LUT-box Mini-Converter

In-Line Color Transform

Installation & Operation Guide

Version 2.3r1

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AJA VIDEO SYSTEMS

Table of Contents

Notices 4
Trademarks 4
Copyright 4
Contacting Support 4

Chapter 1: Introduction 5
Overview 5
Features 5
Block Diagram 6
About LUT Data Write and Read 6
I/O Connections 7
Installation 7

Chapter 2: Operation 8
DIP Switch Settings 8
USB Control and Setup—Using AJA Mini-Config 9
Acquiring Mini-Config 9
Mini-Converter Documentation 9
Installing Mini-Config 9
PC Installation 9
Mac Installation 10
Running Mini-Config 11
PC Startup 11
Mac Startup 11
Saving Setups 11
Operating Mini-Config 12
Running Multiple Mini-Converters 12
Tabbed Screens 13
LUT Write and Read 13
Write and Read Controls 13
Write LUT Procedure 14
Read LUT Procedure 14
Sample LUT Files 15
Input Screen 16
HDMI Output Screen 17
SDI Output Screen 18
Audio Screen 19
LUT Screen 20
1D and 3D LUT Settings 20
Update Screen 21
Software Update Procedure 21
Info Screen 22

Appendix A: Specifications 23
Video Input 23
Input Formats 23
Video Output 23
Audio Input 24
Audio Output 24
LUT File Format Support 24
Physical 24

Power 24
Size 24
Environment 24

Appendix B: Safety and Compliance 25

Federal Communications Commission (FCC) Compliance Notices 25
Class B Interference Statement 25
FCC Caution 25
Canadian ICES Statement 25
European Union and European Free Trade Association (EFTA) Regulatory Compliance 26
Declaration of Conformity 26
Recycling Notice 27
Korea KCC Compliance Statement 27
Taiwan Compliance Statement 27
Japanese Compliance Statement 27
Translated Warning and Caution Messages 28
Before Operation Please Read These Instructions 28

Warranty Information 33

Limited Warranty 33

Index 34

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Contacting 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: http://www.aja.com

Support Email: support@aja.com

Sales Email: sales@aja.com

Chapter 1: Introduction

Overview

Working with material outside the normal REC709 video color space (such as LOG material) can cause confusion both on set and in the edit suite with colors that are not properly represented for client review and approval. LUT-box ensures that every monitor is showing the correct color "look" for any source signal while still allowing the footage to maintain its original color look and take advantage of additional dynamic range.

Load two custom 1D LUTs and two custom 3D LUTs (four total) into LUT-box to adjust the "look" for any source signal with simultaneous outputs to HDMI and SDI monitors from a single LUT-box. Auto controls are available to configure the unit automatically to match the input and output video parameters. Switch between two LUTs, using Mini-Config or DIP switches, to quickly A/B compare between the two. You can even apply a 1D LUT and a 3D LUT simultaneously, feeding the output of the 1D LUT to the input of the 3D LUT for serial processing.

Once configured, the settings are non-volatile. The unit can be disconnected from USB, powered down, moved to a new location, and placed into operation there, retaining that configuration.

Add patch generator function? WHERE?

Features

1D and 3D LUTs LUT-box supports 10-bit and 12-bit 1D LUTs, and 3D LUTs at 17x17x17 or 16x16x16 with 12-bit processing for accurate color representation.

Multiple LUT formats are supported. See *"LUT File Format Support" on page 24* for a complete listing.

Connectivity LUT-box accepts 3G and Dual-Link input in a wide range of signal formats. Simultaneous SDI and HDMI outputs allow multiple monitors to view the corrected color signal, and in-line monitoring of an SDI feed.

Audio Integration Up to 8-channels of embedded SDI and HDMI audio output are supported. You can select which SDI embedded audio input channels are used (Ch 1-8 or Ch 9-16), and can choose to route all eight or just one pair of these channels to the HDMI output. Two channels of analog audio output allow direct external monitoring without the need to disembed the audio separately.

USB and Mini-Config Support AJA's free Mini-Config software can be used with any USB-enabled AJA Mini-Converter and provides an easy-to-use graphical interface with detailed information about the current input and output formats. Control all the parameters of any supported AJA Mini-Converter as well as loading firmware updates from AJA that add new features and functionality.

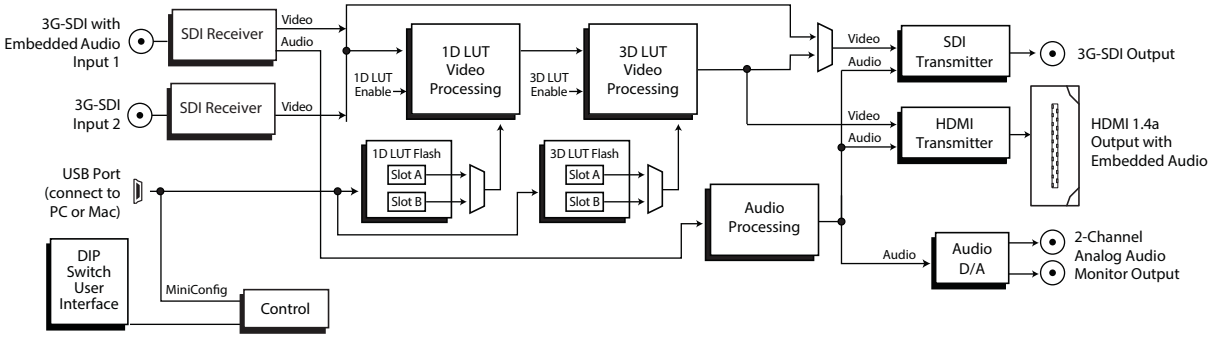
DIP Switch Control DIP switches on the bottom of the unit allow local control of some features without a computer. One of the DIP switches is a "Local/Remote" switch. When in the "Local" mode, the remaining DIP switches support a subset of the user controls. When in the "Remote" mode, the normal Mini-Converter non-volatile registers control the unit (as last set).

Universal Power Supply All AJA Mini-Converters ship with a Universal Power Supply that includes international plug connections for use around the world.

5-year Warranty All AJA Mini-Converters are covered by a 5-year warranty and AJA's advanced replacement policy. If a replacement is necessary, AJA will ship a new unit immediately without the need to send the original unit back first, ensuring you are up and running again as quickly as possible.

