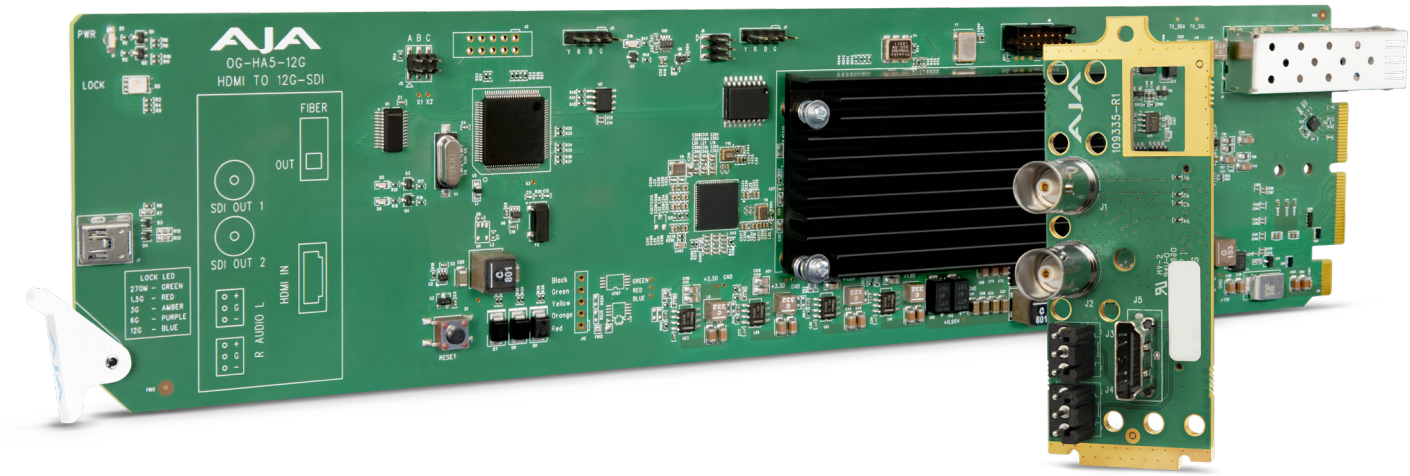
OG-HA5-12G

HDMI 2.0 to 12G-SDI Converter



Installation and Operation Guide

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AJA VIDEO SYSTEMS

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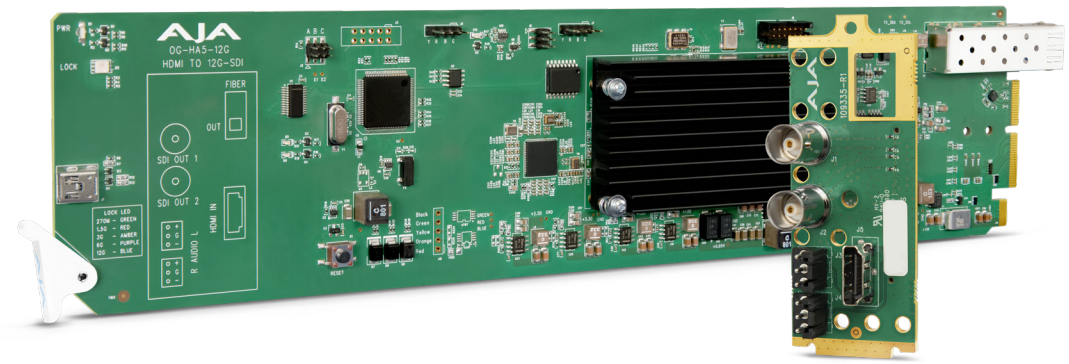
Contents

Chapter 1 – Introduction



Overview

AJA's OG-HA5-12G converts an HDMI 2.0 input to 12G-SDI for 4K/UltraHD single link outputs. OG-HA5-12G includes two 12G-SDI distribution amplifier outputs with 8 or 2-channels of embedded audio from an HDMI source or two-channel analog audio input (3-pin terminal block connectors).

OG-HA5-12G also supports Extended Display Identification Data (EDID) emulation, which ensures the connected source continuously supplies custom preferred video formats on output.

OG-HA5-12G-T and OG-HA5-12G-T-ST Fiber SFP-equipped models are single channel transmitters capable of extending HDMI 4K/UltraHD signals over long distances, up to 10km over a single LC or ST Fiber link respectively. These models ship with SFPs installed, and include all functionality of the OG-HA5-12G, with the added benefit of extending audio and video signals further.

Designed for use in high-density openGear's 2RU frames and AJA's OG-X-FR 2RU frame, DashBoard Software support on Windows®, macOS® and Linux offers remote control and monitoring of the openGear architecture and provides convenient and industry-standard configuration, monitoring and control options over a PC or local network.

Default Operation

The OG-HA5-12G auto configures to the connected HDMI input. The auto-configure function identifies the connected input and outputs the equivalent SDI format.

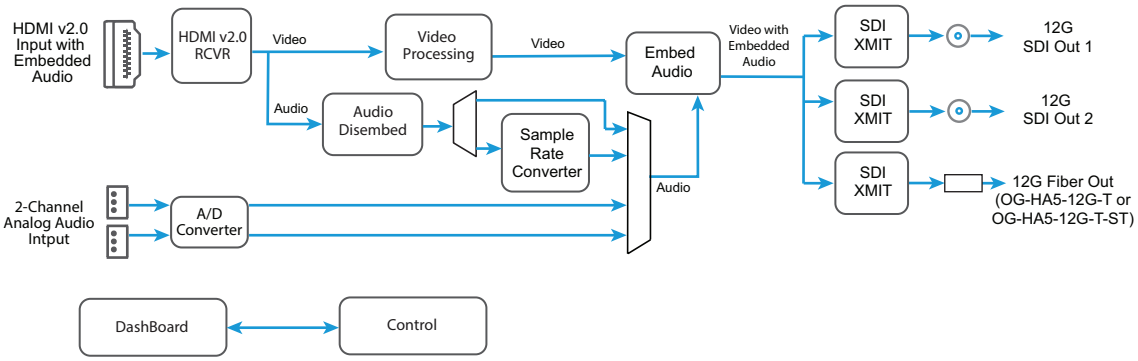
Features

- Convert HDMI 2.0b to 4K/UltraHD 60 fps to 12G-SDI with a second mirrored output (see *"Appendix A – Specifications" on page 26* for a complete list of supported inputs)
- Supports up to 60p input at 4:4:4/4:2:2/4:2:0
- EDID Emulation
- Two Sample Interleave (2SI) 4K/UltraHD source mapping
- Analyzes HDR Infoframe data coming in over HDMI in accordance with HDMI v2.0b/CTA-861-G

- HDR signaling metadata pass-through and optional override
- Simple Frame Rate Conversion (FRC) between Fractional and Integer rates
- Embedded audio can be selected from the HDMI or Analog audio inputs
- Embedded compressed audio pass-through of AC-3 (Dolby Digital) and E-AC-3 (Dolby Digital Plus), including DD+ JOC immersive sound.
- Remote configuration through DashBoard Control System for an openGear Frame
- Rear I/O plate included
- Compatible with OG-X-FR, OG3 and DFR-8321 openGear frames
- Fiber SFP models available
- Five year warranty

Block Diagram

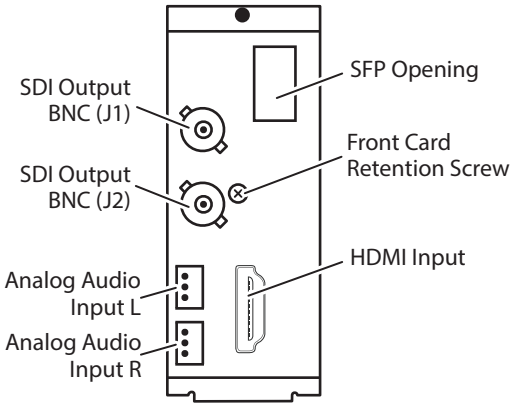
Figure 1. OG-HA5-12G Converter, Simplified Block Diagram



NOTE: The SDI output will automatically mute if there is no valid signal on the HDMI input or if the HDMI cable is removed.

