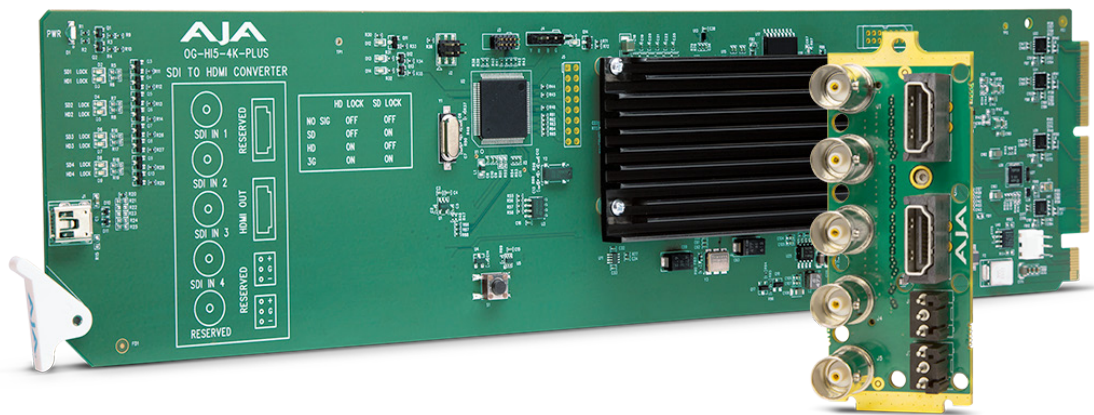


OG-Hi5-4K-Plus

3G-SDI to HDMI 2.0 Converter



Installation and Operation Guide

Version 1.5.3
Published March 12, 2021



Notices

Trademarks

AJA® and Because it matters.® are registered trademarks of AJA Video Systems, Inc. for use with most AJA products. AJA™ is a trademark of AJA Video Systems, Inc. for use with recorder, router, software and camera products. Because it matters.™ is a trademark of AJA Video Systems, Inc. for use with camera products.

Corvid Ultra®, Io®, Ki Pro®, KONA®, KUMO®, ROI® and T-Tap® are registered trademarks of AJA Video Systems, Inc.

AJA Control Room™, KiStor™, Science of the Beautiful™, TruScale™, V2Analog™ and V2Digital™ are trademarks of AJA Video Systems, Inc.

All other trademarks are the property of their respective owners.

Copyright

Copyright © 2021 AJA Video Systems, Inc. All rights reserved. All information in this manual is subject to change without notice. No part of the document may be reproduced or transmitted in any form, or by any means, electronic or mechanical, including photocopying or recording, without the express written permission of AJA Video Systems, Inc.

Contacting AJA Support

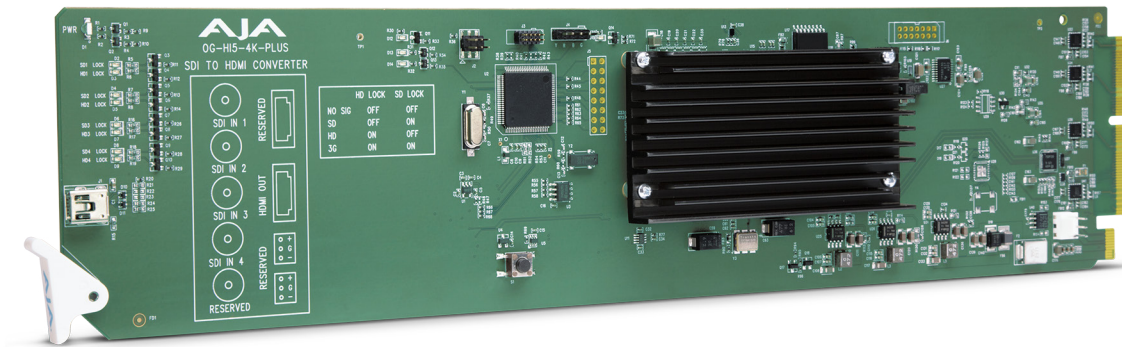
When calling for support, have all information at hand prior to calling. To contact AJA for sales or support, use any of the following methods:

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

Contents

Notices	2
Trademarks	2
Copyright	2
Contacting AJA Support	2
Chapter 1 – Introduction	4
Overview	4
Default Operation	4
Features	5
Block Diagram	6
I/O Connections	6
Signal Indicators on the OG-Hi5-4K-Plus Card	7
Signal Indicators in the DashBoard Control System	7
User Controls	10
DashBoard Control System	10
openGear and AJA	10
Installation	11
Summary	11
Unpacking	11
Rear OG-Hi5-4K-Plus Card Installation	11
Front OG-Hi5-4K-Plus Card Installation	12
Cabling	14
Chapter 2 – Operation	15
Using the DashBoard Control System	15
Requirements	15
Configuration Settings Stored in OG Card	15
Control Interface Basic Components	15
Basic Tree View of Frames and Cards	16
Card Information and Status	16
Parameter Controls	16
Card Tab Screen	17
Signal Status Tab Screen	18
Config Status Tab Screen	19
Input Tab Screen	20
Output Tab Screen	22
HDR Tab Screen	24
Audio Tab Screen	26
Setup Tab Screen	27
Uploading New Software	27
Rebooting	29
Appendix A – Specifications	31
OG-Hi5-4K-Plus	31
Appendix B – Safety and Compliance	33
Limited Warranty on Hardware	42
Limitation of Liability	43
Governing Law and Language; Your Rights	43
Index	44

Chapter 1 – Introduction



Overview

AJA's OG-Hi5-4K-Plus is an openGear card that supports HDMI v2.0 and provides SDI to HDMI conversion for formats up to 4K/UltraHD and frame rates up to 60 frames per second.

OG-Hi5-4K-Plus provides a simple monitoring connection from professional 4K devices using Quad 3G-SDI, Quad 1.5G-SDI, or Dual 3G-SDI outputs to displays with HDMI 2.0 inputs. The HDMI output can be configured for YCbCr 4:2:2, 4:4:4, 4:2:0, or RGB 4:4:4. The unit also supports single link SD, HD, and 3G-SDI inputs.

OG-Hi5-4K-Plus supports Square Division (Quadrant) and Two Sample Interleave (2SI) input mapping of 4K/UHD signals. It can also generate high dynamic range (HDR) metadata in accordance with HDMI v2.0a/CTA-861.3.

Designed for use in high-density openGear 2RU frames, including AJA's OG-X-FR 2RU frame, the OG-Hi5-4K-Plus is capable of communicating with Ross Video's DashBoard Control System. DashBoard runs on Windows®, macOS® and Linux®, providing convenient, industry-standard configuration, monitoring and control of the openGear architecture over a PC or local network.

Default Operation

The OG-Hi5-4K-Plus auto configures to the connected inputs. The auto-configure function identifies the connected inputs, and outputs the default or user configured HDMI output for the given input.

Ross Video's DashBoard Control System is available for firmware updates and advanced configuration.

NOTE: Signal conversion requires the presence of a valid SDI video signal on one of the SDI IN BNC connectors.

For single SD or HD inputs, SDI Input 1 is the default input. For dual-link 1.5G-SDI inputs, and 4K dual-stream 3G-SDI inputs, SDI Inputs 1 and 2 are the default inputs. Where applicable, both level A and B 3G-SDI inputs are auto-detected and supported.

When connecting the OG-Hi5-4K-Plus with multiple SDI inputs in the auto-configure mode (default), as the user connects the first SDI signal to SDI Input 1, the OG-Hi5-4K-Plus will output that input as a full screen image. As soon as the second input is connected, the OG-Hi5-4K-Plus will determine if it is a multi-input signal and will display the image accordingly.

It is possible to use two dual stream 3G-SDI inputs to make 3840 or 4K video for Square Division (Quadrant) inputs. In that case, SDI Input 1 and SDI Input 2 are assumed to be the inputs. SDI Input 1 linkA makes the top left quadrant, SDI Input 1 linkB makes the top right quadrant, SDI Input 2 linkA makes the lower left quadrant, and SDI Input 2 linkB makes the lower right quadrant. To use this mode, change the Video Source Selection to "2 X SDI 4K" and select 2SI pixel mapping.