Block Diagram

Figure 1. LUT-box Converter, Simplified Block Diagram

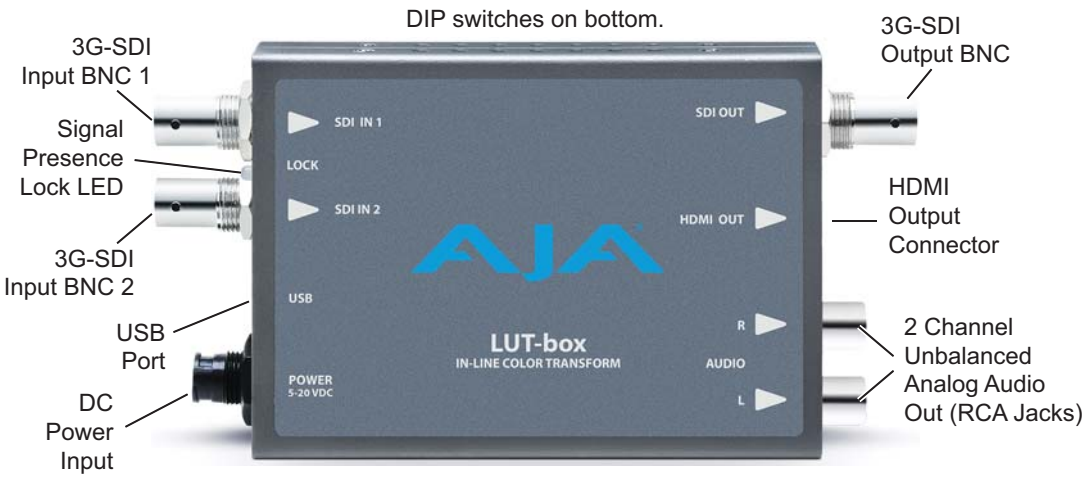


About LUT Data Write and Read

The LUT-box has four areas that can store LUT data,1D LUT slots A and B, and 3D LUT slots A and B. Externally accessed (via USB) LUT file data is written directly into a LUT-box slot, where it acquires a proprietary internal data structure. The file name of the source of the LUT data written into the slot is displayed on the Mini-Config LUT screen. Data residing in one of the LUT-box slots can be read from that slot, and then be sent to an external location via USB. When sending the data, you can select a LUT file format (.txt, .3dl, .lut, .cube) for the data, and produce a file at that destination location that can be used with other LUT-boxes and color management applications. This also makes it possible to convert LUT files from one format to another. However, due to internal math rounding errors, converted LUTs may not perfectly match each other, though any differences will be extremely small.

I/O Connections

Figure 2. LUT-box Converter



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

Installation

Typically, LUT-box installation consists of the following steps:

1. Ensure the LUT-box is disconnected from power.
2. Connect equipment to the SDI input connector(s), and to the SDI out and/or HDMI out connectors.
3. Connect audio equipment to RCA output connectors (optional).
4. Apply power to the converter (AJA power supply included).
5. The converter will now run using the default factory settings. This default configuration applies no conversion, passing the incoming video to the outputs, and routes the first two channels of embedded audio (if present) to the RCA jacks.
6. To use the LUT box you need to load one or two custom LUTs, using Mini-Config:
   - 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 *"USB Control and Setup—Using AJA Mini-Config" on page 9*.
7. When configured with the correct LUT, the LUT-box can be powered down, moved to the target display, and when powered back up retains those configuration settings.

Chapter 2: Operation

DIP Switch Settings

Eight DIP switches are located on the bottom of the unit. The default shipping position for these switches is Off (left). By default, DIP switch configuration is enabled, and Mini-Config control is disabled.

The DIP switch label identifies the functions of the switch positions. The LUT-box originally shipped with a label showing Aux 1, 2, and 3 functions. For LUT-box version 2.0 additional 1D LUT functions were added.

Figure 3. LUT-box DIP Switches

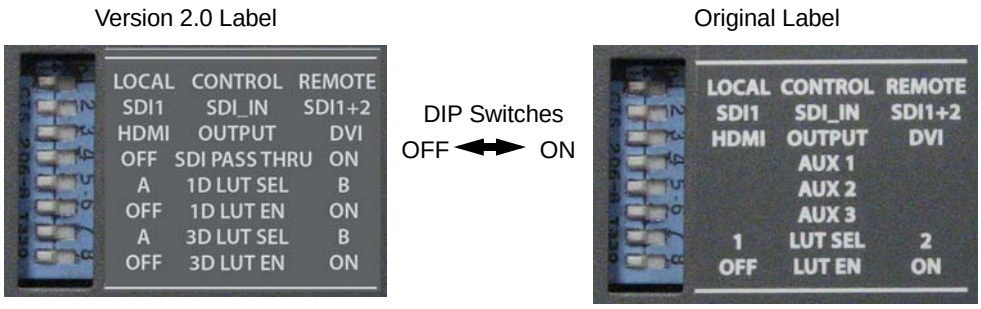


Table 1. LUT-box DIP Switch Setting Descriptions, version 2.0

SWITCH	FUNCTION	OFF (Left)	ON (Right)
1	Control	Selects Local (DIP), and blocks Mini-Config control.	Selects Remote (Mini-Config), and disables DIP switches 2-8.
2	SDI Input Mode	SDI 1	SDI 1+2 (Dual Link)
3	HDMI mode	HDMI	DVI
4	SDI Pass Through	Apply LUT processing, if enabled, and any PsF to P conversion on the SDI output.	Bypass LUT processing, if enabled, and any PsF to P conversion on the SDI output.
5	1D LUT Select	1D LUT Slot A	1D LUT Slot B
6	1D LUT Enable	Bypass - No 1D LUT processing is applied	Enable - The selected 1D LUT processing is applied.
7	3D LUT Select	3D LUT Slot A	3D LUT Slot B
8	3D LUT Enable	Bypass - No 3D LUT processing is applied	Enable - The selected 3D LUT processing is applied.

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/en/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/en/category/mini-converters

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

Installing Mini-Config

PC Installation

To install Mini-Config on a Windows PC:

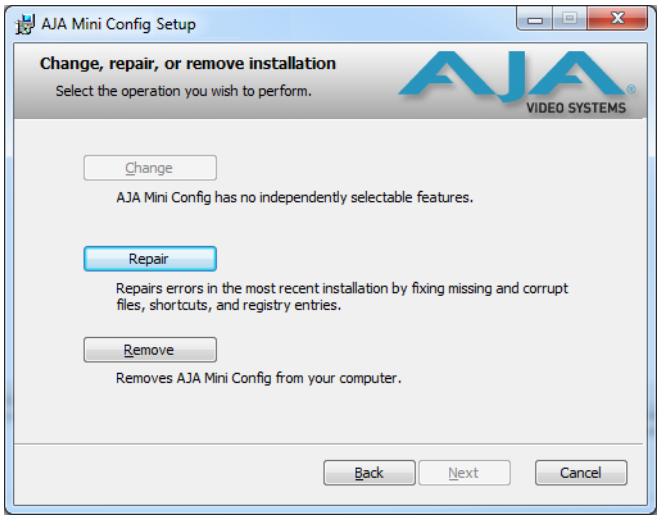
1. Download the application from the AJA website (select the Windows icon on the Mini-Config Support webpage).
2. Open the AJA_MiniConfig.zip file
3. Double-click on the MiniInstaller.msi file.
4. A Setup Wizard will guide you through the installation.

