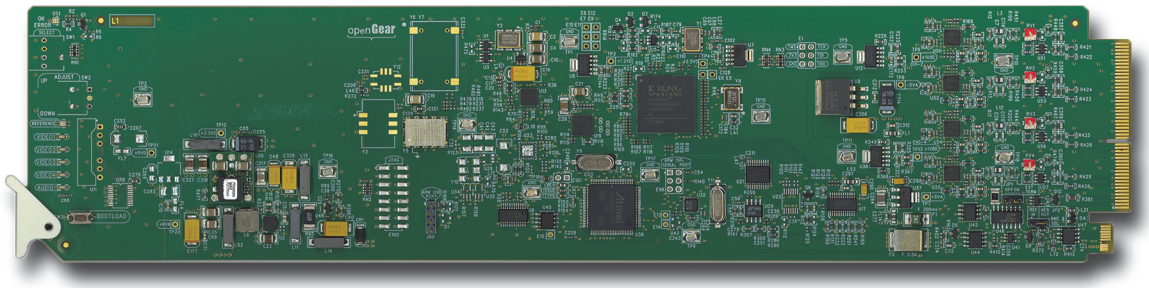
openGear

SPG-8260 Series

Sync Pulse Generators

User Manual



ROSS

Thank You for Choosing Ross

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
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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.)*

SPG-8260 · User Manual

- Ross Part Number: 8260DR-004-04
- Release Date: January 18, 2018.

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.

Notice

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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 under the "**Contact Us**" section 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.

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Contents

Introduction

In This Chapter

This chapter contains the following sections:

A Word of Thanks

Congratulations on choosing an openGear SPG-8260 series Sync Pulse Generator. Thank you for joining the group of worldwide satisfied Ross Video customers!

Should you have a question pertaining to the installation or operation of your card, please contact us at the numbers listed on the back cover of this manual. Our technical support staff is always available for consultation, training, or service.

Overview

The SPG-8260 series generates four pairs of outputs with each pair independently programmed to be either a tri-level sync or a composite signal. Each pair of outputs can be independently delayed relative to the selected incoming reference or to each other when using an internal reference. The delay is in increments of the output's interface sampling frequency (74.25MHz, 74.25/1.001MHz or 13.5MHz) up to one frame of video.

The each card is able to lock to one of the two frame references or the external reference input on the rear module.

Features

The following features make the SPG-8260 series the ideal Sync Pulse Generator:

- AES interfaces conform to SMPTE 276M, and AES-3id-2001
- HD interfaces conform to SMPTE 274M and SMPTE 296M
- SD interfaces conform to SMPTE-170M (NTSC) and PAL-B standards
- Generates four pairs of outputs
- Each pair of outputs can be independently timed (delayed) relative to the incoming reference
- Composite outputs can be black or SMPTE color bars
- Tri-level sync output format is selectable from the following formats:
  - 1080i 60/59.94/50 Hz
  - 720p 60/59.94/50/30/29.97/25/24/23.98 Hz
  - 1080p 30/29.97/25/24/23.98 Hz
  - 1080pSF 24/23.98 Hz
- *SPG-8260 only:* Generates an AES Reference signal or a Word Clock output (non-TTL)
- *SPG-8260 only:* Tone option for AES outputs
- *SPG-8260-W only:* Generates a Word Clock output (TTL compatible)
- Reports status and configuration remotely via DashBoard
- Fits openGear frames
- 5-year transferable warranty

SPG-8260 Functional Block Diagrams

Figure 1.1 outlines the workflow of the SPG-8260 when using the 8310AR-030 or 8320AR-030 rear modules.

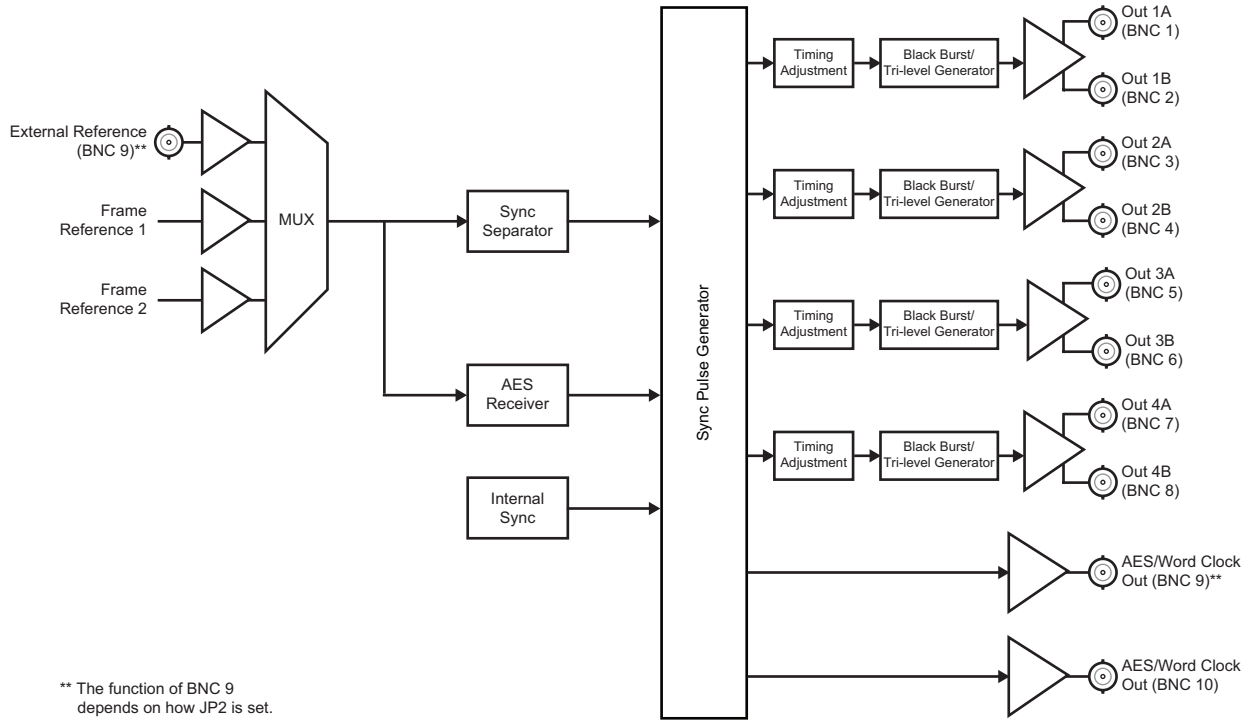


Figure 1.1 *SPG-8260 with a 8320AR-030 Rear Module — Simplified Block Diagram*

Figure 1.2 outlines the workflow of the SPG-8260 when using the 8320AR-031 rear module.

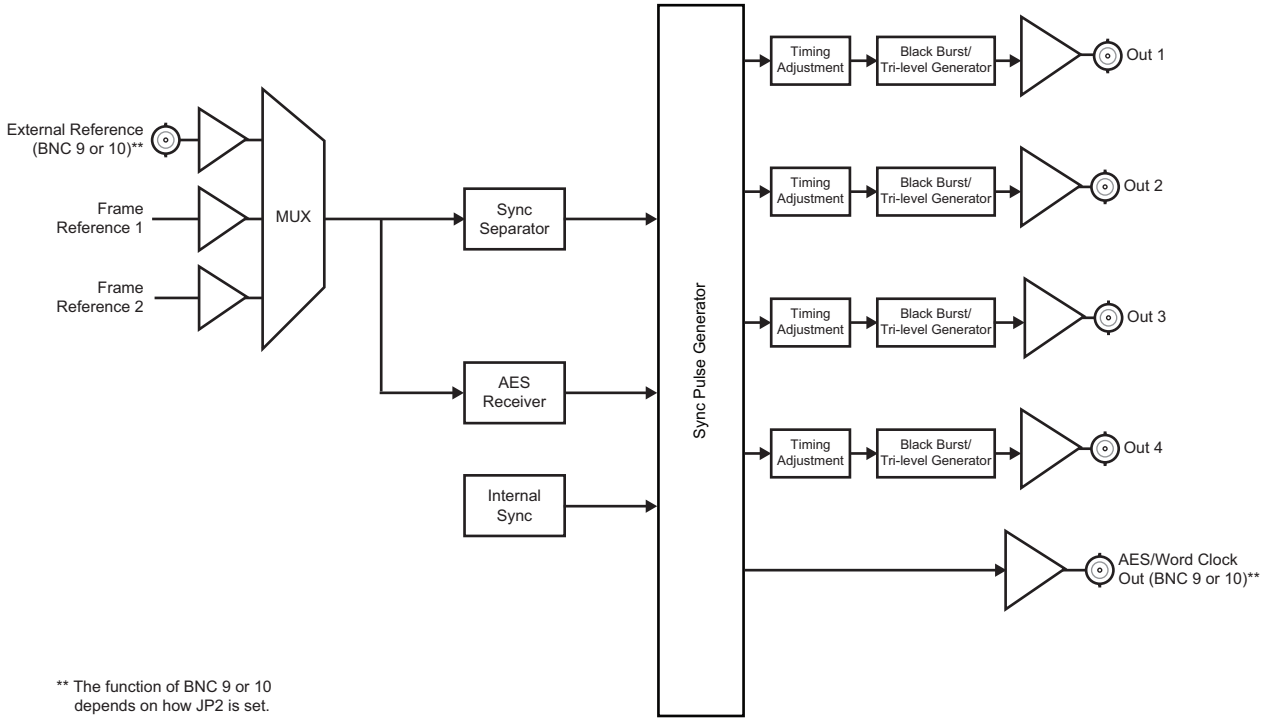


Figure 1.2 *SPG-8260 with a 8320AR-031 Rear Module — Simplified Block Diagram*

SPG-8260-W Functional Block Diagrams

Figure 1.3 outlines the workflow of the SPG-8260-W when using the 8320AR-030 rear module.