NOTE: The OG-Hi5-4K-Plus is an SDI to HDMI converter, not a video format converter, nor a scaling card. Incoming rates are translated to HDMI formats without any scaling. Therefore, whatever video format comes in is what goes out. The OG-Hi5-4K-Plus may output either 4Kx2160 or 3840x2160 if multiple SDI inputs are present with 1.5G-SDI or 3G-SDI on each input and if the monitor can support those resolutions. For 4K input, the OG-Hi5-4K-Plus may provide a center cut 3840, or pass the 4096 to the output, but there is no scaling between the two.

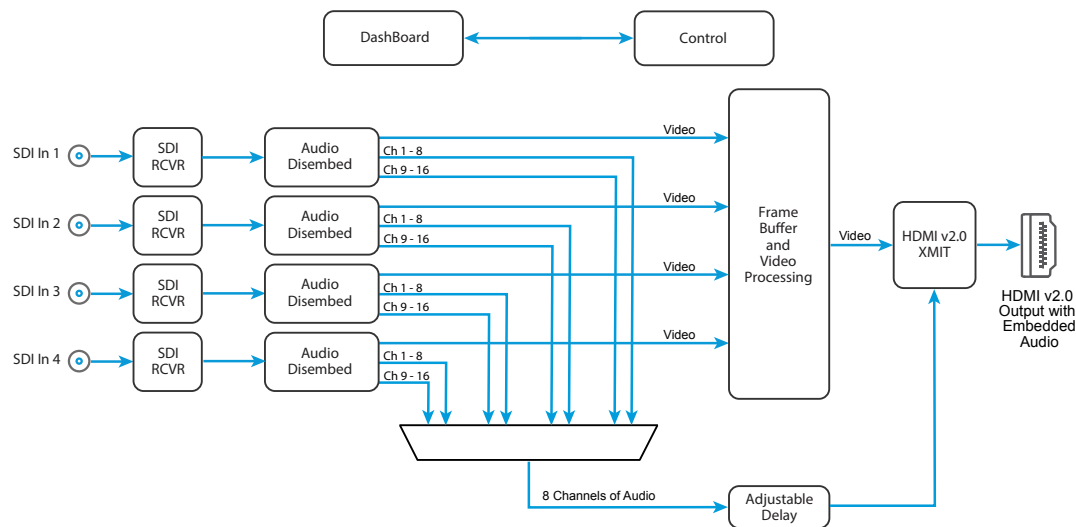
Features

- openGear compatible card (requires 2 slots, rear card included)
- Use with openGear 2RU frames
- Controlled by DashBoard network control software
- 4K/HD/SD-SDI to HDMI (see "[Appendix A – Specifications](#)" on page 31 for a complete list of supported inputs).
- SDI support including:
 - SMPTE 425 Level A and B
 - Quadrant or 2SI mapping
 - 4:2:2/4:4:4 YCbCr
 - 4:4:4 RGB
 - 8-bit or 10-bit (HFR 4K/UltraHD 4:4:4 limited to 8-bit)
 - 16 channels of embedded audio
- HDMI 2.0 support including:
 - 4:2:2/4:4:4/4:2:0 YCbCr
 - 4:4:4 RGB
 - 8-bit or 10-bit (HFR 4K/UltraHD 4:4:4 limited to 8-bit)
 - 2 or 8 channels of embedded audio
- Support for HDMI 2.0a
 - HDR Infoframe generation
- 5 year warranty

NOTE: 720p 4:4:4 formats are not supported in this release.

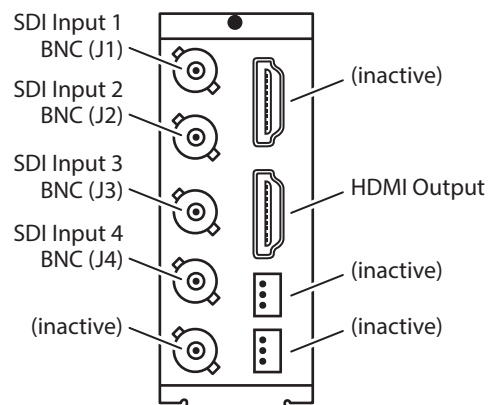
Block Diagram

Figure 1. OG-Hi5-4K-Plus Converter, Simplified Block Diagram



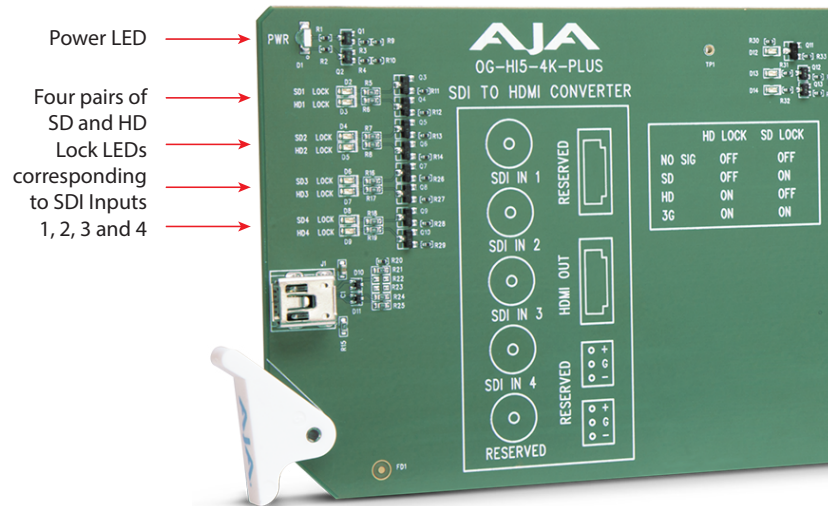
I/O Connections

Figure 2. OG-Hi5-4K-Plus Converter Connections



Signal Indicators on the OG-Hi5-4K-Plus Card

Figure 3. LED lights on card



The Power LED indicates the state of the card as displayed in Dashboard. It will illuminate green if no Dashboard card state alarms are present, yellow if there is a yellow Dashboard card state alarm, and red if there is a red Dashboard card state alarm.

The four pairs of SD and HD Lock LEDs work in combination to indicate the type of signal detected for each SDI input, as described below in [Table 1](#).

Table 1. The meaning of the behaviors of the lights for each pair of SD and HD Lock LEDs

Signal Detected	HD Lock Light	SD Lock Light
No Signal	Off	Off
SD Signal	Off	On
HD Signal	On	Off
3G Signal	On	On

Signal Indicators in the Dashboard Control System

Card Alarm State – Red

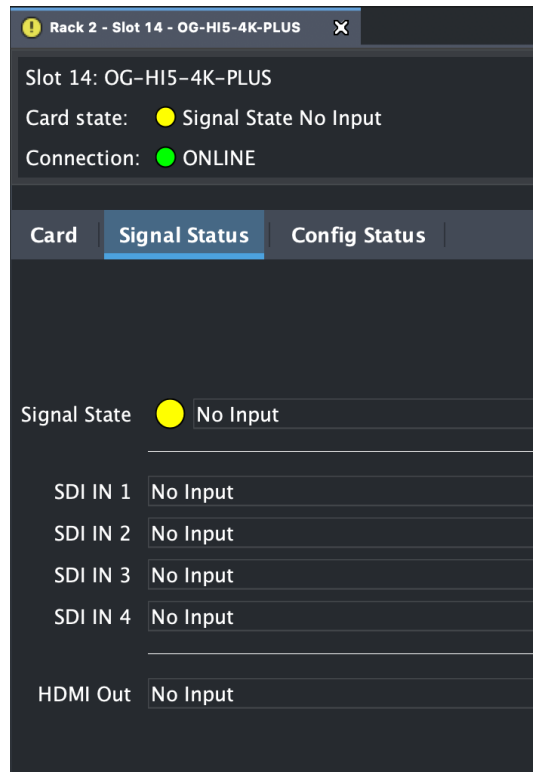
These potential card states will result in a red alarm indicator:

