

# Hi5-3D

**HD-SDI Multiplexer  
to HDMI 1.4a and SDI  
Video and Audio Converter**



Published: 4/26/2011

## Installation and Operation Guide

B e c a u s e   i t   m a t t e r s .



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## Contacting Support

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To contact AJA Video for sales or support, use any of the following methods:

180 Litton Drive, Grass Valley, CA. 95945 USA

Telephone: 800.251.4224 or 530.274.2048

Fax: 530.274.9442

Web: <http://www.aja.com>

Support Email: [support@aja.com](mailto:support@aja.com)

Sales Email: [sales@aja.com](mailto:sales@aja.com)

When calling for support, have all information at hand prior to calling.

## Limited Warranty

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AJA Video warrants that this product will be free from defects in materials and workmanship for a period of five years from the date of purchase. If a product proves to be defective during this 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.

In order to obtain service under this warranty, you the Customer, must notify AJA Video of the defect before the expiration of the warranty period and make suitable arrangements for the performance of service. The Customer shall be responsible for packaging and shipping the defective product to a designated service center nominated by AJA Video, with shipping charges prepaid. AJA Video shall pay for the return of the product to the Customer if the shipment is to a location within the country in which the AJA Video service center is located. Customer shall be responsible for paying all shipping charges, insurance, duties, taxes, and any other charges for products returned to any other locations.

This warranty shall not apply to any defect, failure or damage caused by improper use or improper or inadequate maintenance and care. AJA Video shall not be obligated to furnish service under this warranty a) to repair damage resulting from attempts by personnel other than AJA Video representatives to install, repair or service the product, b) to repair damage resulting from improper use or connection to incompatible equipment, c) to repair any damage or malfunction caused by the use of non-AJA Video parts or supplies, or d) to service a product that has been modified or integrated with other products when the effect of such a modification or integration increases the time or difficulty of servicing the product.

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## Introduction

The Hi5-3D is a 3D video multiplexer that combines two 3G or HD-SDI Inputs into various multiplexed 3D formats for output on HDMI 1.4a and HD-SDI. Non-3D input (SD-SDI, HD-SDI or 3G) at either input will be passed to the HDMI output.

**Note:** support for 3G is not present in version 2.0—this will be introduced in a future firmware release.

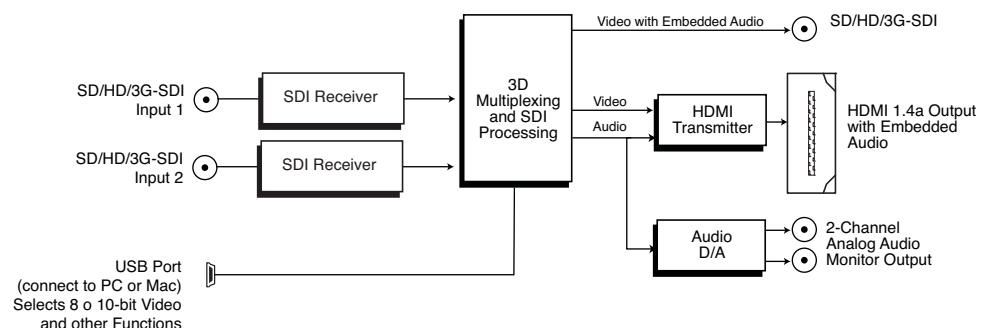
The HDMI 1.4a output supports EDID transactions that allow automatic 2D/3D configuration per the HDMI monitor's capabilities. Input SDI 2 will be frame synchronized to input SDI 1 in 3D Modes.

Embedded SDI input audio is embedded in both the HDMI and SDI outputs. 2 channel RCA audio output is also supported with user control of channel selection. The Hi5-3D supports AJA's Mini-Config application for user configuration and firmware download.

## Features

- HD-SDI to HDMI 1.4a with additional SDI output
- Non-3D SD/HD-SDI passed to HDMI output
- 10-bit HDMI 1.4a support including 3D and embedded audio
- Frame-sync mode for HD formats: the right eye will be frame synchronized to the left eye.
- Anaglyph mode for calibrating 3D camera rigs (only luma data preserved)
- Additional 2 Channel RCA jack audio output
- Setup via Dipswitch or PC/Mac using USB port and supplied USB cable (USB configuration software application supplied on CD)
- Uses 5-20V power (supply sold separately)
- 5 year warranty

## Block Diagram



**Hi5-3D Converter, Simplified Block Diagram**

## 3D Modes Supported

The Hi5-3D supports, depending on the video format, “side-by-side,” “top-bottom,” and “frame-packing” 3D modes. The “side-by-side” and “top-bottom” modes involve compressing, either horizontally or vertically, each input for combining into a single video stream at the same rate of the inputs.

The “frame-packing” mode stacks two full resolution inputs into a “tall” frame (at twice the clock and line rates). When selected, “frame-packing” works only with the following formats: 1080p23.98, 1080p24, 720p50, 720p59.94, and 720p60. (Frame-packed mode does not support psf inputs at this time.) When operating in frame-packing mode, the SDI output will be black; the valid output is the HDMI connector.

Each input, in addition to 3D processing, can be flipped either horizontally, vertically, or both. This control is provided by 4 switches that can be engaged in any combination—or by use of the supplied AJA Mini Config software (Mac/PC).

