at https://www.aja.com/support. Except as stated, the Customer shall bear all shipping, packing, insurance and other costs, excluding parts and labor, to effectuate repair. Customer shall pack and ship the defective product to a service center designated by AJA Video, with shipping charges prepaid. AJA Video shall pay to return the product to Customer, but only if to a location within the country in which the AJA Video service center is located. SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OF IMPLIED WARRANTIES OR LIMITATIONS ON APPLICABLE STATUTORY RIGHTS OF A CONSUMER, SO SOME OR ALL OF THE TERMS OF THIS PARAGRAPH MAY NOT APPLY TO YOU.

Limitation of Liability

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

Governing Law and Language; Your Rights.

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

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