

UDC Mini-Converter

Up/Down/Cross-Converter



Installation and Operation Guide

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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

The UDC is a broadcast quality Up/Down/Cross Mini-Converter that can convert between 3G-A, HD, and SD video formats. Borrowing from AJA's industry leading conversion technology used in our model FS2, the UDC provides very high quality conversions at a low price. The UDC also supports 16-channel embedded SDI audio. I/Os include 3G, HD, and SD-SDI Input and Output, HDMI output, and 2-channel RCA-style audio output. The UDC can be controlled by local DIP switches with additional control available via USB and AJA's Mini-Config application. A Reference Input allows the video output to be timed to a local reference.

Video Formats

The UDC does not convert frame rates—it works with the input frame rate. The only exception is a 3:2 function where 23.98 is converted to 59.94 (and 24 is converted to 60). If a reference is provided, it must be in the same frame rate hierarchy as the input video (e.g., 23.98/29.97/59.94, 25/50, or 24/30/60).

Features

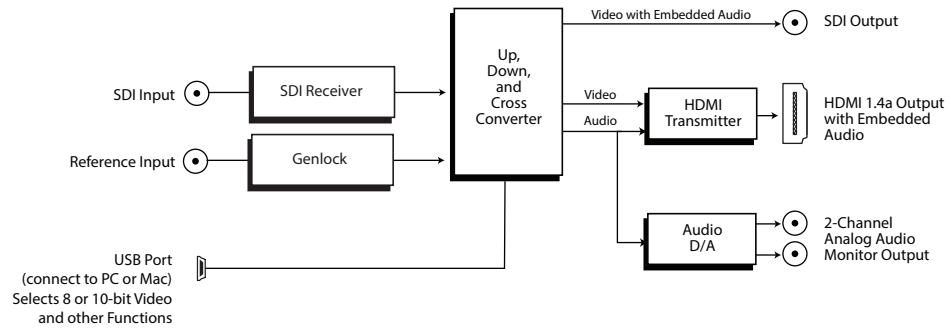
- Converts between SD, HD, and 3G HD formats

NOTE: UDC converts 3G-A formats only. It does not input or output 3G-B.

- Supports 1080p 50, 60
- Very high quality conversions
- 16-channel embedded SDI audio input
- 16-channel embedded SDI audio output
- 8-channel HDMI output audio
- 2-channel RCA-style analog outputs at -10dBV (nominal)
- Reference Input
- Configurable via DIP switch or USB port and supplied Mini-Config software
- Uses universal input +5V power supply AJA model DWP-U-R1 (included)
- 5-year warranty

Block Diagram

Figure 1. UDC Mini-Converter, Simplified Block Diagram



I/O Connections

Figure 2. UDC Mini-Converter



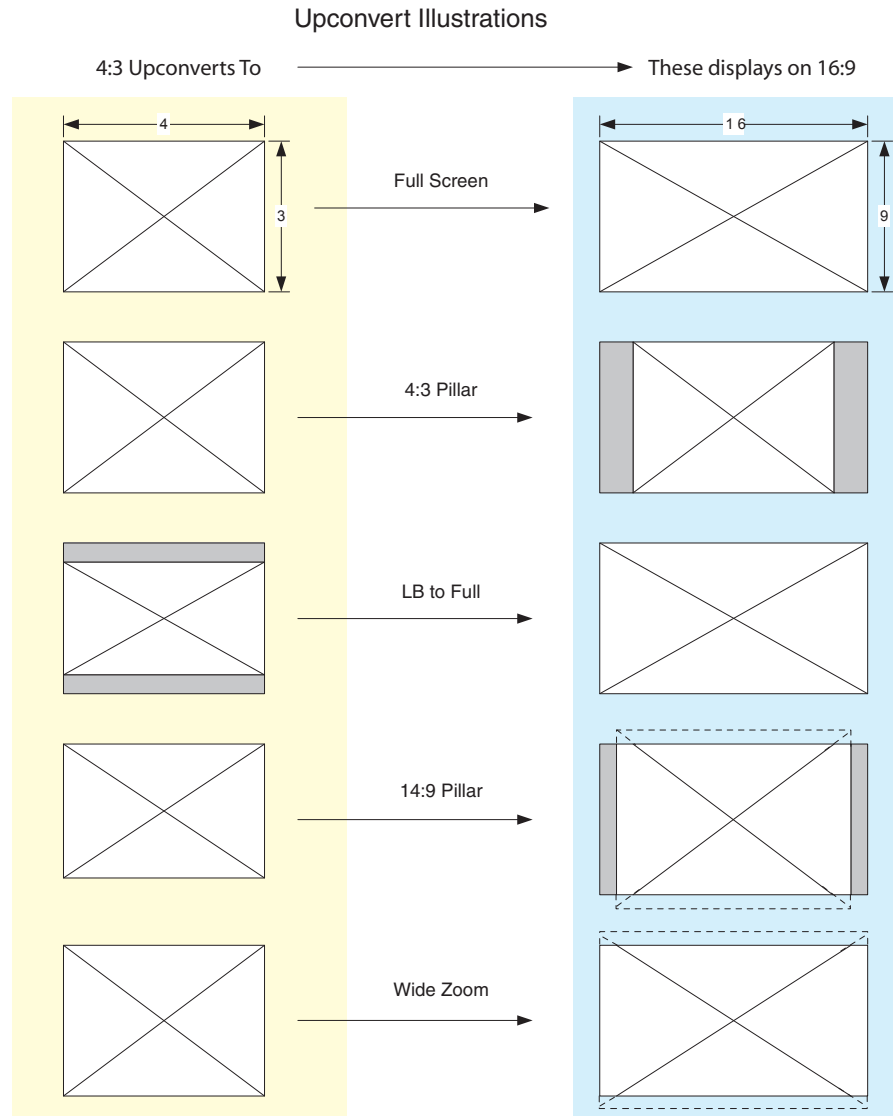
NOTE: The Lock LED indicates valid input video by color. Green is SD video, red is HD video, amber is 3G video, off is no input.

Conversion Mode Discussion and Examples

Upconvert Mode

The UDC allows you to select the type of Upconversion performed on an SD source input. This mode is in effect only when the input is SD (525i or 625i) and the selected output format is HD (720p, 1080i, or 1080p).

