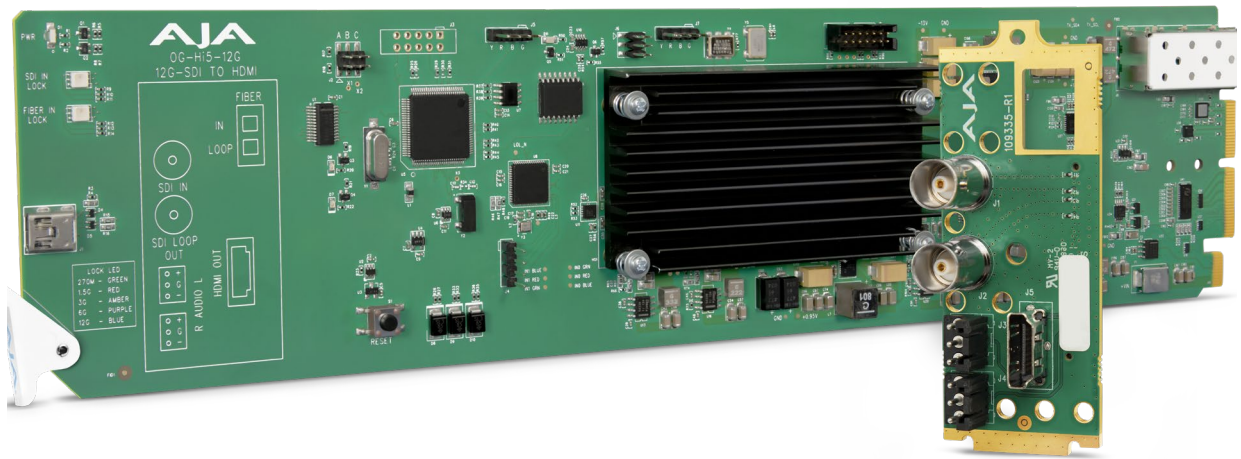


OG-Hi5-12G

SDI to HDMI 2.0 Converter



Installation and Operation Guide

Version 1.2
Published March 12, 2024



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

Support Telephone: +1.530.271.3190

Support Website: <https://www.aja.com/support/contact>

Support Email: support@aja.com

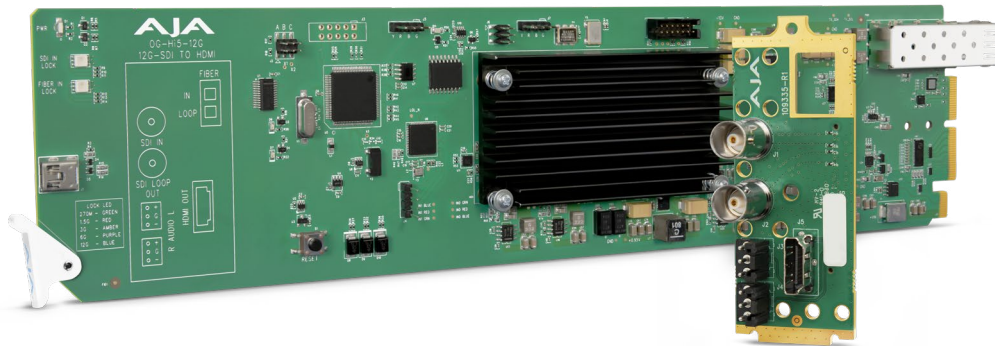
Sales Email: sales@aja.com

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

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Chapter 1 – Introduction



Overview

The OG-Hi5-12G converts 12G-SDI to HDMI 2.0, with pristine image fidelity and HFR support up to 60p for 4K/UltraHD, with single cable simplicity. OG-Hi5-12G provides an easy to deploy monitoring connection from professional 4K 12G-SDI devices to new displays with HDMI 2.0 inputs, for cost-effective monitoring in professional workflows. The OG-Hi5-12G supports HDR signaling metadata pass-through and optional override in accordance with HDMI v2.0 and CTA-861-G.

The OG-Hi5-12G features a 12G-SDI single link input with a reclocked SDI loop out for simpler SDI confidence monitoring or pass on for SDI pipelines.

Fiber SFP equipped OG-Hi5-12G models are available including the OG-Hi5-12G-R receiver, which can receive 4K signals over long distances from a Fiber connected source, and the OG-Hi5-12G-TR transceiver, which delivers a 4K/UltraHD SDI or Fiber source signal to an HDMI destination with pass on of the source through SDI or Fiber to a secondary destination. The Video Source Auto Switch Over feature (SDI and Optical Inputs) in OG-Hi5-12G-R and OG-Hi5-12G-TR provides automatic input changeover with configurable Switch Over Priority selection (Last Valid Input, Priority SDI, and Priority Optical).

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-Hi5-12G's default settings include many automatic settings. The OG-Hi5-12G's Auto-Configure feature automatically identifies the incoming SDI signal format and converts the signal based on the HDMI output default configuration parameters.