## Format Support

The Hi5-3D works with both 2D and 3D inputs. When in the 2D mode, the input is simply passed to the output unmodified—or flipped (via dipswitch or Mini Config software selection). In the 3D mode, the Hi5-3D supports the required 3D modes as defined by the CEA for HDMI 1.4a televisions.

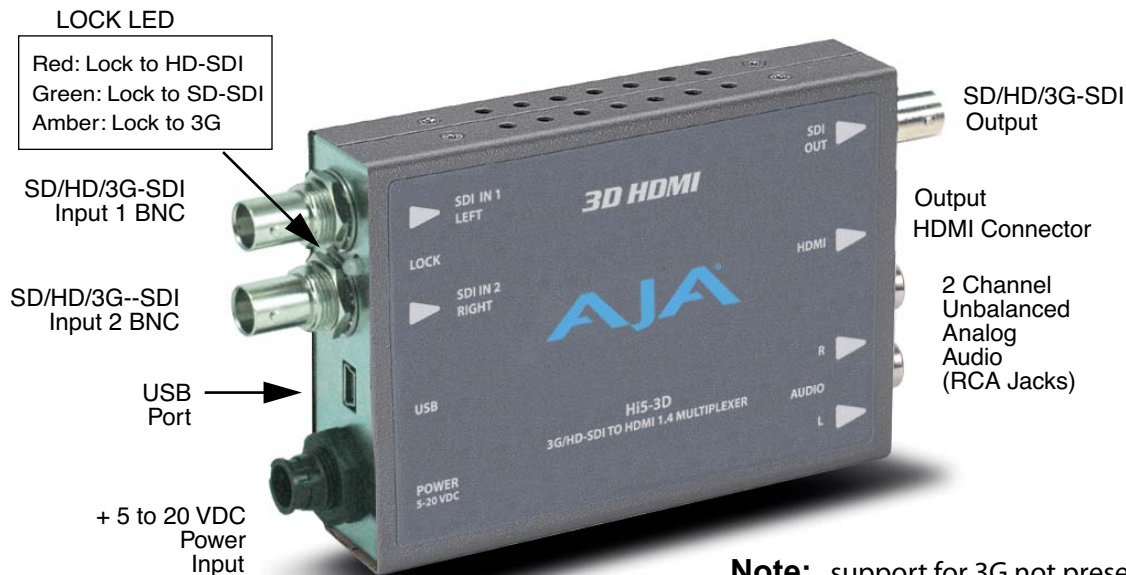
### CEA Required 3D modes:

2xSDI	1.5gb	720p50/59.94/60	T/B
2xSDI	1.5gb	1080p23.98/24	T/B, FP
2xSDI	1.5gb	1080psf23.98/24	T/B, FP
2xSDI	1.5gb	1080i50/59.94	S/S

### Notes:

- “psf” inputs are converted to “p” for HDMI and SDI output.
- The SDI output can support S/S and T/B formats only.
- Future software versions may add other frame rates.
- When a 525 or 625 source is on both inputs, the Hi5-3D will only output one of the sources, defaulting to Input 1. In the absence of Input 1, it will output Input 2. There are no 3D modes with SD sources; output is simply passed through.

## I/O Connections



**Note:** support for 3G not present  
—this will be a feature in a future firmware release.

### Hi5-3D Converter

## Installation

Typically, Hi5-3D installation consists of the following steps:

1. Ensure the Hi5-3D 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 +5 to 20VDC power to the converter (AJA power supply model DWP or DWP-U).
5. The Hi5-3D 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 (supplied on CD) on a computer, attach the Hi5-3D via USB to the computer, and then make your changes. This process is detailed on the following pages.

## User Controls

The Hi5-3D can be used right out of the box for many applications since it is designed to recognize inputs and perform standard actions automatically by default. However you can also manually configure the Hi5-3D using a supplied software application for PCs and Macs called "Mini Config" or by setting dipswitches via a cutout on the back of the Hi5-3D.

One of the dipswitches is a "Local/Remote" switch. When in the "Local" mode, the remaining dipswitches 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).

## Using Mini Config

### Installing Mini Config on a Mac

To install the application on a Mac, simply insert the CD supplied with the Mini-Converter into the computer, drag the "AJA Mini Config" application for your platform (Mac or PC) to your desktop or an applications folder.

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



AJA MiniConfig

### Installing Mini Config on a PC



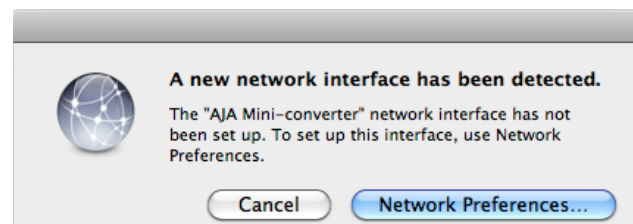
To install the application on a Windows PC, simply insert the CD supplied with the Mini-Converter into the computer, locate the "MiniInstaller" application, and then double-click it.

A Setup Wizard will guide you through the installation. Just click Next to begin.

Answer all questions in the subsequent dialogues; when you're done, you will be able to locate the Mini Config application in the AJA folder in the Programs listing.

