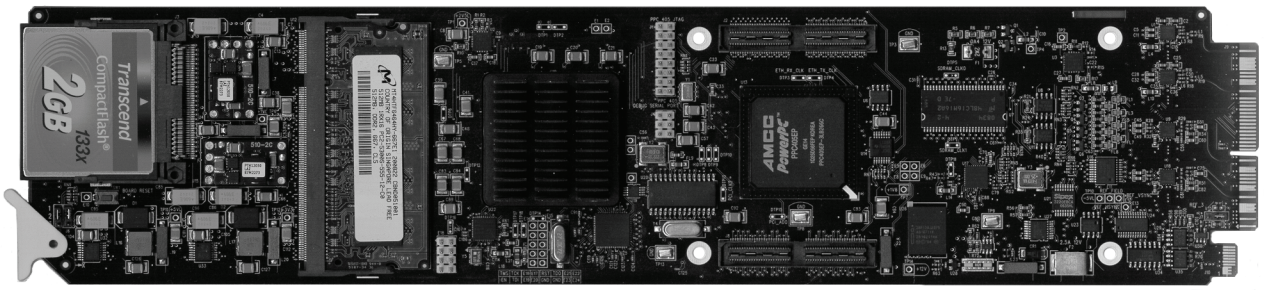
Ross Video Limited

QSP-8229
Quad Split
User Manual



ROSS
Live Production Technology™

openGear

QSP-8229 • Quad Split User Manual

- Ross Part Number: **8229DR-004-01**
- Release Date: January 5, 2010. Printed in Canada.

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Important Regulatory and Safety Notices

Before using this product and any associated equipment, refer to the "**Important Safety Instructions**" listed below to avoid personnel injury and to prevent product damage.

Products may require specific equipment, and/or installation procedures to be carried out to satisfy certain regulatory compliance requirements. Notices have been included in this publication to call attention to these specific requirements.

Symbol Meanings

This symbol on the equipment refers you to important operating and maintenance (servicing) instructions within the Product Manual Documentation. Failure to heed this information may present a major risk of damage or injury to persons or equipment.

Warning — *The symbol with the word "**Warning**" within the equipment manual indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.*

Caution — *The symbol with the word "**Caution**" within the equipment manual indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.*

Notice — *The symbol with the word "**Notice**" within the equipment manual indicates a situation, which if not avoided, may result in major or minor equipment damage or a situation which could place the equipment in a non-compliant operating state.*

ESD Susceptibility — *This symbol is used to alert the user that an electrical or electronic device or assembly is susceptible to damage from an ESD event.*

Important Safety Instructions

Caution — *This product is intended to be a component product of the DFR-8300 series frame. Refer to the DFR-8300 series frame User Manual for important safety instructions regarding the proper installation and safe operation of the frame as well as its component products.*

Warning — *Certain parts of this equipment namely the power supply area still present a safety hazard, with the power switch in the OFF position. To avoid electrical shock, disconnect all A/C power cards from the chassis' rear appliance connectors before servicing this area.*

Warning — *Service barriers within this product are intended to protect the operator and service personnel from hazardous voltages. For continued safety, replace all barriers after any servicing.*
This product contains safety critical parts, which if incorrectly replaced may present a risk of fire or electrical shock. Components contained with the product's power supplies and power supply area, are not intended to be customer serviced and should be returned to the factory for repair. To reduce the risk of fire, replacement fuses must be the same time and rating. Only use attachments/accessories specified by the manufacturer.

Warning — *This product includes an "Ethernet Port" which allows this product to be connected to a local area network (LAN). Only connect to networks that remain inside the building. Do not connect to networks that go outside the building.*

EMC Notices

United States of America
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 Limited could void the user's authority to operate this equipment.*

CANADA

This Class "A" digital apparatus complies with Canadian ICES-003.

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

EUROPE

This equipment is in compliance with the essential requirements and other relevant provisions of **CE Directive 93/68/EEC**.

INTERNATIONAL

This equipment has been tested to **CISPR 22:1997** along with amendments **A1:2000** and **A2:2002**, 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

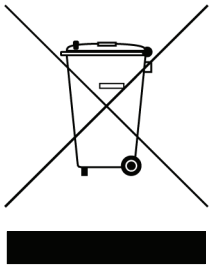
Routine maintenance to this openGear product is not required. This product contains no user serviceable parts. If the module does not appear to be working properly, please contact Technical Support using the numbers listed under the "Contact Us" section on the last page of this manual. All openGear products 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 that you purchased required the extraction and use of natural resources for its production. It 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:

- Overview
- Functional Block Diagrams
- Documentation Terms

A Word of Thanks

Congratulations on your purchase of the Ross Video QSP-8229 Quad Split. The QSP-8229 is part of a full line of Ross Video products which are backed by over 25 years of engineering and design expertise. You will be pleased at how easily your new card fits into your overall working environment. Equally pleasing is the product quality, reliability, and functionality.

Should you have a question pertaining to the installation or operation of your QSP-8229, please contact us at the numbers listed in the section "**Contact Us**" located at the back of this manual. Our technical support staff is always available for consultation, training, or service.

Overview

The QSP-8229 takes four SDI input streams and can reduce them into four quadrants in a single stream. The QSP-8229 has four SDI outputs which can be independently configured to display either the full-screen input or the Quad Split stream. When the output is showing full-screen, all HANC and VANC data, including the embedded audio data on the input is carried through to the output. When the output is showing Quad Split, all HANC and VANC data, including embedded audio, is stripped.

In addition, the 8320AR-049 Rear Module was designed to be used with the QSP-8229 to loop its inputs to a system, such as the CrossOver® production switcher, for a multi-viewer application.

GPI control allows external devices to choose which of the input selections, including the Quad Split, will be assigned to the outputs.

Features

The following features are included for the QSP-8229:

- Compliance with SDI SMPTE 292M (1.485Gbps) and SMPTE 259M (270Mbps)
- Multi-Definition support of popular formats such as 1080i, 720p, 480i, 576i, 1080pSF
- Assign any input, or Black, to any quadrant
- Text overlay to name the four input sources in the Quad Split
- Configure GPIs to trigger any of the outputs or a specific quadrant
- Specify how the input signal timing is reported (relative to the reference or the output)
- Bypass relay from BKGD A input to Output 1 *(8310AR-033 and 8320AR-033 Rear Modules only)*
- Four passive looping inputs *(8320AR-049 Rear Module only)*
- User selectable card analog reference
- Report status and configuration remotely via the DashBoard Control System™
- Ethernet 10/100 Mbit connectivity for easy upgrades in the field
- Independent Proc-Amp control on outputs
- Full DashBoard control and monitoring
- Fully compliant with openGear specifications and installs in the DFR-8300 series frames
- 5 year transferable warranty

Functional Block Diagrams

This section provides the functional block diagrams for the QSP-8229.

Non-Looping Configuration (8310AR-033, 8320AR-033)

This section includes the block diagram when using the QSP-8229 with the 8310AR-033 or 8320AR-033 Rear Modules.

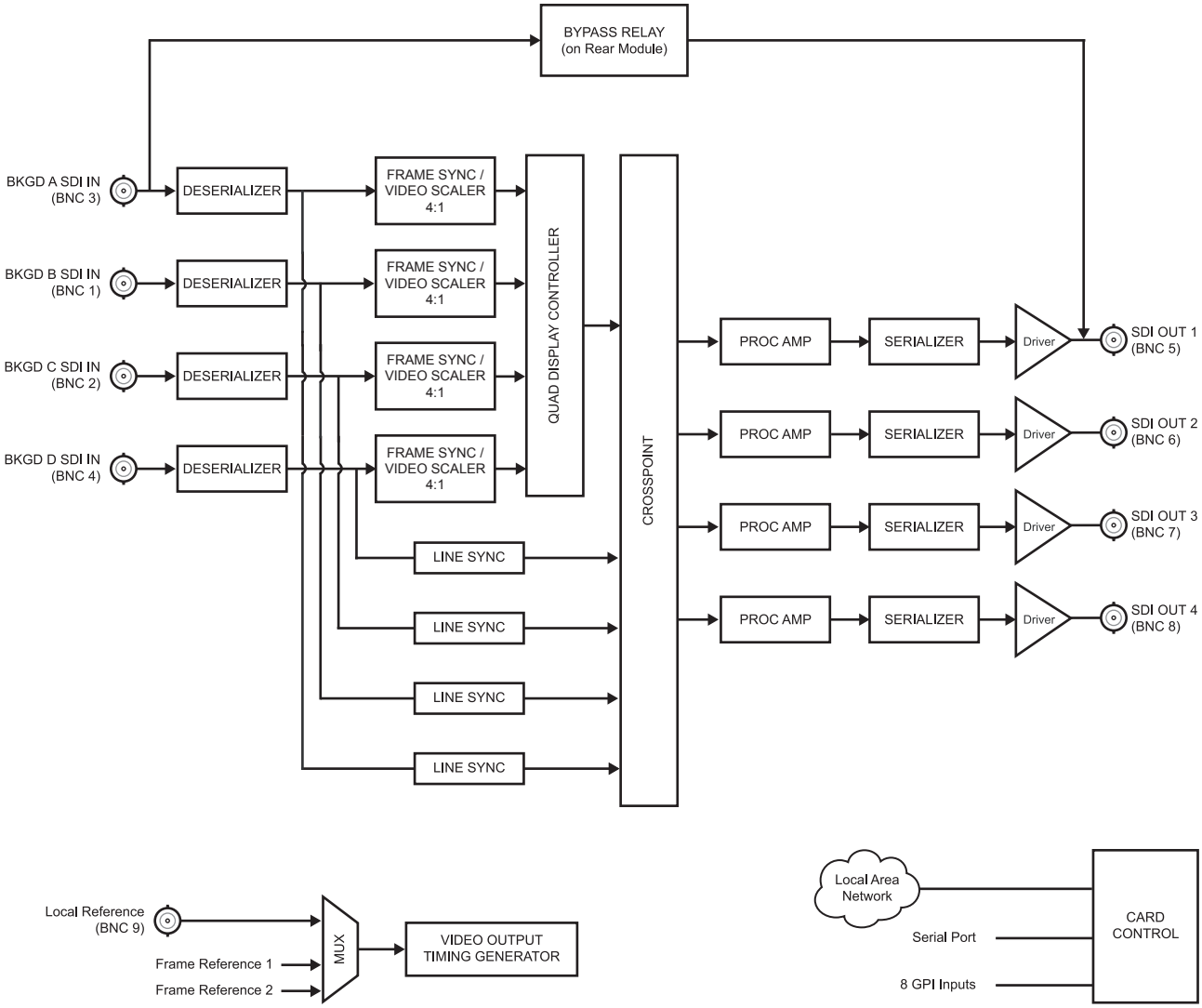


Figure 1.1 *QSP-8229 Block Diagram — 8310AR-033 and 8310AR-033 Rear Modules*

Looping Configuration (8320AR-049)

This section includes the block diagram when using the QSP-8229 with the 8320AR-049 Rear Module.