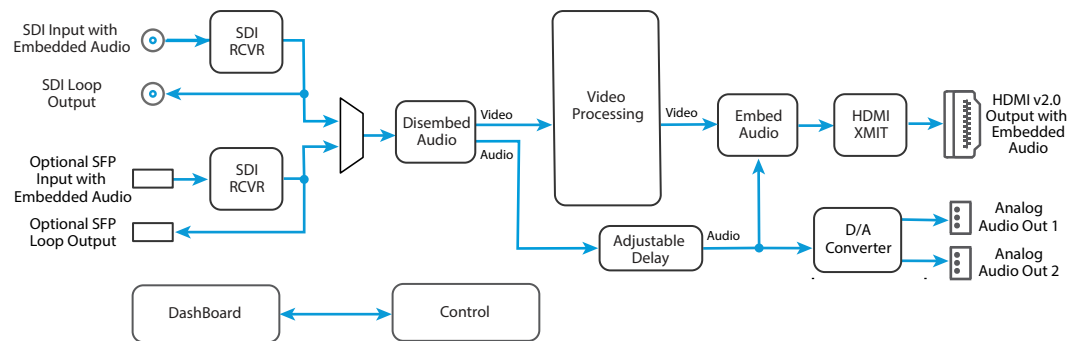
Features

- Convert 12G-SDI to HDMI 2.0b at up to 4K 60p
- Support for 4:4:4/4:2:2/4:2:0 HDMI 2.0b output
- HDR signaling metadata pass-through and optional override

- HDR support for HDR10 and HLG
- Embedded audio pass-through of E-AC-3 (Dolby Digital Plus) compressed audio, including DD+ Atmos
- 12G-SDI loop out
- Remote configuration through DashBoard Control System for an openGear Frame
- Rear I/O card included
- Compatible with OG-X-FR, OG3 and DFR-8321 openGear frames
- Fiber SFP models available
- Five year warranty

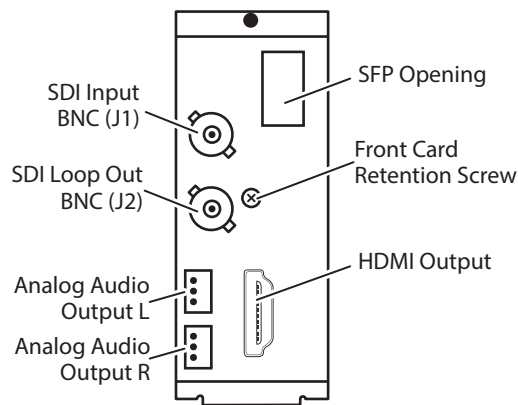
Block Diagram

Figure 1. OG-Hi5-12G Converter, Simplified Block Diagram



I/O Connections

Figure 2. OG-Hi5-12G Converter Connections



Signal Indicators on the OG-Hi5-12G Card

Located at the upper front area of the OG-Hi5-12G card, the Lock LED indicates by color the type of signal detected by the SDI input ([Table 1](#)).

Table 1. SDI 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

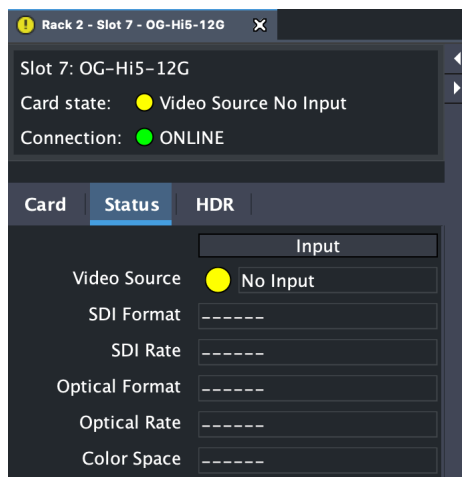
These potential card states will result in a red alarm indicator:

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

Card Alarm State – Yellow

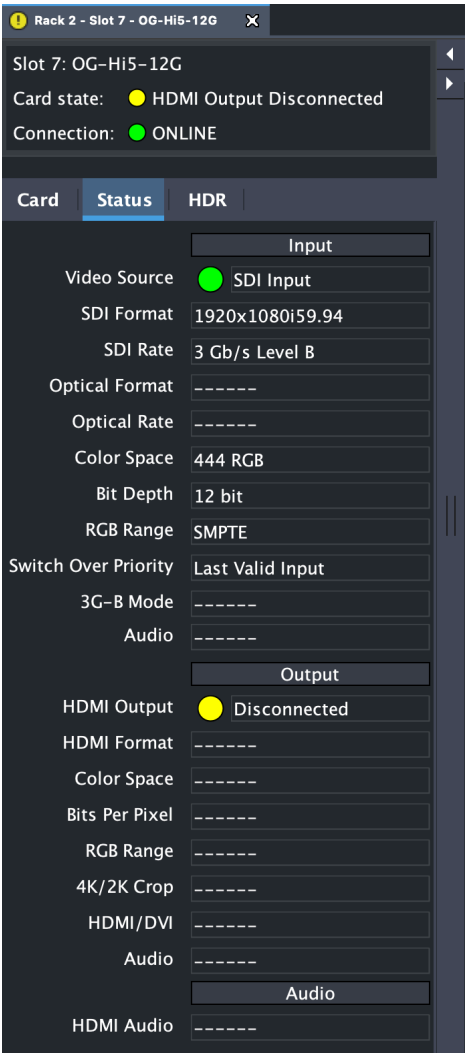
When the signal is either not present or is not locked, the DashBoard Control System shows a yellow Card state alarm: "Video Source No Input". Additionally, a yellow Video Source alarm: "No Input" is shown under the Status tab.

Figure 3. Signal is Not Present or Not Locked



When there is a valid input signal detected, but the HDMI output cable is not connected, either at the rear panel of the card or at the HDMI signal destination, the DashBoard Control System shows a yellow Card state alarm: "HDMI Output Disconnected." Additionally, the HDMI Output status shows a yellow alarm state of "Disconnected" under the Status tab.