Figure 4. 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 5. Mini-Config Setup Wizard, Reinstallation



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

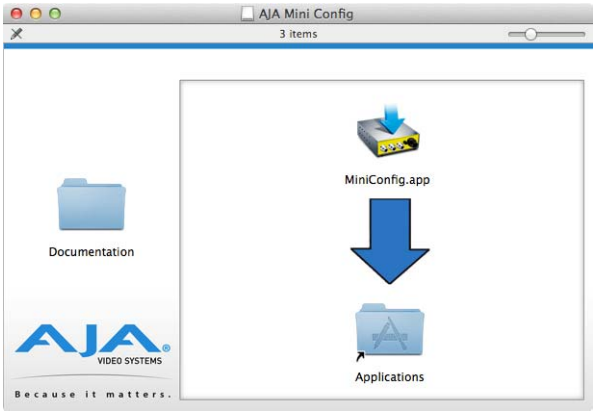
Mac Installation

To install the application on a Mac:

NOTE: Macintosh 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 webpage).
2. Open the AJA_MiniConfig folder.
3. Double-click on the AJAMiniConfig.dmg file.
4. Answer the prompt and a utility program will be launched.

Figure 6. Mini-Config Mac Installer



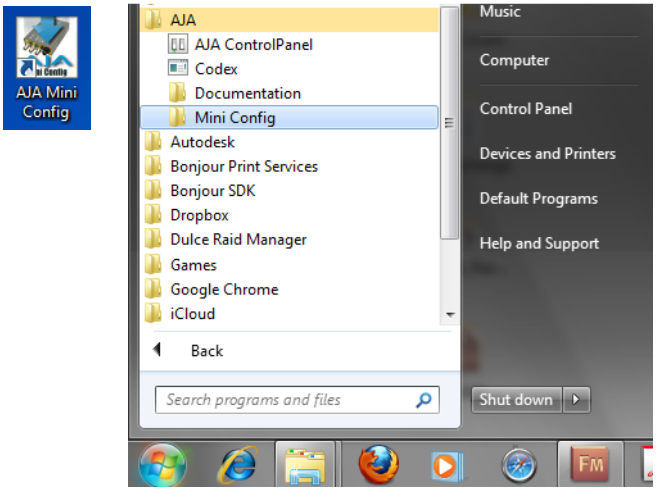
5. To complete the installation drag the “MiniConfig.app” icon to the Applications folder.

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.

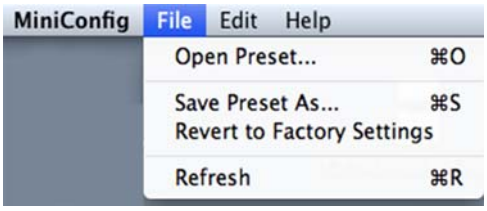


Mac Startup

To run Mini-Config on a Mac, double-click 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.

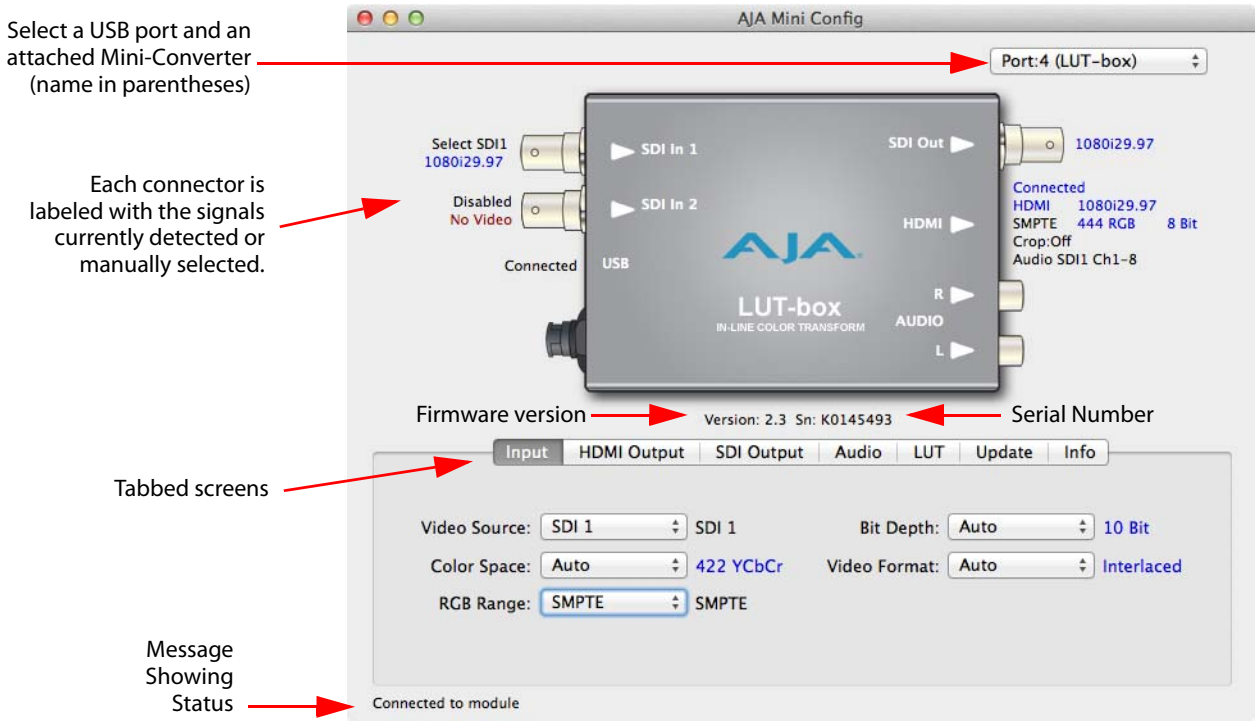
Screens are virtually the same on both PC and Mac, with subtle differences that reflect the general look of the platform environment.

Running Multiple Mini-Converters

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 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.

NOTE: During a Mini-Converter firmware update, only one Mini-Converter should be connected to the computer via USB.

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.

LUT Write and Read

Write and Read Controls

The LUT-box Mini-Converter has additional controls for writing external LUT data into a 1D or 3D LUT slot, and reading LUT data from a slot to send to an external location, using USB. On a Mac these controls are located on the top menu bar (*Figure 8*), while on a PC they are located at the top of the Mini-Config application window (*Figure 9*).