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

Card Alarm State – Yellow

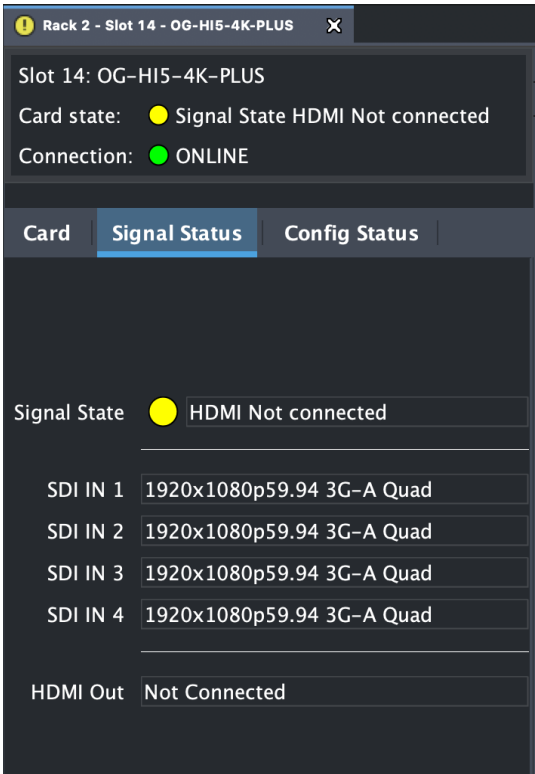
When the signal is either not present or is not locked, the DashBoard Control System shows a yellow Card State alarm: "Signal State No Input." Additionally, the Signal State is shown as "No Input" under the Signal Status tab.

Figure 4. Signal 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: "Signal State HDMI Not connected." Additionally, the Signal State is shown as "HDMI Not connected" under the Signal Status tab.

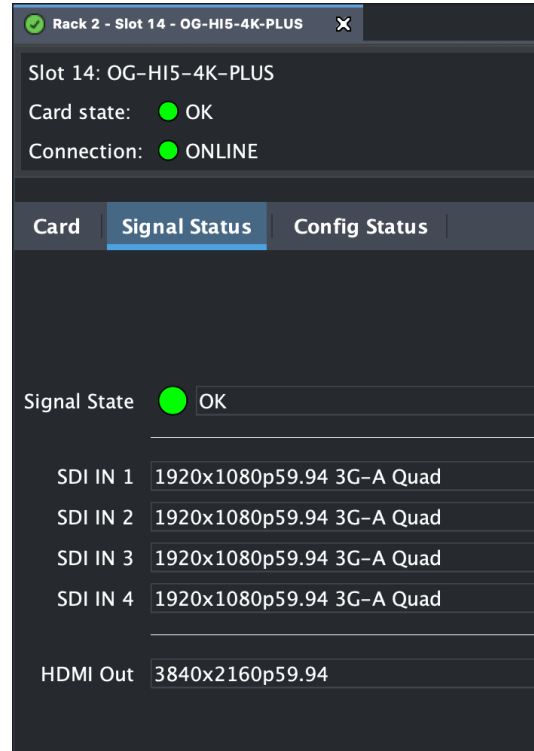
Figure 5. HDMI not connected



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 Signal Status tab. The type of SDI Signal detected is also indicated (for example, "1920x1080p59.94 3G-A").

Figure 6. Signal is present and locked



User Controls

The OG-Hi5-4K-Plus can be used right out of the box for many applications, since it is designed to recognize inputs and perform standard actions automatically. However, you can also manually configure the OG-Hi5-4K-Plus 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 15](#).

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-Hi5-4K-Plus card into a OG3 openGear frame consists of the following steps:

- Install the Rear Panel onto the back of the frame corresponding to the slot pair you will be using for the OG-Hi5-4K-Plus card.
- Insert the OG-Hi5-4K-Plus card into the frame in the right (even numbered) slot of the pair.
- Connect the BNC, HDMI and audio cabling to the Rear Panel.



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-Hi5-4K-Plus Front Card in ESD bag
1	5 BNC, 2 HDMI, 2 Audio Rear Card

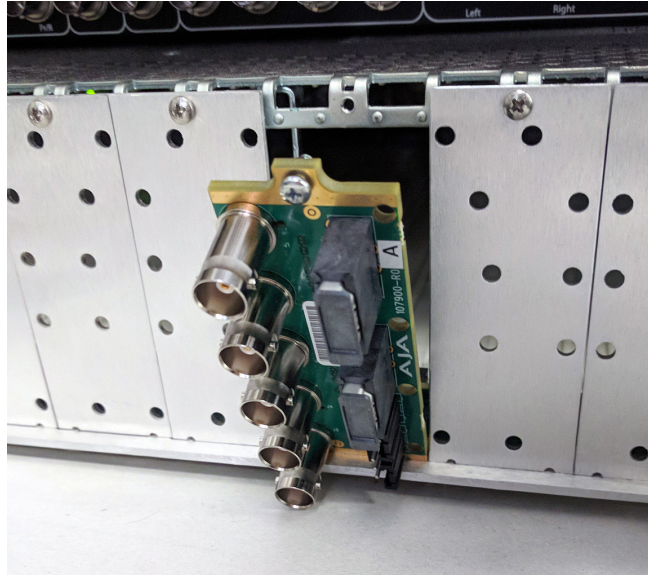
Rear OG-Hi5-4K-Plus Card Installation

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

NOTE: An OG-Hi5-4K-Plus card occupies two slots in the frame.

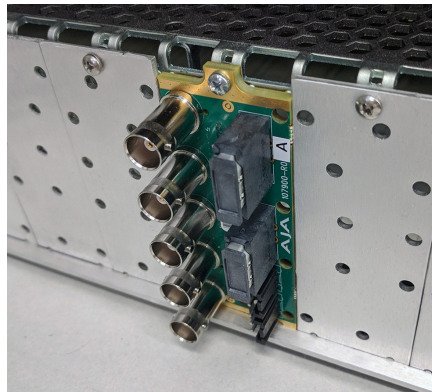
3. Using a Phillips screwdriver, unscrew the top screw from the desired blank rear plate and remove the rear plate.
4. Seat the bottom of the Rear Card in the seating slot at the base of the frame back plane.

Figure 7. Rear Card Inserting Into Frame Seating Slot



5. Align the top screw of the Rear Card with the screw hole on the top edge of the frame back plane.
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 back plane. Do not over tighten.

Figure 8. Rear Card Inserted Into Frame Seating Slot



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

Front OG-Hi5-4K-Plus Card Installation

1. Open the openGear frame door as follows:
 - A. Gently pull the side door tabs towards the center of the door, releasing the door from the frame.
 - B. Using both hands, pull the door towards you. The door extender arms prevent the door from falling.
2. Locate the Rear Card you installed as described above. The interior slot number is dependent on the slot combinations into which you installed the Rear Card. This allows adequate spacing to avoid damaging the card, the cards installed in the neighboring slots, or both.

3. Hold the card by the edges and carefully align the card edges with the rails inside the frame. The slots are numbered starting from the left-most slot when facing the frame front.

IMPORTANT: OG-Hi5-4K-Plus cards are installed into the right (even numbered) slot of the pair in order to connect with the rear panel.

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

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

Figure 9. The card on the left is already fully inserted. The card on the right is not yet fully inserted, as indicated by the white plastic tab tilting forward.

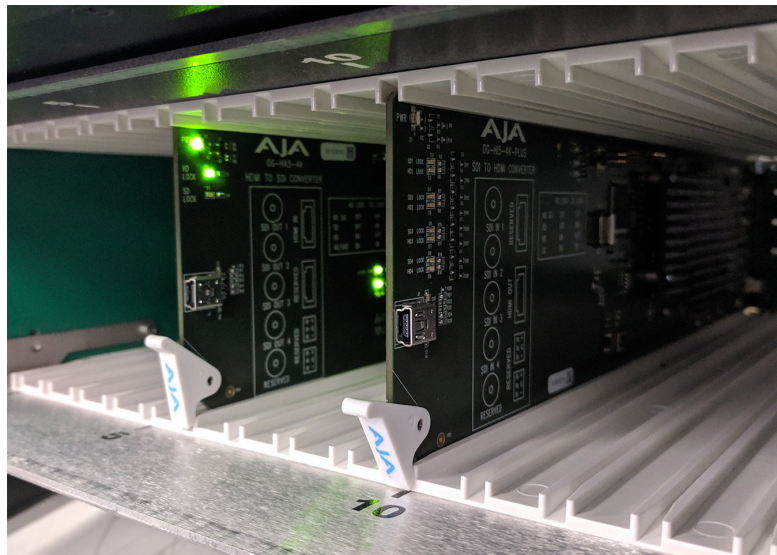


Figure 10. The white plastic tab for the card on the right is now upright. Both cards are shown fully inserted.