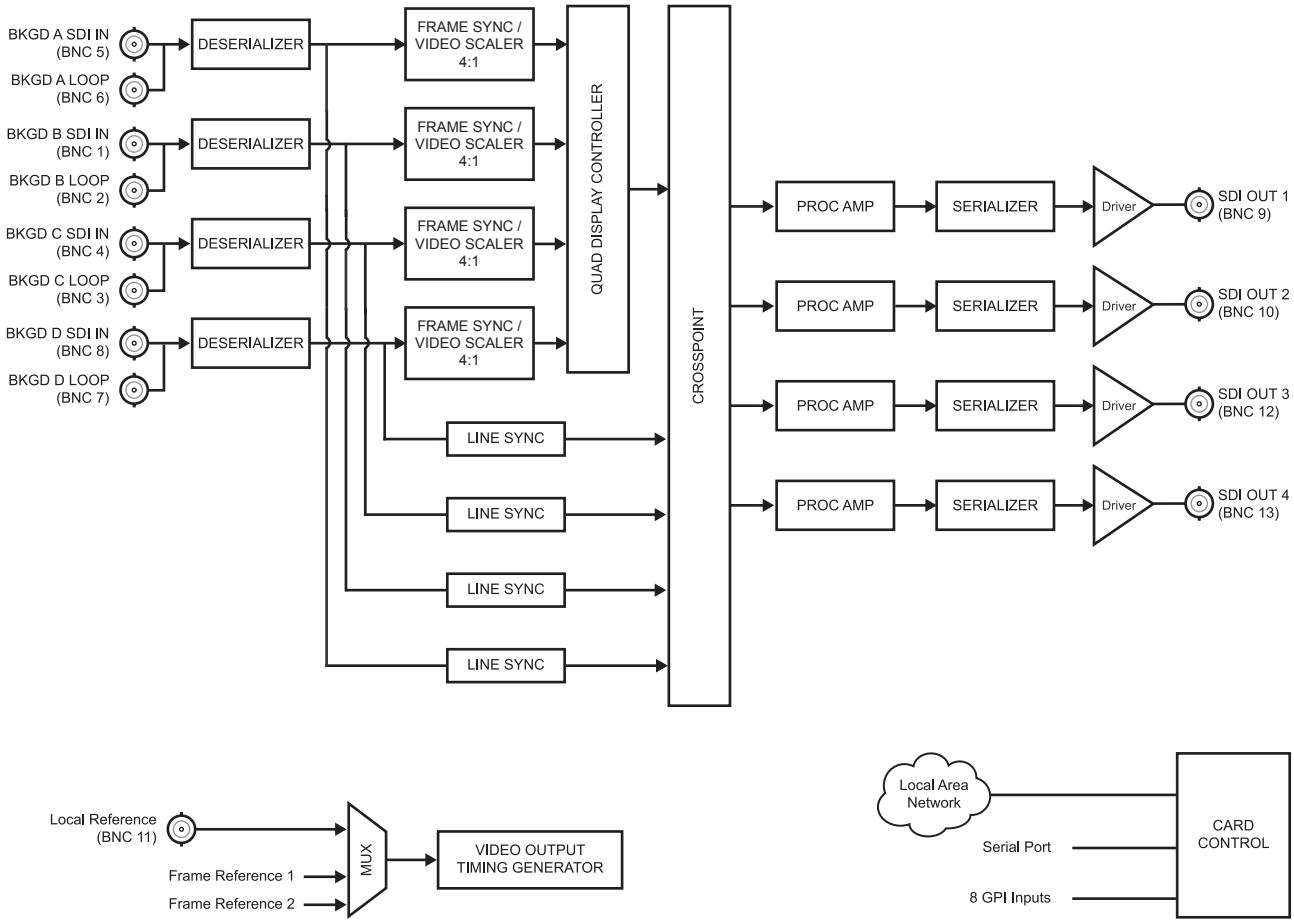


***Figure 1.2** QSP-8229 Block Diagram — 8320AR-049 Rear Module*

Documentation Terms

The following terms are used throughout this manual:

- All references to the **DFR-8300 series frames** also includes all versions of the 10-slot (DFR-8310) and 20-slot (DFR-8321) frames and any available options unless otherwise noted.
- "**Operator**" and "**User**" refers to the person who uses the QSP-8229.
- "**Board**" or "**Card**" refers to the QSP-8229 card, including all components and switches unless otherwise noted.
- "**System**" and "**Video System**" refers to the mix of interconnected digital and analog production equipment in which the QSP-8229 operates.
- "**Looping Rear Module**" refers to the 8320AR-049 Rear Module.
- "**Non-looping rear module**" refers to the 8310AR-033 or 8320AR-033 Rear Modules unless otherwise stated.
- "**DashBoard**" refers to the DashBoard Control System™.
- "**Bkgd**" refers to a Background source (A, B, C, or D).
- "**UL**" refers to the Upper Left quadrant.
- "**UR**" refers to the Upper Right quadrant.
- "**LL**" refers to the Lower Left quadrant.
- "**LR**" refers to the Lower Right quadrant.

Installation

In This Chapter

This chapter provides instructions for the basic physical installation and communications setup of your QSP-8229.

The following topics are discussed:

- Before You Begin
- Card Overview
- Card Installation
- Cabling
- Ethernet Port Cabling
- GPI Cabling

Before You Begin

Before you begin, ensure that you are using DashBoard version 2.3.0 or higher. The DashBoard Control System software and user manual are available to download from the Ross Video website.

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.*

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.

Card Overview

This section provides an overview of the QSP-8229 components.

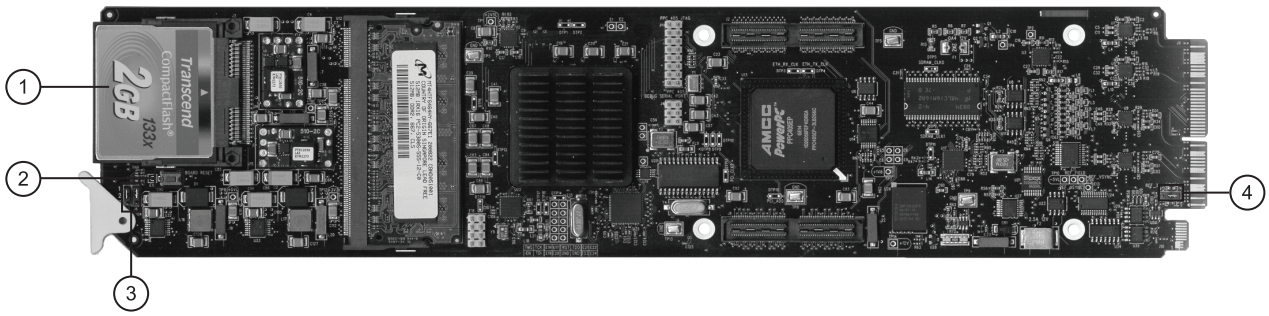


***Figure 2.1** Card-edge Components*

1) CompactFlash™ Card	3) JP5, JP6
2) Board Reset Button (SW1)	4) Reference Termination (JP7)

1. CompactFlash™ Card

The CompactFlash™ card is reserved for future usage.

2. Board Reset Button (SW1)

Pressing this button resets the microprocessor and re-initializes the card. This is a hard reset of the card and settings are not saved. This may cause loss of data and should only be performed as advised by Ross Video Technical Support.

3. JP5, JP6

These jumpers are not yet implemented and must be left in the default position of **Pin 1** (top) and **Pin 2** (center).

4. Reference Termination (JP7)

JP7 is a 3-position jumper block used to configure the 75 Ohm termination on the local analog reference input on **BNC 9** of the 8310AR-033 and 8320AR-033 Rear Modules, or **BNC 11** of the 8320AR-049 Rear Module.

- **Pin 1** (left) + **Pin 2** (center) position — In this position, the analog reference is terminated with an 75 Ohm resistor. This configuration is to be used for point-to-point cabling, or on the last card of a daisy chain topology. This is the default position (**Figure 2.2**).

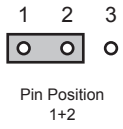


***Figure 2.2** JP7 — Default Position*

- **Pin 2** (center) + **Pin 3** (right) position — In this position, the 75 Ohm terminator is removed and the analog reference is not terminated. This configuration is used in a daisy chain cabling topology where only the last card needs to be terminated.

Card-edge LEDs

This section describes the card-edge LEDs. **Figure 2.3** outlines the locations of the card-edge controls.