I/O Connections

Figure 2. OG-HA5-12G Converter Rear Plate Connections



Signal Indicators on the OG-HA5-12G Card

Located at the upper front area of the OG-HA5-12G card, the Lock LED indicates by color the type of signal detected by the HDMI input (*Table 1*).

Table 1. HDMI In Lock LED Signal Detected

Signal Detected	Color
No Signal	Off
270M	Green
1.5G	Red
3G	Amber
6G	Purple
12G	Blue

Signal Indicators in the DashBoard Control System

Card Alarm State – Red

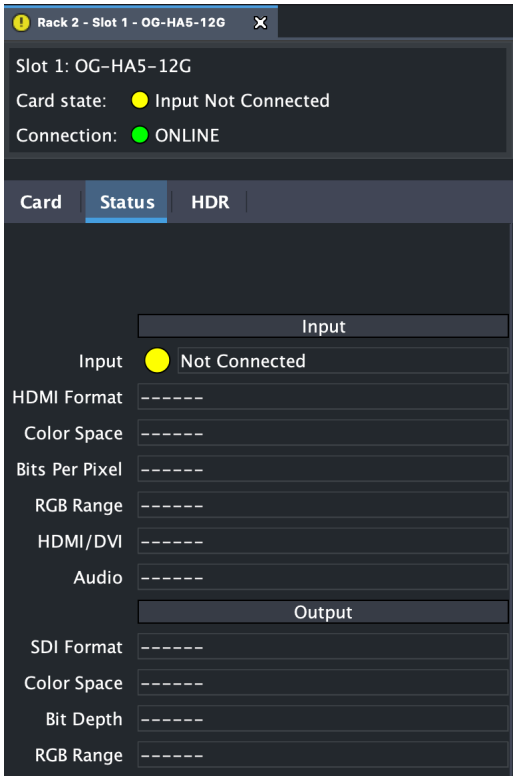
These potential card states will result in a red alarm indicator:

- HW Status Unsupported Rear Module
- HW Status FPGA Load Failure

Card Alarm State – Yellow

When the signal is either not present or is not locked, the DashBoard Control System shows a yellow Card state alarm. Additionally, under the Status tab, the Input State is reported as "Not Connected."

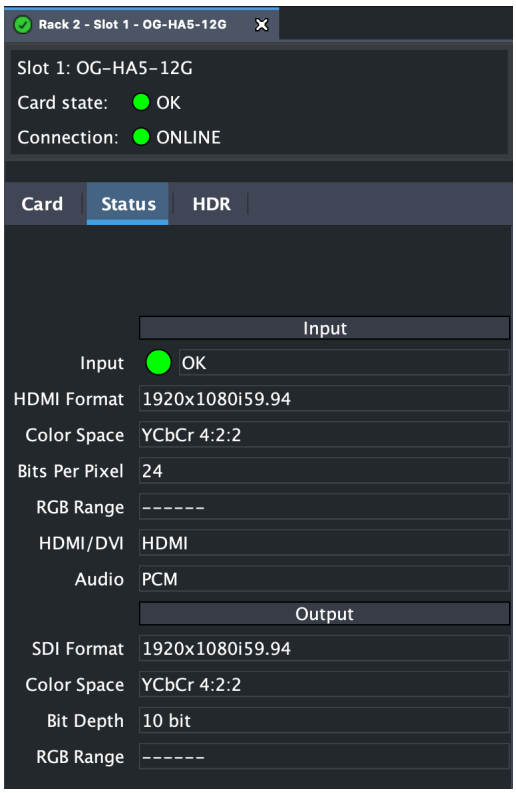
Figure 3. Signal is Not Present or Not Locked



Card Alarm State – Green

When a signal is present and locked, the DashBoard Control System shows a green Card state (OK) and a green Input (OK) under the Status tab. The SDI Format is also indicated.

Figure 4. Signal Present and Locked



User Controls

The OG-HA5-12G can be immediately used for many applications, since it is designed to recognize inputs and perform standard actions automatically. However, you can also manually configure the OG-HA5-12G using remote configuration through the DashBoard Control System for an openGear Frame.

DashBoard Control System

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.

For details about acquiring and using the DashBoard Control System, refer to *"Using the DashBoard Control System" on page 12.*

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.

Installation

Summary

Installing an OG-HA5-12G card into an OG-X-FR openGear frame consists of the following steps:

- Install the rear plate onto the back of the frame corresponding to the slot pair you will be using for the OG-HA5-12G card.
- Insert the OG-HA5-12G card into the frame in the left (odd numbered) slot of the pair.
- Connect the BNC, HDMI and audio cabling to the rear plate.

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.

Parts List

Quantity	*Description*
1	*OG-HA5-12G Front Card in ESD bag*
1	*Compatible Rear Plate*
2	*WECO 3-Pin Terminal Connector Plug 3.5mm*

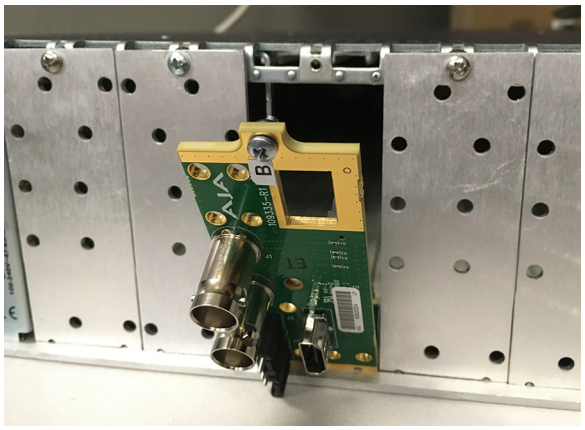
OG-HA5-12G Rear Plate Installation

1. Ensure that the chassis is properly installed in a secure rackframe.
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-HA5-12G card occupies two slots in the frame.

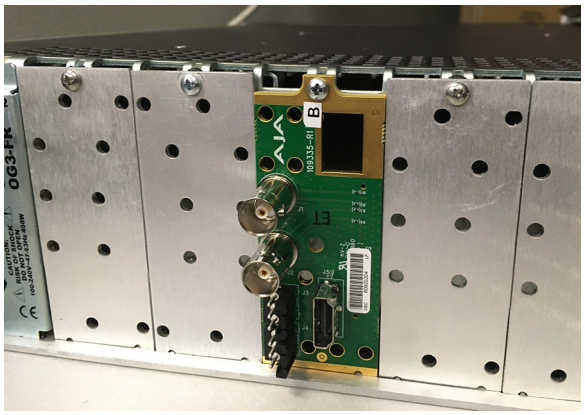
3. Using a Phillips screwdriver, unscrew the top screw from the desired blank rear plate and remove it.
4. Seat the bottom of the rear plate in the seating slot at the base of the frame back plane (*Figure 5*).