Figure 8. LUT Write and Read Controls Location: Mac

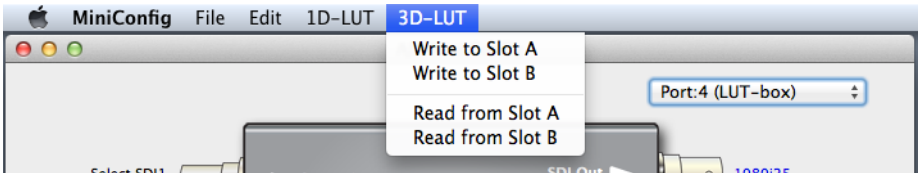
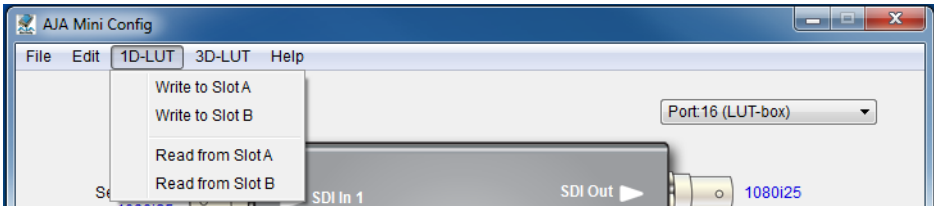


Figure 9. LUT Write and Read Controls Location: PC



You can write and read LUT data from any of the Mini-Config tabbed screens. However, selecting which LUT to use, and performing A/B comparisons between the LUTs, is accomplished from the LUT tabbed screen.

NOTE: A currently enabled and selected LUT slot will immediately display the results of any new LUT data that is written to that slot.

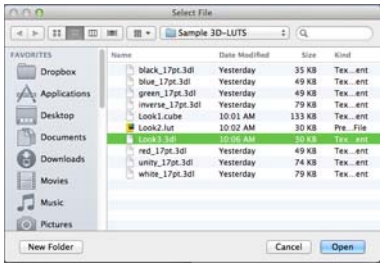
Write LUT Procedure

To write LUT data into a Slot, do the following:

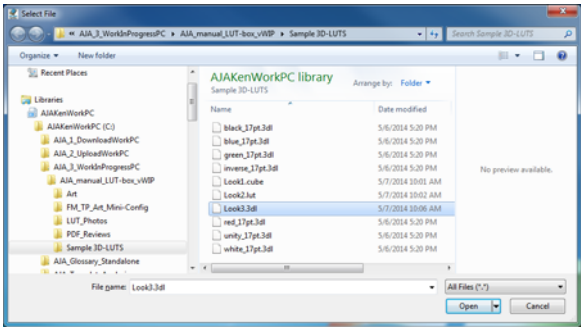
1. Click on either the *1D-LUT* or *3D-LUT* menu name at the top of the screen, and then select from the drop down menu either *Write to Slot A* or *Write to Slot B*.
2. A browser will open, allowing you to navigate to any location the computer can access (*Figure 10*).

Figure 10. Browsers for LUT Write

Mac



Windows



3. Navigate to a browser location that has the desired LUT file.
4. Select the LUT file and click *Open*. The data will be written to the Slot.

NOTE: An error message will be displayed if you select an incompatible 1D or 3D LUT file format for that Slot type.

Read LUT Procedure

To read the LUT data from a Slot, create a LUT file, and save that LUT file to a browser location, do the following:

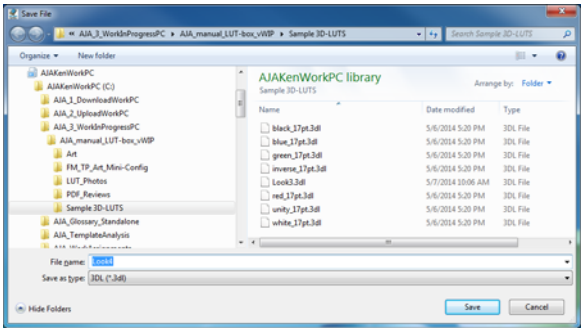
1. Click on either the *1D-LUT* or *3D-LUT* menu name at the top of the screen, and then select from the drop down menu either *Read from Slot A* or *Read from Slot B*.

2. A browser will open, allowing you to navigate to any location the computer can access (*Figure 11*).

Figure 11. Browsers for LUT Read

Mac

Windows



3. Enter a file name in the *Save As:* or *File name:* box.
4. Select a LUT file format in the *Files of Type:* or *Save as type:* box.
5. Click the *Save* button. A thermometer bar is displayed reporting the progress of the Read.

Sample LUT Files

Sample LUT files are included with the Mini-Config application and are installed onto your computer along with the Mini-Config application. These files are accessed differently, depending on the whether you are using a Mac or PC.

Mac Sample LUT File Access

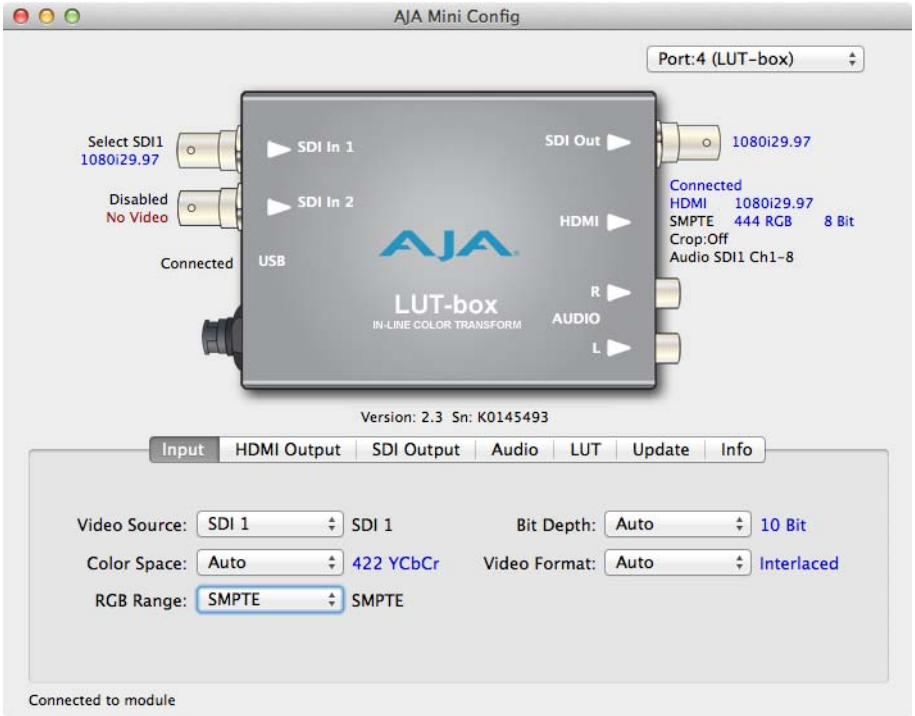
On a Mac, sample LUT files are included in the application package that is installed on the computer. You need to open this package to access the sample LUT files. They cannot be accessed directly from the Mac Mini-Config browser.

1. Using the Mac finder, access the installed location of the Mini-Config application. By default it is installed in the *Applications* folder.
2. Right click on the Mini-Config application name and select *Show Package Contents*.
3. Navigate to the LUT files, located at *Contents/Resources/types/lut_box*. Two folders are used, one for 1D-LUTs and the other for 3D-LUTS.
4. Copy the files to another location accessible to your computer and to the LUT-box Mini-Converter.
5. You will now be able to use Mini-Config to access and write the sample LUT files into your LUT-Box.

