

HDP3 Mini-Converter

3G/HD/SD-SDI to DVI-D



Installation and Operation Guide

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Contacting AJA Support

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

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 HDP3 is a miniature 3G/HD/SD-SDI to DVI-D converter for digital display devices (graphics and video), such as LED, LCD, DLP and Plasma monitors (and projectors) with support for 1080p60. Using a very high quality scaling engine, the HDP3 will automatically size 4:3 or 16:9 inputs to many DVI-D monitors. For appropriate monitor configurations, scaling is automatically 1 to 1—for example, displaying 1920x1080 video on a WUXGA (1920x1200) monitor. Where appropriate, the HDP3 can automatically adapt the input frame rate for monitor compatibility. In addition, the HDP3 provides 8 channel embedded audio over HDMI, 2 channel analog audio monitoring, and a looping output of the SDI input.

The HDP3 is designed for general monitoring, perfect for use in applications such as: General post-production reference monitoring, Client monitoring, Presentation, Projection, Corporate displays, Kiosk applications, and more.

Deep color is supported in RGB and YCbCr. USB connectivity allows for easy PC/Mac setup and field upgrades.

Features

- 3G/HD/SD-SDI to DVI-D
- DVI v1.0 and HDMI v1.3a support (via DVI-D connector), including:
 - Deep Color 30-bit video (24-bit also supported)
 - 2 or 8 channels of embedded audio
- Automatically adapts to popular LED/LCD/DLP/Plasma monitors (and projectors) up to 1920x1200 and 1080p
- Responds to EDID from monitor or projector
- Video to VESA frame rate conversion
- Motion Adaptive De-interlacing
- High quality scaling engine for proper display of 4:3 or 16:9 content—even better quality than original HDP
- 1 to 1 scaling for appropriate monitor configurations
- Loss of input management: Black or Mute.
- 2 channel audio monitoring using RCA analog audio outputs (user-assignable channel pairs)
- 3G/HD/SD-SDI looping output

- Setup via DIP switch or PC/Mac using USB port and supplied USB cable (Mini-Config configuration software application available via download from AJA website)
- 5 year warranty

Monitor Compatibility

The HDP3 is designed to work with most DVI-D monitors. HDMI monitors are also supported with a standard, inexpensive DVI-to-HDMI cable or adapter (user supplied). The HDP3 uses the industry standard EDID communication protocol (within the DVI or HDMI link) to communicate with the monitor, and then adjust the HDP3's internal scaling engine to scale the input video to the native resolution of the monitor. However, due to the hundreds of variations of DVI formats currently in use, proper operation with all monitors cannot be guaranteed.

To ensure the greatest compatibility with today's available digital display devices, the HDP3 will, by default, provide VESA or CEA standard timing.

Frame Locking

Auto

Use this mode to ensure greatest compatibility with other monitors. The HDP3 will use standardized output timing for most monitors. If the attached monitor (such as an HP DreamColor) is recognized as having enhanced capabilities, then special, frame-locked timing will be used.

Manual

Selecting an output frame rate that matches the input frame rate will provide a vertically locked signal to the monitor, and may yield the best results. Note that not all monitors will be able to accept these signals.

Recommended Monitors

The monitors listed below have been verified to work with one or more of the manual frame rate selections.

- HP 24" LP2480zx DreamColor
- Apple 23" HD Cinema, model M9178LL/A (aluminum bezel)
- Sony 23", model SDM-P234
- Viewsonic VP231wb
- Dell 2405FPW
- Barco LC-42
- Barco LC-47
- Westinghouse LVM-37wl
- Sony Bravia Series
- Sharp Aquos Series

Optimal Performance with HP LP2480zx DreamColor

When using the HDP3 with an HP LP2480zx, the best results are obtained by using the default HDP3 "Auto" selections (no action required—unless you've changed the factory defaults using the Mini-Config software supplied).

Automatic 720p or 1080p Support

Monitors that report 1280x720 or 1920x1080 in their “Preferred Timing Mode” section of EDID readback will receive a 1280x720 or 1920x1080p signal, respectively, from the HDP3.

Manual 720p or 1080p Support

The HDP3 can be configured manually for 720p or 1080p. This is discussed under “USB Control and Setup” later in this manual.

NOTE: For best results when using video display devices, it is recommended that a monitor capable of displaying the “Full 1080p” image be used.

