RovoRx

UltraHD HDBaseT Receiver

Installation and Operation Guide

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AJA VIDEO SYSTEMS

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Telephone	+1.530.271.3190
FAX	+1.530.271.3140
Web	https://www.aja.com
Support Email	support@aja.com
Sales Email	sales@aja.com

Contents

Chapter 1 – RovoRx Introduction

System Overview

RovoCam is AJA's first compact block camera for industrial, corporate, security, ProAV and broadcast applications.

RovoRx-HDMI and RovoRx-SDI are companion receiver units that offer the simplest reception option for RovoCam. They are UltraHD/HD HDBaseT Receivers with integrated HDMI or SDI video and audio outputs specifically designed to receive RovoCam's output and drive displays. This allows one to receive the RovoCam's output up to 100m (328') away from the camera itself and display the output on a display wherever needed, greatly simplifying workflows and systems integration.

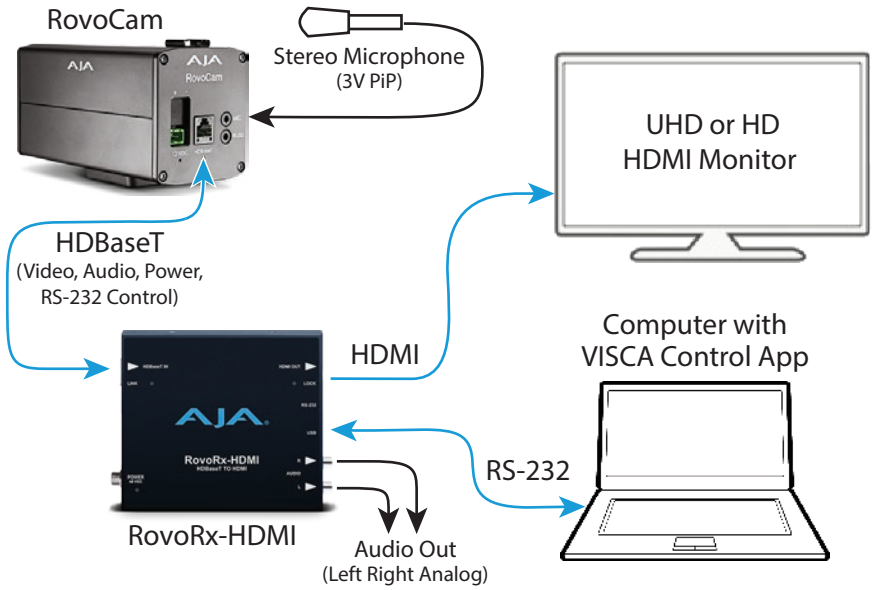
A single Cat5e/6 cable carries all uncompressed video, two-channel audio, VISCA camera control, and power for the simplest installation ever due to RovoCam's integrated HDBaseT interface. Delivering this much functionality and power with single cable connectivity dramatically simplifies the installation, camera setup and footprint requirements.

RovoRx-SDI includes a frame sync function which supports using a RovoCam camera feed in a video production environment.

RovoRx-HDMI and RovoRx-SDI can also be used with any compatible HDBaseT transmitter, not just RovoCam.

NOTE: The HDBaseT format uses RJ-45 connectors but does not support Ethernet. HDBaseT is point-to-point signal transport.

Figure 1. RovoCam System Diagram, with Audio and Computer



RovoCam can receive power from the RovoRx over a Cat5e/6 cable (*Figure 1*), or powered locally using its 12VDC connector (*Figure 2*).

Figure 2. RovoCam System Diagram, with Hardware Controller

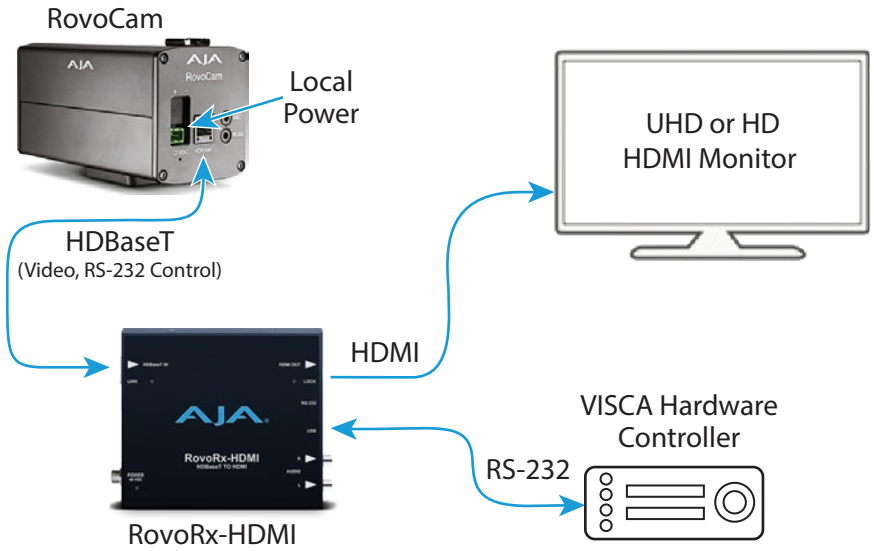
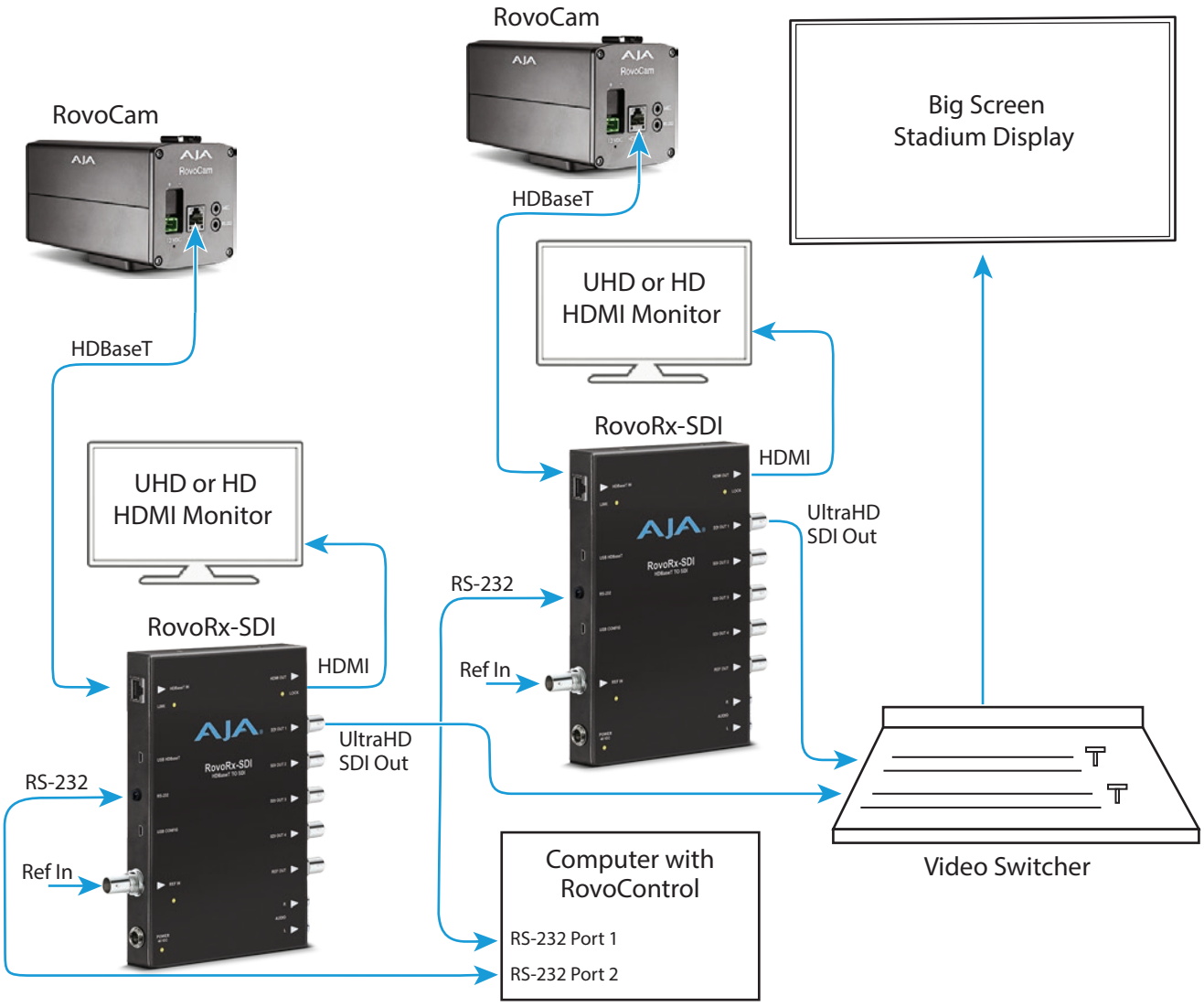