PC Sample LUT File Access

On a PC, sample LUT files are installed by default into the *Program Files/AJA/MiniConfig/types/lut_box* folder. Two directories are used, one for 1D-LUTs and the other for 3D-LUTS. These locations are accessible directly from the Mini-Config browser. The sample LUT files can also be copied to another location accessible by that computer, if desired.

Input Screen



Use the Input screen to view and make changes to the converter's input settings.

Video Source Selects the input video connectors to use. Choose from the following:

- SDI 1 (Single Link (SL) video, using only the SDI 1 input BNC) (default)
- SDI 1 +2 (Dual Link (DL) video, using both BNCs 1 and 2)

Color Space Selects the Input Video Color Space. Choose from the following:

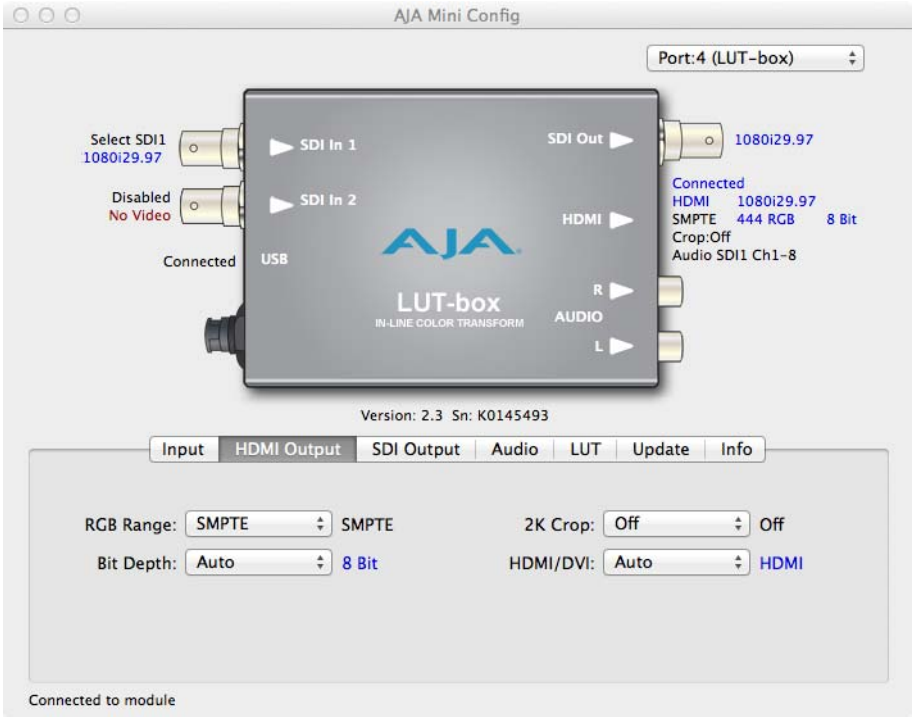
- Auto - automatically selects color mode based on the input video parameters and payload ID (default).
- 422 YCbCr (SL)
- 444 RGB (DL)
- 444 YCbCr (DL).

RGB Range Selects the Input Video Color Range. Choose SMPTE (default) or Full color range. Only applicable if SDI input is 444 RGB format.

Bit Depth Selects the input video bit depth. Choose from Auto, 8-bit, 10-bit, or 12 bit. Choosing "Auto" automatically selects the bit depth based on the input video parameters and the payload ID.

Video Format Selects the Input Video Format. Choose from Auto, Progressive, Interlaced, or PsF. Choosing "Auto" automatically selects the format based on the input video parameters and the payload ID.

HDMI Output Screen



Use the HDMI Output screen to view and make changes to the converter's HDMI video output settings.

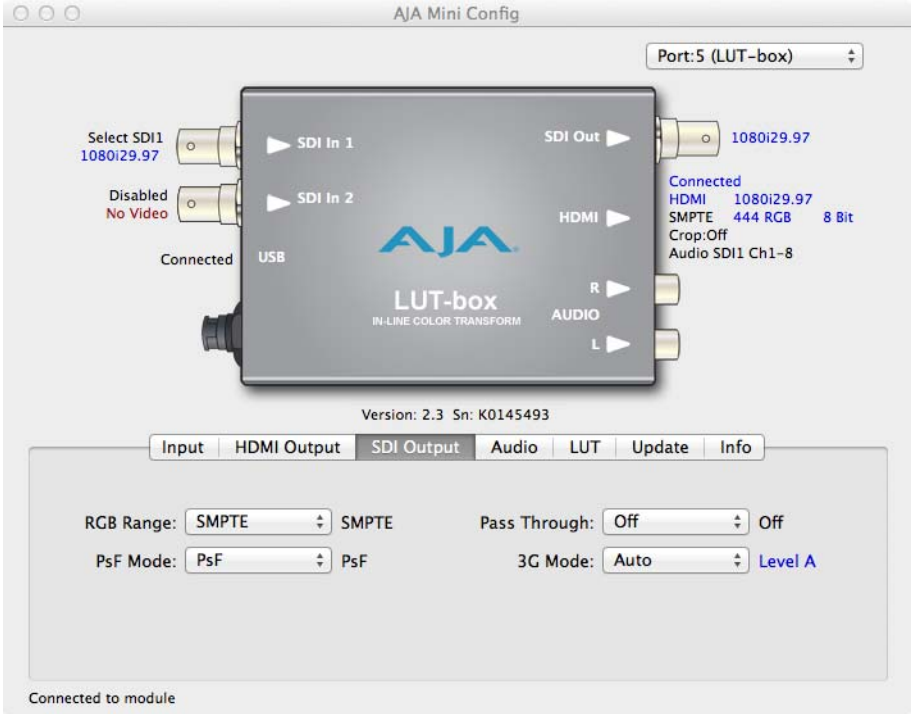
RGB Range Selects the Input Video Color Range. Choose SMPTE or Full color range.

Bit Depth Selects the input video bit depth. Choose from Auto, 8-bit, 10-bit, or 12 bit. Choosing "Auto" automatically selects the bit depth based on the input video parameters and the payload ID.

2K Crop Select from Off or On. Provides the option of center cutting 2Kx1080 video signals to make 1920x1080. Default is Off.

HDMI/DVI Choose Auto, HDMI, or DVI. When DVI is selected, any audio signals present are not passed. DVI only supports 8-bit video. Choosing "Auto" (default) automatically selects the output mode based on the attached device's capabilities.

SDI Output Screen



Use the SDI Output screen to view and make changes to the converter's SDI video output settings.

RGB Range Selects the Input Video Color Range. Choose SMPTE (default) or Full color range. Only applicable if SDI output is 444 RGB format.

PsF Mode Selects what mode an incoming PsF signal will have on the SDI output. Choose Psf (default) or Progressive. Only applicable if SDI input is PsF video, and the SDI output *Pass Through* setting is Off.