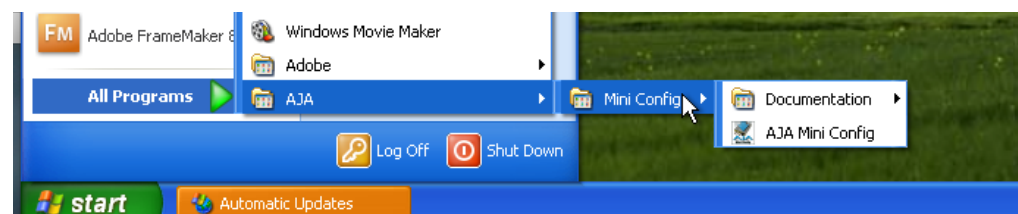
### Running Mini Config

Connect a Hi5-3D Mini-Converter to the PC or Mac via the supplied USB cable. Connect power to the Mini-Converter (DWP or DWP-U recommended).



**Note:** On a Mac, when the Mini-Converter is connected to the USB port, you may see an alert like that shown following. If you do, press Cancel—this alert can be ignored.

To run Mini Config on a PC, find the AJA Mini Config in the program list and locate the AJA Mini Config application.



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

Once AJA Mini Config is running (PC or Mac), it looks pretty much the same, regardless of the platform.

A *File* menu at the top of the Mini Config application menu bar allows you to *Save* the current state of the Mini-Converter—with all the settings you’ve made—to a file for later recall. This allows you to set up the converter for different applications, storing each (with *Save*) to a unique name for easy recall later—using the *Open* menu item. A *Revert to Factory Settings* menu item similarly allows you to change the settings back to AJA’s factory defaults. An *Edit* menu allows you to cut and paste values to/from fields, just as in other applications.

## Operating Mini Config

When the application is running, you’ll see a simple graphical interface for viewing settings and updating software. This user interface consists of an information area at the top that shows the available Mini-Converters attached to the computer via USB (in this case your Hi5-3D), with a graphical rendering of the selected Mini-Converter showing all the BNCs and connectors and their current state.

Colored text by connectors provides an indication of signal type and what the Hi5-3D is doing. Text in blue shows the values automatically selected, while text in black shows values that have been manually selected. Text in red shows that Hi5-3D is not detecting a signal or cannot negotiate with the attached device (even if can’t detect an output device, it 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.

Mini Config can manage multiple AJA Mini-Converters connected via USB—even when they are of differing types. However it only connects to one at a time. You can choose which Mini-Converter you wish to control using the pulldown menu in the upper right hand corner.

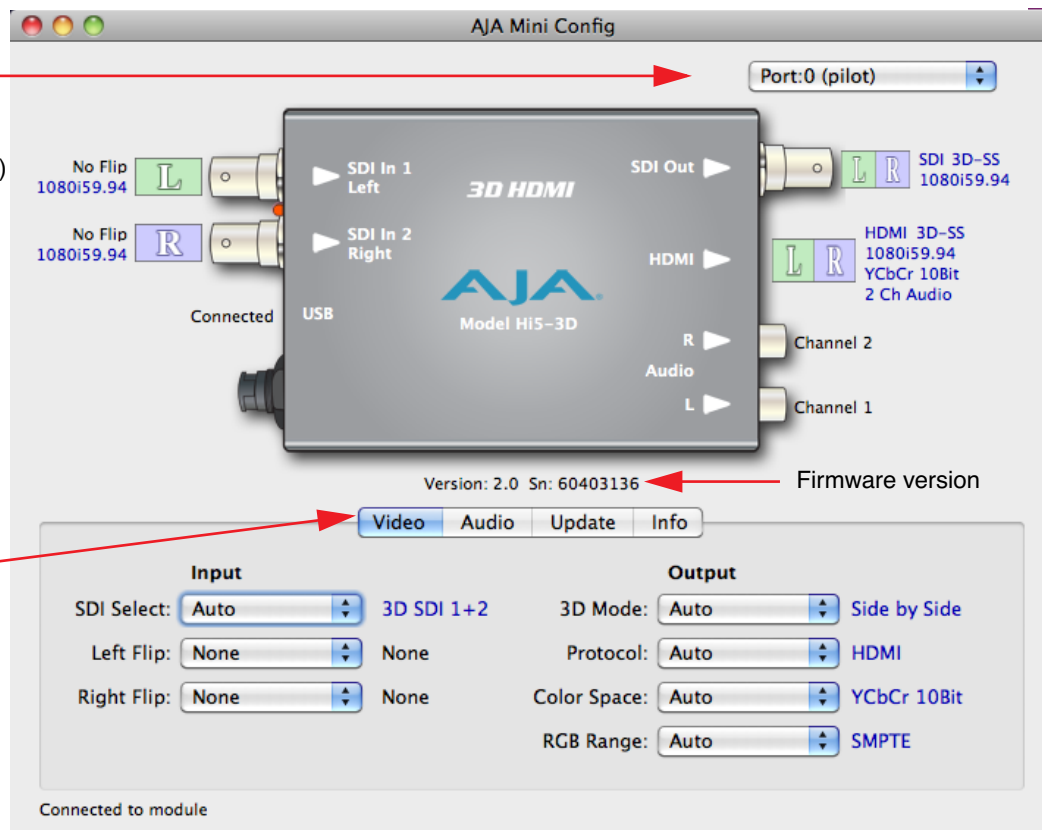
If you want to configure and update multiple Mini-Converters in parallel, you can do it by running multiple instances of the Mini Config application and have each control a different Mini-Converter.