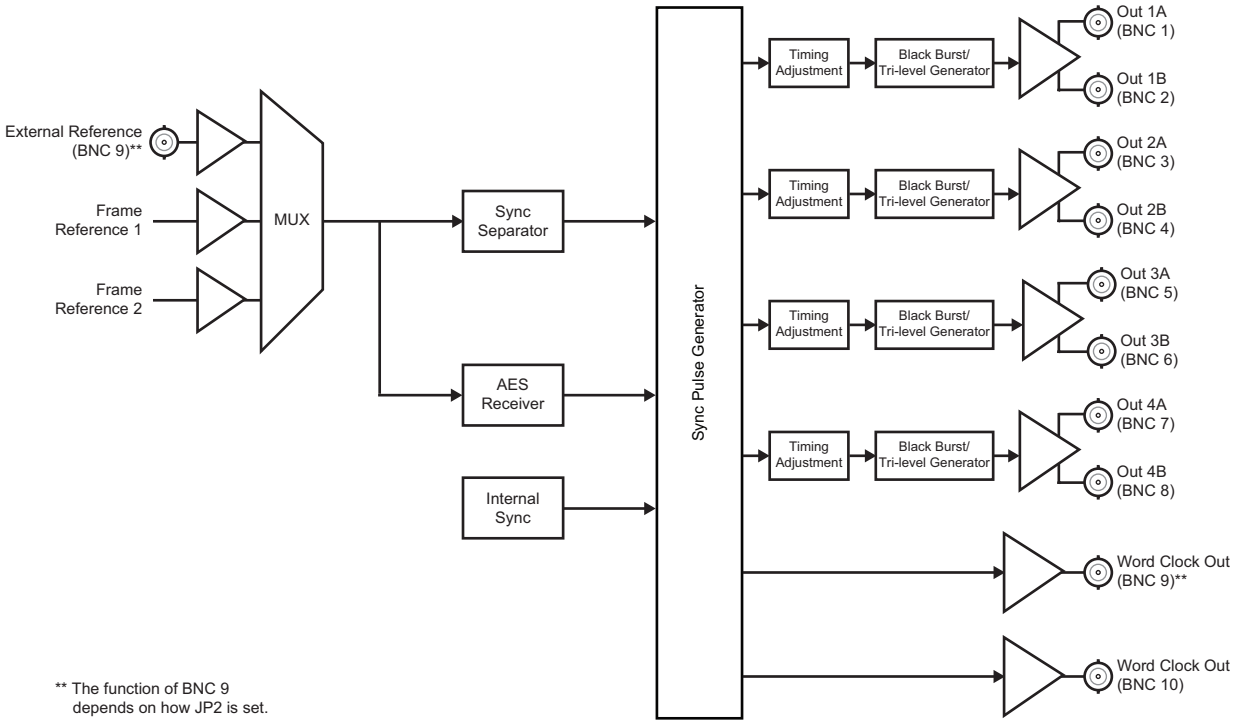


***Figure 1.3** SPG-8260-W with a 8320AR-030 Rear Module — Simplified Block Diagram*

Figure 1.4 outlines the workflow of the SPG-8260-W when using the 8320AR-031 rear module.

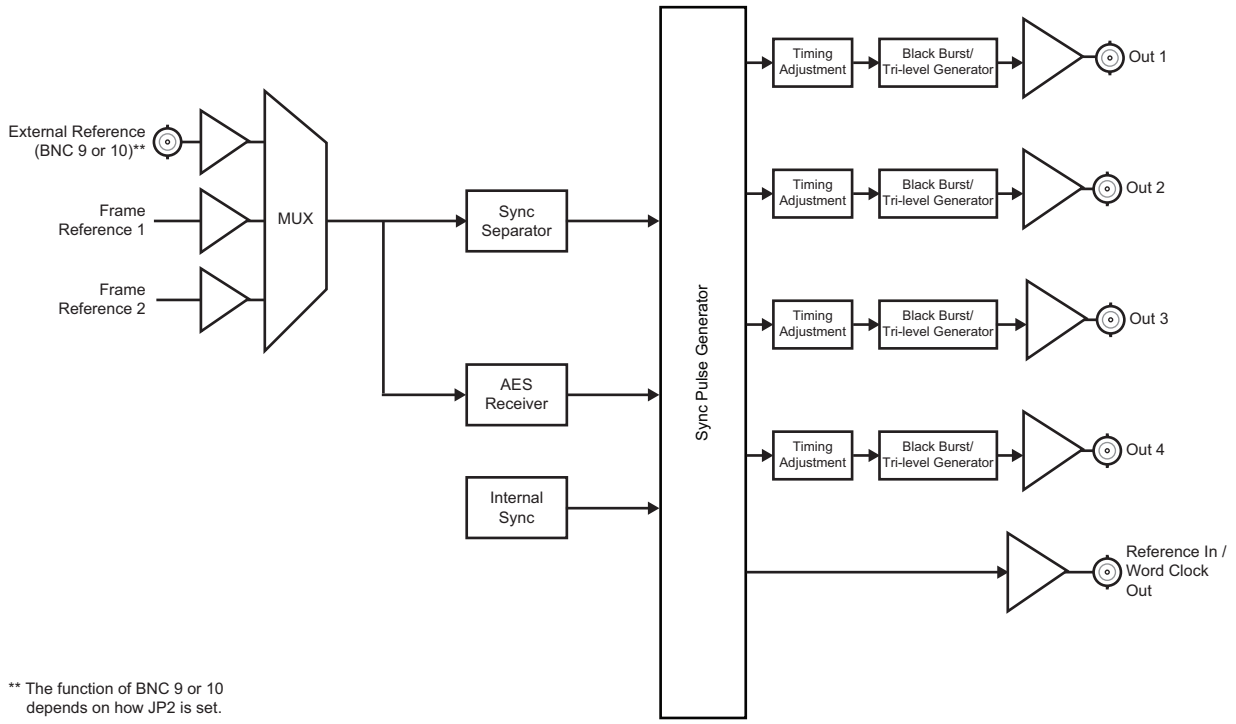


***Figure 1.4** SPG-8260-W with a 8320AR-031 Rear Module — Simplified Block Diagram*

User Interfaces

The SPG-8260 series includes the following user interfaces.

DashBoard Control System

The DashBoard Control System enables you to monitor and control openGear frames and cards from a computer. DashBoard communicates with cards in the frame through the Network Controller card. This controller card is required in order to use DashBoard to monitor SPG-8260 series cards. The DashBoard software and manual are available for download from our website.

For More Information on...

- installing and using DashBoard, refer to the ***DashBoard User Manual***.
- the menus in DashBoard, refer to the chapter "**DashBoard Menus**" on page 4-1.

Card-edge Control and Monitoring

From the SPG-8260 series card-edge you can use a jumper to specify whether to use an AES/Word Clock output, or a local reference input. A second jumper is provided to terminate the reference input if required.

For More Information on...

- the card-edge jumpers and switches, refer to the section "**Card Overview**" on page 3-2.
- monitoring LEDs, refer to the section "**Control and Monitoring Features**" on page 3-3.

SNMP Monitoring and Control

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

For More Information on...

- the SNMP controls on this card, refer to your SPG-8260 or SPG-8260-W Management Information Base (MIB) file.
- SNMP Monitoring and Control, refer to the ***MFC-8300 Series*** or ***MFC-OG3 Series User Manuals***.