Figure 5. Inserting Rear Plate Into Frame Seating Slot



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

Figure 6. rear plate Inserted Into Frame Seating Slot



8. Ensure proper frame cooling and ventilation by having all rear frame slots covered with either OG card rear plates or blank metal plates.

OG-HA5-12G Card Installation

Caution! The SFP module must be removed from an OG-HA5-12G card before inserting the card into or removing the card from an openGear frame.

1. If necessary, remove the SFP module from the Front Card by lifting the lever (also referred to as a "bale") and pulling out the module.
2. 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.
3. Locate the rear plate you installed as described above. The interior slot number is dependent on the slot combinations into which you installed the

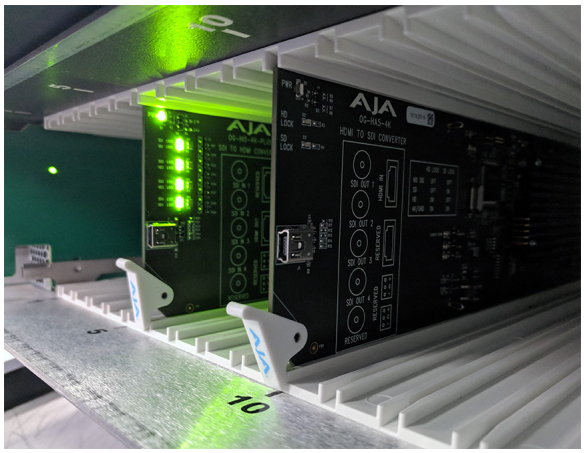
rear plate. This allows adequate spacing to avoid damaging the card, the cards installed in the neighboring slots, or both.

4. 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-HA5-12G cards are installed into the left (odd numbered) slot of the pair in order to connect with the rear plate.

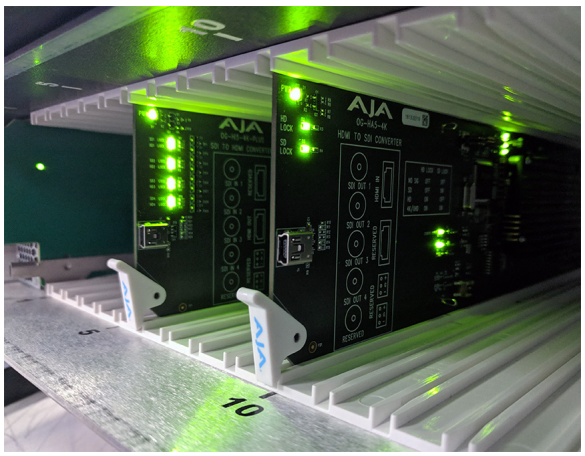
5. Insert the card into the frame until the card is properly seated in the Rear Plate. After you feel the card's first click, its position in the frame will resemble *Figure 7*.

Figure 7. Card on Right Not Fully Inserted



6. Next, press against the white plastic tab again until you feel the second click. 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. A properly seated card position should resemble *Figure 8*.

Figure 8. Card Fully Inserted, White Plastic Tab Upright



7. Some OG cards require more pressure than others to be fully inserted. Because this OG card has a rear SFP port that passes through the rear plate, alignment is especially important. Do not apply excessive force if you cannot completely insert the card into its slot.

NOTE: If the SFP port at the rear of the card fails to line up with the square opening in the rear plate, the card will fail to insert fully into the rack. Please contact AJA Support if you are experiencing this issue.

8. 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.

9. After the front card is fully seated, locate the card retention screw on the rear plate. Torque the card-retention screw into the front card's L bracket using a Phillips screwdriver. Do not overtighten.
10. Insert the SFP fiber module into the socket until it clicks and locks. The lever handle is on the left.

NOTE: The SFP module must match the card's capabilities for proper operation. Input and output triangles next to the fiber ports identify which are inputs and which are outputs.

IMPORTANT: Reverse these steps for removal of the front card to avoid damage to the SFP. Remove the SFP, unscrew the card retention screw, and then withdraw the front card from the frame.

Cabling

Refer to *Figure 2 on page 5* to identify the input and output signal connectors.

NOTE: Keep the protective dust cap in the SFP module until the fiber cabling is actually connected to the module.

Chapter 2 – Operation

Using the DashBoard Control System

The DashBoard Control System 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 AJA OG-HA5-12G manual addresses only those essential aspects of the DashBoard Control System needed to control the OG-HA5-12G card.

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-0G3-N Advanced Networking Frame Controller card, which can be used to control compatible OG cards.

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

Configuration Settings Stored in OG Card

Configuration settings made through DashBoard are stored in the OG-HA5-12G unit through subsequent power cycles.

Control Interface Basic Components

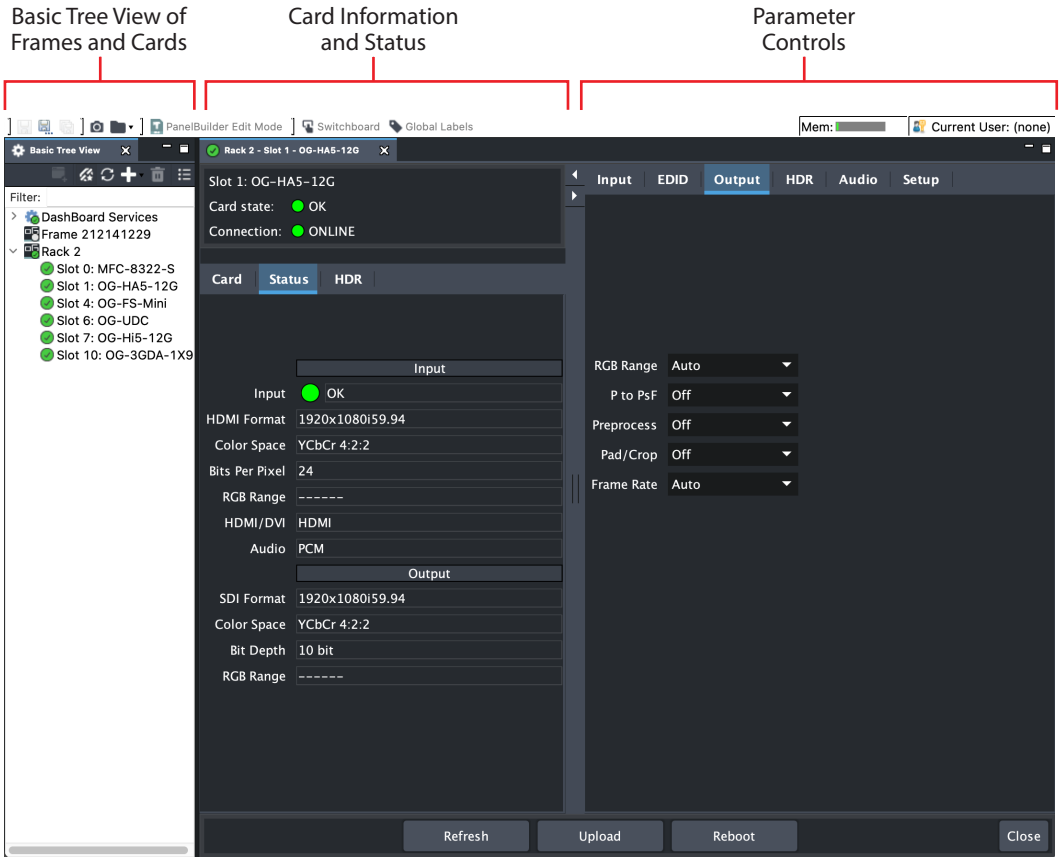
The basic components of the DashBoard Control System user interface consist of the basic tree view of frames and cards, the card information and status panel, and the parameter controls panel. These elements are shown in *Figure 9*.

