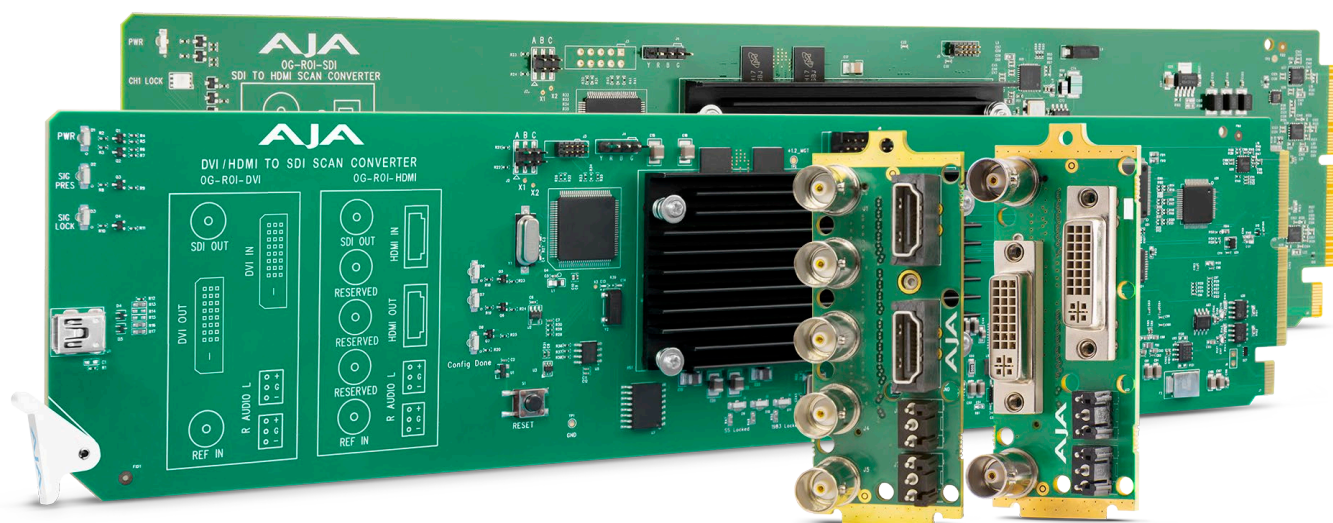


# OG-ROI Series

## Region of Interest Converters

## DVI, HDMI, SDI to SDI Scalers



# Installation and Operation Guide

Version 1.9r1

Published December 28, 2023



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Please have all pertinent information at hand prior to contacting AJA support or sales.

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

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

Shipping Address: AJA Video Systems  
180 Litton Drive  
Grass Valley, CA 95945, USA

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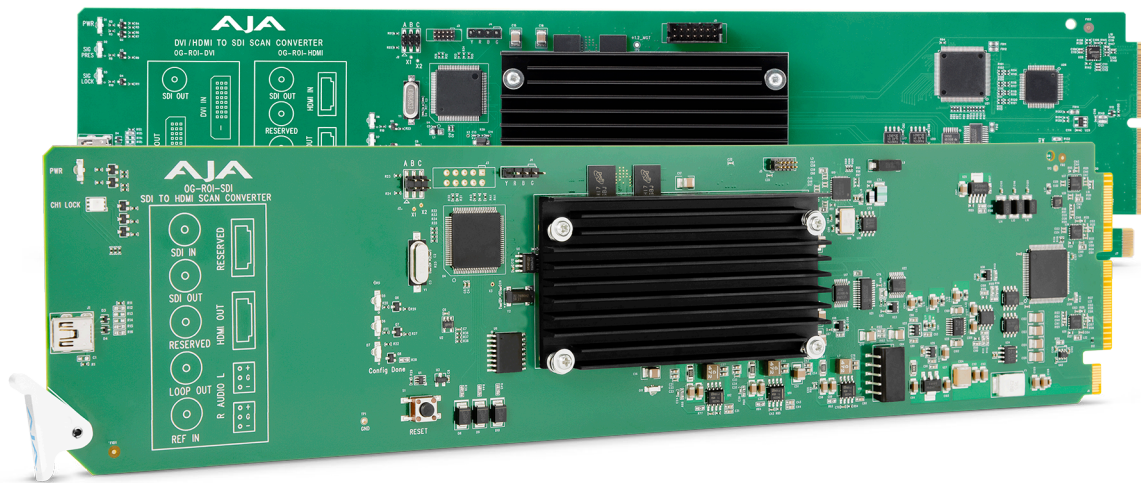
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# Chapter 1 – Introduction

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## Overview

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AJA's OG-ROI family of scalers/scan converters provide exceptionally high quality conversion of computer and video signals in an openGear form factor. The OG-ROI models offer Region of Interest (ROI) support allowing DVI, HDMI and SDI input signals to be scaled and converted to an SDI output. The OG-ROI-SDI model also provides a scaled HDMI output. With incredible image scaling, extensive aspect ratio and frame rate conversion, OG-ROI fulfills the need to scale computer and video to a desired resolution, all in realtime.

The three models of OG-ROI openGear cards available are:

- OG-ROI-DVI
- OG-ROI-HDMI
- OG-ROI-SDI

Designed for use in high-density openGear 2RU frames, including AJA's OG-X-FR 2RU frame, the OG-ROI Series is capable of communicating with Ross Video's DashBoard Control System. DashBoard runs on Windows®, macOS®, and Linux®, providing convenient, industry-standard configuration, monitoring and control of the openGear architecture over a PC or local network.

## Video Processing

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In default mode, the OG-ROI-DVI and OG-ROI-HDMI models automatically detect the input signal format and convert it to the SDI (and HDMI, for the OG-ROI-SDI) output video format. Their respective DVI and HDMI outputs pass the signal through without any processing, maintaining the incoming signal aspect ratio.

For the OG-ROI-SDI, the incoming signal is passed to the SDI Loop Through Output, without any processing, maintaining the incoming signal aspect ratio. The processed signal goes to both the HDMI output and the SDI output.

In Auto mode, if there is a difference in aspect ratio relative to the input and output format, the unused area is filled with a user-configurable matte color. For example, a 720p input will matte with a 625i output and vice versa, due to their different aspect ratios of 16:9 and 4:3, respectively. However, a 720p input will not matte with a 1080p output as they both have a 16:9 aspect ratio.

## Audio Handling

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### OG-ROI-DVI, OG-ROI-HDMI

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Analog audio from the host can be input via 3-pin analog audio connectors and mapped to the embedded SDI output stream. Alternatively, when an HDMI input signal is present, the HDMI input's embedded audio can be mapped to the embedded SDI output stream.

The OG-ROI-DVI model can receive both DVI and HDMI protocol input, and accepts audio if it is embedded in an HDMI signal. However, the DVI protocol does not carry audio, so if the OG-ROI-DVI is receiving DVI input, only analog audio can be embedded to the output.

### OG-ROI-SDI

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Digital audio embedded in the SDI input is carried through to both the SDI output and the HDMI output. Analog audio can be output through the 3-pin analog audio connectors (2 channels). Digital audio can be embedded through the SDI output as 24-bit, 8 channel, and/or through the HDMI output as 24-bit, 2 channel or 8 channel.

## HDCP Protection

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The OG-ROI honors HDCP, and will not allow an HDCP link. If the input content is HDCP protected, no source video will be displayed on the OG-ROI's DVI pass-through connector, or on the OG-ROI's SDI output.

## Features

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### OG-ROI-DVI

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- Converts DVI input to 3G, HD, or SD-SDI output

### OG-ROI-HDMI

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- Converts HDMI input to 3G, HD, or SD-SDI output

### OG-ROI-SDI

---

- Extracts 3G-SDI input and outputs to 3G, HD, SD-SDI and/or HDMI

### All OG-ROI Models

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- openGear compatible card
- EDID Emulation (OG-ROI-HDMI and OG-ROI-DVI)
- 3G-SDI output (and HDMI 1.4 output for OG-ROI-SDI)
- Supports SD, HD, and 3G formats (see Tech Specs for complete list)
- Region of Interest scaling

- Up, down, cross-conversion
- Aspect ratio conversion
- Frame rate conversion
- Image H/V flip and 90 degree rotation
- Conversion between Deinterlaced and Progressive signals
- Loss of input management: Black, or Mute
- Supports 8-channels of embedded audio
- Genlock: Reference Input, HDMI/DVI/SDI Input, or Free Run
- Remote Ethernet configuration through Ross DashBoard software
- Power: 8 watts (OG-ROI-HDMI, OG-ROI-DVI)
- Power: 7 watts (OG-ROI-SDI)
- Hot-swappable
- Rear I/O card included
- Two slots required for each card
- Compatible with OG-X-FR, OG-3-FR, and DFR-8321 openGear frames
- Five year warranty

Pixel rates are limited to a 165 MHz maximum rate.

## Pixel Clock Rate

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The source video pixel clock is a combination of the video resolution and its vertical rate. Some sources can generate pixel clock rates that exceed the capabilities of the OG-ROI-DVI and OG-ROI-HDMI converters. It may not be obvious what the resulting pixel clock will be for a particular resolution or vertical rate.

*NOTE: This topic does not apply to the OG-ROI-SDI since it accepts only SMPTE SDI rates on the input.*

For example, when a downstream sink device is connected to the OG-ROI output monitor connector, the source and sink could potentially negotiate a display format (using EDID) that is beyond the capability of OG-ROI's video processing circuitry.

When this error occurs, an "Exceeds max rate" yellow alarm message will be displayed on the DashBoard user interface, and the OG-ROI will generate a full screen red matte on the SDI output. A downstream DVI/HDMI/SDI monitor will still display the incoming video.

Possible solutions include:

- Disconnect the downstream device (for example, a computer monitor) from the OG-ROI. Once disconnected, OG-ROI will negotiate directly with the source to generate a video resolution that is within the OG-ROI's processing capability.
- Reconfigure the source signal to a resolution that OG-ROI supports.

## OG-ROI Processing Capabilities

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The OG-ROI models utilize a powerful scaling processor, however, some specific combinations of input and output OG-ROI selections, de-interlacing, and 180° rotations or flips can exceed the processing capacity of the OG-ROI cards.

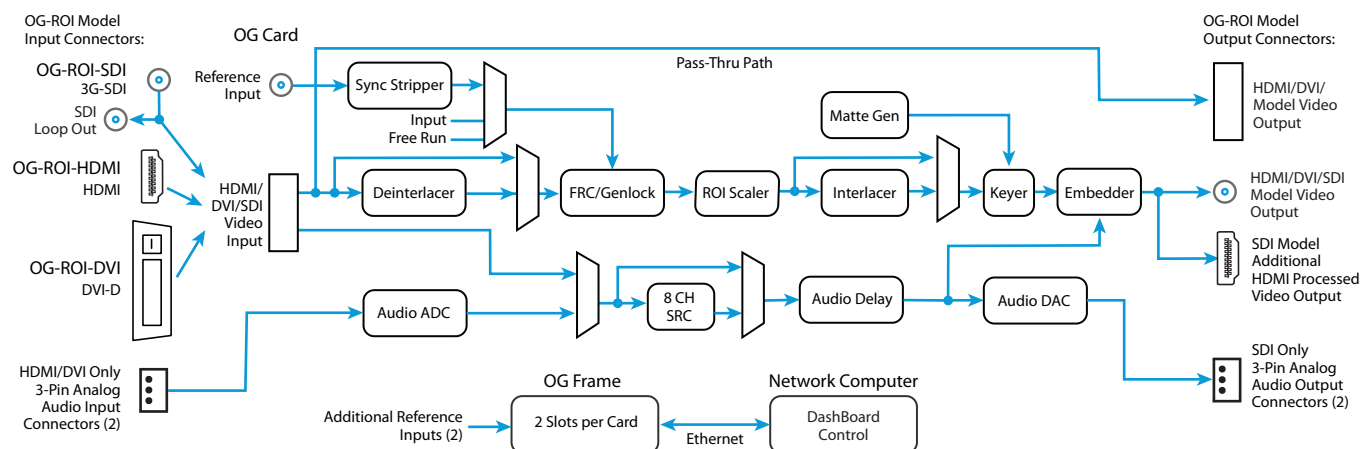
In these cases, a "Processing Limit Exceeded" red error message is displayed on the DashBoard user interface, and the OG-ROI will automatically turn off certain features in order to process the picture. These features that have been turned off will be reported and will be in red. For an example, see ["Processing Limit Exceeded" on page 30](#).

Possible solutions include:

- Reduce the size of the Region of Interest selections; input OG-ROI, output OG-ROI, or a combination of both.
- Turn off 180 degree rotation and/or H and V flips, or frame delay.
- Use a progressive rather than interlace input signal.

## Simplified Block Diagram

Figure 1. OG-ROI Converter/Scaler, Simplified Block Diagram



## openGear and AJA

openGear is an open-architecture, modular frame system designed by Ross Video and supported by a diverse range of terminal equipment manufacturers, including AJA. Ross Video manufactures the frames, power supplies and network cards for openGear. AJA is a reseller of the openGear frames.

AJA Video is a leading manufacturer of video interface technologies, converters, digital video recording solutions and professional cameras, bringing high-quality, cost-effective products to the professional, broadcast and post-production markets. AJA products, including openGear cards, are designed and manufactured at our facilities in Grass Valley, California.

## I/O Connections

### All ROI Models

#### SDI Video Output

The SDI output BNC delivers the processed output signal which has scaling, region of interest, converted raster, converted frame rate, and embedded audio.

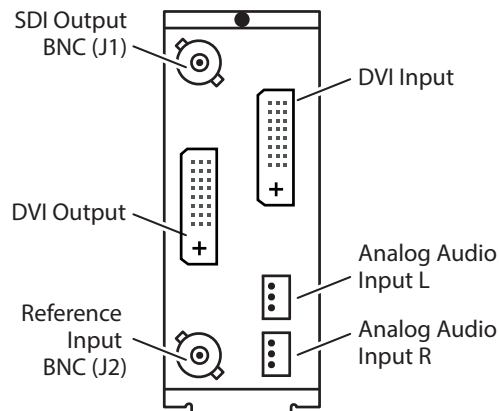
#### Reference Video Input

The Reference BNC accepts an Output timing reference signal. The reference can be SD Blackburst or HD tri-level sync.