Figure 3. Two RovoCam System Diagram, with RovoRx-SDIs



Pairing RovoRx with HB-T Transmitters

RovoRx-HDMI and RovoRx-SDI can also receive HDBaseT signals up to UltraHD from other HDBaseT transmitters. Examples include AJA's HB-T-HDMI and HB-T-SDI model Mini-Converters.

An AJA RovoRx device may work with other HDbaseT sources, although it was primarily designed to receive signals from RovoCam. This manual focuses only on using RovoRx with RovoCam.

Features

Hardware

RovoRx-HDMI

- 1 x HDMI 1.4b output
- 2 x RCA analog audio outputs
- 1 x RS-232 for RovoCam control via SONY VISCA
- 1 x HDBaseT connector (RJ-45)
- 1 x USB HDBT (future use)
- 48VDC power supply (included)

RovoRx-SDI

- 1 x HDMI 1.4b output
- 4 x 6G/3G-SDI BNC outputs
- Loop through Reference BNC
- 2 x RCA analog audio outputs
- 1 x USB for firmware upgrades and Mini-Config configuration
- 1 x RS-232 for RovoCam control via SONY VISCA
- 1 x HDBaseT connector (RJ45)
- 1 x USB HDBT (future use)
- 48VDC power supply (included)

Software

- AJA RovoControl software available for download from the AJA website
- RovoCam accepts VISCA camera control
- A variety of third-party software controllers are also available.
- RovoRx-SDI can use AJA's Mini-Config application for firmware updates and advanced configuration.

Warranty

- Five year AJA warranty on RovoRX-HDMI and RovoRx-SDI.

What's In The Box?

When you unpack your product you'll find the following components:

- AJA RovoRx-HDMI or RovoRx-SDI Mini-Converter
- 48VDC power supply with AC cable
- (RovoRx-SDI only) standard USB to USB micro cable

In addition the following item is available from AJA as part of the HB-CABLE-KIT:

- 3.5mm TRS to DB9 adapter cable

NOTE: This cable is also widely available for purchase from other sources.

Please save all packaging for future shipping.

In This Manual

Chapter 1 - Introduces the RovoCam system, briefly describing the components, features, box contents, and system requirements.

Chapter 2 - Describes the RovoRx-HDMI hardware, connections, and system installation.

Chapter 3 - Describes the RovoRx-SDI I hardware, connections, system installation, and configuration using Mini-Config.

Appendix A - Provides specifications for various aspects of the system.

Appendix B - Contains important caution, warning, and compliance statements.

Warranty and Index

Chapter 2 – RovoRx-HDMI Receiver

RovoRx-HDMI Overview

RovoRX-HDMI converts uncompressed HDMI Video/Audio signals up to UltraHD for reception via HDBaseT over CAT type twisted pair cable. It can also send and receive RS-232 control signals over the same cable. Video and audio can be received by this device over distances up to 328 feet/ 100 meters on Cat 6a cable. See *"Appendix A Specifications" on page 27* for a complete list of supported formats, frame rates, and CAT cable requirements.

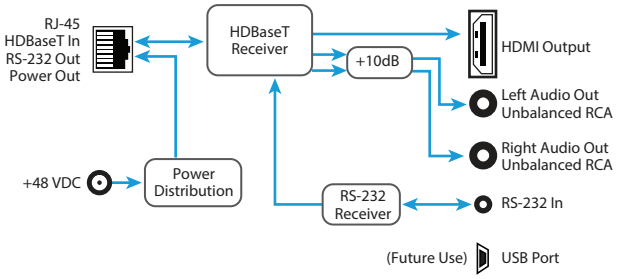
The simple and economical RovoRx-HDMI is designed to pair with the AJA RovoCam camera, to provide video, audio, control and power transmission using a single CAT cable. RovoRx-HDMI can also be used with any compatible HDBaseT transmitter, including AJA's HB-T-HDMI and HB-T-SDI Mini-Converters.

RovoRx-HDMI Features

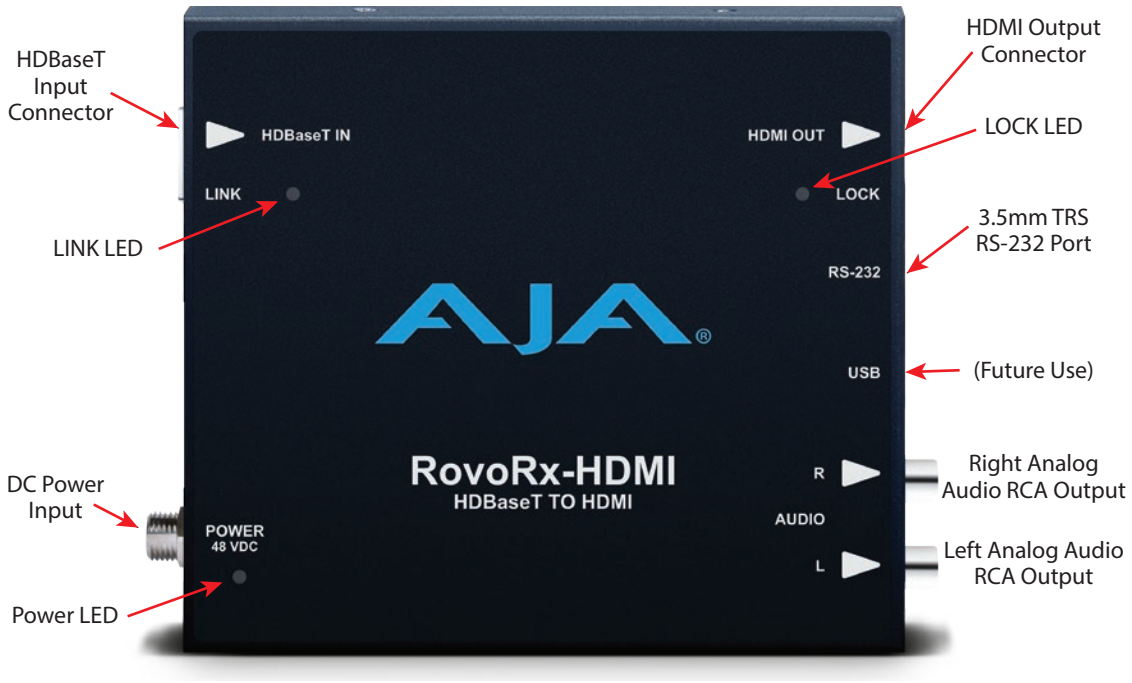
RovoRx-HDMI

- 1x HDMI (UltraHD capable) output
- Extend uncompressed UltraHD or HD HDMI signal up to 100m over CAT cable
- RS-232 control on the same RJ-45 cable
- Two channel unbalanced analog audio outputs, when used with RovoCam and optional stereo microphone
- 48VDC power supply (included)
- Optional RS232 Cable Kit (HB-CABLE-KIT)
- 5-year warranty

RovoRx-HDMI Block Diagram



RovoRx-HDMI I/O Connections



NOTE: The LINK LED, when green, indicates an active HDBaseT connection.