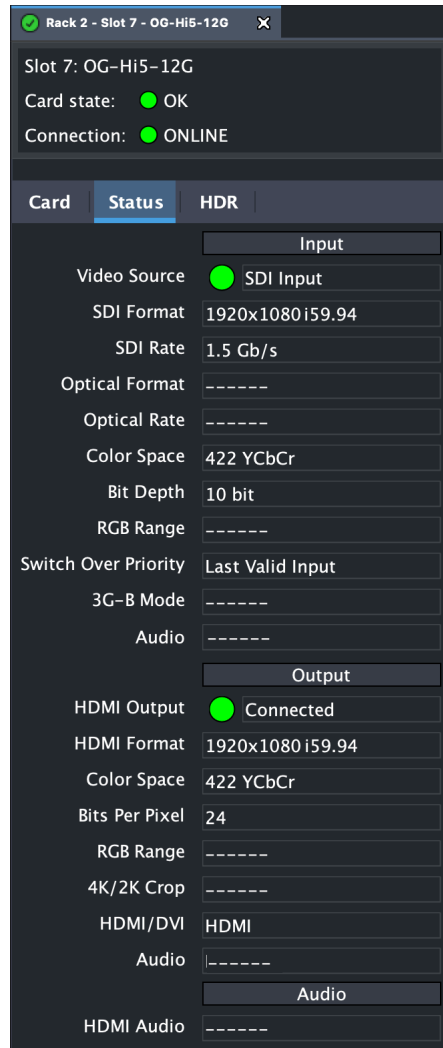
Figure 4. HDMI Not Connected



Card Alarm State – Green

When there is a valid input signal detected and a valid HDMI sink is connected to the output, the DashBoard Control System shows a green Card state. Additionally, the Signal State is shown as "OK" under the Status tab. The type of SDI Signal detected is also indicated.

Figure 5. Signal Present and Locked



User Controls

The OG-Hi5-12G 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-Hi5-12G 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 13](#).

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-Hi5-12G card into an OG-X-FR or OG3 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-Hi5-12G card.
- Insert the OG-Hi5-12G card into the frame in the left (odd numbered) slot of the pair.
- Connect the BNC, HDMI 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.

Parts List

Quantity	Description
1	OG-Hi5-12G Front Card in ESD bag
1	Compatible Rear Card
2	WECO 3-Pin Terminal Connector Plug 3.5mm

OG-Hi5-12G Rear Card Installation

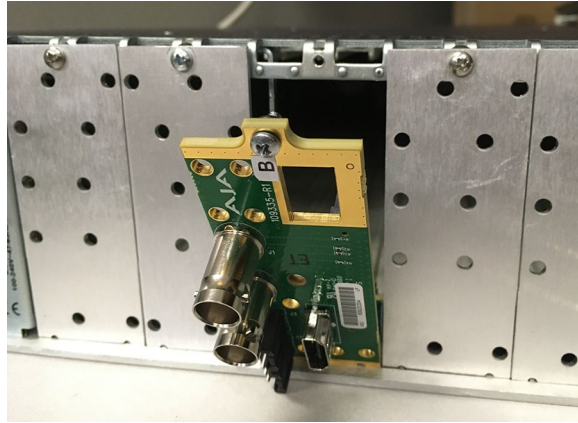
1. Ensure that the chassis is properly installed in a secure rackframe.
2. Locate the card frame slot on the rear of the openGear frame into which you wish to install the openGear card.

NOTE: An OG-Hi5-12G card occupies two slots in the frame.

3. Using a Phillips screwdriver, unscrew the top screw from the desired blank plate and remove it.

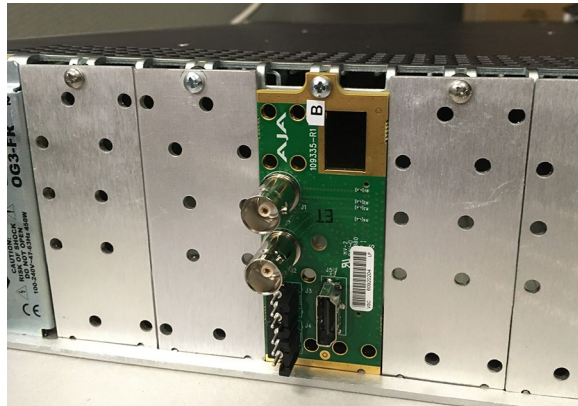
4. Seat the bottom of the rear card in the seating slot at the base of the frame backplane ([Figure 6](#)).

Figure 6. Inserting Rear Card 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 ([Figure 7](#)). Do not over tighten.

Figure 7. 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 metal plates if plates are not pre-installed.

OG-Hi5-12G Front Card Installation

CAUTION: The SFP module must be removed from an OG-Hi5-12G card before inserting or removing the cards from an openGear frame.

1. Remove any SFP modules by lifting the SFP bale lever 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 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.

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.

NOTE: OG-Hi5-12G cards are installed into the left (odd numbered) slot of the pair in order to connect with the rear card.

5. 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 8](#).
 - 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 9](#).

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 8. Partially Inserted Card with Unlocked Plastic Tab



Figure 9. Fully Inserted Card with Locked Plastic Tab



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

6. 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.

7. After the front card is fully seated, locate the card retention screw on the rear card. Torque the card retention screw into the front card's L bracket using a Phillips screwdriver. Do not overtighten.

8. 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.

NOTE: AJA does not support third-party SFP modules. Use of a non-AJA SFP module will void the warranty.

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 "[I/O Connections](#)" 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-Hi5-12G manual addresses only those essential aspects of the DashBoard Control System needed to control the OG-Hi5-12G 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-0GX-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-Hi5-12G unit through subsequent power cycles.