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 9. Main Sections of the DashBoard User Interface



Basic Tree View of Frames and Cards

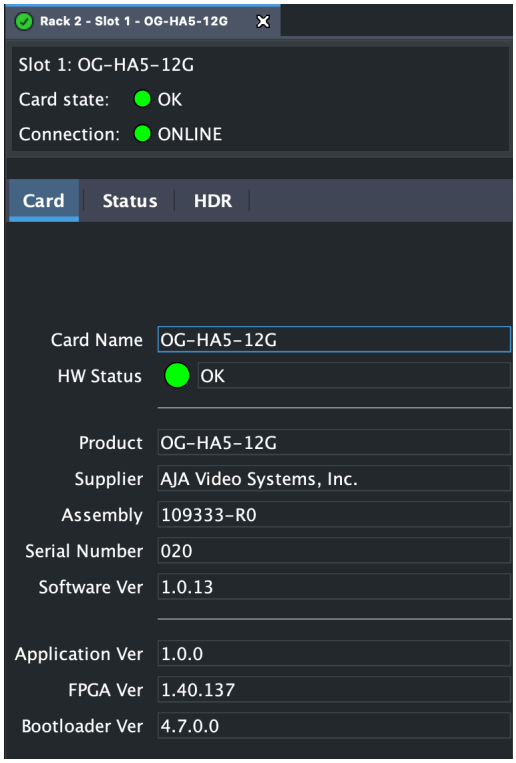
The basic tree view in the left column shows the frames and cards that are discoverable by DashBoard on your network.

Card Information and Status

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

Card Information Screen

Figure 10. OG-HA5-12G Card Information 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. This information is useful when calling AJA Support for service or technical support.

Card Name - This field reports that OG card's name, which you can define with the Setup Tab Screen see *"Setup Tab Screen" on page 22*.

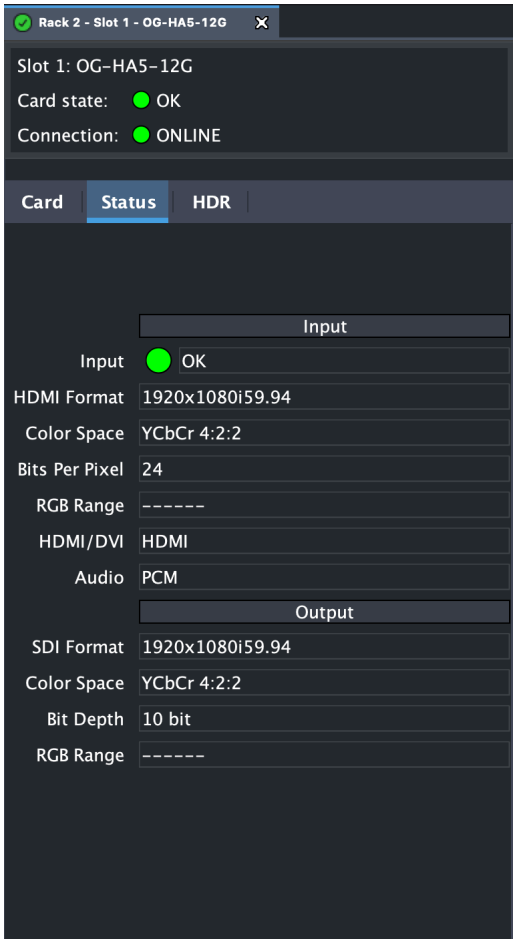
Assembly - This is the factory assembly number.

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.

Status Information Screen

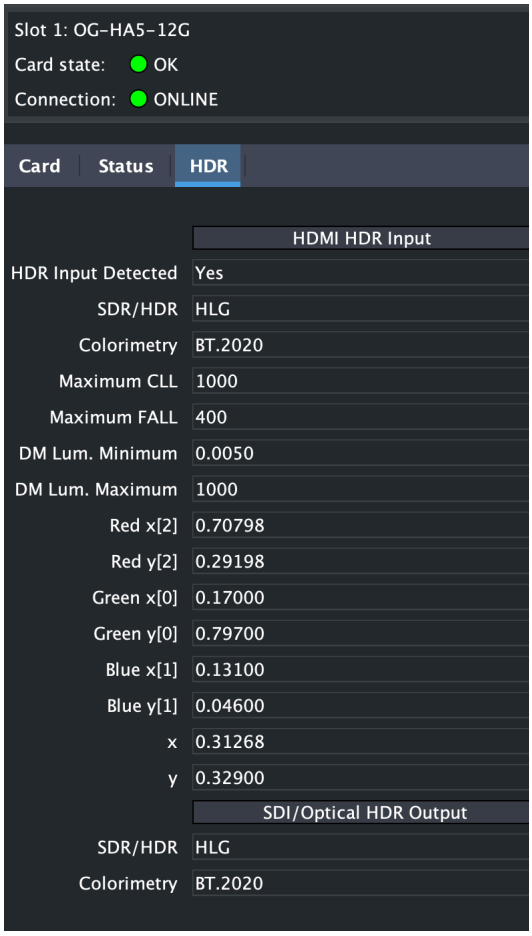
Figure 11. OG-HA5-12G Status Information Screen in DashBoard



The Status tab provides detailed information on the current input and output signal status for the card. For example, the HDMI In status field reports whether the signal is connected. If the signal is not connected, the field would report **No Input**. The SDI Out field reports the signal being generated by the card for both SDI outputs.

HDR Information Screen

Figure 12. OG-HA5-12G HDR Information Screen in DashBoard



Click on the HDR tab to view the received High Dynamic Range static metadata extensions settings.

The HDR Metadata tab indicates whether HDR metadata is being received on the HDMI input. If so, it decodes and presents the static metadata descriptors as defined in CTA-861.3 and HDMI v2.0a.

NOTE: The OG-HA5-12G HDR function does not modify the video data. See "HDR Tab Screen" on page 20 for related information.

The twelve Custom Metadata parameters displays the incoming HDR color, white point, and luminance values, if present.

HDR Infoframe Detected

Indicates whether an HDR Infoframe is being received.

- YES - HDR metadata is being received.
- NO - HDR metadata is not being received.

Red, Green, Blue, White Point

These eight values define the color gamut and white point, and are adjustable in units of 0.00002 cd/m^2, with a range of 0.00000 to 1.00000 cd/m^2.

DM Lum

These two parameters define the Display Mastering Luminance.