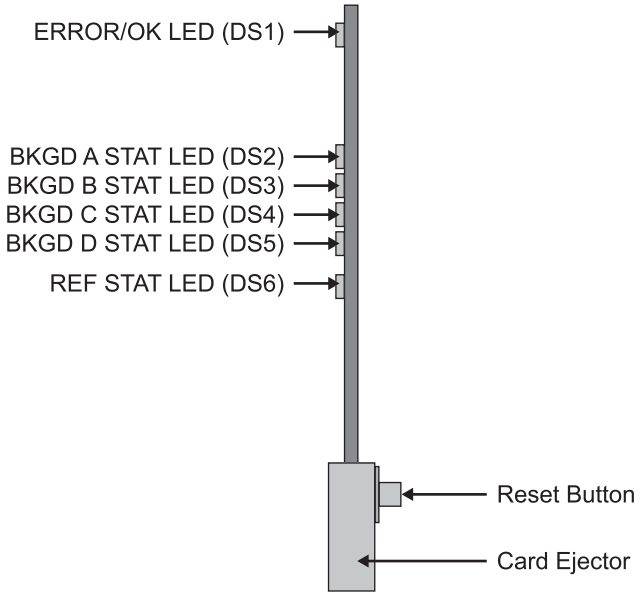


***Figure 2.3** Card-edge Controls*

Table 2.1 LEDs on the Card-edge

LED	Color	Display and Description
ERROR/OK	Green	When this LED is green, the card is in normal operation with no errors.
	Red	When this LED is red, the card is experiencing internal errors.
	Off	When this LED is off, there is no power to the card.
BKGD A STAT	Green	When this LED is green, the Bkgd A video input is valid.
	Red	When this LED is red, the Bkgd A input is not present or is invalid.
BKGD B STAT	Green	When this LED is green, the Bkgd B video input is valid.
	Red	When this LED is red, the Bkgd B input is not present or is invalid.
BKGD C STAT	Green	When this LED is green, the Bkgd C input is valid.
	Red	When this LED is red, the Bkgd C input is not present or is invalid.
BKGD D STAT	Green	When this LED is green, the Bkgd D input is valid.
	Red	When this LED is red, the Bkgd D input is not present or is invalid.
REF STAT	Green	When this LED is green, the reference signal is valid.
	Red	When this LED is red, the reference signal is not present or is invalid.

Card Installation

This section provides a brief overview of the required Rear Modules and physical installation of the QSP-8229.

Note — *The QSP-8229 requires either the 8310AR-033 or the 8320AR-033 Rear Module and therefore is not compatible with the DFR-8310-BNC frames (frames with the pre-installed 100-BNC fixed backplane).*

You must install the card with its 8310AR-033 Rear Module, occupying two slots in a DFR-8310-C, DFR-8310-N frame, or with its 8320AR-033 Rear Module occupying four slots in a DFR-8321 series frame.

Rear Modules

The procedure for installing the Rear Module in your openGear frame is the same regardless of the frame or module used. However, a different module is required depending on the openGear frame you are using. The Rear Module requires two slots in an openGear DFR-8310 series frame and four slots in an DFR-8321 series frame.

The rear module you install for the card depends on the frame you are using.

- **DFR-8310 series frame** — Use the **8310AR-033** Rear Module.
- **DFR-8321 series frame** — Use the **8320AR-033** or the **8320AR-049** Rear Modules.

Power Fail Relay

The 8310AR-033 or 8320AR-033 Rear Modules provide a built in bypass relay from BKGD A to Output 1 protects your on-air feed when the device is taken off-line and ensures critical program content is not lost.

The purpose of this relay is as follows:

- When the card is removed from the frame, the relay passes video from the BKGD A input to the Output 1 of the card. This allows the card to be serviced without interrupting the video signal.
- If the card loses power, or the frame loses power, the video still passes through.
- When the card boots, the relay will be left in Bypass mode until the card can generate a valid output. Once the card is up and functional, the relay is disabled.

8320AR-049 Rear Module

The 8320AR-049 Rear Module provides a passive looping BNC on all four SDI inputs (Bkgd A, B, C, and D). The SDI source signal should be connected to the BNC IN input and if required, the SDI input signal may be propagated to one more downstream equipment using the associated BNC Loop output. Refer to the section "**Looping Rear Module (8320AR-049)**" on page 2-9 for BNC designations and for additional cabling information.

- If you are using the BNC Loop output(s), then the looping SDI cable must drive only one piece of downstream equipment properly terminated with a 75 Ohm load at all time. If the downstream equipment must be disconnected for servicing, it is recommended to first disconnect the cable at the BNC Loop output of the 8320AR-049 Rear Module, otherwise the looping cable without termination will cause signal reflection that will likely corrupt the QSP-8229 SDI input signal.
- If you are not using the looping output, then the BNC Loop should be left open without any cable or standalone 75 Ohm termination attached to the BNC.

Installing the Rear Modules

If the Rear Module is already installed, skip this section.

Caution — *Ross Video does not recommend installing the card in the Slots 1,2 combination in a DFR-8310 series frame, or in Slots 1, 2, 3, 4 in the DFR-8321 series frames. These combinations provide the least air flow cooling in the frame and the card may overheat if installed in this location.*

Use the following procedure to install a Rear Module in an DFR-8300 series frame:

1. Refer to the ***DFR-8300 Series User Manual*** to ensure that the frame is properly installed according to instructions.
2. If you are installing the QSP-8229 in a **DFR-8310 series frame**, Ross Video recommends installing the Rear Module in one of the following combinations:
   - Slots 3, 4
   - Slots 5, 6
   - Slots 7, 8
   - Slots 9, 10
3. If you are installing the **8320AR-033** Rear Module in a **DFR-8321 series frame**, Ross Video recommends installing the Rear Module in one of the following combinations:
   - Slots 5, 6, 7, 8
   - Slots 9, 10, 11, 12
   - Slots 13, 14, 15, 16
   - Slots 17, 18, 19, 20
4. If you are installing the **8320AR-049** Rear Module in a **DFR-8321 series frame**, Ross Video recommends installing the Rear Module in one of the following combinations:
   - Slots 5, 6, 7, 8
   - Slots 9, 10, 11, 12
   - Slots 13, 14, 15, 16
   - Slots 17, 18, 19, 20
5. Remove the Blank Plates from the rear of the selected card frame slots.
6. Seat the bottom of the Rear Module in the seating slot at the base of the backplane of the frame.
7. Align the top holes of the Rear Module with the screw holes on the top-edge of the frame backplane.
8. Verify that the QSP-8229 aligns with the Rear Module before fully tightening any of the slot screws.
9. Using a Phillips screwdriver and the supplied screws, fasten the Rear Module to the backplane. Do not over tighten.
10. Install the supplied BNC label to the rear module.
11. Ensure proper frame cooling and ventilation by having all rear frame slots covered with Rear Modules or Blank Plates.

This completes the procedure for installing a Rear Module in the DFR-8300 series frames.

Installing the Card

Use the following procedure to install the card in an DFR-8300 series frame:

1. Ensure that the DFR-8300 series frame is properly installed.
2. If you are installing the QSP-8229 in a **DFR-8310 series frame**, install the card into an odd-numbered slot (e.g. slot 5, 7, or 9).

3. If you are installing the QSP-8229 in a **DFR-8321 series frame** and depending on the rear module and slot combination you chose for the rear module, install the card into one of the following slots:
   - **8320AR-033** Rear Module — Install the card in slot 6, 10, 14, or 18.
   - **8320AR-049** Rear Module — Install the card in slot 7, 11, 15, or 19.
4. Hold the card by the edges and carefully align the card edges with the slots in the frame.
5. Fully insert the card into the frame until the card is properly seated in the Rear Module.

This completes the procedure for installing the card in an DFR-8300 series frame.

Cabling

The QSP-8229 features four video inputs and four video outputs. This section provides general instructions for video input and output cabling the Rear Module for the cards.

Non-Looping Rear Modules (8310AR-033, 8320AR-033)

This section provides information when cabling the 8310AR-033 and 8320AR-033 Rear Modules. These rear modules do not support the looping feature. Refer to **Figure 2.4** and **Figure 2.5** for cabling designations when installing the 8310AR-033 and 8320AR-033 Rear Modules respectively.

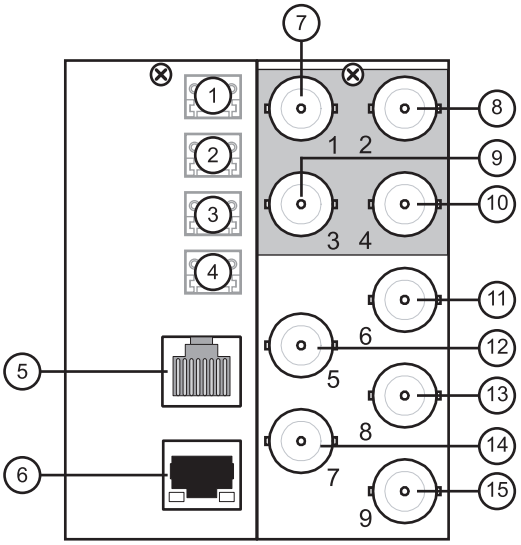


Figure 2.4 *8310AR-033 Cable Connections*

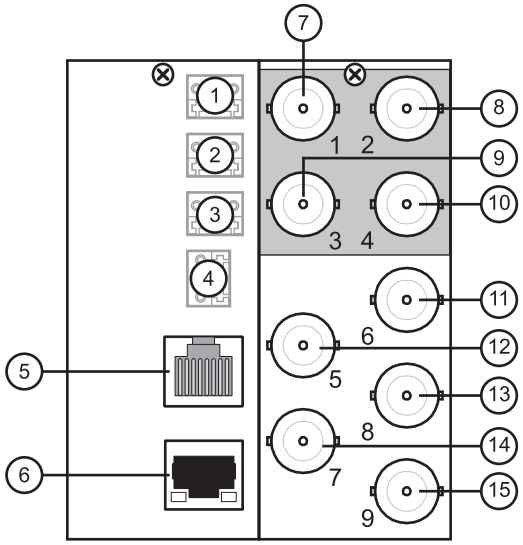


Figure 2.5 *8320AR-033 Cable Connections*

1) GPI 1,2 Port	6) Ethernet 10/100 Port	11) OUT 2 BNC
2) GPI 3,4 Port	7) Bkgd B In BNC	12) OUT 1 BNC
3) GPI 5,6 Port	8) Bkgd C In BNC	13) OUT 4 BNC
4) GPI 7,8 Port	9) Bkgd A In BNC	14) OUT 3 BNC
5) Serial COM Port	10) Bkgd D In BNC	15) REF IN BNC

Cabling for Non-Looping Rear Modules

You can use up to 80m of industry standard 75 Ohm coaxial cable with these rear modules.