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

Cabling

Refer to "I/O Connections" on page 6 to identify the input and output signal connectors.

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-Hi5-4K-Plus manual addresses only those essential aspects of the DashBoard Control System needed to control the OG-Hi5-4K-Plus 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.

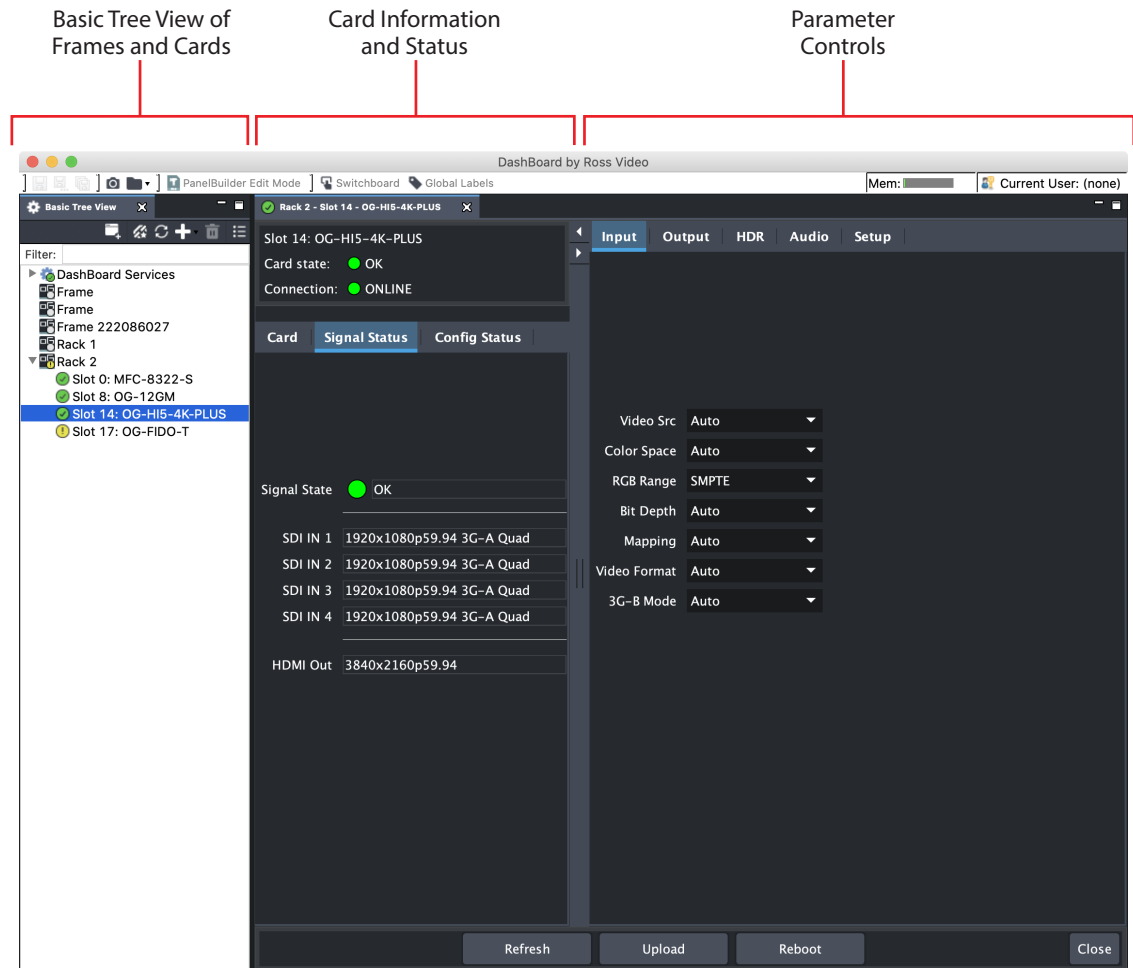
Configuration Settings Stored in OG Card

Configuration settings made through DashBoard are stored in the OG-Hi5-4K-Plus 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 below in [Figure 11](#).

Figure 11. 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

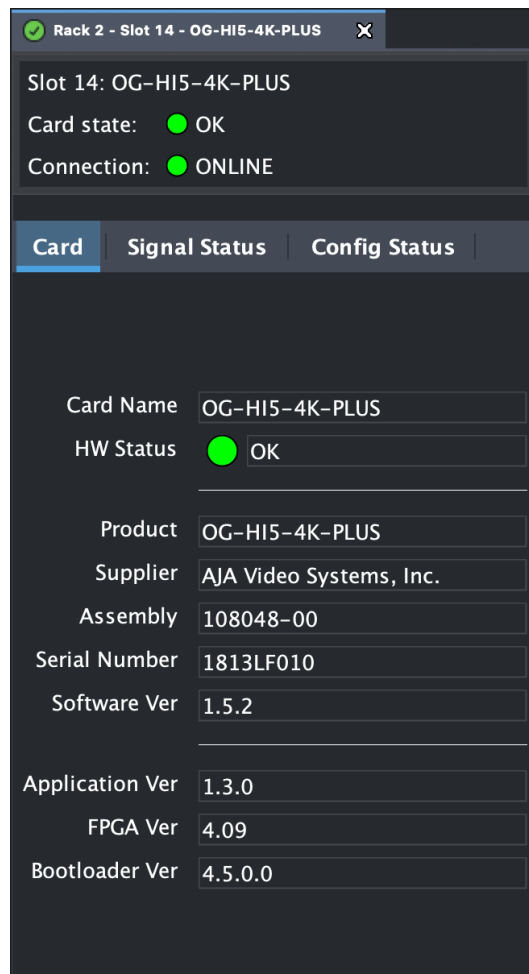
The card information and status panel, shown in the middle panel, displays the basic status of the card currently selected in DashBoard. The yellow fields in this panel indicate that they are read-only.

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 Tab Screen

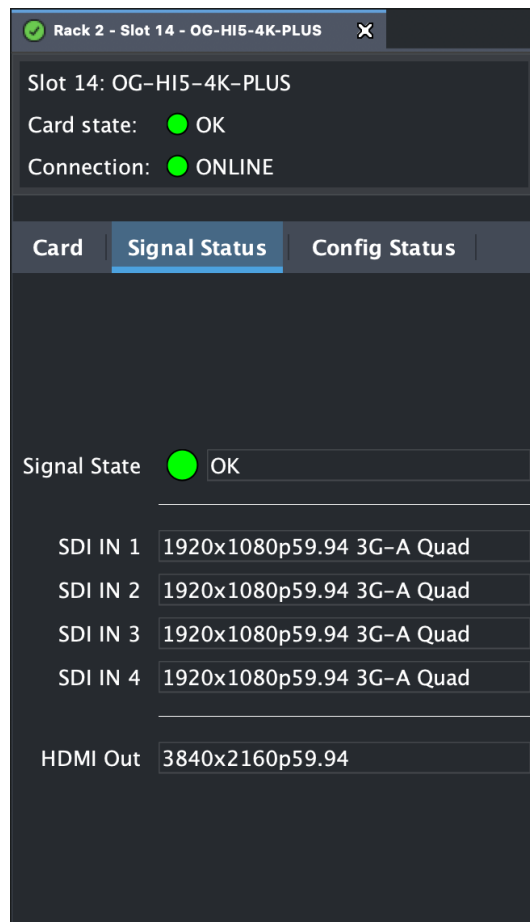
Figure 12. OG-Hi5-4K-Plus Card Tab Screen in DashBoard



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

Signal Status Tab Screen

Figure 13. OG-Hi5-4K-Plus Signal Status Tab Screen in Dashboard



The SDI In 1 - 4 status fields report whether the signal is connected, or **No Input**. Each SDI Input status field reports the signal detected by the card's corresponding inputs.

