OSG-8971 User Guide

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You've made a great choice. We expect you will be very happy with your purchase of Ross Technology.

Our mission is to:

1. Provide a Superior Customer Experience
   - offer the best product quality and support
2. Make Cool Practical Technology
   - develop great products that customers love

Ross has become well known for the Ross Video Code of Ethics. It guides our interactions and empowers our employees. I hope you enjoy reading it below.

If anything at all with your Ross experience does not live up to your expectations be sure to reach out to us at *solutions@rossvideo.com*.

David Ross
CEO, Ross Video
dross@rossvideo.com

Ross Video Code of Ethics

Any company is the sum total of the people that make things happen. At Ross, our employees are a special group. Our employees truly care about doing a great job and delivering a high quality customer experience every day. This code of ethics hangs on the wall of all Ross Video locations to guide our behavior:

1. We will always act in our customers' best interest.
2. We will do our best to understand our customers' requirements.
3. We will not ship crap.
4. We will be great to work with.
5. We will do something extra for our customers, as an apology, when something big goes wrong and it's our fault.
6. We will keep our promises.
7. We will treat the competition with respect.
8. We will cooperate with and help other friendly companies.
9. We will go above and beyond in times of crisis. *If there's no one to authorize the required action in times of company or customer crisis - do what you know in your heart is right. (You may rent helicopters if necessary.)*

OSG-8971 · User Guide

- Ross Part Number: **8971DR-004-01**
- Revision: 1
- Release Date: December 16, 2024
- Software Version: **v1.0**

The information contained in this Guide is subject to change without notice or obligation.

Copyright

Patents

Patent numbers US 7,034,886; US 7,508,455; US 7,602,446; US 7,802,802 B2; US 7,834,886; US 7,914,332; US 8,307,284; US 8,407,374 B2; US 8,499,019 B2; US 8,519,949 B2; US 8,743,292 B2; GB 2,419,119 B; GB 2,447,380 B; and other patents pending.

Notices

The material in this manual is furnished for informational use only. It is subject to change without notice and should not be construed as commitment by Ross Video Limited. Ross Video Limited assumes no responsibility or liability for errors or inaccuracies that may appear in this manual.

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8 John Street
P.O. Box 220
Iroquois, ON
Canada K0E 1K0
techsupport@rossvideo.com

Safety Notices

Refer to the "**Important Regulatory and Safety Notices**" document that accompanied your product.

Statement of Compliance

This product has been determined to be compliant with the applicable standards, regulations, and directives for the countries where the product is marketed.

Compliance documentation, such as certification or Declaration of Compliance for the product is available upon request by contacting techsupport@rossvideo.com. Please include the product; model number identifiers and serial number and country that compliance information is needed in request.

EMC Notices

US FCC Part 15

This equipment has been tested and found to comply with the limits for a class A Digital device, pursuant to part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a Commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Notice — *Changes or modifications to this equipment not expressly approved by Ross Video Ltd. could void the user's authority to operate this equipment.*

Canada

This Class "A" digital apparatus complies with Canadian ICES-003 and part 15 of the FCC Rules.

Cet appareil numerique de la classe "A" est conforme a la norme NMB-003 du Canada.

European Union

This equipment is in compliance with the essential requirements and other relevant provisions established under regulation (EC) No 765/2008 and Decision No 768/2008/EC referred to as the "New Legislative Framework".

Warning — *This equipment is compliant with Class A of CISPR 32. In a residential environment this equipment may cause radio interference.*

Australia/New Zealand

This equipment is in compliance with the provisions established under the Radiocommunications Act 1992 and Radiocommunications Labeling (Electromagnetic Compatibility) Notice 2008.

Korea

This equipment is in compliance with the provisions established under the Radio Waves Act.

Class A equipment (Broadcasting and communications service for business use)

This device is a business-use (Class A) EMC-compliant device. The seller and user are advised to be aware of this fact. This device is intended for use in areas outside home.

Type of Equipment	User's Guide
A급 기기 (업무용 방송통신기자재)	이 기기는 업무용(A급) 전자파적합기기로서 판매자 또는 사용자는 이 점을 주의하시기 바라며, 가정외의 지역에서 사용하는 것을 목적으로 합니다.
Class A Equipment (Industrial Broadcasting & Communication Equipment)	This equipment is **Industrial (Class A) electromagnetic wave suitability equipment** and seller or user should take notice of it, and this equipment is to be used in the places except for home.

International

This equipment has been tested under the requirements of CISPR 22:2008 or CISPR 32:2015 and found to comply with the limits for a Class A Digital device.

Notice — *This is a Class A product. In domestic environments, this product may cause radio interference, in which case the user may have to take adequate measures.*

Maintenance/User Serviceable Parts

Routine maintenance to this openGear product is not required. This product contains no user serviceable parts. If the module does not appear to be working properly, please contact Technical Support using the numbers listed in "**Contact Us**" of this manual. All openGear products are covered by a generous 5-year warranty and will be repaired without charge for materials or labor within this period. See the "**Warranty and Repair Policy**" section in this manual for details.

Environmental Information

The equipment may contain hazardous substances that could impact health and the environment.

To avoid the potential release of those substances into the environment and to diminish the need for the extraction of natural resources, Ross Video encourages you to use the appropriate take-back systems. These systems will reuse or recycle most of the materials from your end-of-life equipment in an environmentally friendly and health conscious manner.

The crossed-out wheeled bin symbol invites you to use these systems.

If you need more information on the collection, reuse, and recycling systems, please contact your local or regional waste administration. You can also contact Ross Video for more information on the environmental performances of our products.

Security and Privacy

If you would like more information on how Ross Video security and privacy practices have been applied to the OSG-8971, what you should know about maintaining security of this product, and how we can partner with you to ensure security throughout this product's life-cycle, contact techsupport@rossvideo.com.

Ross Video has implemented reasonable administrative, technical, and physical safeguards to help protect against security incidents and privacy breaches involving a Ross Video product provided those products are used in accordance with Ross Video instructions for use. However, as systems and threats evolve, no system can be protected against all vulnerabilities and we consider our customers the most important partner in maintaining security and privacy safeguards. If you have any concerns, we ask that you bring them to our attention, and we will investigate. Where appropriate, we will address the issue with product changes, technical bulletins and/or responsible disclosures to customers and regulators. Ross Video continuously strives to improve security and privacy throughout the product life-cycle using practices such as:

- Privacy and Security by Design
- Product and Supplier Risk Assessment
- Vulnerability and Patch Management
- Secure Coding Practices and Analysis
- Vulnerability Scanning
- Access Controls appropriate to Customer Data
- Incident Response
- Clear paths for two-way communication between customers and Ross Video

If you would like to report a potential product related privacy or security issue (incident, breach, or vulnerability), contact techsupport@rossvideo.com.

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Contents

Introduction

This guide covers the installation, configuration, and use of the openGear OSG-8971. The following chapters are included:

- "**Introduction**" summarizes the guide and provides important terms, and conventions.
- "**Before You Begin**" summarizes the features of the OSG-8971.
- "**Integration Examples**" provides a workflow examples for the OSG-8971 integration.
- "**Hardware Overview**" presents information on the features of the OSG-8971 card.
- "**Physical Installation**" provides additional information for installing the OSG-8971, and DashBoard before you can proceed to cabling and configuring your OSG-8971.
- "**Cabling**" outlines how to connect to your facility network, and peripheral devices.
- "**Getting Started**" provides instructions for launching DashBoard, and accessing the OSG-8971 interfaces in DashBoard.
- "**Editing the Network Settings**" outlines how to update the network settings assigned to the OSG-8971.
- "**Licensed Features**" outlines the available software licensed features, and how to install a software key for a licensed feature.
- "**Reference Setup**" provides instructions for specifying a reference source for the OSG-8971.
- "**I/O Configuration**" outlines how to specify the function of an SDI port (input or output), and the output format.
- "**Decoding Setup**" outlines how to configure the OSG-8971 as a decoder for an SRT connection.
- "**Encoding Setup**" outlines how to configure the OSG-8971 as an SRT encoder.
- "**Upgrading the Software**" provides instructions on how to upgrade the OSG-8971 software via DashBoard.
- "**DashBoard Interface Overview**" summarizes the menus and parameters of the OSG-8971 tabs in DashBoard.
- "**Technical Specifications**" provides the specifications for the OSG-8971.
- "**Service Information**" provides information on the warranty and repair policy for your OSG-8971.
- "**Software Licenses**" provides third-party software license information for your OSG-8971.
- "**Glossary**" provides a list of terms used throughout this guide.

Related Publications

It is recommended to consult the following Ross documentation before installing and configuring your OSG-8971:

- ***DashBoard User Guide***, Ross Part Number: 8351DR-004
- ***MFC-OG3-N and MFC-8322-S User Guide***, Ross Part Number: 8322DR-004
- ***OGX-FR Series Quick Start Guide***, Ross Part Number: 8322DR-202
- ***OGX-FR Series User Guide***, Ross Part Number: 8322DR-204
- ***Streaming Gateway User Guide***, Ross Part Number: 3900DR-504

Documentation Conventions

Special text formats are used in this guide to identify parts of the user interface, text that a user must enter, or a sequence of menus and sub-menus that must be followed to reach a particular command.

Interface Elements

Bold text is used to identify a user interface element such as a dialog box, menu item, or button. For example:

In the **Network** tab, click **Apply**.

User Entered Text

Courier text is used to identify text that a user must enter. For example:

In the **Language** box, enter **`English`**.

Referenced Guides

Text set in bold and italic represent the titles of referenced guides, manuals, or documents. For example:

For more information, refer to the ***OGX-FR Series User Guide***.

Menu Sequences

Menu arrows are used in procedures to identify a sequence of menu items that you must follow. For example, if a step reads "**File** > **Save As**," you would click the **File** menu and then click **Save As**.

Important Instructions

Star icons are used to identify important instructions or features. For example:

✶ Contact your IT department before connecting to your facility network to ensure that there are no conflicts. They will provide you with an appropriate value for the IP Address, Subnet Mask, and Gateway for your device.

Contacting Ross Video Technical Support

At Ross Video, we take pride in the quality of our products, but if problems occur, help is as close as the nearest telephone.

Our 24-hour Hot Line service ensures you have access to technical expertise around the clock. After-sales service and technical support is provided directly by Ross Video personnel. During business hours (Eastern Time), technical support personnel are available by telephone. After hours and on weekends, a direct emergency technical support phone line is available. If the technical support person who is on call does not answer this line immediately, a voice message can be left and the call will be returned shortly. This team of highly trained staff is available to react to any problem and to do whatever is necessary to ensure customer satisfaction.

- **Technical Support**: (+1) 613-652-4886
- **After Hours Emergency**: (+1) 613-349-0006
- **E-mail**: techsupport@rossvideo.com
- **Website**: http://www.rossvideo.com

Before You Begin

If you have questions pertaining to the operation of the OSG-8971, contact us at the numbers listed in "**Contacting Ross Video Technical Support**".

Overview

The OSG-8971 is a solution for remote contribution and remote broadcast operation applications requiring the ability to transport the latest SDI technology such as HDR and UHD reliably over a public network. Its modular design allows it to scale to meet the need of any applications. The OSG-8971 can bridge media at high density between remote sites and your production facility with up to 20 x 2160p or 60 x 1080p video per openGear frame.

The OSG-8971 supports the Secure Reliable Transport (SRT) protocol to detect and correct for packet losses when used on lossy networks such as the public Internet. SRT diagnostic tools are provided to ease tuning of the link, help troubleshoot network reliability-related problems, and detect latency that could affect reliability.

SDI to SRT Workflow

Figure 1 provides a general functional block diagram of the OSG-8971 where an SDI video signal (with embedded PCM audio) is received by an SDI port and is converted to an H.264 SRT output.

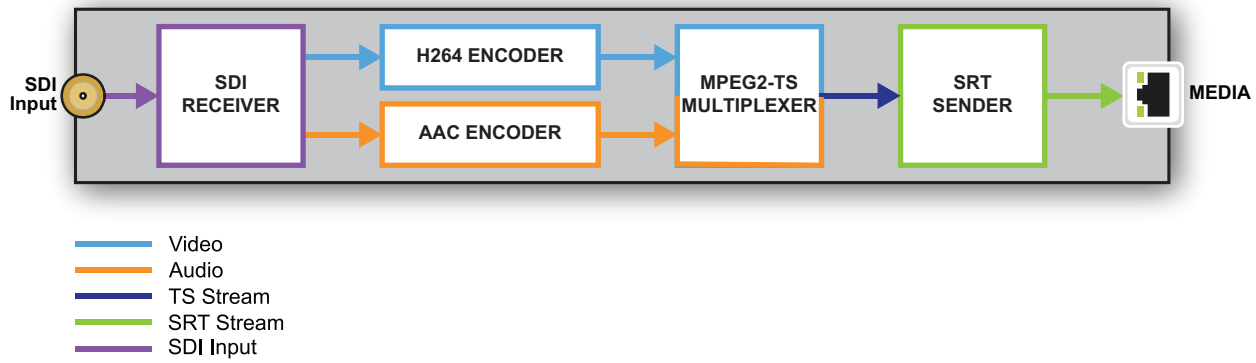


Figure 1 Functional Block Diagram — SDI Input to H.264 SRT Output

SRT to SDI Workflow

Figure 2 provides a general functional block diagram of the OSG-8971 where an H.264 SRT stream is the source and is decoded to an SDI video signal (with embedded PCM audio) for an SDI output.

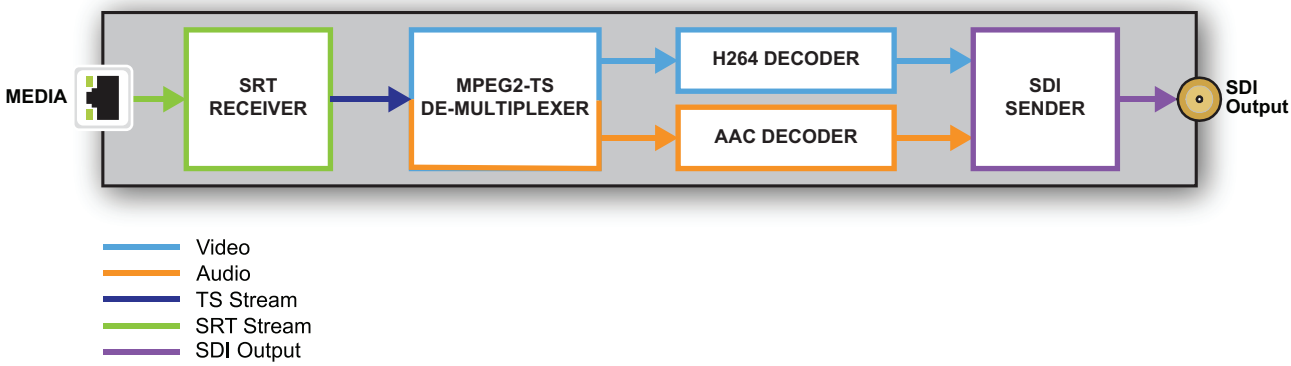


Figure 2 Functional Block Diagram — H.264 SRT Input to an SDI Output

Features

The OSG-8971 includes the following features:

- Transports media reliability over a public network through support with SRT
- Synchronizes media with your facility using a built-in frame sync
- Uses high-efficiency H.265/H.264 codecs with UHD support
- Supports up to 16 channels over embedded SDI to enable flexible audio workflow for contribution or to support in-house production
- Support for 8bit 4:2:0 and 10bit 4:2:0
- Accepts a Genlock from any of the two openGear frame reference signals to synchronize the decoded outputs
- Supports MPEG-TS presentation timestamp insertion and decode to automatically compensate for network delay at the receiver
- Supports AVC/HEVC, UDP, SRT, and HEVC Main 10
- Supports presentation timestamp and NTP to allow stream re-alignment
- Each card provides up to:
  - 6 x 1080p connections; or
  - 3 x 1080p connections plus 1 x 2160p connection (OSG-8971-UHD-LICENSE required); or
  - 2 x 2160p connections (OSG-8971-UHD-LICENSE required)
- Reports status and configuration remotely via DashBoard
- Compatible with DataSafe
- Fully compliant with openGear specifications
- 5-year transferable warranty

Support for H.264 Media Compression

The OSG-8971 supports up to:

- 6 x H.264, encode, decode, or a mix in HD/3G at a bit-rate up to 15Mbps but not exceeding 60Mbps total.
- 2 x UHD[1] encode, decode, or mix at bit-rates not exceeding 40Mbps total.

You can select between Baseline, Main, and High profile as well as selecting GOP size and maximum bit-rate to optimize for the available bandwidth.

Support for H.265 Media Compression

The OSG-8971 supports up to:

- 6 x H.265, encode, decode, or a mix in HD/3G at a bit-rate up to 15Mbps but not exceeding 60Mbps total.
- 2 x UHD[1] encode, decode, or mix at bit-rates not exceeding 40Mbps total.

You can select a profile as well as selecting GOP size and maximum bit-rate to optimize for the available bandwidth.

1. UHD support requires an OSG-8971+UHD license.

DashBoard Interfaces

The OSG-8971 requires an Ethernet network connection between it and a computer that will run the DashBoard client. The OSG-8971 includes DashBoard interfaces for configuration, and operation. These interfaces are accessed by expanding the OSG-8971 node in the DashBoard Tree View and selecting the appropriate sub-node to display the menus and options in the DashBoard window.

For More Information on...

- the OSG-8971 DashBoard interfaces, refer to "**DashBoard Interface Overview**".

SNMP Monitoring and Control

The Network Controller Card in the openGear frame can provide optional support for remote monitoring of your frame and using Simple Network Management Protocol (SNMP), which is compatible with many third-party monitoring and control tools.

For More Information on...

- on enabling SNMP Monitoring and Control for your frame, refer to the ***MFC-OG3-N and MFC-8322-S User Guide***.
- on SNMP controls for the OSG-8971, refer to your OSG-8971 Management Information Base (MIB).

Installation Overview

The user needs to ensure the following tasks are performed:

1. Install the OSG-8971 rear module and card in the openGear frame. Refer to "**Physical Installation**".
2. Cable each Ethernet connection on the rear module. Refer to "**Cabling the MEDIA Port on the Rear Module**".
3. Cable the SDI I/O as required. Refer to "**Cabling the SDI BNCs on the Rear Module**".

General Configuration Overview

Figure 3 provides a generalized workflow of configuring your OSG-8971.

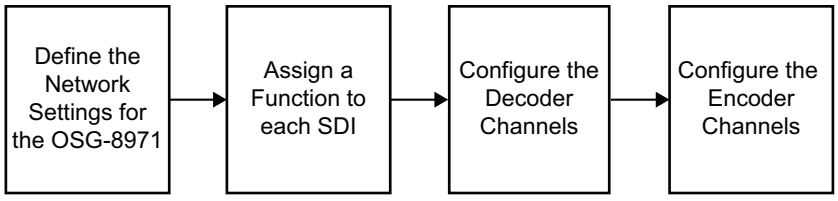


Figure 3 Configuration Workflow

Define the Network Settings for the OSG-8971

The OSG-8971 connects to your facility network via the Network Controller Card installed in the same openGear frame. This enables the OSG-8971 to communicate with a computer running the latest DashBoard client software.

The OSG-8971 rear module provides one 1GbE (MEDIA) port that can be configured for media traffic.

For More Information on...

- configuring the initial network settings, refer to "**Configuring the Initial Network Settings**".
- displaying the OSG-8971 in DashBoard, refer to "**Accessing the OSG-8971 Interfaces in DashBoard**".

Assign a Function to each SDI

Each of the six BNCs on the rear module can be assigned as an SDI input or SDI output. If the OSG-8971+UHD license is enabled, SDI 1 and/or SDI 2 can support 2160p 50Hz and 2160p 59.94Hz formats. Refer to "**Assigning a Function to an SDI**".

Configure the Decoder Channels

Configuring the decoder channels requires you to specify the network connection (via the MEDIA port on the rear module) that will provide the SRT stream, map the stream to a specific decoder channel, and then configure the SDI output.

Configure the Encoder Channels

The number of encoder channels is determined by the number of SDIs that are configured as Inputs. Configuring an encoder channel requires you to specify the SDI source, specify the network connection to output the SRT stream (via the MEDIA port on the rear module), and start the encoding process for that channel.

Integration Examples

This chapter provides a few integration examples but your needs may be differ from what is presented here.

Encoding an SDI Input to an SRT Output

Figure 4 illustrates a workflow where the OSG-8971 encodes a single SDI input and assigns it to one H264 stream over SRT on a private network.