Use the following procedure to connect video input and output cables to the Rear Module:

1. Connect the appropriate input video sources to the BNC connectors on the Rear Module.
2. Connect the output BNC connectors as required for your facility.
3. To use an external reference source other than the Frame Ref 1 and Frame Ref 2:
   - Connect the reference input source to **BNC 9**.
   - Configure **JP7** to for the 75 Ohm termination on the local reference. Refer to the section "**Card Overview**" on page 2-3 for details.

This completes the procedure for connecting video input and output cables to the Rear Module.

Looping Rear Module (8320AR-049)

The Looping feature is only available for the QSP-8229 when using the **8320AR-049** Rear Module in a DFR-8321 series frame. Refer to **Figure 2.6** for cabling designations.

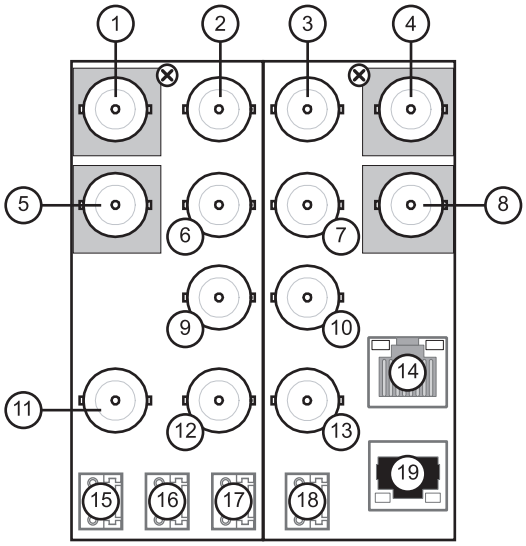


***Figure 2.6** 8320AR-049 Cable Connections*

1) Bkgd B In BNC	6) Bkgd A Loop Out BNC	11) REF IN BNC	16) GPI 3,4 Port
2) Bkgd B Loop Out BNC	7) Bkgd D Loop Out BNC	12) OUT 3 BNC	17) GPI 5,6 Port
3) Bkgd C Loop Out BNC	8) Bkgd D In BNC	13) OUT 4 BNC	18) GPI 7,8 Port
4) Bkgd C In BNC	9) OUT 1 BNC	14) Serial COM Port	19) Ethernet 10/100 Port
5) Bkgd A In BNC	10) OUT 2 BNC	15) GPI 1,2 Port	

Cabling for Looping Rear Modules

Use the following procedure to connect video input and output cables to the Rear Module:

1. Refer to **Table 2.2** for tested cable lengths. Note that other configurations respecting the total cable lengths are possible, but are not listed here.

Table 2.2 Cabling Lengths for the 8320AR-049 Rear Module

Configuration	Input Cable Length	Loop Cable Length	Total Cable Length
270Mbps	145m	5m	150m
	5m	145m	150m
1.5Gbps	50m	4m	54m
	4m	50m	54m

2. Connect the appropriate input and output sources to the BNC connectors on the Rear Module. You do not need to terminate the Loop BNC(s) if you are not setting up a looping application.
3. To use an external reference source other than the Frame Ref 1 and Frame Ref 2:
   - Connect the reference input source to **BNC 11**.
   - Configure **JP7** to for the 75 Ohm termination on the local reference. Refer to the section "**Card Overview**" on page 2-3 for details.

This completes the procedure for connecting video input and output cables to the Rear Module.

Ethernet Port Cabling

The Ethernet Port on the Rear Module is used to connect to an ethernet network for communications, software upgrades using DashBoard.

This section presents a general overview of the ethernet connection process. The exact steps for connecting your card to your facility via an ethernet network depends on the network requirements of your facility.

Note — *Contact your IT Department before connecting the card 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 the card.*

Ethernet Communication Cabling

In order to properly complete this procedure, you need the following cables and equipment:

- **Ethernet Cable** — This is a standard network CAT-5 cable to connect the card to your facility network. You can use a standard straight-through ethernet cable, with no need for a crossover cable as the card includes an Auto-MDIX ethernet PHY that will switch from straight to crossover automatically as needed. Ross Video does not supply this cable.

Use the following procedure to connect the card to an ethernet network:

1. Ensure that you are running DashBoard Control System version 2.3.0 or higher before proceeding. The DashBoard Control System software and user manual are available to download from the Ross Video website.
2. Connect the card to the same subnet as your DashBoard computer or to a network that has a route to the network your DashBoard computer is on. Refer to the section "**Cabling**" on page 2-8 for the **Ethernet 10/100** port location on your Rear Module.
3. Make a note of the IP Address as this information is required when configuring the communication settings for your card.
    - Network topologies vary greatly between facilities. Contact your IT Department for assistance in connecting your card to the appropriate network at your location.

This completes the procedure for connecting the card to an ethernet network. For information on setting up the ethernet communications for the card, refer to the section "**Ethernet Communication Setup**" on page 3-6.

GPI Cabling

The QSP-8229 includes eight General Purpose Input (GPI) pins to interface with external equipment. There are eight input pins labelled GPIO 1-8 on the terminal block of the Rear Module (**Figure 2.4**, **Figure 2.5**, or **Figure 2.6**). Ports are pre-configured to be only an input (GPI). Electrically, the ports are setup for contact closure to ground, with a 1Kilo-Ohms pull-up resistor to +5V, and default to a logical high state.

Note — *The default state for the GPI/O contacts is active low signalling. If a GPI cable is absent from the Rear Module, no GPI will be triggered and executed inadvertently by the card.*

GPI Cable Connections

The GPI ports are available on four 3-pin WECO® connectors located on the Rear Module. Four 3-pin mating WECO® plugs are provided with the Rear Module. This section provides information for connecting GPI/Tally cables to the installed Rear Modules of your DFR-8300 series frame.

Use the following procedure to cable the rear module for GPIs:

1. Locate the GPI ports on the Rear Module. Refer to the Rear Module labelling and Refer to the section "**Cabling**" on page 2-8 for port locations.
2. Wire the GPI ports as follows:
   - The left and right pins are the two GPI signals while the center pin is the common Ground (GND).
   - Refer to **Figure 2.7**, **Figure 2.8**, or **Figure 2.9** for GPI configuration on the Rear Module.

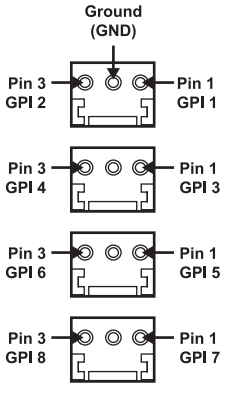


Figure 2.7 *8310AR-033 GPI Connections*

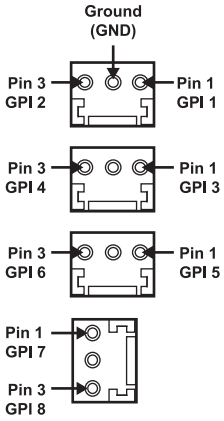


Figure 2.8 *8320AR-033 GPI Connections*

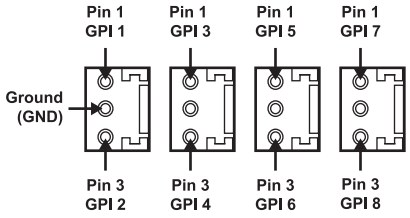


Figure 2.9 *8320AR-049 GPI Connections*

This completes the procedure for cabling the rear module for GPIs. For details on setting up the communications for the GPI ports, refer to the section "**GPI Communication Setup**" on page 3-7.

Configuration

In This Chapter

This chapter provides instructions for configuring the QSP-8229 using the options available in the DashBoard Control System™.

The following topics are discussed:

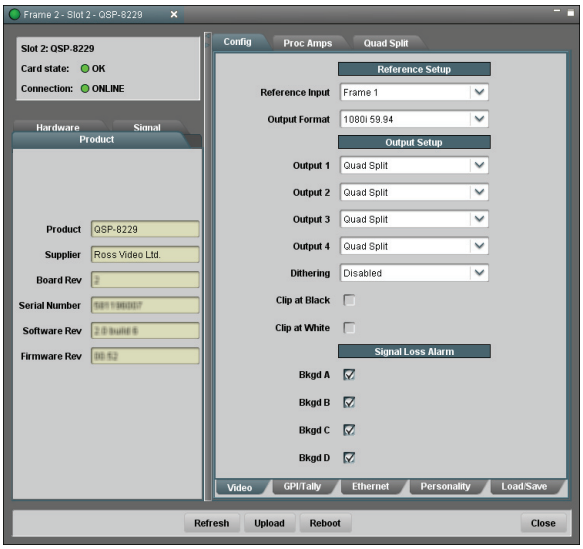
- Video Format and Reference Configuration
- Video Input and Output Configuration
- Ethernet Communication Setup
- GPI Communication Setup
- Loading the Factory Defaults
- Software Upgrades

Note — *Before proceeding, ensure that you are running DashBoard software version 2.3.0 or higher. The DashBoard Control System software and user manual are available to download from the Ross Video website.*

Video Format and Reference Configuration

Use the following procedure to configure the video format and reference on the card using DashBoard:

1. Display the **Device** tab of the card by double-clicking its status indicator in the **Basic Tree View**.
2. Display the **Video** tab as follows:
   - From the **Device** tab, select the **Config** tab.
   - Select the **Video** tab located at the bottom of the **Config** tab.