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

Config Status Tab Screen

Figure 14. OG-Hi5-4K-Plus Config Status Tab Screen in Dashboard

Rack 2 - Slot 14 - OG-HI5-4K-PLUS

Slot 14: OG-HI5-4K-PLUS

Card state: ● OK

Connection: ● ONLINE

Card

Signal Status

Config Status

Input

Video Src4xSDI 4K

Color Space422 YCbCr

Bit Depth10 Bit

MappingQuadrant

Video FormatProgressive

3G-B Mode----

Output

Output Color Space422 YCbCr

Bit Depth8 Bit

Output RGB RangeSMPTE

Output Colorimetry----

4K/2K CropOff

HDMI/DVIHDMI

HDMI 1.4/2.0HDMI 2.0, 18 Gbps Max

Output Channel Count2 Channels

The Config Status tab screen reports the current setting of configuration parameters that are set to **Auto** in the Parameter Configuration tabs (Input, Output, HDR, Audio).

Input Tab Screen

The screenshot shows a dark-themed interface with a top navigation bar containing five tabs: 'Input' (highlighted in blue), 'Output', 'HDR', 'Audio', and 'Setup'. Below the tabs, the 'Input' section contains seven settings, each with a label and a dropdown menu:

Setting	Value
Video Src	4xSDI 4K
Color Space	Auto
RGB Range	SMPTE
Bit Depth	Auto
Mapping	Auto
Video Format	Auto
3G-B Mode	Auto

Click on the Input tab to view and make changes to the OG-Hi5-4K-Plus input settings.

Video Source

Selects the input video source. Choose from the following:

- Auto - automatically selects the SDI input(s) to use based on validation of input signals from 7 possible SDI transport choices in the following order of priority:
 - 4xSDI 4K (Inputs 1, 2, 3, 4) - 4x 3G-SDI
 - 2xSDI 4K (Inputs 1, 2) - 3G-SDI Level B Dual Stream
 - 2xSDI HD-DL (Inputs 1, 2) - 1.5G-SDI Dual Link
 - SDI 1 - Input 1
 - SDI 2 - Input 2
 - SDI 3 - Input 3
 - SDI 4 - Input 4
- 4xSDI 4K (Inputs 1, 2, 3, 4) - 4x 3G-SDI
- 2xSDI 4K (Inputs 1, 2) - 3G-SDI Level B Dual Stream
- 2xSDI HD-DL (Inputs 1, 2) - 1.5G-SDI Dual Link
- SDI 1, SDI 2, SDI 3, or SDI 4

Please see ["Appendix A – Specifications" on page 31](#) for more details on required signal formats.

Color Space

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

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

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.

Bit Depth

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

Mapping

Selects the 4K/UHD mapping format:

- Auto (default) - automatically selects the mapping based on the input video.
- 2SI - Two Sample Interleave
- Quadrant - Square Division

Video Format

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

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 - transmit using Level B Dual-Link format
- Level B-DS - transmit using Level B Dual-Stream format
- B-DS Link 1 - transmit using Level B Dual-Stream format, but only send Link 1
- B-DS Link 2 - transmit using Level B Dual-Stream format, but only send Link 2

Output Tab Screen

The screenshot shows a dark-themed user interface with a top navigation bar containing five tabs: 'Input', 'Output' (which is highlighted with a blue underline), 'HDR', 'Audio', and 'Setup'. Below the tabs, there is a list of seven settings, each with a label on the left and a dropdown menu on the right. The settings are: 'Color Space' set to 'Auto', 'Bit Depth' set to 'Auto', 'RGB Range' set to 'Auto', 'Colorimetry' set to 'Auto', '4K/2K Crop' set to 'Auto', 'HDMI/DVI' set to 'Auto', and 'HDMI 1.4/2.0' set to 'HDMI 2.0'.

Input	Output	HDR	Audio	Setup
Color Space	Auto			
Bit Depth	Auto			
RGB Range	Auto			
Colorimetry	Auto			
4K/2K Crop	Auto			
HDMI/DVI	Auto			
HDMI 1.4/2.0	HDMI 2.0			

Click on the Output tab to view and make changes to the OG-Hi5-4K-Plus Output settings.

Color Space

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

- Auto - selects the video format based on the input video and the attached device's capabilities.
- 4:2:2 YCbCr
- 4:4:4 RGB
- 4:4:4 YCbCr
- 4:2:0 YCbCr

Bit Depth

Choose from Auto, 8-bit, or 10-bit. Choosing "Auto" automatically selects the bit depth based on the input video and the attached device's capabilities. High frame rate (HFR) 4K/UltraHD 4:4:4 limited to 8 bits.

RGB Range

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

Colorimetry

The setting selected in the Colorimetry control determines the colorimetry value that is transmitted in the AVI Info frame. This information is sent to the HDMI sink device regardless of whether the HDR Enable is On or Off.

Choose from the following:

- Auto
- No Data
- Rec.601
- Rec.709
- BT.2020 Non-CL (non-constant luminance)
- BT.2020 CL (constant luminance)

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.

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 an HDMI sink device that supports HDMI 2.0 (maximum bandwidth of 18 Gbps) or HDMI 1.4 (maximum bandwidth of 10.2 Gbps).

OG-Hi5-4K-Plus 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-Hi5-4K-Plus 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
HDR Enable	On			
EOTF	Hybrid Log-Gamma			
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	0.32120			
y	0.32900			

Click on the HDR tab to view and make changes to the OG-Hi5-4K-Plus High Dynamic Range static metadata extensions settings.

The HDR tab provides a mechanism to inform an HDMI sink device (such as a TV or monitor) that the video content is HDR encoded. This includes generation of the Dynamic Range and Mastering Infoframe and the static metadata descriptors as defined in CTA-861.3 and HDMI v2.0a. This tab includes pre-canned primaries values for BT.2020 and DCI P3 color gamuts.

NOTE: The OG-Hi5-4K-Plus HDR function does not modify the video data.

HDR Enable

Choose Off or On to determine whether HDR metadata is generated.

- Off - HDR metadata is not generated, although colorimetry is still getting signaled downstream.
- On - HDR metadata is generated.

EOTF

Electro-Optical Transfer Function (EOTF) selects the transfer function sent in the HDR infoframe.

Choose from the following:

- Trad Gamma SDR
- Trad Gamma HDR
- ST 2084 (SMPTE ST 2084)
- Hybrid Log-Gamma
- Reserved [4], not yet defined
- Reserved [5], not yet defined
- Reserved [6], not yet defined
- Reserved [7], not yet defined

Maximum CLL (Content Light Level)

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. For live or unknown environments, set the value to 0.

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

Maximum FALL (Frame Average Light Level)

Represents the maximum of frame-based average light levels taken over an entire scene, and can be determined in the post environment. For live or unknown environments, set the value to 0.

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

Display Mastering Luminance

Represents the minimum and maximum 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.

Gamut

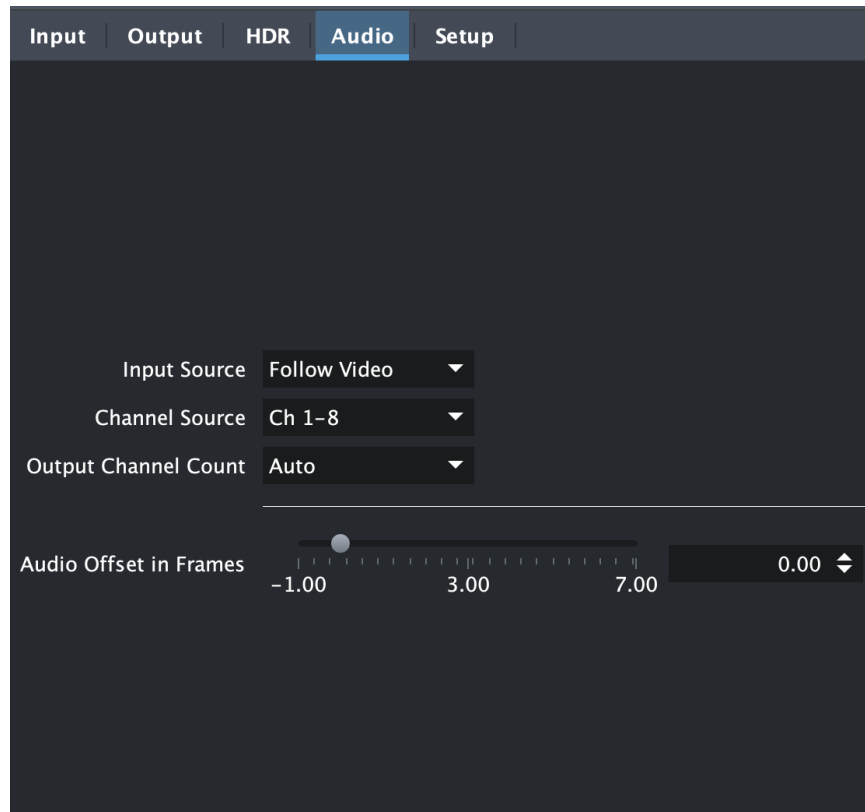
Select a button to set the gamut values, or set the values individually to your custom value.