Documentation Terms and Conventions

The following terms and conventions are used throughout this manual.

Terms

The following terms are used:

- "**525-line mode**" refers to broadcast situations using **NTSC** composite (analog) signal reference inputs.
- "**625-line mode**" refers to broadcast situations using **PAL-B** composite (analog) signal reference inputs.
- "**Board**", and "**Card**" refer to openGear terminal devices within openGear frames, including all components and switches.
- "**DashBoard**" refers to the DashBoard Control System.
- "**DFR-8300 series frames**" refers to all versions of the DFR-8310 series and DFR-8321 series frames and any available options unless otherwise noted.
- "**OG3-FR series frame**" refers to the OG3-FR series frames and any available options unless otherwise noted.
- "**openGear frame**" refers to the DFR-8300 series and OG3-FR series frames unless otherwise noted.
- "**PAL**" refers to PAL-B unless otherwise stated.
- "**Operator**" and "**User**" refer to the person who uses SPG-8260 series card.
- "**SPG-8260**" refers to the card model that can output an AES Reference Signal or a Word Clock signal (but not both).
- "**SPG-8260 series**" refers to both the SPG-8260 and the SPG-8260-W unless otherwise noted.
- "**SPG-8260-W**" refers to the card model that includes a TTL compatible Work Clock output.
- "**System**" and "**Video system**" refer to the mix of interconnected production and terminal equipment in your environment.

Conventions

The following conventions are used:

- The "**Operating Tip**" and "**Note**" boxes are used throughout this manual to provide additional user information.

Installation

In This Chapter

This chapter provides instructions for installing the Rear Modules for the SPG-8260 series, installing the card into the frame, cabling details, and updating the card software.

The following topics are discussed:

- Before You Begin
- Installing the SPG-8260 Series Cards
- Cabling for the SPG-8260
- Cabling for the SPG-8260-W
- Software Upgrades

Before You Begin

Before proceeding with the instructions in this chapter, ensure that your openGear frame is properly installed according to the instructions in its manual.

Static Discharge

Whenever handling the SPG-8260 series cards and other related equipment, please observe all static discharge precautions as described in the following 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.*

Unpacking

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

Installing the SPG-8260 Series Cards

This section outlines how to install a Rear Module in an openGear frame. The same procedure applies regardless of the frame or card type. However, the specific Rear Module you need to install depends on your application and the openGear frame you are using.

Supported Rear Modules for the SPG-8260

The Rear Module for the SPG-8260 depends on the openGear frame you are installing the card into.

- **DFR-8310 series frame** — The **8310AR-030** Rear Module is required. The SPG-8260 is also compatible with the DFR-8310-BNC frame.
- **DFR-8321** or **OG3-FR series frames** — The **8320AR-030** Full Rear Module or the **8320AR-031** Split Rear Module is required. Note that the available cable designations differ between the type of module used. Refer to the section "**Cabling for the SPG-8260**" on page 2-5 for details.

Supported Rear Modules for the SPG-8260-W

The Rear Module for the SPG-8260-W depends on the openGear frame you are installing the card into.

- **DFR-8310 series frame** — The **8310AR-030** Rear Module is required. The SPG-8260-W is also compatible with the DFR-8310-BNC frame.
- **DFR-8321** or **OG3-FR series frames** — The **8320AR-030** Full Rear Module or the **8320AR-031** Split Rear Module is required. Note that the available cable designations differ between the type of module used. Refer to the section "**Cabling for the SPG-8260-W**" on page 2-6 for details.

Installing a Rear Module

If you are installing the card in a DFR-8310-BNC frame, or the Rear Module is already installed, proceed to the section "**Installing the Card**" on page 2-4.

To install a rear module in your openGear frame

1. Locate the card frame slots on the rear of the frame.
2. Remove the Blank Plate from the slot you have chosen for the card installation.
3. Install the bottom of the Rear Module in the **Module Seating Slot** at the base of the frame's back plane. (**Figure 2.1**)

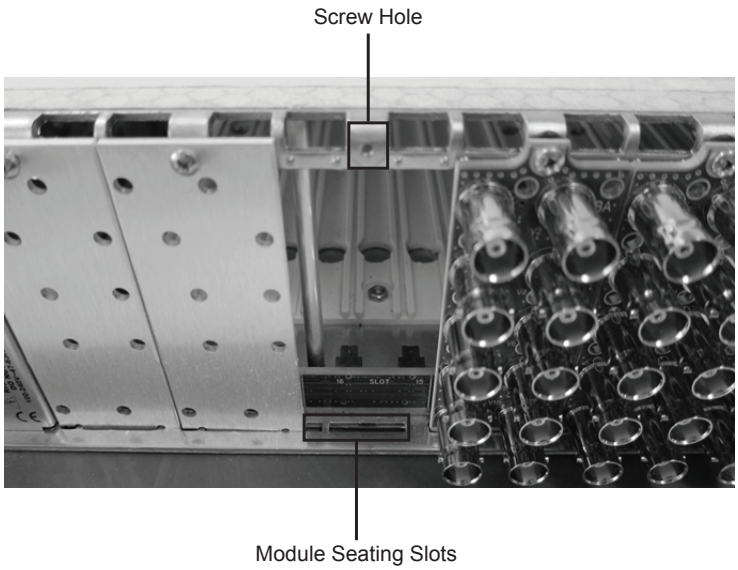


***Figure 2.1** Rear Module Installation in an openGear Frame (Card not shown)*

4. Align the top hole of the Rear Module with the screw on the top-edge of the frame back plane.
5. Using a Phillips screwdriver and the supplied screw, fasten the Rear Module to the back plane of the frame. Do not over tighten.
6. Ensure proper frame cooling and ventilation by having all rear frame slots covered with Rear Modules or Blank Plates.

Installing the Card

Use the following procedure to install the card in an openGear frame:

1. Locate the Rear Module you installed in the procedure "**Installing a Rear Module**" on page 2-3.
2. Hold the card by the edges and carefully align the card-edges with the slots in the frame.
3. Fully insert the card into the frame until the rear connection is properly seated in the Rear Module.
4. Affix the supplied **Rear Module Label** to the BNC area of the Rear Module.

Cabling for the SPG-8260

This section provides information for connecting cables to the installed Rear Modules on the openGear frames. Connect the input and output cables according to the following sections.

For More Information on...

- configuring BNC 9 and/or BNC 10, refer to the section "**Card Overview**" on page 3-2.

DFR-8310 Series Frame Cabling Overview

Each **8310AR-030** rear module occupies one slot and accommodates one card. This rear module provides eight video outputs. Depending on your configuration, there can be a reference input or an AES output on BNC 9, and an AES output or a Word Clock output on BNC 10. (**Figure 2.2**)

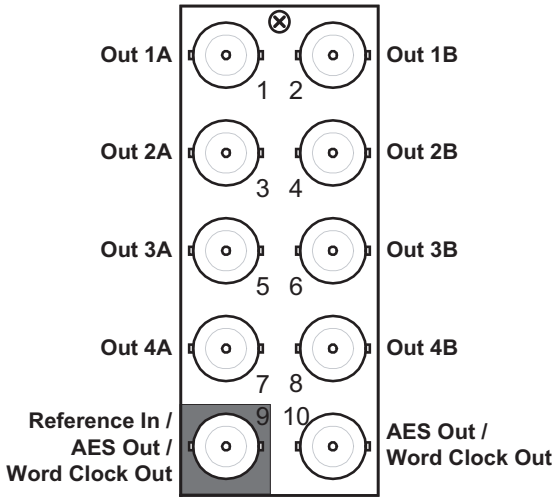


Figure 2.2 *Cable Connections for the 8310AR-030 and 8320AR-030 Rear Modules*

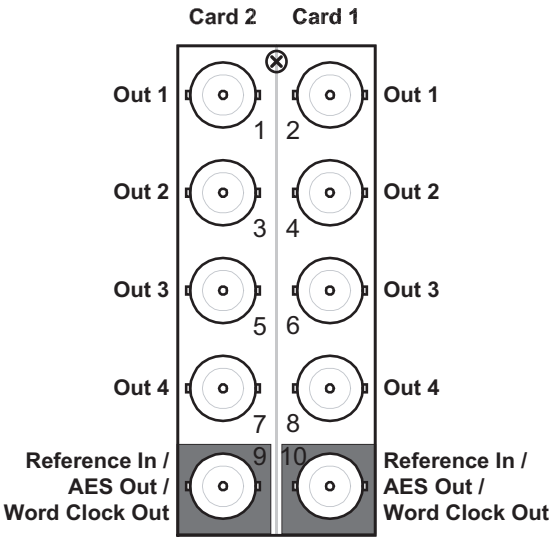


Figure 2.3 *Cable Connections for the 8320AR-031 Rear Module*

DFR-8321 and OG3-FR Series Frame Cabling Overview

The SPG-8260 is used with the following Rear Modules:

- **8320AR-030** Full Rear Module — Each rear module occupies two slots and accommodates one card. This rear module provides eight video outputs. Depending on your configuration, there can be a reference input or an AES output on BNC 9, and an AES output or a Word Clock output on BNC 10. (**Figure 2.2**)
- **8320AR-031** Split Rear Module — Each rear module occupies two slots and accommodates two cards. This rear module provides four video outputs per card. Depending on your configuration, an AES or Word Clock output is available on the bottom BNC. (**Figure 2.3**)

Cabling for the SPG-8260-W

This section provides cabling information for the SPG-8260-W when installed in an openGear frame.