VESA and CEA Timing

By default, the HDP3 will automatically output standardized VESA rate graphics where appropriate when a computer resolution is detected, and standardized CEA rate video when a video device, such as an HDTV is detected. Not all VESA rates are synchronous to SMPTE standard video input rates. However, the HDP3 can be configured manually by selecting an output frame rate that matches the incoming frame rate. By doing so, enhanced timing signals will be generated that will be locked to the incoming video.

NOTE: Some monitors may not be able to handle some of these enhanced timing modes. For best results, refer to the list of recommended monitors that have been tested to lock at one or more of the user-selectable frame rates.

Motion Adaptive De-interlacing

Video displayed on DVI progressive display devices requires de-interlacing technology to properly display the video from its native interlace format. HDP3 uses advanced motion adaptive de-interlacing to predict motion in the video stream and output a quality picture using spatial and temporal comparisons on individual pixels.

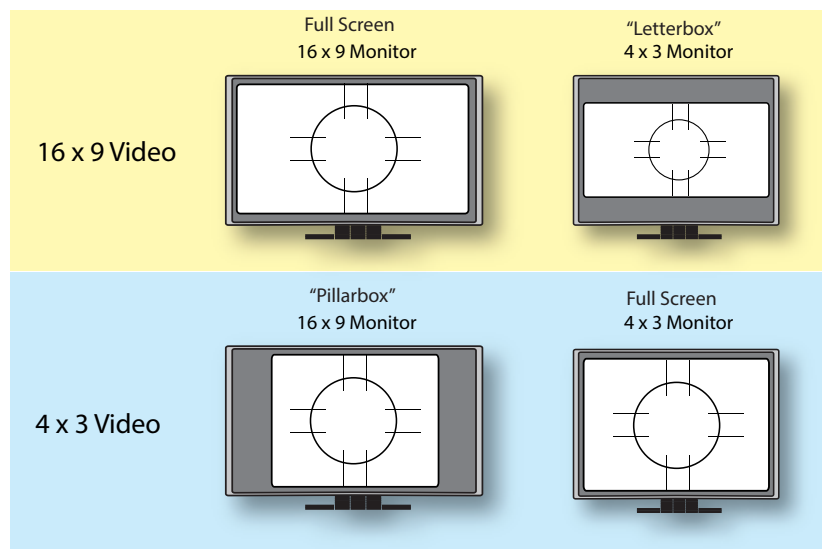
10-Bit and Deep Color Support

HDP3 supports the HDMI v1.3a specification for Deep Color bit depths. In operation, HDP3 can support Deep Color bit depths up to 30 bits/pixel (1.073 billion colors).

Video Scaling

The HDP3 will scale the input video to the best fit for a given monitor and video input. In cases where the input video and the monitor are already the same or similar, the HDP3 automatically turns off scaling. For example, a 1920 x1080 video and a 1920 x1200 monitor will not be scaled.

Figure 1. Video Scaling Examples



NOTE: The HDP3 also properly supports 16:10 and 5:4 monitors.

If the HDP3 scaling is set to 1:1 via the control panel, the input raster will be displayed unscaled. This means that input rasters smaller than the monitor appear as a “floating” image surrounded by black. For example, a 1280 x 720 image on a 1920 x 1200 monitor only fills about 40% of the screen. Standard definition inputs unscaled on a 1920 x 1200 monitor only fill about 20% of the screen. This mode will only work when the input raster is smaller than the monitor resolution.

If the HDP3 scaling is set to “Auto”, the HDP3 will scale the image to best fit the screen while preserving the aspect ratio. In some cases, a letterboxed or pillarboxed image can be expected.

Vertical Locking

Depending on the input frame rate and the capabilities of the monitor in use, the HDP3 will provide a vertically locked signal to the monitor. Because most DVI monitors have their own internal scaling, the internal scaler of the monitor may or may not lock vertically to the HDP3 output. The recommended monitor list shown earlier lists only monitors which have been tested for proper vertical lock. The HDP3 works with many LED/LCD/DLP/Plasma monitors not shown on the recommended monitor list—however, these monitors may have one of two types of issues associated with not being vertically locked:

Frame Add/Drop

The monitor occasionally adds or drops a frame of video which appears as discontinuous motion. For example, a moving object may appear to briefly pause or jump ahead.