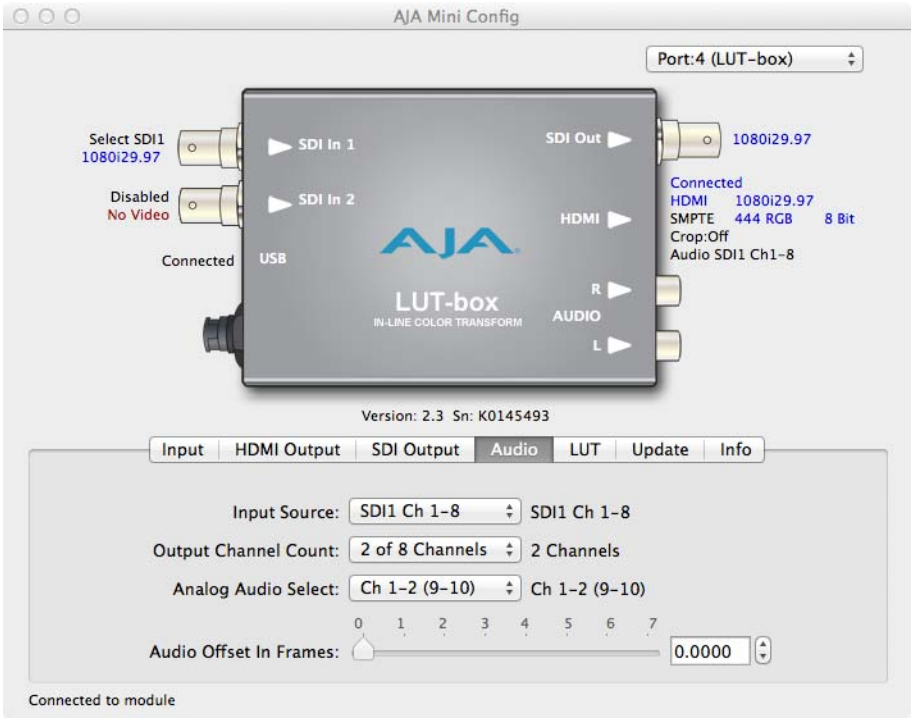
NOTE: The LUT-Box HDMI output is always progressive for PsF input video.

Pass Through Choose Off or On (default is Off). When On, LUT processing is bypassed on the SDI output. This permits the comparison of unprocessed pass through SDI video on the SDI output alongside LUT processed video displayed on the HDMI output.

3G Mode Choose from Auto (default), Level A, or Level B. Auto selects the input 3G format.

NOTE: The SDI output color space and bit depth always follows the SDI input.

Audio Screen



Use the Audio screen to view and make changes to the LUT-box settings.

NOTE: When using the DVI video protocol no audio is output on the HDMI connector, since that protocol is video only.

Input Source Choose which group of eight embedded SDI input audio channels on the SDI1 input connector to use for routing to the audio outputs.

- SDI1 Ch. 1-8
- SDI1 Ch. 9-16

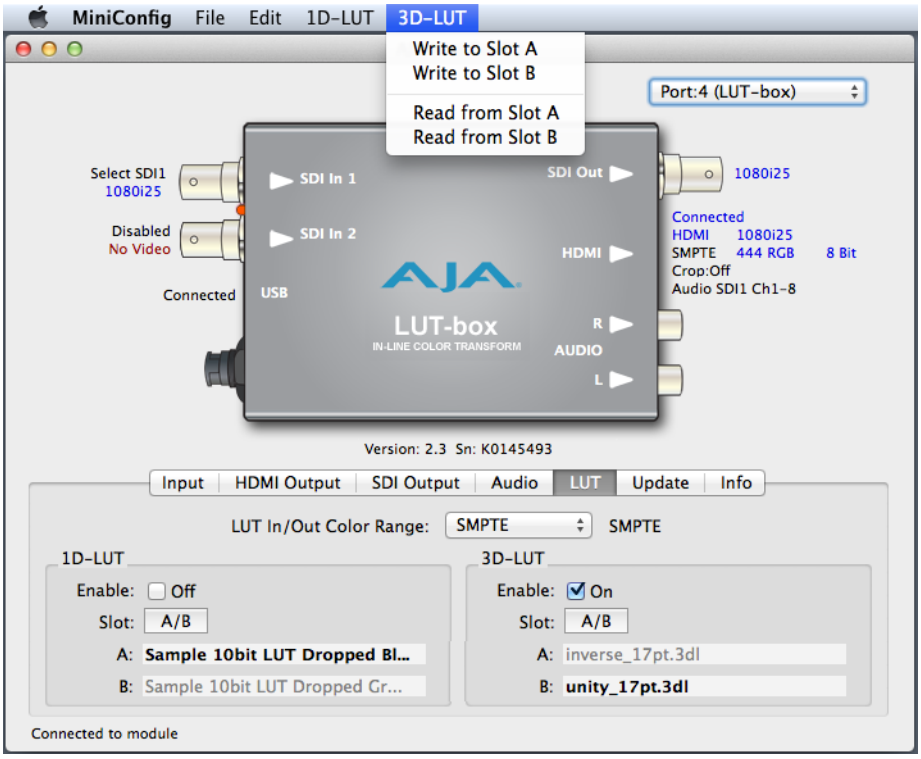
Output Channel Count Choose Auto, 2-channel or 8-channel embedded audio for the HDMI output. Choosing "Auto" automatically selects the audio channels based on the attached device's capabilities. This control does not affect the SDI output, which always embeds 8 audio channels.

Analog Audio Select Choose which two incoming SDI audio channels from the selected group are routed to the analog audio outputs. Choose from Ch 1-2 (9-10) through Ch 7-8 (15-16).

Audio Offset In Frames Permits time shifting the audio outputs in relationship to the video (for example, to correct for lip sync problems), in 1/16 of a frame increments. Delay range is up to +7.0 video frames. The actual time duration of delay will vary depending on the frame rate of the format being converted.

NOTE: Any video to audio delay caused by LUT processing is automatically corrected. Zero offset sets the output video to audio relationship the same as the incoming signals.

LUT Screen



Use the LUT screen to view and make changes to the LUT-box LUT settings. With this screen you can enable and disable LUT processing and switch between the different LUTs.

LUT In/Out Color Range Controls color space range input and output for both 1D- and 3D-LUTs.

- SMPTE (default)
- Full

NOTE: The LUT In/Out Color Range must match the setting used when the LUT was generated.

1D and 3D LUT Settings

The lower part of the screen has two areas, one for 1D LUTs, and the other for 3D LUTs. The controls in these two areas perform identical functions for each type of LUT.