DFR-8310 Series Frame Cabling Overview

Each **8310AR-030** rear module occupies one slot and accommodates one card. This rear module provides eight video outputs and a Word Clock output. Depending on your configuration, there can be a reference input or a second Word Clock output on BNC 9. (**Figure 2.4**)

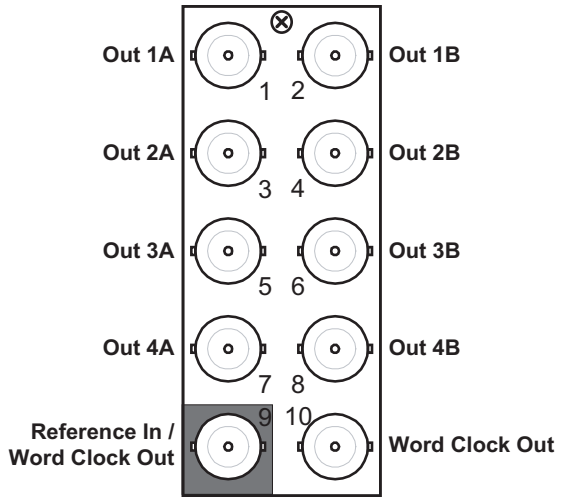


Figure 2.4 *Cable Connections for the 8310AR-030 and 8320AR-030 Rear Modules*

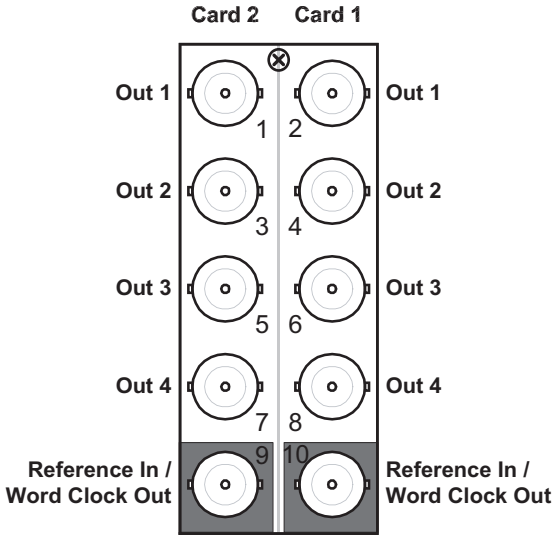


Figure 2.5 *Cable Connections for the 8320AR-031 Rear Module*

DFR-8321 and OG3-FR Series Frame Cabling Overview

The SPG-8260-W is used with the following Rear Modules:

- **8320AR-030** Full Rear Module — Each rear module occupies two slots and accommodates one card. This rear module provides eight video outputs and a Word Clock output. Depending on your configuration, there can be a reference input or a second Word Clock output on BNC 9. (**Figure 2.4**)
- **8320AR-031** Split Rear Module — Each rear module occupies two slots and accommodates two cards. This rear module provides four video outputs. Depending on your configuration, there can be a reference input or a second Word Clock output on the bottom BNC. (**Figure 2.5**)

Software Upgrades

This section provides instructions for upgrading the software for your card using DashBoard.

To upgrade the software for the SPG-8260 series card

1. Contact Ross Technical Support for the latest software version file.
2. In DashBoard, display the **Device** tab of the card by double-clicking its status indicator in the **Basic Tree View**.
3. From the **Device** tab, click **Upload** to display the **Select File for upload** dialog box.
4. Navigate to the *.bin upload file you wish to upload. DashBoard automatically selects the last directory that you loaded from.
5. Click **Open** to display a confirmation dialog box. This dialog box displays the selected upload file name, type, size, and the file creation date.
6. From the **Confirmation** dialog box, select one of the following:
   - **Cancel** — Select this option to cancel the upload of the file and return to the **Device View**.
   - **Continue** — Select this option to upload the file. While uploading, an **Uploading Progress** dialog box opens.

Important — *Clicking the **Cancel** button while uploading will leave the card in an invalid state. Do not click **Cancel** unless the uploading progress has stopped completely for 60 seconds or more.*

---

7. Monitor the upgrade progress bar displayed in DashBoard while the software is upgraded on your card.
8. To complete the upgrade process, you must reboot the card as follows:
   - From the **Device** tab, click **Reboot** to reboot card. The reboot process takes up to 30 seconds.

Note — *The communications processor of the card requires approximately 30 seconds to re-start and re-establish network communications.*

   - The card automatically saves all your settings before starting the reboot process.
   - The status of all the cards in the frame are grayed out until the reboot process is complete.

User Controls

In This Chapter

This chapter provides a general overview of the user controls available on the SPG-8260 series card.

The following topics are discussed:

- Card Overview
- Control and Monitoring Features
- Timing and Reference
- Output Notes
- Using DashBoard

Card Overview

The configurations outlined in this section should be performed before installing the card in the frame, but may be repeated as required.

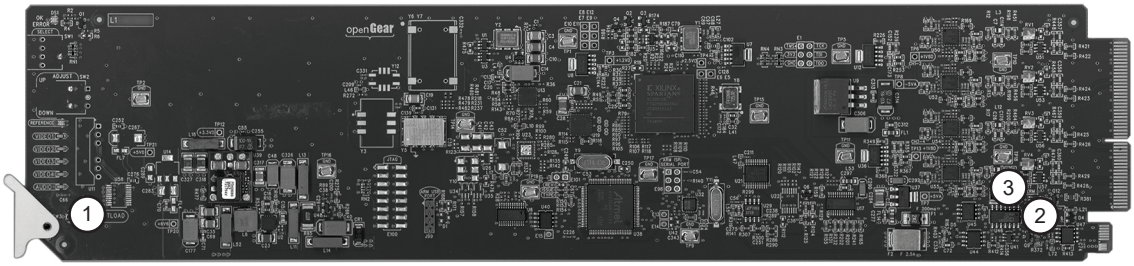


***Figure 3.1** SPG-8260 Series — Card-edge Components*

1. Bootload Button (SW3)

Use **SW3** for factory service in the unlikely even of a complete card failure. Do not press this button unless instructed to do so by Ross Technical Support personnel. Refer to the section "**Bootload Button**" on page 7-2.

2. Reference In/AES Out/Word Clock Out Jumper (JP2)

An AES/Word Clock output, or a local reference input, is also available on one of the bottom BNCs. Depending on the card model and the rear module you are using, the AES/Word Clock output or a reference input is available on BNC 9 (8310AR-030, 8320AR-030 Full Rear modules), or the bottom BNC (8320AR-031 Split Rear module). Use **JP2** to select the function of BNC 9 (bottom BNC).

For the SPG-8260, select from the following:

- **REF IN** — Select this option to enable the BNC to use the local reference input.
- **AES OUT** — Select this option to enable the BNC to output an AES signal or a copy of the Word Clock signal.

For the SPG-8260-W, select from the following:

- **REF IN** — Select this option to enable the BNC to use the local reference input.
- **WORD CLOCK OUT** — Select this option to enable the BNC to output a copy of the Word Clock signal.

3. EXT TERM Jumper (JP1)

Use **JP1** to terminate the signal on the Reference input when **JP2** is set to **REF IN**. Select from the following:

- **ON** — Select this option to terminate the signal on the card. Note that it is recommended to select this option when **JP2** is set to **AES OUT / WORD CLOCK OUT**.
- **OFF** — Select this option to leave the signal un-terminated (signal terminated externally on the cable).

4. Function Select Switch (SW1), not shown

On legacy SPG-8260 series cards, use **SW1** to select general functions and menu items and works in conjunction with the Mode Select Switch (**SW2**). Refer to the chapter "**Card-edge Menus**" on page 5-1 for details.

5. Mode Select Switch (SW2), not shown

On legacy SPG-8260 series cards, use **SW2** to enable, disable, and select specific configurations within the operational function modes menu (selected first with **SW1**).