Figure 3. Upconvert Mode Examples



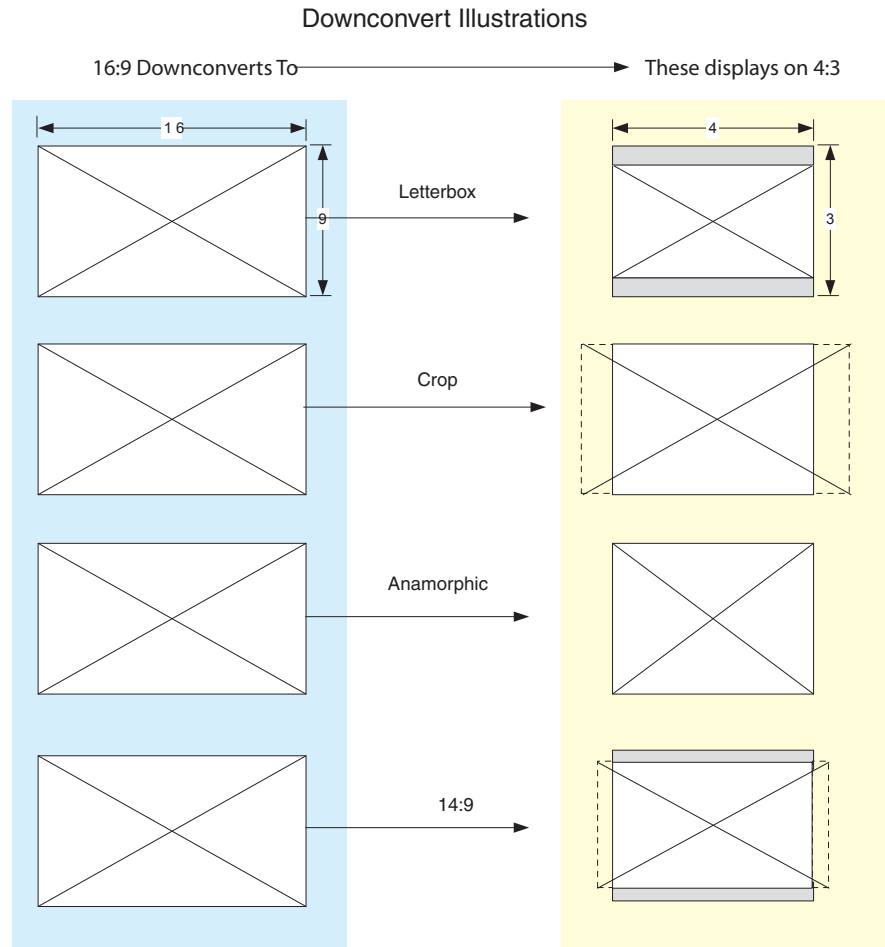
Selection Description

- Full Screen – 4x3 image is stretched horizontally to fill a 16x9 frame.
- 4x3 Pillar – 4x3 image at center screen with black sidebars.
- LB to Full – 4x3 letterboxed image is scaled to fit horizontally in a 16x9 frame. Black bars top and bottom are cropped off.
- 14x9 Pillar (default) – 4x3 image is scaled to create a 14x9 image with black sidebars and slightly cropping top and bottom of original image.
- Wide Zoom – A combination of scaling and stretching is used to fit to a 16x9 frame. Slight cropping of top and bottom and a small aspect ratio change.

Downconvert Mode

This mode determines the type of Downconversion performed on the selected HD source input. See the following Downconvert Illustrations for Downconversion examples. This mode is in effect only when the input is HD (720p, 1080i, or 1080p) and the selected output format is SD (525i or 625i).

Figure 4. Downconvert Mode Example



Selection Description

- Letterbox – Image is reduced with black top and bottom added to image area, with the aspect ratio preserved.
- Crop (default) – Image is cropped to fit new screen size.
- Anamorphic – HD image is converted to full-screen SD with a 16x9 aspect ratio (anamorphic).
- 14:9 – Image is reduced slightly with aspect ratio preserved. Black is added top and bottom, and the left and right sides are cropped.
- Auto AFD – Automatically selects the best Downconvert mode based on the input video's Active Format Description (AFD) code.

Active Format Description (AFD) codes are carried in the vertical ancillary (VANC) portion of HD SDI video signals, specified in SMPTE 2016 as follows: "AFD information is intended to guide DTV receivers and/or intermediate professional video equipment regarding the display of video of one aspect ratio on a display of another aspect ratio."

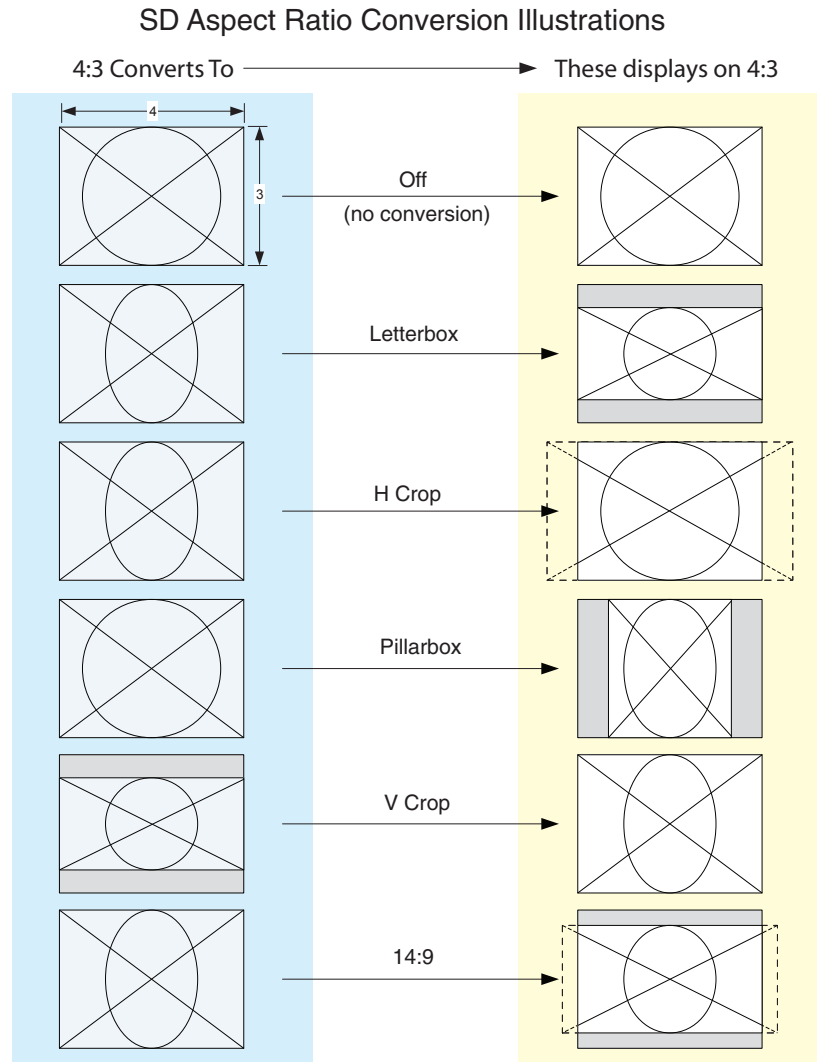
In the UDC Downconverter, the AFD code on the video input can be used to guide the Downconverter in choosing which mode to use to best display the important content of the 16:9 HD input video on the 4:3 SD output. For example, if the input AFD code is 10 (Full Frame), it means that the input video has important picture information throughout the full 16:9 frame, so the Downconverter should use Letterbox mode to be sure none of the content is cropped off. An AFD code of 9 (Pillarbox) says that the input video only has

content within the center 4:3 area of the picture (usually because it originally came from an Upconverted SD signal) so the Downconverter Crop mode would be the best choice. There are 16 possible HD AFD codes, of which 8 are in common use. The UDC does not process or use SD AFD codes.