Config Tab — Video Tab

3. Select a Reference Input from the **Reference Input** list. You can choose from the following:
   - **Frame 1** — Select this option to use the reference source connected to the **FRAME REF 1** port on the openGear DFR-8300 series frame.
   - **Frame 2** — Select this option to use the reference source connected to the **FRAME REF 2** port on the openGear DFR-8300 series frame.
   - **External** — Select this option to use the external reference source connected to **REF IN** on the Rear Module.
     - › Use **JP7** on the card to enable or disable a 75 Ohm terminator on the External Reference input. Refer to the section "**Card Overview**" on page 2-3 for information on configuring **JP7**.
4. Select the card output video format from the **Output Format** menu. Ensure that it is the same format as in the input video format.

This completes the procedure for configuring the video format and reference on the card using DashBoard.

Operating Tip — *Use the **Signal** tab to monitor the Signal status, including the reference and the Background sources. Refer to the section "**Status Tabs**" on page 5-2 for more information.*

Video Input and Output Configuration

Keep the following in mind when configuring your video inputs and outputs:

- You can configure any of the four outputs independently to display the Quad Split or any of the backgrounds. Note that when a Bkgd source is fed through full screen, the ancillary data will also pass.
- The Quad sources can be any of the four Background sources, or an internally generated black.
- The Quad outputs are configured directly from the **Quad Split** tab.
- Each output has a Proc Amp that can adjust parameters such as the black offset and gain.
- All of the outputs can be enabled to add dither, clip to SMPTE black or allow super-black, or clip to SMPTE white or allow super-white.

Configuring the Video Outputs

Use the following procedure to configure your video outputs on the card:

1. Display the **Device** tab of the card by double-clicking its status indicator in the **Basic Tree View**.
2. Display the **Video** tab as follows:
   - From the **Device** tab, select the **Config** tab.
   - Select the **Video** tab located at the bottom of the **Config** tab.
3. From the **Output Setup** area, locate the Output BNC you want to configure.
4. Choose an output to configure as follows:
   - **Output 1** — Select this field to configure the source on Output 1.
   - **Output 2** — Select this field to configure the source on Output 2.
   - **Output 3** — Select this field to configure the source on Output 3.
   - **Output 4** — Select this field to configure the source on Output 4.
5. Select the output that you want to assign to the selected Output BNC from the corresponding **Output** field. You can choose between the following:
   - **Quad Split** — Select this option to assign the Quad Split to the selected output.
   - **Bkgd A** — Select this option to assign Bkgd A to the selected output.
   - **Bkgd B** — Select this option to assign Bkgd B to the selected output.
   - **Bkgd C** — Select this option to assign Bkgd C to the selected output.
   - **Bkgd D** — Select this option to assign Bkgd D to the selected output.
6. From the **Dithering** field, select the type of dithering you want to apply to all outputs. You can choose between the following:
   - **Disabled** — Select this option to disable the Dithering feature.
   - **Enabled low** — Select this option to enable 2 bit dithering.
   - **Enabled medium** — Select this option to enable 3 bit dithering.
   - **Enabled high** — Select this option to enable 4 bit dithering.
7. Enable the Clip White or Clip Black feature as follows:
   - **Clip at Black** — Select this box to enable the card to clip to SMPTE black on all outputs. An unchecked box allows super-black.

- **Clip at White** — Select this box to enable the card to clip to SMPTE white on all outputs. An unchecked box allows super-white.

This completes the procedure for configuring your outputs on the card.

Configuring the Input Signal Timing Display

The **Timing Display** feature enables you to configure how the input signal timing is reported by DashBoard. This information is displayed in the **Bkgd A, B, C,** and **D Timing** fields of the **Signal** tab in the number of clocks and lines. Negative values indicate the input signal timing is earlier than the reference. Positive values indicate the input signal timing is later than the reference. Note that there are 4400 clocks per line when using the 1080i 59.94Hz format.

Use the following procedure to configure the input signal timing for your QSP-8229:

1. Display the **Device** tab of the card by double-clicking its status indicator in the **Basic Tree View**.
2. Display the **Personality** tab as follows:
   - From the **Device** tab, select the **Config** tab.
   - Select the **Personality** tab located at the bottom of the **Config** tab.
3. Configure how the signal timing by selecting one of the following options from the **Timing Display** menu:
   - **Relative to Reference** — Select this option to display the timing offset values of the SDI inputs and output relative to the selected analog reference as follows:
     - › A negative offset value indicates that the SDI signal is earlier than the analog reference.
     - › A positive value indicates that the SDI signal is later than the analog reference.
   - **Input to Output** — Select this option to display the timing offset values of the SDI BKGD inputs relative to the SDI output of the card as follows:
     - › A negative offset value indicates that the SDI BKGD input signal is earlier than the SDI OUT signal.
     - › A positive value indicates that the SDI BKGD input signal is later than the SDI OUT signal.

This completes the procedure for configuring the input signal timing for your QSP-8229.

Signal Loss Alarm Setup

The **Signal Loss Alarm** feature enables DashBoard to display status alarms when a loss of signal is experienced on the Background input sources. The alarm information displays in the **Signal** tab of DashBoard and on the card-edge LEDs. For more information on the status LEDs, refer to the section "**Card-edge LEDs**" on page 2-4.

Use the following procedure to set up the Signal Loss Alarm feature:

1. Display the **Device** tab of the card by double-clicking its status indicator in the **Basic Tree View**.
2. Display the **Video** tab as follows:
   - From the **Device** tab, select the **Config** tab.
   - Select the **Video** tab located at the bottom of the **Config** tab.
3. Enable or disable the alarms by selecting or deselecting the required boxes in the **Signal Loss Alarm** area as follows:

- **Bkgd A** — Select this box to enable DashBoard to report the status of the Background A input source.
- **Bkgd B** — Select this box to enable DashBoard to report the status of the Background B input source.
- **Bkgd C** — Select this box to enable DashBoard to report the status of the Background C input source.
- **Bkgd D** — Selecting this box enables DashBoard to report the status of the Background D input source.

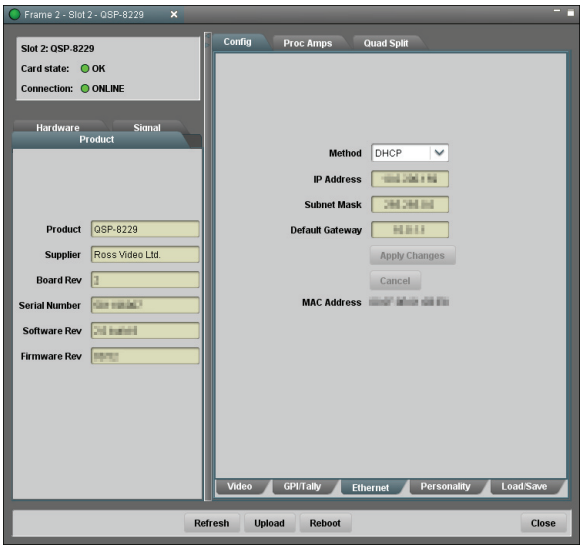
This completes the procedure for setting up the Signal Loss Alarm.

Ethernet Communication Setup

To enable the card to perform software upgrades, the card must be configured with valid ethernet settings for the 10/100 Ethernet port on the Rear Module of the card. The settings can be specified manually (**Static**) or may be obtained automatically from a server on your network (**DHCP**).

Use the following procedure to set up ethernet communications for the card:

1. Display the **Device** tab of the card by double-clicking its status indicator in the **Basic Tree View**.
2. Display the **Ethernet** tab as follows:
   - From the **Device** tab, select the **Config** tab.
   - Select the **Ethernet** tab located at the bottom of the **Config** tab.



Config Tab — Ethernet Tab

3. To obtain network settings automatically:
   - Select **DHCP** from the **Method** drop-down list.
   - To save the new settings, click **Apply Changes**. Note that clicking **Cancel** will revert to the previous settings.
4. To manually configure the ethernet settings:
   - Select **Static** from the **Method** drop-down list.
   - Enter the **IP Address**, **Subnet Mask**, and **Default Gateway** settings for the card.
   - To save the new settings, click **Apply Changes**. Note that clicking **Cancel** will revert to the previous settings.

This completes the procedure for setting up ethernet communications for the card.

Note — *The **Ethernet Status** field in the **Ethernet** tab displays the current status of your connection. Refer to **Table 5.4** for a list of the messages.*

GPI Communication Setup

This section explains how to configure communications for GPIs on the card using the menus and options available in DashBoard.

Note — *The QSP-8229 does not support Tallies at this time.*

GPI Overview

When configured as a GPI, a port behaves as an input, and can be used to trigger actions such as switching between the Quad Split display or full-screen BKGD input display. A push-button switch, or an ON-OFF switch, may be directly connected between the port and the adjacent ground pin. Alternatively, a external device may drive a low level. Minimum pulse duration is 1ms, anything shorter will be filtered out.

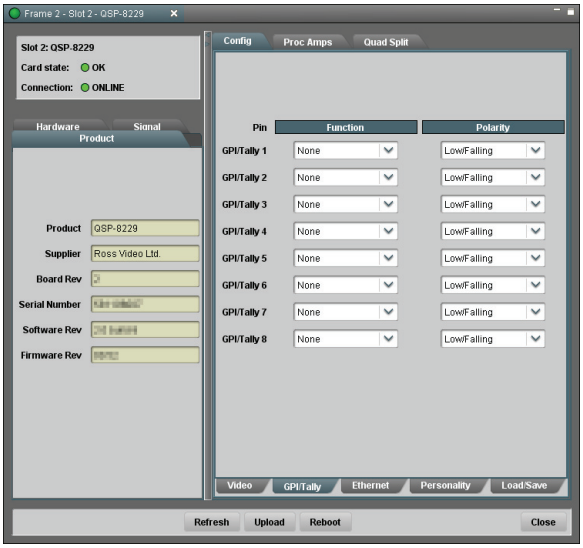
GPI Communication Setup

You can configure the GPI to control the display configuration. Each output can be set to display the Quad Split, a Bkgd source, or to cycle through the sources each time the specific GPI/Tally is triggered.