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

Each connector is labelled with the signals currently detected or manually selected.  
Blue = Auto  
Black = Manual selection  
Red = No Signal or signal output since device not detected

Tabbed screens

Message Showing Status



### Mini Config, Video Screen

The name of each Mini-Converter found can be seen in the menu pulldown at the top right hand side of the screen (in the example above, it shows "Port: 0 (pilot)". This allows you to select a desired Mini-Converter when there are more than one. Selecting a Mini-Converter with this dropdown menu causes this application to connect to the selected converter. The type of Mini-Converter and serial number will be shown in the graphic and text below it.

The Mini-Converter graphic shows Left and Right eye assignments iconically next to the BNC and HDMI connectors. An "L" or "R" by itself means only left eye or right eye, respectively. An "LR" together means the signal is a combined left eye/right eye multiplexed signal. How the signal is multiplexed is defined in the text next to it as listed in the CEA Modes Table that follows (last column in table is the mode):

2xSDI	1.5gb	720p50/59.94/60	3D-TB
2xSDI	1.5gb	1080p23.98/24	3D-TB-FP
2xSDI	1.5gb	1080psf23.98/24	3D-TB-FP
2xSDI	1.5gb	1080i50/59.94	3D-SS

Key: TB=Top/Bottom, FP=Frame-packing, and SS=Side-by-Side

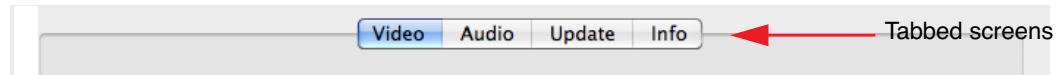


A status field at the bottom of the screen shows whether you are connected and communicating with the Mini-Converter shown using Mini-Config.

When configuring the Hi5-3D 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 groups of controls for each type of task to be performed.

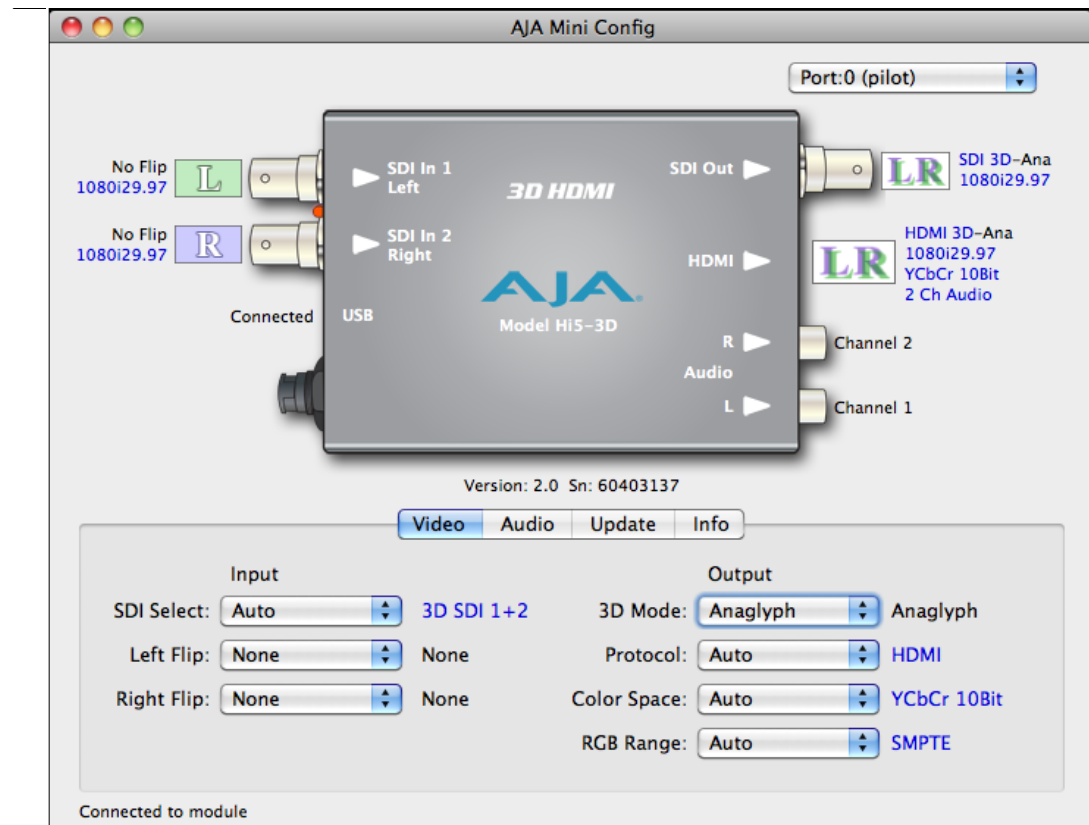


### Mini Config, Tabbed Screens

Click on any of the tabbed buttons (Video/Audio/Update/Info) and the screen below will change to match. Each of these screens are described on the following pages.

## Video Tab Screen

The Video Screen is where you can configure Hi5-3D video inputs and outputs. Pulldown menu settings are described following the screen graphic.



### Mini Config, Video Screen

SDI Select—use to select a specific SDI input (1 and/or 2) or select automatic mode.

Auto: directs the Hi5-3D to automatically select the input based on the signals detected at the two SDI Input BNCs.

SDI 1: manually select the signal present at SDI Input 1.