SD Aspect Ratio Convert

This mode selects the type of SD-to-SD Aspect Ratio Conversion (ARC) performed on an incoming selected SD source. This mode is in effect only when the input and output are both SD (525i or 625i). (In Europe 16:9 anamorphic video is also known as "wide screen" video.)

Figure 5. SD Aspect Ratio Conversion Examples



Selection Descriptions

- **Off**—Turns aspect ratio conversion Off.
- **Letterbox**—Converts 16:9 Anamorphic video to Letterbox video.
- **H Crop**—Converts 16:9 Anamorphic video to 4:3 Standard video (crops left and right edges of video).
- **Pillarbox**—Converts 4:3 Standard video to 16:9 Anamorphic video.
- **V Crop**—Converts Letterbox video to 16:9 Anamorphic video.
- **14:9**—Converts 16:9 Anamorphic video to 14:9 Cropped video.

Installation

Typically, UDC installation consists of the following steps:

1. Ensure the converter is disconnected from power.
2. Connect video equipment to the converter BNCs and HDMI connector.
3. Connect audio equipment to RCA connectors (optional)
4. Apply power to the converter (AJA power supply included).
5. The converter 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 converter via USB
 - Make your changes using Mini-Config setup screens.
 - This process is detailed in "[Chapter 2 Operation](#)" on page 11.

User Controls

The UDC can be used right out of the box for many applications, since it is designed to recognize inputs and perform standard actions automatically. However, you can also manually configure the UDC using either of two methods:

- Mini-Config software application supplied for PCs and Macs
- DIP switches accessible via a cutout on the back of the UDC case

One of the DIP switches is a "Local/Remote" switch. When in the "Local" mode, the remaining DIP switches support a subset of the user controls. When in the "Remote" mode, the normal Mini-Converter non-volatile registers control the unit (as last set).

Refer to "[Chapter 2 Operation](#)" on page 11 for information about controlling the UDC with Mini-Config. Instructions for DIP switch settings are presented below.

Using DIP Switches to Control the UDC

Figure 6. DIP Switches



In addition to the Mini-Config application, you can also control the unit via an 8-switch DIP, accessible through a cut-out in the bottom of the unit.

The default positions are shown in [Figure 6](#). The default settings result in an output of 1080i59.94 with NTSC related inputs and 1080i50 with PAL related inputs.

For 1080p23.98/1080psf23.98 inputs, the input can be converted to 720p23.98, 1080p23.98, 1080i59.94, or 1080p59.94. The latter two would use the 3:2 DIP switch to add 3:2 pulldown.

The compliance label, found on the back of the UDC, lists the DIP switch settings.

NOTE: HDMI monitors may not support all frame rates or "pSF" formats.

NOTE: UDC converts 3G-A formats only. It does not input or output 3G-B.

DIP Switch Settings

The functions of the DIP switches and what they control are described in the following tables.

Table 1. DIP Switch Setting Descriptions

SWITCH	FUNCTION	DIP Set LEFT (default)	DIP Set RIGHT
1	Control	Selects LOCAL (DIP), and blocks Mini-Config control. When in "Local" mode, the remaining DIP switches will support a subset of the user controls.	Selects REMOTE (Mini-Config), and disables DIP switches 2-8. When in "Remote" mode, the normal Mini-Config non-volatile registers (as last set), control the unit.
2	HD/SD	Selects HD output mode.	Selects SD output mode.
3	1080/720 (HD mode only)	Selects 1080 output.	Selects 720 output.
4 & 5	Alternate HD formats.	These two DIP switches (FMT0, FMT1) act together to select alternate HD output formats. Zero (0) is Left position, one (1) is Right position. See Table 2 below for setting information.	
6	3:2 Conversion (23.98/24 inputs only)	3:2 conversion is OFF. A 23.98/24 fps input results in a 23.98/24 fps output.	3:2 conversion is ON. A 23.98/24 fps input results in either a 29.97/30 or 59.94/60 fps output.
7	Up Conversion	Sets upconversion to Sidebar (SIDEB).	Sets upconversion to Full screen (FULL).
8	Down Conversion	Sets downconversion to Letterbox (LTRBX).	Sets downconversion to Full screen (FULL).

DIP Switches 4 & 5 (FMT0, FMT1)

DIP switches 4 and 5 together select alternate HD formats. Switches 1 and 2 can also affect the HD output format. In the table below an X indicates a "Don't Care" setting.

Table 2. Output Formats for DIP Switch 2,3, 4, & 5 Settings

SW2 HD/SD	SW3 1080/720	SW 4 FMT0	SW 5 FMT1	Output
Left	Left	Left	Left	1080i 25/29.97/30
Left	Left	Left	Right	1080pSF 23.98/24/25/29.97/30
Left	Left	Right	Left	1080p 50/59.94/60
Left	Left	Right	Right	1080p 23.98/24/25/29.97/30
Left	Right	X	Left	720p 50/59.94/60
Left	Right	X	Right	720p 23.98/24/25/29.97/30
Right	X	X	X	525i/625i

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.

NOTE: DIP switch 1 must be ON (Remote, Right) to permit Mini-Config control of the unit.

Acquiring Mini-Config

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

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

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

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

Mini-Converter Documentation

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

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

Documentation (and firmware) included with the 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/category/mini-converters>

and navigate to the Support web page of that Mini-Converter.