Control and Monitoring Features

This section provides information on the LEDs for the SPG-8260 series. Refer to **Figure 3.2** for the location of the LEDs and controls.

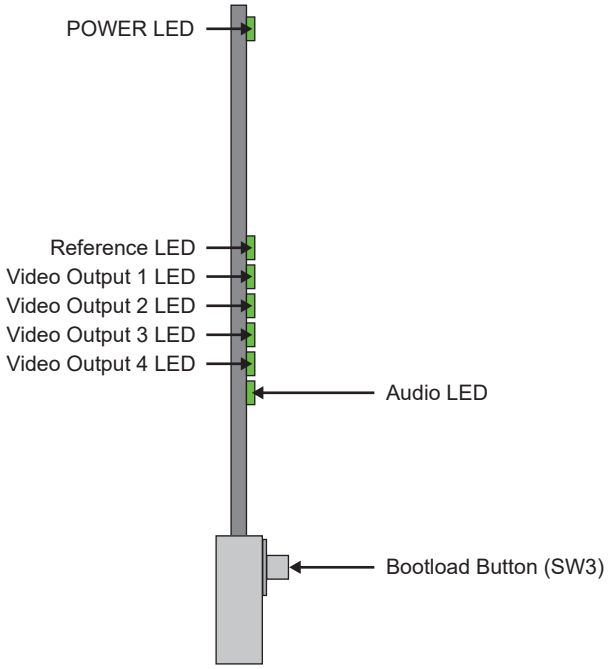


***Figure 3.2** SPG-8260 Series Card-edge Controls*

Note — *Legacy SPG-8260 series cards will include a card-edge 4-character display and the **SW1** and **SW2** switches.Refer to the chapter "**Card-edge Menus**" on page 5-1 for details on the card-edge menu system.*

Status and Selection LEDs on the Card Edge

The front-edge of the card has LED indicators for the cooling module fan, alarm, and communication activity. Basic LED displays and descriptions are provided in **Table 3.1**.

Table 3.1 LEDs on the SPG-8260 Series

LED	Color	Display and Description
POWER	Green	When lit green, this LED indicates that the card is functioning normal and that no anomalies have been detected. The following condition must be satisfied: • a valid reference signal is present when a reference is required
	Flashing Green and Red	When flashing green and red, this LED indicates that a valid reference signal is not present on the selected reference input.
	Red	When lit red, this LED indicates that the card is experiencing internal errors.

Table 3.1 LEDs on the SPG-8260 Series

LED	Color	Display and Description
Reference	Green	When lit green, this LED indicates that the card is locked to the external reference.
	Yellow	When lit yellow, this LED indicates that the card is using the internal reference source.
	Off	When unlit, this LED indicates that the current selected reference is not available or the reference format is not supported.
Video Output 1	Green	When lit green, this LED indicates that Output 1 (BNC 1 and 2) is Genlocked to the selected reference or the internal reference is used.
	Flashing Green	When flashing green, this LED indicates that Output 1 (BNC 1 and 2) cannot be Genlocked to the selected reference and is either Field Boundary locked, Clock locked, or free running.
Video Output 2	Green	When lit green, this LED indicates that Output 2 (BNC 3 and 4) is Genlocked to the selected reference and the internal reference is used.
	Flashing Green	When flashing green, this LED indicates that Output 2 (BNC 3 and 4) cannot be Genlocked to the selected reference and is either Field Boundary locked, Clock locked, or free running.
Video Output 3	Green	When lit green, this LED indicates that Output 3 (BNC 5 and 6) is Genlocked to the selected reference and the internal reference is used.
	Flashing Green	When flashing green, this LED indicates that Output 3 (BNC 5 and 6) cannot be Genlocked to the selected reference and is either Field Boundary locked, Clock locked, or free running.
Video Output 4	Green	When lit green, this LED indicates that Output 4 (BNC 7 and 8) is Genlocked to the selected reference and the internal reference is used.
	Flashing Green	When flashing green, this LED indicates that Output 4 (BNC 7 and 8) cannot be Genlocked to the selected reference and is either Field Boundary locked, Clock locked, or free running.
Audio	Green	When lit green, this LED indicates that the AES reference is the output.
	Flashing Green	When flashing green, this LED indicates that the Word Clock is the output.
	Off	When unlit, this LED indicates that the audio output is disabled by the user.

Timing and Reference

This section provides additional information on the timing and reference features of the SPG-8260 series cards.

Frame Rate Compatibility

Refer to **Table 3.2** for frame rate compatibility where a check mark indicates a Genlock state, an "F" indicates a Field Lock state, and an "CL" indicates a Clock Lock state.

Important — *You cannot use one SPG-8260-W as a Word Clock reference input to a second SPG-8260-W as this card model drives to TTL levels (5V). Due to the reduced amplitude of the standard Word Clock output, it is recommended to use a standard SPG-8260 as the Word Clock reference input to a SPG-8260-W.*

Table 3.2 Genlock, Field Lock, and Clock Lock Matrix

Locked Outputs	Inputs																
	1080i 60Hz	1080i 59.94Hz	1080i 50Hz	1080p 30Hz	1080p 29.97Hz	1080p 25Hz	1080p 24Hz	1080p 23.98Hz	720p 60Hz	720p 59.94Hz	720p 50Hz	1080pSF 24Hz	1080pSF 23.98Hz	480i 59.94Hz	576i 50Hz	AES Reference	Word Clock[a]
1080i 60Hz	✓		CL	F		CL	CL		F		CL	CL			CL	CL	CL
1080i 59.94Hz		✓			F			CL		F			CL	✓		CL	CL
1080i 50Hz	CL		✓	CL		F	CL		CL		F	CL			✓	CL	CL
1080p 30Hz	✓		CL	✓		CL	CL		✓		CL	CL				CL	CL
1080p 29.97Hz		✓			✓			CL		✓			CL	✓		CL	CL
1080p 25Hz	CL		✓	CL		✓	CL		CL		✓	CL			✓	CL	CL
1080p 24Hz	CL		CL	CL		CL	✓		CL		CL	✓			CL	CL	CL
1080p 23.98Hz		CL			CL			✓		CL			✓	CL		CL	CL
720p 60Hz	✓		CL	✓		CL	CL		✓		CL	CL			CL	CL	CL
720p 59.94Hz		✓			✓			CL		✓			CL	✓		CL	CL
720p 50Hz	CL		✓	CL		✓	CL		CL		✓	CL			✓	CL	CL
720p 30Hz	✓		CL	✓		CL	CL		✓		CL	CL			CL	CL	CL
720p 29.97Hz		✓			✓			CL		✓			CL	✓		CL	CL
720p 25Hz	CL		✓	CL		✓	CL		CL		✓	CL			✓	CL	CL
720p 24Hz	CL		CL	CL		CL	✓		CL		CL	✓			CL	CL	CL
720p 23.98Hz		CL			CL			✓		CL			✓	CL		CL	CL
1080pSF 24Hz	CL		CL	CL		CL	✓		CL		CL	✓			CL	CL	CL

Table 3.2 Genlock, Field Lock, and Clock Lock Matrix

Locked Outputs	Inputs																
	1080i 60Hz	1080i 59.94Hz	1080i 50Hz	1080p 30Hz	1080p 29.97Hz	1080p 25Hz	1080p 24Hz	1080p 23.98Hz	720p 60Hz	720p 59.94Hz	720p 50Hz	1080pSF 24Hz	1080pSF 23.98Hz	480i 59.94Hz	576i 50Hz	AES Reference	Word Clock[a]
1080pSF 23.98Hz		CL			CL			✓		CL			✓	CL		CL	CL
480i 59.94Hz		✓			F					F				✓		CL	CL
576i 50Hz	CL		✓	CL		F			CL		F				✓	CL	CL
AES	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Word Clock	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

a. If a Word Clock reference signal is used, its amplitude must not exceed 4Vp-p.

Notes on Using the Matrix

When using **Table 3.2**, keep in mind the following definitions.

- **Genlock** — Occurs when the reference and the output frame/field rates are compatible.
- **Field Lock** — Occurs when the reference and the output frame/field rates are compatible but the reference is a progressive format and the output is an interlaced format.
- **Clock Lock** — Occurs when there is a fixed relationship between the reference and the output clock rates but when there is no direct relationship between the reference and output frame rates.

Reference Signals

The SPG-8260 series can lock to one of the two frame references, the **REF IN** BNC on the rear module, or free-run using the card internal oscillator.