Choose from the following:

- BT.2020 (preset values per ITU BT.2020)
- DCI-P3 D65 (preset values per DCI-P3 Cinema)

- BT.709 (preset values per ITU BT.709)
- Custom (allows for defining specific custom coordinates)

Audio Tab Screen



Click on the Audio tab to view and make changes to the OG-Hi5-4K-Plus audio settings.

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

Input Source

Choose Follow Video, SDI 1, SDI 2, SDI 3, or SDI 4.

Channel Source

Choose which 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 from any of the SDI inputs.

Output Channel Count

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

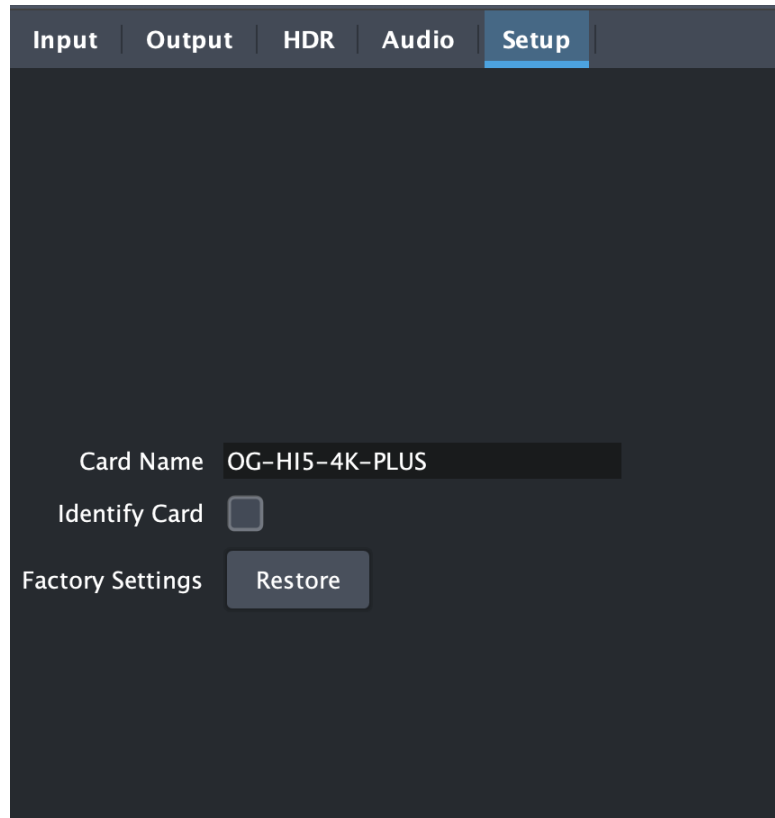
Audio Offset In Frames

Permits time shifting 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 -0.8125 video frame to +7.0 video frames. 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 or to restore card settings to factory default values.

Figure 15. OG-Hi5-4K-Plus Setup Tab Screen in DashBoard



Card Name - By default, this field is pre-populated with the card name OG-Hi5-4K-Plus. You can change the card name by editing the text in the Card Name field.

Identify Card - When checked, the power LED on the card blinks orange so it can easily be identified for service.

Factory Settings - If you would like to revert the card settings to factory default values, click **Restore**.

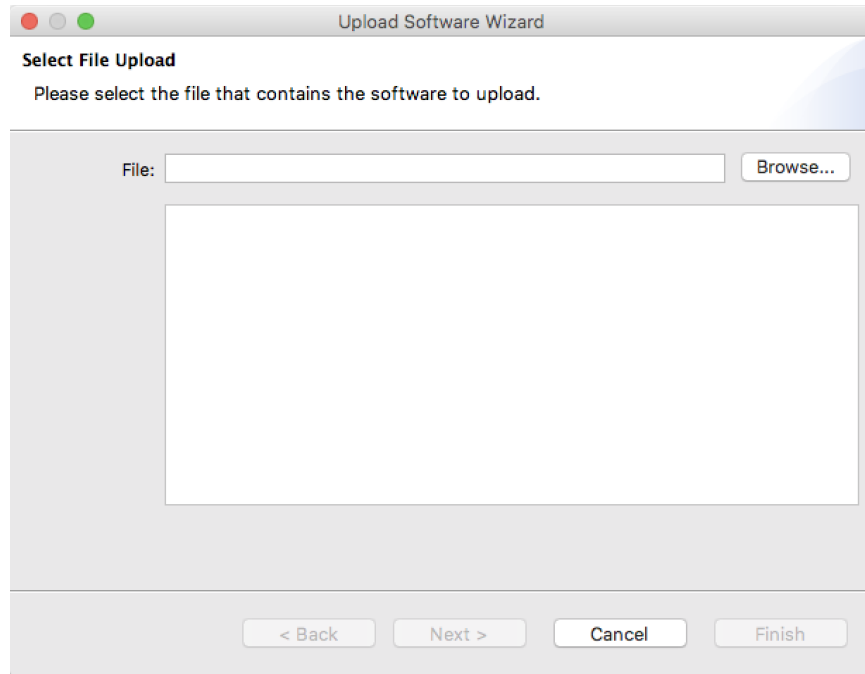
Uploading New Software

When available, you can upload updated software to the OG-Hi5-4K-Plus 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-Hi5-4K-Plus. 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.

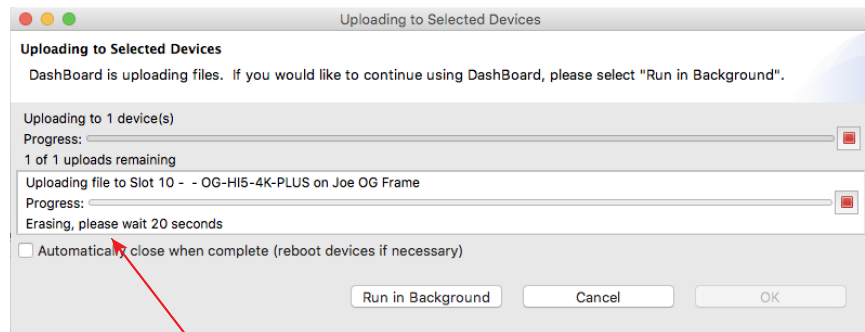
Figure 16. OG-Hi5-4K-Plus Upload Software Wizard window in DashBoard



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.

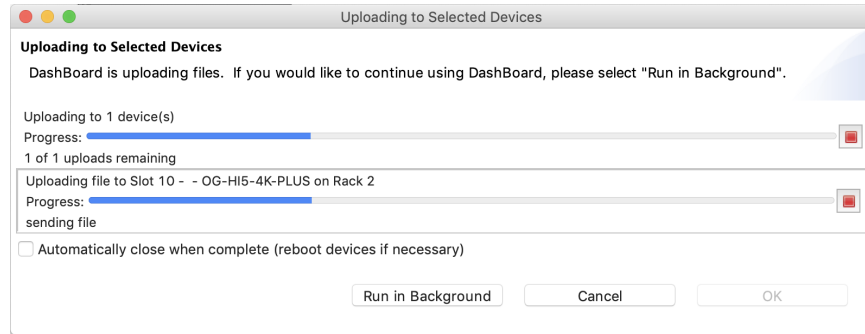
Figure 17. Note the message "Erasing, please wait 20 seconds"



For the first 20 seconds,
DashBoard is erasing the
card's firmware.