- Minimum: Defines the floor of the SMPTE ST 2086 color volume (in the case of HDR) and is determined by the mastering environment.
  - Range: 0.00000 cd/m^2 to 1.00000 cd/m^2.
  - Step size: 0.00002 cd/m^2.
- Maximum: Defines the ceiling of the SMPTE ST 2086 color volume (in the case of HDR) and is determined by the mastering environment.
  - Range: 1 cd/m^2 to 65535 cd/m^2.
  - Step size: 1 cd/m^2.

Maximum: CLL

Represents the highest-value pixel component in an entire scene. It is determined by analyzing each frame of video, and can be determined in the post environment.

- Range: 1 cd/m^2 to 65535 cd/m^2.
- Step size: 1 cd/m^2.

Maximum: FALL

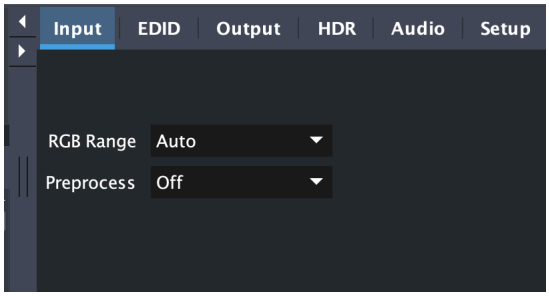
Represents the maximum of frame-based average light levels taken over an entire scene, and can be determined in the post environment.

- Range: 1 cd/m^2 to 65535 cd/m^2.
- Step size: 1 cd/m^2.

Parameter Controls

The parameter controls panel on the right side of DashBoard shows the tabs and parameters that are configurable for the selected card.

Input Tab Screen



NOTE: SDI output will automatically mute if there is no valid signal on the HDMI cable, or if the HDMI cable is disconnected.

About Bits Per Pixel

With HDMI, YCbCr is always reported as 24bpp, which is 12 bit depth (whether the input signal is 8, 10, or 12 bit depth).

To determine the bit depth for RGB, divide the bpp by 3. For example:

- 24bpp = 8 bit depth
- 30bpp = 10 bit depth
- 36bpp = 12 bit depth

RGB Range

Selects the Input Video Color Range for RGB signals.

NOTE: This setting has no effect on YCbCr signals.

Choose from:

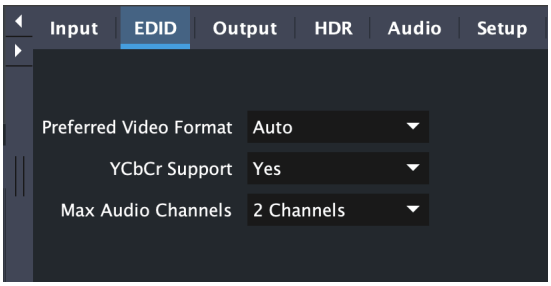
- Auto (default)
- SMPTE
- Full

Preprocess

Can be used to add internal preprocessing to accept sources with high jitter. Choose from:

- On
- Off (default)

EDID Tab 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 OG-HA5-12G, the OG-HA5-12G sends its EDID information to that source. The source uses this information to decide what format to send.

Preferred Video Format

The OG-HA5-12G's EDID setting can be configured by the user to any of the following formats and frame rates:

Auto	1920x1080i25	2048x1080p50
1280x720p50	1920x1080i30	2048x1080p60
1280x720p60	1920x1080p50	3840x2160p50
	1920x1080p60	3840x2160p60

YCbCr Support

This parameter determines whether the OG-HA5-12G will signal to its HDMI source that the OG-HA5-12G will support (Yes) or will not support (No) YCbCr input formats.

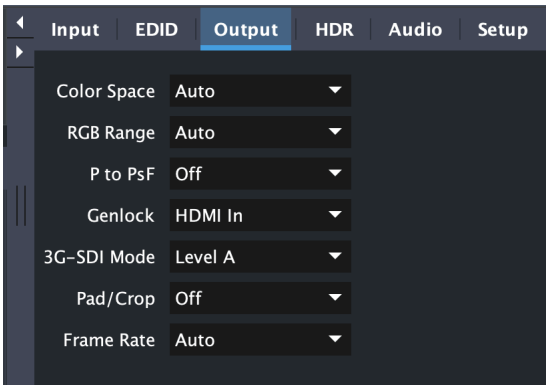
NOTE: RGB formats are always supported by default in an HDMI sink.

Max Audio Channels

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

- 2 Ch
- 8 Ch

Output Tab Screen



Color Space

Selects the Output Video Color Space. Note that DVI output is limited to 4:4:4 RGB. 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

RGB Range

Selects the Color Range. Choose from the following:

- Auto - (default) The OG-HA5-12G automatically detects the RGB range (if the input signal is RGB).
- SMPTE
- Full

P to PsF

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).

3G-SDI Mode

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

- Level A - (default)
- Level B

Pad/Crop

Selects pixel padding and cropping conversions between UltraHD and 4K formats. Choose from the following:

- Off - (default) No processing.
- Pad - Add black pixels to the left and right sides of the raster to fill a wider aspect ratio (UltraHD to 4K, or HD to 2K).
- Crop - Crop pixels from left and right sides of the raster to fit a narrower aspect ratio (4K to UltraHD, or 2K to HD).

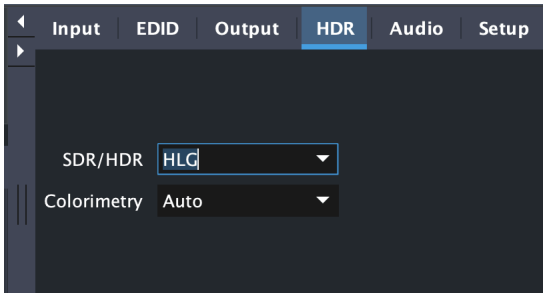
Frame Rate

The Frame Rate control can be set to convert an integer input frame rate (like p60) to the matching fractional or non-integer output frame rate (like p59.94). The frame rate converter accomplishes this by dropping a complete video frame every 1001 frames. This control can also be set to convert a fractional or non-integer input frame rate (like p59.94) to an integer output frame rate (like p60), accomplished by repeating a complete video frame every 1000 frames.

NOTE: Because audio is disembedded prior to any video processing and then re-embedded after video processing, there will be no disruption to audio when the frame rate converter is working.

- Off (default) - No frame rate conversion will be performed. The output frame rate will match the input frame rate.
- Fractional - If the input frame rate is an integer frame rate, the output frame rate will be converted to the matching fractional frame rate. Fractional frame rate input signals are unaffected.
- Integer - If the input frame rate is a fractional frame rate, the output frame rate will be converted to the matching integer frame rate. Integer frame rate input signals are unaffected.

HDR Tab Screen



Output override controls on this screen can be used to replace incoming or missing HDR metadata with alternative values for the OG-HA5-12G's SDI VPID outputs. See *"HDR Information Screen" on page 16* for related information.

SDR/HDR

This setting controls what SDR/HDR metadata value is applied to the video output.

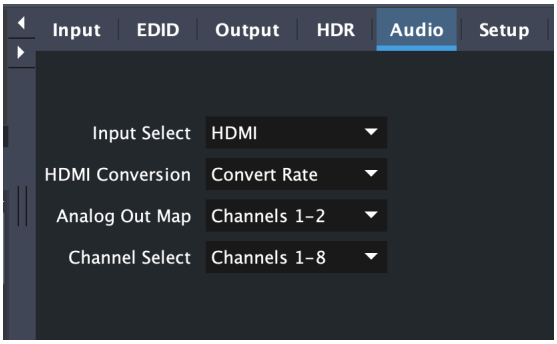
- Auto - Passes the SDR/HDR value from the video input to the output.
- SDR - An SDR value is applied to the output.
- PQ - A PQ value is applied to the output.
- HLG - An HLG value is applied to the output.