Motion Tearing

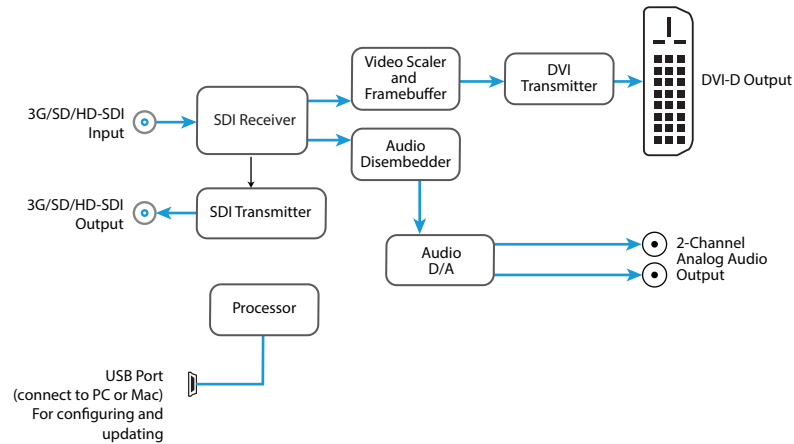
The monitor displays video from two different fields or frames on screen. This appears as a horizontal discontinuity in the video during motion. For example, a moving object may appear to be split horizontally with the upper part ahead or behind the lower part.

Frame Rates

When the HDP3 is manually configured for a particular output frame rate, the output will run in lock-step with the video input. For best results, (without any added or dropped frames), select an output frame rate that matches the incoming video frame rate.

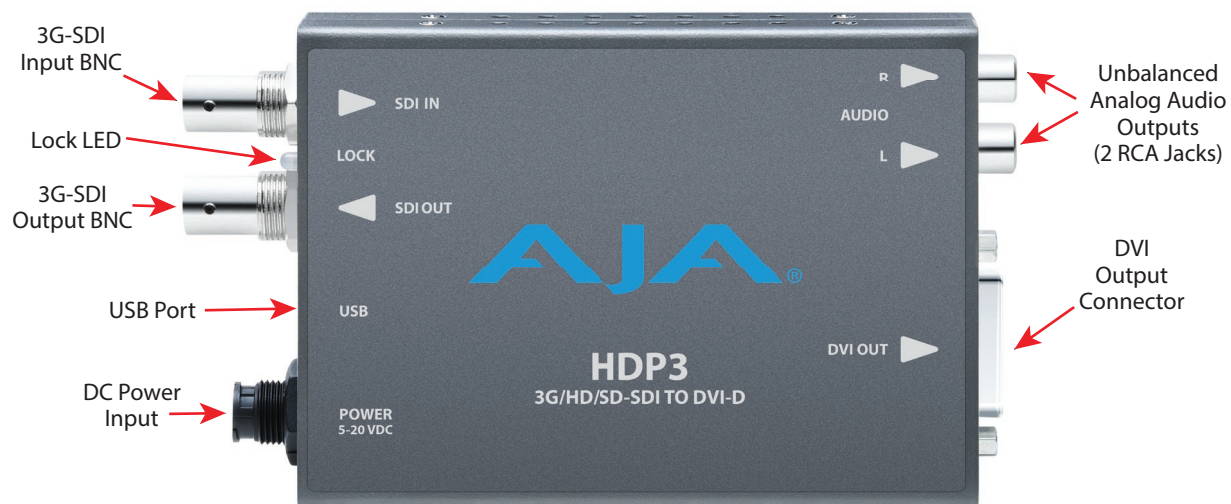
Block Diagram

Figure 2. HDP3 Converter, Simplified Block Diagram



I/O Connections

Figure 3. HDP3 Mini-Converter



NOTE: The LOCK LED indicates valid input video by color. Off is no signal, green is SD video, red is HD video, amber is 3G video.

User Controls

Mini-Config Control

Automatic input format detection configures the unit automatically to match input and output video parameters. In most cases, manual configuration is not necessary. Advanced Mini-Config control supports color space and bit depth adjustments, and audio channel selection.

Configuration set via Mini-Config is stored in the HDP3 unit through subsequent power cycles.

Installation

Typically, HDP3 installation consists of the following steps:

1. Ensure the converter is disconnected from power.
2. Connect video equipment to the converter BNC and DVI connectors.
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 10*.