DashBoard Control Interface Basic Components

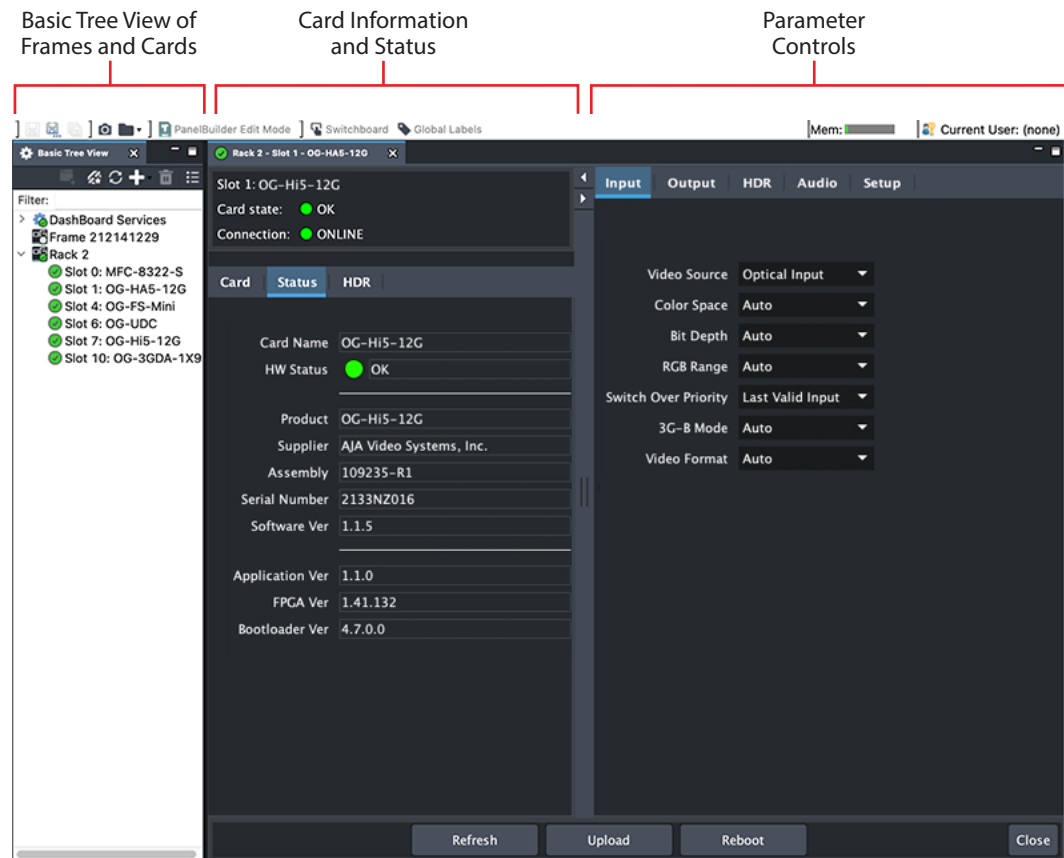
The basic components of the DashBoard Control System user interface consist of the basic tree view of frames and cards, the card information and status panel, and the parameter controls panel. These elements are shown below in [Figure 10](#).

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 10. 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.

Parameter Controls

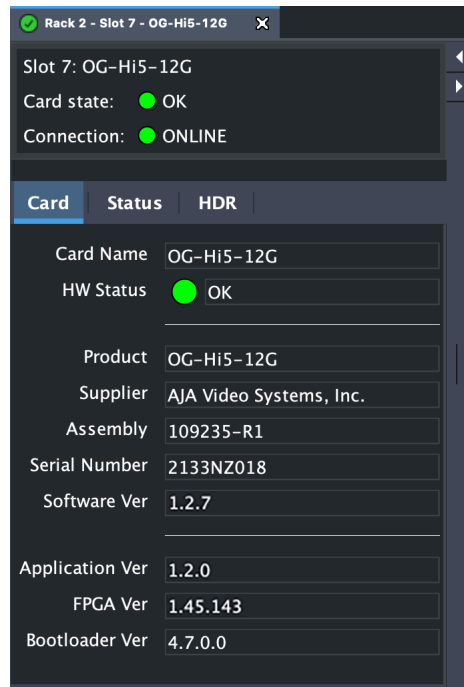
The parameter controls panel on the right side of DashBoard shows the tabs and parameters that are configurable for the selected card. The white fields indicate that they can be written to, or modified.

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. The yellow fields in this panel indicate that they are read-only.

Card Information Screen

Figure 11. OG-Hi5-12G 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.

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.

Status Information Screen

Figure 12. OG-Hi5-12G Status Information Screen in DashBoard

Rack 2 - Slot 7 - OG-Hi5-12G

Slot 7: OG-Hi5-12G

Card state: OK

Connection: ONLINE

Card | **Status** | HDR

Input

Video Source: SDI Input

SDI Format: 1920x1080 i59.94

SDI Rate: 1.5 Gb/s

Optical Format: -----

Optical Rate: -----

Color Space: 422 YCbCr

Bit Depth: 10 bit

RGB Range: -----

Switch Over Priority: Last Valid Input

3G-B Mode: -----

Audio: -----

Output

HDMI Output: Connected

HDMI Format: 1920x1080 i59.94

Color Space: 422 YCbCr

Bits Per Pixel: 24

RGB Range: -----

4K/2K Crop: -----

HDMI/DVI: HDMI

Audio: |-----

Audio

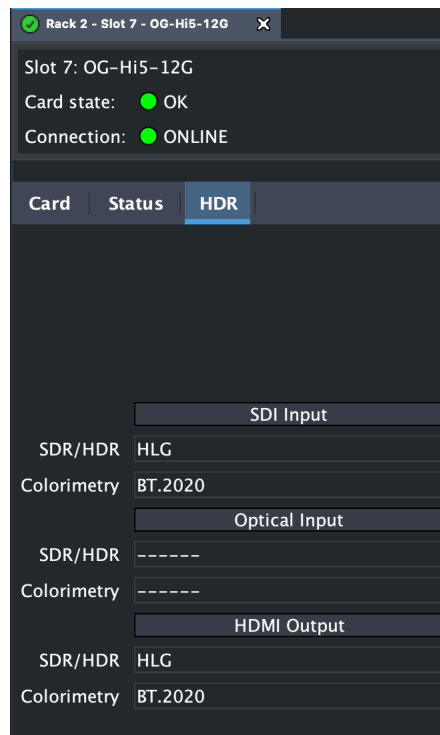
HDMI Audio: -----

The Video Source status field reports whether the signal is connected. The SDI Format status field reports the signal detected by the card's SDI input.