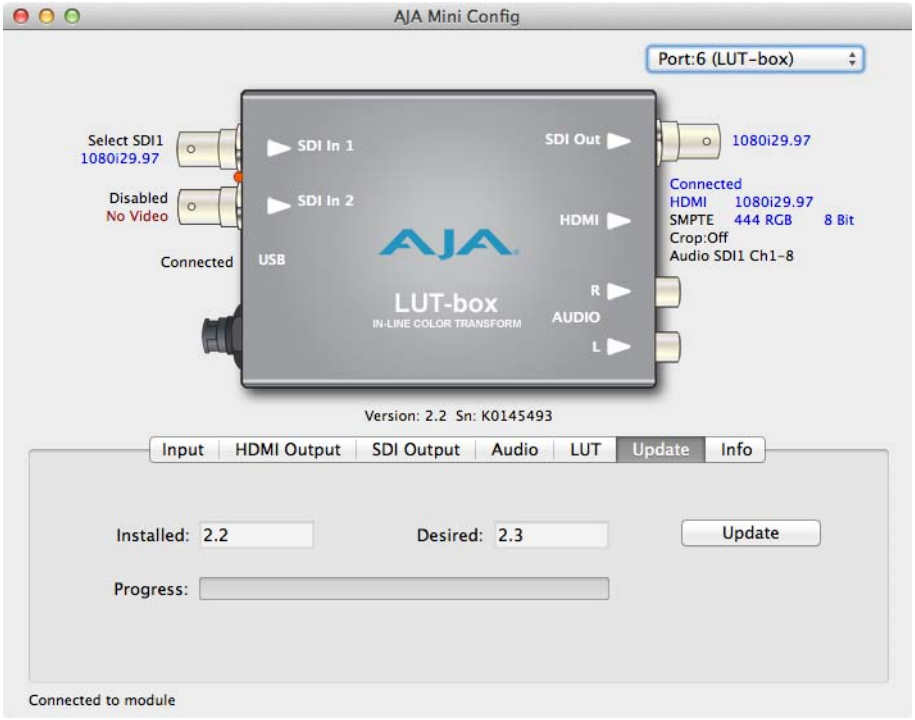
Enable Enables LUT processing. Choose from On or Off. Clicking on the control toggles between the On and Off states, allowing you to watch the output on a display device as you apply and remove LUT processing.

Slot Toggles between the A and B slots. When LUT processing is enabled above, you can A/B compare between the two sets of LUT data while watching the output on a display device.

A and B Displays the file name of the source of the LUT data currently residing in that slot. The file name of the currently selected slot (whether enabled or not) is displayed in bold text.

See *"Write and Read Controls" on page 13* for LUT data Write and Read procedures.

Update Screen



Use this Update 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.

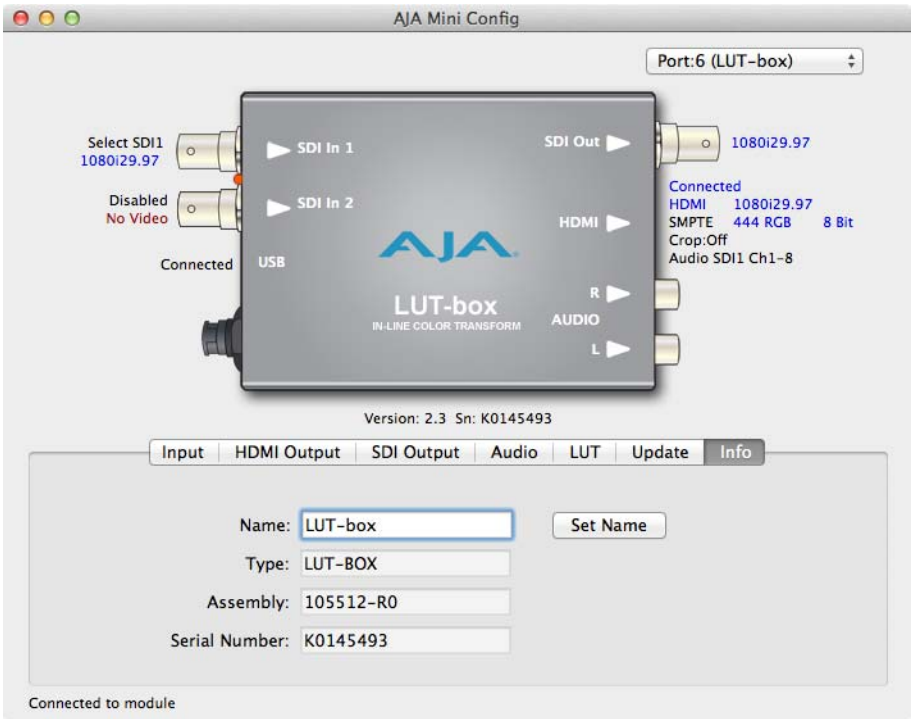
Progress: This indicator bar shows the progress of firmware installation.

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/en/products/mini-converters/mini-config-software
2. Connect the Mini-Converter to a Mac or PC via a USB port on the computer and run the new Mini-Config software just downloaded.
3. Click on the Update tab screen.
4. Check the Installed version level against the Desired version level. If the Desired is newer, then click the *Update* button to download the new firmware to the Mini-Converter; progress will be shown via the "Progress" thermometer bar.

Info Screen



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

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

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

Assembly: This is the factory assembly number.

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

Appendix A: Specifications

Video Input

- 3G-SDI with embedded audio, 2 x BNC
- 3G single link
- HD dual link
- HD single link
- YCbCr 4:2:2 8-bit and 10-bit, RGB 4:4:4 10-bit and 12-bit supported

Input Formats

3G-SDI Input

- 2048x1080p 4:4:4, 23.98, 24, 25, 29.97, 30, Level B
- 2048x1080PsF 4:4:4, 23.98, 24, 25, 29.97, 30, Level B
- 2048x1080p 4:2:2, 50, 59.94, 60, Level A and Level B
- 1920x1080p 4:4:4, 23.98, 24, 25, 29.97, 30, Level B
- 1920x1080PsF 4:4:4, 23.98, 24, 25, 29.97, 30, Level B
- 1920x1080p 4:2:2, 50, 59.94, 60, Level A and Level B
- 1920x1080i 4:4:4, 25, 29.97, 30, Level B

HD-SDI Dual Link Input

- 2x2048x1080p 4:4:4, 23.98, 24, 25, 29.97, 30
- 2x2048x1080PsF 4:4:4, 23.98, 24, 25, 29.97, 30
- 2x2048x1080p 4:2:2, 50, 59.94, 60
- 2x1920x1080p 4:4:4, 23.98, 24, 25, 29.97, 30
- 2x1920x1080PsF 4:4:4, 23.98, 24, 25, 29.97, 30
- 2x1920x1080p 4:2:2, 50, 59.94, 60

HD-SDI Input

- 2048x1080p 4:2:2, 23.98, 24, 25, 29.97, 30
- 2048x1080PsF 4:2:2, 23.98, 24, 25, 29.97, 30
- 1920x1080p 4:2:2, 23.98, 24, 25, 29.97, 30
- 1920x1080PsF 4:2:2, 23.98, 24, 25, 29.97, 30
- 1920x1080i 4:2:2, 25, 29.97, 30 (50, 59.94, 60 fields)
- 1280x720p 4:2:2, 50, 59.94, 60

Video Output

- 3G-SDI with embedded audio, 1 x BNC
- HDMI with embedded audio, up to 36-bit Deep Color Support, 1 x HDMI 1.4 Type A

NOTE: PsF inputs are always converted to progressive on the HDMI output. Mini-Config allows the SDI output to be set to either PsF or progressive for a PsF input signal.