## OG-ROI-DVI Connectors

Figure 2. OG-ROI-DVI Converter/Scaler Connections



### DVI Input

Connects to your Computer or single-link source device.

### DVI Output

This is a pass-through unprocessed DVI output for use on a second computer monitor.

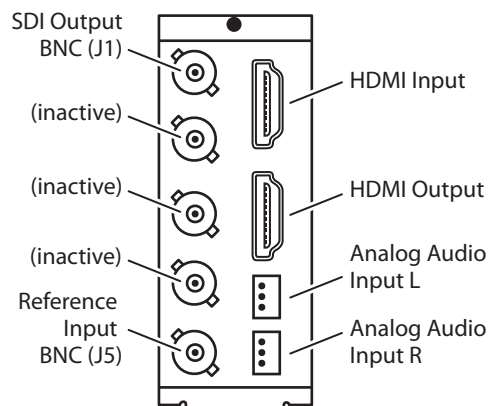
**NOTE:** To connect an HDMI video signal to a DVI connector, or vice versa, you can use a passive HDMI-to-DVI adapter, or use a cable adapter with an HDMI connector on one end and a DVI connector on the other (user-supplied).

### Analog Audio Input

Two 3-pin analog audio connectors accept two channels of analog audio which can be embedded into the SDI output as determined by the audio configuration set using DashBoard.

## OG-ROI-HDMI Connectors

Figure 3. OG-ROI-HDMI Converter/Scaler Connections



**NOTE:** Because the same rear card is used for both the OG-ROI-HDMI and OG-ROI-SDI, the functionality of the connectors is determined not by the rear card, but by the OG card it is attached to.

## HDMI Input

Connects to your computer or single-link source device.

## HDMI Output

This is a pass-through unprocessed HDMI output for use on a second computer monitor.

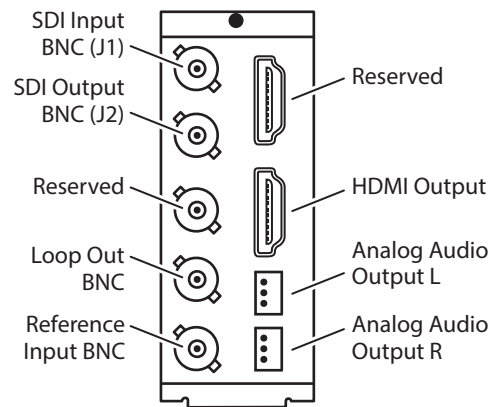
**NOTE:** To connect an HDMI video signal to a DVI connector, or vice versa, you can use a passive HDMI-to-DVI adapter, or use a cable adapter with an HDMI connector on one end and a DVI connector on the other (user-supplied).

## Analog Audio Input

Two 3-pin analog audio connectors accept two channels of analog audio which can be embedded into the SDI output as determined by the audio configuration set using DashBoard.

## OG-ROI-SDI Connectors

Figure 4. OG-ROI-SDI Converter/Scaler Connections



**NOTE:** Because the same rear card is used for both the OG-ROI-HDMI and OG-ROI-SDI, the functionality of the connectors is determined not by the rear card, but by the OG card it is attached to.

## SDI Video Input

Connects to a single-link SDI source device.

## SDI Loop Output

The SDI Loop Output provides a copy of the SDI Input signal. It is not processed.

## HDMI Output

This is a copy of the processed SDI output signal for driving a display or device with an HDMI input.

## Analog Audio Output

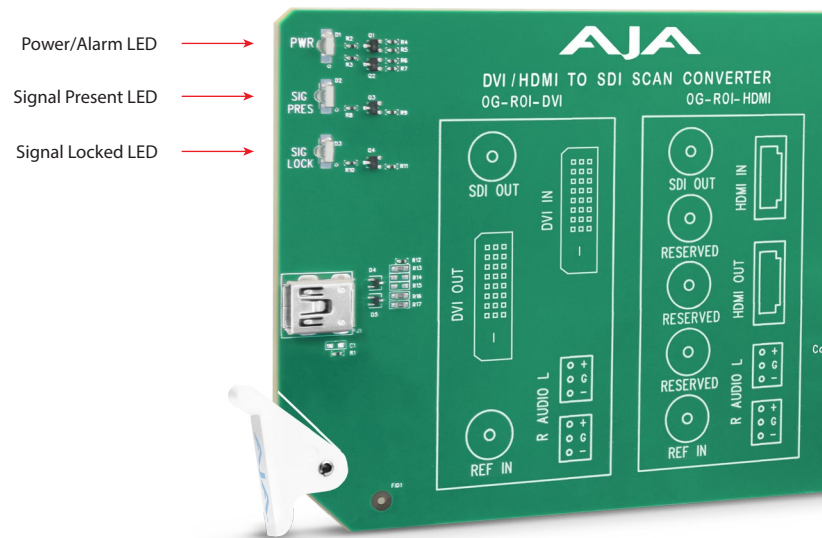
Two 3-pin analog audio connectors output two channels of analog audio disembedded from the incoming SDI, as determined by the audio configuration set using DashBoard.

## Signal Indicators

### OG-ROI-DVI/HDMI Card

Located at the upper front area of the OG-ROI-DVI/HDMI card, the LEDs shown in [Figure 5](#) below indicate the status of the card's power, signal presence and signal lock.

*Figure 5. LED lights on OG-ROI-DVI/HDMI card*



#### Power LED

The Power LED indicates the state of the card as displayed in DashBoard. It can be green, yellow or red.

- Green: no DashBoard card state alarm is present.
- Yellow: a yellow DashBoard card state alarm is present. See DashBoard for more information.
- Red: a red DashBoard card state alarm is present. See DashBoard for more information.

#### Signal Present LED

The Signal Present LED can be green or off.

- Green: incoming signal has been identified and acquired.
- Off: no signal is detected.

#### Signal Lock LED

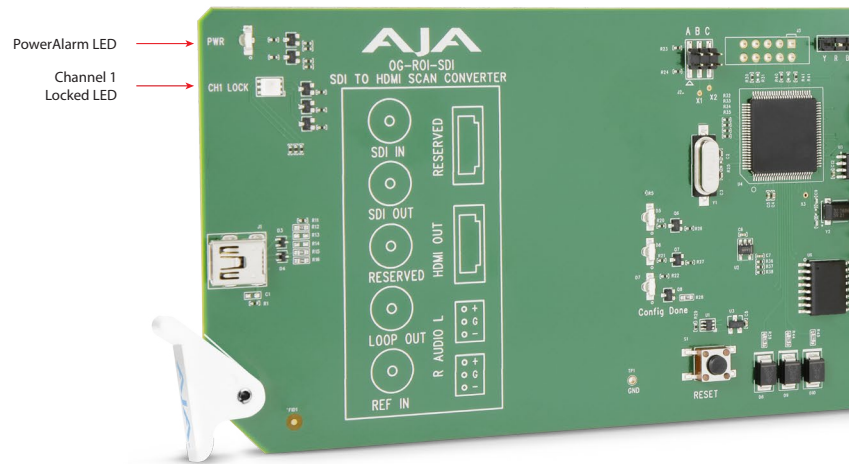
The Signal Locked LED can be green or off.

- Green: incoming signal is locked. Note that in DashBoard, the Status tab shows what signal you are locked to (HDMI, Reference Input, or Free Run).
- Off: no reference is present.

## OG-ROI-SDI Card

Located at the upper front area of the OG-ROI-SDI card, the LEDs shown in [Figure 6](#) below indicate the status of the card's power and signal lock.

*Figure 6. LED lights on OG-ROI-SDI card*



### Power LED

The Power LED indicates the state of the card as displayed in DashBoard. It can be green, yellow or red.

- Green: no DashBoard card state alarm is present.
- Yellow: a yellow DashBoard card state alarm is present. See DashBoard for more information.
- Red: a red DashBoard card state alarm is present. See DashBoard for more information.

### Signal Lock LED

The Signal Lock LED has four states:

- Off: Not locked to an input signal
- Green: Locked to 270 Mb input signal
- Red: Locked to 1.5Gb input signal
- Amber: Locked to 3Gb input signal

# DashBoard Control System

**IMPORTANT:** DashBoard version 8.5.1 or later is required to support the OG-ROI cards.

The DashBoard Control System, created by Ross Video, provides a control interface between Windows, macOS and Linux computers and the cards installed in an openGear frame. DashBoard operates through TCP/IP communication and requires an Ethernet connection between the controlling computer and an openGear frame.

Details for acquiring and using the DashBoard Control System are provided in ["Using the DashBoard Control System" on page 20](#).

## Parts List

Quantity	Description
1	OG-ROI Series Front Card in ESD bag
1	DVI / HDMI / BNC Rear Card
2	WECO mating connectors, part number 107654-00

The OG-ROI-HDMI and OG-ROI-SDI use the same rear card.

## Installation

### Summary

Installing an OG-ROI Series card into an OG-X-FR or OG-3-FR openGear frame consists of the following steps:

- Install the rear card onto the back of the frame corresponding to the slot pair you will be using for the OG-ROI Series card.
- Insert the OG-ROI Series card into the frame in the right (even numbered) slot of the pair.
- Connect the BNC and audio cabling to the rear card.



**ESD Susceptibility** - Static discharge can cause serious damage to sensitive semiconductor devices. Avoid handling circuit boards in high static environments such as carpeted areas, and when wearing synthetic fiber clothing. Always exercise proper grounding precautions when working on circuit boards and related equipment.

### Unpacking

Unpack each openGear product you received from the shipping container and ensure that all items are included. If any items are missing or damaged, contact your sales representative or AJA directly.

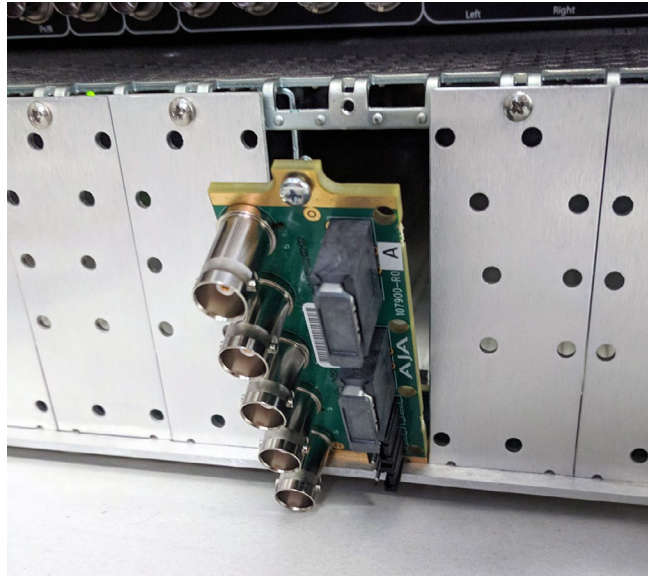
### OG-ROI Series Rear Card Installation

1. Ensure that the frame is properly installed.
2. Locate the card frame slot on the rear of the openGear frame into which you wish to install the openGear card.

**NOTE:** An OG-ROI Series card occupies two slots in the frame.

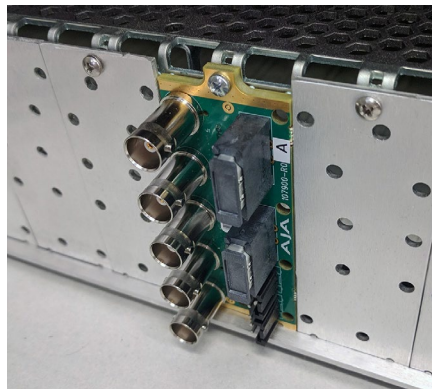
3. Using a Phillips screwdriver, unscrew the top screw from the desired blank plate and remove the blank plate.
4. Seat the bottom of the rear card in the seating slot at the base of the frame backplane.

*Figure 7. Rear Card Inserting into Frame Seating Slot*



5. Align the top screw of the rear card with the screw hole on the top edge of the frame backplane.
6. Ensure the rear card aligns with the desired card slot before tightening the screw.
7. Using a Phillips screwdriver, fasten the rear card to the frame backplane. Do not over tighten.

*Figure 8. Rear Card Inserted into Frame Seating Slot*



8. Ensure proper frame cooling and ventilation by having all rear frame slots covered with rear cards or blank plates if plates are not pre-installed.

## OG-ROI Series Front Card Installation

1. Open the openGear frame door as follows:
  - A. Gently pull the side door tabs towards the center of the door, releasing the door from the frame.
  - B. Using both hands, pull the door towards you. The door extender arms prevent the door from falling.

2. Locate the rear card you installed as described above. The interior slot number is dependent on the slot combinations into which you installed the rear card. This allows adequate spacing to avoid damaging the card, the cards installed in the neighboring slots, or both.
3. Hold the card by the edges and carefully align the card edges with the rails inside the frame. The slots are numbered starting from the left-most slot when facing the frame front.

*IMPORTANT: OG-ROI Series cards are installed into the right (even numbered) slot of the pair in order to connect with the rear panel.*

4. Fully insert the card into the frame until the card is properly seated in the rear card. There are two stages to inserting the card:
  - A. After you feel the card's first click, its partially inserted position in the frame will resemble [Figure 9](#).
  - B. Next, press against the white plastic tab again until you feel the second click. The card's fully inserted position in the frame will resemble [Figure 10](#).

*NOTE: Some cards require more pressure than others to be fully inserted. Make sure that the plastic tab at the bottom of the front edge of the card is completely upright. If it is tilting forward, the card is not yet fully inserted.*

*Figure 9. Partially Inserted Card with Unlocked Plastic Tab (Middle)*



Figure 10. Fully Inserted Card with Locked Plastic Tab (Middle)



5. Close the frame door as follows:
  - A. Slide the door into the frame.
  - B. Pull and release the door tabs to ensure the frame door is securely locked to the frame.