The HDMI Out status field reports the type of HDMI signal generated by the HDMI Output.

HDR Information Screen

Figure 13. OG-Hi5-12G HDR Information Screen in DashBoard

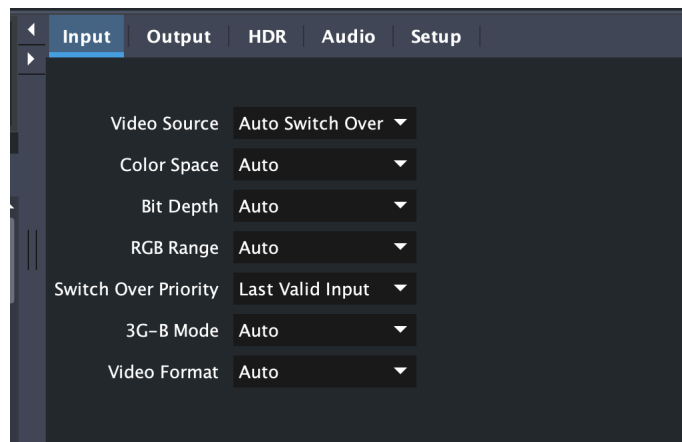


Click on the HDR information tab to view the received High Dynamic Range static metadata extensions settings. This HDR tab indicates whether HDR metadata is being received on the SDI or Optical inputs and identifies the type of HDR and its Colorimetry. It also reports the same information for the OG card's HDMI output.

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



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

Video Source

Selects the input video source. Choose from the following:

- Auto Switch Over - automatically selects between the SDI Input and the Optical Input (applicable to the OG-Hi5-12G-R, OG-Hi5-12G-R-ST and OG-Hi5-12G-TR models).
- SDI Input - selects the SDI input.
- Optical Input - selects the optical input (applicable to the OG-Hi5-12G-R, OG-Hi5-12G-R-ST and OG-Hi5-12G-TR models).

Color Space

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

- Auto - automatically selects color space based on the input video parameters and payload ID.
- 4:2:2 YCbCr
- 4:4:4 RGB
- 4:4:4 YCbCr

Bit Depth

Selects the input video bit depth. Choose from Auto, 8-bit, 10-bit, or 12-bit.

Choosing "Auto" automatically selects the bit depth based on the input video and the attached device's capabilities. High frame rate (HFR) 4K/UltraHD 4:4:4 limited to 8 bits. DVI output is limited to 8 bits.

RGB Range

Selects the Input Video Color Range when the input is RGB. Does not apply when the input is YCbCr. Choose SMPTE or Full color range.

Switch Over Priority

Selects which input (SDI or Optical) is the preferred input. This selection is valid only when an AJA optical SFP is installed. If and when the selected input signal is no longer detected, the auto switchover circuit will fail over to the non-priority input if present. Choose from Last Valid Input, SDI Input, or Optical Input.

3G-B Mode

Selects the 3G level B Video Mode. Choose from the following:

- Auto - automatically selects the format based on the input video parameters.
- Level B-DL
- B-DS Link 1 - use Link 1
- B-DS Link 2 - use Link 2

Video Format

This control can be used to force the OG-Hi5-12G's input video receiver to interpret that incoming video signal as either Progressive, interlaced, or PsF (Progressive Sequential Frame).

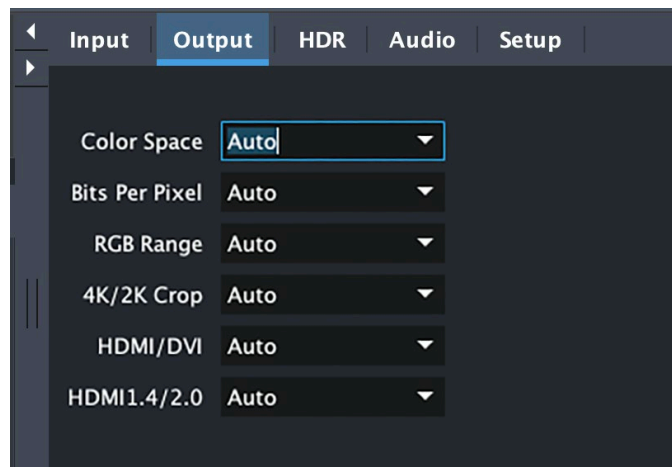
The default setting is Auto, in which the OG-Hi5-12G examines the incoming video signal to determine which format is appropriate.

Choose from Auto, Progressive, Interlaced, or PsF.

- Auto - Automatically selects the format based on the input video parameters and the Video Payload ID (VPID).
- Progressive - Forces the OG-Hi5-12G to interpret the incoming video as Progressive.
- Interlaced - Forces the OG-Hi5-12G to interpret the incoming video as Interlaced.
- PsF - Forces the OG-Hi5-12G to interpret the incoming video as PsF.

Under normal circumstances you should always run in Auto mode. However, because interlaced and PsF formats are essentially the same signal, the OG-Hi5-12G might confuse them. For example, if you know for sure that you are receiving a PsF signal, but the OG-Hi5-12G is interpreting it as an Interlaced signal while running in Auto mode, setting this control to PsF will force the receiver to interpret that signal as PsF. However, if the OG-Hi5-12G is receiving a Progressive signal and you force it to interpret it as Interlaced, an invalid output video signal will be created.

Output Tab Screen



Click on the Output tab to view and make changes to the OG-Hi5-12G Output settings.