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 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-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/family/mini-converters>

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

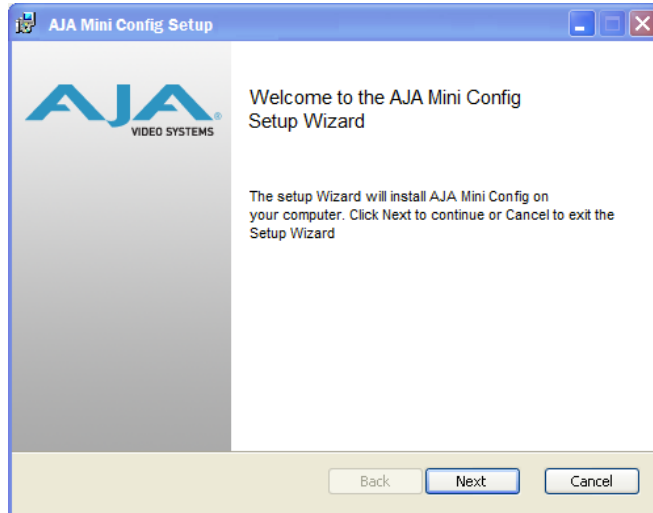
Installing Mini-Config

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.

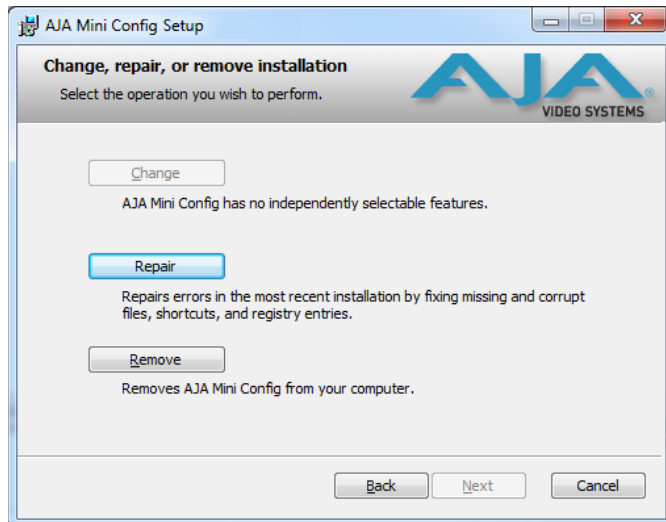
Figure 4. Mini-Config PC Setup Wizard



5. Click **Next** to begin. Answer the questions in the subsequent dialogs. 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 5. Mini-Config Setup Wizard, Reinstallation



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

Mac Installation

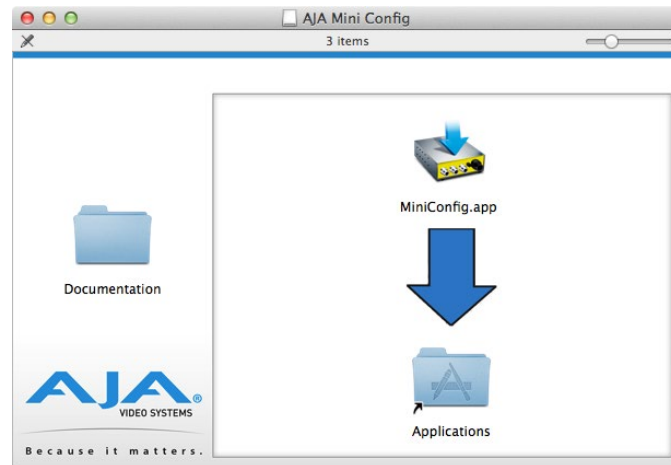
To install the application on a Mac:

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 6. Mini-Config Mac Installer



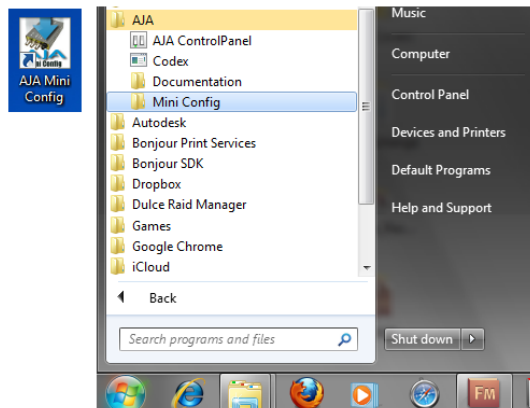
5. To complete the installation drag the **MiniConfig.app** icon to the Applications folder.

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.