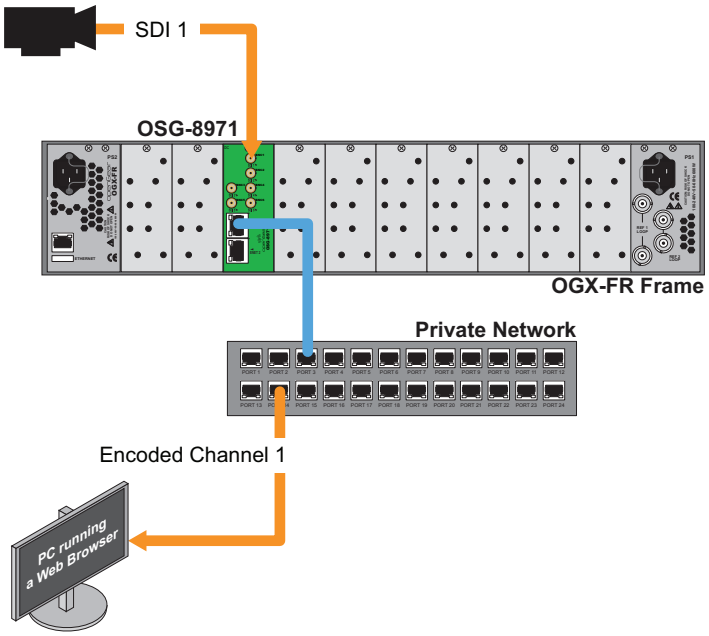


Figure 4 Workflow — One SDI Input to One H264 SRT Stream

This setup would require you to:

1. Connect SDI 1 to an SDI source. Refer to "**Cabling the SDI BNCs on the Rear Module**".
2. Connect the OSG-8971 to your network. Refer to "**Cabling the MEDIA Port on the Rear Module**" and "**Configuring the Initial Network Settings**".
3. Set the SDI 1 Encode/Decode mode to Input. Refer to "**Assigning a Function to an SDI**".
4. Configure Encode Channel 1 to transmit to an SRT peer. Refer to "**Defining the Transport Stream for Encoding**".
5. Start the encoder channel. Refer to "**To encode an SDI signal to an SRT stream**".

Decoding an SRT Input to an SDI Output

Figure 5 illustrates a workflow where the OSG-8971 decodes a single H264 SRT stream and assigns it to one SDI output.

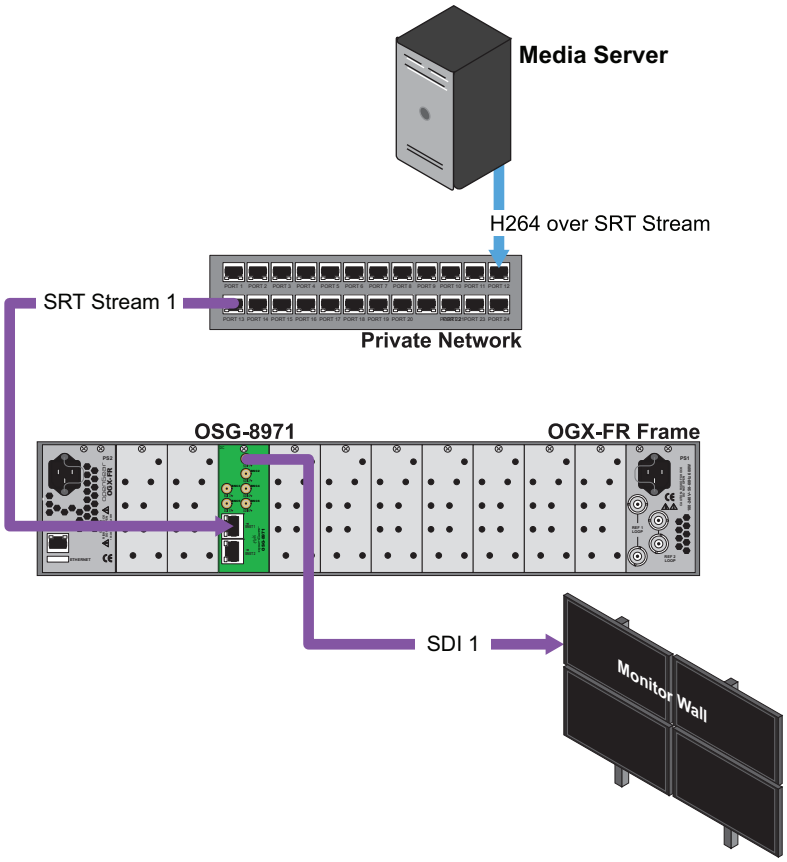


Figure 5 Workflow — One H264 SRT Stream to One SDI Output

This setup requires you to:

1. Connect SDI 1 to a downstream device. Refer to "**Cabling the SDI BNCs on the Rear Module**".
2. Connect the OSG-8971 to your network. Refer to "**Cabling the MEDIA Port on the Rear Module**" and "**Configuring the Initial Network Settings**".
3. Set the SDI 1 Encode/Decode mode to Output. Refer to "**Assigning a Function to an SDI**".
4. Configure Decode Channel 1 to receive from an SRT peer. Refer to "**Assigning an SRT Stream to a Decode Channel**".

Setup with Multiple Channels

You can configure independent streams for encoding and decoding. In this section, the setup includes: two SDI inputs that are encoded and assigned to two independent streams, and two SRT streams that are decoded and assigned to two independent SDI outputs.

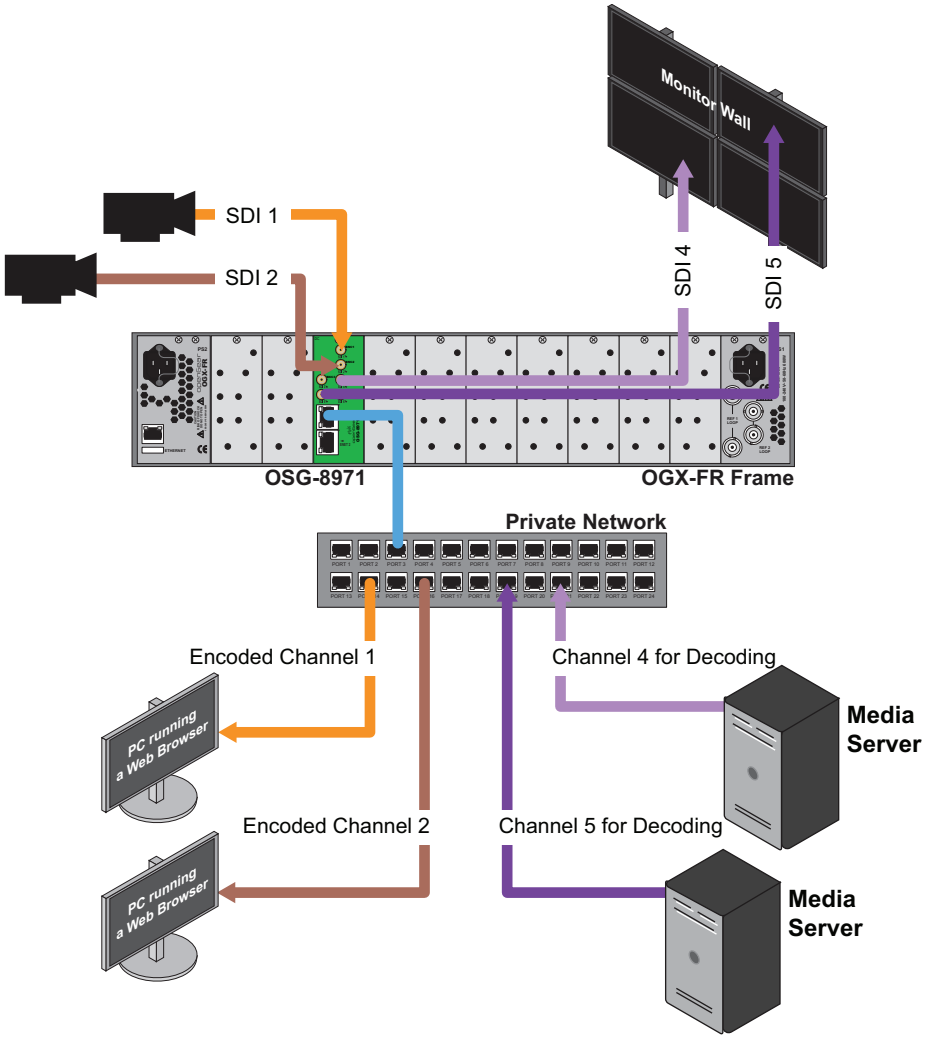


Figure 6 Workflow — Multiple Channel Setup

To configure the encoder channels

1. Connect SDI 1 to an SDI source. Refer to "**Cabling the SDI BNCs on the Rear Module**".
2. Connect SDI 2 to an SDI source. Refer to "**Cabling the SDI BNCs on the Rear Module**".
3. Connect the OSG-8971 to your network. Refer to "**Cabling the MEDIA Port on the Rear Module**" and "**Configuring the Initial Network Settings**".
4. To configure Encoder Channel 1:
   a. Set the SDI 1 Encode/Decode mode to Input. Refer to "**Assigning a Function to an SDI**".
   b. Configure Encode Channel 1 to transmit to an SRT peer. Refer to "**Defining the Transport Stream for Encoding**".
5. To configure Encoder Channel 2:

a. Set the SDI 2 Encode/Decode mode to Input. Refer to "**Assigning a Function to an SDI**".

b. Configure Encode Channel 2 to transmit to an SRT peer. Refer to "**Defining the Transport Stream for Encoding**".

6. Start each encoder channel. Refer to "**To encode an SDI signal to an SRT stream**".

To configure the decoder streams

1. Connect SDI 4 to a downstream device. Refer to "**Cabling the SDI BNCs on the Rear Module**".
2. Connect SDI 5 to a downstream device. Refer to "**Cabling the SDI BNCs on the Rear Module**"
3. To configure Decoder Channel 4:

   a. Set the SDI 4 Encode/Decode mode to Output. Refer to "**Assigning a Function to an SDI**".

   b. Configure Decoder Channel 4 to receive from an SRT peer. Refer to "**Assigning an SRT Stream to a Decode Channel**".
4. To configure Decoder Channel 5:

   a. Set the SDI 5 Encode/Decode mode to Output. Refer to "**Assigning a Function to an SDI**".

   b. Configure Decoder Channel 5 to receive from an SRT peer. Refer to "**Assigning an SRT Stream to a Decode Channel**".

Workflows and UHD Mode

The OSG-8971-UHD-LICENSE licensed feature enables support for 2160p video formats including 6G-SDI and 12G-SDI for a maximum of two channels (SDI 1, SDI 2).

✶ UHD Mode applies to SDI 1 and/or SDI 2 only. Each signal path can be configured independently as required by your setup.

Encoding Two Channels of UHD

This section presents a workflow that encodes two channels of UHD.

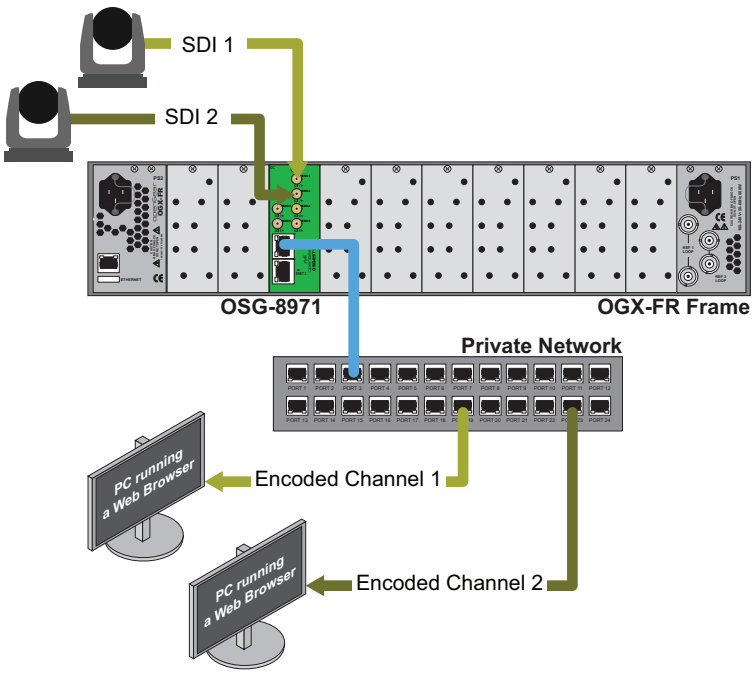
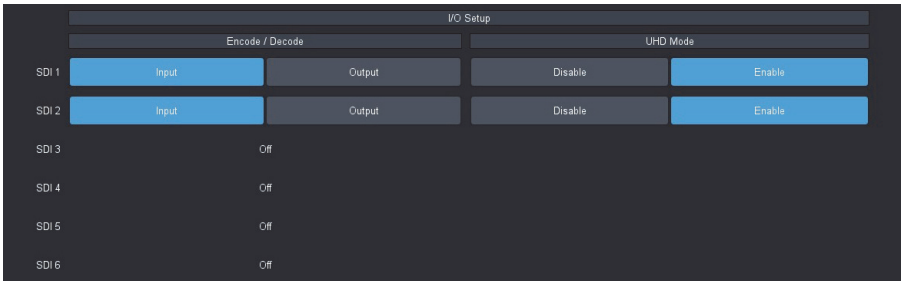


Figure 7 Workflow — Encoding Two Channels of UHD

To configure two UHD encoder channels

1. Install the OSG-8971-UHD-LICENSE. Refer to "**Installing a License Key**".
2. Connect SDI 1 to an UHD source. Refer to "**Cabling the SDI BNCs on the Rear Module**".
3. Connect SDI 2 to an UHD source. Refer to "**Cabling the SDI BNCs on the Rear Module**".
4. Connect the OSG-8971 to your network. Refer to "**Cabling the MEDIA Port on the Rear Module**" and "**Configuring the Initial Network Settings**".
5. Set the Encode/Decode mode to Input for SDI 1 and SDI 2. Refer to "**Assigning a Function to an SDI**".
6. Enable the UHD Mode for SDI 1 and SDI 2. Refer to "**Enabling UHD Mode for SDI 1 and/or SDI 2**".



7. Configure Encode Channel 1 to transmit to an SRT peer. Refer to "**Defining the Transport Stream for Encoding**".
8. Configure Encode Channel 2 to transmit to an SRT peer. Refer to "**Defining the Transport Stream for Encoding**".
9. Start each encoder channel. Refer to "**To encode an SDI signal to an SRT stream**".

Decoding Two Channels of UHD

This section presents a workflow that decodes two channels of UHD.

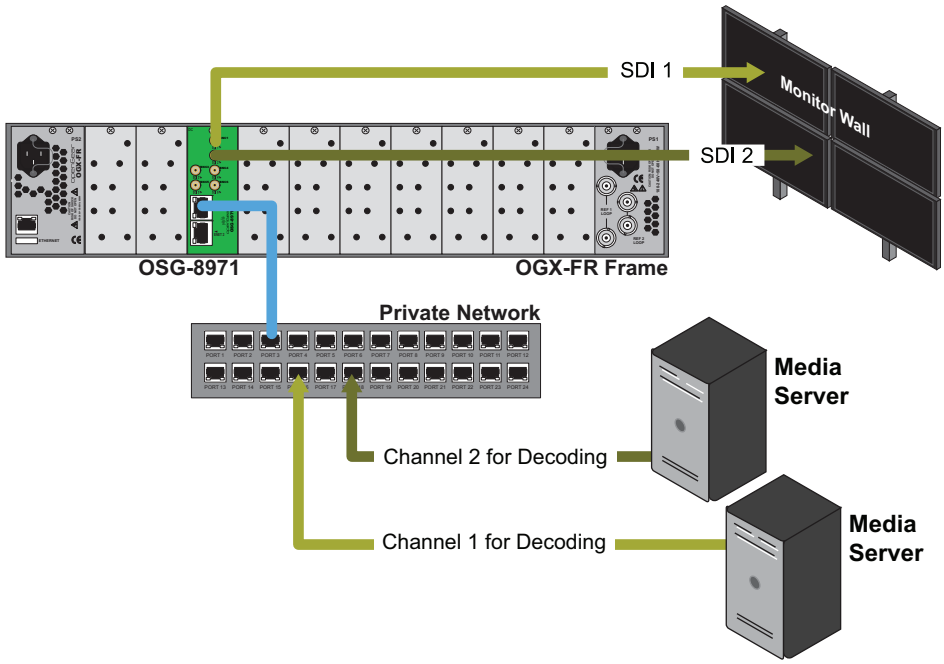
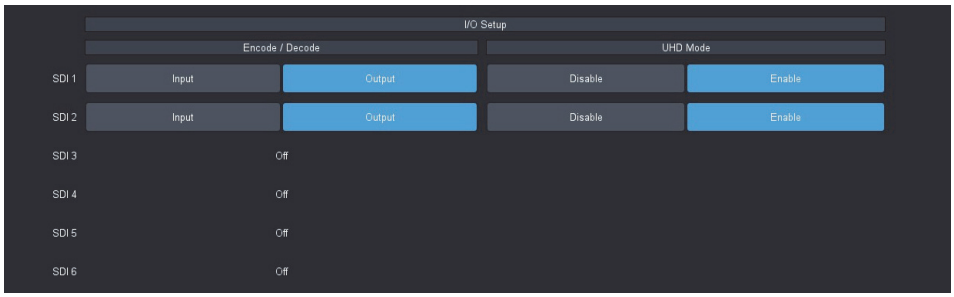


Figure 8 Workflow — Decoding Two SRT Streams of UHD

To configure two UHD decoder channels

1. Install the OSG-8971-UHD-LICENSE. Refer to "**Installing a License Key**".
2. Connect SDI 1 to an UHD downstream device. Refer to "**Cabling the SDI BNCs on the Rear Module**".
3. Connect SDI 2 to an UHD downstream device. Refer to "**Cabling the SDI BNCs on the Rear Module**".
4. Connect the OSG-8971 to your network. Refer to "**Cabling the MEDIA Port on the Rear Module**" and "**Configuring the Initial Network Settings**".
5. Set the Encode/Decode mode to Output for SDI 1 and SDI 2. Refer to "**Assigning a Function to an SDI**".
6. Enable the UHD Mode for SDI 1 and SDI 2. Refer to "**Enabling UHD Mode for SDI 1 and/or SDI 2**".



7. Configure Decoder Channel 1 to receive from an SRT peer. Refer to "**Assigning an SRT Stream to a Decode Channel**".
8. Configure Decoder Channel 2 to receive from an SRT peer. Refer to "**Assigning an SRT Stream to a Decode Channel**".

Hardware Overview

This chapter outlines the OSG-8971 card components, and the supported rear module.

Overview

The OSG-8971 is an openGear modular system composed of two sub-systems.

- a main PCB which connects to a rear module and the openGear frame midplane
- a rear module that provides physical connectors

Notice — *Installing the OSG-8971 in a frame other than the OGX-FR could damage the card, the rear module, or both. The OSG-8971 must be installed in a -CN or -CNS frame. It is not supported on -C frames using the MFC-8322-S controller card.*

Main PCB Overview

The main PCB is a typical openGear card. An ejector on one end secures the card to the slot inside the openGear frame, and the other end inserts into a connector on the back of the rear module.

The front-edge of the main PCB includes LED indicators for power, and SDI signal status. A **Reset** button is also located near the front-edge by the card ejector. Pressing this button resets the microprocessor and re-initializes the card. This is a hard reset of the card. This action should only be before as advised by Ross Video Technical Support. (**Figure 9**)

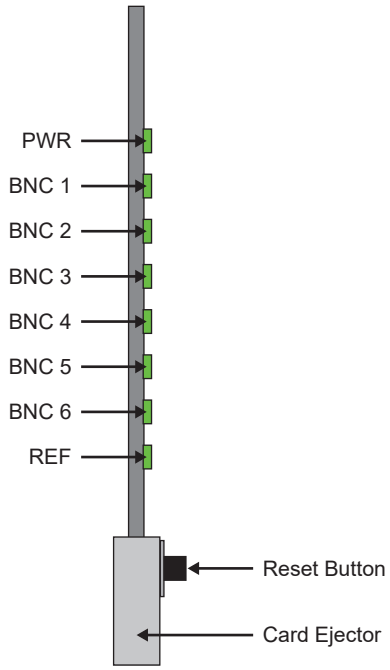


Figure 9 Card-edge Features

Table 1 provides information on the LED displays.