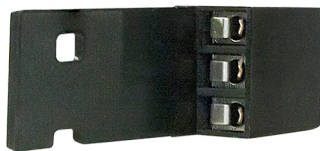
## Cabling

Refer to ["I/O Connections" on page 8](#) to identify the input and output signal connectors.

Two WECO audio mating connectors are included with each OG-ROI Series card.

1. Insert connecting audio wires into their corresponding holes from the rear ([Figure 11](#)).

Figure 11. Rear view of the WECO mating audio connector



2. Tighten the screws on the other side of the audio mating connector ([Figure 12](#)).

Figure 12. Front view of the WECO mating audio connector showing the tightening screws



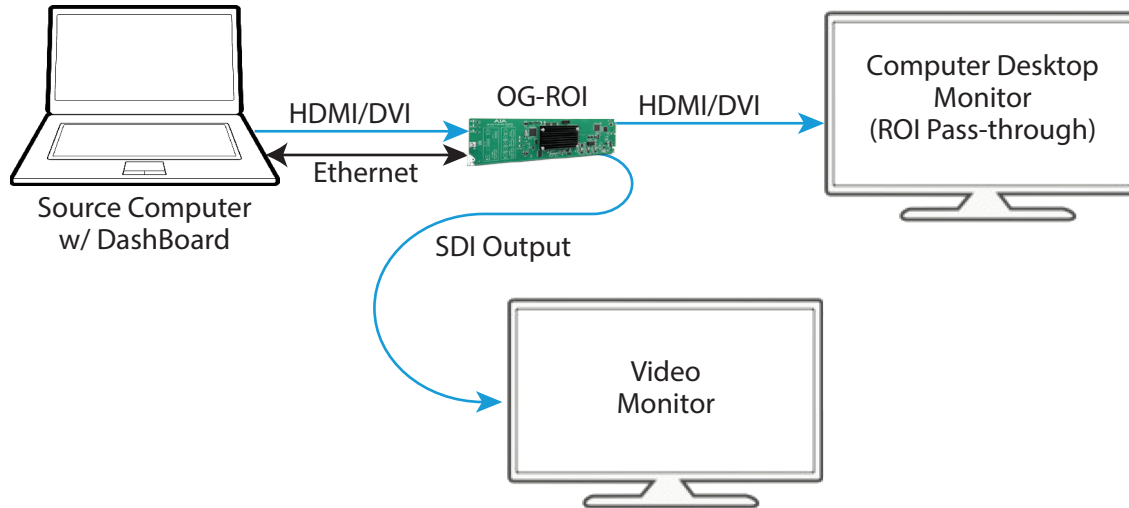


3. After you have secured the wiring for each WECO mating audio connector, connect them to the audio output connectors on the rear panel of the OG-ROI Series card.
4. Add tie wraps around the audio connectors for strain relief.

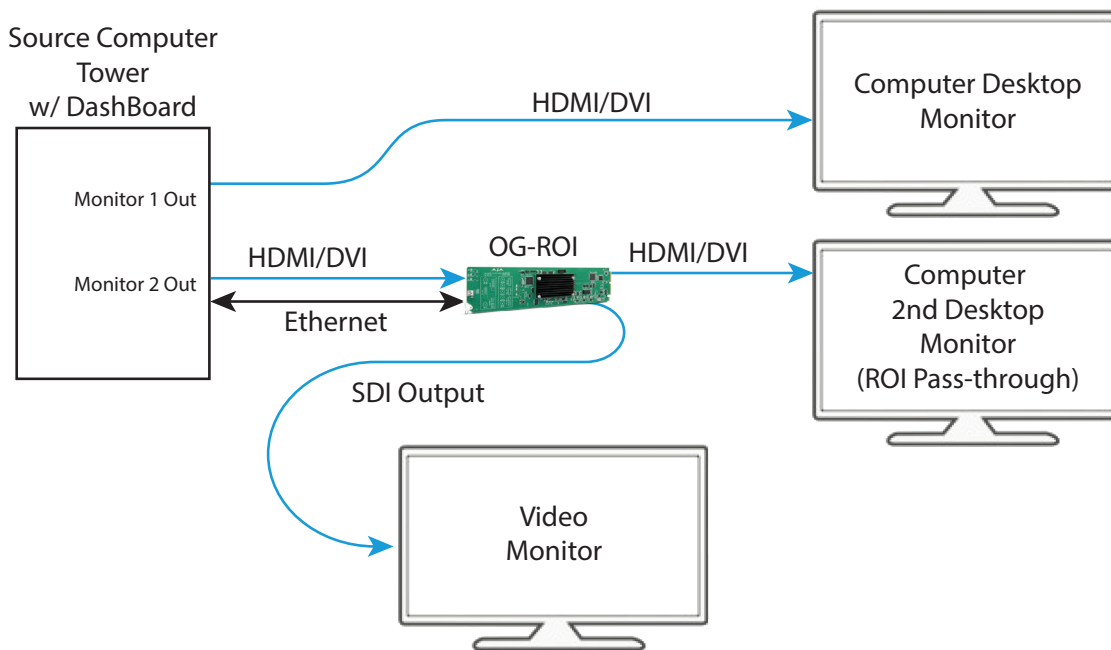
## Typical ROI Configurations

Two typical configurations for using the OG-ROI for scaling of desktop region-of-interest computer-sourced video are illustrated in the following two figures. In these configurations, the pass-through monitor is used to view the subject desktop video.

*Figure 13. OG-ROI with Laptop Computer, System Interconnect Diagram*

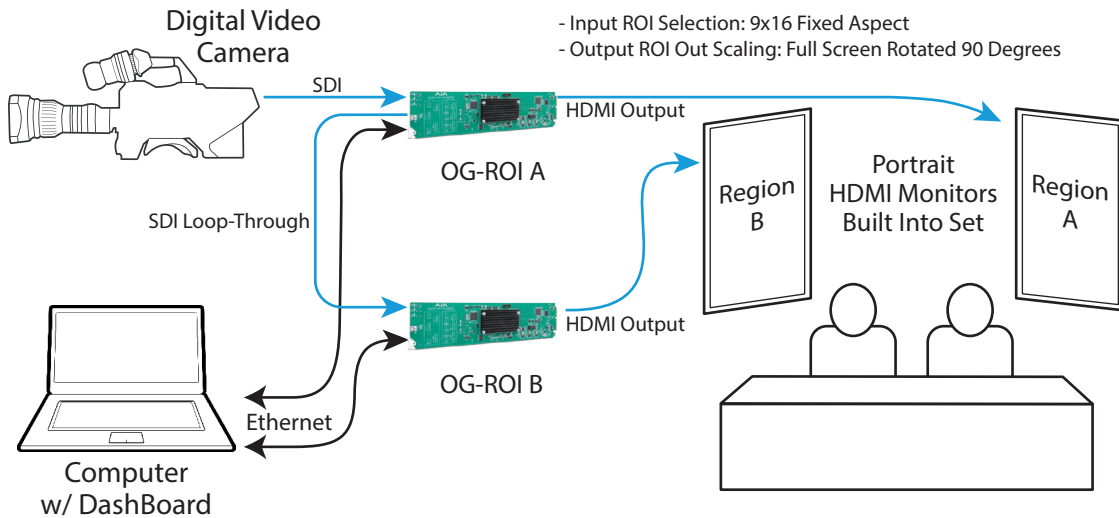


*Figure 14. OG-ROI with Tower Computer & Two Monitors, System Interconnect Diagram*



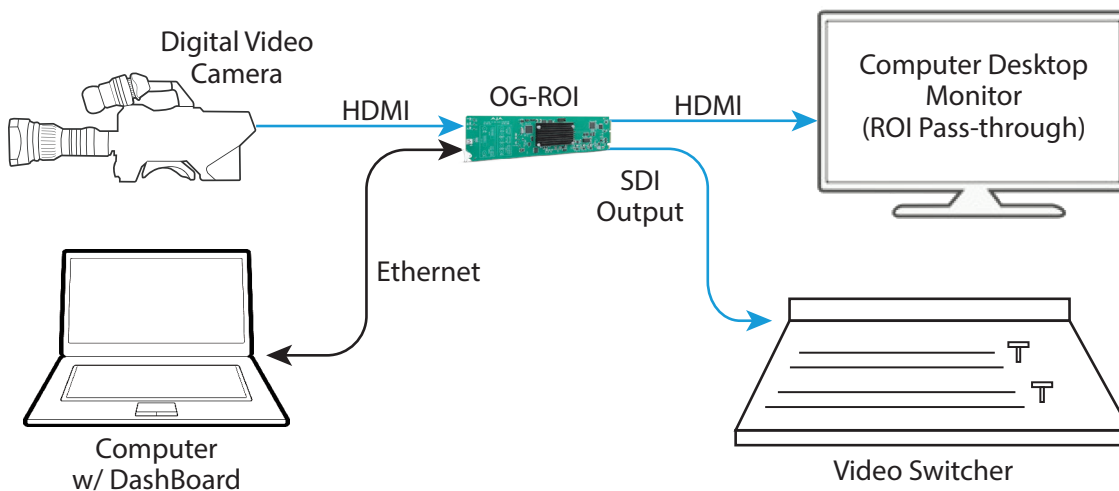
A third example ([Figure 15](#)) illustrates use of the OG-ROI Rotation feature to send selected areas of a SDI signal to portrait mounted on-set monitors at full resolution. Each monitor uses one OG-ROI converter, accomplishing the task at a much lower cost than dedicating DVE channels for rotation and resizing.

*Figure 15. OG-ROI Rotation with Portrait Mounted On-Set Monitors*



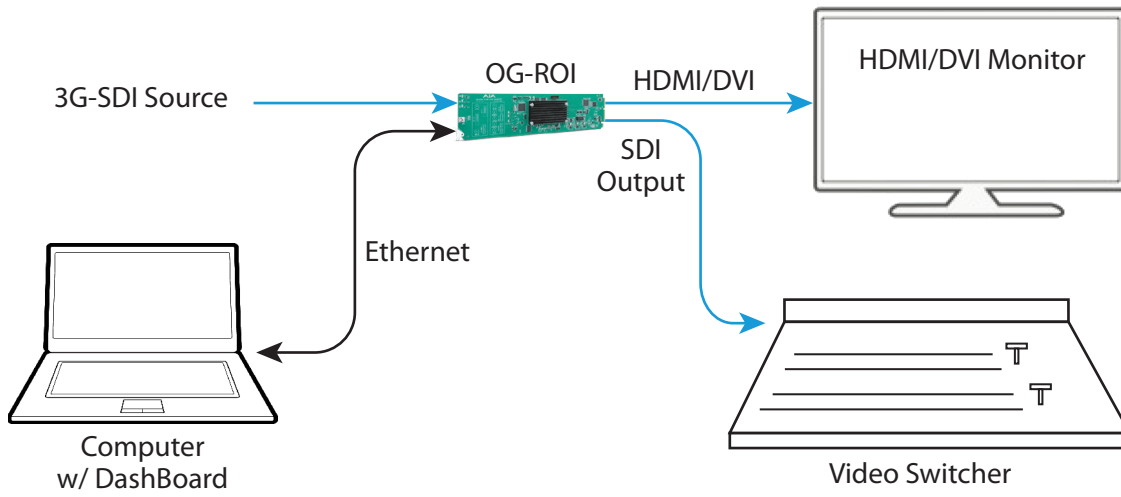
A fourth example below illustrates sending HDMI digital video from a camera to an OG-ROI to allow region of interest video input to a video switcher.

*Figure 16. OG-ROI-HDMI with Video Camera to Switcher Interconnect Diagram*



In a parallel configuration as [Figure 16](#), [Figure 17](#) below shows a basic configuration of the OG-ROI-SDI being used to send a 3G-SDI digital video signal to allow region of interest video input to a video switcher. You can use methods for adjusting the region of interest selection described in the section for the ["Input Screen" on page 22](#) with the processed 3G-SDI output signal feeding a monitor.

Figure 17. OG-ROI-SDI with SDI Source to Switcher Interconnect Diagram



# Chapter 2 – Operation

---

*IMPORTANT: Once you have configured the OG-ROI card using DashBoard, and as long as the input format remains the same, the settings will persist when the frame is disconnected from a controlling computer (in stand-alone mode). If you anticipate that the input format may change, and if the current configuration settings wouldn't make sense for a different input format, you can enable Auto Bypass Mode (Auto Bypass Mode checkbox is selected from the Input tab). When enabled, Auto Bypass Mode forces the OG-ROI card to use Auto in all applicable settings when the input format changes. When the original input format is re-connected, the OG-ROI will exit Auto Bypass Mode and restore all previously configured settings for that format.*

## Using the DashBoard Control System

---

The DashBoard Control System, created by Ross Video, is available as a free download from the openGear DashBoard Software Download webpage:

<https://www.opengear.tv/frame-and-control/control-system/download/>

Ross Video offers comprehensive documentation that covers the extensive capabilities of the DashBoard Control System:

<https://www.rossvideo.com/support/product-documentation/dashboard/>

This manual addresses only those essential aspects of the DashBoard Control System needed to control the OG-ROI Series cards.

## Requirements

---

The DashBoard Control System requires the following components:

- openGear frame with a Frame Controller card
- Ethernet connection between the controlling computer and the openGear frame

*NOTE: The openGear frame ships from AJA with the MFC-8322-S Frame Controller card for controlling the new AJA DashBoard cards. The openGear frame also supports the MFC-0GX-N Advanced Networking Frame Controller card, which can be used to control compatible OG cards.*

*IMPORTANT: DashBoard version 8.5.1 or later is required to support the OG-ROI cards.*

DashBoard automatically discovers openGear and DashBoard Connect devices, such as openGear frames and cards that are present and accessible on your network.