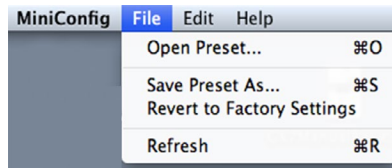


Mac Startup

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:

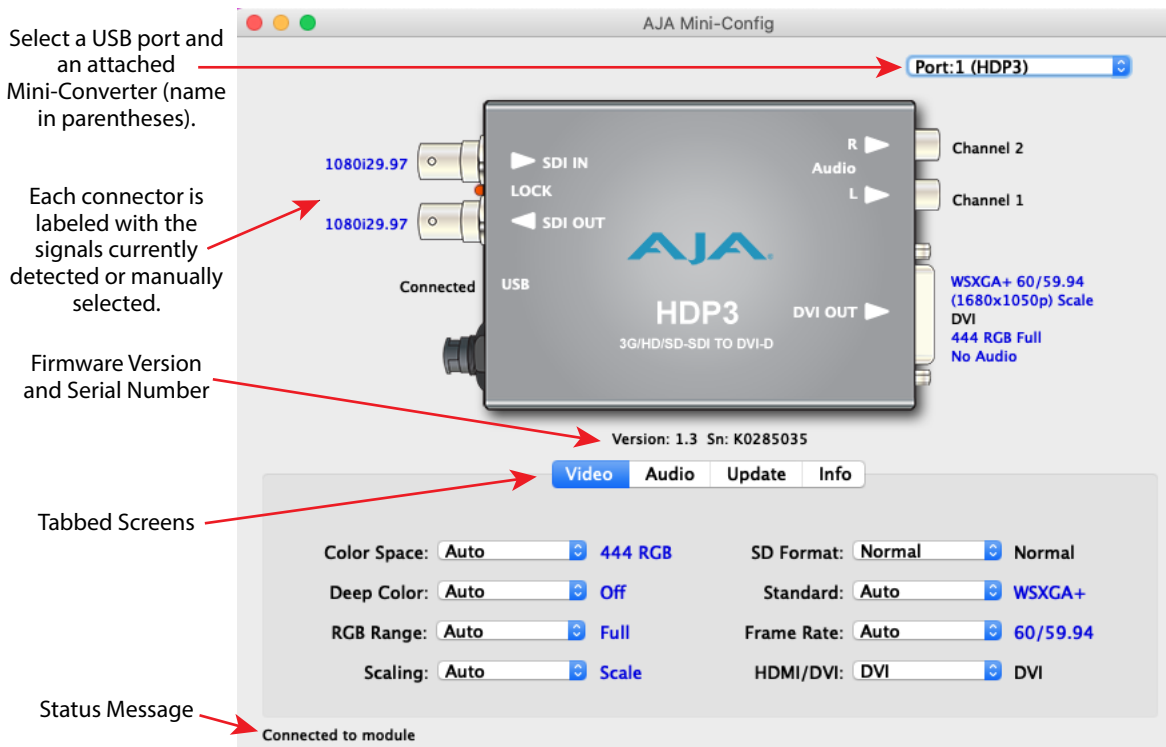
- Blue text indicates the values automatically selected
- Black text indicates values that you have manually selected
- Red text indicates the Mini-Converter is not detecting a signal, or cannot operate with the current user settings.

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 7. 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.

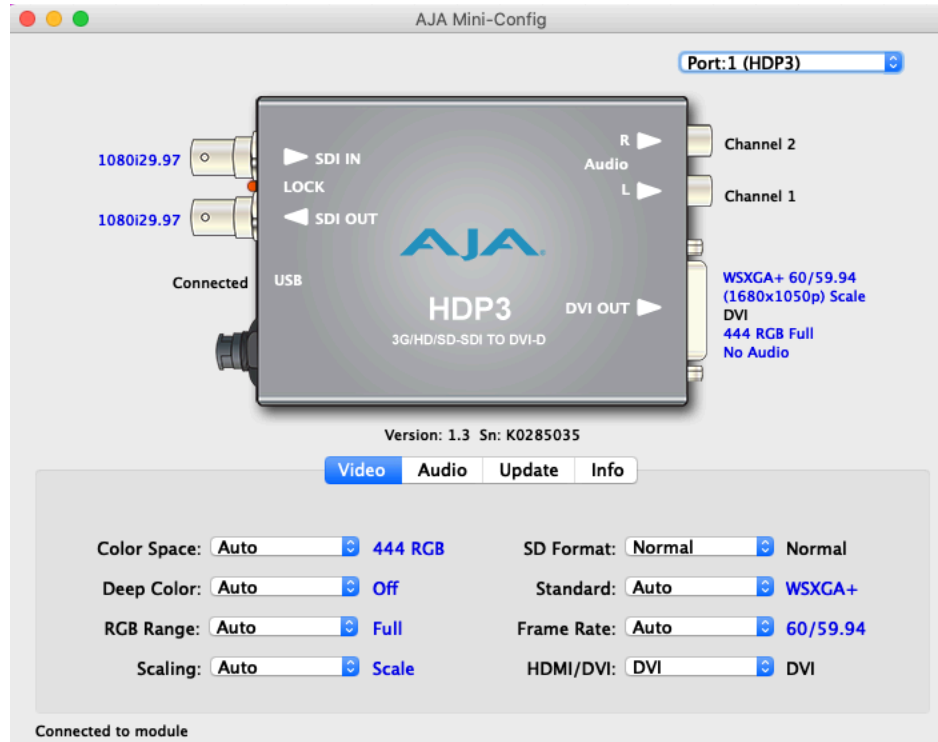
When configuring the Mini-Converter, select it from the top pulldown, view the current settings and change any values. Making a change communicates that new value to the Mini-Converter's non-volatile memory.