Notice — *The SPG-8260-W outputs are 5V maximum (TTL levels).*

- Switching between references may cause the outputs to glitch.
- When the selected reference is lost, the card switches to its internal oscillator.
- When the selected reference returns, the card locks back to the input reference.
- When running off the internal oscillator, the card ignores any signal on the other reference inputs.
- When running off the internal oscillator and the outputs are set to the same NTSC or PAL standard, the outputs will be color framed to each other.
- The card can operate without a reference by switching to the internal reference.

Note — *When using the internal reference, the outputs should be no more than +/- 1ppm from the nominal frequency, with a maximum drift of +/- 4.6ppm after 10 years.*

Color Framing

When a NTSC or PAL reference is connected to the card, and one or more of the outputs are set to the same standard as the reference, the color frame of the video outputs will match the reference. It is important to note that the card will not continuously color frame lock to the reference. The card will re-lock to the reference color frame only when one of the following conditions occur:

- **Card boot-up** — After a power on, or re-boot, with a valid NTSC or PAL reference signal applied to the selected reference input.
- **Change in reference** — Either by input selection, or removal and return, of the reference signal.
- **Output timing change** — Adjusting the output timing will trigger another color frame re-lock sequence.

Output Notes

This section provides additional information when the configuring outputs of the SPG-8260 series cards.

Alarms

The card-edge LEDs and DashBoard alerts the user when the reference and the selected frame rate do not match.

For More Information on...

- card-edge LEDs, refer to the section "**Status and Selection LEDs on the Card Edge**" on page 3-3.
- DashBoard status fields, refer to **Table 4.1**, **Table 4.4**, and **Table 4.5**.

Free-run

While free-running, the card operates with an internal reference, and output timing can be adjusted relative to this internal reference. The timing of each output with respect to each other will be maintained.

While free-running, the card still conforms to the following:

- All AES interfaces conform to SMPTE 276M, and AES-3id-2001.
- All HD interfaces conform to SMPTE 274M, or SMPTE 296M.
- All SD interfaces conform to SMPTE 170M (NTSC) or ITU-R BT.470 (PAL-B).

Using a Delay

Each pair of outputs can be independently timed relative to the reference. The delay will be in increments of the output's interface sampling frequency up to one frame of video.

Audio Output Timing (SPG-8260 only)

The SPG-8260 includes an **Audio Output Co-Timing** option in the card-edge menus[1] and DashBoard. This option enables you to specify which video output the audio will follow. If there is any change, in timing or format, the audio attempts to re-lock thereby causing a glitch in the audio timing. If a tone is selected, the card mutes the tone during this period of re-acquiring of timing. The AES/Word Clock outputs are framed as per ***AES11-2009***.

- **Audio Output Timing with an AES/Work Clock Reference** — If the reference into the SPG-8260 is AES or Word Clock, the audio outputs will be co-timed to the reference.
- **Audio Output Timing with a Video Reference** — If the reference into the SPG-8260 is a video signal, or if the SPG-8260 is set to the internal reference, the audio output (AES or Word Clock) will be co-timed to one of the video outputs.

Note — *Ensure the selected output is Genlocked or Field Locked to the reference. If the card is in free-run, the selected output frame rate must be compatible with the selected frame rate.*

1. This function is only available on legacy SPG-8260 series cards with the 4-character display and the SW1 and SW2 switches.

For More Information on...

- the **Audio Output Co-Timing** option in DashBoard, refer to **Table 4.4**.

Word Clock Output Timing (SPG-8260-W only)

The SPG-8260-W includes an **TTL-level Word Clock Output Co-Timing** option in the card-edge menus[1] and DashBoard. This option enables you to specify which video output the Word Clock will follow. If there is any change, in timing or format, the Word Clock attempts to re-lock thereby causing a glitch in the Word Clock timing. The Word Clock outputs are framed as per ***AES11-2009***.

- **Word Clock Output Timing with an AES/Work Clock Reference** — If the reference into the SPG-8260-W is AES or Word Clock, the Word Clock output will be co-timed to the reference.

Important — *If you are using a AES or Word Clock reference input, ensure the provided reference signal does not exceed 4Vp-p.*

- **Word Clock Output Timing with a Video Reference** — If the reference into the SPG-8260-W is a video signal, or if the SPG-8260-W is set to the internal reference, the Word Clock output will be co-timed to one of the video outputs.

1. This function is only available on legacy SPG-8260 series cards with the 4-character display and the SW1 and SW2 switches.

Using DashBoard

Before proceeding, ensure that the DashBoard client software is installed on a computer connected to your facility network. The DashBoard software and user manual area available from the Ross Video website.

For More Information on...

- installing DashBoard, refer to the ***DashBoard User Manual***.

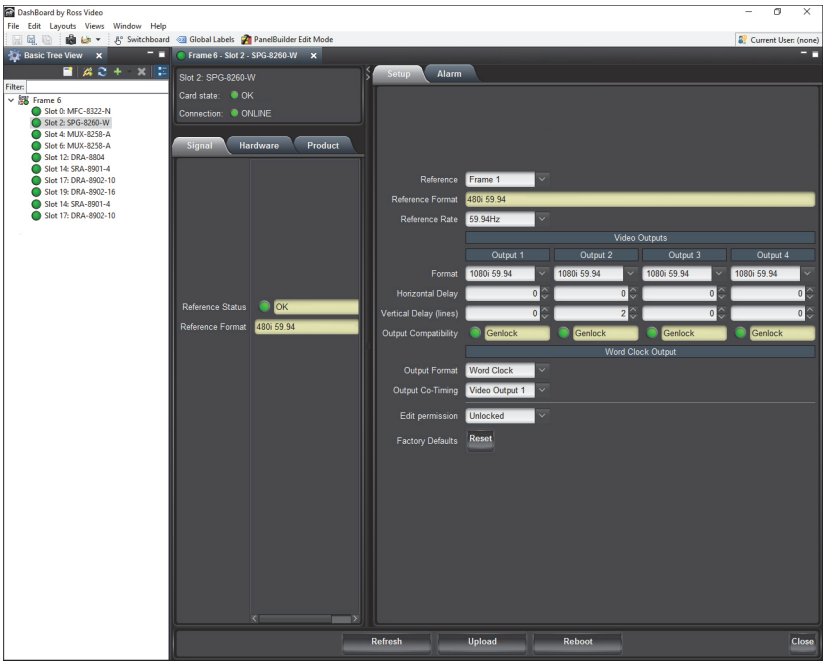
To launch DashBoard

1. Ensure that you are running DashBoard software version 8.2.0 or higher.
2. Launch DashBoard by double-clicking its icon on your desktop.
3. Ensure that the openGear frame with your SPG-8260 card(s) is displayed in the Tree View located on the left-side of the DashBoard window.

   It may take 30 seconds or more to update the Tree View. Consult the ***MFC-8300 Series*** or ***MFC-OG3 Series User Manual*** and ***DashBoard User Manual*** should the Tree View not display the card.

To access a card in DashBoard

1. From the **Tree View**, expand the node for the openGear frame your cards are installed in. A list of cards installed in the frame is now displayed. In the example below, a SPG-8260-W is installed in slot 2 in Frame 6.
2. Double-click the node for a card to display its menus in the **Device View** of DashBoard (right-side of the DashBoard window).



Example of a SPG-8260-W in DashBoard

DashBoard Menus

In This Chapter

This chapter briefly summarizes the menus, items, and parameters available from DashBoard for the SPG-8260 series. The default values are noted with an asterisk (*).

The following topics are discussed:

- Status Tabs
- Setup Tab
- Alarm Tab

Operating Tip — *Wait 30 seconds after the last setting change to ensure all changes are saved to the non-volatile memory of the card.*

Status Tabs

This section summarizes the read-only information displayed in the Status tabs. The fields in the Status tabs vary in severity from green (valid), yellow (caution), to red (alarm). DashBoard reports the most severe alarm for a single field. Alarm colors are noted within the tables as text set in brackets next to the menu parameter name.

Signal Tab

Table 4.1 summarizes the read-only information displayed in the **Signal** tab.

Table 4.1 Signal Tab Items

Tab Title	Item	Parameters	Description
Signal	Reference Status	OK (Green)	Indicates the presence of a valid reference signal
		Locking (Yellow)	Indicates the presence of a valid reference signal, but the card has not locked to it yet
		No Color Burst (Yellow)	Indicates the presence of a NTSC or PAL reference signal that does not include a valid color burst
		No reference (Red)	Indicates that no signal is detected on the selected reference source
		Unknown (Red)	Indicates that a signal is detected, but is not supported
	Reference Format	#	Specifies the reference format
		AES	
		Word Clock	
		Unknown	Indicates that the reference is an unsupported format

Hardware Tab

Table 4.2 summarizes the read-only information displayed in the **Hardware** tab.