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
- 4:2:0 YCbCr

Bits Per Pixel

Selects the input video bits per pixel. Choose from Auto, 24 bpp, 30 bpp, or 36 bpp. Choosing "Auto" automatically selects the bits per pixel based on the input video and the attached device's capabilities. High frame rate (HFR) 4K/UltraHD 4:4:4 limited to 24 bpp. DVI output is limited to 24 bpp.

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 Output Video Color Range when the output is RGB. Does not apply when the output is YCbCr. Choose Auto, SMPTE or Full color range.

4K/2K Crop

Choose Auto, Off, or On. Provides the option of center cutting 2048x1080 video signals to make 1920x1080, or center cutting 4096x2160 signals to make 3840x2160.

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.

When the incoming signal is 4K or UltraHD and the HDMI/DVI control is set to "DVI," the output will be down sampled to deliver a 2048x1080 or 1920x1080 image. The down sampling is accomplished by passing only one of the 2SI quadrants from the SDI input signal. The output will appear to be a full picture, but is actually only one quarter of the total pixels. This feature is very helpful when connecting to a non-4K/UltraHD preview monitor.

HDMI 1.4/2.0

Choose Auto, HDMI 1.4, or HDMI 2.0.

Your selection for this control will depend on whether you are connected to a sink device that supports HDMI 2.0 (maximum bandwidth of 18 Gbps) or HDMI 1.4 (maximum bandwidth of 10.2 Gbps).

OG-Hi5-12G supports HDMI 2.0 and can pass through 4K/UltraHD high frame rate (HFR) signals such as 50, 59.94 or 60.

- Auto (default setting) - If connected to an HDMI 2.0 sink device, the 4K UltraHD HFR source will pass straight through with no loss of data. If connected to an HDMI 1.4 sink device, the unit will reduce its output data rate by dropping every other video frame, reducing bit depth, or both.
- HDMI 1.4 - When the video source is 4K or UltraHD with a high frame rate (HFR) including 50, 59.94 or 60, the OG-Hi5-12G will automatically drop every other video frame, reduce bit depth, or both. This setting can be used to support connection to an HDMI 1.4 sink device such as a monitor.
- HDMI 2.0 - When the video source is 4K or UltraHD with a high frame rate (HFR) including 50, 59.94 or 60, the HDMI 2.0 setting supports the unit in passing through 4K/UltraHD high frame rate (HFR) signals such as 50, 59.94 or 60.

HDR Tab Screen

Input Output **HDR** Audio Setup

SDR/HDR HLG

Colorimetry Auto

Metadata Auto

Maximum CLL 1000

Maximum FALL 400

Display Mastering Luminance

Minimum 0.0005

Maximum 1000

Gamut

Set to BT.2020 values

Set to DCI-P3 D65 values

Set to BT.709 values

Red

x[2] 0.68000

y[2] 0.32000

Green

x[0] 0.26500

y[0] 0.69000

Blue

x[1] 0.15000

y[1] 0.06000

White Point

x 0.31270

y 0.32900

Click on the HDR Metadata tab to view and, if necessary, make changes to the OG-Hi5-12G High Dynamic Range metadata. The OG-Hi5-12G can identify HDR Metadata from the incoming SDI signal and either pass it through to the HDMI output, or override them and set new values for the HDMI output.

For SDI, this metadata defines the VPID (Video Payload Identifier) for Transfer Characteristic and Colorimetry. For HDMI, it defines the EOTF and Colorimetry and sets parameters for the Dynamic Range and Mastering infoframes. The HDR metadata is a mechanism to inform an HDMI sink device (such as a TV or monitor) that the video content is HDR encoded.

NOTE: HDR Metadata values do not modify video image data. They define the HDR metadata included in the video output.

For most workflows the Auto settings for the HDMI Out Overrides parameters are appropriate, which will automatically pass incoming HDR metadata, if present, through to the output. However, this metadata may need to be edited for a specific workflow, or to correct inaccurate incoming metadata.

NOTE: You can hover the cursor over each parameter field to view its corresponding description in a pop-up window.

Custom HDMI Metadata

The twelve Custom Metadata parameters on the left side of the HDR Metadata tab can be used to define HDR color, white point, and luminance values.

NOTE: *These settings are only applied when the HDMI Metadata parameter on the lower right is set to **Custom**. These values can be changed at any time (even with **Auto** selected), in which case those values will only be applied after selecting **Custom**.*

Red, Green, Blue, White Point

These eight values define the color gamut and white point, and are adjustable in units of 0.00002 cd/m², with a range of 0.00000 to 1.00000 cd/m².

Presets

For user convenience, the eight top values (RGB vertices and white point) can be preset to default **BT.709**, default **BT.2020**, or to default **DCI-P3** values.

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/m² to 1.00000 cd/m².
 - Step size: 0.00002 cd/m².
- **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/m² to 65535 cd/m².
 - Step size: 1 cd/m².

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/m² to 65535 cd/m².
- Step size: 1 cd/m².

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/m² to 65535 cd/m².
- Step size: 1 cd/m².

HDMI Out Overrides

The override controls on the right can be used to replace incoming or missing HDR metadata with alternative values for the OG-Hi5-12G's HDMI output.

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.

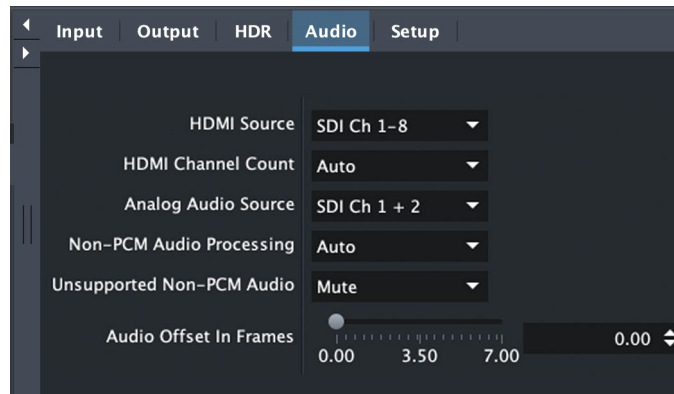
HDMI Metadata

This setting can be used to insert custom metadata values on the HDMI outputs.