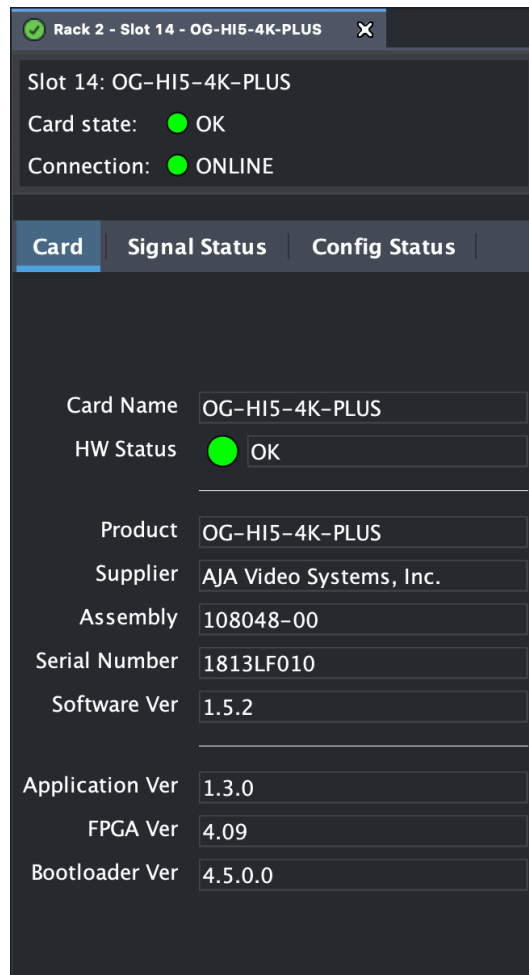
After the erasing process has completed, the upload will begin, shown in the Uploading to Selected Devices window below.

Figure 18. OG-Hi5-4K-Plus 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 19. OG-Hi5-4K-Plus Card Tab Screen in DashBoard indicating the currently installed 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-Hi5-4K-Plus

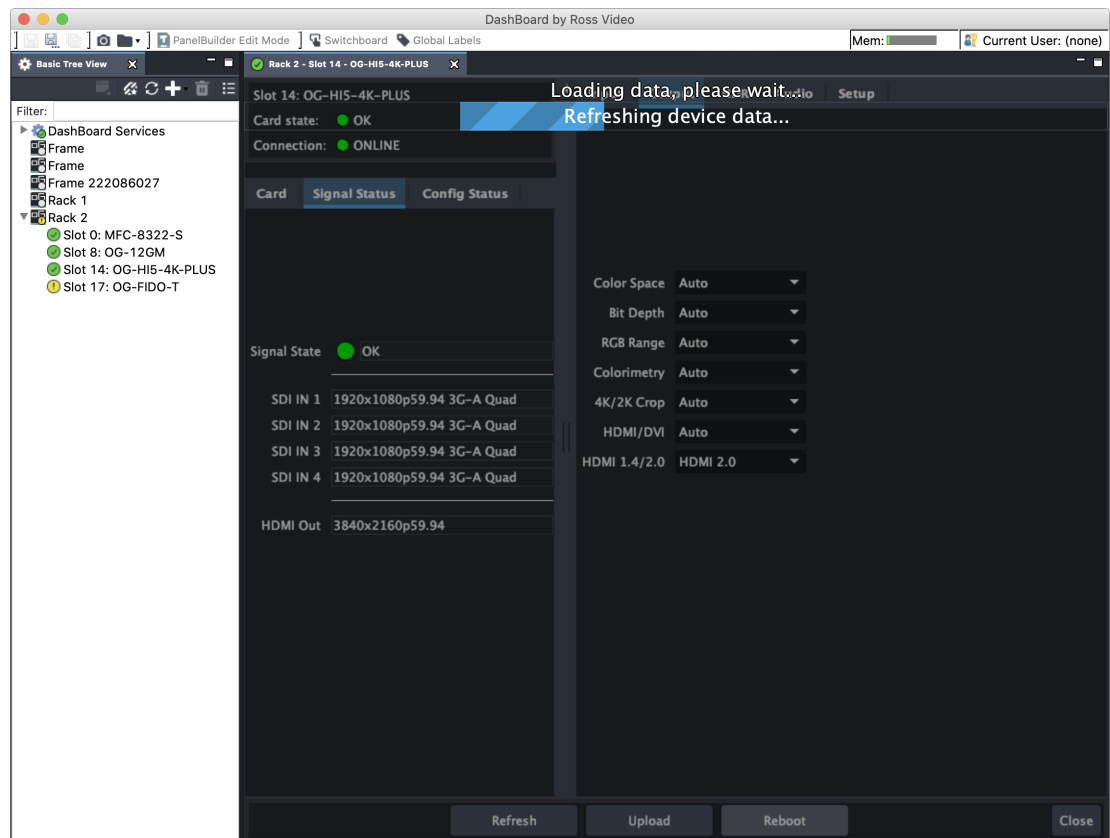
1. Click the Reboot button in the lower panel of DashBoard. The reboot confirmation message displays.

Figure 20. 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 21. The OG-Hi5-4K-Plus 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-Hi5-4K-Plus

Video Formats

- (4K) 4096 x 2160p
- (UltraHD) 3840 x 2160p
- (2K) 2048 x 1080p
- (HD) 1920 x 1080p
- (HD) 1920 x 1080i
- (HD) 1280 x 720p
- (SD) 720 x 576i
- (SD) 720 x 480i

Video Input Digital

- 4x 3G-SDI BNC, SMPTE-259/292/424
- YCbCr 4:2:2/4:4:4
- RGB 4:4:4, SMPTE or Full level
- 8 or 10-bit
- Two Sample Interleave (2SI) or Square Division (Quadrant) source mapping
- 4x 3 Gb SDI (Level A or B-Dual Link)
 - (4K) 4096 x 2160p 23.98, 24, 25, 29.97, 30, 50, 59.94, 60
 - (4K) 4096 x 2160PsF* 23.98, 24, 25, 29.97, 30
 - (UltraHD) 3840 x 2160p 23.98, 24, 25, 29.97, 30, 50, 59.94, 60
 - (Ultra HD) 3840 x 2160PsF* 23.98, 24, 25, 29.97, 30
- 4x 1.5 Gb SDI
 - (4K) 4096 x 2160p 23.98, 24, 25, 29.97, 30
 - (4K) 4096 x 2160PsF 23.98, 24, 25, 29.97, 30
 - (UltraHD) 3840 x 2160p 23.98, 24, 25, 29.97, 30
 - (UltraHD) 3840 x 2160PsF 23.98, 24, 25, 29.97, 30
- 2x 3 Gb SDI (Level B-Dual Stream)
 - (4K) 4096 x 2160p 23.98, 24, 25, 29.97, 30
 - (4K) 4096 x 2160PsF 23.98, 24, 25, 29.97, 30
 - (UltraHD) 3840 x 2160p 23.98, 24, 25, 29.97, 30
 - (UltraHD) 3840 x 2160PsF 23.98, 24, 25, 29.97, 30
- 1x 3 Gb SDI (Level A or B-Dual Link)
 - (2K) 2048 x 1080p 23.98, 24, 25, 29.97, 30, 50, 59.94, 60
 - (2K) 2048 x 1080PsF 23.98, 24, 25, 29.97, 30
 - (HD) 1920 x 1080p 23.98, 24, 25, 29.97, 30, 50, 59.94, 60
 - (HD) 1920 x 1080PsF 23.98, 24, 25, 29.97, 30
 - (HD) 1920 x 1080i 50, 59.94, 60
 - (HD) 1280 x 720p** 50, 59.94, 60
- 2x 1.5 Gb SDI
 - (HD) 1920 x 1080p 50, 59.94, 60
- 1x 1.5 Gb SDI
 - (2K) 2048 x 1080p 23.98, 24, 25, 29.97, 30
 - (2K) 2048 x 1080PsF 23.98, 24, 25, 29.97, 30

- (HD) 1920 x 1080p 23.98, 24, 25, 29.97, 30
- (HD) 1920 x 1080PsF 23.98, 24, 25, 29.97, 30
- (HD) 1920 x 1080i 50, 59.94, 60
- (HD) 1280 x 720p 50, 59.94, 60
- 1x 270 Mb SDI
 - (SD) 625i 50
 - (SD) 525i 59.94