Table 4.2 Hardware Tab Items

Tab Title	Item	Parameters	Description
Hardware	HW Status	OK	Indicates the status of the hardware
		FPGA load invalid	
		Incomp I/O Module	
		Current out of spec	
		Internal Error	
	Voltage (mV)	#	Supply Voltage
	Current (mA)	#	Current consumption of card
	CPU headroom	#	Processing power available

Table 4.2 Hardware Tab Items

Tab Title	Item	Parameters	Description
Hardware	RAM available	#/##	On-board processing memory available
	Uptime (h)	#	Displays the number of hours since the last restart of the card
	Configuration Bank	#	Storage count

Product Tab

Table 4.3 summarizes the read-only information displayed in the **Product** tab.

Table 4.3 Product Tab Items

Tab Title	Item	Parameters	Description
Product	Product	SPG-8260, SPG-8260-W	Indicates card model
	Supplier	Ross Video Ltd.	
	Board Rev	##	Indicates the board version
	Board S/N	######	Indicates the board serial number
	Rear Module	#	Type of rear module in the slot
	Firmware Rev	#.##	Indicates the firmware version
	Software Rev	##.##	Indicates the software version

Setup Tab

Table 4.4 summarizes the **Setup** options available in DashBoard for the SPG-8260 series.

Table 4.4 Setup Menu Items

Menu Title	Item	Parameters	Description
Setup	Reference	Frame 1	Selects the reference source connected to the **REF 1** BNC on the openGear frame
		Frame 2	Selects the reference source connected to the **REF 2** BNC on the openGear frame
		Local	Selects the reference source connected to the **REF IN** BNC on the SPG-8260 series rear module
		Internal*	Uses the internally generated reference signal of the SPG-8260 series card
	Reference Format (read-only)	#	Indicates the reference format
	Reference Rate	# (read-only)	This field is read-only when the card is using one of the following as the reference source: • the **REF 1** BNC on the openGear frame • the **REF 2** BNC on the openGear frame • the **REF IN** BNC on the rear module
		#	This field is editable when the card is using the internal reference (selected or because a valid reference source on the frame or the local reference is unavailable), or is using an AES source or Word Clock for the reference source
Video Outputs - Output #	Format	NTSC Black	Selects the video format of the output signal
		NTSC Color Bars	
		PAL Black	
		PAL Color Bars	
		#	
	Horizontal Delay (pixel)	0* to #[a]	Delay set in pixels[b]
	Vertical Delay (lines)	0* to #[a]	Delay set in lines
	Output Compatibility (read-only)	Genlock	The output video is locked in time to the reference where a Line 1 of output is aligned with Line 1 of the reference
		Field Lock	The output video is locked in time to the reference where the first line of either Field 1 or Field 2 in the output video is aligned with Line 1 of the reference

Table 4.4 Setup Menu Items

Menu Title	Item	Parameters	Description
Video Outputs - Output #	Output Compatibility (read-only)	Clock Lock	The interface sampling clock of the output video is locked in time to the reference interface sampling clock
		Incompatible[c]	The reference format does not support the video output format and the output format timing may be invalid
AES Output / Word Clock Output[d]	Output Format	Off	Disables the audio output on BNC 10 (8310AR-030 and 8320AR-030 rear modules); for the 8320AR-031 Rear Module, on BNC 9 or BNC 10
		AES[e]	Outputs an AES signal at 48kHz. This is the default setting for the SPG-8260.
		Word Clock	Left/right clock is being output (word clock). This is the default setting for the SPG-8260-W.
	Output Co-Timing	Video Output 1*	Selects the channel the audio output will follow
		Video Output 2	
		Video Output 3	
		Video Output 4	
	AES Level (dBFS)[f]	-40 to 0[g]	Adjusts the gain of the audio output for both channels
	AES Tone[h]	Mute*	Assigns the AES tone for both channels
		#Hz	
		#kHz	
Setup	Edit permission	Unlocked*	All menu options can be edited
		Locked	All menu items, except this one, are read-only
	Factory Defaults	Reset	Resets all parameters to factory defaults

a. The maximum value depends on the selected output format.
b. The precision of the Horizontal Delay after reset or power-up is +/- 1 pixel.
c. The following errors are occurring: the horizontal and/or vertical timing is not locked to your reference, and the frame rate is invalid. Note that the frame rate will not be the value specified in the **Format** menu.
d. This area of the tab is labeled as AES Output when using an SPG-8260. When using a an SPG-8260-W, this area is labeled as Word Clock Output.
e. This option is only available when using an SPG-8260.
f. This menu is only available when using an SPG-8260.
g. The default value is -20dBFS.
h. This menu is only available when using an SPG-8260.

Alarm Tab

Table 4.5 summarizes the **Alarm** options available in DashBoard for the SPG-8260.

Table 4.5 Alarm Menu Items

Menu Title	Item	Parameters	Description
Alarm	Reference Alarm	Selected*	Updates the **Reference Status** field in the **Signal** tab when a reference error occurs
		Cleared	Disables this feature
	Color Burst Detection	Selected*	Updates the **Reference Status** field in the **Signal** tab when the card is using a NTSC or PAL reference signal that does not include a valid color burst
		Cleared	Disables this feature
	Video Output Compatibility - Output #	Selected*	Updates the **Video Output Status** field, for the specified output, when a change in output status occurs
		Cleared	Disables this feature

Card-edge Menus

In This Chapter

This chapter summarizes the Card-edge Menu system of the SPG-8260 series and how to navigate the menus and options using the **SW1** and **SW2** switches.

Note — *This chapter only applies to SPG-8260 series cards with the card-edge 4-character display and the **SW1** and **SW2** switches.*

The following topics are discussed:

- Navigation
- Card-edge Menus
- Menu Descriptions

Navigation

Use the following procedure to navigate the card-edge menus of the SPG-8260 series:

1. Rotate **SW1** to the required menu.
2. Toggle **SW2** to select the required parameter.

Note — *Do not power down the card before ensuring that all edited parameters are saved. Saving edited parameters can take up to 10 seconds.*

Card-edge Menus

Table 5.1 lists all the menus and the default values available using the card-edge controls. To activate some of these parameters, it may be necessary to toggle **SW2** in either direction, or it may require that **SW2** be held in either direction for a few seconds.

Table 5.1 Card-edge Menus and Items

Menu Select	Card-Edge Menu Label	Menu Name	Item
0	SPG-8260 slot #	Home	
1	Ref Src	Reference Source	Frame 1
			Frame 2
			Local
			Internal*
2	Ref Rate	Reference Rate	59.94Hz*
			60Hz
			23.98Hz
			24Hz
			25Hz
			29.97Hz
			30Hz
			50Hz
3	Out Sel	Output Select	1
			2
			3
			4
4	Out Std	Output Standard	1080i 59.94 Hz*
			PAL Color Bars
			PAL Black
			NTSC Color Bars
			NTSC Black
			720p 23.98Hz
			720p 24Hz
			720p 25Hz
			720p 29.97Hz
			720p 30Hz
			720p 60Hz
			1080pSF 23.98Hz
			1080pSF 24Hz
			1080p 23.98Hz

Table 5.1 Card-edge Menus and Items

Menu Select	Card-Edge Menu Label	Menu Name	Item
4	Out Std	Output Standard	1080p 24Hz
			1080p 25Hz
			1080p 29.97Hz
			1080p 30Hz
			1080i 60Hz
			720p 50Hz
			720p 59.94Hz
			1080i 50Hz
5	Out V Dly	Output Vertical Delay	0*-1124 lines (1080i formats)
			0*-749 lines (720p formats)
			0*-624 lines (576 formats)
			0*-524 lines (480 formats)
6	Out H Dly	Output Horizontal Delay	0*-4124 (720p 24/23.98Hz)
			0*-3959 (720p 25Hz)
			0*-3299 (720p 30/29.97Hz)
			0*-2749 (1080p 24/23.98Hz, 1080pSF 24.23.98Hz)
			0*-2639 (1080i 50Hz, 1080p 25Hz)
			0*-2199 (1080i 60/59.94Hz, 1080p 30/29.97Hz)
			0*-1979 (720p 50Hz)
			0*-1649 (720p 60/59.94 Hz)
			0*-863 (PAL B)
			0*-857 (NTSC)
7	Aud Out	Audio Output	Off
			AES*[a]
			Word Clock[b]
8	Aud Timing	Audio Output Co-Timing	Video Output 1*
			Video Output 2
			Video Output 3
			Video Output 4
9	AES Tone[c]	AES Tone	Mute*
			4kHz
			2kHz
			1kHz
			500Hz

Table 5.1 Card-edge Menus and Items

Menu Select	Card-Edge Menu Label	Menu Name	Item
A	AES Level[d]	AES Level	-40dBFS to 0dBFS (1dBFS increments)[e]
F	Fact Def	Factory Default	Pushing up or down on the toggle switch will reset the card to the factory default values

a. This option is only available when using an SPG-8260. This is the default for the SPG-8260.
b. This is the default setting for the SPG-8260-W.
c. This option is only available when using an SPG-8260.
d. This option is only available when using an SPG-8260.
e. The default value is -20dBFS.