NOTE: The LOCK LED, when blinking green, indicates a lock to a valid video source.

System Installation

RovoRx-HDMI Installation with RovoCam

Typically, installation consists of the following steps:

1. Ensure the RovoRx-HDMI converter is disconnected from power.
2. Connect the RovoCam HDBaseT RJ-45 output to the HDBaseT RJ-45 input connector with an approved CAT cable type and length.
3. Connect the RovoRx-HDMI output to the HDMI input of a destination device (in this example, an HDMI monitor) with an HDMI cable.
4. Connect the 48 VDC power connector to the RovoRx-HDMI, and then connect the provided DC power supply to an AC power source with the supplied cable.

NOTE: The RovoCam camera ships configured for 1080p59.94.

5. Power up the HDMI monitor. You should see the camera image on the monitor. This confirms the camera and links are working.
6. Connect a control source to the RS-232 input connector, using a 3.5mm TRS cable.
7. Install and configure RovoControl (or a third-party control application) for operation with the RovoCam system.

Audio Level

The RovoCam microphone input is a single ended stereo audio input with a fixed 20dB of gain. The RovoRx has a fixed audio gain of 10dB, giving a system gain of 30dB which will bring a typical microphone output up to line level.

System Ground and Audio

When the RovoCam is used with RovoRx, the power provided by RovoRx has 1500V isolation from ground, meaning that the RovoCam is electrically isolated from ground. When RovoCam is used with an external microphone, the microphone is also isolated from ground, and there will be no noise issues. If you use the RovoCam microphone input from source equipment which is grounded it can cause ground loops in the system and unintended noise will be heard on the microphone input. To correct this, the user can ground the RovoCam camera by connecting a ground wire to the negative input of the 12V DC power connection. This will effectively tie the camera to earth ground and eliminate the unwanted noise.

RovoRx-HDMI Rack Mounting

The RovoRx-HDMI can be mounted to a rack using AJA's optional RMB bracket. The threaded holes in the case can also be used for mounting without the bracket, using 1/4 inch 440 thread screws.

RovoRx-HDMI units can also be installed in AJA's DRM frame, but each RovoRx-HDMI will require its own external power supply (provided). If unused space is not available in the DRM frame, the power supplies can be tie-wrapped above or below the frame, provided air flow is not restricted.

Chapter 3 – RovoRx-SDI and Mini-Config

RovoRx-SDI Overview

RovoRX-SDI converts uncompressed HDMI Video/Audio signals up to UltraHD for reception via HDBaseT over CAT type twisted pair cable. It includes a frame sync function, designed specifically to lock the RovoCam signal to a facility reference for use in a production facility. RovoRX-SDI is designed to pair with the AJA RovoCam camera, to provide video, audio, RS-232 control and power transmission using a single CAT cable. Video and audio can be received by this device over distances up to 328 feet/ 100 meters on Cat 6a cable, to drive displays or ingest into an SDI production environment. RovoRX-SDI can also be used with any compatible HDBaseT transmitter, including AJA's HB-T-HDMI and HB-T-SDI Mini-Converters. See *"Appendix A Specifications" on page 27* for a complete list of supported formats, frame rates, and CAT cable requirements.

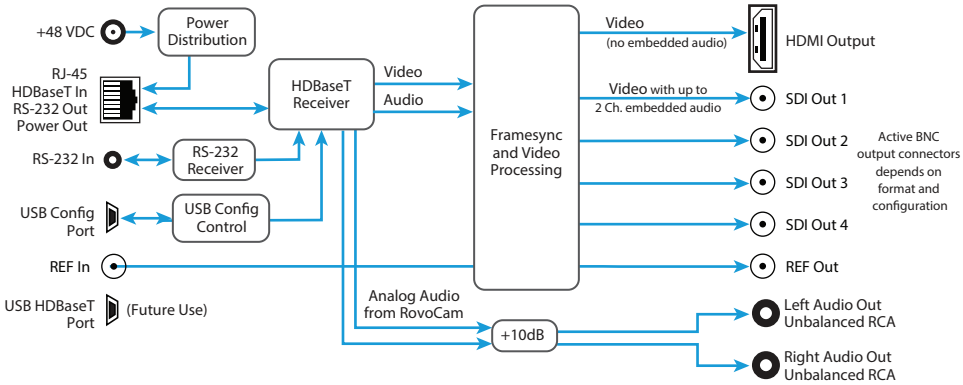
NOTE: The RovoRx-SDI packs an unprecedented feature set into a Mini-Converter box. As a result, the unit uses approximately 14.5 watts of power. It will be very warm to the touch, which is normal. The unit is engineered to operate across the full temperature range, from 0 to 40 degrees C.

RovoRx-SDI Features

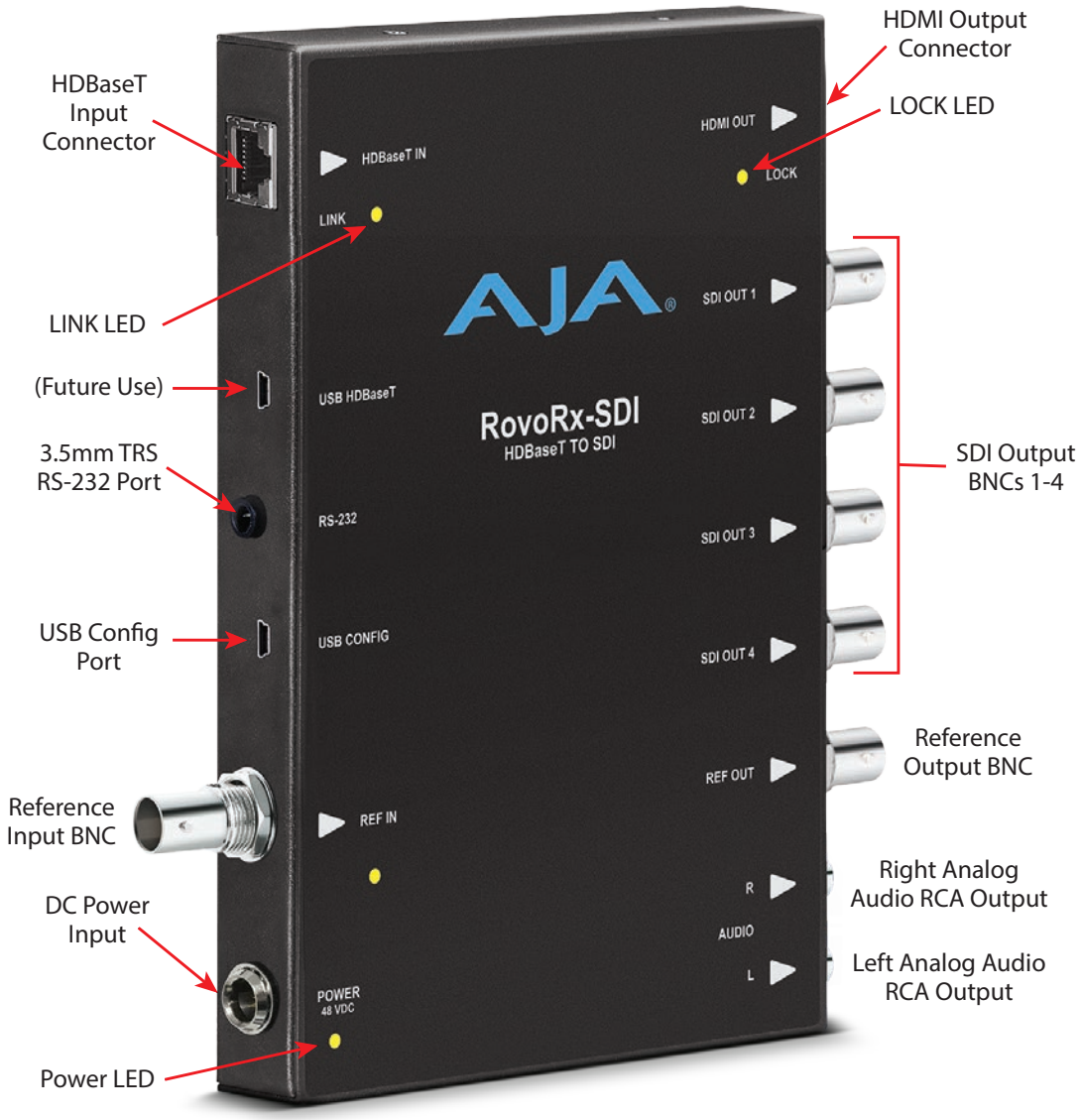
- Integrated Framesync with genlock to external reference
- 4x 6G/3G-SDI BNC outputs
- 1x HDMI (UltraHD capable) output
- 6G-SDI output of UltraHD
- Loop through Reference BNCs
- DA Mode for distributing multiple SDI signals from an HDBaseT source
- UHD Downconverter
- 1080p50/59.94 to 1080p25/29.97 frame rate converter
- 1080p50/59.94 to 1080i25/29.97 interlacer
- Extend uncompressed UltraHD or HD HDMI signal up to 100m over CAT cable
- RS-232 control on the same RJ-45 cable
- Two channel unbalanced analog audio outputs, when used with RovoCam and optional stereo microphone
- Mini-Config support for control and status