Table 1 OSG-8971 LED Descriptions

LED	Color	Description
PWR	Green	The card is powered on and is operating correctly
	Flashing	The card software is updating
	Red	When lit red, this LED indicates: • the card is booting, or • a major alarm condition is occurring on the card
	Off	The card is not powered on
BNC #	Green	A valid signal is detected on the SDI BNC
	Flashing Green/Red	A valid signal is detected on the SDI BNC, but the card is not locked to a reference signal
	Red	The signal connected to the SDI BNC is not valid
	Off	The SDI BNC is not in use
REF	Green	The reference signal is valid.
	Red	The reference signal is invalid or not supported.
	Off	The reference signal is not detected.

Supported Rear Module

The OSG-8971 requires the R4-8971 (8322AR-331) rear module. This rear module occupies two slots and accommodates one card. (**Figure 10**) The following connections are available:

- 2 x 12G[1] bi-directional HD-BNCs (SDI 1, SDI 2 only)
- 4 x 3G bi-directional HD-BNCs
- 1 x 1GbE connector (MEDIA port)

1. UHD support requires an OSG-8971+UHD license. If the license is not enabled, the ports support formats up to 3G.

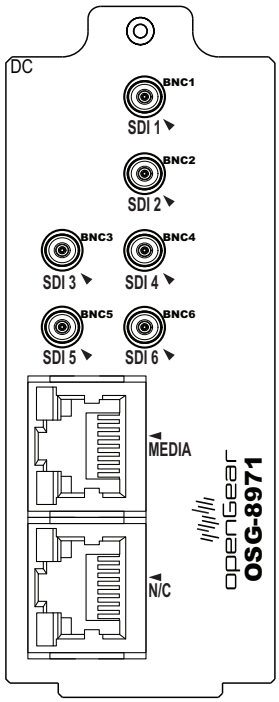


Figure 10 Cabling Designations

UHD Mode Configurations

The OSG-8971+UHD license provides the ability to enable UHD Mode on SDI 1 and SDI 2 only. When UHD mode is enabled on one of these SDI, the number of available SDI channels is automatically impacted. This section outlines the SDI cabling when configuring UHD Mode on your card.

For More Information on...

- assigning the SDI as an input or output, refer to "**Assigning a Function to an SDI**".
- enabling support for UHD formats, refer to "**Enabling UHD Mode for SDI 1 and/or SDI 2**".

UHD Mode is Disabled on SDI 1 and 2

When UHD mode is disabled on SDI 1 and SDI 2, these ports are still available for 3G signals. SDI 3, 4, 5, and 6 are also available for 3G. (**Figure 11**)

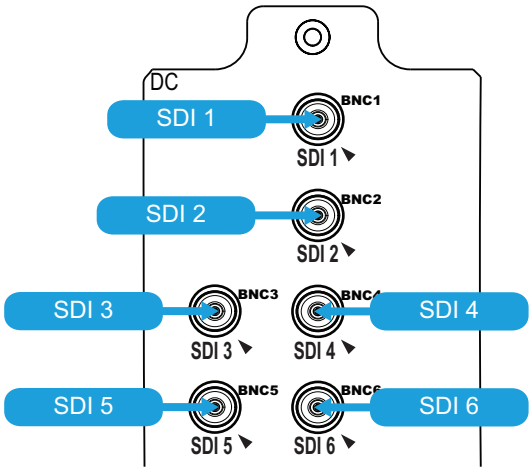


Figure 11 UHD Mode is Disabled on SDI 1 and 2

UHD Mode is Enabled on SDI 1 Only

When UHD mode is enabled on SDI 1 only, SDI 3 and 4 are automatically turned off. SDI 2, 5, and 6 are still available for 3G signals. (**Figure 12**)

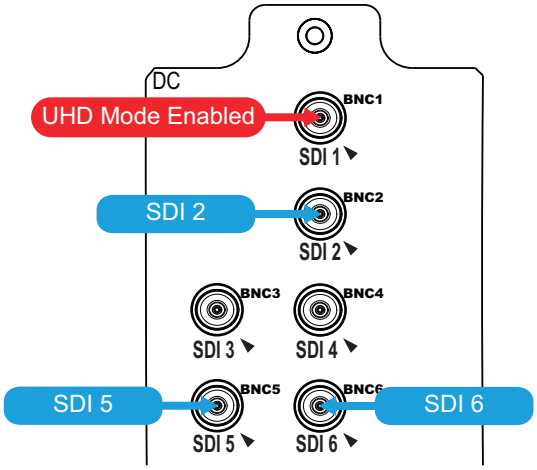


Figure 12 UHD Mode Enabled on SDI 1

UHD Mode is Enabled on SDI 2 Only

When UHD mode is enabled on SDI 2 only, SDI 5 and 6 are automatically turned off. SDI 1, 3, and 4 are still available for 3G signals. (**Figure 13**)

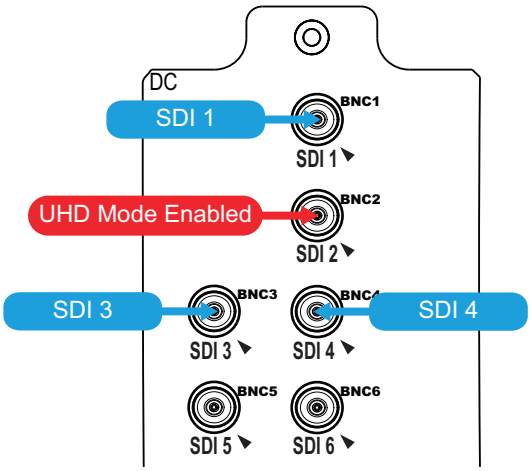


Figure 13 UHD Mode Enabled on SDI 2

UHD Mode is Enabled on SDI 1 and 2

When UHD mode is enabled on SDI 1 and 2, SDI 3, 4, 5, and 6 are automatically turned off. (**Figure 14**)

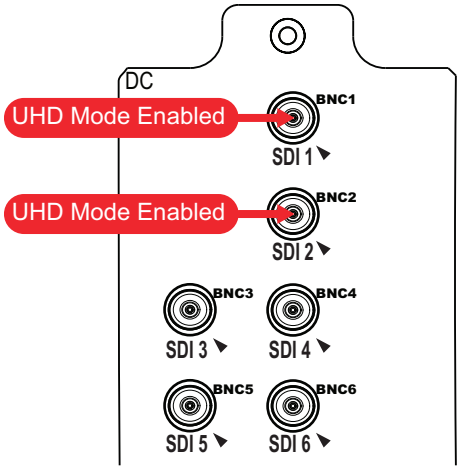


Figure 14 UHD Mode is Enabled on SDI 1 and 2

Physical Installation

This chapter how to install the OSG-8971 in your openGear frame before you can proceed to cabling and configuring your OSG-8971.

If you have questions pertaining to the installation of OSG-8971, contact us at the numbers listed in "**Contacting Ross Video Technical Support**". Our technical staff is always available for consultation, training, or service.

For More Information on...

- the technical specifications for the OSG-8971, refer to "**Technical Specifications**".

Before You Begin

Installing an OSG-8971 card into the openGear frame requires you to remove the blank plates in the designation frame slots, install the required rear module into the frame rear panel, and then install the OSG-8971 card into the required frame slot. If the rear module is already installed in the openGear frame, proceed to "**Installing the OSG-8971 into an openGear Frame**".

These installation guidelines assume the following:

- The openGear frame is properly installed. Refer to the ***User Guide*** for your frame.
- A valid IP address is available for the OSG-8971.

Static Discharge

Throughout this chapter, please heed the following cautionary note:

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 synthetic fiber clothing is worn. Always exercise proper grounding precautions when working on circuit boards and related equipment.*

Removing the Blank Plates from the Rear Panel

When a frame slot is not populated with an openGear card, a blank plate must be installed to ensure proper frame cooling and ventilation.

Notice — *Installing the rear modules in a frame other than the OGX-FR could damage the card, the rear module, or both.*

To remove a blank plate from the openGear frame

1. Locate the slots in the openGear frame you wish to install the OSG-8971 into.

   It is recommended to use the following slot combinations:

   - Slots 1, 2
   - Slots 3, 4
   - Slots 5, 6
   - Slots 7, 8
   - Slots 9, 10
   - Slots 11, 12
   - Slots 13, 14
   - Slots 15, 16
   - Slots 17, 18
   - Slots 19, 20

2. Use a Phillips screwdriver to unfasten each blank plate from the openGear frame backplane.
3. Remove each blank plate from the chassis and set aside.

Installing the Rear Module into the openGear Frame

If the rear module is already installed in the openGear frame, proceed to "**Installing the OSG-8971 into an openGear Frame**".

To install a rear module into the openGear frame

1. For each retaining screw on the rear module, push the o-ring to the end of the screw (but not off the screw). This will help to align the rear module to the frame backplane in step 3.
2. Seat the bottom of the rear module in the seating slots at the base of the frame's backplane.
3. Align the top holes of the rear module with the screw holes on the top-edge of the frame backplane.
4. Using a Phillips screwdriver and the provided screw, fasten the rear module to the backplane.

✶ Do not fully tighten the screws until after installing the card and you have verified that the OSG-8971 card aligns with the rear module.

Installing the OSG-8971 into an openGear Frame

The slot the OSG-8971 installs into depends on the slot combination you installed the rear module in. This allows adequate spacing to avoid damaging the card, the cards installed in the neighboring slots, or both.

Refer to **Table 2** for valid slot combinations.

Table 2 Card Slot Combinations

Rear Module is Installed in	Card Installs into Slot
Slots 1, 2	1
Slots 3, 4	3
Slots 5, 6	5
Slots 7, 8	7
Slots 9, 10	9
Slots 11, 12	11
Slots 13, 14	13
Slots 15, 16	15
Slots 17, 18	17
Slots 19, 20	19

To install the OSG-8971 into an openGear frame

1. Locate the slot the OSG-8971 card will slide into. Refer to **Table 2**.
2. Verify that the OSG-8971 card aligns with the rear module.
3. Using a Phillips screwdriver fasten the rear module to the backplane using the provided screws.

✶ Do not over tighten the screws.

4. Hold the card by the edges and carefully align the card edges with the slot rails in the frame.
5. Fully insert the card into the frame until the card is properly seated in the rear module.

Cabling

If you have questions pertaining to the installation of OSG-8971, contact us at the numbers listed in "**Contacting Ross Video Technical Support**". Our technical staff is always available for consultation, training, or service.

Cabling the Ethernet Port on the openGear Frame

The Network Controller Card (MFC-OG3-N or MFC-OGX-N) in the openGear frame is connected to your network via the Ethernet port on the frame chassis[1]. The Network Controller card enables the OSG-8971 to interface with other cards in the frame, and the computer running the DashBoard client software. After a physical connection is established, DashBoard is used to configure the network settings for the OSG-8971.

Keep the following in mind:

- Contact your IT department before connecting to your facility network to ensure that there are no conflicts.
- The OSG-8971 requires the MFC-OG3-N or MFC-OGX-N Network Controller Card to be installed in the openGear frame. The MFC-8322-S does not support the OSG-8971.
- You must provide an Ethernet connection to the openGear frame as outlined in the manual that accompanied your frame.

For More Information on…

- downloading and installing DashBoard, refer to the ***DashBoard User Guide***.
- configuring the Ethernet port on the openGear frame, refer to the ***OGX-FR Series User Guide***.

✶ Contact your network administrator if you experience problems when connecting to a network hub.

Cabling the MEDIA Port on the Rear Module

The OSG-8971 provides one 1GbE connector (MEDIA) that is connected to your facility network. The primary function of the MEDIA port is to provide a 1GbE network interface that can be configured as a Receiver and/or a Sender in DashBoard.

Keep the following in mind when connecting the MEDIA port:

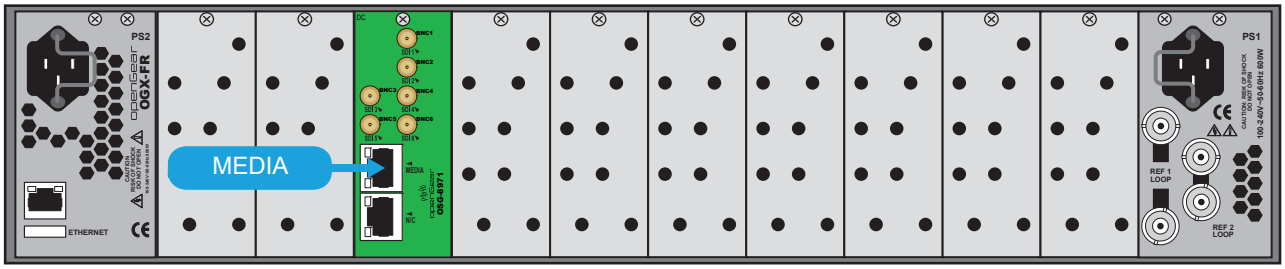
✶ Contact your IT department before connecting to your facility network to ensure that there are no conflicts. They will provide you with an appropriate value for the IP Address, Subnet Mask, and Gateway for your device.

✶ If difficulties or problems are experienced when connecting the OSG-8971 to a network hub, contact your network administrator.

✶ The exact steps for connecting your OSG-8971 to your facility via an Ethernet network depend on the network requirements of your facility. Contact your IT department before connecting to your facility network to ensure that there are no conflicts.

1. This port is labeled as the MEDIA port in the DashBoard interfaces.

OGX-FR Series Frame



Cabling the SDI BNCs on the Rear Module

The OSG-8971 provides six BNCs that can be connected to SDI sources or downstream devices.

Table 3 summarizes the cabling based on supported SDI format.

Table 3 Rear Module Ports — Supported SDI Formats

	Supported Format			
Port	**1.5G**	**3G**	**6G**	**12G[a]**
SDI 1	✓	✓	✓	✓
SDI 2	✓	✓	✓	✓
SDI 3	✓	✓		
SDI 4	✓	✓		
SDI 5	✓	✓		
SDI 6	✓	✓		

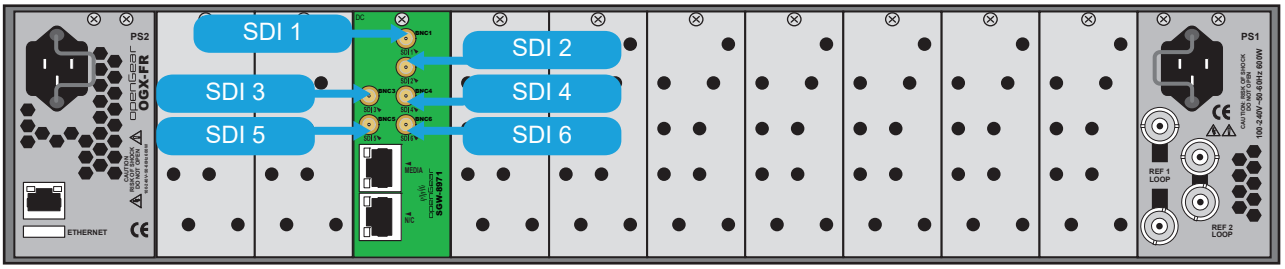
a. Requires the OSG-8971-UHD-LICENSE. Refer to "Installing a License Key" for details.

To cable your SDI signals

1. Connect each SDI source device to a BNC.
2. Connect each downstream SDI device to a BNC.
3. Make a note of the BNC(s) you connected in steps 1 and 2.

   This information is required when assigning the BNCs as Inputs/Outputs in DashBoard. Refer to "**I/O Configuration**".

OGX-FR Series Frame



Getting Started

This chapter provides instructions for launching DashBoard, and accessing the OSG-8971 interfaces in DashBoard.

If you have questions pertaining to the operation of OSG-8971, contact us at the numbers listed in "**Contacting Ross Video Technical Support**". Our technical staff is always available for consultation, training, or service.

Before You Begin

Ensure that:

- An MFC-OG3-N or MFC-OGX-N Network Controller Card is installed in your OGX-FR frame.
- The OGX-FR frame that houses the OSG-8971 displays in the Basic Tree View of DashBoard.
- The OSG-8971 displays as a sub-node in the OGX-FR frame tree.
- Your facility IT Department provided the required network settings to be assigned to the OSG-8971.

Launching DashBoard

DashBoard must run on a computer that has a physical wired ethernet connection. Wireless connections do not allow device discovery.

For More Information on...

- downloading and installing the DashBoard client software, refer to the ***DashBoard User Manual***.
- the OSG-8971 interfaces in DashBoard, refer to "**DashBoard Interface Overview**".

To launch DashBoard

1. Ensure that you are running DashBoard software version 9.10.0 or higher.
2. Launch DashBoard by double-clicking its icon on your computer desktop.

Configuring the Initial Network Settings

Once the OSG-8971 is physically installed and cabled to your facility network, you will need to assign it an initial IP address in order to gain full access to the card menus, options, and status fields in DashBoard.

✶ This procedure requires a reboot of the card.

To assign the initial network settings for the OSG-8971

1. Launch DashBoard.
2. Expand the OGX-FR frame node to display a list of cards installed in that frame.
3. Double-click the **OSG-8971** node under the frame node.

   The **Network** interface displays in DashBoard.
4. Select the **Network** tab.
5. Use the **Mode** menu to select **Static**.

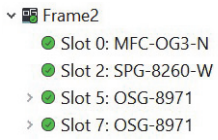
✶ Ross Video recommends using a static IP address.

6. Use the **Static IP Address** field to assign a unique IP address to the OSG-8971 card.

7. Use the **Subnet Mask** field to assign the subnet mask for the card.
8. Use the **Gateway** field to specify the gateway for communications outside of the local area network (LAN) the card will use.
9. Click **Apply**.

   The card is temporarily taken off-line during the reboot of the card to apply the new settings.
10. Verify the new network settings as follows:
    a. Close the **Network** interface.
    b. Refresh the Basic Tree View.
    c. Expand the OGX-FR frame node to display a list of sub-nodes.
    d. Verify that the OSG-8971 displays as a sub-node of the frame.

       In the following example, Frame2 includes one OSG-8971 in Slot 5, and a second OSG-8971 in slot 7.



Accessing the OSG-8971 Interfaces in DashBoard

Once you establish the initial network settings for the OSG-8971, you can access the Global, and OSG-8971 interfaces. These interfaces provide options for configuring, monitoring, and operating your card in DashBoard.

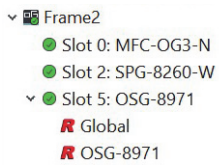
To display the Global interface in DashBoard

1. Launch DashBoard.
2. In the Basic Tree View of DashBoard, locate the openGear frame the OSG-8971 is installed in.
3. Expand the openGear frame node to display a list of sub-nodes.

   Each sub-node represents a specific card installed in a frame slot.
4. Locate the OSG-8971 sub-node.

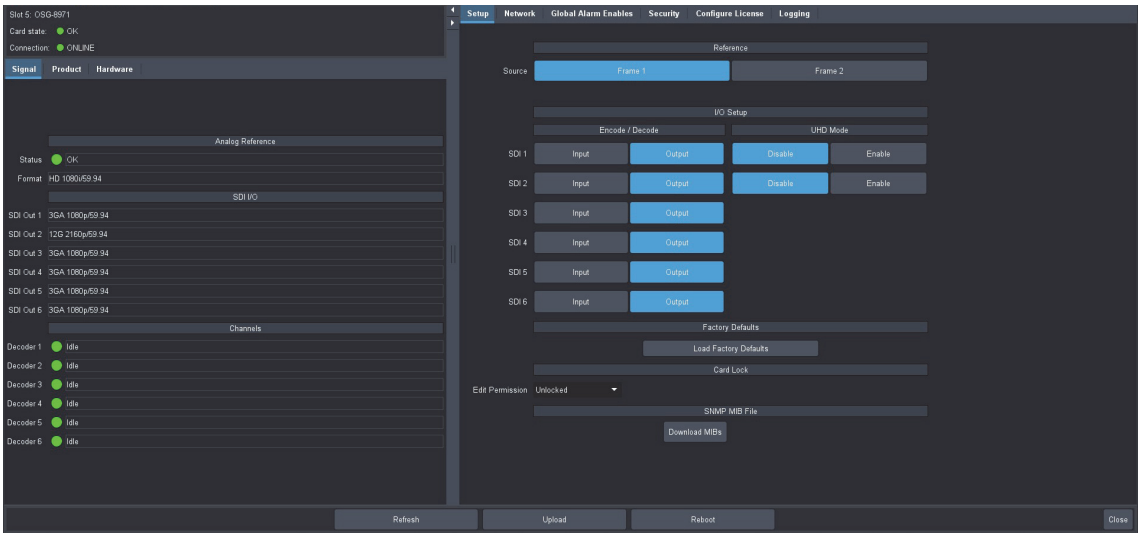
✶ Look for the slot number that corresponds to the physical frame slot the OSG-8971 is installed in.