SDI 2: manually select the signal present at SDI Input 2.

3D SDI 1+2: manually select the signals present at SDI Inputs 1 and 2 as a 3D two input stream (right/left channels respectively).

Left Flip—use to select how the left eye channel input will be flipped (if any).

None: no flipping; the signal is unaltered.

Horizontal: left eye channel is flipped horizontally.

Vertical: left eye channel is flipped vertically.

Horiz/Vert: left eye channel is flipped horizontally and vertically.

Right Flip—use to select how the right eye channel input will be flipped (if any).

None: no flipping; the signal is unaltered.

Horizontal: right eye channel is flipped horizontally.

Vertical: right eye channel is flipped vertically.

Horiz/Vert: right eye channel is flipped horizontally and vertically.

3D Mode—use to select the type of CEA 3D mode:

Auto: lets the Hi5-3D automatically select a 3D mode based on the HDMI 1.4a device it is connected and negotiating with (blue text shows what it chooses).

Side by Side: select left/right eye channels are compressed and placed side by side.

Top Bottom: select left/right eye channels are compressed and placed one on top of the other

Frame Packed: select left/right eye channels into a single full-resolution—but tall—frame, at twice the clock and line rates. When selected, “frame-packing” works only with the following formats: 1080p23.98, 1080p24, 720p50, 720p59.94, and 720p60. (Frame-packed mode does not support psf inputs at this time.)

Anaglyph: used for calibrating camera rigs, this mode shows both stereo images overlaid as a single image for viewing using anaglyph glasses. In this implementation only the luma data is preserved.

**Note:** 525 and 625 are passed through to the output without 3D processing.

Protocol—use to select the signal protocol used for the HDMI output connector.

Auto: lets the Hi5-3D automatically select a protocol based on the device it is connected and negotiating with at the HDMI connector (blue text shows what it chooses).

HDMI: selects HDMI signal protocols.

DVI: selects DVI signal protocols (note: an HDMI to DVI adapter should be used when connecting DVI devices).

Color Space—use to select type of RGB or YCbCr colorspace. The choices are:

Auto: lets the Hi5-3D automatically select a protocol based on the device it is connected and negotiating with.

RGB 8Bit

RGB 10Bit

YCbCr 10Bit

RGB Range—use to select type of RGB color range, when RGB has been selected as the color space. Choices are:

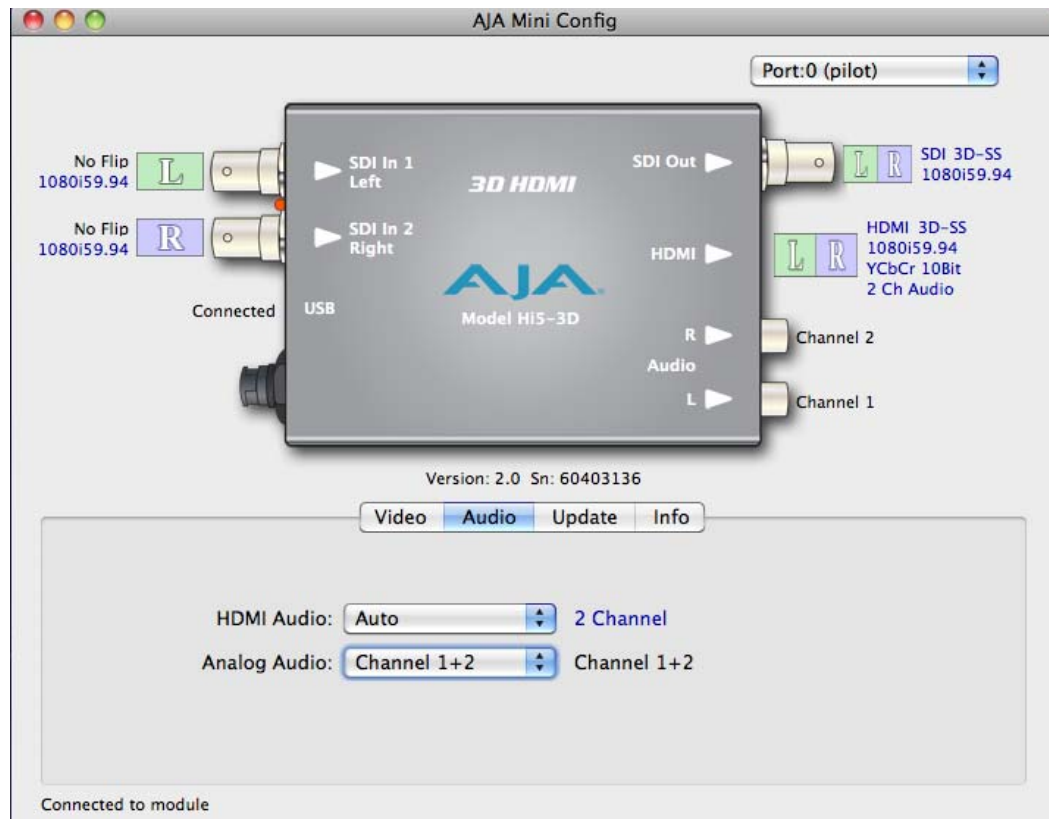
Auto: lets the Hi5-3D automatically select a protocol based on the device it is connected and negotiating with.