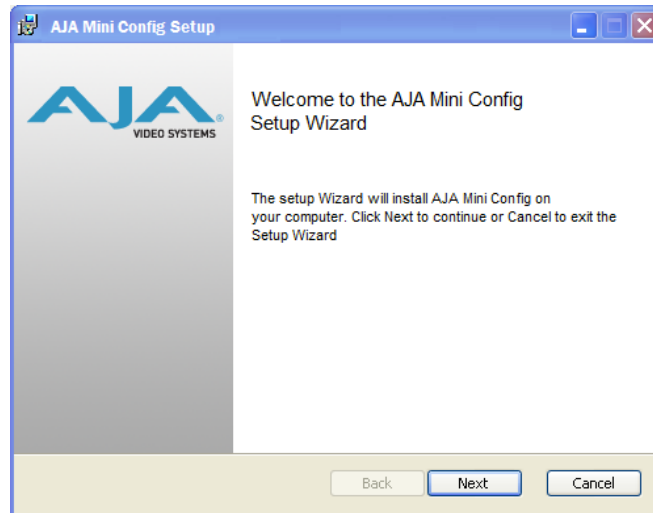
Installing Mini-Config

PC Installation

To install Mini-Config on a Windows PC:

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

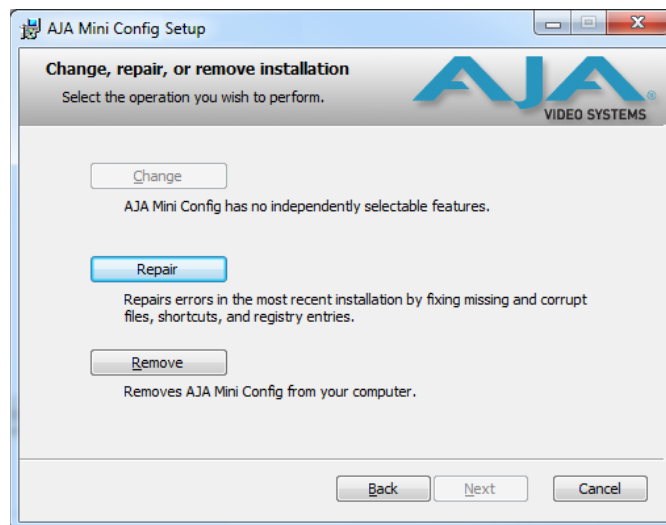
Figure 7. Mini-Config PC Setup Wizard



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 Mini-Config application in the AJA folder in the Programs listing.

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

Figure 8. Mini-Config Setup Wizard, Reinstallation



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

Mac Installation

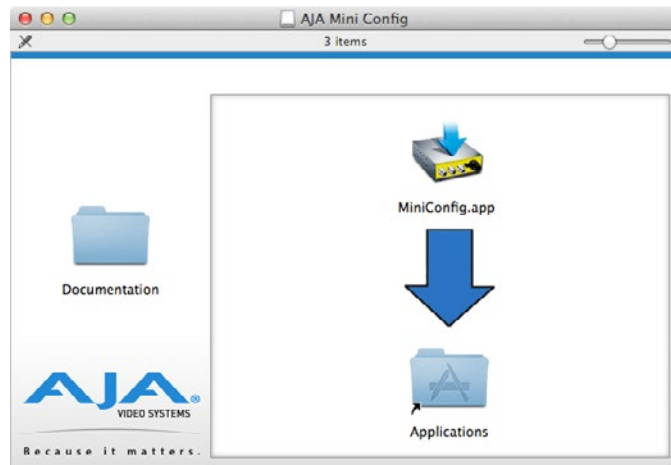
To install the application on a Mac:

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

1. Download the application from the AJA website (select the Apple icon on the Mini-Config Support web page).
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 9. Mini-Config Mac Installer



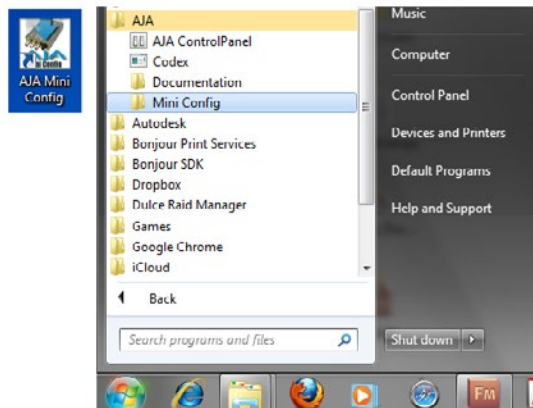
5. To complete the installation drag the **MiniConfig.app** icon to the Applications folder.

Running 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 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 Mini-Config folder.

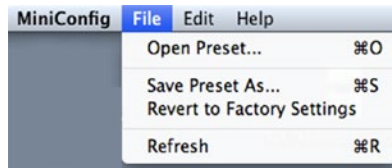


Mac Startup

To run 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 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 Mini-Config

The 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:

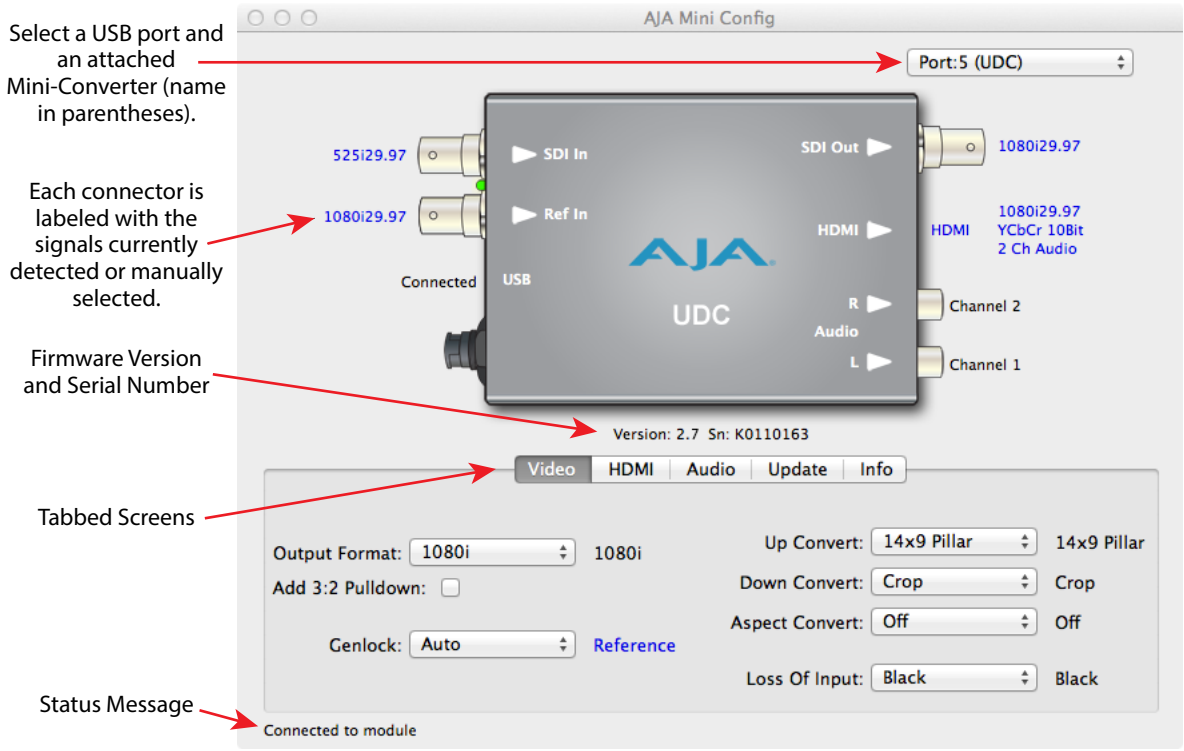
- Blue text indicates the values automatically selected
- Black text indicates values that you have manually selected
- Red text indicates the Mini-Converter is not detecting a signal, or cannot operate with the current user settings.