5. Expand the OSG-8971 sub-node.



6. Double-click the **Global** sub-node.

   The Global interface opens in the right pane of the DashBoard window. The tabs in the Global interface enable you to monitor the overall status of the OSG-8971 software and hardware, configure the network settings for ethernet communications, specify the I/O functions, and select a reference source.



To display the OSG-8971 interface in DashBoard

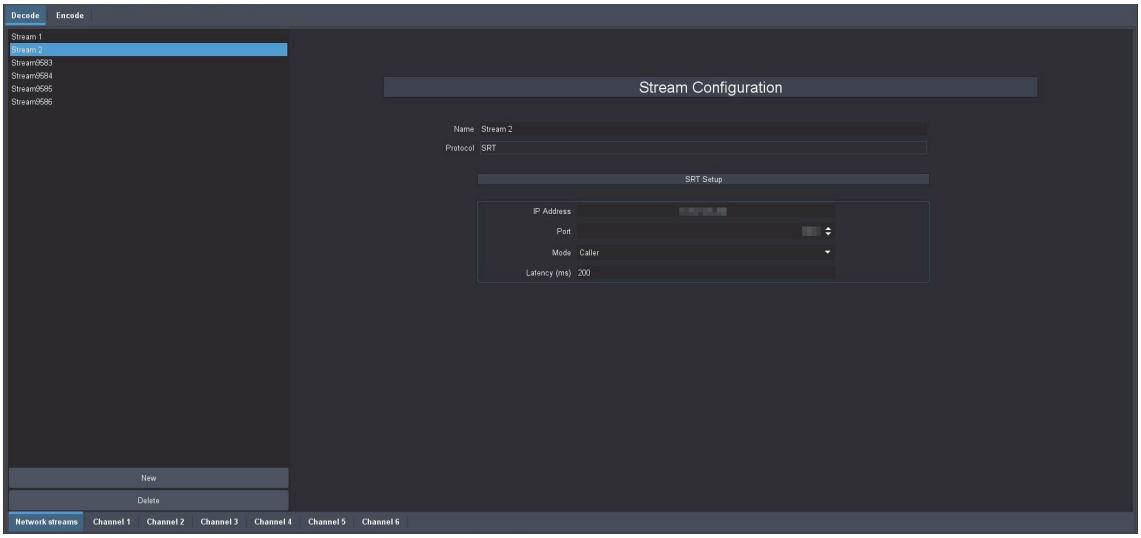
1. Launch DashBoard.
2. In the Basic Tree View of DashBoard, locate the openGear frame the OSG-8971 is installed in.
3. Expand the openGear frame node to display a list of sub-nodes.

   Each sub-node represents a specific card installed in a frame slot.
4. Locate the OSG-8971 node in the frame tree.

✶ Look for the slot number that corresponds to the physical frame slot the OSG-8971 is installed in.

5. Expand the **OSG-8971** node to display a list of sub-nodes for the card.
6. Double-click the **OSG-8971** sub-node.

   The OSG-8971 interface opens in the right pane of the DashBoard window. The tabs in the OSG-8971 interface enable you to configure the video outputs, decode/encode settings, ANC configuration, and audio settings.



Security Configuration

The Global > Security tab provides the option to disable/enable Secure Shell (SSH) Login services. This is a client-server protocol used by system administrators to securely log onto remote systems and execute commands over an unsecured network. SSH may also be used by Technical Support for advanced troubleshooting. This service is disabled by default on the OSG-8971.

Editing the Network Settings

This chapter outlines how to update the network settings assigned to the OSG-8971.

✶ If difficulties or problems are experienced when assigning IP addresses, contact your network administrator.

Before You Begin

Ensure that:

- The OGX-FR frame that houses the OSG-8971 displays in the Basic Tree View of DashBoard.
- An MFC-OG3-N Network Controller Card installed in your OGX-FR frame.
- The OSG-8971 displays as a sub-node in the OGX-FR frame tree.
- You contacted your facility IT Department for the required settings to be assigned to the OSG-8971.

Disable Network Scans and Probes

Caution — *Network scans and probes will result in the OSG-8971 requiring a power cycle.*

Ensure that any port scans, security scans or security probes are done during a service window. The OSG-8971 is not qualified for network and/or port scanners while in normal operation. After a scan, the OSG-8971 will require a power cycle.

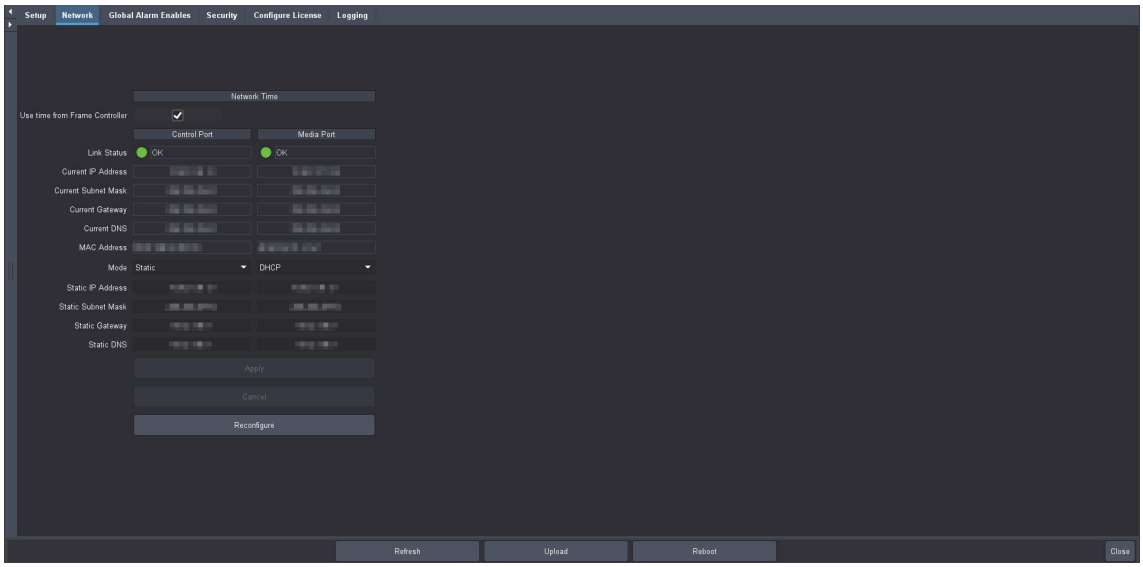
Configure the MEDIA Port of the OSG-8971

The OSG-8971 provides one 1GbE connector (MEDIA port) port. You are able to uniquely identify the MEDIA port on the network and control it via the DashBoard interface. This also allows the MEDIA port be available to for media traffic for the OSG-8971.

✶ Ross Video recommends using a static IP address.

To update the network settings for the MEDIA port on the OSG-8971 rear module

1. Navigate to the Global interface as outlined in "**To display the Global interface in DashBoard**".
2. Select the **Network** tab.



3. Locate the **Media Port** column.
4. Use the **Mode** menu to select **Static**.
5. Use the **Static IP Address** field to specify the new static IP Address for the OSG-8971. This is the address the card will use within the OGX-FR frame.
6. Use the **Subnet** field to specify the subnet mask for your network.
7. Use the **Static Gateway** field to specify the gateway for communications outside of the local area network (LAN) the card will use.

✶ If you want the network settings to be automatically obtained, select **DHCP** from the **Mode** menu.

8. Click **Apply** to save the new settings.

✶ The the OSG-8971 card reboots automatically.

Changing the Network Settings of the OSG-8971

Once you have establish connection to the card, you may want to change the IP address from the default setting to one that was provided by your IT Department. This procedure is optional.

To update the network settings for the MEDIA port on the OSG-8971 rear module

1. Navigate to the Global interface as outlined in "**To display the Global interface in DashBoard**".
2. Select the **Network** tab.
3. Locate the **Control Port** column of the tab.
4. Use the **Mode** menu to select **Static**.
5. Use the **Static IP Address** field to specify the new static IP Address for the OSG-8971. This is the address the card will use within the OGX-FR frame.
6. Use the **Subnet** field to specify the subnet mask for your network.
7. Use the **Static Gateway** field to specify the gateway for communications outside of the local area network (LAN) the card will use.

✶ If you want the network settings to be automatically obtained, select **DHCP** from the **Mode** menu.

8. Click **Apply** to save the new settings.

✶ The OSG-8971 card reboots automatically.

Licensed Features

This chapter outlines the available software licensed features, and how to install a software key for a licensed feature.

License Keys Overview

Table 4 provides a brief summary on the types of licensed features available for the OSG-8971.

Table 4 List of OSG-8971 Licensed Features

License	Description
OSG-8971-UHD-LICENSE	Enables 2160p video formats including 6G-SDI and 12G-SDI

Installing a License Key

Ross Video uses license keys to control user access to specific OSG-8971 features. You can obtain a key for a OSG-8971 licensed feature from Ross Video Technical Support.

To install a license key

1. Navigate to the Global interface as outlined in "**To display the Global interface in DashBoard**".
2. Select the **Configure Licenses** tab.
3. Make a note of the character string in the **Request Code** field for the feature you wish to enable.
4. Contact Ross Video using the information found in "**Contacting Ross Video Technical Support**".
   a. When you speak to your Technical Support representative, tell them your name, your facility name, and the **Request Code** from the **Configure Licenses** tab.
   b. You will be given a License Key that must be entered in the applicable field in the **Licenses** table.
5. Enter the provided License Key in the applicable **Key** field in the **Configure Licenses** tab.
6. Click **Apply** in the row for the License Key you entered in step 5.

Removing a License Key

Disabling a License Key removes user access to the OSG-8971 features associated with that License Key.

✶ To re-enable the features, contact Ross Technical Support and request a new License Key.

To remove an OSG-8971 license key

1. Navigate to the Global interface as outlined in "**To display the Global interface in DashBoard**".
2. Select the **Configure Licenses** tab.
3. Click in the **Key** field for the licensed feature you want to remove.
4. Type **`remove`**.
5. Click **Apply** to remove the license.

Reference Setup

The OSG-8971 accepts a black-burst or tri-level Genlock reference signal via a **REF** port on the openGear frame. This signal is used to synchronize the SDI outputs of the OSG-8971.

Frame Rate Compatibility

The card supports a number of reference modes for external reference signals. The card allows you to use any interlaced video format to operate the card in any format of the same frequency; however, the use of 480i or 576i (Composite Sync) reference signals for High Definition (720p, or 1080p) video modes is not recommended.

✶ When using a progressive format reference signal to lock an interlaced format video signal, the lock will be Frame Locked but Field indeterminate.

Table 5 outlines the OSG-8971 frame rate compatibility.

Table 5 Output/Reference Compatibility

Card Format	Required Reference
HD-SDI Formats	
720p 50Hz	576i
	720p 50Hz
720p 59.94Hz	480i
	720p 59.94Hz
1080pSF 23.98Hz	1080pSF 23.98Hz
1080pSF 24Hz	1080pSF 24Hz
1080p 23.98Hz	1080p 23.98Hz
1080p 24Hz	1080p 24Hz
1080p 25Hz	576i
1080p 29.97Hz	480i
1080p 30Hz	1080p 30Hz
1080p 50Hz	576i
	720p 50Hz
1080p 59.94Hz	480i
	720p 59.94Hz
1080p 60Hz	720p 60Hz
6G-SDI Formats[a]	
2160p 23.98Hz	1080p 23.98Hz
2160p 24Hz	1080p 24Hz
2160p 25Hz	576i
	720p 50Hz
2160p 29.97Hz	480i

Table 5 Output/Reference Compatibility

Card Format	Required Reference
2160p 30Hz	1080p 30Hz
12G-SDI Formats[a]	
2160p 50Hz	576i
	720p 50Hz
2160p 59.94Hz	480i
	720p 59.94Hz

a. Requires the OSG-8971-UHD-LICENSE. Refer to "**Installing a License Key**" for details.

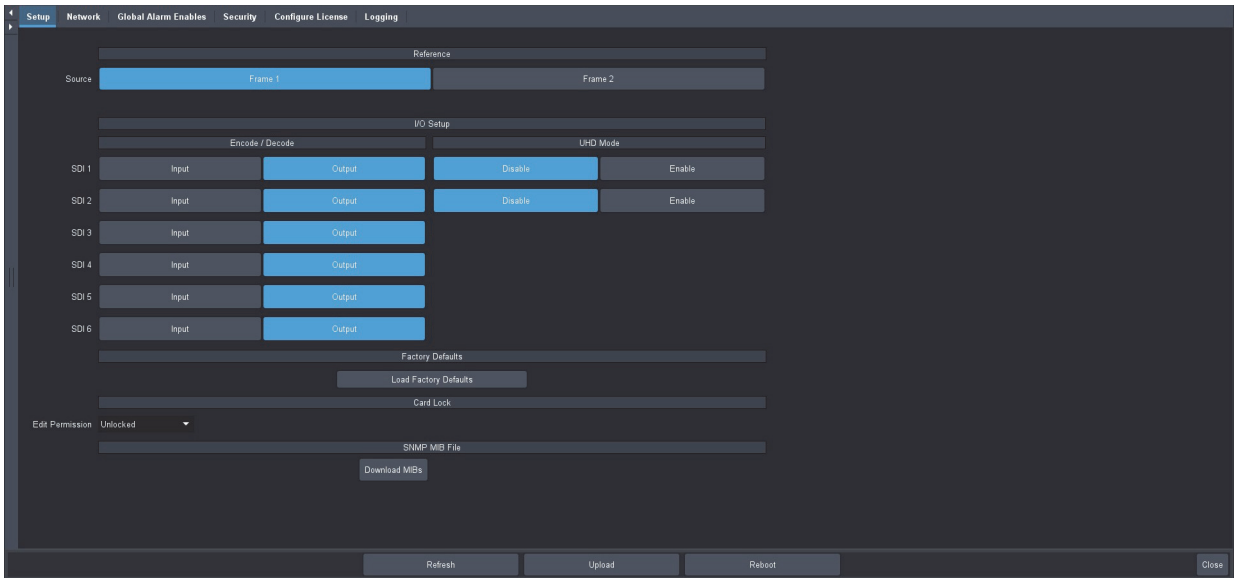
Specifying a Global Analog Reference Source

✶ The output video frame rate must match this reference frame rate.

To specify a global analog reference source for all outputs of the OSG-8971

1. Navigate to the Global interface as outlined in "**To display the Global interface in DashBoard**".

   The **Setup** tab is automatically selected.



2. Use the **Reference Source** options to specify the source for the reference input signal. Choose from the following:

   - **Frame 1** — uses the source connected to the **REF 1** port on the openGear frame.
   - **Frame 2** — uses the source connected to the **REF 2** port on the openGear frame.

✶ To lock properly, the reference frame rate and the video output frame rate should be in a ratio of 1:1 or 1:2.

Monitoring the Reference Signal via DashBoard

The status of the OSG-8971 may be monitored via its fields in the DashBoard client software or the LEDs located on the front card-edge.

To configure the reference alarm for the OSG-8971

1. Navigate to the Global interface as outlined in "**To display the Global interface in DashBoard**".
2. Select the **Global Alarm Enables** tab.
3. Select the **Reference Format** box to enable the following fields to report when a reference is not detected:
   - Global > Card state (located in the top left corner of the Global interface)
   - Global > Signal > Analog Reference Status

Configuring the Time Source

The Frame Network Controller card in the openGear frame can use an NTP server as a time source. The time data is then made available to any openGear card installed in the same frame. You must manually enable the OSG-8971 to access this time data by selecting an option on its Global > Network tab.

For More Information on...

- communicating with an NTP server, refer to the ***MFC-OG3-N and MFC-8322-S User Manual***.

To enable the OSG-8971 to access the time data from the Frame Network Controller card

1. Navigate to the Global interface as outlined in "**To display the Global interface in DashBoard**".
2. Select the **Network** tab.
3. Locate the **Network Time** area of the tab.
4. Select the **Use time from Frame Controller** box.
5. Click **Apply**.

To enable monitoring of the time data

1. From the **Global** interface, select the **Global Alarm Enables** tab.
2. Locate the **Network Alarm** area of the tab.
3. Select the **Network Time** > **Alarm Enable** box.

   The **Network time** field will report the status of the time data.

I/O Configuration

This chapter outlines how to specify the function of an SDI BNC (input or output), and enable UHD Mode on eligible BNCs.

✶ Before proceeding, ensure that you verified which SDI BNCs are cabled to sources or downstream devices. Refer to "**Cabling the SDI BNCs on the Rear Module**" for SDI channel numbering.

Default I/O Settings

Table 6 outlines the default Encode/Decode and UHD Mode settings for each SDI on the rear module. These settings can be edited as outlined in "**To assign a function to an SDI**" and "**To enable UHD mode**".

Table 6 I/O Setup — Default Settings

SDI	Encode/Decode	UHD Mode[a]
1	Input	Disable
2	Input	Disable
3	Input	--
4	Output	--
5	Output	--
6	Output	--

a. Requires the OSG-8971-UHD-LICENSE.

Enabling UHD Mode for SDI 1 and/or SDI 2

The OSG-8971+UHD license provides the ability to enable UHD Mode on the SDI 1 and SDI 2 BNCs.

Keep the following in mind:

- When UHD mode is enabled on one SDI (SDI 1 or SDI 2), the card provides 3 channels up to 1080p, and 1 channel of 2160p.
  - › If UHD mode is enabled on SDI 1: SDI 3 and 4 are turned off. Refer to "**UHD Mode is Enabled on SDI 1 Only**" for cabling designations.
  - › If UHD mode is enabled on SDI 2: SDI 5 and 6 are turned off. Refer to "**UHD Mode is Enabled on SDI 2 Only**" for cabling designations.
- When UHD mode is enabled on SDI 1 *and* 2: the card provides 2 channels of 2160p. SDI 3-6 are turned off. Refer to "**UHD Mode is Enabled on SDI 1 and 2**" for cabling designations.

To enable UHD mode

1. Navigate to the Global interface as outlined in "**To display the OSG-8971 interface in DashBoard**".
2. Select the **Setup** tab.
3. In the **UHD** area, locate the **SDI** you wish to configure.
4. Choose from the following:
   - **OFF** — disables UHD mode. The SDI supports formats up to 3G only.

- **ON** — enables UHD mode. The SDI supports the 2160p 50Hz and 2160p 59.94Hz formats.

5. If required, repeat steps 3 and 4 for the second SDI.

Assigning a Function to an SDI

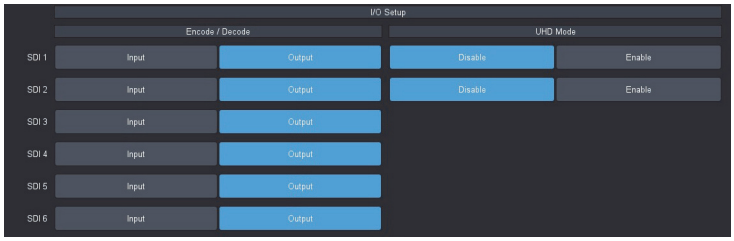
Each rear module includes six SDI bi-directional HD-BNCs. This provides the opportunity to assign each BNC as an input or output as required by your system workflow.

✶ Assigning an SDI as an input enables one encoder channel. Assigning an SDI as an output enables one decoder channel.

To assign a function to an SDI

1. Navigate to the Global interface as outlined in "**To display the OSG-8971 interface in DashBoard**".
2. Select the **Setup** tab.
3. In the **I/O Setup > Encode/Decode** area, locate the **SDI** you wish to configure.

✶ Each SDI row represents an SDI BNC on the rear module. Refer to **Figure 10** for cabling designations.



4. Choose from the following:
   - **Input** — assigns the SDI signal as an SDI input. One encoder channel is enabled.
   - **Output** — assigns the SDI signal as an SDI output. One decoder channel is enabled.
5. Repeat steps 3 and 4 for each SDI you wish to configure.

Decoding Setup

This chapter outlines how to configure the OSG-8971 as a decoder for an SRT connection.

✶ Before proceeding, ensure that the SDI inputs and outputs are cabled and configured as required. Refer to "**Cabling**" and "**I/O Configuration**" respectively.