Colorimetry

This setting controls what Colorimetry metadata value is applied to the video output.

- Auto - Passes the Colorimetry value from the video input to the output.
  - BT.601, BT.709 and BT.2020 values are passed through.
    - If a non-supported colorimetry value is received, then BT.601 is signaled for SD formats and BT.709 is signaled for HD/UltraHD formats.
- BT.709 - A BT.709 value is applied to the output.
- BT.2020 - A BT.2020 value is applied to the output.

Audio Tab Screen



Input Select

Choose the audio input source. Select from the following:

- HDMI
- Analog
- Analog + HDMI
- None

HDMI Conversion

Choose the audio conversion to be performed on the incoming HDMI audio.

- Convert Rate - HDMI audio will be sample rate converted, if necessary, to 24-bit/48 kHz audio.
- Pass Through - HDMI audio will be passed to the SDI embedded audio channels without sample rate conversion.

Analog Out Map

Select which pair of audio channels will carry the analog audio output. Choose from the following:

- Ch 1+2 (9+10)
- Ch 3+4 (11+12)
- Ch 5+6 (13+14)
- Ch 7+8 (15+16)

NOTE: The actual channel pair depends on the selection made for the Channel Select control. For example, if Ch 1+2 is selected, but the Channel Select is set to Channels 9-16, then the Analog Audio will be embedded into SDI Ch 9+10.

Channel Select

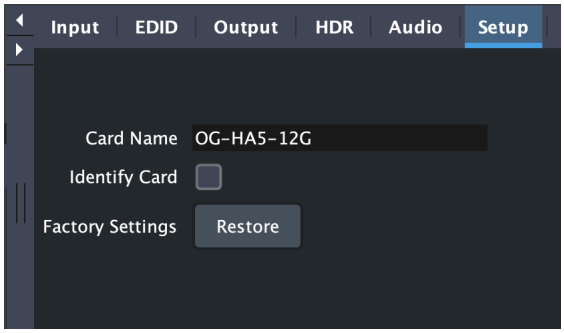
Choose which set of SDI embedded audio output channels will receive up to eight channels of embedded audio received from the incoming signal. Choose from the following:

- Channels 1-8
- Channels 9-16

Setup Tab Screen

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

Figure 13. OG-HA5-12G Setup Tab Screen in DashBoard



Click on the Setup tab to view and make changes to the card name, to identify the card in the openGear frame, or to restore card settings to factory default values.

Card Name

This field allows you to give your specific OG card a name. This can be useful if you have multiple OG-HA5-12G cards in your installation so you can distinguish between them easily. By default, this field is pre-populated with OG-HA5-12G. You can change the card name by editing the text in the Card Name field.

NOTE: Changing the Card Name in the Setup tab also changes the name of the card in the DashBoard tree view.

Identify Card

Select the checkbox to turn on the Identify Card function. When this function is turned on, an LED light on the front of the OG-HA5-12G card inside the openGear frame will blink to help you quickly identify the card. Open the front of the openGear frame in order to see the light blinking.

Factory Settings

If you would like to revert the card settings to factory default values, click **Restore**. A confirmation prompt displays. Select "Yes" to restore factory settings. Select "No" to cancel.

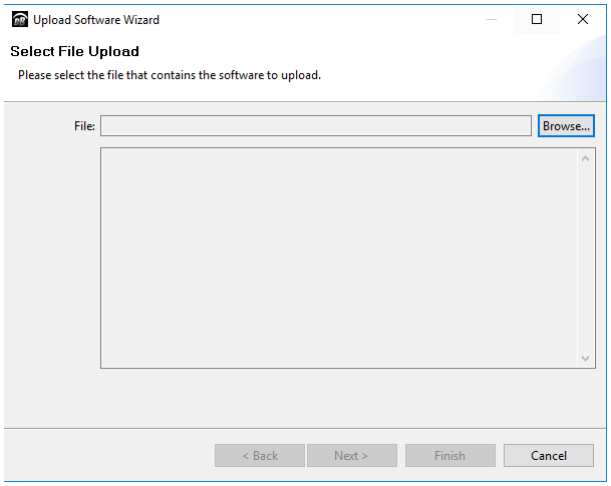
Uploading New Software

When available, you can upload updated software to the OG-HA5-12G through the DashBoard Control System by following the steps below.

To Upload New Software

1. Check the AJA website for new software for your OG-HA5-12G. 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.

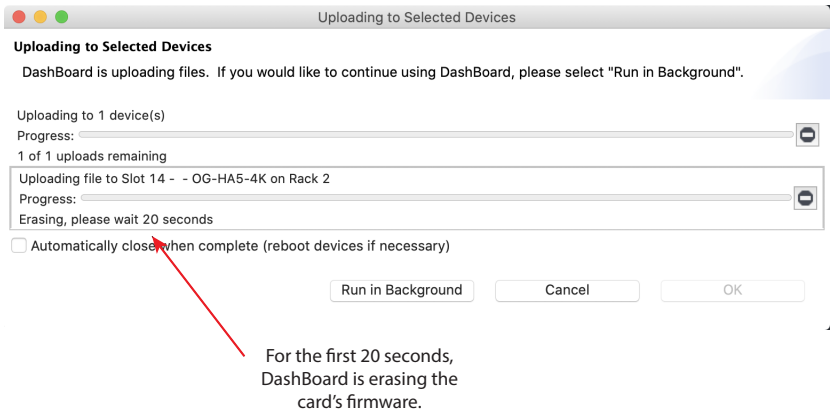
Figure 14. OG-HA5-12G Upload Software Wizard Window in DashBoard



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**.

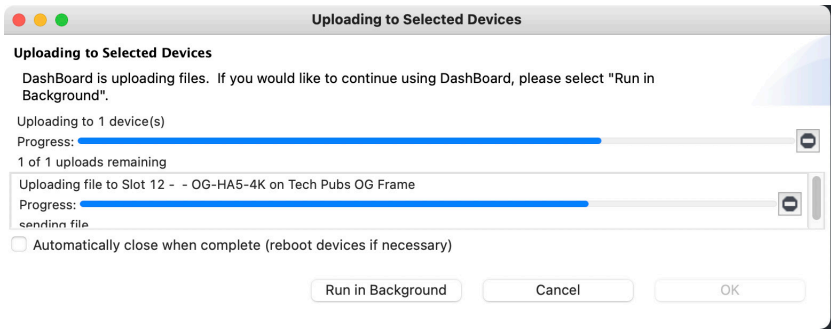
NOTE: Before the upload begins, DashBoard will erase the firmware on the card, taking approximately 20 seconds.