NOTE: HDMI/DVI output is always RGB color space.

Audio Input

- SDI embedded audio input, up to 8 channels

Audio Output

- SDI embedded audio output, up to 8 channels
- HDMI embedded audio output, 2 or 8 channels
- 2-channel analog audio output (-10dBV nominal), 2 x RCA style connector

LUT File Format Support

10-bit and 12-bit 1D LUTs, and 12-bit 17 or 16 point 3D LUTs, are supported in these formats:

1D LUT file types:

- .cube
- .lut
- .txt

3D LUT file types:

- .3dl
- .cube
- .lut
- .txt

Physical

Power

- +5 to 20V DC regulated, 8 watts max
- AJA external power supply model DWP-U-R1 (included):
  - 100-240V, 50/60Hz universal input

Size

- 5.8" x 3.1" x 1" (147mm x 79mm x 25mm)

Environment

Operating Temperature: 0 to 40 degrees C (32 to 104 degrees F)

Operating Relative Humidity: 10-90% non-condensing

Operating Altitude: <3,000 meters (<10,000 feet)

Safe Storage Temperature (Power OFF): -40 to 60 degrees C (-40 to 140 degrees F)

Appendix B: Safety and Compliance

Federal Communications Commission (FCC) Compliance Notices

Class B Interference Statement

This equipment has been tested and found to comply with the limits for a Class B 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 B 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 B 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 B prescrites dans le Règlement sur le brouillage radioélectrique du ministère des Communications du Canada. Cet appareil numérique de la Classe B 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.

CE

This equipment meets the following conformance standards:

Safety: IEC 60065: 2001 + A1: 2005 + A2: 2010 (CB Scheme Report/Certificate)

EN 60065: 2002 + A1: 2006 + A11: 2008 + A2: 2010 + A12: 2011 (GS License

Additional licenses issued for specific countries available on request.

Emissions: EN 55103-1: 2009

EN 61000-3-2: 2009, EN 61000-3-3: 2008

Environments: E2, E3 and E4

Immunity: EN 55103-2: 2009

EN 61000-4-2:2009, EN 61000-4-3:2010, EN 61000-4-4:2010, EN 61000-4-5:2005, 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 B 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 B. 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 B. 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

B급 기기 (가정용 방송통신기자재)	이 기기는 가정용(B급) 전자파적합기기로서 주로 가정에서 사용하는 것을 목적으로 하며, 모든 지역에서 사용할 수 있습니다.
Class B (Broadcasting Communication Equipment for Home Use)	As an electromagnetic wave equipment for home use (Class B), this equipment is intended to use mainly for home use and may be used in all areas.

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 B product based on the standard of the Bureau of Standards, Metrology and Inspection (BSMI) CNS 13438, Class B. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Japanese Compliance Statement

2. Class B ITE

この装置は、クラスＢ情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。

取扱説明書に従って正しい取り扱いをして下さい。

ＶＣＣＩ－Ｂ

This is a Class B product based on the standard of the VCCI Council (VCCI V-3/2011.04). If this is used near a radio or television receiver in a domestic environment, it may cause radio interference. Install and use the equipment according to the instruction manual.

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!

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

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

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

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

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

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

Warning!

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

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

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

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

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

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

Warning!

Unplug this device during lightning storms or when unused for long periods of time.

Avertissement! Débranchez cet appareil pendant les orages avec éclairsou s'il est inutilisé pendant de longues périodes.

Warnung! Das Gerät ist bei Gewitterstürmen oder wenn es über lange Zeiträume ungenutzt bleibt vom Netz zu trennen.

¡Advertencia! Desenchufe este dispositivo durante tormentas eléctricas o cuando no se lo utilice por largos periodos del tiempo.

Aviso! Desconecte este dispositivo da tomada durante trovoadas ou quando não é utilizado durante longos períodos de tempo.

Avviso! Utilizzare soltanto i collegamenti e gli accessori specificati e/o venduti dal produttore, quali il treppiedi e l'esoscheletro.

Warning!

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

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

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

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

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

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

Warning!

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

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

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

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

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

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

Warning!

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

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

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

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

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

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

Warning!

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

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

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

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

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

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

Warranty Information

Limited Warranty

AJA Video Systems, Inc. (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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Index

Numerics

1D and 3D LUT Settings *20*
2K Crop (HDMI output) setting *17*
3G Mode (SDI output) setting *18*

A

A/B Slot *20*
Analog Audio Select setting *19*
Audio Offset In Frames setting *19*
Audio Screen *19*

B

Bit Depth (HDMI output) setting *17*
Bit Depth (input) setting *16*
Block Diagram *6*

C

Color Space (input) setting *16*
Compliance Statements *25*

D

Documentation
    Downloading *9*
    Mini-Converter *9*

E

Enable LUT Processing setting *20*

F

Features *5*

H

HDMI Output Screen *17*
HDMI/DVI setting *17*

I

I/O Connections *7*
Info Screen *22*
Input Screen *16*
Input Source setting *19*
Input Tab Screen *16*
Installation *7*

L

LUT
    Read procedure *14*
    Write procedure *14*
LUT file name *6*
LUT In/Out Color Range *20*
LUT Read *6*
LUT Read Controls *13*
LUT sample files *15*
LUT Screen *20*
LUT Write *6*
LUT Write Controls *13*

M

Mac Sample LUT File Access *15*
Mini-Config
    Acquiring *9*
    Installation on Mac *10*
    Installation on PC *9*
    Operation *12*
    Running Multiple Converters *12*
    Screen Description *13*
    Startup *11*
Mini-Config Screen
    Audio *19*
    HDMI Output *17*
    Info *22*
    Input *16*
    LUT *20*
    SDI Output *18*
    Update *21*
Mini-Converter Documentation *9*

O

Output Channel Count setting *19*
Overview *5*

P

Pass Through (SDI output) setting *18*
PC Sample LUT File Access *15*
PsF Mode (SDI output) setting *18*

R

Read Controls *13*
Read LUT *6*
Read LUT Data Procedure *14*
RGB Range (HDMI output) setting *17*
RGB Range (input) setting *16*
RGB Range (SDI output) setting *18*

S

Safety Statements *25*
Sample LUT File
    access on Mac *15*
    access on PC *15*
Sample LUT Files *15*
SDI Output Screen *18*
Slot A & B description *6*
Slot setting *20*
Software Update Procedure *21*

Specifications *23*

U

Update Screen *21*

V

Video Format setting *16*
Video Source (input) setting *16*

W

Warnings
    Safety *25*
Write and Read Description *6*
Write Controls *13*
Write LUT *6*
Write LUT Data Procedure *14*