Overview

The OSG-8971 supports frame synchronization and delay up to 1 sec on each decoder path so that a user can manually tune delays for each stream. DashBoard reports any media or input signal that is asynchronous to the external reference. Up to 16 channel of audio per decoder can be synchronized and delayed in the same way.

The OSG-8971 supports MPEG-TS presentation timestamp insertion and decode to automatically compensate for network delay at the receiver.

Defining the Network Streams for Decoding

Before you can configure the decode channels, you must first define the network streams that will provide the OSG-8971 with an SRT connection. The mode of operation for the OSG-8971 is determined by its settings in the Decode > Network Streams tab in DashBoard.

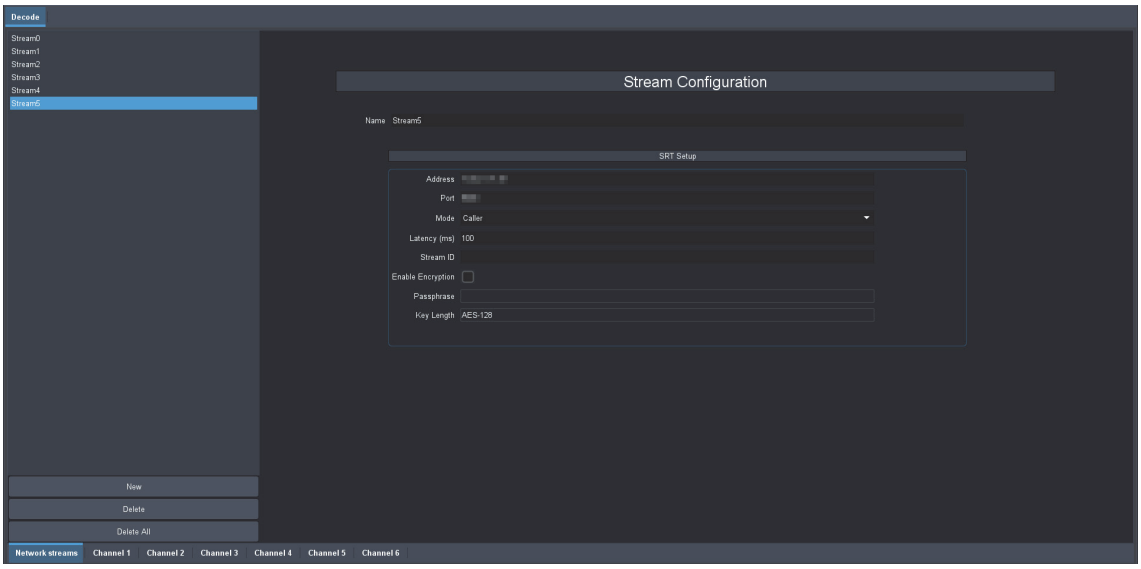
✶ The OSG-8971only supports SRT connections at this time.

To define an SRT stream for decoding

1. Navigate to the **OSG-8971** interface as outlined in "**To display the OSG-8971 interface in DashBoard**".
2. Select the **Decode** tab.

   The **Network Streams** sub-tab is automatically selected.
3. Click **New**.

   A new entry is added to the Decode table, and the **Stream Configuration** options display with the default values. In the following example, the user is configuring `Stream 5`.



4. Use the **Name** field to assign a unique identifier to the stream.

5. Use the **Address** field to specify the IP address or host name for this network stream. The OSG-8971 will connect to the peer SRT device assigned to this address on your network.
6. Use the **Mode** menu to assign a function to the OSG-8971 for decoding this network stream. Choose from the following:
   - Caller — the OSG-8971 acts as a transmitter using the SRT protocol over the network.
   - Listener — the OSG-8971 acts as a receiver using the SRT protocol over the network.
   - Rendezvous — enables the SRT end points to auto-negotiate port settings when your network includes a firewall.
7. If the **Mode** is set to **Caller**:
   a. Use the **Port** menu to specify the Host Port on your network that the peer SRT Listener device is monitoring.
   b. Use the **Stream ID** field to assign a unique identifier to the stream.
8. If the **Mode** is set to **Listener**:
   - Use the **Port** menu to specify the local UDP port the OSG-8971 will use to receive the network stream data from the peer device assigned as the Caller.
9. Use the **Latency** menu to define the minimum receiver buffering delay (in milliseconds) before delivering an SRT data packet from a receiving SRT socket to the stream decoder.

To use data encryption

1. Select the **Enable Encryption** box.
2. Use the **Passphrase** field to specify a string between 10-80 characters long.

✶ The passphrase must match for both SRT peers.

3. Use the **Key Length** menu to select the desired key length to encrypt the data.

Assigning an SRT Stream to a Decode Channel

This section outlines how to assign an SRT stream as a source for a specific decode channel.

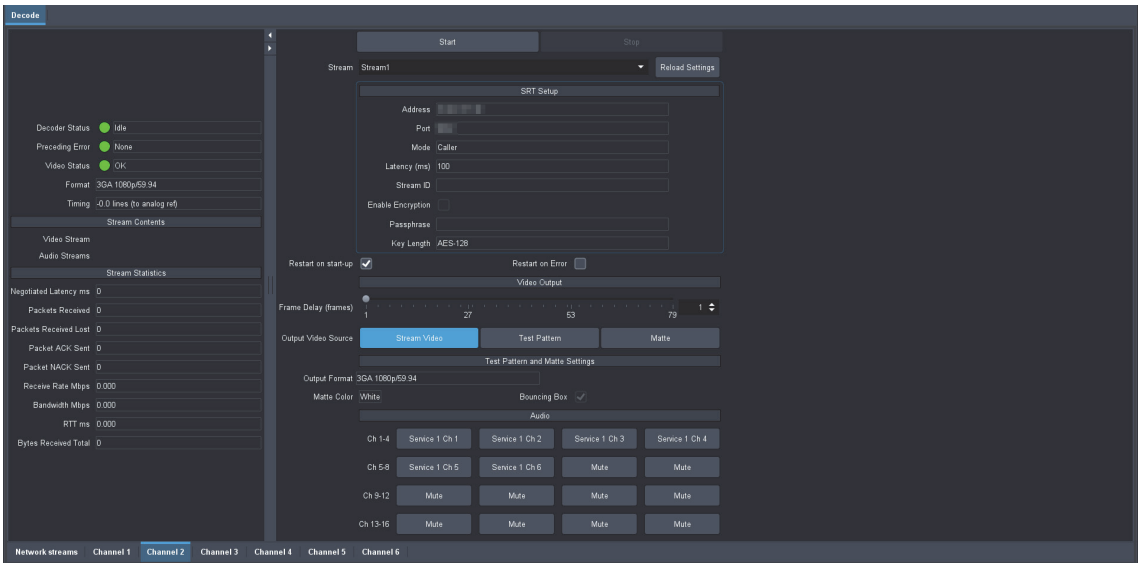
When the decoding mode for a network stream is set to Caller, a channel sub-tab displays to provide options for selecting the network stream to decode, mapping the audio channels, and (if required) assigning a test pattern to the output. You can configure up to six decode channels.

To assign an SRT stream to a decode channel

1. Navigate to the **OSG-8971** interface as outlined in "**To display the OSG-8971 interface in DashBoard**".
2. Select the **Decode** tab.

   The **Network Streams** sub-tab is automatically selected.
3. On the bottom of the **Decode** tab, select the sub-tab for the decode channel you want to assign the SRT stream to.

   In the example below, the user selected Channel 2.



4. Use the **Stream** menu to select the network stream you want to decode on this channel.

✶ Click **Reload Settings** to refresh the list of items in the **Stream** menu, or if you recently made changes to the Network streams tab.

5. Verify the read-only information reported in the **SRT Setup** fields.
6. To enable this channel to automatically start encoding after the OSG-8971 reboots, select the **Restart on start-up** box.
7. To enable this channel to automatically start encoding after an invalid connection was detected but fixed, select the **Restart on Error** box.
8. If required, use the **Frame Delay** slider to adjust the relative position of the video output start of frame as an offset to the reference (in number of frames).
9. Use the **Output Video Source** menu to specify the output of the decode channel. Choose from the following:
   - Stream Video — This channel will output the decoded video from the specified network stream. Proceed to "**To decode an SRT stream**".
   - Test Pattern — This channel will output a test pattern. Proceed to "**To include a test pattern or matte**".
   - Matte — This channel will output a matte box. Proceed to "**To include a test pattern or matte**".
10. In the **Audio** area, select the button for the audio channel you want to map to this decode channel.

To include a test pattern or matte

1. Set the **Output Video Source** menu to **Test Pattern**.
2. Locate the **Test Pattern and Matte Settings** area.
3. Use the **Test Pattern** options to specify a pattern to output for this channel. Choose from the following:
   - Video In — sets the active SDI input signal as the test pattern output for this channel.
   - Test Pattern On — enables the internally generated test pattern as the output.
   - Matte — sets the channel output to a matte box. Proceed to "**To include a test pattern or matte**".

Decoding an SRT Stream

Each decode channel can be controlled via its **Start** and **Stop** buttons (located at the top of the associated Channel tab) allowing you to customize which decode channels are active.

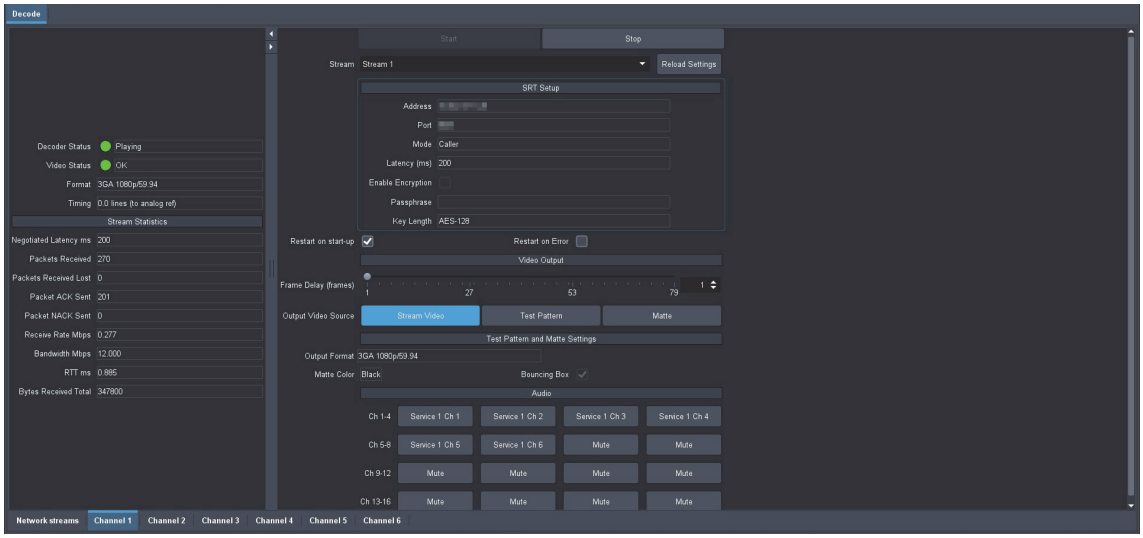
Decoding an SRT stream requires you to select its tab in the Decode interface, and click the Start button at the top of the tab. When the Start button is selected, the connection is published to downstream devices.

To decode an SRT stream

1. Navigate to the **OSG-8971** interface as outlined in "**To display the OSG-8971 interface in DashBoard**".
2. Select the **Decode** tab.
3. Select the required **Channel** sub-tab.
4. Click **Start**.

   In the following example, the user is decoding Channel 1.

   The Start button is read-only, and the **Stop** button is available.



5. To verify the decoding, review the fields in the left pane of the Channel sub-tab. Refer to **Table 18** for details.

Encoding Setup

This chapter outlines how to configure the OSG-8971 as an SRT encoder.

✶ Before proceeding, ensure that the SDI inputs and outputs are cabled and configured as required. Refer to "**Cabling**" and "**I/O Configuration**" respectively.

Overview

Each connection is configured independently, allowing you to assign the SDI input signal or a SRT stream as the source for a connection. Once all the sources are configured, you can proceed to assign each source to an output (destination) to create a connection.

Defining the Transport Stream for Encoding

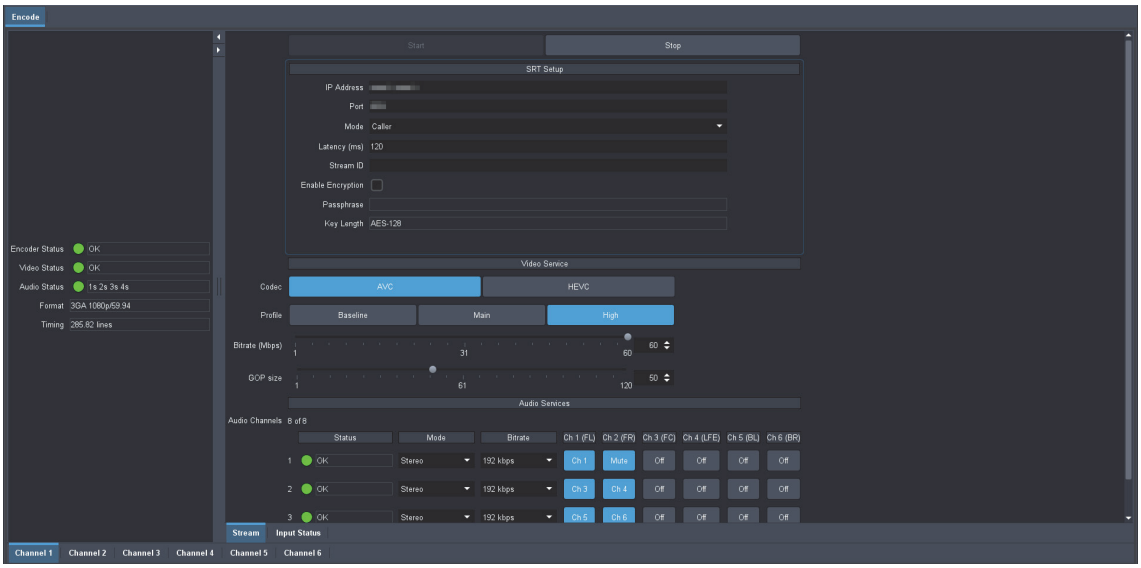
This section outlines how to set the mode of operation for the OSG-8971 and define an SRT encoding connection.

✶ The number of SDI BNCs set to Input (Encode) determines the number of encoding channels that are available (the number of Channel tabs in the OSG-8971 > Encode interface). The Encode interface is blank when no SDIs are set to Input. Refer to "**Assigning a Function to an SDI**".

To specify a transport stream for encoding

1. Navigate to the **OSG-8971** interface as outlined in "**To display the OSG-8971 interface in DashBoard**".
2. Select the **Encode** tab.
3. Select the **Channel** tab for the encoder channel you wish to configure.

   The **Stream** sub-tab is automatically selected and displays in the right pane.



4. Locate the **SRT Setup** area of the **Stream** sub-tab.
5. Use the **IP Address** field to specify the IP address for the network stream assigned to this Encoder channel.

6. Use the **Mode** menu to assign a function to the OSG-8971 for this network stream. Choose from the following:
   - Caller — the OSG-8971 acts as a transmitter using the SRT protocol over the network.
   - Listener — the OSG-8971 acts as a receiver using the SRT protocol over the network.
   - Rendezvous — enables the SRT end points to auto-negotiate port settings when your network includes a firewall.
7. If the **Mode** is set to **Caller**:
   a. Use the **Port** menu to specify the Host Port on your network that the peer SRT Listener device is monitoring.
   b. Use the **Stream ID** field to assign a unique identifier to the stream.
8. If the **Mode** is set to **Listener**:
   - Use the **Port** menu to specify the local UDP port the OSG-8971 will use to receive the network stream data from the peer device assigned as the Caller.
9. Use the **Latency** menu to define the minimum receiver buffering delay (in milliseconds) before delivering an SRT data packet from a receiving SRT socket to the stream decoder.

To enable encryption

1. Select the **Enable Encryption** box.
2. Use the **Passphrase** field to specify a string between 10-80 characters long.

✶ The password must match for both peers.

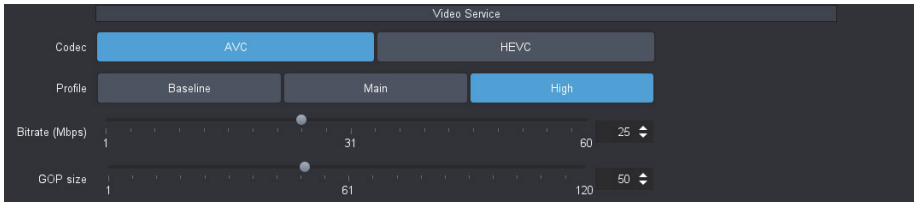
3. Use the **Key Length** menu to select the desired key length to encrypt the data.

Adjusting the Video Settings

Once the network stream credentials are configured for the encode channel, you can proceed to adjust the settings for the video data.

To configure the video data

1. Configure network settings for the encoder channel. Refer to "**To specify a transport stream for encoding**".
2. Locate the **Video Service** area of the Channel # > Stream sub-tab.



3. Use the **Codec** options to specify the MPEG code to use for encoding on this channel. Choose from the following:
   - AVC — uses the H.264 (MPEG-4 Part 10) codec to encode the stream channel.
   - HEVC — uses the H.265 (MPEG-H Part 2) codec to encode the stream channel.
4. Use the **Profile** options to specify the compression ratio. Choose from the following:
   - Baseline — uses a compression ratio of approximately 1000:1 (compresses a 1Gbsp stream to 1Mbps). For use in low powered systems.
   - Main — For use with H.264 code to a maximum resolution of 8K UHD.

- High — uses a compression ratio of 2000:1 (compresses a 2Gbsp stream to 1Mbps). For use in broadcast or storage formats.

5. Use the **GOP size** slider to specify the size of the Group of Pictures (GOP) structure in the encoded channel.

Embedded Audio Setup

The OSG-8971 supports up to 8 channels over embedded SDI to enable flexible audio workflow for contribution or to support in house productions. The OSG-8971 uses the AAC-LC compression standard to encode the audio data.

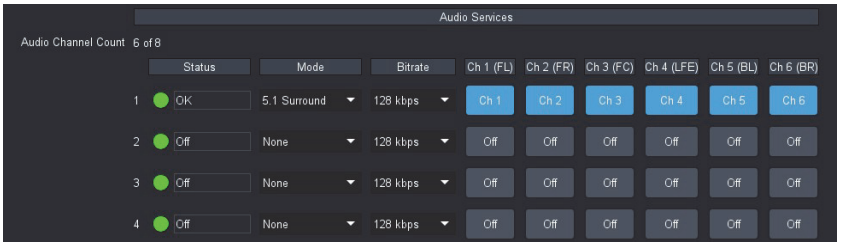
✶ The embedded output channels are configured per processed input to allow different audio mapping that will track the currently processed input.

To map a channel

1. Navigate to the **OSG-8971** interface as outlined in "**To display the OSG-8971 interface in DashBoard**".
2. Select the **Encode** tab.

   The Channel 1 sub-tab is automatically selected.
3. Select the required **Channel** sub-tab.
4. Locate the **Audio Services** area of the tab.

   The Audio Services area is organized into a table where each row represents an audio group, and each column provides the audio settings. The number of available audio channels is reported at the top of the Audio Services area. In the following example, the Audio Channel Count field reports 6 of 8.



5. Locate the row for the embedded audio group you wish to map.

✶ If the group is not present on the input video, silence is embedded.

6. Use the **Mode** menu to specify the type of audio data to include in the encoded stream. Choose from the following:
   - None — the audio is not embedded in the encoded stream. The group Status reports Off, and the channels are set to Off (all buttons are unlit).
   - Mono — the first audio channel is included in the encoded stream. All other channels are set to Off (buttons are unlit).
   - Stereo — the first two audio channels are included in the encoded stream (buttons are lit blue). All other channels set to Off (buttons are unlit).
   - 5.1 Surround — all channels are included in the encoded stream. The buttons are lit blue.
7. Use the **Bitrate** menu to set the upstream data transfer rate (the number of bytes received in the last field).

✶ The buttons in the selected group (row) of the **Audio Services** area will be lit blue to indicated the number of available channels. In the above example, the first audio group is set to 5.1 Surround mode, and all channel buttons are lit blue (available).

8. Repeat steps 5 to 7 for each audio group to embed in the selected encoded channel.

✶ To mute a specific channel in a group, click **Mute**.