- 48VDC power supply (included)
- Optional RS232 Cable Kit (HB-CABLE-KIT)
- 5-year warranty

RovoRx-SDI Block Diagram



RovoRx-SDI I/O Connections



NOTE: The LINK LED, when green, indicates an active HDBaseT connection.

NOTE: The LOCK LED, when blinking green, indicates a lock to a valid video source.

System Installation

NOTE: For highest reliability, the Mini-Converter relies on convection cooling instead of using a built-in fan. Therefore, when installing the unit, mount in a location where it has access to air for proper cooling. Do not stack the RovoRx-SDI with other Mini-Converters.

RovoRx-SDI Installation with RovoCam

Typically, installation consists of the following steps:

1. Ensure the RovoRx-SDI converter is disconnected from power.
2. Connect the RovoCam HDBaseT RJ-45 output to the HDBaseT RJ-45 input connector with an approved CAT cable type and length.

3. Connect the RovoRx-SDI HDMI output to the HDMI input of a destination device (in this example, an HDMI monitor) with an HDMI cable.
4. Connect the RovoRx-SDI BNC outputs to the SDI inputs of a destination device. Begin with the SDI 1 connector.
5. Connect the 48 VDC power connector to the RovoRx-SDI, and then connect the provided DC power supply to an AC power source with the supplied cable.

NOTE: The RovoCam camera ships configured for 1080p59.94 video format.

6. Power up the HDMI monitor. You should see the camera image on the monitor. This confirms the camera and links are working.
7. Connect a control source to the RS-232 input connector, using a 3.5mm TRS cable.
8. Install and configure RovoControl (or a third-party control application) for operation with the RovoCam system.
9. For advanced features (for example, DA output) and specific SDI output configuration, download and install AJA's Mini-Config application onto a PC or Mac (see *"USB Control and Setup—Using AJA Mini-Config" on page 16*)

Audio Level

The RovoCam microphone input is a single ended stereo audio input with a fixed 20dB of gain. The RovoRx has a fixed audio gain of 10dB, giving a system gain of 30dB which will bring a typical microphone output up to line level.

System Ground and Audio

When the RovoCam is used with RovoRx, the power provided by RovoRx has 1500V isolation from ground, meaning that the RovoCam is electrically isolated from ground. When RovoCam is used with an external microphone, the microphone is also isolated from ground, and there will be no noise issues. If you use the RovoCam microphone input from source equipment which is grounded it can cause ground loops in the system and unintended noise will be heard on the microphone input. To correct this, the user can ground the RovoCam camera by connecting a ground wire to the negative input of the 12V DC power connection. This will effectively tie the camera to earth ground and eliminate the unwanted noise.

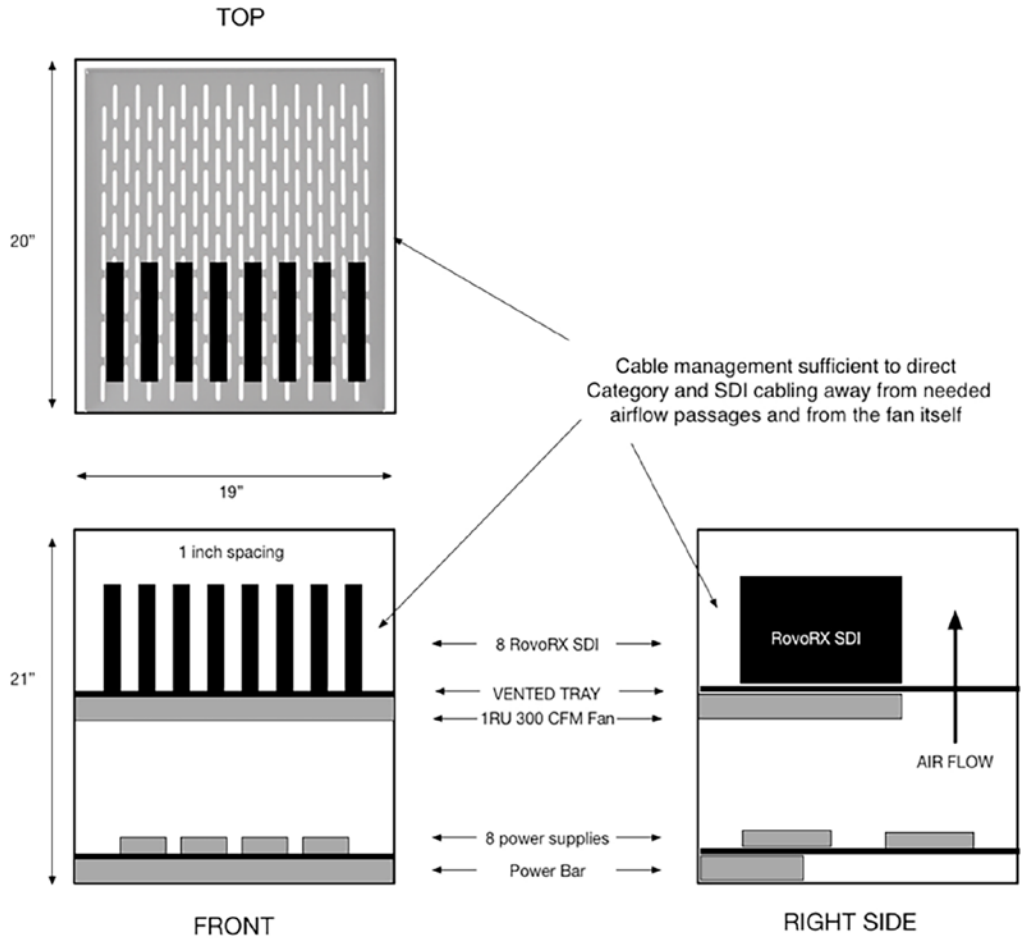
RovoRx-SDI Rack Mounting

The RovoRx-SDI is too large to be mounted into AJA's DRM frame, and the location of the unit's threaded holes are incompatible with AJA's RMB bracket.