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 selections on this screen configure the output video. Selecting “Auto” allows the HDP3 to conform the output to best serve the attached monitor. This is handled automatically when the HDP3 reads the capabilities indicated by the attached monitor.

Color Space

Selects the Video Format. Choose from

- Auto - the HDP3 automatically select the format based on the capabilities indicated by the attached monitor.
- 4:2:2 YCbCr
- 4:4:4 RGB
- 4:4:4 YCbCr.

Deep Color

Selects how Deep Color is supported. Choose from:

- Auto - The HDP3 decide based on input.
- On - Turns on support for Deep Color 30-bit video (24-bit also supported)
- Off - Turns off Deep Color support.

RGB Range

Selects the Input Video Color Range. Choose from:

- Auto - to let the HDP3 decide, or choose
- SMPTE
- Full color range.

Scaling

Choose from:

- Auto - The HDP3 chooses based on the attached output device's capabilities.
- 1:1 (no scaling) - 1:1 only works properly when it is possible to display the entire unscaled raster. For example, it is not possible to display a 1920 x 1080 input on a 1600 x 1200 monitor. For optimal performance with 1:1 scaling, use a 1920 x 1200 (WUXGA) monitor.
- Scale - The HDP3 scales for the attached monitor.

SD Format

Controls how an SD picture appears on an HD monitor. Choose from:

- Normal (standard picture aspect ratio)
- Anamorphic

Standard

Raster choices available are:

Auto (let the HDP3 decide based on input), Native, WUXGA, UXGA, WSXGA+, SXGA, XGA, 1080p, 1080i, 720p, 576p, or 480p.

Frame Rate

Choices are:

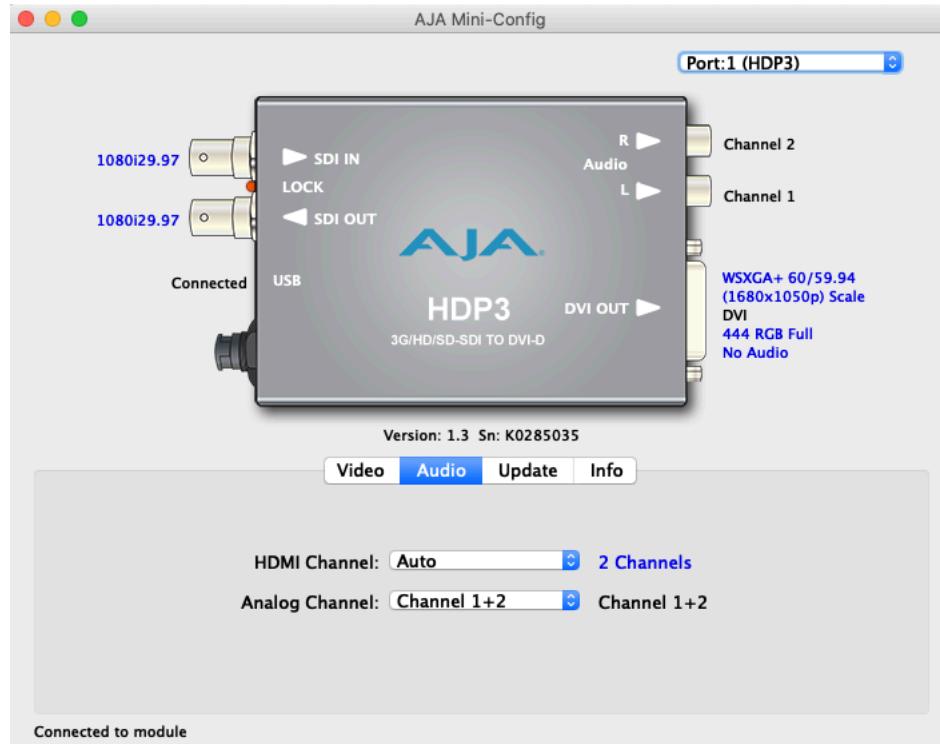
Auto (let HDP3 decide) VESA, 24/23.98, 25, 30/29.97, 48/47.95, 50, or 60/59.94.