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 10. Example Mini-Config Screen



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.

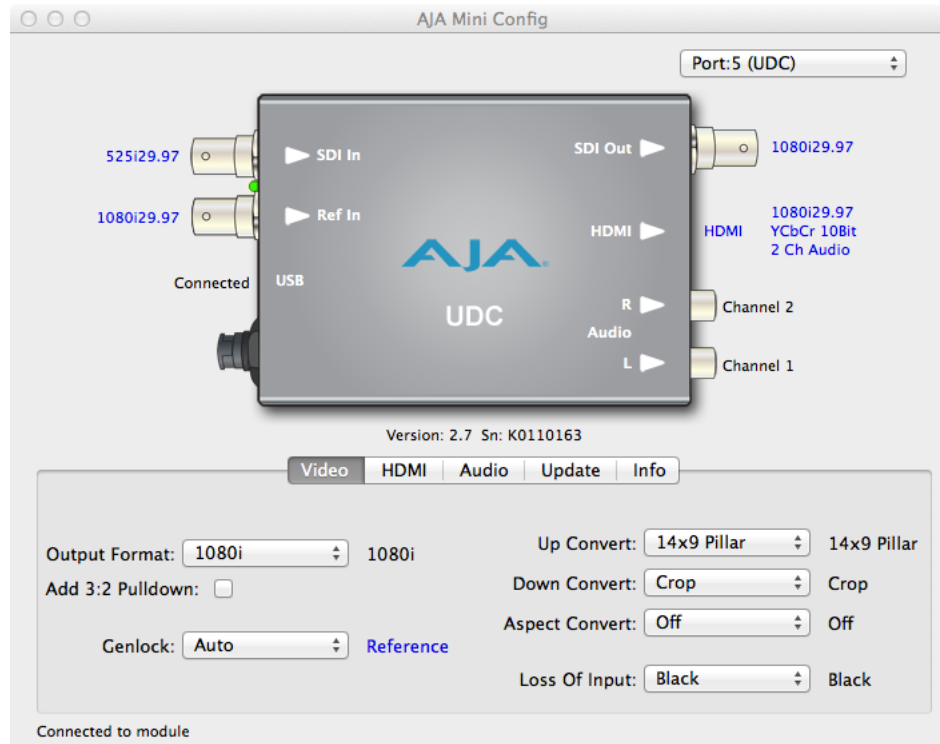
When configuring the Mini-Converter, select it from the top pulldown, view the current settings and change any values. Making a change communicates that new value to the Mini-Converter's non-volatile memory.

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.

Video Tab Screen



The Video Screen is where you can configure UDC video inputs and outputs.

Output Format

Determines the UDC output video format. These are the format choices:

- SD: The output video format will be 525i59.94 (for 23.98, 29.97, or 59.94 fps video inputs) or 625i50 (for 25 or 50 fps video inputs).
- 720p: - The output video format will be 720p59.94 (for 23.98, 29.97, or 59.94 fps video inputs), 720p60 (for 24, 30, or 60 fps video inputs), or 720p50 (for 25 or 50 fps video inputs).
- 1080i: The output video format will be 1080i59.94 (for 23.98, 29.97, or 59.94 fps video inputs), 1080i60 (for 24, 30, or 60 fps video inputs), or 1080i50 (for 25 or 50 fps video inputs).
- 1080psf: The output video format will be 1080psf23.98 (for 23.98 fps video inputs), 1080psf24 (for 24 fps video inputs), 1080psf25 (for 25 or 50 fps video inputs), 1080psf29.97 (for 29.97 or 59.94 video inputs), or 1080psf30 (for 30 or 60 fps video inputs).
- 1080p (low): The output video format will be 1080p23.98 (for 23.98 fps video inputs), 1080p24 (for 24 fps video inputs), 1080p25 (for 25 or 50 fps video inputs), 1080p29.97 (for 29.97 or 59.94 video inputs), or 1080p30 (for 30 or 60 fps video inputs).
- 1080p (high): The output video format will be 1080p50 (for 25 or 50 fps video inputs), 1080p59.94 (for 23.98, 29.97 or 59.94 video inputs), or 1080p60 (for 24, 30 or 60 fps video inputs).

NOTE: UDC converts 3G-A formats only. It does not input or output 3G-B.

Add 3:2 Pulldown

When the Add 3:2 Pull down box is checked, 23.98 fps and 24 fps video inputs are converted to 29.97 fps and 30 fps, respectively, by adding 3:2 pull down before conversion. Note that this selection is only used when the UDC module is in Remote mode (DIP switch #1). In Local mode, 3:2 pull down addition is determined by DIP switch #6.

Genlock

Determines the timing reference for the UDC video output. The selected reference is displayed to the right of the Genlock pull-down. These are the choices:

- Auto (default): Auto uses the reference input if present, or locks to the SDI input if no reference is present or if the reference is present but is not compatible.
- Lock to Input: Always locks to the SDI input.
- Lock to Reference: Always locks to the Reference input – if the supplied reference is not compatible, reverts to Free Run.
- Free Run: Always operates in Free Run mode.

Up Convert

Determines the mode when converting from SD input video to an HD output video format. This selection is only used when the UDC module is in Remote mode (DIP switch #1). In Local mode, the up convert mode is determined by DIP switch #7. These are the choices:

- 4x3 Pillar: Produces 4x3 image at center screen with black sidebars.
- 14x9 Pillar (default): Produces 14x9 image, zoomed slightly to fill a 14x9 image with black sidebars.
- Full Screen: Produces anamorphic full screen display.
- LB to Full Image: Produces image zoomed to fit the full screen (letterbox).
- Wide Zoom: Produces an image sized to fit a 16x9 screen using a combination of zoom and stretch. (This can introduce a small aspect ratio change.)