Note — *Each GPI should be set to a different function. Setting more than one GPI to the same function can cause unexpected behavior. Multiple GPIs can be set to None at the same time.*

Use the following procedure to configure remote control for GPIs:

1. Display the **Device** tab of the card by double-clicking its status indicator in the **Basic Tree View**.
2. Display the **GPI/Tally** tab as follows:
   - From the **Device** tab, select the **Config** tab.
   - Select the **GPI/Tally** tab located at the bottom of the **Config** tab.



Config Tab — GPI/Tally Tab

3. Assign a transition event to a GPI /Tally by selecting the function from the **Function** drop-down list to the required GPI/Tally. Choose from the following:

   - **None** — Select this option to not assign a function to the selected GPI/Tally. The Polarity setting is ignored. This is the default setting.
   - **Output xx - Quad** — Selecting this option causes the specified output, where **xx** represents the output, to display the Quad Split when the GPI is triggered.
   - **Output xx - Bkgd #** — Selecting this option causes the specified output, where **xx** represents the output, to display the specified full-screen input when the GPI is triggered.
   - **Output xx - Cycle** — Selecting this option causes the specified output, where **xx** represents the output, to cycle through the Quad Split and full-screen inputs when the GPI is triggered.
   - **yy Quad - Black** — Selecting this option causes the specified quadrant, where **yy** represents the quadrant (UL, UR, LL, and LR), to show black when the GPI is triggered.
   - **yy Quad - Bkgd #** — Selecting this option causes the specified quadrant, where **yy** represents the quadrant, to show the specified Bkgd source when the GPI is triggered.
   - **yy Quad - Cycle** — Selecting this option causes the specified quadrant, where **yy** represents the quadrant, to cycle through Black and the four inputs when the GPI is triggered.

4. Select a Polarity for the GPI from the **Polarity** column. Choose from the following:

   - **High/Rising** — Select this option to have the GPI triggered on a static High level, or on a Low-to-High pulse.
   - **Low/Falling** — Select this option to have the GPI triggered on a static Low level or on a High-to-Low pulse. This is the default setting.

This completes the procedure for configuring remote control for GPIs.

Loading the Factory Defaults

If required, the card menu parameters can be reset to the factory default values using the option available in the **Load/Save** tab.

Note — *Ethernet settings, reference input selection, and the output formats are not reset using this method.*

Use the following procedure to reset the card to the factory default configuration in DashBoard:

1. Display the **Device** tab of the card by double-clicking its status indicator in the **Basic Tree View**.
2. Display the **Load/Save** tab as follows:
   - From the **Device** tab, select the **Config** tab.
   - Select the **Load/Save** tab located at the bottom of the **Config** tab.
3. From the **Global Settings** area, click **Load Factory Defaults** to display the **Confirm** dialog.
4. Press **Yes** to load the factory default values for all menu parameters, or **No** to cancel the load and close the dialog.

This completes the procedure for resetting the card to the factory default configuration in DashBoard.

Software Upgrades

The card can be upgraded in the field using the 10/100 Ethernet port on the Rear Module and using the options available in DashBoard. Refer to the section "**Ethernet Communication Setup**" on page 3-6 for setting up ethernet communications.

Note — *This procedure assumes that you are running DashBoard v3.0 or higher.*

Use the following procedure to upgrade the software on a card:

1. Contact Ross Technical Support for the latest software version file.
2. 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 Upload** dialog.
4. Navigate to the ***.bin** file you wish to upload.
5. Click **Open**.
6. If you are upgrading a single card, click **Finish** to start the upgrade. Proceed to step 8.
7. If you are upgrading multiple cards:
   - Click **Next >** to display the **Select Destination menu**. This menu provides a list of the compatible cards based on the card selected in step 2.
   - Specify the card(s) to upload the file to by selecting the check box(es) for the cards you wish to upload the file to.
   - Verify that the card(s) you wish to upload the file to. The **Error/Warning** fields indicate any errors, such as incompatible software or card type mismatch.
   - Click **Finish**.
8. Monitor the upgrade.
   - A **Upload Status** dialog enables you to monitor the upgrade process.
   - Note that if the ethernet connection is invalid, such as the ethernet cable is unplugged from the card rear module, the card uses the internal frame communication bus for the upload process resulting in a longer upgrade process.
   - The card reboots automatically once the file is uploaded. The card is temporarily taken offline.
   - The reboot process is complete once the status indicators for the **Card State** and **Connection** return to their previous status.

Operating Tip — *If you are running DashBoard v2.3 or lower, you must click **Reboot** in the **Device** tab to complete the upgrade process.*

This completes the procedure for upgrading the software on a card.

Troubleshooting

If you encounter problems when upgrading your card software, verify the following:

- Your network settings on the card are valid. Refer to **Table 5.4** for a list of settings.
- Ethernet cable is properly connected if you are uploading the file via a network connection.
- The file you are attempting to load is a ***.bin** file that is for the card you are upgrading.

Operation

In This Chapter

This chapter provides a summary of the operational features, such as Proc Amp controls and assigning input sources to the Quad Split.

The following topics are discussed:

- Adjusting the Proc Amp Controls
- Configuring the Quad Split Sources
- Notes on Timing

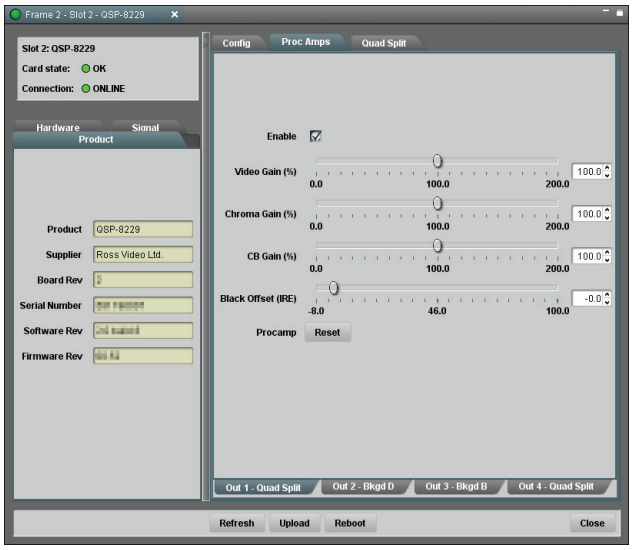
Note — *Before proceeding, ensure that you are running DashBoard software version 2.3.0 or higher. The DashBoard Control System software and user manual are available for download from the Ross Video website.*

Adjusting the Proc Amp Controls

Each output on the card has a Proc Amp that can adjust the black offset, the video gain, the chroma gain and the CB gain. This section briefly outlines how to adjust the options available in the **Proc Amp** tab.

Use the following procedure to adjust an output using a Proc Amp:

1. Display the **Device** tab of the card by double-clicking its status indicator in the **Basic Tree View**.
2. Select an output signal to adjust as follows:
   - Select the **Proc Amps** tab.
   - Select the **Output** tab for the output signal you want to adjust. The **Output** tabs are located at the bottom of the **Proc Amps** tab.



Proc Amps Tab — Out 1 - Program Tab

3. Select the **Enable** box to ensure the color adjustments are applied. The **Enable** box must be selected in order for any color correction to take effect on the selected output.
4. Adjust the **Video Gain** of the card video outputs as follows:
   - Use the **Video Gain** slider to adjust the amount of Video Gain you want to apply. Increasing overall gain causes an increase in contrast while also making colors more saturated and vivid. Decreasing overall gain causes a decrease in contrast while de-saturating colors.
5. Adjust the **Chroma Gain** of the card video outputs as follows:
   - Use the **Chroma Gain** slider to adjust the chrominance video signal components (Cr and Cb) simultaneously. Increasing the chroma gain value causes the video signal colors to become increasingly saturated and more vivid. Decreasing the chroma gain value de-saturates color from the video signal until it is black and white.
6. Adjust the **CB Gain** of the card video outputs as follows:
   - Use the **CB Gain** slider to adjust the Cb component of the chrominance video signal. Increasing the Cb Gain value causes the video signal colors to become increasingly saturated with blue. Decreasing the Cb Gain value desaturates blue from the video signal.

7. Adjust the **Black Offset** of the card video outputs as follows:

   - Use the **Black Offset** slider to adjust the Black Offset you want to apply. Increasing the Black Offset value causes a lightening effect. Decreasing the Black Offset value causes a darkening effect.

Operating Tip — *To reset the Proc Amp settings to the default values, click **Reset** and then **Yes** in the **Confirm** dialog box.*

This completes the procedure for adjusting an output using a Proc Amp.

Configuring the Quad Split Sources

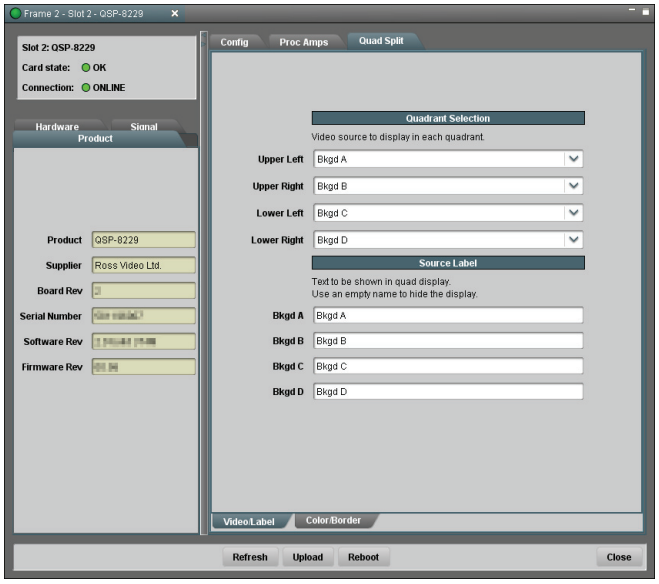
This section briefly describes how to set up your Quad Split sources using the **Quad Split** tab in DashBoard. From the **Quad Split** tab, you can assign any input to any quadrant and add a text label to display at the bottom of the applicable quadrant. All active video content will be visible, including the 480i Line 21 content. Note that when a loss of input in a quadrant occurs, the QSP-8229 fills that quadrant with a blue pattern.