Figure 15. Note the message "Erasing, please wait 20 seconds"



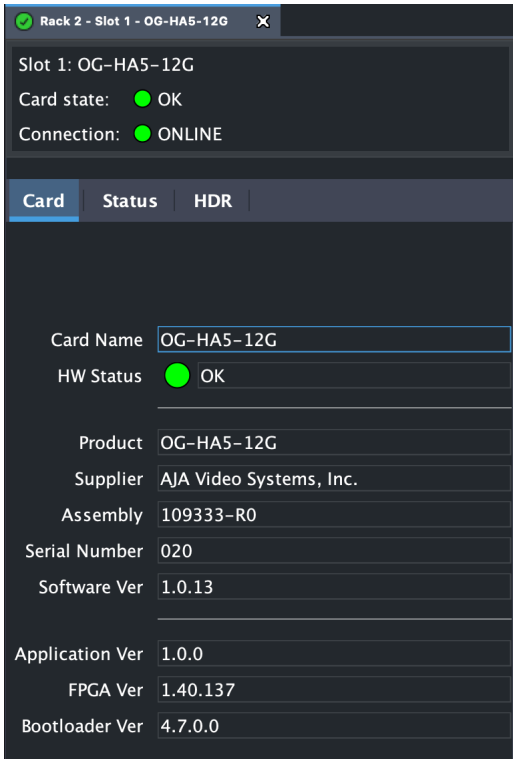
After the erasing process has completed, the upload will begin, shown in the Uploading to Selected Devices window below.

Figure 16. OG-HA5-12G 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 17. Dashboard Card Screen Showing Software Version



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 card operations will be briefly interrupted, but will be restored once the reboot has completed.***

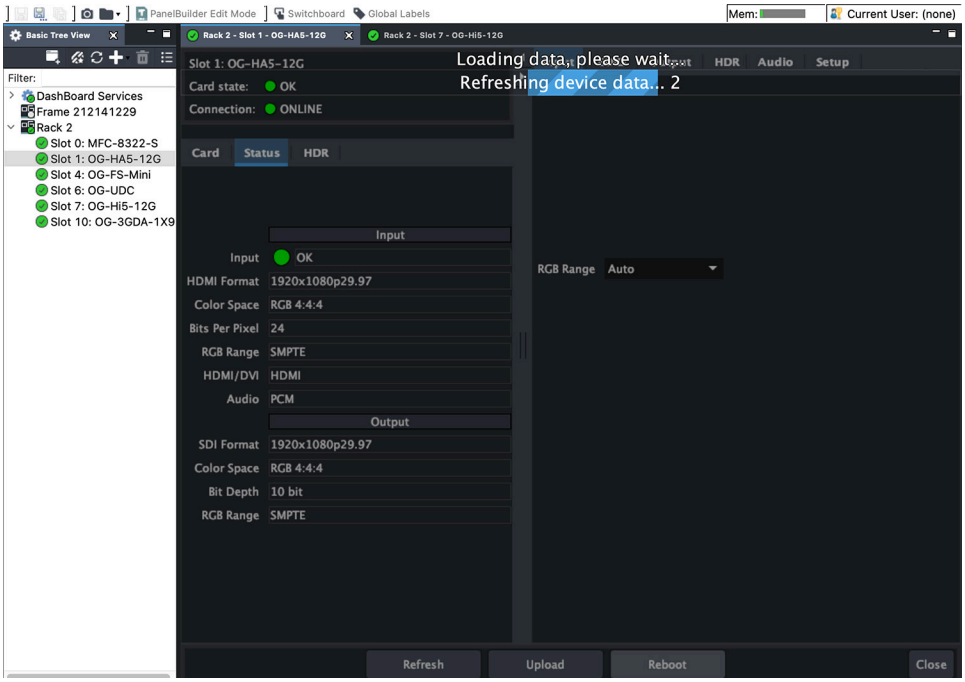
To Reboot the OG-HA5-12G

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

Figure 18. 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 operations will be interrupted.

Figure 19. The OG-HA5-12G briefly pauses operations while rebooting



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

OG-HA5-12G Family Tech Specs

Video Formats

- (4K) 4096x2160p
- (UltraHD) 3840x2160p
- (2K) 2048x1080p
- (HD) 1920x1080p
- (HD) 1920x1080i
- (HD) 1280x720p
- (SD) 720x576i
- (SD) 720x480i

Note: Raster and Frame Rate Dependent, please see the OG- HA5-12G Video Formats Document.

Video Input Digital

- 1x HDMI Type A connector, HDMI v2.0b
  - HDR Infoframe decoder as defined in CTA-861.3 and HDMI v2.0b
  - HDR VPID generation with pass-through or override for Colorimetry and Transfer Characteristic
  - YCbCr 4:2:2/4:4:4/4:2:0
  - RGB 4:4:4, SMPTE or Full level
  - 8, 10, or 12-bit (HFR 4K/UltraHD 4:4:4 limited to 8-bit)
  - (4K) 4096x2160p 23.98, 24, 25, 29.97, 30, 47.95, 48, 50, 59.94, 60
  - (UltraHD) 3840x2160p 23.98, 24, 25, 29.97, 30, 50, 59.94, 60
  - (2K) 2048x1080p 23.98, 24, 25, 29.97, 30, 47.95, 48, 50, 59.94, 60
  - (HD) 1920x1080p 23.98, 24, 25, 29.97, 30, 50, 59.94, 60
  - (HD) 1920x1080i 50, 59.94, 60
  - (HD) 1280x720p 50, 59.94, 60
  - (SD) 720x576i 50
  - (SD) 720x480i 59.947

HDCP Decryption

- Not supported. By definition, SDI outputs are unencrypted.

Video Output Digital

- 1x 12G-SDI BNC, SMPTE 259/292/424/2081/2082
  - YCbCr 4:2:2/4:4:4
  - RGB 4:4:4, SMPTE or Full level
  - 10-bit, 12-bit*
- 1x 12G-SDI
  - (4K) 4096x2160p 23.98, 24, 25, 29.97, 30, 47.95, 48, 50, 59.94, 60
  - (4K) 4096x2160PsF 23.98, 24, 25, 29.97, 30
  - (UltraHD) 3840x2160p 23.98, 24, 25, 29.97, 30,50, 59.94, 60
  - (Ultra HD) 3840x2160PsF 23.98, 24, 25, 29.97, 30
- 1x 6 Gb SDI DL
  - (4K) 4096x2160p 23.98, 24, 25, 29.97, 30
  - (4K) 4096x2160PsF 23.98, 24, 25, 29.97, 30
  - (UltraHD) 3840x2160p 23.98, 24, 25, 29.97, 30
  - (Ultra HD) 3840x2160PsF 23.98, 24, 25, 29.97, 30
- 1x 3 Gb SDI (Level A or B DL)
  - (2K) 2048x1080p 23.98, 24, 25, 29.97, 30, 47.95, 48, 50, 59.94, 60
  - (2K) 2048x1080PsF 23.98, 24, 25, 29.97, 30
  - (HD) 1920x1080p 23.98, 24, 25, 29.97, 30, 50, 59.94, 60
  - (HD) 1920x1080PsF 23.98, 24, 25, 29.97, 30
  - (HD) 1920x1080i 50, 59.94, 60
  - (HD) 1280x720p** 50, 59.94, 60
- 1x 1.5 Gb SDI
  - (2K) 2048x1080p 23.98, 24, 25, 29.97, 30
  - (2K) 2048x1080PsF 23.98, 24, 25, 29.97, 30
  - (HD) 1920x1080p 23.98, 24, 25, 29.97, 30
  - (HD) 1920x1080PsF 23.98, 24, 25, 29.97, 30
  - (HD) 1920x1080i 50, 59.94, 60
  - (HD) 1280x720p 50, 59.94, 60
- 1x 270 Mb SDI
  - (SD) 625i 50
  - (SD) 525i 59.94

*Some 12-bit formats not supported, please see OG-HA5-12G Video Formats in Documents and Manuals.