## Control Interface Basic Components

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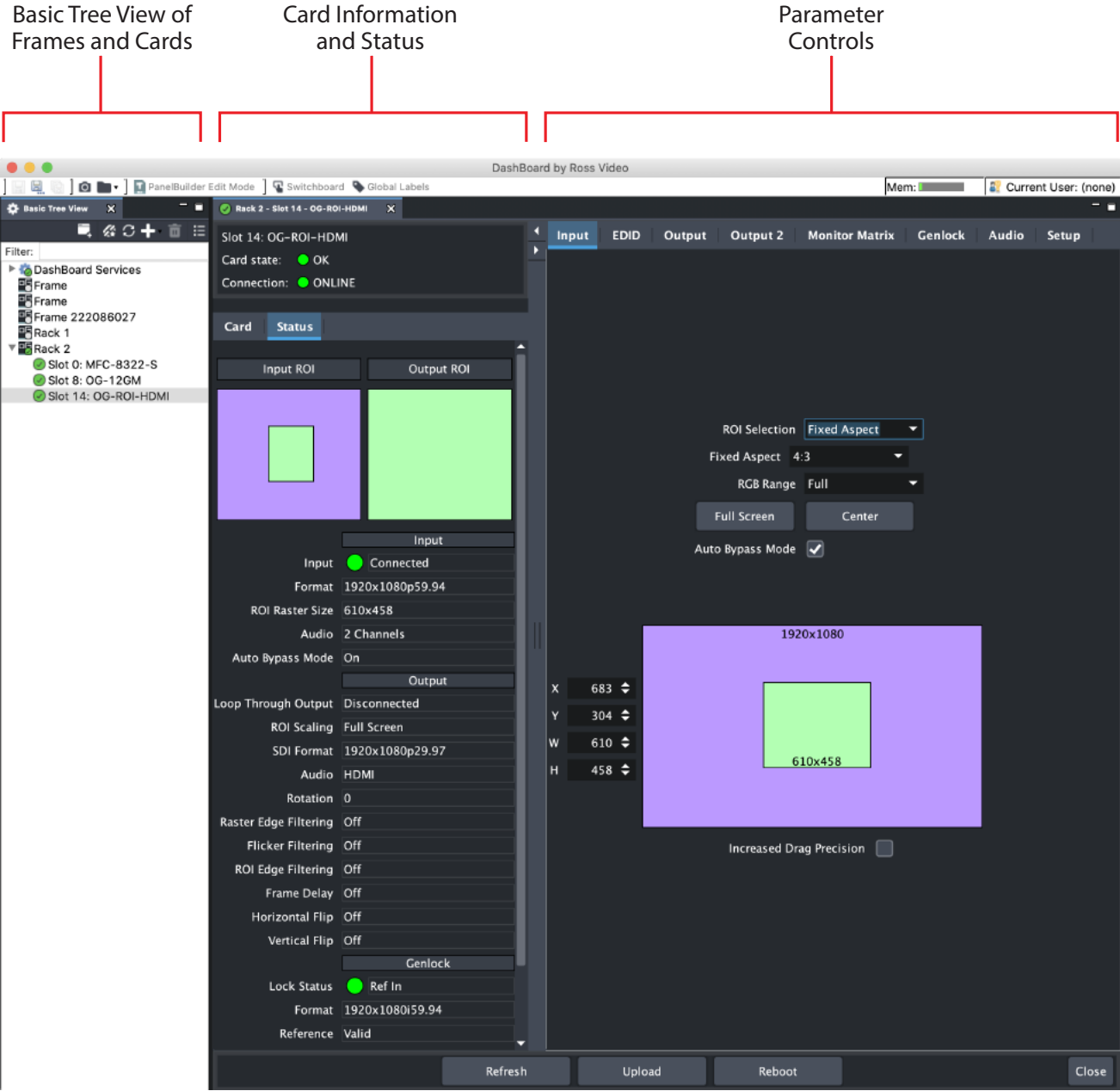
The basic components of the DashBoard Control System user interface consist of the basic tree view of frames and cards, the card information and status panel, and the parameter controls panel. These elements are shown below in [Figure 18 on page 21](#)

The basic tree view of frames and cards shows the frames and cards that are discoverable by DashBoard on your network.

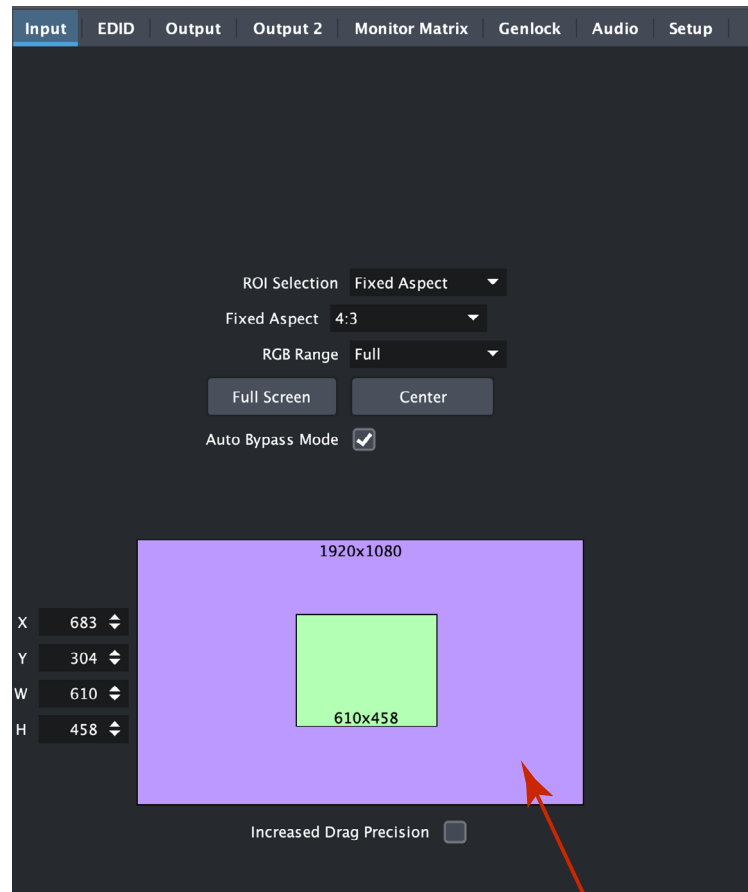
The card information and status panel, shown in the middle panel, display the basic status of the card currently selected in DashBoard.

The parameter controls panel shows the tabs and parameters that the selected card has available for configuration and control.

Figure 18. Main Sections of the DashBoard User Interface



# Input Screen



Proxy Screen

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

An input signal is required before the Input menu configuration controls are available. When no input signal is present, the OG-ROI unit grays out the Input menu controls.

The Proxy Screen shows the current region of interest setting in green with the selection pixel size at the bottom and the input pixel size at the top. Various controls are also available on the left.

*NOTE: The adjustments made on the green proxy screens are live and can be viewed on the SDI output.*

*NOTE: Portions of this screen are grayed out if no input signal is present.*

## ROI Selection

Using this pulldown menu you can choose a selection mode:

**Auto** - Selects the entire signal detected at the input to the ROI (default setting). Scales the input region-of-interest as large as possible to fit into the SDI output region while maintaining the incoming aspect ratio. Matte may result if the input's aspect ratio does not match the SDI out aspect ratio.

*NOTE: Auto selections in the Input screen and the Output screen are linked. Selecting Auto from one screen will also select Auto in the other screen.*

**Variable** - Allows user-adjustable selection of all or a portion of the input signal. When you select *Variable* as the selection type, you can choose the region-of-interest selection in three ways with no constraints:

- Use the X,Y coordinates and W,H (width, height) size fields. Within these fields, you can enter values (if they are valid) or use your keyboard arrow keys to increment one pixel/line at a time for fine adjustment.
- If configuring a multiple monitor matrix, you can use the Monitor Matrix screen to select the ROI and, when applied, will fill the X, Y, W, and H fields with the correct values. See "[Monitor Matrix Screen](#)" on page 33.
- Drag the edges of the image representation (green proxy screen) at the right of the selection pane. See "[Click and Drag Options](#)" on page 24.

**Fixed Aspect** - Opens a ROI Fixed Aspect drop-down menu allowing fixed aspect input region-of-interest selection. In this mode, the size of the selected region-of-interest can change but the aspect ratio is held constant:

- 4:3 (SD aspect ratio)
- 16:9 (HD aspect ratio)
- 3:4 (useful for presentation on vertically oriented monitors)
- 9:16 (useful for presentation on vertically oriented monitors)

**NOTE:** *Pixel aspect ratio (PAR) is accounted for in fixed aspect mode. The storage aspect ratio will change based on the input's PAR to achieve a display aspect ratio equivalent to your configured settings.*

**Fixed Size** - Opens a ROI Fixed Size drop-down menu allowing fixed size input region-of-interest selection. In this mode, the region-of-interest selection can change position on the input screen but the size cannot be changed. These settings allow you to easily select standard video sizes for region-of-interest.

- DV
- NTSC
- PAL
- 720HD
- 1080HD

**SDI Out** - Forces the region-of-interest to have the same aspect ratio as the current *SDI Out Format* setting.

RGB Range Menu (not applicable to OG-ROI-SDI)

---

The RGB Range pulldown menu allows you to select either Full range (0-1023) or SMPTE range (typically 64-940) for RGB color input.

Full Screen Button

---

Click the Full Screen button to set the region-of-interest to the full input raster size.

Center Button

---

If you choose anything other than a full-sized image (Auto) in the ROI Select menu, you will have complete control of where the region of interest selection is placed. To quickly and precisely center the region-of-interest, click the Center button.

Auto Bypass Mode

---

Once you have configured the OG-ROI card using DashBoard, and as long as the input format remains the same, the settings will persist when the frame is disconnected from a controlling computer (in stand-alone mode).

If you anticipate that the input format may change, and if the current configuration settings wouldn't make sense for a different input format, you can enable Auto Bypass Mode (Auto Bypass Mode checkbox is selected from the Input tab). When enabled, Auto Bypass Mode forces the OG-ROI card to use Auto in all applicable settings when the input format changes.

When the original input format is re-connected, the OG-ROI will exit Auto Bypass Mode and restore all previously configured settings for that format.

## Click and Drag Options

When using the drag method for region-of-interest placement or resizing, you can use the Increased Drag Precision functionality for precise adjustments.

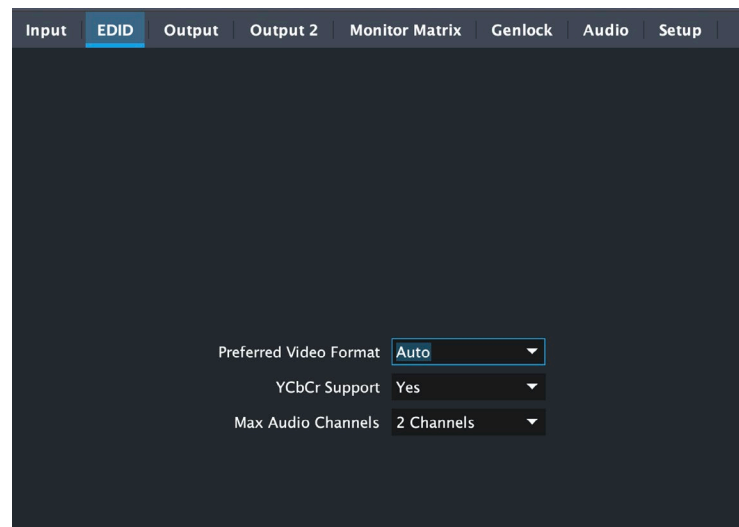
### Increased Drag Precision

For more control, select the Increased Drag Precision checkbox. While dragging the image, you will notice that the selection changes in a more gradual pixel-by-pixel manner regardless of your drag speed.

### Arrow Keys

You can use the keyboard arrows to increment size and placement of a variable region-of-interest selection one pixel at a time in X, Y, H, W fields. (The up/down arrow keys can also be used to step through some menu selections.)

## EDID Screen



EDID (Extended Display Identification Data) is used to find the highest signal resolution that is compatible with both the source and the destination (sink) devices. When an HDMI source device is initially connected to the ROI Mini-Converter, the ROI sends its EDID information to that source. The source uses this information to decide what format to send.

**NOTE:** The OG-ROI-SDI does not have an EDID tab screen because it does not support EDID.

**NOTE:** For OG-ROI-DVI and OG-ROI-HDMI devices, when a sink device is connected, its EDID is passed through to the source device and the settings on the EDID tab are not used. If no sink device is connected, the settings on the EDID tab are used.



## Preferred Video Format

The OG-ROI's default EDID selection is **Auto** but it can be configured by the user to any of the following formats and frame rates:

- Auto
- 1280x720p50
- 1280x720p60
- 1920x1080i50
- 1920x1080i60
- 1920x1080p50
- 1920x1080p60

## YCbCr Support

This parameter determines whether the OG-ROI will signal to its HDMI source that the OG-ROI will support (Yes) or will not support (No) YCbCr input formats.

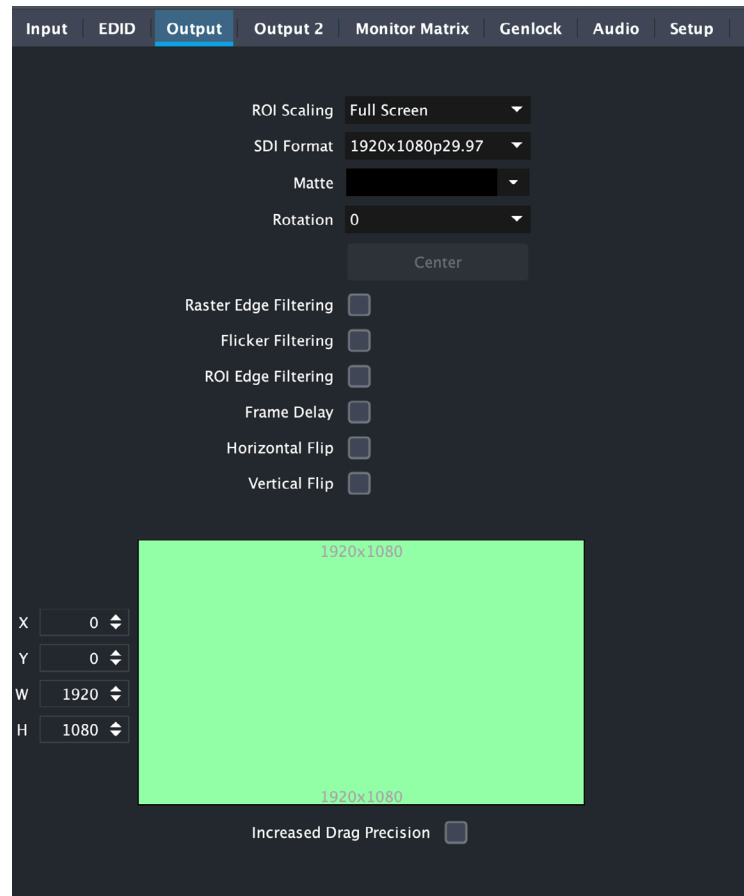
*NOTE: RGB formats are always supported by default in an HDMI sink.*

## Max Audio Channels

Selects the number of audio channels to be used from the signal source. Choose from:

- 2 Channels
- 8 Channels

# Output Screen



Click on the Output Tab to adjust the following parameters.