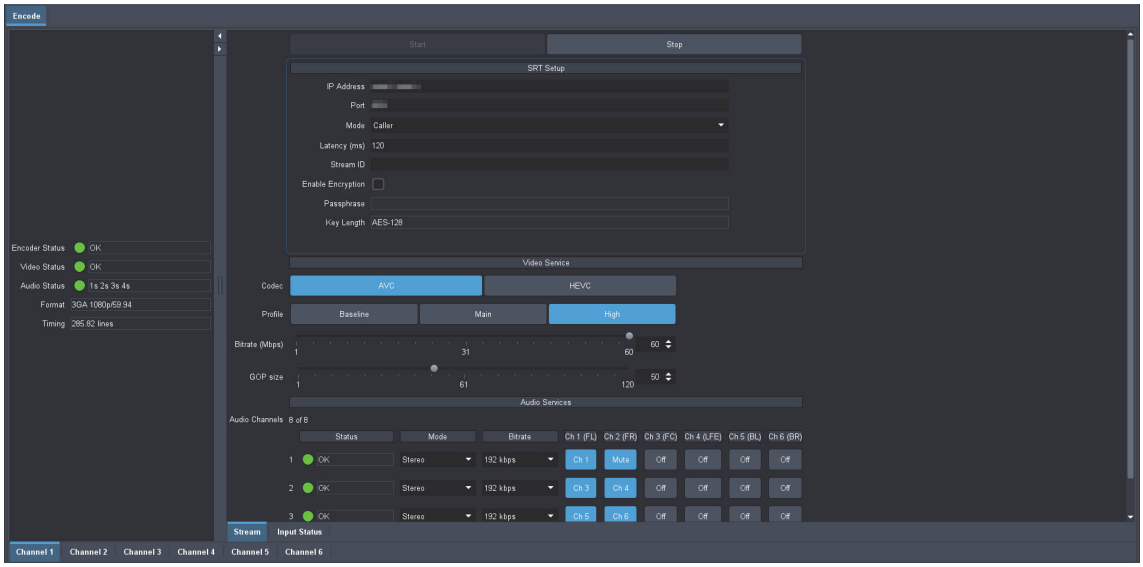
Encoding an SRT Stream

Each encode channel can be controlled via its **Start** and **Stop** buttons (located at the top of the associated Channel tab) allowing you to customize which encode channels are active.

Encoding an SRT stream requires you to select its tab in the Encode interface, and click the Start button at the top of the Stream sub-tab. When the Start button is selected, the connection is published to downstream devices.

To encode an SDI signal to an SRT stream

1. Navigate to the **OSG-8971** interface as outlined in "**To display the OSG-8971 interface in DashBoard**".
2. Select the **Encode** tab.
3. Select the required **Channel** sub-tab.

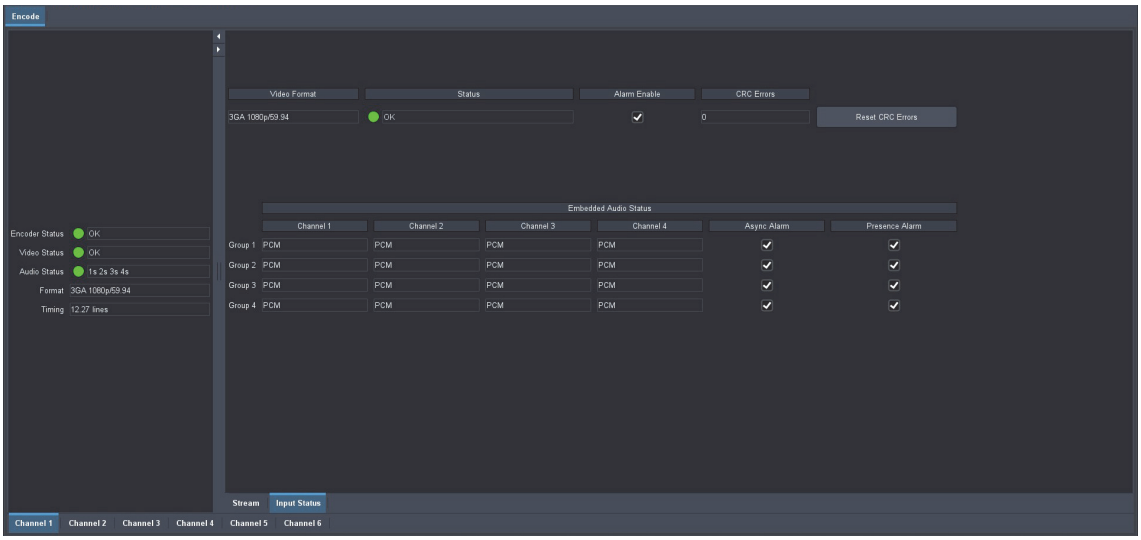


4. Click **Start**.

   The Start button is read-only, and the **Stop** button is available.

To verify the encoding

1. Review the fields in the left pane of the Channel tab. Refer to **Table 20** for details.
2. To review the embedded audio status, select the **Input Status** sub-tab for the channel.


Encode
Video Format
Status
Alarm Enable
CRC Errors
3GA 1080p/59.94
OK
0
Reset CRC Errors
Embedded Audio Status
Channel 1
Channel 2
Channel 3
Channel 4
Async Alarm
Presence Alarm
Group 1 PCM PCM PCM PCM
Group 2 PCM PCM PCM PCM
Group 3 PCM PCM PCM PCM
Group 4 PCM PCM PCM PCM
Encoder Status OK
Video Status OK
Audio Status 1s 2s 3s 4s
Format 3GA 1080p/59.94
Timing 12.27 lines
Stream
Input Status
Channel 1
Channel 2
Channel 3
Channel 4
Channel 5
Channel 6

Upgrading the Software

The OSG-8971 can be upgraded in the field via DashBoard.

✶ The OSG-8971 is temporarily taken off-line during the upgrade process.

To upgrade the software on the OSG-8971

1. Contact Ross Technical Support for the latest software version file.
2. Ensure the Ethernet cable is connected to the **1G** port on the OSG-8971.
3. Navigate to the OSG-8971 interfaces as outlined in "**Accessing the OSG-8971 Interfaces in DashBoard**".
4. Select **Upload**, located near the bottom of the interface, to display the **Select file Upload** dialog.
5. Navigate to the ***.bin** file you want to upload.
6. Click **Open**.
7. Click **Next >** to display the **Select Destination** menu.

   This menu provides a list of the compatible units.
8. Select the box for the OSG-8971 you want to upload the file to.

   The **Error/Warning** fields indicate any errors, such as incompatible software or product type mismatch.
9. Click **Finish**.
10. Monitor the upgrade.

    An **Upload Status** dialog enables you to monitor the upgrade process.
11. Click **OK**.
    - The **Upload Status** dialog closes.

✶ If the **Automatically close when complete** box is selected, the OSG-8971 automatically reboots to complete the upgrade process. Otherwise the user must click **Reboot** once the upload is complete.

- The process is complete once the status indicators in the **Connections Control** tab return to their previous status.

DashBoard Interface Overview

This chapter briefly summarize the menus, items, and parameters available in DashBoard for the OSG-8971.

✶ Parameters marked with an asterisk (*) are the factory default values.

Global Interface

The Global interface is accessed by double-clicking the Global sub-node in the OSG-8971 tree. There are two panes in the Global interface: Status (on the left), and Configuration (on the right). This section outlines the tabs displayed in the Global interface starting with the leftmost tab in the Status pane.

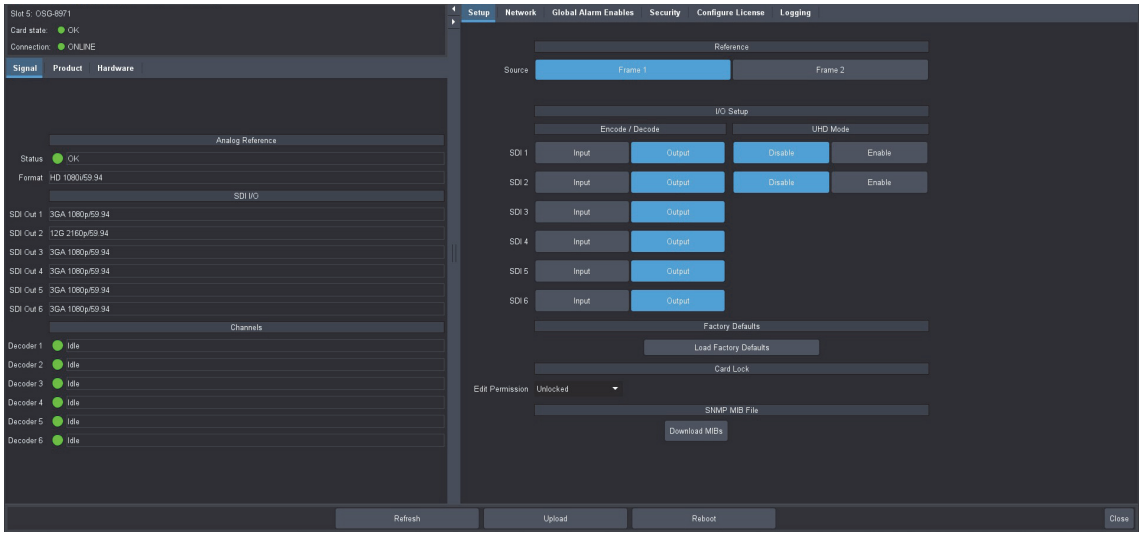


Figure 15 Example of the Global Interface

Signal Tab

Table 7 summarizes the read-only fields displayed in the **Signal** tab.

Table 7 Global > Signal Tab

Item	Parameters	Description
Analog Reference		
Status	OK (Green)	A valid signal is detected from the reference source device
	Alarm suppressed (Green)	There are reference errors detected but the Global Alarm Enables > Reference Error option is disabled (box is not selected)
	Unsupported (Red)	An unsupported signal is detected from the reference source device
	Unlocked (Red)	A valid or present reference signal is not detected by the card

Table 7 Global > Signal Tab

Item	Parameters	Description
Format	#	Reports the video format detected on the input reference signal as defined by the Setup > Analog Reference Source menu.
SDI I/O		
SDI #	#	Indicates the following for the SDI BNC: • If the SDI is an IN or OUT (as specified by the Setup > I/O Setup > Encode/Decode option for the SDI) • A valid signal is detected • The format is supported • The selected reference signal is supported and compatible
	N/A	A signal is not detected on the specified SDI BNC. Verify the cable connection.
Channels[a]		
Decoder #	OK (Green)	Indicates the following for this decoder channel: • The **Start** button was selected on the associated Decode > Channel sub-tab • A valid signal is detected • The channel is decoding correctly
	Idle (Green)	Indicates that the **Start** button is not selected on the associated Decode > Channel sub-tab
	N/A (Green)	The channel is set to Decode (the Setup > I/O Setup menu is set to Output) but this channel is not configured correctly for decoding
Encoder #	OK (Green)	Indicates the following for this encoder channel: • The **Start** button was selected on the associated Encode > Channel sub-tab • A valid signal is detected • The channel is encoding correctly
	Idle (Green)	Indicates that the **Start** button is not selected on the associated Encode > Channel sub-tab
	N/A (Green)	The channel is set to Encode (the Setup > I/O Setup menu is set to Input) but this channel is not configured correctly for encoding

a. The number of Decoder and Encoder channels is determined by the Setup > I/O Setup > Encode/Decode setting for each SDI. For example, if SDI 1-4 are set to Inputs and SDI 5-6 are set to Outputs, there will be four Encoder channels and two Decoder channels.

Product Tab

Table 8 summarizes the read-only information displayed in the Product tab.

Table 8 Global > Product Tab

Item	Parameters	Description
Product	OSG-8971	
Supplier	Ross Video Ltd.	
Board Rev	#	Indicates the hardware version
Serial Number	#	Indicates the serial number of the card
Rear Module	#	Indicates the part number of the rear module that the card is installed with
Rear Module Status	OK (Green)	A supported rear module is installed with the card
	Alarm suppressed (Green)	An unsupported rear module is installed but the Global Alarm Enables > Rear Module option is disabled
	Incomp I/O Module (Red)	Card is connected to an unsupported rear module
Software Rev	#.#-#	Indicates the software version running on the card
Firmware Rev	#.#	Indicates the firmware version running on the card
Daughter Card		
Type	#	Reports the daughter card model installed on the main card
OS Version	#	
Status	Indicates if the daughter card is running correctly whether errors are detected	
Supplier	Ross Video Limited	
Product	OSG-8971	
SW Version	#	Indicates the software running on the daughter card
Build stamp	#	

Hardware Tab

Table 9 summarizes the read-only information displayed in the Hardware tab.

Table 9 Global > Hardware Tab

Item	Parameters	Description
Hardware Status	OK (Green)	Fans are operating correctly; no errors are detected
	Alarm suppressed (Green)	There are fan errors detected but the Global Alarm Enables > Stalled Fan option is disabled (box is not selected)
	Critical Temperature (Red)	The FPGA temperature is 100°C (212°F) or above
	Fan Off/Stalled (Red)	The fan installed on the OSG-8971 is not operating correctly
Voltage (mV)	#	Measured input millivolts
Current (mA)	#	Current consumption in milliamperes
Power (W)	#	Power consumption in watts
FPGA Temp (C)	#	Indicates the FPGA Core temperature where: • A green indicator displays when the temperature is less than 95°C (203°F). • A yellow indicator displays when the temperature is greater than or equal to 95°C (203°F). • A red indicator displays when the temperature is greater than or equal to 100°C (212°F). ✶**If the temperature is greater than 100°C (212°F), the user must manually power down the card.**
AXI Bridge	OK (Green)	Reports the status of the Advanced Extensible Interface (AXI) bridge running on the OSG-8971. This information is for Ross Technical Support.
	Error (Red)	
Fan Speed	#	Reports the speed (rpm) of the fan on the board
CPU Usage	x.xx / y.yy / z.zz	Displays the CPU Load average where: • `x.xx` represents in the last minute • `y.yy` represents the last five minutes • `z.zz` represents the last fifteen minutes
Uptime (System/App)	a / b	Reports the length of time (hh:mm:ss) where: • `a` represents the last reboot of the PCB • `b` represents the last reboot of the OSG-8971 software
RAM Available	# / # MB	CPU Memory Used / Total CPU Memory
SD Card Status	# of #GB used	Reports the amount of memory used on the Micro SD card of the main PCB

Setup Tab

The Global > Setup tab provides options for specifying a reference source, assigning a function to each SDI BNC, and enabling UHD Mode on the required SDI.

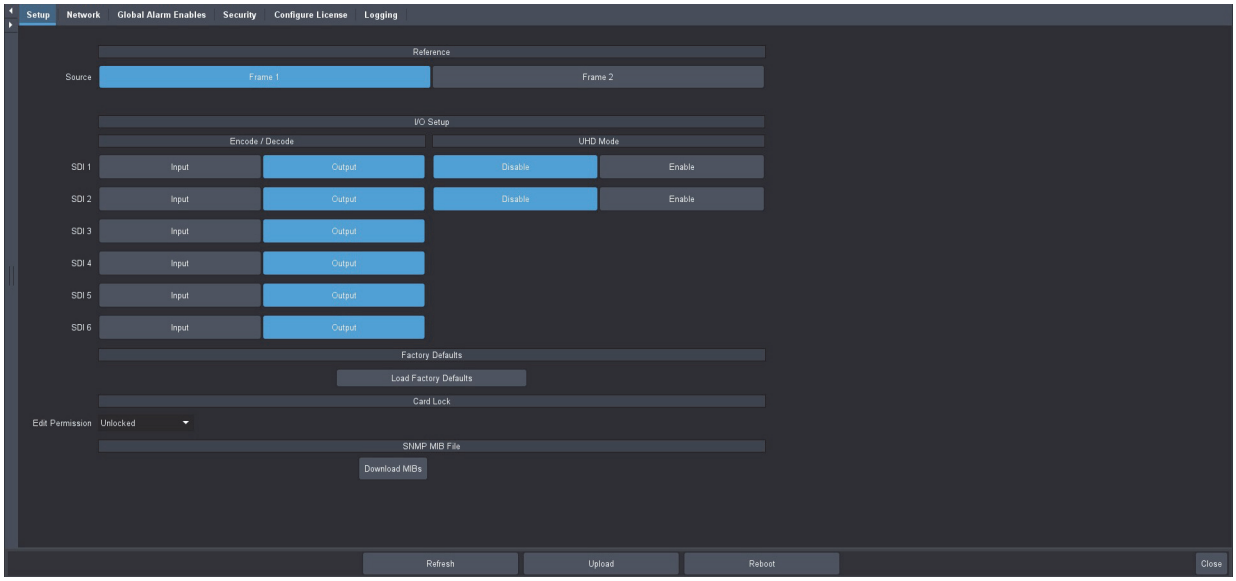


Figure 16 Example of the Global > Setup Tab

Table 10 summarizes the options displayed in the Setup tab.

Table 10 Global > Setup Tab

Item	Parameters	Description
Reference		
Source	Frame 1	Uses the reference signal connected to the **REF 1** BNC on the openGear frame
	Frame 2	Uses the reference signal connected to the **REF 2** BNC on the openGear frame
I/O Setup		
SDI #	Input	Configures the SDI channel as an input; one encoder channel is automatically available
	Output	Configures the SDI channel as an output; one decoder channel is automatically available
UHD Mode[a]		
SDI #	Disable	Disables UHD support on this SDI channel
	Enable[b]	UHD support is available on this SDI channel
Factory Defaults		
Load Factory Defaults	All editable parameters in DashBoard, except those in the Network tab, are reset to the factory default values	
Card Lock		

Table 10 Global > Setup Tab

Item	Parameters	Description
Enable Permission	Unlocked	All editable parameters in DashBoard can be modified by the user
	Locked	The DashBoard interface is locked. The editable parameters in DashBoard can no longer be modified by the user. To unlock the interface, select the box again.
SNMP MIB File		
Download MIBs	Downloads the Management Information Base (MIB) file that provides the SNMP controls for your card	

a. UHD Mode is only available for SDI 1 and SDI 2 and requires the OSG-8971+UHD license be enabled.
b. Enabling UHD Mode impacts the number of active SDI channels. When UHD mode is enabled on SDI 1, SDI 3 and 4 are automatically turned off. When UHD mode is enabled on SDI 2, SDI 5 and 6 are turned off. Refer to "**UHD Mode Configurations**" and "**Enabling UHD Mode for SDI 1 and/or SDI 2**" for details.

Network Tab

The Global > Network tab provides options for configuring the network settings of the CONTROL and MEDIA ports for the OSG-8971. Note that each port is configured independently.

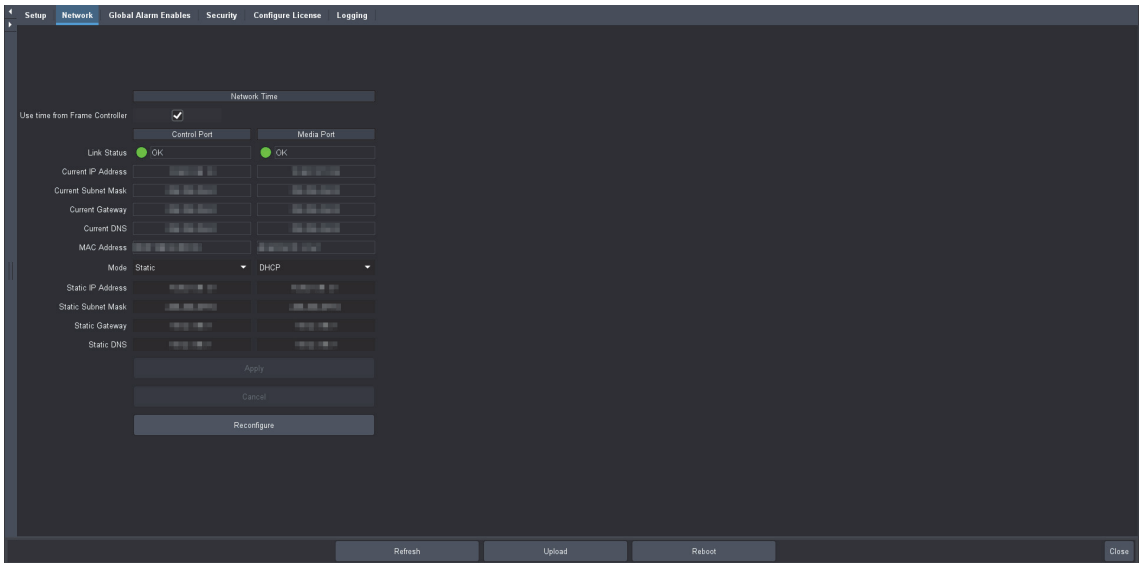


Figure 17 Example of the Global > Network Tab

Table 11 summarizes the menus and read-only fields displayed in the Network tab.