HDMI/DVI

Selects HDMI or DVI output. Choose from:

- Auto - The HDP3 automatically select the audio channels based on the attached device's capabilities.
- HDMI
- DVI

Audio Tab Screen



The selections on this screen configure the output audio.

HDMI Channel

Selects the audio channels to be used. Choose from:

- Auto - The HDP3 automatically select the audio channels based on the attached device's capabilities.
- 2 Channel
- 8 Channel embedded audio.

NOTE: When in 2-channel mode, the audio pair selected will be the same as described by the "Analog Channel" selection, below.

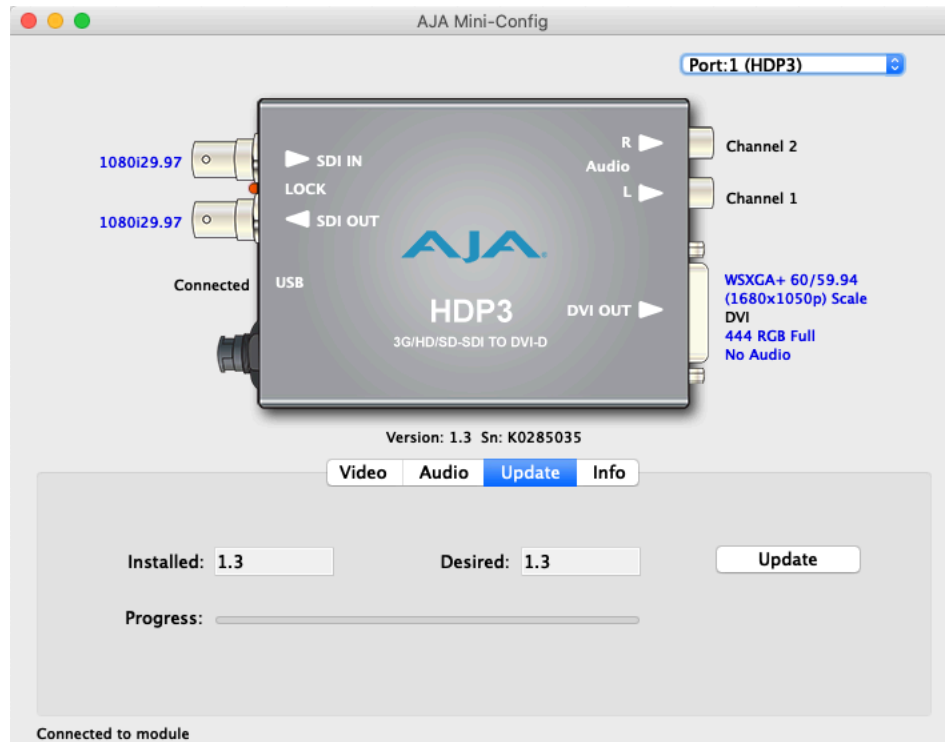
Analog Channel

Selects which 2 embedded audio channels are routed to the RCA output pair.

Choose from:

- Channel 1+2
- Channel 3+4
- Channel 5+6
- Channel 7+8.