*PsF is Level B-Dual Link

**1280 x 720p is Level A Only

Video Output Digital

- 1 x HDMI Type A connector*, HDMI v2.0
- YCbCr 4:2:2/4:4:4/4:2:0
- RGB 4:4:4, SMPTE or Full level
- 8 or 10-bit (HFR 4K/UltraHD 4:4:4 limited to 8 bit)
- HDR Infoframe generation as defined in CTA-861.3 and HDMI v2.0a
- (4K) 4096 x 2160p 23.98, 24, 25, 29.97, 30, 50, 59.94, 60
- (UltraHD) 3840 x 2160p 23.98, 24, 25, 29.97, 30, 50, 59.94, 60
- (2K) 2048 x 1080p 23.98, 24, 25, 29.97, 30, 50, 59.94, 60
- (HD) 1920 x 1080p 23.98, 24, 25, 29.97, 30, 50, 59.94, 60
- (HD) 1920 x 1080i 50, 59.94, 60
- (HD) 1280 x 720p 50, 59.94, 60
- (SD) 720 x 576i 50
- (SD) 720 x 480i 59.94

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

Audio Input Digital

- SDI embedded audio, 24-bit, 16-Channel

Audio Output Digital

- HDMI embedded audio, 24-bit, 2- or 8-Channel

User Controls

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

Size

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

Weight

- 0.5 lb (0.3 kg)

Power

- openGear frame compatible, 12.0 watts max per card

Environment

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

Appendix B – Safety and Compliance

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, LICHTEINSTEIN, 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.



This equipment meets the following conformance standards:

Safety

EN 60065: 2014 (T-Mark License),

IEC 60065: 2014 (CB Scheme Report/Certificate)

Additional licenses issued for specific countries available on request.

Emissions

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

Immunity

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

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

EN 61000-4-11:2004

Environments: E2, E3 and E4

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



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

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

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

Recycling Notice



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

Korea KCC Compliance Statement

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 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-Hi5-4K-Plus 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-Hi5-4K-Plus 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-Hi5-4K-Plus 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-Hi5-4K-Plus 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-Hi5-4K-Plus 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-Hi5-4K-Plus 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.

Five Year Warranty

AJA VIDEO SYSTEMS, INC.

Limited Warranty on Hardware

AJA Video Systems, Inc. (AJA Video) warrants that the hardware product, not including storage modules or software components, will be free from defects in materials and workmanship for a period of five (5) years from the date of purchase. AJA Video warrants that the storage modules provided as part of the hardware product will be free from defects in materials and workmanship for a period of one year from the date of purchase. AJA Video provides a separate software warranty as part of the license agreement applicable to software components.

If a hardware product or storage module (hereafter, a “product”) proves to be defective during the applicable warranty period, AJA Video, at its option, will either repair the defective product without charge for parts and labor, or will provide a replacement in exchange for the defective product.

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 <http://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.

This warranty shall not apply to any defect, failure or damage caused by negligent, inadequate or improper use, handling or maintenance. Without limiting the foregoing, AJA Video shall not be obligated to furnish service under this warranty or repair any damage or malfunction a) resulting from attempts by personnel other than AJA Video representatives to install, repair or service the product, b) resulting from improper use or connection to incompatible equipment, c) caused by the use of non-AJA Video parts or supplies, d) if the product has been modified or integrated with other products when the effect of such a modification or integration increases the time or difficulty of servicing the product, or e) resulting from being dropped or otherwise subjected to undue force, exposure to moisture or other corrosive or conductive substances, exposure to strong magnetic fields, use with improperly regulated power supplies, exposure to electric shock, use in temperatures outside the specified operating range, or otherwise failing to treat the product in accordance with the standard of care appropriate to sensitive and delicate electronic equipment.

EXCEPT AS STATED ABOVE, AJA VIDEO AND ITS VENDORS DISCLAIM IN THEIR ENTIRETY ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION ALL WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. AJA VIDEO'S RESPONSIBILITY TO REPAIR OR REPLACE TIMELY REPORTED DEFECTIVE PRODUCTS IS THE WHOLE AND EXCLUSIVE REMEDY CUSTOMER IS PROVIDED WITH RESPECT TO HARDWARE PRODUCTS AND THEIR STORAGE MODULES. 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.

THE PRODUCT IS NOT INTENDED, STATED, OR WARRANTED TO OPERATE UNINTERRUPTED OR ERROR-FREE. YOU UNDERSTAND AND ACKNOWLEDGE THAT THE PRODUCT IS NOT INTENDED TO BE USED AS THE SOLE OR PRIMARY DATA SOURCE OR TARGET FOR CRITICAL DATA, AND THAT IT IS YOUR RESPONSIBILITY TO IMPLEMENT REDUNDANT CAPTURE AND BACKUP SYSTEMS AS APPROPRIATE.

Limitation of Liability

Under no circumstances shall AJA video BE LIABLE IN ANY WAY FOR ANY LOST, CORRUPTED OR DESTROYED DATA, FOOTAGE OR WORK, OR FOR ANY OTHER INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES OR LOST PROFITS, OR FOR ANY THIRD PARTY CLAIM, IN CONNECTION WITH THE PRODUCT, WHETHER RESULTING FROM DEFECTS IN THE PRODUCT, SOFTWARE OR HARDWARE FAILURE, OR ANY OTHER CAUSE WHATSOEVER, EVEN IF AJA VIDEO HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. AJA VIDEO'S LIABILITY IN CONNECTION WITH THE PRODUCT SHALL UNDER NO CIRCUMSTANCES EXCEED THE PURCHASE PRICE PAID FOR THE PRODUCT. The foregoing limitations apply even if any remedy set forth in this LIMITED WARRANTY fails of its essential purpose. SOME JURISDICTIONS DO NOT ALLOW THE LIMITATION OF LIABILITY FOR PERSONAL INJURY, OR OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO SOME OR ALL OF THE TERMS OF THIS PARAGRAPH MAY NOT APPLY TO YOU.

Governing Law and Language; Your Rights.

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

Symbols

- 3G-B Mode 21
- 4K/2K Crop setting 23
- 4K Dual-Stream 3Gb SDI Inputs 4
- 4K x 2160 Output 5
- 3840 x 2160 Output 5

A

- AJA Support 2
- Audio Follow Video 26
- Audio Input Source setting 26
- Audio Offset in Frames setting 26
- Audio Tab Screen 26

B

- Bit Depth Input setting 21
- Bit Depth Output setting 22

C

- Color Space setting 21, 22
- Configuration Settings
 - Stored in OG cards 15

D

- DashBoard Control System 10
 - Card Tab Screen 17
 - Config Status Tab Screen 19
 - Control Interface Basic Components 15
 - Documentation 15
 - Downloading 15
 - Rebooting 29
 - Requirements 15
 - Setup Tab Screen 27
 - Signal Status Tab Screen 18
 - Uploading New Software 27
 - Using 15
- Default Operation 4
- Diagram
 - Simplified Block 6
- Dual-Link 1.5 Gb HD Inputs 4
- Dual-Stream 4K 3Gb SDI Inputs 4

F

- Features 5

H

- HDMI 1.4/2.0 Auto setting 23
- HDMI 1.4 setting 23
- HDMI 2.0 setting 23
- HDMI/DVI Output setting 23
- HDR Tab Screen 24
- HD Single Inputs 4

I

- Input Tab Screen 20
- Installation 11
 - Cabling 14
 - Front Card Installation 12
 - Rear Card Installation 11
- I/O Connections 6

M

- Mapping
 - 2SI 21
- Input Tab Screen 21

O

- openGear and AJA 10
- Output Channel Count
 - Audio Tab Screen 26
- Output Tab Screen 22
- Overview 4

R

- RGB Range setting
 - Input Tab Screen 21
 - Output Tab Screen 22

S

- SD Single Inputs 4
- Signal Conversion Requirement
 - Valid SDI Video Signal 4
- Signal Indicators
 - DashBoard Control System 7
 - LED Lights on Card 7

T

- Technical Support 2

U

- User Controls 10

V

- Video Format setting
 - Input Tab Screen 21
- Video Source setting
 - Input Tab Screen 20

W

- Warranty 42