The threaded holes in the case of the RovoRx-SDI can be used for mounting, using 1/4 inch 440 thread screws. However each RovoRx-SDI runs at about 18 watts, so air movement will be required wherever it is installed. The separate RovoRx-SDI power suppliy can be tie-wrapped to the rack frame, provided air flow is not restricted.

Figure 4 shows an example of mounting multiple RovoRx-SDI unit into a rack frame that ensures adequate cooling.

Figure 4. RovoRx-SDI Rack Mounting Example



USB Control and Setup—Using AJA Mini-Config

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

Acquiring AJA Mini-Config

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

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

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

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

Mini-Converter Documentation

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

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

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

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

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

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

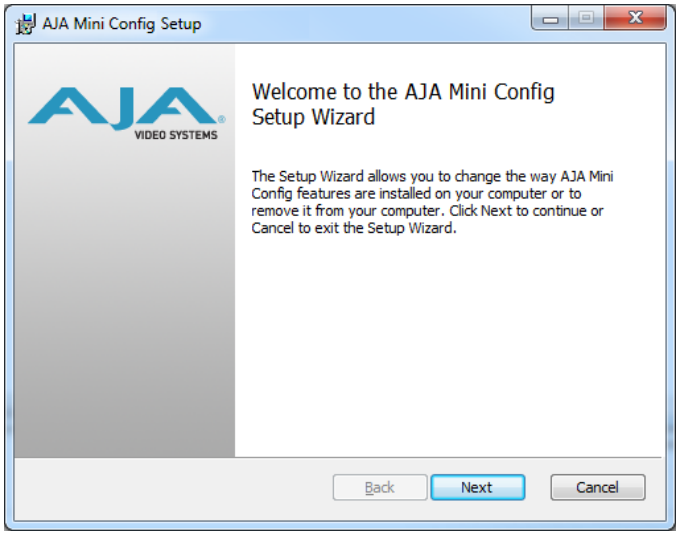
Installing AJA Mini-Config

PC Installation

To install AJA Mini-Config on a Windows PC:

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

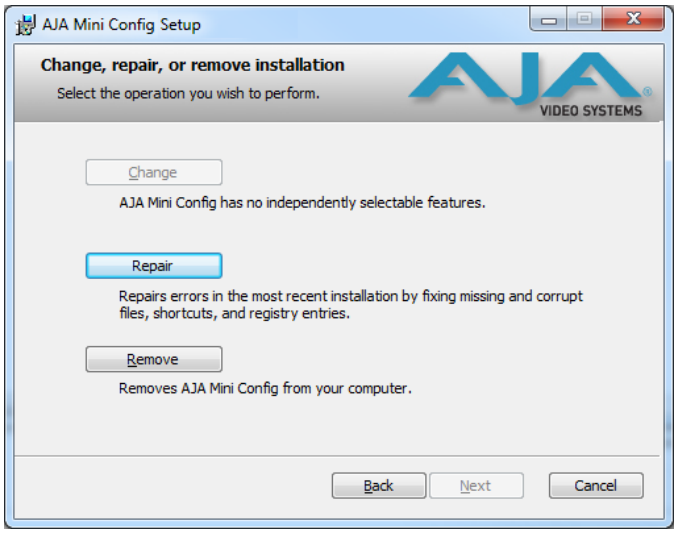
Figure 5. AJA Mini-Config PC Setup Wizard



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

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

Figure 6. AJA Mini-Config Setup Wizard, Reinstallation



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

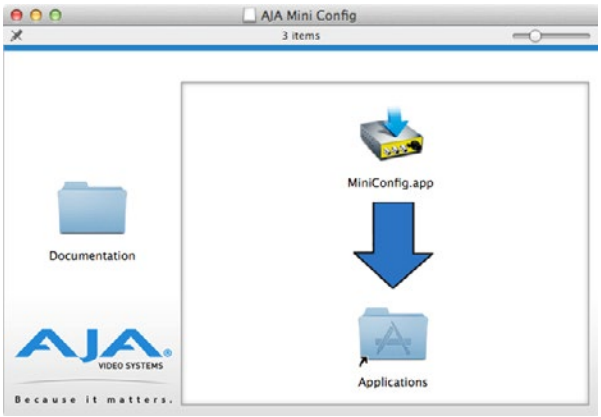
Mac Installation

To install the application on a Mac:

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

1. Download the application from the AJA website (select the Apple icon on the AJA Mini-Config Support webpage).
2. Open the AJA_MiniConfig folder.
3. Double-click on the AJAMiniConfig.dmg file.
4. Answer the prompt and a utility program will be launched.

Figure 7. AJA Mini-Config Mac Installer



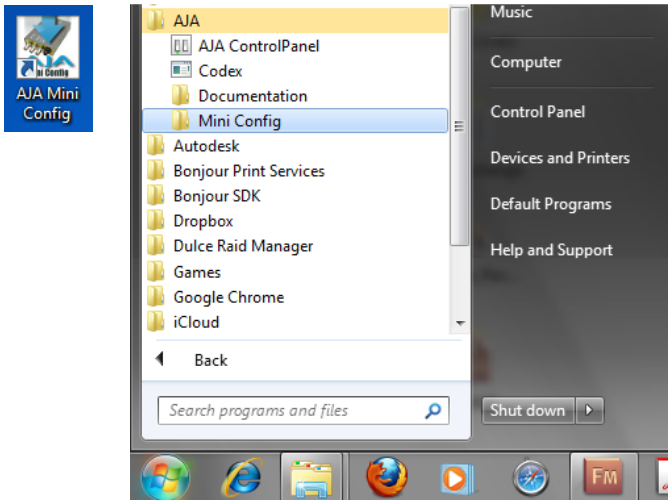
5. To complete the installation drag the “MiniConfig.app” icon to the Applications folder.

Running AJA Mini-Config

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

PC Startup

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

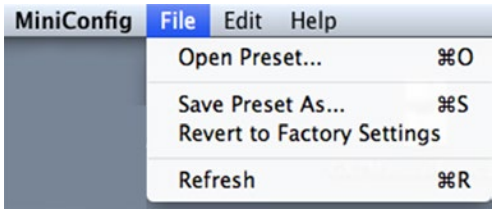


Mac Startup

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

Saving Setups

A **File** drop down menu on the AJA Mini-Config application bar allows you to save the current state of the Mini-Converter to a preset file for later recall.



Using this feature you can set up the converter for different applications, storing each configuration (**Save Preset As...**) with a unique name for easy recall (**Open Preset...**).

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

Operating AJA Mini-Config

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

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

- Blue text indicates the values automatically selected
- Black text indicates values that you have manually selected

- Red text indicates the Mini-Converter is not detecting a signal, or cannot operate with the current user settings.