*NOTE: Portions of this screen are grayed out if no input signal is present.*

*NOTE: Some sources can generate pixel clock rates that exceed the capabilities of the ROI. If the incoming video's pixel clock rate is too high, the ROI converter will generate a full screen red matte on the SDI output to indicate this error condition. DashBoard will also display an "Exceeds max rate" error message. A downstream HDMI/DVI/SDI monitor will still display the incoming video. See ["Pixel Clock Rate" on page 7](#) and ["OG-ROI Processing Capabilities" on page 7](#) for potential solutions.*

## ROI Out Scaling

Use the ROI Out Scaling pulldown menu to select one of the following:

**Auto** - Automatically scales region-of-interest to maximum size with fixed aspect ratio defined by input format (default setting).

*NOTE: Auto selections in the Output screen and the Input screen are linked. Selecting Auto from one screen will also select Auto in the other screen.*

**Fixed Aspect - Matte** - Scales region-of-interest to maximum size to fit output region while maintaining aspect ratio. Matting may occur if aspect ratio of input format and output format do not match.

**Full Screen** - Scales region-of-interest to maximum size to fit output geometry. This may change aspect ratio of the image. No matting will occur.

**None – Crop/Matte** - No scaling occurs to region-of-interest. It is always centered on the output, and the area displayed is selected using the placement controls in the Input menu.

**Variable** - Allows user to arbitrarily change position and scaling of region-of-interest as it is placed into the output region.

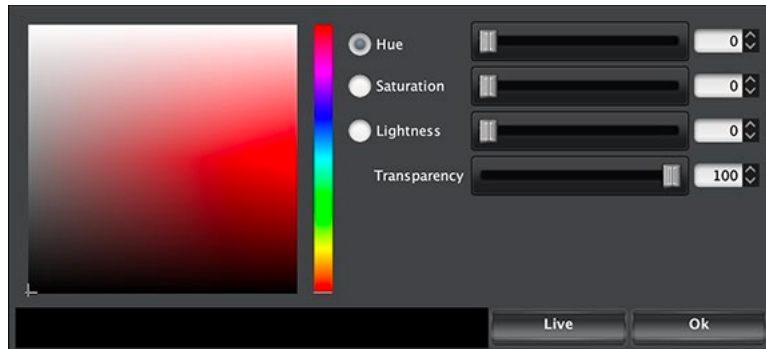
## SDI Output Format

The pulldown menu offers a full range of SDI Video Formats for output. For the complete list, see ["Appendix A Specifications" on page 41](#). The format selection is reported in the DashBoard graphic depicting the SDI Output.

## Matte Background

Click the Matte button to pull up the matte color panel that offers various modes of background color selection.

*Figure 19. Matte Color Selection Panel*



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## Rotation

---

Opens a drop down menu for selecting of a clockwise rotation setting (see [Figure 21 on page 28](#)):

- 0° (no rotation, default setting)
- 90°
- 180°
- 270°

---

## Center Button

---

After a screen region-of-interest has been defined, click the Center button to quickly center the image.

---

## Raster Edge Filtering Checkbox

---

You can disable edge filtering with this control. The filtering is applied to the left and right edge pixels of the raster. This is useful if you are using four OG-ROIs to drive a 4K monitor matrix. Disabling edge filtering on all four OG-ROIs can eliminate the vertical line that would occur in that situation. Default setting is On.

---

## Flicker Filtering Checkbox

---

You can enable flicker filtering with this control. This can be useful where vertical detail (horizontal lines) may strobe with the refresh rate of the display. Flicker filtering can help with interlaced outputs, and when a detailed image is scaled down into a smaller area. Default setting is Off.

---

## ROI Edge Filtering Checkbox

---

Similar to Raster Edge Filtering above, but the filtering is applied to the left and right sides of the Region of Interest portion of that OG-ROI's output. Default setting is On.

*NOTE: The following Rotation, Frame Delay, and Flip controls interact with each other. If the OG-ROI's video processing circuit is unable to perform the processing, the actual Off state of each control is reported in red. See "[About the Rotation, Flip, and Frame Delay Controls](#)" on page 28 for more information.*

---

## Frame Delay

---

Turns Frame Delay On or Off. One frame of delay is automatically applied whenever Rotate or Flip is active. The current frame delay state (On or Off) is reported.

*NOTE: Turning Frame Delay On can be useful if you are using two ROIs simultaneously, flipping or rotating only one of their outputs. Because a frame delay is always applied to the flipped or rotated output, turning on the other ROI's Frame Delay restores their relative timing.*

---

## Horizontal Flip

---

Flips the output horizontally (left to right, and right to left, see [Figure 20](#)).

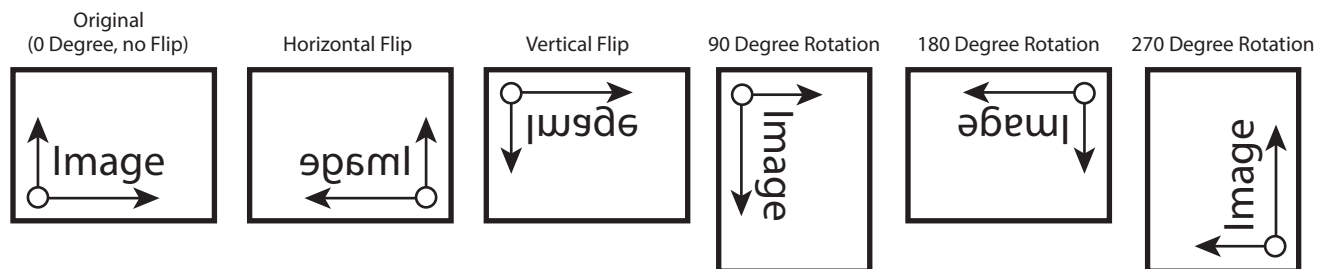
---

## Vertical Flip

---

Flips the output vertically (top to bottom and bottom to top, see [Figure 20](#)).

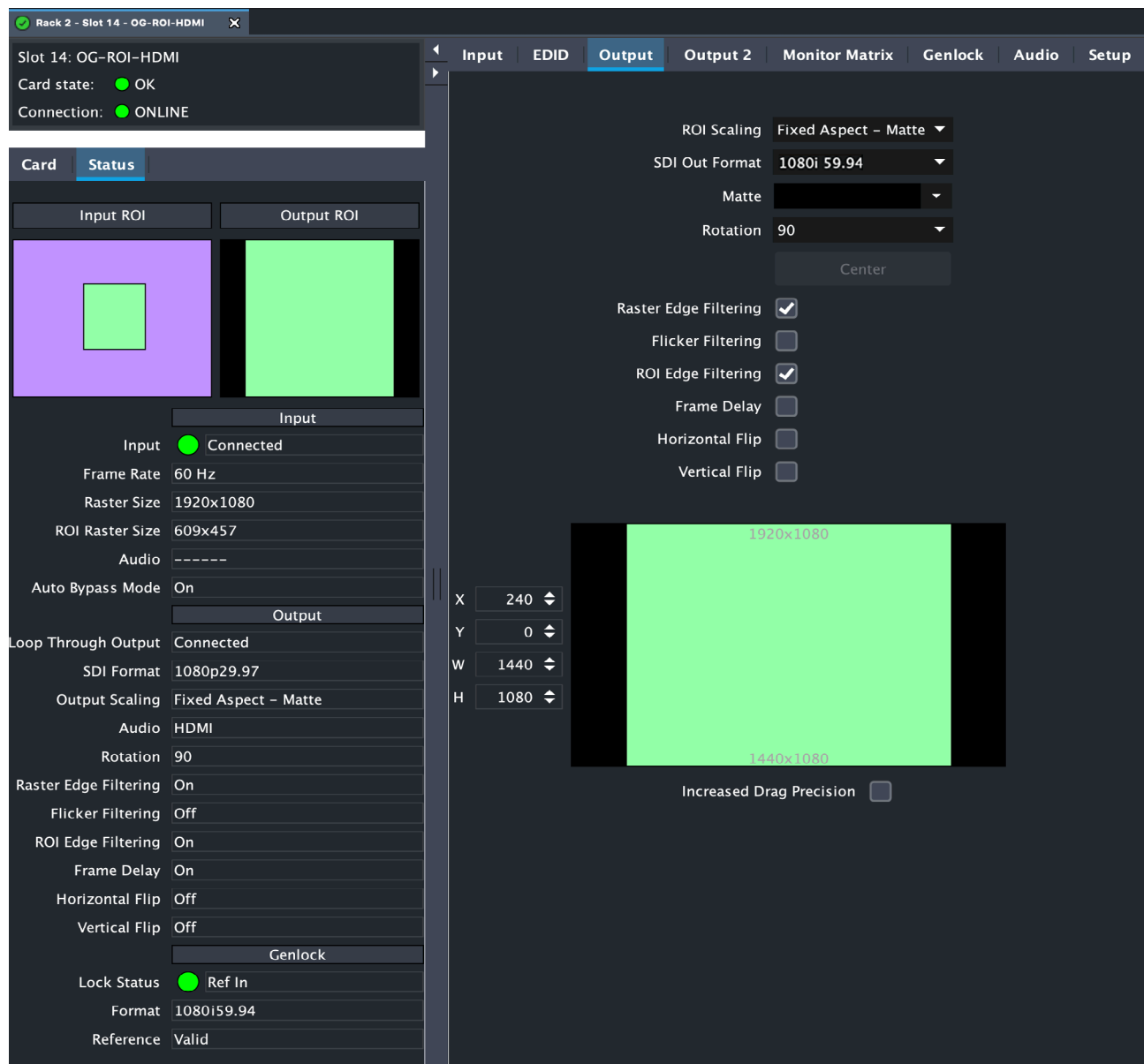
Figure 20. Flip and Rotation Illustration



## About the Rotation, Flip, and Frame Delay Controls

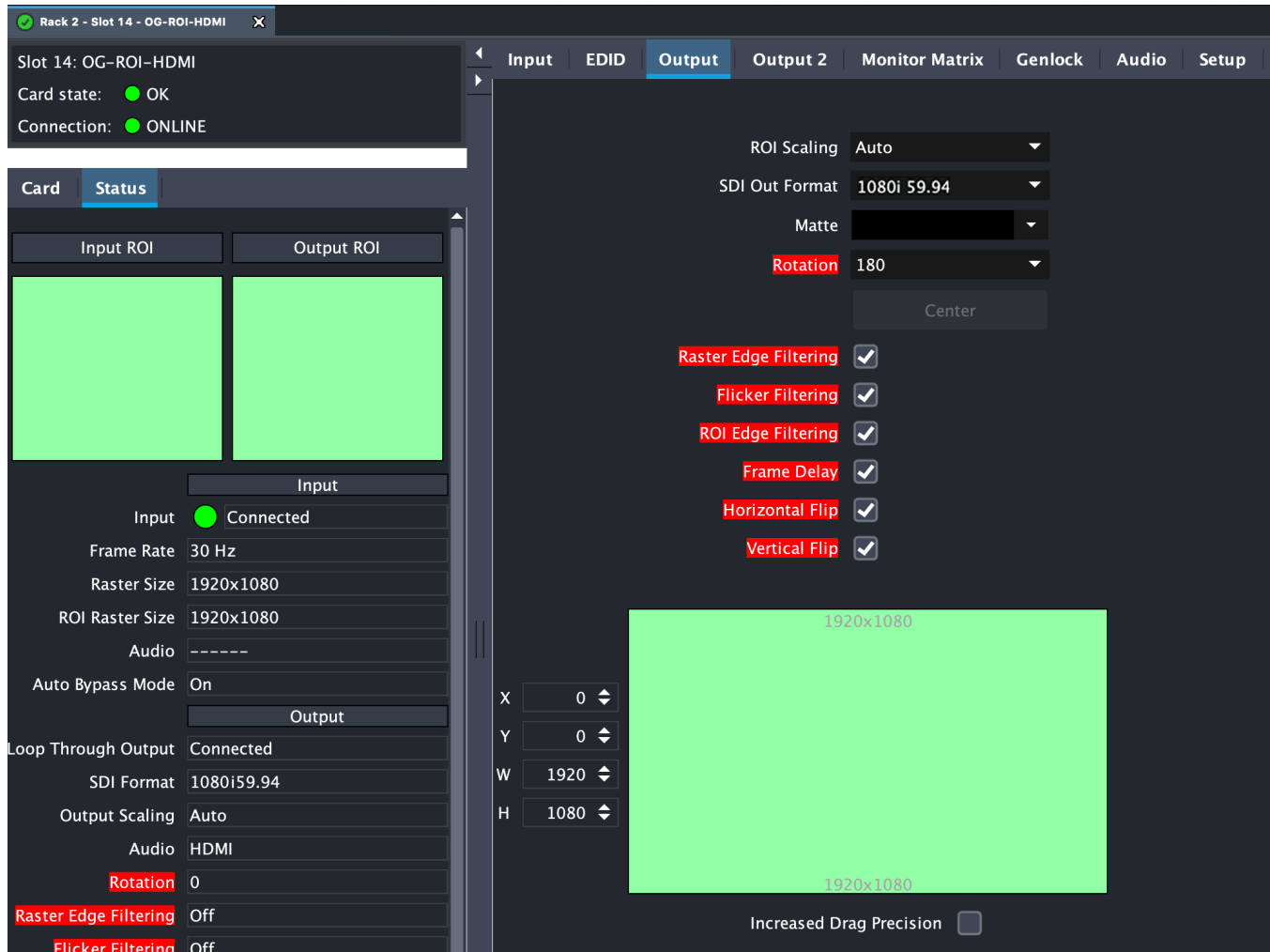
Rotation and Flip image processing requires one frame of video delay. Whenever a rotation or flip occurs a frame delay is automatically applied, and the Frame Delay On status is reported, even if the checkbox isn't selected (see [Figure 21](#)).