Down Convert

Determines the mode when converting from HD input video to an SD output video format. Note that this selection is only used when the UDC module is in Remote mode (DIP switch #1). In Local mode, the upconvert mode is determined by DIP switch #8. These are the choices:

- Crop (default): Image is cropped to fit new screen size.
- Anamorphic: HD image is converted to full-screen SD with a 16x9 aspect ratio (anamorphic).
- 14x9: Image is reduced slightly with aspect ratio preserved. Black is added top and bottom, and the left and right sides are cropped.
- Auto AFD: Automatically selects the best Downconvert mode based on the input video's Active Format Description (AFD) code. If the input video is not carrying an AFD VANC code, the Downconverter defaults to crop.
- Letterbox: Image is reduced with black top and bottom added to image area, with the aspect ratio preserved.

Aspect Convert

Determines the mode when converting from SD input video to an SD output video format. There is no DIP switch equivalent for this control. The setting is saved in nonvolatile memory in the module and used for all subsequent operation. These are the choices:

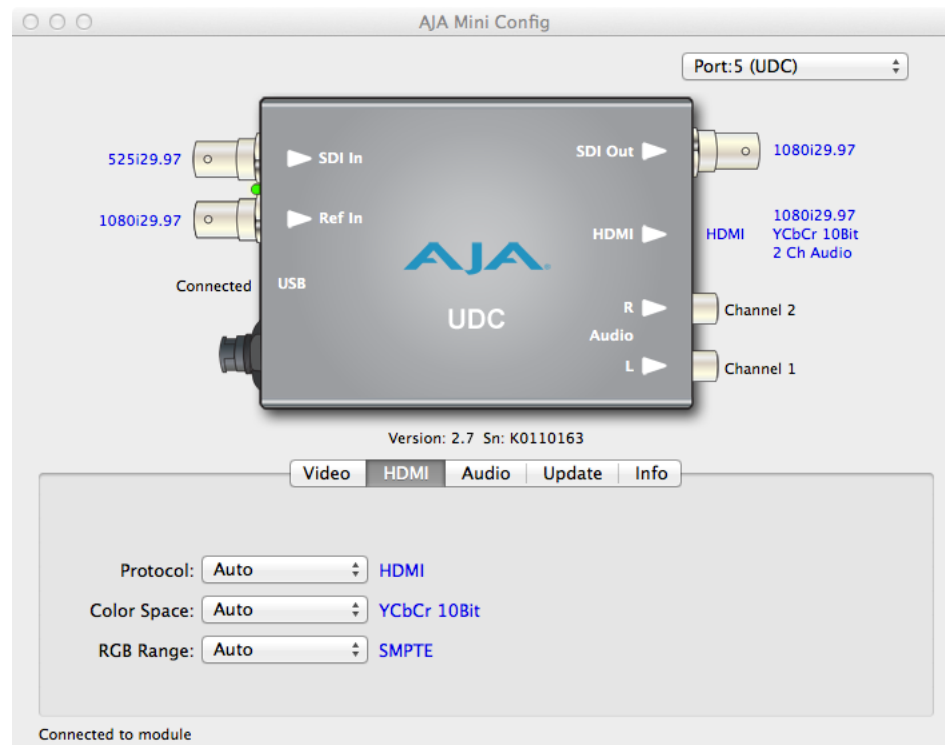
- Off (default): The input image is copied to the output with no scaling.
- Letterbox: The input frame is scaled vertically to a 16x9 "letterboxed" size (anamorphic to letterbox conversion).
- H Crop: The input frame is scaled horizontally to 16x9, then center-cropped (anamorphic to center crop conversion).
- Pillarbox: The input frame is scaled horizontally to make a pillarbox output (4x3 to anamorphic conversion).
- V Crop: The input frame is scaled vertically to make a vertically cropped output (letterbox to anamorphic conversion).
- 14x9: The input frame is scaled horizontally and vertically as a compromise between H Crop and Letterbox (anamorphic to 14x9 conversion).

Loss of Input

Determines what action is taken when input video is lost. These are the choices:

- Black (default): The output goes to black.
- Freeze: The output freezes on the last good frame.

HDMI Tab Screen



Provides user selection of the HDMI output modes. There is no DIP switch equivalent for these controls. The setting is saved in nonvolatile memory in the module and used for all subsequent operation.

NOTE: *The HDMI video output always mirrors the SDI video output, both in content and output format selection. Click on the Output tab to view and make changes to the UDC output settings.*

NOTE: When the output format is set to 1080psf23.98 or 1080psf24 the HDMI output is disabled since HDMI does not have a corresponding supported format.

Protocol

Selects whether the HDMI output uses DVI or HDMI protocols for sending video to the destination device. These are the choices:

- Auto: UDC automatically selects the output protocol based on getting the attached HDMI device's EDID information. This is the recommended setting. The selected protocol is shown to the right of the popup control.
- HDMI: UDC uses HDMI protocols regardless of the attached device's EDID.
- DVI: UDC uses DVI protocols regardless of the attached device's EDID. Because DVI protocols do not support audio or HDMI InfoFrame ancillary data, select this mode only if you know that the attached device requires it.

Color Space

Selects the HDMI output color space and depth. These are the choices:

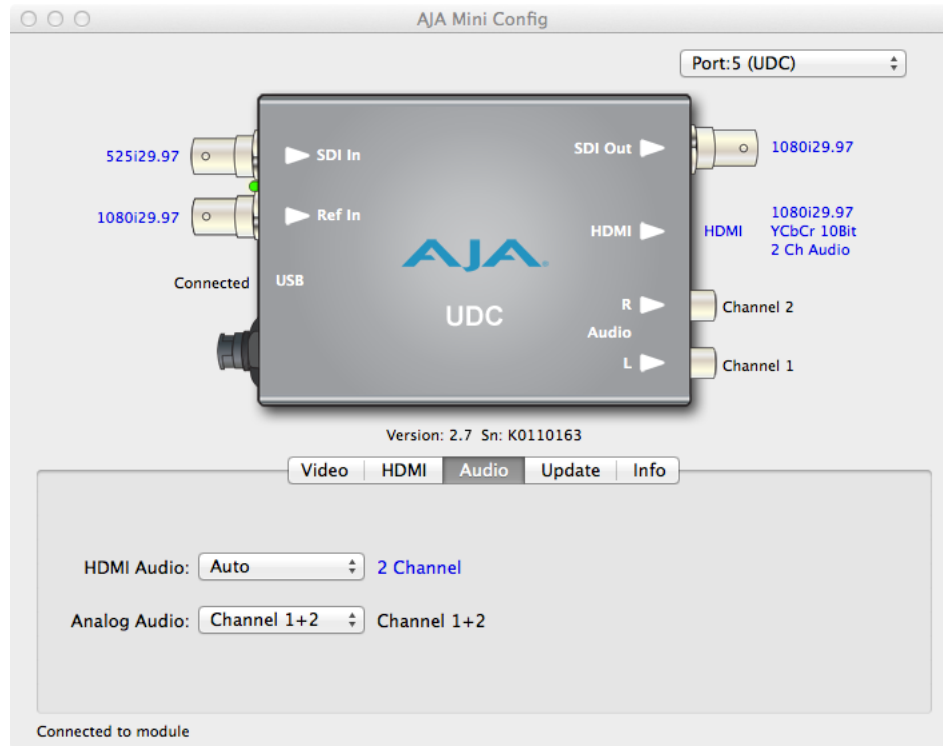
- Auto: UDC automatically selects the mode based on getting the attached HDMI device's EDID information. This is the recommended setting. The selected mode is shown to the right of the pull-down control.
- RGB 8Bit: UDC uses 8-bit RGB mode regardless of the attached device's EDID.
- RGB 10Bit: UDC uses 10-bit RGB mode regardless of the attached device's EDID.
- YCbCr 10Bit: UDC uses 10-bit YCbCr mode regardless of the attached device's EDID.