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

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

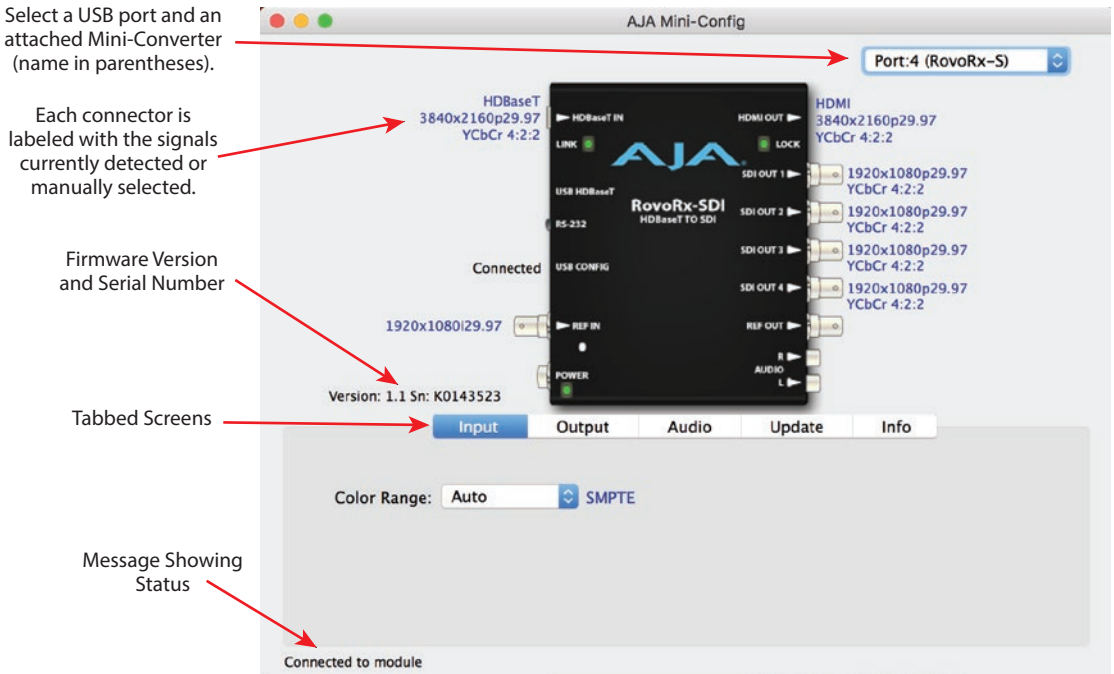
Screens are virtually the same on both PC and Mac, with subtle differences that reflect the general look of the platform environment.

Running Multiple Mini-Converters

AJA 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 AJA 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 8. Example AJA Mini-Config Screen



NOTE: The LINK LED, when green, indicates an active HDBaseT connection.

NOTE: The LOCK LED, when blinking green, indicates a lock to a valid video source.

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

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

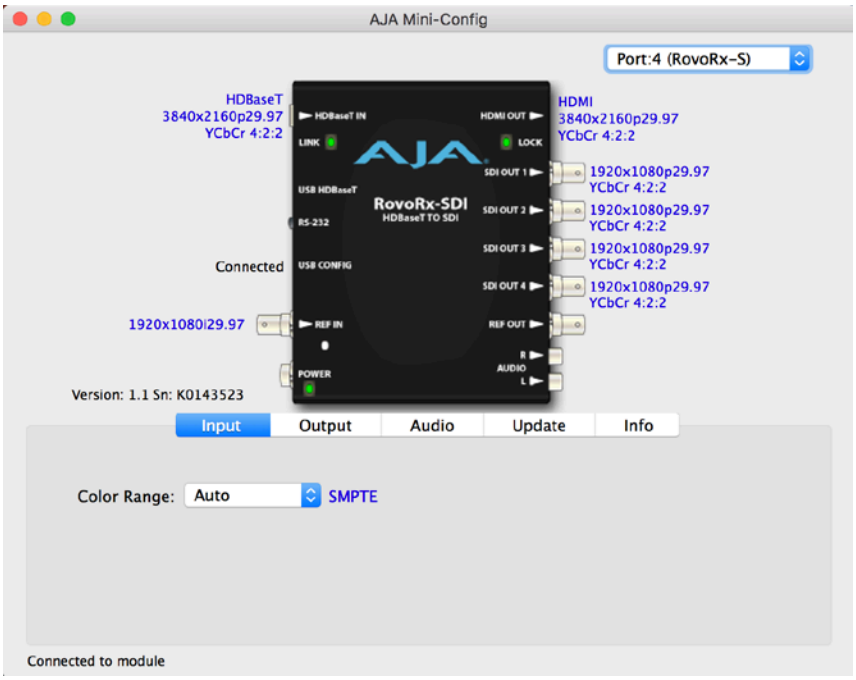
A status field at the bottom of the screen shows if your application is connected and communicating with the Mini-Converter.

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

Tabbed Screens

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

Input Tab Screen



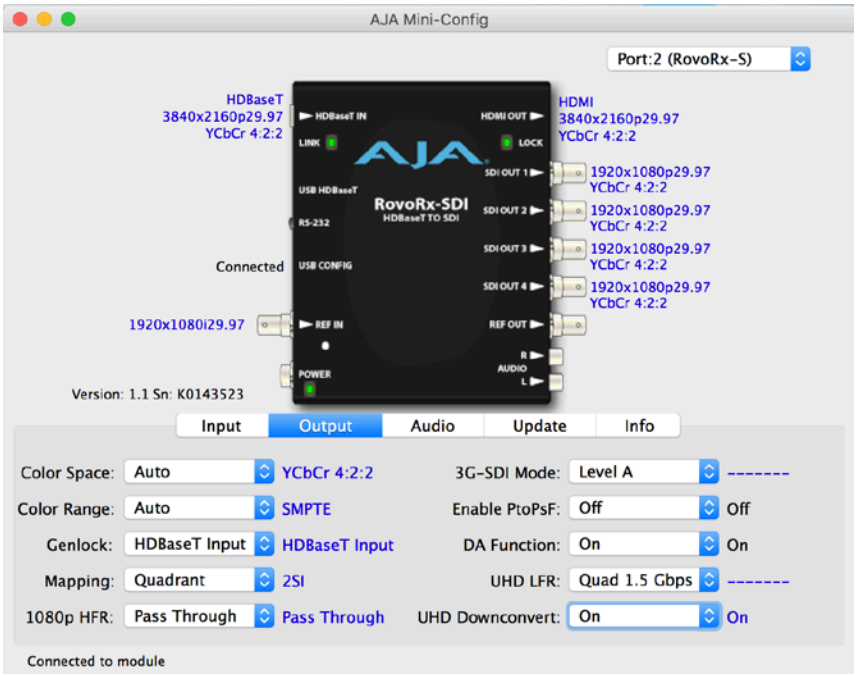
Click on the Input tab to view and make changes to the converter's input settings.

Color Range

Selects the Input Video Color Range for RGB signals. Choose from:

- Auto (default)
- SMPTE
- Full

Output Tab Screen



Color Space

Selects the desired output video format. Choose from the following:

- Auto- (default) Selects the video format based on the input video and the attached device's capabilities.
- 4:2:2 YCbCr (8/10/12-bit depth)
- 4:4:4 RGB (8-bit depth)
- 4:4:4 YCbCr (8-bit depth)

NOTE: The number of output BNC connectors that will be used can depend on the selected color space and video format. See "UHD LFR" on page 23.

Color Range

Selects the Color Range. Choose from the following:

- Auto - (default) Selects SMPTE vs Full based on incoming HDMI and setting of Input Color Range.
- SMPTE
- Full

Genlock

Select the genlock reference. Choose from the following:

- HDBaseT Input (default) - Locks to incoming clock.
- Ext.Reference - Locks to incoming reference signal..

Mapping

Select the UltraHD mapping format:

- Quadrant - Square Division
- 2SI - Two Sample Interleave

1080p HFR

This parameter lets you choose to drop every other frame of high frame rate UltraHD or HD 50/59.94p video input. It offers two conversions:

- Frame rate conversion of UltraHD/1080p50 to 1080p25 and UltraHD/1080p59.94 to 1080p29.97.
- Progressive to interlace conversion to 1080i25 or 1080i29.97.