Note — *The ancillary data (HANC and VANC) of the Quad Split is empty but filled with valid black.*

Assigning Sources to the Quad Split

Use the following procedure to assign sources to a Quad Split quadrant:

1. Display the **Device** tab of the card by double-clicking its status indicator in the **Basic Tree View**.
2. From the **Device** tab, select the **Quad Split** tab.



Quad Split — Video/Label Tab

3. Select the **Video/Label** tab.
4. Select the quadrant you wish to configure.
5. Assign a video source to the specific quadrant by selecting an option from the corresponding drop-down menu. Choose from the following:
   - **Black** — Select this option to assign black to the specific quadrant.
   - **Bkgd A** — Select this option to assign the Bkgd A input to the specific quadrant.
   - **Bkgd B** — Select this option to assign the Bkgd B input to the specific quadrant.
   - **Bkgd C** — Select this option to assign the Bkgd C input to the specific quadrant.
   - **Bkgd D** — Select this option to assign the Bkgd D input to the specific quadrant.
6. To apply a text label to the quadrant:
   - Locate the **Source Label** area of the **Quad Split** tab.
   - Enter a text label in the applicable text box for the input source.

- Press **Enter** on your keyboard to apply the new text.

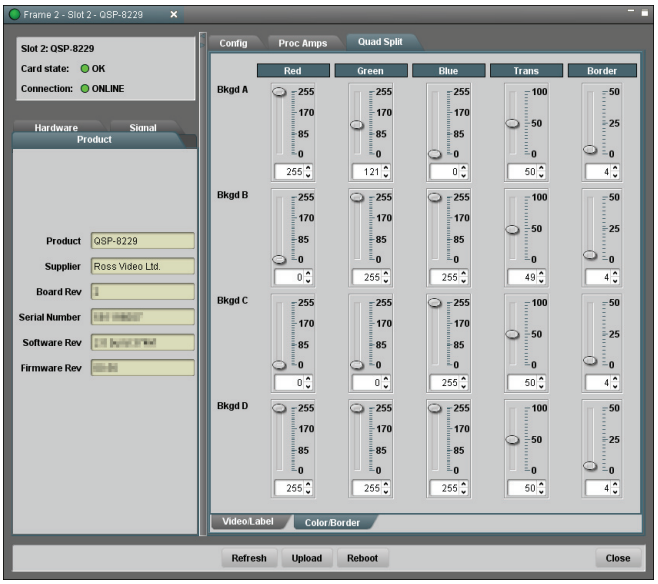
This completes the procedure for assigning sources to the Quad Split.

Applying a Border

The Color/Border feature allows you to set the color (RGB format), transparency, and overall thickness of the border that is applied to the specified source. Borders are created from the outside edge of the quadrant and expand inward. The border is applicable to the specified source and not a specific quadrant.

Use the following procedure to adjust the border of a quadrant source:

1. Display the **Device** tab of the card by double-clicking its status indicator in the **Basic Tree View**.
2. From the **Device** tab, select the **Quad Split** tab.



Quad Split — Color/Border Tab

3. Select the **Color/Border** tab.
4. Select the source you wish to configure a border for.
5. Adjust the color of the border as follows:
   - Use the **Red** slider to adjust the amount of red that is mixed in the border of the specified source. Note that 0 has no intensity, and 255 has full intensity.
   - Use the **Green** slider to adjust the amount of green that is mixed in the border of the specified source. Note that 0 has no intensity, and 255 has full intensity.
   - Use the **Blue** slider to adjust the amount of blue that is mixed in the border of the specified source. Note that 0 has no intensity, and 255 has full intensity.
6. Use the **Trans** slider to adjust the transparency of the border, around the specified source, from opaque (0%) to fully transparent (100%)
7. Use the **Border** slider to adjust the thickness of the border in pixel units. Notice that as you adjust the thickness of the border, it expands inwards from the edge of the quadrant. A value of 0 removes the border. For best results, Ross Video recommends to increase the border width in increments of 2 pixels.

This completes the procedure for adjusting the border of a quadrant source.

Notes on Timing

This section provides additional information on the timing features of the QSP-8229:

- On the current software release, SDI output timing of the card is currently fixed at 0.5 line after the selected analog reference. For example, when using a 1080i output format, the **Output Timing** field in the **Signal** tab will be +2200 clocks because the output timing measurement is relative to the selected analog reference.
- Each video input has a line sync that can support a full line of SD or HD video including horizontal blanking.
- When showing full screen BKGD inputs (no Quad Split), line syncs are used and all BKGD video inputs must be timed within +/- 0.5 line offset from the selected analog reference. Exceeding this tolerance will result in shifting the full screen output display by one or several lines.
- When using Quad Split, frame syncs are used and the BKGD video inputs do not need to be timed to the selected analog reference. The video scaling requires a frame store operation and the BKGD inputs will be delayed by up to one frame before being displayed in the Quad Split quadrants.
- All of the video outputs must be the same video format as the video inputs. If the formats do not match, the card reports an error in the DashBoard **Signal Status** area and on the card-edge LEDs.
- When using Quad Split, inputs that are mis-timed will be aligned to the next frame boundary.
- By default, DashBoard displays output timing relative to the reference. Signal timing is reported in Clocks and Lines.
- Use the Timing Display option in the **Personality** tab to configure how DashBoard displays the input signal timing. You can choose to report the timing as relative to the output or relative to the reference.

Appendix A. DashBoard Menus

In This Appendix

The DashBoard Control System enables you to monitor and control openGear frames and cards from a computer. DashBoard communicates with other cards in the openGear DFR-8300 series frames through a MFC-8300 Series Network Controller Card. This controller card is required in order to use DashBoard to monitor the QSP-8229. Refer to the ***MFC-8300 Series User Manual*** for details.

This appendix briefly summarizes the menus, items, and parameters available from the DashBoard Control System™ for the QSP-8229. Default values are noted with an asterisk (*).

The following topics are discussed:

- Status Tabs
- Configuration Menus
- Proc Amps Menus
- Quad Split Menus

Note — *Before proceeding, ensure that you are running DashBoard software version 2.3.0 or higher. The DashBoard Control System software and user manual are available to download from the Ross Video website (www.opengear.tv).*

Status Tabs

The following table summarizes the read-only information displayed in the **Status** tabs.

Table 5.1 Status Tab Items

Tab Title	Item	Parameters	Description
Product (Read-only)	Product	QSP-8229	
	Supplier	Ross Video Ltd.	
	Board Rev	##	
	Serial Number	###########	
	Software Rev	#.# build ###	Indicates the software and build versions
	Firmware Rev	##.##	Indicates the FPGA version number
Hardware (Read-only)	Voltage (V)	#	Supply Voltage, in Volts
	Current (A)	#	Current consumption of card in Amperes
	Power (W)	#	Power consumption of card in Watts
	Rear Module	#	Indicates the type of Rear Module in the slot
	FPGA Core Temp	##C[a] / ##F	FPGA core temperature
	CPU Headroom	x.xx / y.yy / z.zz[b]	CPU Load average
	RAM Available	## / ## MB	Memory Used / Total Memory
	CF Card Status	#.## of 2.0 GB used	Displays the amount of memory used on the CompactFlash card
		Missing	CompactFlash card is not present
		Unreadable	An error has occurred, such as incompatible CompactFlash card, or an error reading the card
	Playout RAM	x / y / z MB	Displays RAM memory usage where: • **x** represents the memory in use • **y** represents the memory cache from previously loaded files • **z** represents the total playout memory
Signal (Read-only)	Reference Status	Green - OK	Valid reference signal
		Red - No reference	No signal detected on selected reference input
		Red - Reference Unlocked	Signal detected, but not locked (or lock lost)
		Red - Invalid Reference	Signal detected, but incompatible with the current video mode
	Reference Format	Unknown	No signal present, or format is not recognized
		480i 59.94	Composite NTSC reference detected
		720p 59.94	
		1080i 59.94	Tri-level sync at 59.94Hz detected
		576i 50	Composite PAL reference detected
		720p 50	

Table 5.1 Status Tab Items

Tab Title	Item	Parameters	Description
Signal (Read-only)	Reference Format	1080i 50	Tri-level sync at 50Hz detected
		1080PsF 24	Progressive segmented frames at 24Hz
		1080PsF 23.98	Progressive segmented frames at 23.98Hz
	Bkgd A Status	Green - OK	Normal operation
		Green - Alarm Suppressed	An alarm condition exists but is silenced
		Yellow - Incompatible format	Signal present but format does not match the video output format configuration of the card
		Red - No signal	No signal present on the input
	Bkgd B Status	Same parameters as above	
	Bkgd C Status	Same parameters as above	
	Bkgd D Status	Same parameters as above	
	Bypass Relay	Green - Normal (not in bypass)	Video is being routed through the card; Quad Split may be active
		Red - Active (in bypass)	BKGD A bypasses the card and is looped passively on Output 1 through the relay
	Timing Display	Relative to Reference	The **BKGD Timing** fields display the timing values relative to the selected analog reference
		Input to Output	The **BKGD Timing** fields display the timing values relative to the SDI output of the card
	Bkgd A Timing	## clocks ## lines	Indicates the timing of the BKGD A input signal relative to the reference signal or relative to the output as specified in the **Timing Display** feature where 1 clock is: • 1 period of 27MHz (SD), or • 1 period of 148.x MHz (HD)
		Green status	Indicates that the timing is within the specified range for the card
		Yellow status	Indicates that the card is operating outside the specified line sync range. You may encounter vertical shifts and/or missing ancillary data when viewing at full-screen.
		Gray status	Indicates the absence of an input signal. Verify that the cable is properly secured to the rear module.
	Bkgd B Timing	Same parameters as above	
	Bkgd C Timing	Same parameters as above	
	Bkgd D Timing	Same parameters as above	
	Output Timing	## clocks ## lines	Indicates the timing of the output signals relative to the reference

a. A warning is displayed in DashBoard when the FPGA Core Temperature reaches 85°C. If the temperature reaches 110°C, the card will automatically shut down to avoid permanent damage and will have to be reset, rebooted, or power cycled to resume normal operation.

b. The CPU Load average is displayed in the following format where x.xx represents in the last minute, y.yy represents the last five minutes and z.zz is the last fifteen minutes.