Table 11 Global > Network

Item	Parameters	Description
Network Time		
Use Time from Network Controller	Selected	Enables the OSG-8971 to use the time data reported by the MFC-OG3-N or MFC-OGX-N that is installed in the same openGear frame
	Cleared	

Table 11 Global > Network

Item	Parameters	Description
Control Port		
Link Status (read-only)	OK (Green)	The OSG-8971 is communicating on the network via the MFC-OG3-N or MFC-OGX-N
	Invalid Subnet Mask (Yellow)	The Current Subnet Mask value is set incorrectly or is invalid within your network
	Apply/Cancel Changes (Yellow)	One or more setting on this tab was changed but the Apply button was not selected
	Link Down (Red)	The link for the MFC-OG3-N or MFC-OGX-N is invalid
Current IP Address (read-only)	#.#.#.#	Indicates the IP address currently assigned to the OSG-8971 via the MFC-OG3-N or MFC-OGX-N
Current Subnet Mask (read-only)	#.#.#.#	Indicates the subnet mask assigned to the OSG-8971 via the MFC-OG3-N or MFC-OGX-N
Current Gateway (read-only)	#.#.#.#	Indicates the gateway for communications outside of the local area network (LAN)
MAC Address (read-only)	#	Indicates the MAC address currently assigned to the OSG-8971 via the MFC-OG3-N or MFC-OGX-N
Mode	Static	The user manually assigns the network settings for the OSG-8971
	DHCP*	Automates the assignment of network settings for the OSG-8971
Static IP Address	#	The IP address for the OSG-8971 that the user manually assigned
Subnet Mask	#	The Subnet Mask for the OSG-8971 that the user manually assigned
Static Gateway	#.#.#.#	The Gateway for the OSG-8971 that the user manually assigned
Media Port		
Link Status (read-only)	OK (Green)	The Media port on the OSG-8971 rear module is communicating on the network
	Invalid Subnet Mask (Yellow)	The Current Subnet Mask value is set incorrectly or is invalid within your network
	Apply/Cancel Changes (Yellow)	One or more setting on this tab was changed but the Apply button was not selected
Link Status (read-only)	Link Down (Red)	The link for the Media port is invalid
Current IP Address (read-only)	#.#.#.#	Indicates the IP address currently assigned to the Media Port on the OSG-8971 rear module

Table 11 Global > Network

Item	Parameters	Description
Current Subnet Mask (read-only)	#.#.#.#	Indicates the subnet mask for the Media port on the OSG-8971 rear module
Current Gateway (read-only)	#.#.#.#	Indicates the gateway for communications outside of the local area network (LAN)
MAC Address (read-only)	#	Indicates the MAC address currently assigned to the Media port on the OSG-8971 rear module
Mode	Static	The user manually supplies the network settings for the Media port on the OSG-8971 rear module
	DHCP*	Automates the assignment of network settings for the Media port on the OSG-8971 rear module
Static IP Address	#	The IP address for the Media port on the OSG-8971 rear module that the user manually assigned
Subnet Mask	#	The Subnet Mask for the Media port on the OSG-8971 rear module that the user manually assigned
Static Gateway	#.#.#.#	The Gateway for the Media port on the OSG-8971 rear module that the user manually assigned
Reconfigure	Select this button to re-apply the current network settings. For example, if the OSG-8971could not be configured with an IP address via DHCP, then clicking this button causes a new attempt to acquire the IP address.	

Global Alarm Enables Tab

The Global Alarm Enables tab provides monitoring options for the OSG-8971.

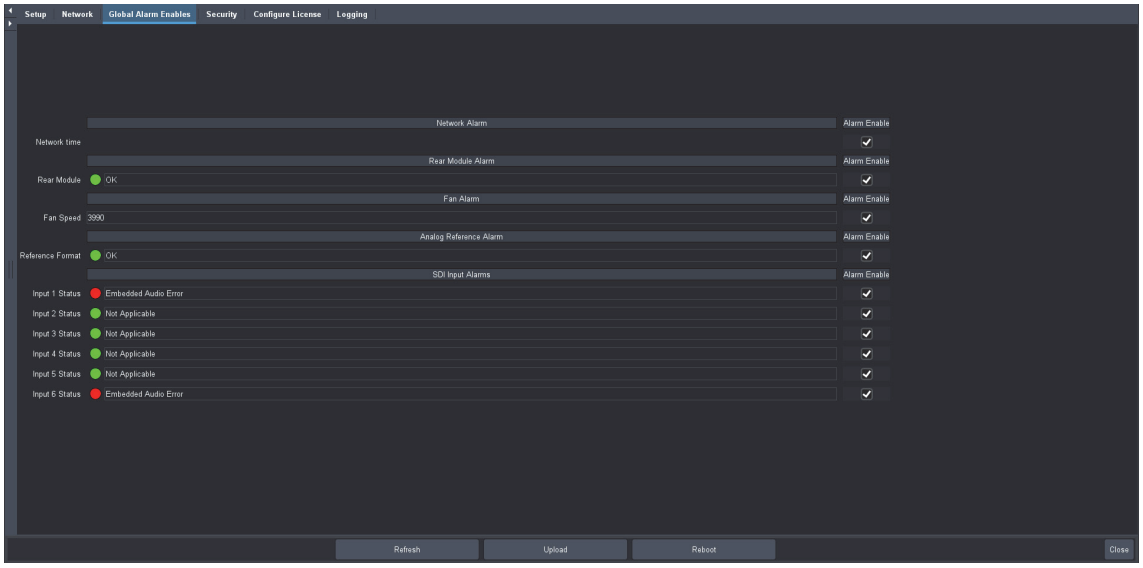


Figure 18 Example of the Global > Global Alarm Enables Tab

Table 12 summarizes the options displayed in the Global Alarm Enables tab.

Table 12 Global > Global Alarm Enables Tab

Item	Parameters	Description
Network Alarm		
Network time (read-only)	#	Displays the time data transmitted by the MFC-OG3-N or MFC-OGX-N in the same openGear frame. Requires that the Global > Network > Use time from Frame Controller box is selected on the OSG-8971.
Alarm Enable	Selected*	The OSG-8971 reports the NTP time as provided by the MFC-OG3-N or MFC-OGX-N
	Cleared	Disables this alarm
Rear Module Alarm		
Status (read-only)	OK (Green)	A supported rear module is installed with the OSG-8971
	Alarm Suppressed (Green)	The Alarm Enable box is cleared. The status of the rear module will not be reported.
	Incompat Rear Module (Red)	The rear module installed is not supported by the OSG-8971. Refer to "**Supported Rear Modules**".
Alarm Enable	Selected*	The Global > Product > Rear Module Status field reports when a rear module is not compatible with the card
	Cleared	Disables this alarm
Fan Alarm		
Fan Speed (read-only)	#	Reports the speed (rpm) of the fan on the board
Alarm Enable	Selected*	The OSG-8971 reports the detected speed of the fan installed on the board
	Cleared	Disables this alarm
Analog Reference Alarm		
Reference Format (read-only)	OK (Green)	Indicates the detected reference format is supported
	Alarm Suppressed (Green)	The Alarm Enable box is cleared. The status of the reference signal will not be reported.
	Unlocked (Red)	A reference signal is detected, but the card is not locked to it
	Unsupported (Red)	A reference signal is detected, but the format is not supported by the OSG-8971
	Incompatible (Red)	A reference signal is detected but the format is incompatible with the current output mode of the card

Table 12 Global > Global Alarm Enables Tab

Item	Parameters	Description
Alarm Enable	Selected*	The Global > Signal > Analog Reference Status field reports when there is a loss of reference signal
	Cleared	Disables this alarm
SDI Input Alarms		
Input # Status (read-only)	This field duplicates the information reported in the Input Status field.	
Alarm Enable	Selected*	OSG-8971 reports a loss of the specified input or if the format is incompatible for the specified input
	Cleared	Disables this alarm

Security Tab

Table 13 summarizes the options displayed in the Security tab.

Table 13 Global > Security Tab

Item	Parameters	Description
Security Configuration		
SSH Login	Disable*	Disables the ability for a user to log onto the OSG-8971 via a SSH server
	Enable	The OSG-8971 can be accessed via a secure channel by an SSH server. This should only be selected if directed to do so by Ross Video Technical Support.

Configure Licenses Tab

Table 14 summarizes the read-only information displayed in the Configure Licenses tab.

Table 14 Configure Licenses Tab

Item	Parameters	Description
Base Product Type	OSG-8971	
Feature	<license name>	Specifies the license(s) available for your card
Request Code	#	This character string is used to obtain a license key
Key	#	Specifies the license key that was provided to enable the licensed feature
	Licensed	The license key is valid and the licensed feature is enabled

Logging Tab

Table 15 summarizes the read-only information displayed in the Logging tab.

Table 15 Global > Logging Tab

Item	Parameters	Description
Logging Level	Filters the events the System Log captures	
Remote Logging	#.#.#.#	Specifies the IP address for the external device that is logging the communication activity for the OSG-8971
System Log	Reports the OSG-8971 events since the last time the log was cleared	

OSG-8971 Interface

The OSG-8971 interface provides options for configuring and monitoring the channels for your card.

Decode Tab

The OSG-8971 > Decode tab displays at least one SDI has its I/O Setup set to Output in the Global > Setup tab. The Decode options are organized into the sub-tabs that display in the bottom toolbar. This section outlines the sub-tabs starting with the leftmost bottom tab.

For More Information on...

- setting the I/O Setup options for the SDI BNCs, refer to "**Assigning a Function to an SDI**".

Network Streams Sub-tab

The Network Streams tab is organized into two panes. (**Figure 19**) The left pane lists the available network streams that are configured for decoding. Selecting a stream from the list displays the settings for that stream in the right pane.

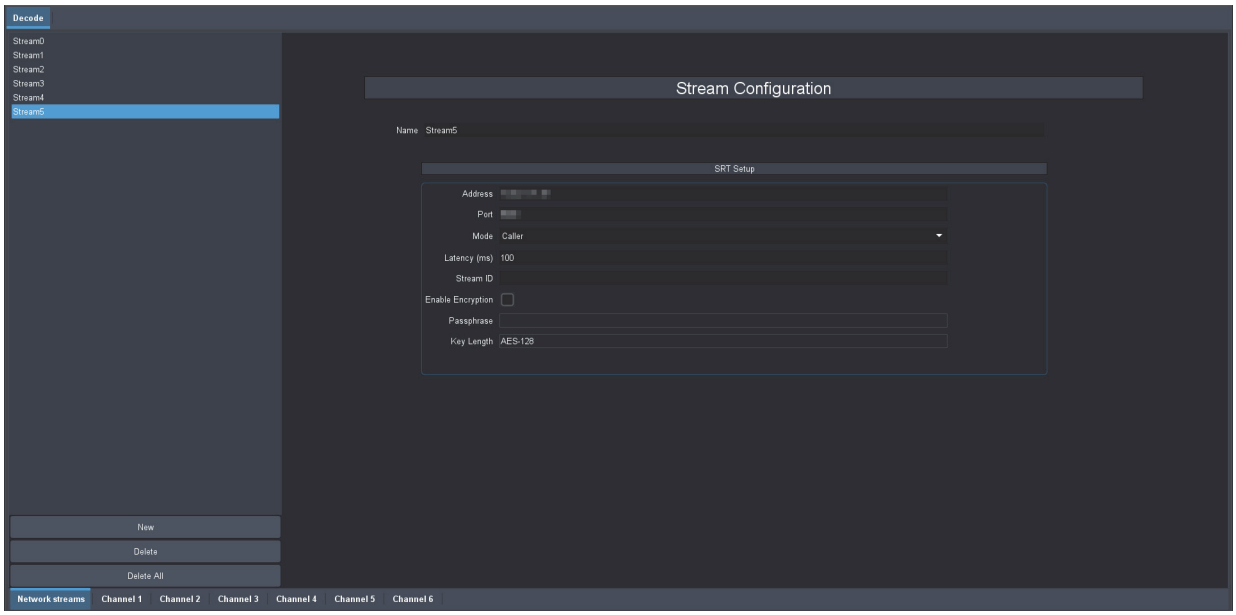


Figure 19 Example of an OSG-8971 > Decode > Network Streams Sub-tab

Table 16 summarizes the information displayed in the leftmost table of the Decode > Network Streams sub-tab.

Table 16 OSG-8971 Interface — Decode > Network Streams Table

Item	Parameters	Description
Stream name (read-only)	This area lists the configured decoder streams in the database	
New	Displays the Stream Configuration options to define a new decoder stream	
Delete	Select this button to remove the selected decoder stream from the database	
Delete All	Removes all decoder streams from the database	

Table 17 summarizes the options displayed in the Decode > Network Streams rightmost pane.

Table 17 OSG-8971 Interface — Decode > Network Streams

Item	Parameters	Description
Stream Configuration		
Name	<text>	Assigns a unique identifier to the stream. This name is used to identify the stream in the OSG-8971 interfaces.
SRT Setup		
Address	#.#.#.#	Specifies the Multicast IP address or host name for the network connection that provides the stream
Port	#	• If the **Mode** is set to Caller, use the **Port** menu to specify the Host Port on your network that the peer SRT Listener device is monitoring. • If the **Mode** is set to Listener, use the **Port** menu to specify the local UDP port the OSG-8971 will use to receive the network stream data from the peer device assigned as the Caller.
Mode	Caller	The OSG-8971 operates as an SRT transmitter for decoding the media stream
	Listener	The OSG-8971 operates as an SRT receiver for a decoded media stream
	Rendezvous	The OSG-8971 operates within a network with a firewall. The SRT end points auto-negotiate.
Latency (ms)	#	Defines the minimum receiver buffering delay (in milliseconds) before delivering an SRT data packet from a receiving SRT socket to the stream decoder

Table 17 OSG-8971 Interface — Decode > Network Streams

Item	Parameters	Description
Enable Encryption	Selected	Enables data encryption in transit using AES. The Password and Key Length fields are now editable.
	Cleared	Disables data encryption
Passphrase[a]	<text>	Determines the password that must be the same for both peers, or the connection will be rejected by the receiver and fail. The password must be 10-80 characters long.
Key Length[a]	Default	Defaults key length to 128-bit to encrypt the data
	AES-128	Uses 128-bit key length to encrypt the data
	AES-192	Uses 192-bit key length to encrypt the data
	AES-256	Uses 256-bit key length to encrypt the data

a. Displays only when the Enable Encryption box is selected.

Channel Sub-tabs

Each Channel sub-tab is divided into two panes: status (left), and configuration (right).

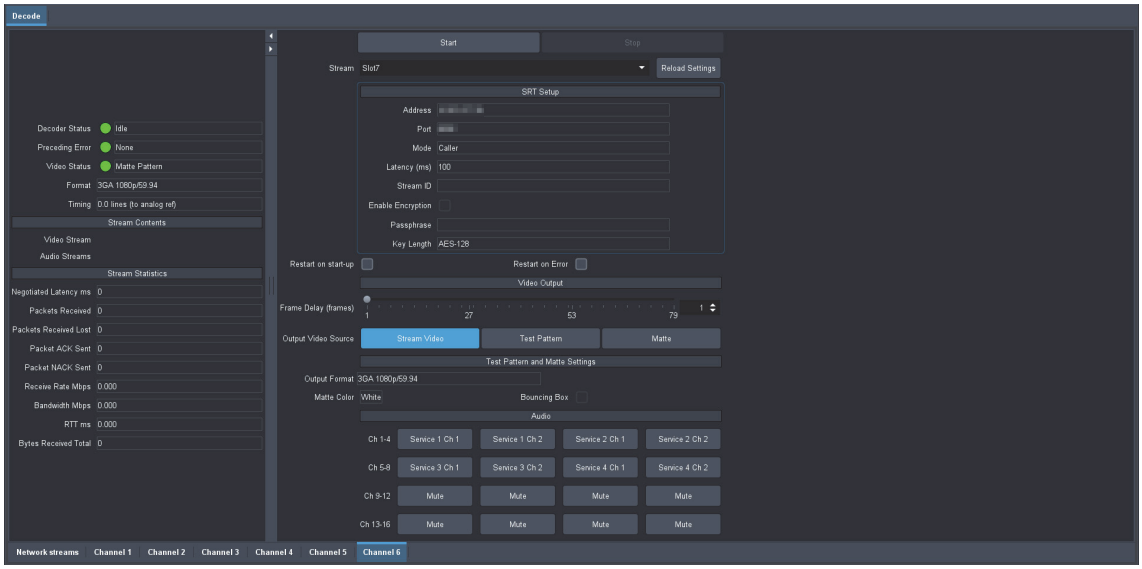


Figure 20 Example of an OSG-8971 > Decode > Channel 6 Sub-tab

Table 18 summarizes the options displayed in the left pane of each Decode > Channel # sub-tab.

Table 18 OSG-8971 Interface — Decode > Channel # > Status

Item	Parameters	Description
Decoder Status	OK (Green)	A valid link is established using the current settings
	N/A (Green)	The SRT Setup settings are not configured for this channel
	Not Present (Yellow)	A valid link was previously established but is no longer detected
	Link Down (Red)	The link at the specified IP address and port is invalid (fails)
Preceding Error	None (Green)	Errors were not encountered during the last decode session on this channel
	Network Error (Red)	Indicates that an invalid network connection is occurring
Video Status	OK (Green)	No errors are detected on the video signal of the specific input
	Unsupported Format (Yellow)	An input signal is detected but the video is not supported by the card
	Incompatible Video (Yellow)	An input signal is detected but its format is not compatible with the output video format
	Not time to Ref (Yellow)	An input signal is detected but the detected reference signal is incompatible with this input signal
	No Signal (Red)	Indicates one of the following issues is occurring: • the input signal is not detected • the system frame rate does not match the input frame rate
Format	#	Indicates the video format of the input signal
Timing	# lines (to analog ref)	Indicates the timing offset between the video input signal and the reference signal. The unit of measure is in respect to the input video format.
Stream Contents		
Video Stream	The current stream includes a video signal	
Audio Streams	The current stream includes audio signals	
Stream Statistics		
Negotiated Latency	# ms	Defines the minimum receiver buffering delay before delivering an SRT data packet from a receiving SRT socket to the stream decoder
Packets Received	#	Reports the total number of packets received on the network stream

Table 18 OSG-8971 Interface — Decode > Channel # > Status

Item	Parameters	Description
Packets Received Lost	#	Reports the total number of error packets received on the network stream
Packet ACK Sent	#	Reports the number of ACK packets sent on the network stream
Packet NACK Sent	#	Reports the number of ignored ACK packets sent on the network stream
Receive Rate (Mbps)	#	Reports the packets received on the network stream and forwarded to the processor on the specified SDI
Bandwidth (Mbps)	# Mbps	Reports the amount of data the OSG-8971 is currently receiving on the MEDIA port via this network stream
RTT (ms)	#	Reports the detected latency on your network (the number of milliseconds that passed from when the OSG-8971sent a network request was sent and an acknowledgment was received)
Bytes Received Total	#	Reports the amount of data the OSG-8971 received on the MEDIA port via this network stream since the **Start** button was selected

Table 19 summarizes the options displayed in the right pane of each Decode > Channel # sub-tab.