Select from:

- Pass Through - No modification of the input signal
- 1080p 25/29 - Alternate frames are dropped to create 1080p 25/29
- 1080i 25/29 - Alternate frames are dropped to create 1080i 25/29

This parameter is particulary useful if the input source has doubled the frame rate when converting from UltraHD to HD.

NOTE: When AJA's RovoCam is operating in RovoControl's ePTZ mode (UltraHD downconverted to HD for pan and zoom control), frames will be duplicated, creating a doubled frame rate.

3G-SDI Mode

Selects the 3G SDI Video Mode. Choose from the following:

- Level A (default)
- Level B

Enable PtoPsF

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

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

DA Function

Choose to replicate the signal on any extra BNC outputs. How this feature works depends on signal bandwidth, and is disabled under some circumstances. When disabled the On/Off status next to the control is replaced with dashes (-------).

- Off - (default) no video sent to any extra BNC outputs.
- On - For HD signals and single link 6Gbps UltraHD LFR 4:2:2 signals, three additional copies of the signal are sent to the SDI Out 2, 3, and 4 BNCs. For dual link output signals one additional copy of the signal is sent to the pair of SDI Out 3 and 4 BNCs.

UHD LFR

Controls what output video transport method will be used for Low Frame Rate incoming video, using all four BNC outputs, two BNC outputs, or one BNC output. How this feature works depends on signal bandwidth. The status next to the control reports the actual output signal. Choose from the following:

- Quad 1.5 Gbps
- Dual 3 Gbps
- Single 6 Gbps

NOTE: The number of output BNC connectors used depends on the video transport, color space, and video format. For example, if a 4:4:4 color space is selected for a UltraHD LFR video format, and Single 6.0 Gbps is selected here, four 3G signals are required for that bandwidth so all four BNC outputs must be used for that one signal. In this case the DA Function will be disabled.

UHD Downconvert

This function downconverts an UltraHD input to an HD output; 3840x2160p25 to 1920x1080p25 and 3840x2160p29.97 to 1920x1080p29.97. The UltraHD input may be single link 6G-SDI, dual-link 3G-SDI, or quad-link 1.5G-SDI. The output will be 1.5G-SDI (one output) unless DA mode is on, then four outputs will have 1.5G-SDI.

- Choose On or Off.

Audio Tab Screen

Click on the Audio tab to view and make changes to the converter's audio settings.

Audio Insertion

Choose insert or suppress audio output.

- Insert - (default) Inserts incoming audio from RovoCam into the first two channels of the SDI BNC embedded audio outputs.

NOTE: Audio is only routed to the SDI BNC output connectors. No audio is sent to the HDMI output.

  - In Quad output mode, the SDI embedded audio will only be sent out the SDI Out 1 BNC.
  - In Dual output mode, when the DA function is Off the audio will only be sent out the SDI Out 1 BNC. When the DA Function is On, the audio will also be sent out the SDI Out 3 BNC.
  - In Single output mode, when the DA function is Off the audio will only be sent out the SDI Out 1 BNC. When the DA Function is On, the audio will also be sent out the SDI Out 2, 3, and 4 BNCs.

- Suppress - Turns the audio off on the SDI output.

Mute Channels 1/2

When checked, mutes the SDI outputs (silent audio is output).

Update Tab 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 firmware 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

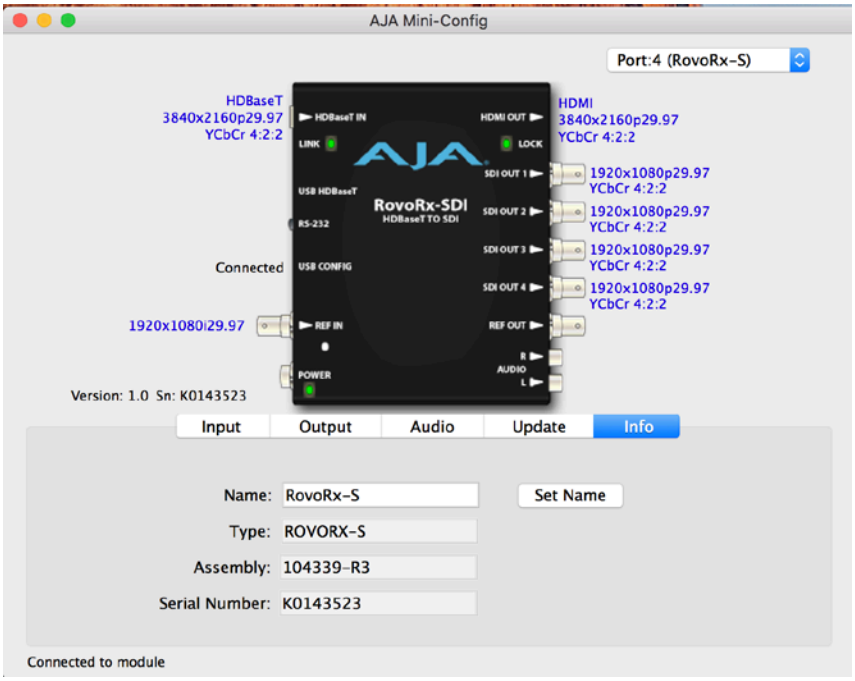
1. Check the AJA website for new Mini-Config software for your Mini-Converter. If new software is found, download it and uncompress the file archive (zip). Here is the URL to use when checking:

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

Info Tab Screen



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

Name

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

Type

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

Assembly

This is the factory assembly number.

Serial Number

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

Appendix A – Specifications

RovoRx-HDMI Tech Spec

Video Formats

- (UltraHD) 3840 x 2160p 25, 29.97
- (HD) 1080p 50, 59.94
- (HD) 1080i 25, 29.97
- (HD) 720p 50, 59.94
- (SD) 625i
- (SD) 525i

Video Input

- HDBaseT (RJ-45)

Video Output

- HDMI 1.4b

*No embedded audio

VESA Displays

W x H	Frame Rate	Color Sampling	Max. Cable Length		Max. Bit Depth
			Cat 5e/6	Cat 6a/7	
640 x 480	to 85 fps	4:4:4	100 meters	100 meters	24-bit
800 x 600	to 120 fps	4:4:4	100 meters	100 meters	24-bit
1024 x 768	to 120 fps	4:4:4	100 meters	100 meters	24-bit
1152 x 768	-	4:4:4	100 meters	100 meters	24-bit
1280 x 768	to 120 fps	4:4:4	100 meters	100 meters	24-bit
1280 x 800	to 120 fps	4:4:4	100 meters	100 meters	24-bit
1280 x 1024	to 120 fps	4:4:4	100 meters	100 meters	24-bit
1360 x 768	to 120 fps	4:4:4	100 meters	100 meters	24-bit
1366 x 768	to 120 fps	4:4:4	100 meters	100 meters	24-bit
1440 x 1050	to 120 fps	4:4:4	100 meters	100 meters	24-bit
1440 x 900	to 120 fps	4:4:4	100 meters	100 meters	24-bit
1600 x 1200	to 75 fps	4:4:4	100 meters	100 meters	24-bit
	120 fps	4:4:4	100 meters	100 meters	24-bit
		4:4:4	100 meters	100 meters	24-bit
1680 x 1050	to 85 fps	4:4:4	70 meters	100 meters	24-bit
	120 fps	4:4:4	100 meters	100 meters	24-bit
		4:4:4	70 meters	100 meters	24-bit
1920 x 1200	to 120 fps	4:4:4	100 meters	100 meters	24-bit
1920 x 1440	to 60 fps	4:4:4	70 meters	100 meters	24-bit
2560 x 1600	60_RB	4:4:4	70 meters	100 meters	24-bit