Menu Descriptions

This section briefly summarizes the menu parameters available in the card-edge display.

0 — Home

This read-only menu displays the product name and the slot the card is installed in the frame.

1 — Reference Source

This menu enables you to select which reference to use. The choices are Frame Reference 1 (**Fr 1**), Frame Reference 2 (**Fr 2**), the BNC on the rear module (**Local**), and **Internal**.

2 — Reference Rate

This selects the internal reference field rate. This field is not used when the SPG-8260 is locked to an external reference.

3 — Output Select

This menu enables you to select the output to be configured. This menu is used in conjunction with Menus 4, 5, and 6.

4 — Output Standard

This menu enables you to select the format for the output selected in Menu 3.

5 — Output Vertical Delay

This menu enables you to add extra delay to the output video in line increments. This menu is used in conjunction with Menu 3.

6 — Output Horizontal Delay

This menu enables you to add delay to the output video in pixel increments. This menu is used in conjunction with Menu 3.

7 — Audio Output

This menu enables you to select the function of the audio output.

8 — Audio Output Co-Timing

This menu enables you to specify the video output the audio input will follow.

9 — AES Tone

This menu enables you to assign the tone for the AES output. This option applies to the SPG-8260 only.

A — AES Level

Use this menu to adjust the audio gain over a range of ±20dB in increments of 1dB. This option applies to the SPG-8260 only.

B, C, D, E, — Not Implemented

Menus B, C, D, and E are not implemented at this time.

F — Factory Defaults

This function enables you to return all controls to their factory default values. Use the following procedure to reset the card parameters to factory default values using the card-edge controls:

1. Rotate **SW1** to **F**. The Four-Character Display displays "**Fact Def**".
2. Toggle **SW2** up or down and hold for 3 seconds.
3. Release **SW2**.

Note — *Holding the **Bootload** button for 3 seconds when on any menu other than **Factory Defaults**, resets that menu to the factory default value.*

Specifications

In This Chapter

This chapter provides technical specifications for the SPG-8260 series. Note that specifications are subject to change without notice.

The following topics are discussed:

- Technical Specifications
- Channel Status Data

Technical Specifications

This section provides technical information for the SPG-8260 series.

Table 6.1 Technical Specifications

Category	Parameter	Specification
Analog Video Output	Standards Accommodated	SMPTE 274M, SMPTE 296M, SMPTE 170M ITU-R BT.470-6 (PAL-B)
	Number of Channels	4
	Number of Outputs per Channel	2
	Signal Level	1Vp-p
	DC Offset	<50mV
	Output Impedance	75ohm
	Return Loss	>40dB to 30MHz
	Free Run Frequency	1ppm initial (4.6ppm 10 years, all conditions)
	Thermal Stability	±0.25ppm (0 to 70°C)
AES / Word Clock Output (SPG-8260)	Number of Outputs	2 (BNC 9 is not configured as a reference input) 1 (BNC 9 is configured as a reference input)
	Connector Type	BNC
	Output Impedance	75ohm
	Signal Level	1Vp-p
	Return Loss	>25dB to 10MHz
	AES/Word Clock Output Sample Rate	48kHz
Word Clock Output (SPG-8260-W)	Number of Outputs	2 (BNC 9 is not configured as a reference input) 1 (BNC 9 is configured as a reference input)
	Connector Type	BNC
	Output Impedance	75ohm
	Max. Word Clock Drive Level	5V (TTL compatible)
	Word Clock Sample Rate	48kHz
	Coupling	DC
	Waveform	Square wave
Reference Input[a]	Number of Inputs	1
	Connector	BNC
	Input Impedance	75ohm
	Return Loss	>40dB to 10MHz
	Minimum Input (AES/Word Clock)	100mVp-p
	Maximum Input (AES/Word Clock)	4Vp-p

Table 6.1 Technical Specifications

Category	Parameter	Specification
Reference Input[a]	Sample Rate (AES Input)	48kHz
	Standards Accommodated (Reference Input)	SMPTE 274M, 296M, and 170M ITU-R BT.470-6 (PAL-B)
	Signal Level (Reference Input)	1Vp-p
Environmental	Operating Range	5°C to 40°C (41°F to 104°F) ambient
Power	Total Power Consumption	6W

a. This can be BNC 9 or BNC 10 depending on the rear module you are using.

Channel Status Data

Table 6.2 shows the channel status bit information that is used for all output audio.

Table 6.2 Channel Status Data

Byte	Bit	Function	Transmitted
0	0	Professional or Consumer use of Channel Status Block	Professional (1)
	1	Normal Audio or Non-Audio Mode	Normal Audio (0)
	2-4	Emphasis	No Emphasis (100)
	5	Lock Indication	Not Indicated (0)
	6-7	Sampling Rate	48kHz (01)
1	0-3	Channel Mode	Two channel mode (0001)
	4-7	User Bit Mode	192-bit (0001)
2	0-2	Auxiliary Bit Usage	24-bit audio sample, Aux bits audio (001)
	3-5	Sample Word Length	24-bits (101)
	6-7	Alignment Level	Not Indicated (00)
3	0-7	Multi-channel Modes	Undefined (0)
4	0-1	Digital Audio Reference Signal	Not a Reference (0)
	2	Reserved	0
	3-6	Sampling Frequency	Not Indicated (0000)
	7	Sampling Frequency Scaling Flag	No Scaling (0)
5	0-7	Reserved	Unused (0)
6-9		ASCII Source ID	Unused (0)
10-13		ASCII Destination ID	Unused (0)
14-17		Local Sample Address	Unused (0)
18-21		Time of Day	Unused (0)
22	0-7	C Data Reliability	All Status Bytes are marked as Reliable
23	0-7	CRC	Calculated CRC

Service Information

In This Chapter

This chapter contains the following sections:

- Troubleshooting Checklist
- Warranty and Repair Policy

Troubleshooting Checklist

Routine maintenance to this openGear 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 "**Contact Us**" section.

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** — Check 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.

Bootload Button

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.

Note — *When a legacy SPG-8260 series card is running, pressing and holding the* ***Bootload*** *button for 3 seconds will reset the parameters selected by the card-edge controls to the default values.*

To reload the software on the SPG-8260 series card

1. Eject the card from the frame.
2. Press and hold the **Bootload** button, while re-inserting the card into the frame. During power-up, if this button is held down, the **POWER** LED will start to flash and the card waits for a new software load.
   - During power-up, if this button is held down, the **POWER** LED starts to flash and the card waits for a new software load.
   - When the card is running, pressing and holding the **Bootload** button for 3 seconds resets the parameters selected by the card-edge controls to the default values.
3. Release the button.
   - If a new software load is not sent to the card within 60 seconds, the card will attempt to restart 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 SPG-8260 series card 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 SPG-8260 series 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 SPG-8260 series 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.

In no event shall Ross Video Limited be liable for direct, indirect, special, incidental, or consequential damages (including loss of profits) incurred by the use of this product. Implied warranties are expressly limited to the duration of this warranty.

This SPG-8260 Series User Manual provides all pertinent information for the safe installation and operation of your openGear Product. Ross Video policy dictates that all repairs to the SPG-8260 series card are to be conducted only by an authorized Ross Video Limited factory representative. Therefore, any unauthorized attempt to repair this product, by anyone other than an authorized Ross Video Limited factory representative, will automatically void the warranty. Please contact Ross Video Technical Support for more information.

In Case of Problems

Should any problem arise with your SPG-8260 series 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 SPG-8260 series 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.

The Ross Video Technical Support Department will continue to provide advice on any product manufactured by Ross Video Limited, beyond the warranty period without charge, for the life of the equipment.

Contact Us

Contact our friendly and professional support representatives for the following:

- Name and address of your local dealer
- Product information and pricing
- Technical support
- Upcoming trade show information

Technical Support	Telephone:	+1 613 • 652 • 4886
	After Hours Emergency:	+1 613 • 349 • 0006
	Email:	techsupport@rossvideo.com
General Information	Telephone:	+1 613 • 652 • 4886
	Fax:	+1 613 • 652 • 4425
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	Website:	http://www.rossvideo.com

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