Table 19 OSG-8971 Interface — Decode > Channel #

Item	Parameters	Description
Start	The stream channel is now active. The OSG-8971 connects to the stream using the credentials set in the Decode > Network Streams tab.	
Stop	The stream channel is inactive. The OSG-8971 stops decoding data on this channel.	
Stream	#	Specifies a network stream for the channel. The network stream is defined using the options in the Decode > Network Streams sub-tab.
Reload Settings	Updates the list of streams in the Stream menu	
SRT Setup		
Address (read-only)	#	Indicates the IP address or host name for the stream assigned to this decode channel
Port (read-only)	#	Indicates the communications port for the stream assigned to this decode channel
Mode (read-only)	#	Indicates the if the stream assigned to this decode channel is a Caller or Listener
Latency (ms) (read-only)	#	Indicates the assigned receiver buffering delay

Table 19 OSG-8971 Interface — Decode > Channel #

Item	Parameters	Description
Stream ID	#	Indicates the unique identifier for the stream when the Mode is set to Caller. When the Mode is set to Listener, this field is not applicable.
Enable Encryption	Selected	Enables data encryption in transit using AES. The Password and Key Length fields are now editable.
	Cleared	Disables data encryption
Passphrase[a]	<text>	Determines the password that must be the same for both peers, or the connection will be rejected by the receiver and fail. The password must be 10-80 characters long.
Key Length[a]	Default	Defaults key length to 128-bit to encrypt the data
	AES-128	Uses 128-bit key length to encrypt the data
	AES-192	Uses 192-bit key length to encrypt the data
	AES-256	Uses 256-bit key length to encrypt the data
Restart on start-up	Selected	This decode channel will automatically start after a reboot or once the OSG-8971 comes online after a loss of power
	Cleared	Disables this feature
Restart on Error	Selected	This decode channel will automatically start after an error condition is detected
	Cleared	Disables this feature
Video Output		
Frame Delay (frames)	#	Adjusts the relative position of the video output start of frame as an offset to the reference.
Output Video Source	Stream Video	Assigns the decoded SRT stream as the output
	Test Pattern	Specifies that a SMPTE bars test pattern will replace all of the output picture (but not the HANC and VANC)
	Matte	Specifies that the output is a solid color signal as determined by the Matte Color setting. The matte is a full raster signal.
Test Pattern and Matte Settings		
Output Format	#	Specifies the video format for the test pattern output
Matte Color	#	Specifies the color of the Matte Pattern when Output Video Source is set to Matte

Table 19 OSG-8971 Interface — Decode > Channel #

Item	Parameters	Description
Bouncing Box	Selected	An overlay in the shape of a box, filled with the specified Matte Color, moves across the screen in a pre-determined pattern
	Cleared	Disables this feature
Audio > Ch #		
Service # Ch #	Enables you to customize the audio mapping for the decoded channel	
Mute	Mutes the input source for the specified channel that is inserted into the embedded group (if present)	

a. Displays only when the Enable Encryption box is selected.

Encode Tab

The Encode tab displays a sub-tab for each channel that is configured to encode data. Each channel sub-tab is organized into two areas. The left area displays the read-only fields that report the status, format, and timing for the channel. The right area displays the options for configuring and managing the specific channel, and includes the Input Status read-only fields.

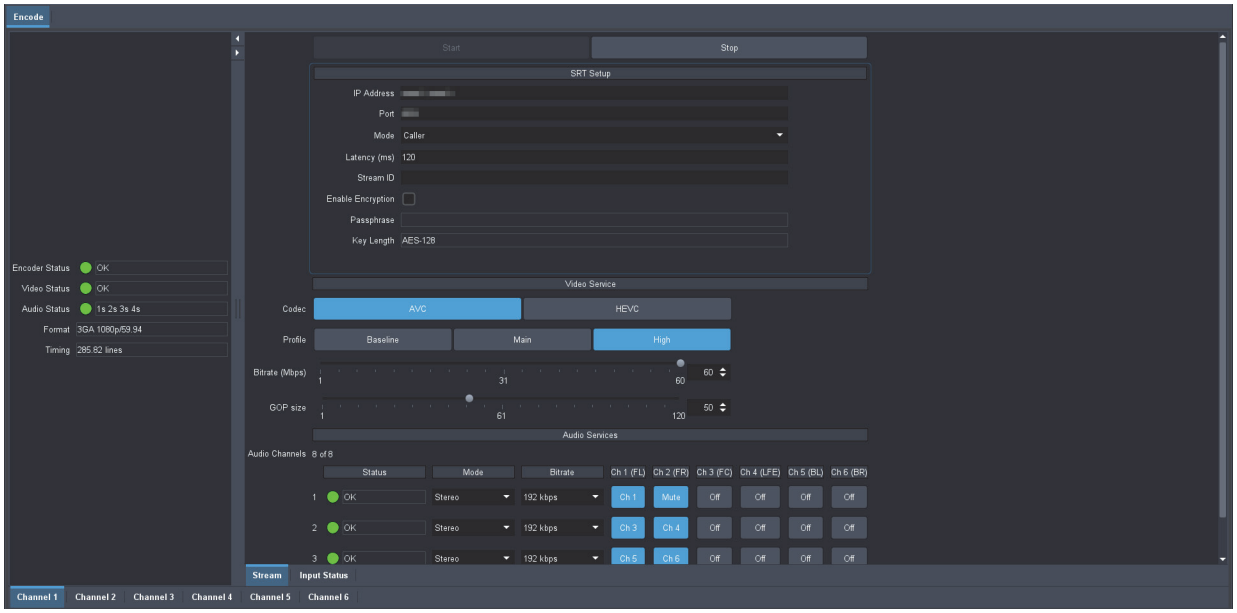


Figure 21 Example of an OSG-8971 > Encode > Channel 1 Interface in DashBoard

Table 20 summarizes the read-only information displayed in the left pane of each Encode > Channel sub-tab.

Table 20 OSG-8971 Interface — Encode > Channel # > Status

Item	Parameters	Description
Encoder Status	OK (Green)	A valid link is established using the current settings
	N/A (Green)	The SRT Setup settings are not configured for this channel
	Not Present (Yellow)	A valid link was previously established but is no longer detected
	Link Down (Red)	The link at the specified IP address and port is invalid (fails)
Video Status	OK (Green)	No errors are detected on the video signal of the specific SDI input
	Alarm suppressed (Green)	The OSG-8971 is not monitoring the input signal
	Unsupported Format (Yellow)	An input signal is detected on the specific SDI but the video format is not supported by the card
	Incompatible Video (Yellow)	An input signal is detected on the specific SDI but its format is not compatible with the output video format
	Not time to Ref (Yellow)	An input signal is detected on the specific SDI but the detected reference signal is incompatible with this input signal
Video Status	No Signal (Red)	Indicates one of the following issues is occurring: • the SDI input signal is not detected • the system frame rate does not match the input frame rate
Audio Status	#a #x #s #s	Indicates the input audio status where: • # represents the audio group (e.g. 1, 2) • a represents an async audio group • x represents a missing audio group • s represents a sync audio
Format	#	Indicates the output video format
	NA: Port directed to input	The SDI port is configured as an Output via the Setup > Encode/Decode menu
	Invalid Selection	The output video format is not supported or does not match the reference format
Timing	#	Indicates the timing offset between the video input signal and the reference signal. The unit of measure is lines and pixels with respect to the input video format.

Stream Sub-tab

Each Encode channel tab includes two sub-tabs. The Stream sub-tab provides options for defining the network stream for the selected Encode channel.

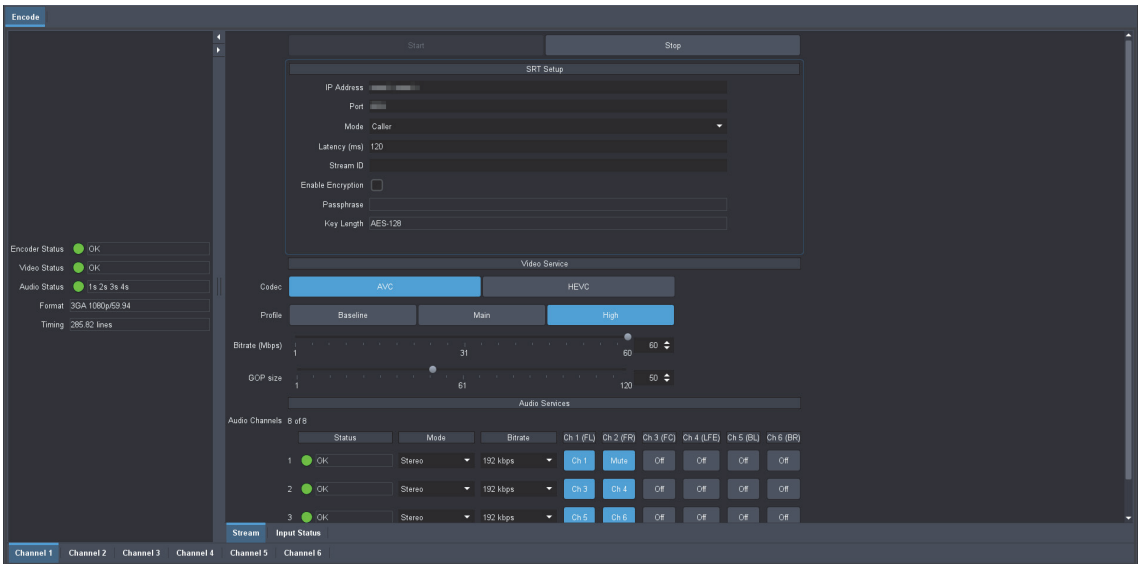


Figure 22 Example of an Encode > Channel 1 > Stream Sub-tab

Table 21 summarizes the options displayed in each Channel > Stream sub-tab.

Table 21 OSG-8971 Interface — Encode > Channel # > Stream

Item	Parameters	Description
Start	The stream channel is now active. The OSG-8971 connects to the stream using the credentials set in the Decode > Network Streams tab.	
Stop	The stream channel is inactive. The OSG-8971 stops encoding data on this channel.	
SRT Setup		
IP Address	#.#.#.#	Specifies the Multicast IP address for the host network connection that provides the stream
Port	#	Specifies the remote port that the OSG-8971 will try to connect to. • When the Mode is set to Caller, this field indicates the host and port used • When the Mode is set to Listener, this field displays and indicates the port used

Table 21 OSG-8971 Interface — Encode > Channel # > Stream

Item	Parameters	Description
Mode	Listener	The OSG-8971 operates as an SRT client for encoding the specified media stream. When in Listener mode, the OSG-8971 is listening on a port to establish a connection.
	Caller	The OSG-8971 operates as an SRT server for encoding the specified media stream. When in Caller mode, the OSG-8971 sends out a message to the IP address and port to connect.
	Rendezvous	The OSG-8971 operates within a network with a firewall. The SRT end points auto-negotiate the port settings.
Latency (ms)	#	Defines the minimum receiver buffering delay before transmitting an SRT data packet
Stream ID	#	Assigns a unique identifier to the stream when the Mode is set to Caller. When the Mode is set to Listener, this field is not applicable.
Enable Encryption	Selected	Enables data encryption in transit using AES. The Password and Key Length fields are now editable.
	Cleared	Disables data encryption
Passphrase[a]	<text>	Determines the password that must be the same for both peers, or the connection will be rejected by the receiver and fail. The password must be 10-80 characters long.
Key Length[b]	Default	Defaults key length to 128-bit to encrypt the data
	AES-128	Uses 128-bit key length to encrypt the data
	AES-192	Uses 192-bit key length to encrypt the data
	AES-256	Uses 256-bit key length to encrypt the data
Video Service		
Codec	AVC	Uses the H.264 (MPEG-4 Part 10) codec to encode the stream channel
	HEVC	Uses the H.265 (MPEG-H Part 2) codec to encode the stream channel

Table 21 OSG-8971 Interface — Encode > Channel # > Stream

Item	Parameters	Description
Profile	Baseline	For use in low powered systems. Uses a compression ratio of approximately 1000:1 (compresses a 1Gbsp stream to 1Mbps).
	Main	Sets the H264 encoding profile to Main
	High	For use with broadcast or storage formats. Uses a compression ratio of 2000:1 (compresses a 2Gbsp stream to 1Mbps).
GOP size	#	Specifies the size of the Group of Pictures (GOP) structure in the encoded channel
Audio Services > Group #		
Audio Channels (read-only)	x of y	Reports the number of audio channels allocated where: • x represents the number of channels in use • y represents the total number of available audio channels
Status (read-only)	OK (Green)	Displays the status of the specified Group # channel # input
	No Input (Red)	
	Async (Red)	
Mode	None	Specifies the type of audio data and number of channels to include in the encoded stream
	Mono	
	Stereo	
	5.1 Surround	
Bitrate	#	Sets the upstream data transfer rate; the number of bytes received in the last field
Channel #	On	The channel is embedded in the encoded stream
	Off	The channel is not embedded in the encoded stream
	Mute	• Mutes the specified channel • The channel is no longer embedded

a. Displays only when the Enable Encryption box is selected.
b. Displays only when the Enable Encryption box is selected.

Input Status Sub-tab

Table 21 summarizes the options displayed in each Channel > Input Status sub-tab.

Table 22 OSG-8971 Interface — Encode > Channel # > Input Status

Item	Parameters	Description
Video Format (read-only)	#	Indicates the detected SDI input format and bitrate
Status (read-only)	OK (Green)	No errors are detected on the video signal of the specific encoder channel
	Alarm suppressed (Green)	The OSG-8971 is not monitoring the input signal
	Unsupported Format (Yellow)	An SDI input signal is detected but the video is not supported by the OSG-8971
	Not time to Ref (Yellow)	An SDI input signal is detected but the reference signal is incompatible with this input signal
	No Signal (Red)	Indicates one of the following issues is occurring: • the SDI input signal is not detected • the system frame rate does not match the input frame rate
Alarm Enable	Selected*	An alarm is reported during a loss of the specified input or the format is incompatible for the specified input
	Cleared	Disables this alarm
CRC Errors (read-only)	#	Displays the count of the CRC errors on the video input. This counter is reset on loss of video, or by user request. The counter is non-latching, and the count can roll over the counter.
Reset CRC Errors	Resets the CRC Errors field	
Embedded Audio Status > Group #		
Channel # (read-only)	PCM	The channel is PCM audio
	Non-PCM	The channel is non-PCM audio
Async Alarm	Selected	An alarm is reported when the embedded audio is incompatible
	Cleared	Disables the alarm
Presence Alarm	Selected	An alarm is reported when the embedded audio is not present
	Cleared	Disables the alarm

Technical Specifications

This chapter provides technical information for the OSG-8971.

✶ Specifications are subject to change without notice.

Supported Rear Modules

- R4-8971 (8322AR-331) rear module

Supported Video Formats

Encoders and Decoders

Table 23 Supported Video Formats — Encoding and Decoding

Video Format
HD Formats
720p 50Hz
720p 59.94Hz
1080p 50Hz
1080p 59.94Hz
UHD Formats[a]
2160p 50Hz
2160p 59.94Hz

a.An OSG-8971+UHD license must be enabled.

Test Patterns

Table 24 Supported Video Formats — Test Patterns

Resolution (lines)	Frame Rate (Hz)
720p	50
	59.94
	60
1080i	50
	59.94
	60

Table 24 Supported Video Formats — Test Patterns

Resolution (lines)	Frame Rate (Hz)
1080p	23.98
	24
	25
	29.97
	50
	59.94
	60
1080pSF	23.98
	24
2160p[a]	23.98
	24
	25
	29.97
	50
	59.94
	60

a.An OSG-8971+UHD license must be enabled.

SDI Specifications

Table 25 Technical Specifications — SDI Ports

Item	Specifications
Number of Ports	If the UHD Mode is not licensed: • up to 6 x 3G / 1.5G If the UHD Mode is licensed[a]: • up to 6 x 3G / 1.5G • 2 x 12G
Connector Type	Bi-directional HD-BNC
Input(s)	
Standards Accommodated	1.485Gbps Component, SMPTE 292M
	2.97Gbps Component, SMPTE 424M
	5.94Gbps Component, SMPTE ST-2081
	11.88Gbps Component, SMPTE ST-2082
Impedance	75ohms
Return Loss	>15dB to 1.5GHz
	>10dB to 3GHz
	>7dB to 6GHz
	>4dB to 12GHz

Table 25 Technical Specifications — SDI Ports

Item	Specifications	
Equalization	200m @ 1.485Gbps	
	100m @ 2.97Gbps	
	70m @ 5.94Gbps (SDI IN 1 and SDI IN 2 only)	
	55m @ 11.88Gbps (SDI IN 1 and SDI IN 2 only)	
Output(s)		
Standards Accommodated	1.485Gbps Component, SMPTE 292M	
	2.97Gbps Component, SMPTE 424M	
	5.94Gbps Component, SMPTE ST-2081	
	11.88Gbps Component, SMPTE ST-2082	
Impedance	75ohms	
Return Loss	>15dB to 1.5GHz	
	>10dB to 3GHz	
	>7dB to 6GHz	
	>4dB to 12GHz	
Signal Level	±800mV 10%	
DC Offset	0V +/- 50mV	
Rise and Fall Time (20-80%)	1.485Gbps:	<270ps, <100ps difference
	2.97Gbps:	<135ps, <50ps difference
	5.94Gbps:	<80ps, <30ps difference
	11.88Gbps:	<45ps, <18ps difference
Jitter	1.485Gbps:	<1.0UI 10Hz-100kHz, <0.2UI above 100kHz
	2.97Gbps:	<2.0UI 10Hz-100kHz, <0.3UI above 100kHz
	5.94Gbps:	<2.0UI 10Hz-100kHz, <0.3UI above 100kHz
	11.88Gbps:	<2.0UI 10Hz-100kHz, <0.3UI above 100kHz, band limit @1188MHz
Overshoot	<10%	

a. UHD support requires an OSG-8971+UHD license to be enabled.

MEDIA Port Specifications

Table 26 Technical Specifications — MEDIA Port

Item	Specifications
Number of Ports	1

Table 26 Technical Specifications — MEDIA Port

Item	Specifications
Standards Accommodated	10/100/1000BASE-T
Connector Type	RJ45 (1GbE)

Environment

Table 27 Technical Specifications — Environment

Item	Specifications
Max. Ambient Temperature	40°C (104°F)

Power

Table 28 Technical Specifications — Power

Item	Specifications
Max. Power Consumption	40W

Service Information

Routine maintenance to this product is not required. In the event of problems with your card, the following basic troubleshooting checklist may help identify the source of the problem. If the frame still does not appear to be working properly after checking all possible causes, please contact your openGear products distributor, or the Technical Support department at the numbers listed under the "**Contacting Ross Video Technical Support**".

1. **Visual Review** — Performing a quick visual check may reveal many problems, such as connectors not properly seated or loose cables. Check the card, the frame, and any associated peripheral equipment for signs of trouble.
2. **Power Check** — Inspect the power indicator LED on the distribution frame front panel for the presence of power. If the power LED is not illuminated, verify that the power cable is connected to a power source and that power is available at the power main. Confirm that the power supplies are fully seated in their slots. If the power LED is still not illuminated, replace the power supply with one that is verified to work.
3. **Input Signal Status** — Verify that source equipment is operating correctly and that a valid signal is being supplied.
4. **Output Signal Path** — Verify that destination equipment is operating correctly and receiving a valid signal.
5. **Unit Exchange** — Exchanging a suspect unit with a unit that is known to be working correctly is an efficient method for localizing problems to individual units.

Reloading the Software on the Card

In the unlikely event of a complete card failure, you may be instructed by a Ross Technical Support specialist to perform a complete software reload on the card.

To reload the software on the card

1. Eject the card from the frame.
2. Press and hold the **Bootload** button, while re-inserting the card into the frame.
3. Release the button.
   - If a new software load is not sent to the card within 60 seconds, the card will attempt to re-start with its last operational software load.
   - Software loads can be sent to the card via the connection on the rear of the frame.

Warranty and Repair Policy

The OSG-8971 is warranted to be free of any defect with respect to performance, quality, reliability, and workmanship for a period of FIVE (5) years from the date of shipment from our factory. In the event that your card proves to be defective in any way during this warranty period, Ross Video Limited reserves the right to repair or replace this piece of equipment with a unit of equal or superior performance characteristics.

Should you find that this card has failed after your warranty period has expired, we will repair your defective product should suitable replacement components be available. You, the owner, will bear any labor and/or part costs incurred in the repair or refurbishment of said equipment beyond the FIVE (5) year warranty period.

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In Case of Problems

Should any problem arise with your card, please contact the Ross Video Technical Support Department. (Contact information is supplied at the end of this publication.)

A Return Material Authorization number (RMA) will be issued to you, as well as specific shipping instructions, should you wish our factory to repair your card. If required, a temporary replacement frame will be made available at a nominal charge. Any shipping costs incurred will be the responsibility of you, the customer. All products shipped to you from Ross Video Limited will be shipped collect.

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zlib

Glossary

The following terms are used throughout this guide:

AVC — refers to the H.264 or MPEG-4 Part 10 codec.

CBR — Constant Bit Rate

DHCP — Dynamic Host Configuration Protocol

GOP — Group of Pictures

HEVC — High Efficiency Video Coding. Refers to the H.265 or MPEG-H Part 2 codec.

NTP — Network Time Protocol

Operator and **User** — the person who uses the OSG-8971.

SRT — Secure Reliable Transport protocol

Tree View — the area located to the left pane of the DashBoard window. This area displays devices in a tree structure.

URI — Uniform Resource Identifier

VBR — Variable Bit Rate

WebRTC — Web Real-Time Communication