Figure 21. Frame Delay Automatically On with Rotation even if the checkbox isn't selected



The Rotation, Flip, and Delay controls all report their current statuses. Some specific combinations of input and output selections and 180° rotations or flips involving 1920 x 1080i input video can exceed the processing capacity of the OG-ROI Series. In these unusual cases, a Processing Limit Exceeded yellow warning alarm is displayed on the UI, and the actual current settings for Rotation, Frame Delay, and Flip are reported in red (see [Figure 22](#)). Note, however, that parameters using their default values will not be highlighted in red.

Figure 22. Processing Limit Exceeded

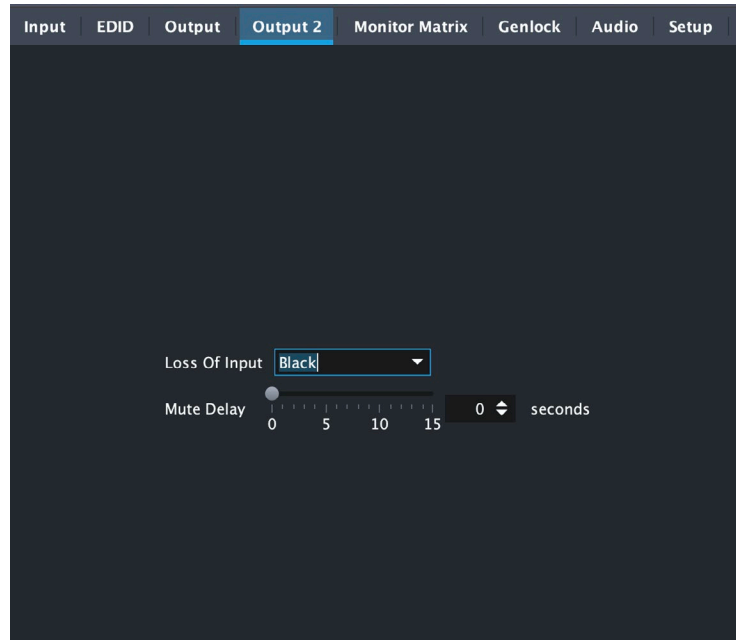


Possible workarounds for this error condition include:

- Select an input source format that is not 1920x1080i.
- Reduce the size of the input or output region of interest.
- Deselect 180° rotation if on.

# Output 2 Screen

---



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## Loss of Input

This parameter lets you control OG-ROI output behavior if the input signal is lost. Selecting Black outputs black video under those circumstances. Selecting Mute will output no-video content (no signal). This can be used in conjunction with a downstream signal loss capability that would not have been triggered with a black signal.

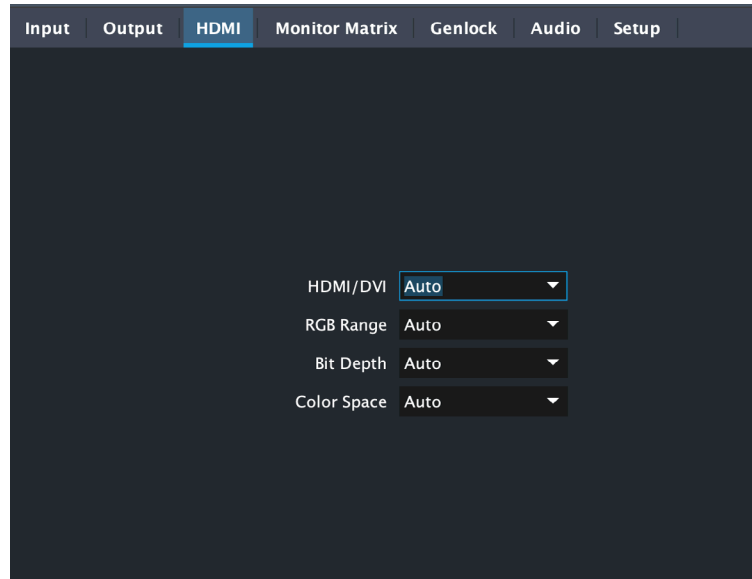
---

## Mute Delay

If Mute is selected from the Loss of Input control above, you can set a time delay (0-15 seconds) for how long the switch to no signal occurs. The last good frame of video is displayed during that delay time.

# HDMI Screen (OG-ROI-SDI)

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## HDMI/DVI

Choose Auto, HDMI, or DVI. When DVI is selected, any audio signals present are not passed. Choosing “Auto” automatically selects the output mode based on the attached device’s capabilities.

---

## RGB Range

Choose Auto, SMPTE or Full. Choosing “Auto” automatically selects the RGB output color range setting.

---

## Bit Depth

Choose from Auto, 8-bit, or 10-bit. Choosing “Auto” automatically selects the bit depth based on the input video and the attached device’s capabilities.

---

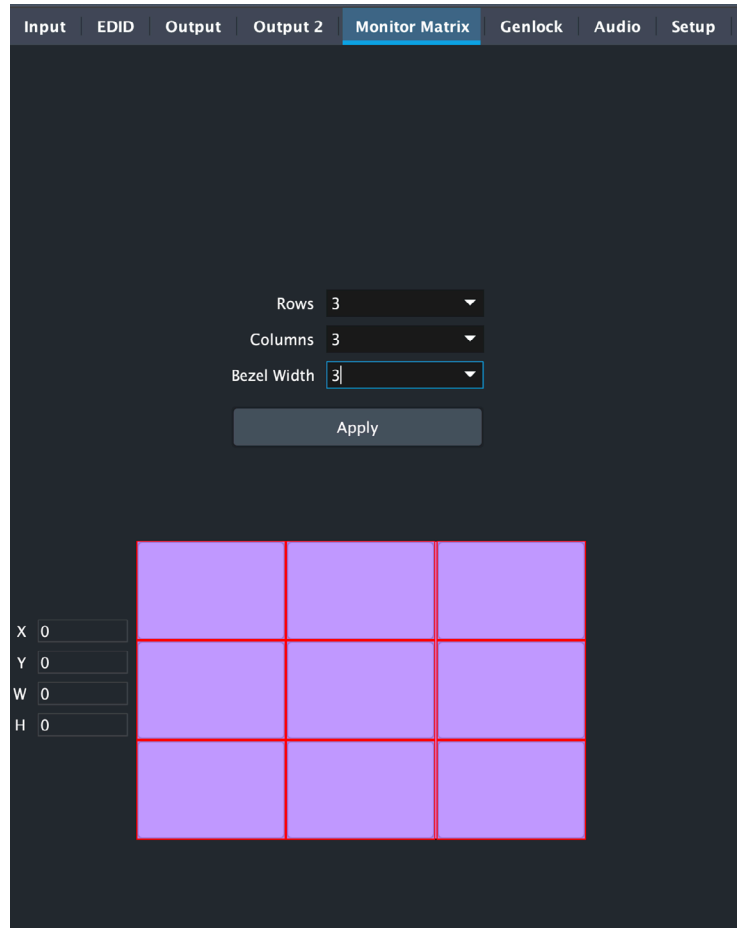
## Color Space

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

- Auto - selects the video format based on the input video and the attached device’s capabilities.
- 4:2:2 YCbCr
- 4:4:4 RGB
- 4:4:4 YCbCr



# Monitor Matrix Screen



The Monitor Matrix screen offers a calculator that lets you easily define Input Region of Interest dimensions suitable for a multiple monitor matrix display. Typically a monitor matrix is a horizontal and vertical stacking of monitors, with a physical bezel distance separating the edges of the displays from each other. Dedicating one ROI to feed each monitor, and sending the same input video to all the ROIs, makes it possible to display that video so it spans across all the monitors.

## Monitor Matrix Representation

A representation of the monitor matrix is shown in the Proxy Screen on the lower right. Clicking selects the area of the monitor at that location in the matrix. When row and column values are entered, a graphical representation of a matrix will be displayed. A default monitor position will be shown as yellow. A new monitor position can be selected by moving the mouse cursor over the desired position and selecting it. The Input Region of Interest position (X,Y) and size (W,H) values will then be automatically calculated. When Apply is clicked, the monitor position rectangle will turn green. When a non-zero Bezel Width is entered, the bezel border around that area is colored red.

### Rows

Select the number of rows in the monitor matrix. Select from 1 to 20.

### Columns

Select the number of columns in the monitor matrix. Select from 1 to 20.

### Bezel Width

Select the bezel width of the display. This width will be used in calculating the Input Region of Interest.

Note that adjoining displays could have a different bezel width and require a different value entered on the ROI driving that monitor.

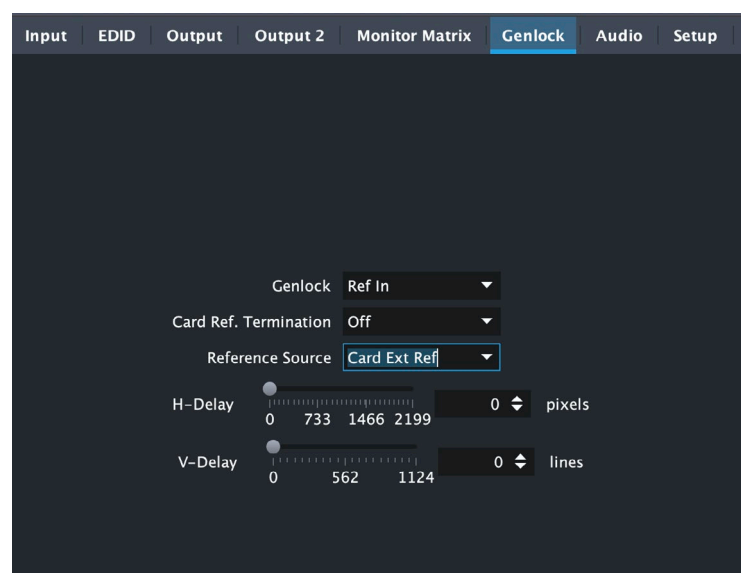
### X, Y, W, H

The currently calculated Input Region of Interest position (X,Y) and size (W,H) are displayed here. These values are grayed out and cannot be adjusted. Once the values are applied, they can be adjusted on the Input tab.

### Apply

Click on the Apply button to transfer the current Input Region of Interest dimensions to the Input screen.

## Genlock Screen



### Genlock

The Genlock control offers the following options:

- Auto – use Ref Input if present, then Input signal if valid, then free-run
- HDMI – Lock to the HDMI/DVI Input (if valid video rate)
- Ref In – Lock to the Video Reference input
- Free-run – Lock to internal clock

*NOTE: When HDMI is selected, OG-ROI can lock to input formats that have a SMPTE raster and frame rate and are within 50 ppm of the SDI output format.*

*NOTE: The actual resultant Genlock status is reported in the Status tab.*

### Card Ref Termination

Whether you turn this control On or Off depends on the configuration of your equipment, and whether or not the incoming reference signal is already terminated. The Ext Ref input impedance is 75 ohms.

For proper operation the input Reference signal must be stable and properly terminated using a 75-ohm terminator on the last piece of downstream equipment to which the Ref Video is connected.

**On** - Turn on if you have an unterminated incoming reference signal. This will provide 75 Ohm signal termination.

**Off** - Turn off (default) if the incoming reference signal is already terminated.

#### Reference Source

Select which source you want to use for Reference. Choose from the following:

**Free Run** - The OG-ROI Series will lock to its internal clock as the reference source.

**Card Ext Ref** - The OG-ROI Series will use the incoming reference source connected to the Reference Input BNC on the rear panel of the card.

**OG Frame Ref 1** - The OG-ROI Series will use the incoming reference source connected to the openGear frame's Reference 1 Input BNC on the rear of the frame.

**OG Frame Ref 2** - The OG-ROI Series will use the incoming reference source connected to the openGear frame's Reference 2 Input BNC on the rear of the frame.

#### H-Delay and V-Delay

These controls let you adjust H and V delay from the sync input by dragging the slider or entering values in the windows on the right. Horizontal delay is entered in pixels, while Vertical delay is entered in lines.

*NOTE: H and V delay adjustments are only available when the SDI Out Format is compatible with the current sync input reference.*

## Audio Screen (OG-ROI-HDMI/DVI)



In default mode, the OG-ROI passes up to eight channels of embedded audio from the video input to the video output.

*NOTE: The OG-ROI-DVI model can receive both DVI and HDMI protocol input, and accepts audio if it is embedded in an HDMI signal. However, the DVI protocol does not carry audio, so if the ROI-DVI is receiving DVI input, only analog audio can be embedded to the output.*

## Input Select

Use this control to select which input audio to pass to the SDI output.

- HDMI - This selection passes the HDMI incoming audio to the SDI output (up to 8 channels).
- Analog - This selection passes only the Analog audio input for inclusion into the SDI audio stream. In this case, you can use the *Analog Out Map* pulldown menu to select the specific channel pair you want to carry the signal.
- Analog + HDMI - This selection causes the Analog audio input to replace one pair of the HDMI audio channels on the SDI output. The analog audio is inserted on the channels defined by the Analog Out Map pulldown.
- None - No audio is output (mute) on the SDI output.