Audio Output Analog*

- 1 x RCA connector, 2-Channel unbalanced

*NOTE: This feature only works when used in conjunction with RovoCam

RS-232

- 1 x 3.5mm TRS Input for RS-232/VISCA bidirectional signals

User Interface

- AJA RovoControl software (Mac and Windows)
- Third party VISCA software or hardware controllers

USB

- 1 x USB for firmware and additional control

Size (w x d x h)

- 4.03" x 5.2" x 0.94" (102.4mm x 132mm x 23.9mm)

Weight

- 0.7 lbs (0.4kg)

Power

- RovoRx-HDMI only: 48V @ 125mA = 6W typical, 48V @ 156mA = 7.5W max
- RovoRx-HDMI powering RovoCam: 48V @ 271mA = 13W typical, 48V @ 312mA = 15W max

Environment

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

RovoRx-SDI Tech Specs

Video Formats

- (UltraHD) 3840 x 2160p 25, 29.97
- (HD) 1080p 25, 29.97, 50, 59.94
- (HD) 1080i 25, 29.97
- (HD) 720p 50, 59.94
- (SD) 625i
- (SD) 525i

Video Input

- HDBaseT (RJ-45), Analog Video reference terminating input
- REF IN supports tri-Level and bi-level sync (SDI outputs only)

Video Output

- HDMI 1.4b, No EDID negotiation, No embedded audio
- 6G-SDI output on SDI 1-4
  - 4 x 6G-SDI while in "DA Mode"
  - UltraHD 3840 x 2160p 25, 29.97
  - UltraHD 4:2:2 or 4:4:4 (4 x BNC)
  - UltraHD LFR 3.0 GB 2SI (2 x BNC)
  - UltraHD LFR 1.5 GB 2SI (4 x BNC)

- 3G-SDI (Level A or B)
  - (HD) 1920 x 1080p 25, 29.97, 50, 59.94
- HD-SDI
  - (HD) 1920 x 1080i 50, 59.94
  - (HD) 1280 x 720p 50, 59.94
- SD-SDI
  - (SD) 625i 50
  - (SD) 525i 59.94

Audio Output Digital

- 2-Channels (1 pair) of SDI embedded audio supported
- Rates supported: 48 kHz

*No Audio on HDMI output

Audio Output Analog

- 2 x RCA connectors, 2-Channel unbalanced

*NOTE: This feature only works when used in conjunction with RovoCam Audio

RS-232

- 1 x 3.5mm TRS Input for RS-232 bidirectional signals

USB Config

- 1 x USB for configuration with AJA Mini-Config

Size (w x d x h)

- 4.66" x 6.97" x 0.94" (118mm x 177mm x 23.9mm)

Weight

- 0.8 lbs (0.4kg)

Power

- RovoRx-SDI only: 48V @ 303mA = 14.5W typical, 48V @ 335mA = 16W max
- RovoRx-SDI powering RovoCam: 48V @ 450mA = 21.6W typical, 48V @ 480mA = 23W max

Environment

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

Cat Cable Recommendations

The cable types in the table below are recommended for maximum performance reach and full -capacity by the HDBaseT Alliance.

Table 1. Recommended Cables for Ultra-HD Video Transmission

Type	Manufacturer	URL
CAT7 S/FTP	Teldor	http://www.teldor.com/
CAT6A H/STP	Teldor	http://www.teldor.com/
CAT.7	Earthline	http://products.lappgroup.com/online-catalogue/data-communication-systems-for-ethernet-technology/

Video Displays

Figure 9. HDBaseT Cable Run Performance for 4K/UltraHD/HD

W x H	Frame Rate	Color Sampling	Max. Cable Length		Max. Bit Depth
			Cat 5e/6	Cat 6a/7	
1920 x 1080	< 30 fps	4:2:2	100 meters	100 meters	16-bit
	> 30 fps	4:2:2	100 meters	100 meters	12-bit
		4:2:2	70 meters	100 meters	16-bit
2048 x 1080	< 30 fps	4:2:2	70 meters	100 meters	16-bit
	> 30 fps	4:2:2	100 meters	100 meters	12-bit
		4:2:2	70 meters	100 meters	16-bit
3840 x 2160	< 30 fps	4:4:4	70 meters	100 meters	8-bit
	> 30 fps	4:2:0	70 meters	100 meters	8-bit
4096 x 2160	< 30 fps	4:4:4	70 meters	100 meters	8-bit
	> 30 fps	4:2:0	70 meters	100 meters	8-bit

RS-232 Cable Option

The RS-232 pinout diagram provided below pertains to the AJA cable bundle provided as an optional purchase. This chart depicts the complete RS-232 pinout specification. As noted, only three connections are commonly used today and are supported in the AJA cable option.

DTE to DCE Connections:

DTE Device (Computer) DB9			Signal Direction	DCE Device (Modem) DB9		
Pin # DB9	RS-232 Signal Names			Pin # DB9	RS-232 Signal Names	
#1	Carrier Detector (DCD)	CD	←	#1	Carrier Detector (DCD)	CD
#2	Receive Data (Rx) *	RD	←	#2	Receive Data (Rx) *	RD
#3	Transmit Data (Tx) *	TD	→	#3	Transmit Data (Tx) *	TD
#4	Data Terminal Ready	DTR	→	#4	Data Terminal Ready	DTR
#5	Signal Ground/Common (SG) *	GND	—	#5	Signal Ground/Common (SG) *	GND
#6	Data Set Ready	DSR	←	#6	Data Set Ready	DSR
#7	Request to Send	RTS	→	#7	Request to Send	RTS
#8	Clear to Send	CTS	←	#8	Clear to Send	CTS
#9	Ring Indicator	RI	←	#9	Ring Indicator	RI
Soldered to DB9 Metal - Shield		F GND	—	Soldered to DB9 Metal - Shield		F GND

* As is common current practice, only these pins and functions are supported.

NOTE: For additional Cable and HDBaseT information, visit www.HDBaseT.org.

Appendix B – Safety and Compliance

Federal Communications Commission (FCC) Compliance Notices

Class A Interference Statement

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

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

FCC Caution

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

Canadian ICES Statement

Canadian Department of Communications Radio Interference Regulations

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

Règlement sur le brouillage radioélectrique du ministère des Communications

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

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

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

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

Declaration of Conformity

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

CE This equipment meets the following conformance standards:

Safety:

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

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

Additional licenses issued for specific countries available on request.

Emissions:

EN 55032: 2012, EN 55022: 2010, CISPR 22: 2008,

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

Immunity:

EN 55103-2: 2009, EN 61000-4-2:2009, EN 61000-4-3:2006+A1:2008+A2:2010,

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

EN 61000-4-11:2004

Environments: E2, E3 and E4

The product is also licensed for additional country specific standards as required for the International Marketplace.

Warning! This is a Class A product. In a domestic environment, this product may cause radio interference, in which case, the user may be required to take appropriate measures.

Achtung! Dieses ist ein Gerät der Funkstörgrenzwertklasse A. In Wohnbereichen können bei Betrieb dieses Gerätes Rundfunkstörungen auftreten, in welchen Fällen der Benutzer für entsprechende Gegenmaßnahmen verantwortlich ist.

Attention! Ceci est un produit de Classe A. Dans un environnement domestique, ce produit risque de créer des interférences radioélectriques, il appartiendra alors à l?utilisateur de prendre les mesures spécifiques appropriées..

Recycling Notice

This symbol on the product or its packaging indicates that this product must not be disposed of with your other household waste. Instead, it is your responsibility to dispose of your waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste for recycling, please contact your local authority, or where you purchased your product.

Korea KCC Compliance Statement

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

Taiwan Compliance Statement

警告使用者：
這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

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

Japanese Compliance Statement

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

This is a Class A product based on the standard of the VCCI Council (VCCI V-3/2015.04). 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 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! 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! 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.

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.

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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