RGB Range

Selects the HDMI video levels when the Color Space is RGB 8Bit or RGB 10Bit.

- Auto: The UDC automatically selects the mode based on getting the attached HDMI device's EDID information. This is the recommended setting. The selected mode is shown to the right of the popup control.
- SMPTE: The UDC scales the output video level to 8-bit range 16 - 235 (10-bit 64 - 940) regardless of the attached device's EDID.
- Full Range: The UDC scales the output video level to 8-bit range 0 - 255 (10-bit 0 - 1023) regardless of the attached device's EDID.

Audio Tab Screen



The Audio Screen is where you can configure UDC HDMI and analog (RCA-style) audio output channels. Pull down menu settings are described following the screen graphic. There is no DIP switch equivalent for these controls. The setting is saved in nonvolatile memory in the module and used for all subsequent operation.

NOTE: The SDI embedded output audio is a channel-for-channel copy of the input SDI embedded audio. There are no user controls.

HDMI Audio

Selects how many SDI channels are passed to the HDMI connector and which channel pairs are selected. These are the choices:

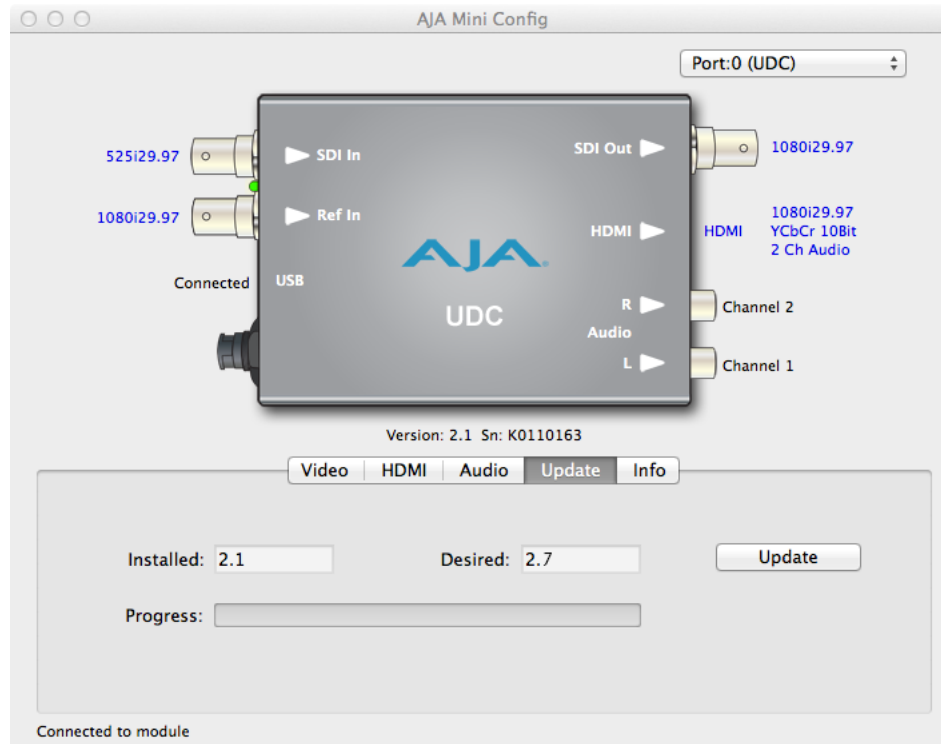
- Auto: The UDC automatically selects the audio output configuration based on communicating with the attached HDMI device. The resulting mode is displayed to the right of the popup control.
- 2 Channel: Outputs a pair of channels from the SDI stream to two channels on the HDMI output connector. The selected audio pair is determined by the Analog Audio setting (below).
- 8 Channel: Outputs SDI channels 1 through 8 to the HDMI output connector.

Analog Audio

Selects the channel pair that will be output to the Analog RCA connectors (L/R) and the HDMI audio output (when HDMI Audio is in 2-channel mode). These are the choices:

- Channel 1+2, Channel 3+4, Channel 5+6, Channel 7+8, Channel 9+10, Channel 11+12, Channel 13+14, Channel 15+16

Update Tab Screen



Use this Update tab screen to view the software version currently installed on the converter or 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 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 Mini-Config application which you can install into the Mini-Converter by clicking the Update button.