- Auto - The 8 RGB vertices/white point parameters that get inserted into the HDMI HDR Infoframe are automatically generated:
 - If the incoming Colorimetry value is BT.709, Color VANC Packet, or Unknown, then BT.709 values are passed to the outputs.
 - If the incoming Colorimetry value is BT.2020, BT.2020 values are passed to the outputs.
- Custom - The 8 RGB vertices/white point parameters defined on the left side of the screen are applied to the HDMI output.

NOTE: The four mastering parameters (Max CLL, etc) set in Mini-Config are always inserted into the HDMI HDR Infoframe, although HDMI HDR Infoframes are only generated if the SDR/HDR value is PQ or HLG.

Audio Tab Screen



Click on the Audio tab to view and make changes to the OG-Hi5-12G audio settings.

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

HDMI Source

Choose which SDI embedded audio channels are routed to the HDMI output. Eight channels are routed at a time. You can choose Ch 1-8 or Ch 9-16. The source of the audio channels is determined by the selected video input of either SDI Input or Optical Input.

HDMI Channel Count

Choose Auto, 2 Channels, or 8 Channels for embedded audio. Choosing "Auto" automatically selects the audio channels based on the attached device's capabilities.

NOTE: When the '2 Channels' option is selected, the HDMI will output CH 1-2 if CH 1-8 is selected in the HDMI Source menu, and will output CH 9-10 if CH 9-16 has been selected.

Analog Audio Source

Selects the channel pair that will be output to the 3-pin block terminal connectors (L/R). Choose from the following:

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

NOTE: When compressed audio is present (if the selected audio is non-PCM), the Analog Audio Outputs are automatically disabled.

Non-PCM Audio Processing

This control is used to specify the processing mode for non-pcm audio. Default is Auto (non-pcm audio will be processed) or Off (non-pcm audio will not be processed). Audio input field in the Status tab will reflect type of audio that is passed when control is set to Pass.

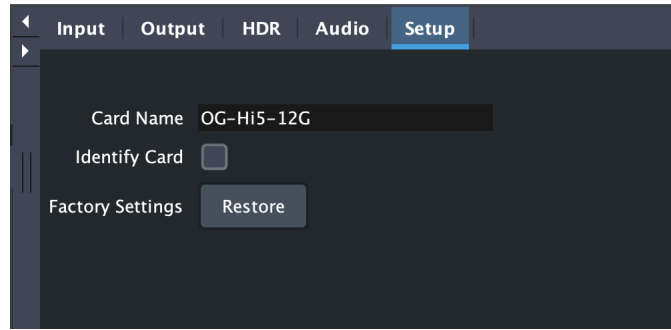
Unsupported Non-PCM Audio

This control is used to specify behavior if unsupported non-pcm audio is detected. Default is Mute (unsupported non-pcm audio is not passed to output) or Pass (unsupported non-pcm audio is passed to output). Audio output field in the Status tab will reflect Mute/Pass status.

Audio Offset In Frames

Permits delaying the embedded audio in relationship to the video (for example, to correct for lip sync problems), in 1/16 of a frame increments. Range is from 0 video frames to +7.0 video frames of delay. The actual time duration of delay will vary depending on the frame rate of the format being converted.

Setup Tab Screen



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-Hi5-12G cards in your installation so you can distinguish between them easily. By default, this field is pre-populated with OG-Hi5-12G. 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-Hi5-12G 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.

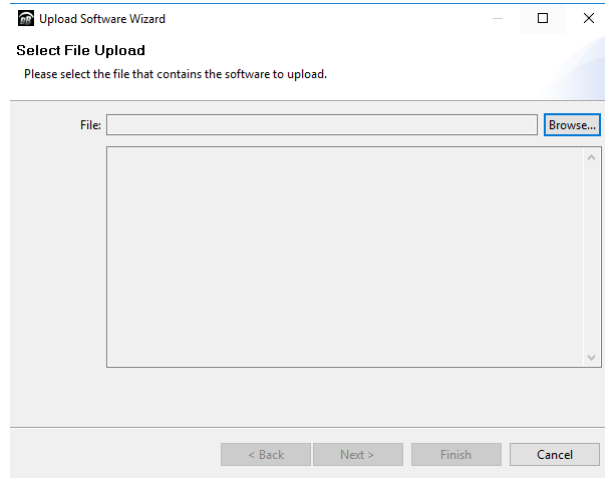
Uploading New Software

When available, you can upload updated software to the OG-Hi5-12G 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-Hi5-12G. 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.

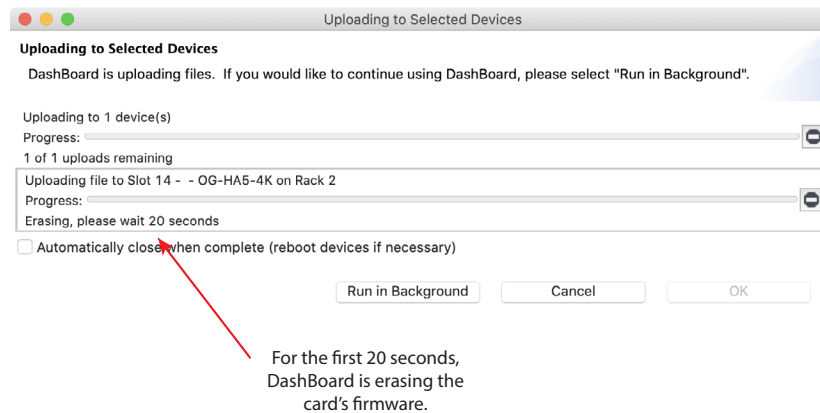
Figure 14. OG-Hi5-12G Upload Software Wizard Window in DashBoard



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**.