SMPTE

Full Range

## Audio Tab Screen

The Audio Screen is where you can configure Hi5-3D digital and analog audio settings. Pulldown menu settings are described following the screen graphic.



### Mini Config, Audio Screen

**HDMI Audio**—use to select how many SDI channels are passed to the HDMI connector and which channel pairs are selected. Choices are:

**Auto:** lets the Hi5-3D automatically select an HDMI audio output configuration based on it communicating with the attached HDMI device and determining its configuration.

**2 Channel:** output 2 channels from the SDI stream to two channels on the HDMI output connector. Which 2 channels are selected mirrors the Analog Audio setting (below).

**8 Channel:** output SDI channels 1 through 8 to the HDMI output connector.

**Analog Audio**—use to select the channel pair that will be output to the Analog RCA connectors (L/R).

**Channel 1+2:** output channels 1 & 2 from the SDI stream to the two Analog Audio RCA connectors (L/R).

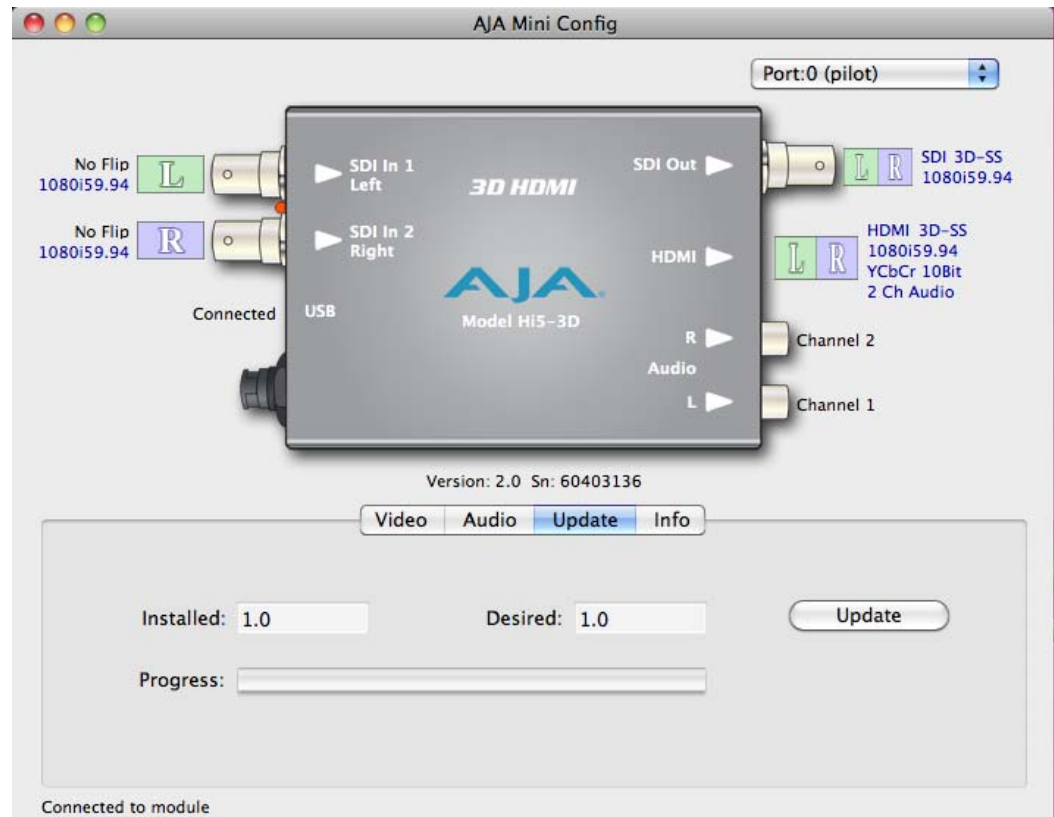
**Channel 3+4:** output channels 3 & 4 from the SDI stream to the two Analog Audio RCA connectors (L/R).

**Channel 5+6:** output channels 5 & 6 from the SDI stream to the two Analog Audio RCA connectors (L/R).

**Channel 7+8:** output channels 7 & 8 from the SDI stream to the two Analog Audio RCA connectors (L/R).

## Update Tab Screen

Use this Update screen to view the software version currently installed on the Hi5-3D or install new software.



### Mini Config, Update Screen

**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.

The following fields and control are present in this screen:

**Installed**—this field shows the version of the Hi5-3D firmware currently installed.

**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.

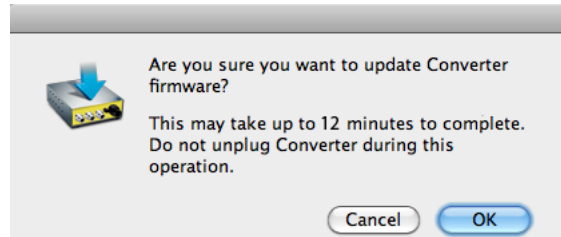
**Update**—this button initiates a software update operation loading the “Desired” version of firmware into the Mini-Converter’s non-volatile memory.