Update

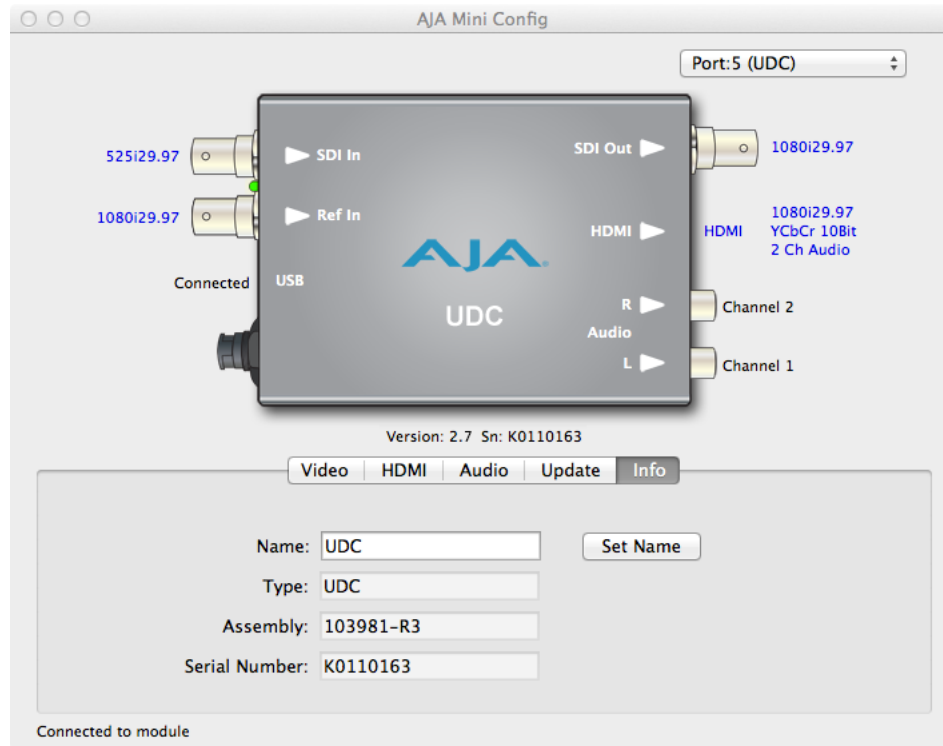
This button initiates a software update operation loading the "Desired" version of firmware into the Mini-Converter's non-volatile memory.

Progress

This indicator bar shows the progress of firmware installation.

See "[Acquiring Mini-Config](#)" on page 11 and "[Installing Mini-Config](#)" on page 11 for more information.

Info Tab Screen



This screen provides basic information about the Mini-Converter. This information is mostly 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

UDC Tech Specs

Video Formats

- (2K) 2048 x 1080p
- (2K) 2048 x 1080PsF
- (HD) 1920 x 1080p
- (HD) 1920 x 1080PsF
- (HD) 1920 x 1080i
- (HD) 1280 x 720p
- (SD) 720 x 625i
- (SD) 720 x 576i
- (SD) 720 x 480i

Video Input Digital

- 1x 3G-SDI BNC, SMPTE-259/292/372/424
- (2K) 2048 x 1080p 23.98, 24, 25, 29.97, 30, 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) 720x576i 50, 59.94, 60

Video Output Digital

- 1x 3G-SDI BNC, SMPTE-259/292/372/424
- (HD) 1080p 23.98 (for 23.98 video inputs)
- (HD) 1080p 24 (for 24 video inputs)
- (HD) 1080p 25 (for 50 video inputs)
- (HD) 1080p 29.97 (for 59.94 video inputs)
- (HD) 1080p 30 (for 60 video inputs)
- (HD) 1080p 50 (for 50 video inputs)
- (HD) 1080p 59.94 (for 23.98, 59.94 video inputs)
- (HD) 1080p 60 (for 24, 30 or 60 video inputs)
- (HD) 1080PsF 23.98 (for 23.98 video inputs)
- (HD) 1080PsF 24 (for 24 video inputs)
- (HD) 1080PsF 25 (for 50 video inputs)
- (HD) 1080PsF 29.97 (for 59.94 video inputs)
- (HD) 1080PsF 30 (for 30 or 60 video inputs)
- (HD) 1080i 59.94 (for 23.98, or 59.94 video inputs)
- (HD) 1080i 60 (for 24, 30, or 60 video inputs)
- (HD) 1080i 50 (for 25 or 50 video inputs)
- (HD) 720p 50 (for 50 video inputs)
- (HD) 720p 59.94 (for 23.98, 59.94 video inputs)
- (HD) 720p 60 (for 24, 30, or 60 video inputs)
- (SD) 625i 50 (for 25 or 50 fps video inputs).
- (SD) 525i 59.94 (for 23.98 or 59.94 video inputs)

Reference Input

- Color Black
- Tri-Level sync

HDMI Output

- 10-bit HDMI v1.4a

Audio I/O

- 16-Channel embedded SDI audio input
- 16-Channel embedded SDI audio output
- 8-Channel HDMI audio output
- 2x RCA style analog outputs at -10 dBu (nominal)

HDCP

- The UDC does not encode the HDMI output with HDCP encryption. By definition, HD-SDI inputs to the UDC are unencrypted. The HDMI specification requires HDMI monitors to support unencrypted inputs.

User Controls

- USB port used with supplied cable and Mini-Config software application to configure device via PC or Mac

Size (w x d x h)

- 5.8" x 3.1" x 1.0" (147.32 x 78.74 x 25.4 mm)

Power

- +5VDC Regulated, 3 Watts, Power Supply Required (included with purchase)

Environment

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

Appendix B – Safety and Compliance

Federal Communications Commission (FCC) Compliance Notices

Class A Interference Statement

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

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

FCC Caution

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Canadian ICES Statement

Canadian Department of Communications Radio Interference Regulations

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

Règlement sur le brouillage radioélectrique du ministère des Communications

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

European Union and European Free Trade Association (EFTA) Regulatory Compliance

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

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



This equipment meets the following conformance standards:

Safety

EN 60065: 2014 (T-Mark License)

IEC 60065: 2014 (CB Scheme Report/Certificate)

Additional licenses issued for specific countries available on request.

Emissions

EN 55032: 2012, 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

<p>A급 기기 (업무용 방송통신기자재)</p>	<p>이 기기는 업무용(A급) 전자파적합기기로서 판매자 또는 사용자는 이 점을 주의하시기 바라며, 가정외의 지역에서 사용하는 것을 목적으로 합니다.</p>
<p>Class A (Broadcasting Communication Equipment for Office Use)</p>	<p>As an electromagnetic wave equipment for office use (Class A), this equipment is intended to use in other than home area. Sellers or users need to take note of this.</p>

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 espiga ancha, o la tercera espiga, sirven para su seguridad. Si el enchufe suministrado no encaja en el tomacorriente, consulte con un electricista para reemplazar el tomacorriente obsoleto.

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

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



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

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

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

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

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

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



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

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

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

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

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

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



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

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

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

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

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

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



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

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

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

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

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

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



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

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

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

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

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

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



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

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

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

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

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

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

Warranty and Liability Information

AJA VIDEO SYSTEMS, INC.

Limited Warranty on Hardware

AJA Video Systems, Inc. (AJA Video) warrants that the hardware product, not including storage modules or software components, will be free from defects in materials and workmanship for a period of five (5) years from the date of purchase. AJA Video warrants that the storage modules provided as part of the hardware product will be free from defects in materials and workmanship for a period of one year from the date of purchase. AJA Video provides a separate software warranty as part of the license agreement applicable to software components.

If a hardware product or storage module (hereafter, a “product”) proves to be defective during the applicable warranty period, AJA Video, at its option, will either repair the defective product without charge for parts and labor, or will provide a replacement in exchange for the defective product.

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