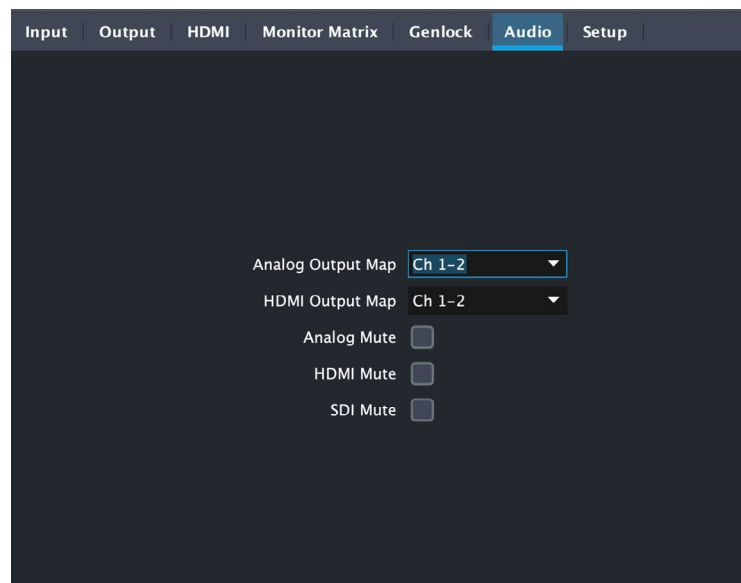
## HDMI Conversion

The *Convert Rate* button enables OG-ROI Series to convert incoming HDMI audio between 32 kHz to 96 kHz to 48 kHz (the SDI native audio standard). If you don't want to convert, choose Pass Through.

## Analog Out Map

This control selects which two SDI embedded audio channels receive the incoming L R analog audio when Input Select is set to Analog or Analog + HDMI. Choose from Ch 1-2, Ch 3-4, Ch 5-6, or Ch 7-8.

# Audio Screen (OG-ROI-SDI)



## Analog Output Map

This control selects which two SDI embedded audio channels go to the two 3-pin Analog Audio Outputs. Choose from Ch 1-2, Ch 3-4, Ch 5-6, or Ch 7-8.

## HDMI Output Map

This control selects which two SDI embedded audio channels go to the HDMI Output. Choose from Ch 1-2, Ch 3-4, Ch 5-6, Ch 7-8, or Ch 1-8.

### Analog Mute

Select the checkbox to mute the audio on the Analog Audio Outputs.

### HDMI Mute

Select the checkbox to mute the audio on the HDMI Output.

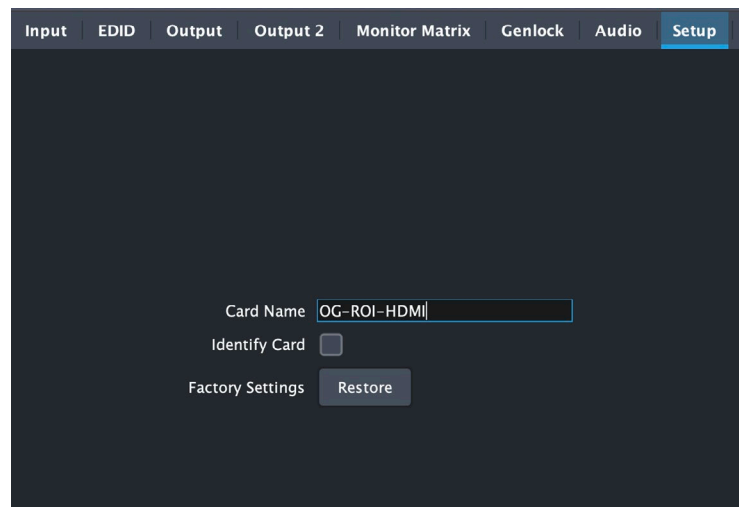
### SDI Mute

Select the checkbox to mute the audio on the SDI Output.

## Setup Screen

Click on the Setup tab to view and make changes to the card name, configure the reference source, or to restore card settings to factory default values.

*Figure 23. OG-ROI Series Setup Tab Screen in DashBoard*



### Card Name

By default, this field is pre-populated with the card name of the card you have installed—OG-ROI-HDMI, OG-ROI-DVI, or OG-ROI-SDI. You can change or customize the card name by editing the text in the Card Name field. The card name controls the name of the card that appears in the DashBoard tree view.

### Identify Card

Click the checkbox to turn on Identify Card. This is especially useful when working with numerous cards and frames and you need a simple method for identifying a specific card. Click the checkbox again to turn Identify Card off.

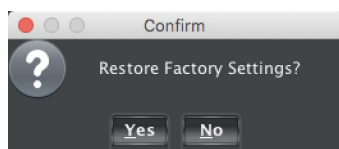
**On** - Turn on if you need to identify the card. When on, the PWR LED located at the front top edge of the card will blink on and off with an orange/green color.

**Off** - Turn off (default) if you do not need to physically identify the card. When Identify Card is off, the PWR LED light follows the state of the card as shown in the DashBoard tree view.

- Green Icon = Green LED
- Yellow icon = yellow power LED
- Red Icon = Red LED

## Factory Settings

If you would like to revert the card settings to factory default values, click **Restore**. A confirmation window displays.



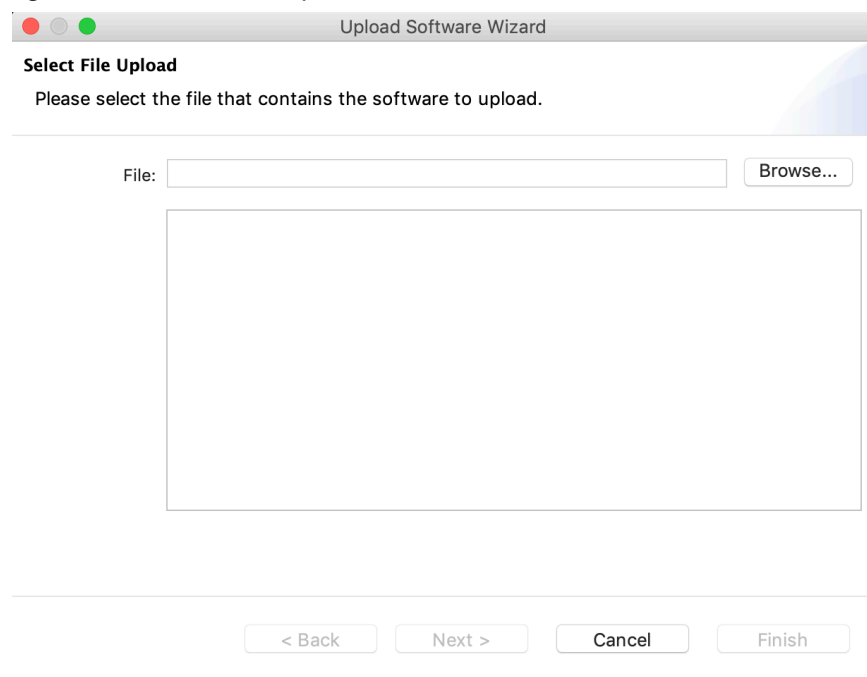
Select **Yes** to restore to factory settings. Select **No** to cancel.

## Upload Screen

### To Upload New Software

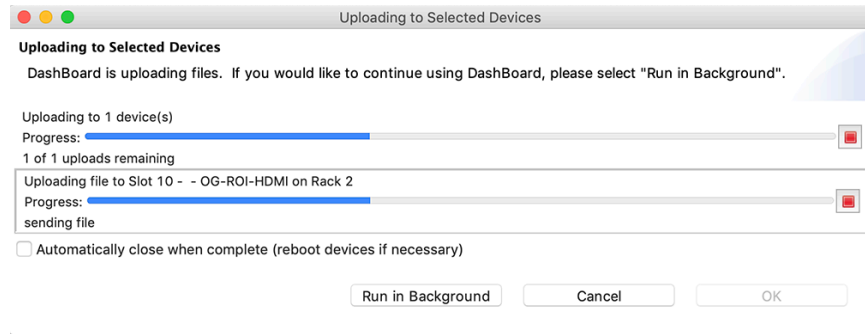
1. Check the AJA website for new software for your OG-ROI Series. If new software is found, download it and uncompress the file archive (zip).
2. Click the Upload button in the lower panel of the DashBoard Control System to open the Upload Software Wizard.

*Figure 24. OG-ROI Series Upload Software Wizard window in Dashboard*



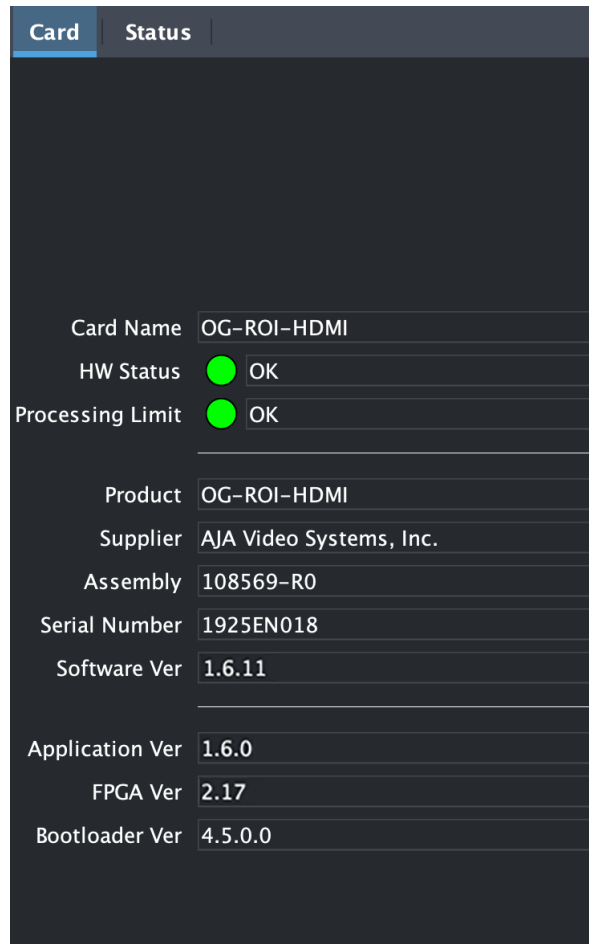
3. From the Upload Software Wizard window, select **Browse**.
4. Navigate to the location of the downloaded .bin file containing the software update. Select the .bin file, then select **Open**. The Upload Software Wizard window displays characteristics of the selected file for uploading.
5. Click **Finish**. The Uploading to Selected Devices window displays with a progress bar.

Figure 25. OG-ROI Series Uploading to Selected Devices window in DashBoard



6. When the progress bar indicates that the uploading is finished and status indicates "Complete," click **OK**.
7. To verify the version of software or firmware currently installed on your card, select the Card tab from the center panel of DashBoard.

Figure 26. OG-ROI Series Card Tab Screen in DashBoard



The Card information screen indicates the basic information about the card itself such as the card name, hardware status, serial number, software version and other items.

**Card Name** - This field reports that OG card's name, which you can define with the Setup Tab Screen.

**Assembly** - This is the factory assembly number.

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

**Software Ver** - This shows the currently installed firmware for that OG card.

## Rebooting

---

Rebooting is a standard function built in to the DashBoard Control System, and should only be performed if the board has become unresponsive.

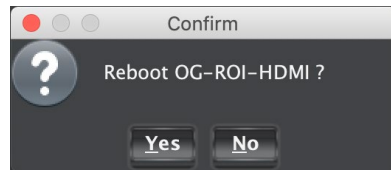
***WARNING:*** *During a reboot, any embedding or disembedding operations will be briefly interrupted, but will be restored once the reboot has completed.*

### To Reboot the OG-ROI Series

---

1. Click the Reboot button in the lower panel of DashBoard. The reboot confirmation message displays.

*Figure 27. Reboot confirmation window*



2. Click **Yes**. The message "Loading data, please wait. Refreshing device data" displays for a moment. The card will be offline for a few seconds, and any current scan conversion operations will be interrupted.
3. Following a Reboot operation, the board configuration will return to the settings that were in place at the time of rebooting.



# Appendix A – Specifications

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## OG-ROI-DVI Tech Specs

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### Video Input Formats

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- Computer Signals:
  - WUXGA (1920 x 1200) 60 Hz max
  - VGA (640 x 480) minimum
- Video Signals:
  - (HD) 1920 x 1080i 50, 59.94
  - (HD) 1920 x 1080p 23.98, 24, 25, 29.97, 30, 50, 59.94, 60
  - (HD) 1280 x 720p 50, 59.94, 60
  - (SD) 625i, 525i
  - (SD) 580p, 480p

*NOTE: Frame rates limited by the 165 MHz max pixel rate of the DVI receiver.*

### Video Output Formats

---

- (HD) 1920 x 1080p 50, 59.94, 60, SMPTE 425-1 Level A mapping structure 1 (4:2:2 10-bit YCbCr)
- (HD) 1920 x 1080p 23.98, 24, 25, 29.97, 30
- (HD) 1920 x 1080i 50, 59.94, 60
- (HD) 1280 x 720p 50, 59.94, 60
- (SD) 625i 25
- (SD) 525i 29.97

### Color Range

---

- Full
- SMPTE

### Reference Source

---

- Free Run
- Card Ext Ref
- OG Frame Ref 1
- OG Frame Ref 2

### Reference Input

---

- Supported reference video inputs include
  - 1080i tri-level sync
  - 1080p tri-level sync
  - 720p tri-level sync
  - 625i Color Black
  - 525i Color Black
- 75-ohm terminating

### Video Input

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- 1x DVI input connector (with embedded audio, up to 8 channels)

## Video Outputs

---

- DVI
  - 1x DVI loop through connector (with embedded audio, up to 8-channels)
- SDI
  - 3G-SDI, SMPTE-259/292/424, 1x BNC

## Audio Inputs

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- 2-channel Balanced analog audio inputs, 2x 3-Pin terminal block connectors
- DVI embedded audio, 24-bit, 8-channel

## Audio Output

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- SDI embedded audio, 24-bit, 2-channel or 8-channel

## User Interface

---

- openGear DashBoard network control software via Windows, macOS or Linux

## Size

---

- openGear standard form factor, front slot and rear card. Two slots required for each card

## Weight

---

- 0.5 lb (0.3 kg)