**Progress**—this indicator bar shows the progress of software being installed.

### Software Update Procedure

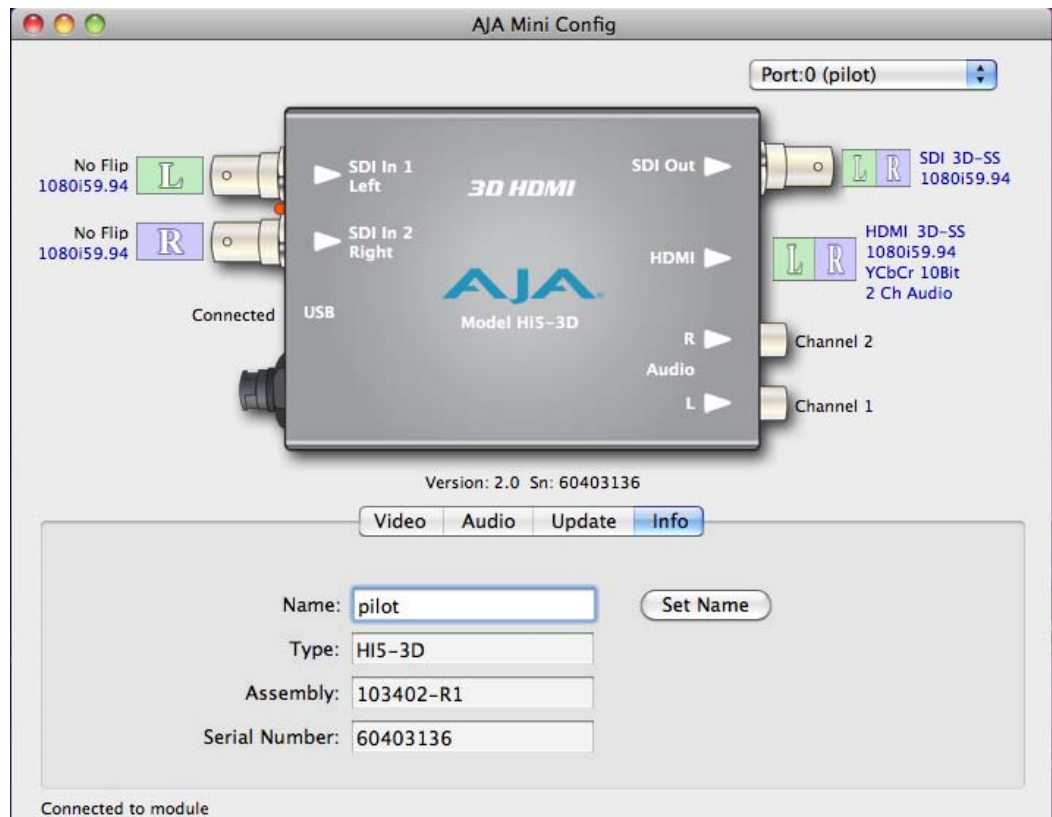
1. Check the AJA website for new Mini-Config software for your Mini-Converter. If new software is found, download it and uncompress the file archive (zip). Here is the URL to use when checking:  
<http://www.aja.com/support/converters/converters-mini-rackmount.php>
2. Connect the Mini-Converter to a Mac or PC via a USB port on the computer and run the new Mini-Config software just downloaded.
3. Click on the Update tab screen.

4. Check the Installed version level against the Desired version level. If the Desired is newer, then click the *Update* button to download the new firmware to the Mini-Converter; progress will be shown via the “Progress” thermometer bar. When you click Update, Mini Config will provide a dialog asking you to confirm that you really want to update the firmware (see below).



## 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.



### Mini Config, Info Screen

**Name**—this field allows you to give your Mini-Converter a name. This may be useful if you have several Mini-Converters attached to a Mac/PC via USB so you can distinguish one of them easily (especially if they’re the same model). In the example show previously, the Hi5-3D has been named “pilot.” To change the value, type in a new name and click the “Set Name” button.

**Type**—this is the factory set model name of the Mini-Converter (Hi5-3D).

**Assembly**—this is the factory assembly number.

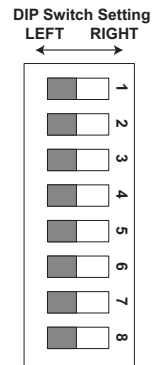
**Serial Number**—this is the factory set unique serial number of your Hi5-3D. If you ever call AJA Support for service, you may be asked for this number.

## Using Dipswitches to Control the Hi5-3D

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

The exact function of each DIP switch and what it controls is described on the following pages.

**Switch 1 (CONTROL)—This switch determines whether the Hi5-3D is configured via dipswitch or Mini-Config software**



LOCAL (LEFT)	REMOTE (RIGHT)
When in "Local" mode, the remaining dipswitches will support a subset of the user controls	When in the "Remote" mode, the normal Mini-Config non-volatile registers (as last set), control the unit

**Switch 2 (H FLIP LT)—Controls Horizontal Flip of Left Eye Input**

OFF (LEFT)	ON (RIGHT)
The left eye input is not flipped horizontally	The left eye input is flipped horizontally

**Switch 3 (V FLIP LT)—Controls Vertical Flip of Left Eye Input**

OFF (LEFT)	ON (RIGHT)
The left eye input is not flipped vertically	The left eye input is flipped vertically

**Switch 4 (H FLIP RT)—Controls Horizontal Flip of Right Eye Input**

OFF (LEFT)	ON (RIGHT)
The right eye input is not flipped horizontally	The right eye input is flipped horizontally

**Switch 5 (V FLIP RT)—Controls Vertical Flip of Right Eye Input**

OFF (LEFT)	ON (RIGHT)
The right eye input is not flipped vertically	The right eye input is flipped vertically

**3D Mode Selection** Switches 6 and 7 are used together to form a 2-digit binary value. Switch 6 is the least significant digit and Switch 7 is the most significant digit.