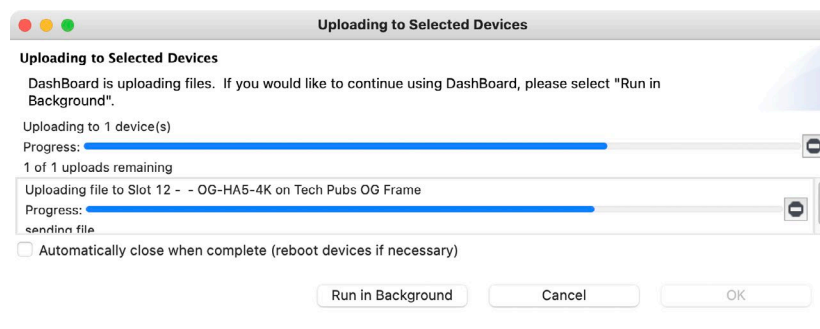
NOTE: Before the upload begins, DashBoard will erase the firmware on the card, taking approximately 20 seconds.

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-Hi5-12G 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

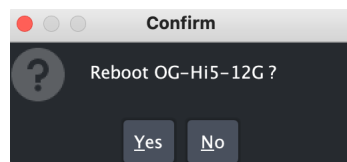
Rebooting is a standard function built in to the DashBoard Control System, and should only be performed if the board has become unresponsive.

WARNING: During a reboot, any card operations will be briefly interrupted, but will be restored once the reboot has completed.

To Reboot the OG-Hi5-12G

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.
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-Hi5-12G 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 OG-Hi5-12G Video Formats in Documents and Manual

Video Input 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
- 8, 10, 12-bit
- Two Sample Interleave (2SI) 4K/UltraHD source mapping
- 1x 12 Gb SDI
 - (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
- 1x 6 Gb SDI
 - (4K) 4096x2160p 23.98, 24, 25, 29.97, 30
 - (UltraHD) 3840x2160p 23.98, 24, 25, 29.97, 30
- 1x 3 Gb SDI (Level A or B Dual Link)
 - (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

*1280x720p is Level A Only

Input Signal Selection - OG-Hi5-12G-R and OG-Hi5-12G-TR Only

- 1x 12G-SDI BNC, SMPTE-259/292/424/2081/2082
- 1x 12G-SDI Fiber LC connector, SMPTE 297/259/292/424/2081/2082
 - Nominal Wavelength: Rx 1260 nm (min), 1620 nm (max)
 - Optical Sensitivity: -10 dBm (min 12 Gbps), -14 dBm (min 3 Gbps)
 - Overload Power: -2 dBm (min)

Input Signal Selection - OG-Hi5-12G-R-ST Only

- 1x 12G-SDI BNC, SMPTE-259/292/424/2081/2082
- 1x 12G-SDI Fiber ST connector, SMPTE 297/259/292/424/2081/2082
 - Nominal Wavelength: Rx 1260 nm (min), 1620 nm (max)
 - Optical Sensitivity: -10 dBm (min 12 Gbps), -14 dBm (min 3 Gbps)
 - Overload Power: -2 dBm (min)

Video Output Digital

- 1x HDMI Type A connector*, HDMI v2.0b
- HDR infoframe 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
- 24, 30, or 36 Bits Per Pixel (HFR 4K/UltraHD 4:4:4 limited to 24 BPP)
- (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 59.94

*If a connected monitor doesn't support HDMI protocol, the unit automatically switches to DVI protocol (which does not pass audio)

Video Output Digital - Additional for OG-Hi5-12G-TR 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: 5.4 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

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

Audio Output Digital

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

Audio Output Analog

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

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 card
- Two slots required for each card

Weight

- 0.5 lb (0.3 kg)

Power

- openGear frame compatible, 13 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, European Free Trade Association (EFTA) and United Kingdom Regulatory Compliance

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

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

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

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

Emissions

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

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

Immunity

EN 55035: 2017 + A11: 2020, 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

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

Laser

EN 60825-1: 2014+A11 and EN 60825-2: 2004+A1+A2,

CDRH Compliant Class 1 (TUV Cert No. 50135086)

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 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! 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 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-Hi5-12G 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-Hi5-12G 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-Hi5-12G 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-Hi5-12G 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-Hi5-12G 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-Hi5-12G 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 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.



Caution! OG-Hi5-12G devices require the use of "single mode 1310nm compatible" fiber optic cable.

Aviso! Dispositivos Hi5-12G exigem a utilização de cabo de fibra ótica "compatível com monomodo 1310nm".

Attention! Les équipements Hi5-12G doivent être utilisés avec un câble en fibre optique monomode compatible 1310 nm.

Attenzione! I dispositivi OG-Hi5-12G richiedono l'uso di un cavo a fibre ottiche "compatibile con 1310 nm monomodo".

¡Precaución! OG-Hi5-12G dispositivos requieren el uso de cable de fibra óptica "mono modo 1310nm compatibles".

Vorsicht! OG-Hi5-12G-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-Hi5-12G is a 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-Hi5-12G é um 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-Hi5-12G sont des 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-Hi5-12G è un 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-Hi5-12G es un producto láser de Clase 1.



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-Hi5-12G ist ein Laser-Produkt der Klasse 1.



5 Year Warranty and Liability Information

Limited Warranty on Hardware

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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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