## Power

---

- openGear frame compatible, 8.0 watts max per card

## Environment

---

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

# OG-ROI-HDMI Tech Specs

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## Video Input Formats

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- Computer Signals:
  - WUXGA (1920 x 1200) 60 Hz max
  - VGA (640 x 480) minimum
- Video Signals:
  - (HD) 1920 x 1080i 50, 59.94
  - (HD) 1920 x 1080p 23.98, 24, 25, 29.97, 30, 50, 59.94, 60
  - (HD) 1280 x 720p 50, 59.94, 60
  - (SD) 625i, 525i
  - (SD) 580p, 480p

*NOTE: Frame rates limited by the 165 MHz max pixel rate of the HDMI receiver.*

## Video Output Formats

---

- (HD) 1920 x 1080p 50, 59.94, 60, SMPTE 425-1 Level A mapping structure 1 (4:2:2 10-bit YCbCr)
- (HD) 1920 x 1080p 23.98, 24, 25, 29.97, 30
- (HD) 1920 x 1080i 50, 59.94, 60
- (HD) 1280 x 720p 50, 59.94, 60
- (SD) 625i 25
- (SD) 525i 29.97

## Color Range

---

- Full
- SMPTE

## Reference Source

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- Free Run
- Card Ext Ref
- OG Frame Ref 1
- OG Frame Ref 2

## Reference Input

---

- Supported reference video inputs include
  - 1080i tri-level sync
  - 1080p tri-level sync
  - 720p tri-level sync
  - 625i Color Black
  - 525i Color Black
- 75-ohm terminating

## Video Input

---

- 1x HDMI input connector (with embedded audio, up to 8 channels)

## Video Outputs

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- HDMI
  - 1x HDMI loop through connector (with embedded audio, up to 8 channels)
- SDI
  - 3G-SDI, SMPTE-259/292/424, 1x BNC

## HDCP

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- ROI does not encode the HDMI output with HDCP encryption
- ROI does not accept HDCP input

## Audio Inputs

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- 2-channel Balanced analog audio inputs, 2x 3-Pin terminal block connectors
- HDMI embedded audio, 24-bit, 8-channel

## Audio Output

---

- SDI embedded audio, 24-bit, 2-channel or 8-channel

## User Interface

---

- openGear DashBoard network control software via Windows, macOS or Linux

---

## Size

- openGear standard form factor, front slot and rear card. Two slots required for each card

---

## Weight

- 0.5 lb (0.3 kg)

---

## Power

- openGear frame compatible, 8.0 watts max per card

---

## Environment

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

---

# OG-ROI-SDI Tech Specs

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## Video Input Formats

- Video Signals:
  - (HD) 1920x1080i 50, 59.94
  - (HD) 1920x1080p 23.98, 24, 25, 29.97, 30, 50, 59.94, 60
  - (HD) 1280x720p 50, 59.94, 60
  - (SD) 625i, 50
  - (SD) 525i, 59.94

---

## Video Output Formats

- (HD) 1920x1080p 50, 59.94, 60, SMPTE 425-1 Level A mapping structure 1 (4:2:2 10-bit YCbCr)
- (HD) 1920x1080p 23.98, 24, 25, 29.97, 30
- (HD) 1920x1080i 50, 59.94, 60
- (HD) 1280x720p 50, 59.94, 60
- (SD) 625i 50
- (SD) 525i 59.94

---

## Color Range

- Full
- SMPTE

---

## Reference Source

- Free Run
- Ext Ref

---

## Reference Input

- Supported reference video inputs include:
  - 1080i tri-level sync
  - 1080p tri-level sync
  - 720p tri-level sync
  - 625i Color Black
  - 525i Color Black
  - 75 ohm terminating

## Video Input

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

## Video Outputs

---

- 1x 3G-SDI BNC, loop through
- 1x 3G-SDI BNC, SMPTE-259/292/424
- 1x HDMI Type A, HDMI v1.4

## Audio I/O

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- 24-bit, 16-channel embedded SDI audio input
- 24-bit, 16-channel embedded SDI audio output
- 24-bit, 8-channel HDMI audio output
- Balanced analog audio outputs, 2x 3-Pin terminal block connectors

## User Interface

---

- openGear DashBoard network control software via Windows, macOS or Linux

## Size

---

- openGear standard form factor, front slot and rear card. Two slots required for each card.

## Weight

---

- 0.5 lb (0.3 kg)

## Power

---

- openGear frame compatible, 7.0 watts max per card

## Environment

---

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

# Appendix B – Safety and Compliance

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## Federal Communications Commission (FCC) Compliance Notices

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### Class A Interference Statement

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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

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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

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### 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, European Free Trade Association (EFTA) and United Kingdom Regulatory Compliance

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

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

## Declaration of Conformity

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



This equipment meets the following conformance standards:

### Safety

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

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

EN 62368-1: 2014 + A11 (T-Mark License)

IEC 62368-1: 2014 (CB Scheme Certificate)

Additional licenses issued for specific countries available on request.

### Emissions

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EN 55032: 2012 + AC: 2013, CISPR 32: 2015, EN 61000-3-2: 2014, EN 61000-3-3: 2013

### Immunity

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

EN 61000-4-4: 2012, EN 61000-4-5: 2014/A1: 2017, EN 61000-4-6: 2013,

EN 61000-4-11: 2020

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.

## Korean KCC Compliance Statement

### 사 용 자 안 내 문

이 기기는 업무용 환경에서 사용할 목적으로 적합성평가를 받은 기기로서 가정용 환경에서 사용하는 경우 전파간섭의 우려가 있습니다.

## Taiwan Compliance Statement

### 警告使用者：

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

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-32: 2016). If this equipment is used in a domestic environment, radio interference may occur, in which case, the user may be required to take corrective actions.

## Translated Warning and Caution Messages

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





Warning Symbol



Hazard 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!** 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!** 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.



**Hazard!** High Voltage. This situation or condition can cause injury due to electric shock.

**Avertissement!** Tension élevée. Cette situation ou condition peut causer des blessures dues à un choc électrique.

**Warnung!** Hochspannung. Diese Situation oder Bedingung kann zu Verletzungen durch Stromschlag führen.

**¡Advertencia!** Alto voltaje. Esta situación o condición puede causar lesiones debidas a una descarga eléctrica.

**Aviso!** Alta Tensão. Esta situação ou condição pode causar danos devido a choques elétricos.

**Avviso!** Alta tensione. Questa situazione o condizione può causare lesioni a causa di scosse elettriche.



**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!** Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.

**Avertissement!** La sécurité de la prise polarisée ou de la prise de type mise à la terre ne doit en aucun cas être empêchée de fonctionner. Une prise polarisée a deux broches, l'une étant plus large que l'autre. Une prise de type mise à la terre a deux broches et une troisième broche pour la mise à la terre. La broche large ou la troisième broche sont fournies pour votre sécurité. Si la prise fournie ne s'insère pas dans votre prise femelle, consultez un électricien pour le remplacement de la prise femelle obsolète.

**Warnung!** Der Sicherheitszweck des gepolten bzw. Schukosteckers ist zu berücksichtigen. Ein gepolter Stecker verfügt über zwei Pole, von denen einer breiter als der andere ist. Ein Schukostecker verfügt neben den zwei Polen noch über einen dritten Pol zur Erdung. Der breite Pol bzw. der Erdungspol dienen der Sicherheit. Wenn der zur Verfügung gestellte Stecker nicht in Ihren Anschluss passt, konsultieren Sie einen Elektriker, um den veralteten Anschluss zu ersetzen.

**¡Advertencia!** No eche por tierra la finalidad del tipo de enchufe polarizado con conexión a tierra. Un enchufe polarizado tiene dos espigas, una más ancha que la otra. Un enchufe con conexión a tierra tiene dos espigas iguales y una tercera espiga que sirve para la conexión a tierra. La espiga ancha, o la tercera espiga, sirven para su seguridad. Si el enchufe suministrado no encaja en el tomacorriente, consulte con un electricista para reemplazar el tomacorriente obsoleto.

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

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



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

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

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

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

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

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



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

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

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

**¡Advertencia!** Proteja el cable de corriente 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 éclairs ou 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!** Ensure Mains Power is disconnected before installing the OG-ROI Series modules into the frame, or installing and removing options. If a Mains switch is not provided, the power cord(s) of this equipment provide the means of disconnection. The socket outlet must be installed near the equipment and must be easily accessible.

**Avertissement !** Avant d'installer des modules OG-ROI Series dans la structure, ainsi qu'avant d'installer ou d'enlever des options, assurez-vous d'avoir déconnecté l'alimentation électrique. S'il n'y a pas d'interrupteur électrique, il faut débrancher les câbles électriques de l'équipement. La prise électrique doit être située à proximité de l'équipement et doit être aisément accessible.

**Achtung!** Sicherstellen, dass die Netzleitung entkoppelt ist, bevor die OG-ROI Series Module in das Gestell eingebaut oder Wahlteile eingebaut bzw. ausgebaut werden. Wenn kein Netzschalter vorgesehen ist, dient das bzw. dienen die Netzkabel dieser Vorrichtung als Entkopplungsmittel. Die Steckdose muss in der Nähe der Vorrichtung installiert und leicht zugänglich sein.

**Avvertenza.** Accertarsi che l'alimentazione di rete sia scollegata prima di installare i moduli OG-ROI Series nel frame o di installare e rimuovere componenti opzionali. Se non è presente un interruttore di accensione/spengimento, occorre scollegare il cavo (o i cavi) di alimentazione di questo apparecchio dalla presa di corrente. La presa di corrente deve essere situata presso l'apparecchio e facilmente accessibile.

**Aviso!** Certifique-se que a fonte principal de energia elétrica está desconectada antes de instalar os módulos OG-ROI Series no bastidor ou antes de instalar e remover opções. Se o interruptor principal não existir, o cabo elétrico deste equipamento proporciona o meio de desconexão. A tomada elétrica deverá ser instalada perto do equipamento e deverá ser de fácil acesso.

**¡Advertencia!** Asegúrese que la red de alimentación está desconectada antes de instalar los módulos OG-ROI Series en el marco, o la instalación y extracción de opciones. Si no se proporciona un conmutador de red, el cable de alimentación de este equipo proporciona los medios de desconexión. El zócalo tomacorriente debe estar instalado cerca del equipo y debe ser fácilmente accesible.



**Warning!** Dual Power Cord Notice—please read this. To reduce the risk of electrical shock, disconnect both power cords before servicing equipment.

**Avertissement !** Avis concernant la double alimentation électrique—à lire soigneusement. Pour éviter tout risque d'électrocution, débranchez les deux câbles électriques avant d'intervenir sur l'équipement.

**Achtung!** Hinweis auf Doppel-Netzkabel-bitte lesen. Um das Risiko eines Elektroschocks zu verringern, müssen beide Netzkabel ausgestöpselt werden, bevor die Vorrichtung gewartet wird.

**Avvertenza.** Avviso concernente il cavo di alimentazione doppio - leggere attentamente. Per ridurre il rischio di elettrocuzione, scollegare entrambi i cavi di alimentazione prima di eseguire la manutenzione o riparazioni di questo apparecchio.

**Aviso!** Aviso de Cabo Elétrico Duplo - por favor, leia isto. Para reduzir o risco de choque elétrico, desconecte ambos os cabos elétricos antes de fazer manutenção ao equipamento.

**¡Advertencia!** Aviso del doble cable de alimentación - leer esto por favor. Para reducir el riesgo de descarga eléctrica, desconecte ambos cables de alimentación antes de dar servicio al equipo.



**Caution!** The OG-X-FR front fan door is heavy. Remove with Caution.

**Attention!** La porte du ventilateur avant OG-X-FR est lourde. Retirer avec précaution.

**Achtung!** Die OG-X-FR -Frontlüfter Tür ist schwer. Bitte vorsichtig entfernen.

**¡Precaución!** La puerta del ventilador frontal OG-X-FR es pesado. Extraer con precaución.

**Atenção!** A porta do ventilador frontal OG-X-FR é pesado. Remova com cuidado.

**Attenzione!** La porta ventola anteriore OG-X-FR è pesante. Rimuovere con cautela.



**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.



**Caution!** To meet safety regulations for leakage current, connect the dual power supplies to separate branch circuits.

**¡Advertencia!** Para cumplir con las normas de seguridad para la corriente de fuga, conecte las dos fuentes de alimentación para circuitos derivados diferentes.

**Attention!** Pour répondre aux mesures de sécurité concernant le courant de fuite, raccorder les sources d'alimentation doubles à des circuits de dérivation distincts.

**Warnung!** Zur Erfüllung der Sicherheitsbestimmungen bezüglich Reststrom schließen Sie bitte die zwei Netzteile an unterschiedlichen Abzweigungen an.

**Cuidado!** Para atender aos regulamentos de segurança para correntes de fuga, conecte as fontes duplas a circuitos elétricos separados.

**Attenzione!** Per soddisfare le norme di sicurezza sulla corrente di perdita, collegare i doppi alimentatori a circuiti derivati separati.

# Warranty and Liability Information

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## Limited Warranty on Hardware

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

If the Customer brings a valid claim under this limited warranty for a hardware product (hereafter, a “product”) during the applicable warranty period, AJA Video will, at its sole option and as the Customer’s sole remedy for breach of the above warranty, provide one of the following remedies:

Repair or facilitate the repair the product within a reasonable period of time, free of charge for parts and labor.

Replace the product with a direct replacement or with a product that performs substantially the same function as the original product.

Issue a refund of the original purchase price less depreciation to be determined based on the age of the product at the time remedy is sought under this limited warranty.

To obtain service under this warranty, the Customer must notify AJA Video of the defect before expiration of the warranty period and make suitable arrangements for the performance of service by contacting AJA Video support through the channels set forth on the support contacts web page at <https://www.aja.com/support>.

Except as stated, the Customer shall bear all shipping, packing, insurance and other costs, excluding parts and labor, to effectuate repair. Customer shall pack and ship the defective product to a service center designated by AJA Video, with shipping charges prepaid. AJA Video shall pay to return the product to Customer, but only if to a location within the country in which the AJA Video service center is located. SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OF IMPLIED WARRANTIES OR LIMITATIONS ON APPLICABLE STATUTORY RIGHTS OF A CONSUMER, SO SOME OR ALL OF THE TERMS OF THIS PARAGRAPH MAY NOT APPLY TO YOU.

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