**Switch 6 (S1)—3D Mode select - bit0 “S1”**

OFF (LEFT)	ON (RIGHT)
Set to 0	Set to 1

**Switch 7 (S2)—3D Mode select - bit1 “S2”**

OFF (LEFT)	ON (RIGHT)
Set to 0	Set to 1

**3D Modes Selected by Switches 6 and 7**

Selection	S2 (Switch 7)	S1 (Switch 6)
Auto	0	0
T/B (force top/bottom)	0	1
S/S (force side-by-side)	1	0
FP (force frame packing)	1	1

**Switch 8 (AUX 1)—Anaglyph**

OFF (LEFT)	ON (RIGHT)
Set to non-anaglyph	Set to anaglyph mode

## Specifications

Item	Specification
Input Formats	525i, 625i, 720p 50/59.94/60, 1080i 50/59.94/60, 1080p 23.98/24/25 1080psf 23.98/24
Video Inputs	SD/HD-SDI (auto-selected), SMPTE-292/296/424, 2x BNC 1 SDI for left eye input (10-bit) 1 SDI for right eye input (10-bit) <b>Note:</b> support for 3G-SDI is not present—this will be a feature in a future firmware release.
Output	Video: • 10-bit HDMI v1.4a, HD, 1080p50/60 • 1 SDI output, 10-bit Audio: • HDMI embedded audio, 2 or 8 channels • SDI embedded audio • 2 RCA-style analog outputs at -10dBV (nominal), User assignable channels
HDCP	The Hi5-3D does not encode the HDMI output with HDCP encryption. By definition, HD-SDI inputs to the Hi5-3D are unencrypted. The HDMI specification requires HDMI monitors to support unencrypted inputs.
User Controls	USB port used with supplied cable and MiniConfig software application to configure device via PC/Mac
Size	5.8" x 3.1" x 1 (147mm x 79mm x 25mm)
Power	+5-20 VDC regulated, 5 watts Requires Power Supply (AJA power supply model DWP or DWP-U recommended)



## Appendix A: Safety & 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 commercial 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. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense. 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 2004/108/EC.



This equipment meets the following conformance standards:

### Safety:

CB- IEC 60065:2001 + A1:2005

NRTL - UL 60065:2003 R11.06, CSA C22.2 NO.60065:2003 + A1:06

GS - EN 60065:2002 + A1

Additional licenses issued for specific countries available on request.

### Emissions:

EN 55103-1: 1996

EN61000-3-2:2006, EN61000-3-3:1995 + A1:2001 + A2:2005

### Immunity:

EN 55103-2: 1996

EN61000-4-2:1995 + A1:1999 + A2:2001, EN61000-4-3:2006, EN61000-4-4:2004,

EN 61000-4-5: 2005, EN 610004-6:2007, EN61000-4-11:2004

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.

## Korea KCC Compliance Statement

### 1) Class A ITE

A급 기기 (업무용 방송통신기기)	이 기기는 업무용 (A 급) 으로 전자파적합등록을 한 기기이오니 판매자 또는 사용자는 이 점을 주의하시기 바라며, 가정외의 지역에서 사용하는 것을 목적으로 합니다.
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### 1) Class A device

Class A (Broadcasting and Communication Equipment for Business Use)	Please note that this equipment has obtained EMC registration for business use (Class A), and it is intended to use in other than home area.
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## 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.

## Japanese Compliance Statement

1. Class A ITE

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 V-3/2008.04). 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 caution statements, warning conventions and warning messages

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



Warning Symbol



Caution Symbol

## Before operating your unit, please read the instructions in this document



### 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!**

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.



**Caution!**

This device is a Class A product. Operation of this equipment in a residential area is likely to cause harmful interference, in which case users will be required to take whatever measures may be necessary to correct the interference at their own expense.

**Attention!** Le périphérique est un produit de Classe A. Le fonctionnement de cet équipement dans une zone résidentielle risque de causer des interférences nuisibles, auquel cas l'utilisateur devra y remédier à ses propres frais.

**Achtung!** Dies ist ein Gerät der Klasse A. Bei Einsatz des Geräts in Wohngebieten kann es Störungen des Radio- und Fernsehempfangs verursachen. In diesem Fall muss der Benutzer alle notwendigen Maßnahmen ergreifen, die möglicherweise nötig sind, um die Störungen auf eigene Rechnung zu beheben.

**¡Precaución!** Este es un producto clase A. El uso de este equipo en áreas residenciales puede causar interferencias nocivas, en cuyo caso, se requerirá que los usuarios tomen cualquier medida necesaria para corregir la interferencia por cuenta propia.

**Cuidado!** Este dispositivo é um produto Classe A. Operar este equipamento em uma área residencial provavelmente causará interferência prejudicial; neste caso, espera-se que os usuários tomem as medidas necessárias para corrigir a interferência por sua própria conta.

**Attenzione!** Questo dispositivo è un prodotto di Classe A. Il funzionamento di questo apparecchio in aree residenziali potrebbe causare interferenze dannose, nel cui caso agli utenti verrà richiesto di adottare tutte le misure necessarie per porre rimedio alle interferenze a proprie spese.