**1280x720p is Level A Only

Video Output Digital - Additional for OG-HA5-12G-T Only

- 1x 12G-SDI Fiber LC connector, SMPTE 297/259/292/424/2081/2082
  - Nominal Wavelength: Tx 1260 nm (min), 1310 nm (typ), 1360 nm (max)
  - Optical Power: -5 dBm (min), 0.5 dBm (max)
  - Extinction Ratio: 3.5 dB (min)

Video Output Digital - Additional for OG-HA5-12G-T-ST Only

- 1x 12G-SDI Fiber ST connector, SMPTE 297/259/292/424/2081/2082
  - Nominal Wavelength: Tx 1260 nm (min), 1310 nm (typ), 1360 nm (max)
  - Optical Power: -5 dBm (min), 2 dBm (max)
  - Extinction Ratio: 3.5 dB (min)

Audio Pass-Through Formats

- PCM
- Dolby Digital (AC-3)
- Dolby Digital Plus (E-AC-3), including Atmos Immersive Sound (JOC)

Audio Input Digital

- HDMI embedded audio, 24-bit, 8-channel

Audio Input Analog

- 2x 3-pin terminal block connector, 2-channel balanced analog audio +24dBu (nominal)

Audio Output Digital

- SDI embedded audio, 24-bit (SD limited to 20-bit), 16-channel

User Interface

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

Size (w x d x h)

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

Weight

- 0.5 lb (0.3 kg)

Power

- openGear frame compatible, 14 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

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

IEC 62368-1: 2014; (CB Scheme Certificate)

Additional licenses issued for specific countries available on request.

Emissions

EN 55032: 2015/A11: 2020, CISPR 32: 2015,

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

Immunity

EN 55035: 2017, 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 61000-4-6:2014,

EN 61000-4-8: 2010, EN 61000-4-11: 2020

Environments: E2, E3 and E4

Laser

EN 60825-1: 2014 and EN 60825-2:2004 + A1 + A2,

CDRH Compliant Class 1 (TUV Cert No. R 50408760)

Also Licensed for Standards: FDA 21 CFR 1040.10 and 1040.11

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

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

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

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

Recycling Notice

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

Korea KCC Compliance Statement

사 용 자 안 내 문
이 기기는 업무용 환경에서 사용할 목적으로 적합성평가를 받은 기기로서 가정 용 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! 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 expiga 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 rimane prontamente accessibile e operabile.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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.

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 Abzweigleitungen 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.

Warning! Ensure Mains Power is disconnected before installing the OG-HA5-12G 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-HA5-12G 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-HA5-12G 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-HA5-12G nel frame o di installare e rimuovere componenti opzionali. Se non è presente un interruttore di accensione/spegnimento, 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-HA5-12G 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-HA5-12G 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 lourd. Retirer avec précaution.

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

¡Precaución! LLa 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.

Caution! OG-HA5-12G devices require the use of “single mode 1310nm compatible” fiber optic cable.

Aviso! Dispositivos OG-HA5-12G exigem a utilização de cabo de fibra ótica "compatível com monomodo 1310nm ".

Attention! Les équipements OG-HA5-12G doivent être utilisés avec un câble en fibre optique monomode compatible 1310 nm.

Attenzione I dispositivi OG-HA5-12G richiedono l'uso di un cavo a fibre ottiche "compatibile con 1310 nm monomodo".

¡Precaución! OG-HA5-12G dispositivos requieren el uso de cable de fibra óptica "monomodo 1310nm compatibles".

Vorsicht! OG-HA5-12G-Geräte erfordern den Gebrauch von "Einzelmodus 1310nm kompatiblen" Faseroptik-Kabeln.

Warning! Active fiber-optic cables emit radiation invisible to the human eye. Do not look directly at the end of an active fiber-optic cable; the OG-HA5-12G is a Class 1 Laser Product.

CLASS 1 LASER PRODUCT

Advertência! Cabos de fibra ótica ativos emitem radiação invisível ao olho humano. Não olhe diretamente para a extremidade de um cabo de fibra óptica ativo; o OG-HA5-12G é um produto laser de classe 1.

PRODUTO LASER DE CLASSE 1

Avertissement! Lorsqu'ils sont actifs, les câbles en fibre optique émettent des radiations que l'oeil humain ne peut voir. Ne regardez pas directement l'extrémité d'un câble en fibre optique en cours d'utilisation ; les équipements OG-HA5-12G sont des produits laser de classe 1.

PRODUITS LASER DE CLASSE 1

Avvertenza I cavi a fibre ottiche attivi (ossia in cui si propagano segnali) emettono radiazioni invisibili. Non fissare lo sguardo direttamente sull'estremità di un cavo a fibre ottiche attivo; il cavo OG-HA5-12G è un prodotto laser di Classe 1.

PRODOTTO LASER DI CLASSE 1

¡Advertencia! Active los cables de fibra óptica de emitir radiación invisible para el ojo humano. No mire directamente en el extremo de un cable de fibra óptica activa; el OG-HA5-12G es un producto láser de Clase 1.

CLASE 1 LASER PRODUCTO

Achtung! Aktive Faseroptik-Kabel geben eine Strahlung ab, die für das menschliche Auge unsichtbar ist. Das Ende eines aktiven Faseroptik-Kabels niemals direkt ansehen; die OG-HA5-12G ist ein Laser-Produkt der Klasse 1.

KLASSE 1 LASER-PRODUKT

5 Year Warranty and Liability Information

Limited Warranty on Hardware

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

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

- Repair or facilitate the repair the product within a reasonable period of time, free of charge for parts and labor.
- Replace the product with a direct replacement or with a product that performs substantially the same function as the original product.
- Issue a refund of the original purchase price less depreciation to be determined based on the age of the product at the time remedy is sought under this limited warranty.

To obtain service under this warranty, the Customer must notify AJA Video of the defect before expiration of the warranty period and make suitable arrangements for the performance of service by contacting AJA Video support through the channels set forth on the support contacts web page at https://www.aja.com/support. Except as stated, the Customer shall bear all shipping, packing, insurance and other costs, excluding parts and labor, to effectuate repair. Customer shall pack and ship the defective product to a service center designated by AJA Video, with shipping charges prepaid. AJA Video shall pay to return the product to Customer, but only if to a location within the country in which the AJA Video service center is located. SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OF IMPLIED WARRANTIES OR LIMITATIONS ON APPLICABLE STATUTORY RIGHTS OF A CONSUMER, SO SOME OR ALL OF THE TERMS OF THIS PARAGRAPH MAY NOT APPLY TO YOU.

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This limited warranty is the only warranty provided by AJA Video on the hardware product. It supersedes all prior or contemporaneous understandings regarding such subject matter. No amendment to or modification of this warranty will be binding unless in writing and signed by AJA Video. The laws of the State of California, USA will govern this warranty and any dispute arising from it. Any translation of this Agreement is intended for convenience and to meet local requirements and in the event of a dispute between the English and any non-English versions, the English version of this warranty will govern. This limited warranty gives you specific legal rights and you may have other rights that vary from jurisdiction to jurisdiction, some of which are noted above.

Index