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

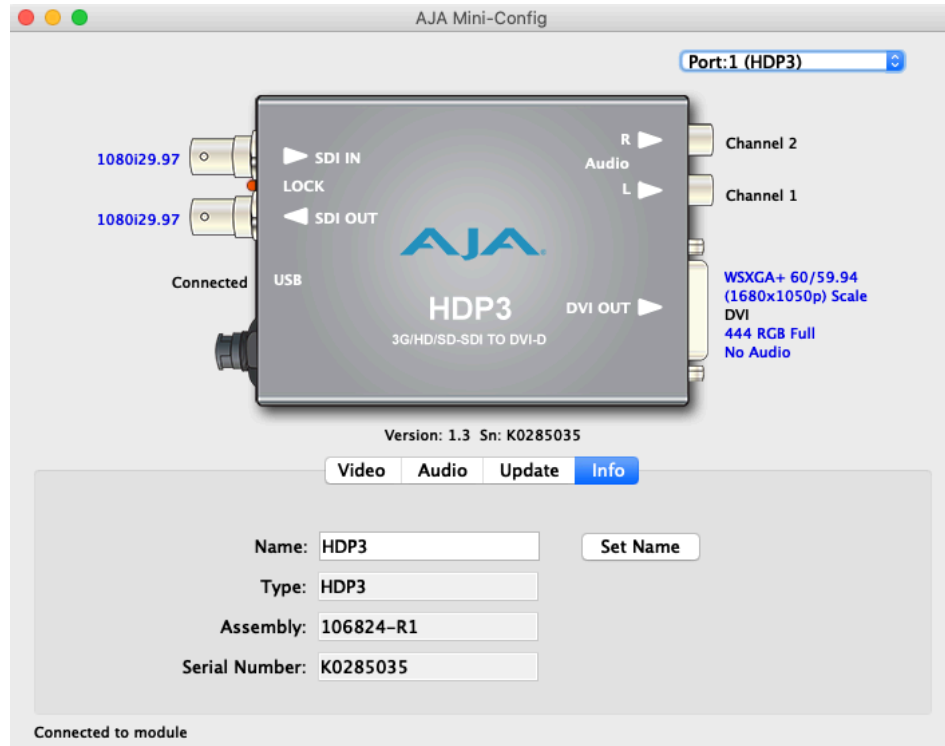
This button initiates a software update operation loading the "Desired" version of firmware into the Mini-Converter's non-volatile memory.

Progress

This indicator bar shows the progress of firmware installation.

See ["Acquiring Mini-Config" on page 10](#) and ["Installing Mini-Config" on page 10](#) 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

HDP3 Tech Specs

Video Formats

- 1x 3 Gb SDI (Level A)
 - (HD) 1920 x 1080p 50, 59.94, 60
- 1x 1.5 Gb SDI
 - (HD) 1920 x 1080p 23.98, 24, 25, 29.97, 30
 - (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
- 1x 270 Mb SDI
 - (SD) 625i 50
 - (SD) 525i 59.94

Video Input Digital

- 1x 3G-SDI BNC, SMPTE-259/292/424

Video Output Digital

- 1x DVI Type D female connector
- Supports DVI v1.0 and HDMI v1.3a, 24/30 bits per pixel, RGB or YUV
- Automatically adapts to popular LCD/DLP/Plasma monitors (and projectors) up to 1920 x 1200 and 1080p
- High quality scaling engine for proper display of 4:3 or 16:9 content-even better quality than original HDP
- 1 to 1 scaling for appropriate monitor configurations

Audio Input Digital

- SDI embedded audio, 24-bit, 8-Channel

Audio Output Digital

- DVI embedded audio, 24-bit, 2 or 8-Channel (HDMI adapter only)
- SDI (looped) embedded audio, 24-bit, 8-Channel

Audio Output Analog

- 1x RCA Stereo analog outputs at -10dBV (nominal)

Size (w x d x h)

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

Weight

- 0.7 lb (0.5 kg)

Power

- 5-20VDC regulated, 6.5 watts, power supply required (included with purchase)

Environment

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

Appendix B – Safety and Compliance

Federal Communications Commission (FCC) Compliance Notices

Class A Interference Statement

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

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

FCC Caution

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

Canadian ICES Statement

Canadian Department of Communications Radio Interference Regulations

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

Règlement sur le brouillage radioélectrique du ministère des Communications

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

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

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

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

Declaration of Conformity

Marking by this symbol indicates compliance with the Essential Requirements of the EMC Directive of the European Union 2014/30/EU.



This equipment meets the following conformance standards:

Safety

EN 62368-1: 2014 + A11 (T-Mark License),
IEC 62368-1: 2014 (CB Scheme Certificate)

Additional licenses issued for specific countries available on request.

Emissions

EN 55032: 2012 + AC: 2013, 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。
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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
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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

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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