Configuration Menus

This section briefly summarizes the options and tabs available in the **Config** tab.

Video Configuration

The following table summarizes the **Video** tab options available in Dashboard.

Table 5.2 Video Tab Options

Menu	Item	Parameters	Description
Reference Setup	Reference Input	Frame 1*	The card is using Frame Reference 1
		Frame 2	The card is using Frame Reference 2
		External	The card is using the reference input on: • BNC 9 (8310AR-033, 8320AR-033); or • BNC 11 (8320AR-049)
	Output Format	480i 59.94	Specifies the format of the output signal of the card
		720p 59.94	
		1080i 59.94	
		576i 50	
		720p 50	
		1080i 50	
		1080PsF 24	
		1080PsF 23.98	
Output Setup	Output 1	Quad Split*	Output 1 displays the Quad Split as configured using the options in the Quad Split tab
		Bkgd A	Output 1 displays the Bkgd A source
		Bkgd B	Output 1 displays the Bkgd B source
		Bkgd C	Output 1 displays the Bkgd C source
		Bkgd D	Output 1 displays the Bkgd D source
	Output 2	Same parameters as above. The default setting is Quad Split.	
	Output 3	Same parameters as above. The default setting is Bkgd A.	
	Output 4	Same parameters as above. The default setting is Bkgd B.	
	Dithering	Disabled*	Dithering is disabled
		Enabled - low	Dithering is enabled and set to 2bits
		Enabled - medium	Dithering is enabled and set to 3bits
		Enabled - high	Dithering is enabled and set to 4bits
	Clip at Black	Check box is selected	SuperBlack is clipped on all outputs
		Check box is unselected*	SuperBlack is not clipped
	Clip at White	Check box is selected	SuperWhite is clipped on all outputs
		Check box is unselected*	SuperWhite is not clipped

Table 5.2 Video Tab Options

Menu	Item	Parameters	Description
Signal Loss Alarm	Bkgd A	Check box is selected*	An alarm is triggered when a missing or an invalid signal is detected on the BKGD A input
		Check box is unselected	The alarm is suppressed when a missing or an invalid signal is detected on the BKGD A input
	Bkgd B	Same parameters as above	
	Bkgd C	Same parameters as above	
	Bkgd D	Same parameters as above	

GPI Configuration

The menu items available in the **GPI/Tally Setup** tab enable you to configure the functions and polarity of each GPI connected to the QSP-8229.

Table 5.3 GPI/Tally Setup Menu Items

Menu	Item	Parameter	Description
GPI/Tally #	Function	None*	The port is not configured and the GPI has no effect
		Output # - Quad Split	When triggered, the specified output displays the Quad Split
		Output # - Bkgd #	When triggered, the specified output displays the specified Bkgd source at full-screen
		Output # - Cycle	On each trigger, the output will cycle through the possible Bkgd sources, and the Quad Split
		# Quad - Black	The specified quadrant displays black when the GPI is triggered
		# Quad - Bkgd #	The specified quadrant displays the selected Bkgd source when the GPI is triggered
		# Quad - Cycle	The specified quadrant output cycles through the available input sources and black when the GPI is triggered
	Polarity	High/Rising	Sets the polarity of the edge or level trigger. In the case of edge trigger, a Low-to-High transition starts the function. In the case of level trigger, a high level starts the function.
		Low/Falling*	Sets the polarity of the edge or level trigger. In the case of the edge trigger, a High-to-Low transition starts the function. In the case of a level trigger, a low level starts the function.

Ethernet

The **Ethernet** tab enables you to set up ethernet communications on the QSP-8229.

Table 5.4 Ethernet Tab Items

Menu	Item	Parameter	Description
Ethernet	Method	Static	User manually supplies the Ethernet Setup settings
		DHCP*	Automates the assignment of the Ethernet settings
	IP Address	##.#.#.###	The IP Address for the card
	Subnet Mask	###.#.#.#	The subnet mask for the card
	Default Gateway	##.#.#.#	The gateway for communication outside of the local area network (LAN)
	Apply Changes		Applies and saves any changes made to the **Ethernet Settings**
	Cancel		Cancels any setting changes and resets the **Ethernet Settings** to the previous values
	Ethernet Status	OK	Ethernet communications for the card are valid
		Link Down	Ethernet communications for the card are invalid. The ethernet cable may be disconnected from the rear module or the network may be down.
		No IP Address	The following conditions are occurring: • The **Method** is set to **DHCP**. • The ethernet cable connected to card rear module is securely connected. • A valid IP Address is no longer available. The DHCP server may be down or is still powering up after a loss of power.
	MAC Address (read-only)	##:##:##:##:##:##	The MAC Address for the card

Personality

The menu items available in the **Personality** tab enable you to configure how signal timing is reported in DashBoard.

Table 5.5 Personality Tab Items

Menu	Item	Parameter	Description
Timing Display	Timing Display	Relative to Reference*	The **BKGD A, B, C, D Timing** fields in the **Signal** tab display the timing values relative to the selected analog reference
		Input to Output	The **BKGD A, B, C, D Timing** fields in the **Signal** tab display the timing values relative to the SDI output of the card

Load/Save

The menu items available in the **Load/Save** tab enable you to reset menu parameters for the card to the factory default values.

Table 5.6 Load/Save Tab Items

Menu	Item	Parameter	Description
Global Settings	Load Factory Defaults		Resets all DashBoard parameters and values (excluding ethernet, reference, and output format settings) to the factory default values

Proc Amps Menus

The following table summarizes the **Proc Amps** tab options available in DashBoard.

Table 5.7 Proc Amps Options

Menu	Item	Parameters	Description
Out #	Enable	Check box is selected	Enables the adjustment of Proc Amp settings for the selected output
		Check box is unselected*	The Proc Amp settings for the selected output are inactive
	Video Gain (%)	0 to 200[a]	Adjusts the Chroma and Luma Gain values simultaneously
	Chroma Gain (%)	0 to 200[b]	Adjusts the Cr and Cb values of the output video signals: • Increasing the gain increases the saturation of colors • Decreasing the gain desaturates the colors until the signal is black and white
	CB Gain (%)	0 to 200[c]	Adjusts the Cb component of the chrominance video signal: • Increasing the value causes the video signal colors to become increasingly saturated with blue • Decreasing the value desaturates blue from the video signal
	Black Offset (IRE)	-8 to 100[d]	Selects how much of the input video signal values are mapped to black in the output signal: • Increasing the value increases the black level and lightens the image • Decreasing the value darkens the image
	Procamp	Reset	Resets the Proc Amp menu settings for the selected output to the default values

a. The default value is 100.
b. The default value is 100.
c. The default value is 100.
d. The default value is 0.

Quad Split Menus

The following table summarizes the **Quad Split** tab options available in DashBoard.

Table 5.8 Quad Split Options

Menu	Item	Parameters	Description
Video/Label - Quadrant Selection	Upper Left	Black	The upper left quadrant displays black
		Bkgd A*	The upper left quadrant displays the Bkgd A source
		Bkgd B	The upper left quadrant displays the Bkgd B source
		Bkgd C	The upper left quadrant displays the Bkgd C source
		Bkgd D	The upper left quadrant displays the Bkgd D source
	Upper Right	Same parameters as above. The default setting is Bkgd B.	
	Lower Left	Same parameters as above. The default setting is Bkgd C.	
	Lower Right	Same parameters as above. The default setting is Bkgd D.	
Video/Label - Source Label	Bkgd A	Bkgd A*	Enter text in this field to configure the label for the specified source. Note that a blank field hides the text overlay in the display quadrant.
	Bkgd B	Bkgd B*	
	Bkgd C	Bkgd C*	
	Bkgd D	Bkgd D*	
Color/Border - Bkgd #[a]	Red	0-255	Adjusts the amount of red that is mixed in the border of the specified source (0 has no intensity, 255 has full intensity)
	Green	0-255	Adjusts the amount of green that is mixed in the border of the specified source (0 has no intensity, 255 has full intensity)
	Blue	0-255	Adjusts the amount of blue that is mixed in the border of the specified source (0 has no intensity, 255 has full intensity)
	Trans	0-100[b]	Adjusts the transparency of the border, around the specified source, from opaque (0%) to fully transparent (100%)
	Border	0-50[c]	Adjusts the width, in pixel units, of the border around the specified source. Note that a value of 0 removes the border. For best results, Ross Video recommends to increase the border width in increments of 2 pixels.

a. The default colors for the sources are as follows: BKGD A is set to tan, BKGD B is set to purple, BKGD C is set to cyan, and BKGD D is set to gray.
b. The default value is 50.
c. The default value is 4.

Appendix B. Specifications

In This Appendix

This appendix provides information on the specifications for your QSP-8229. Note that specifications are subject to change without notice.

The following topics are discussed:

- 8310AR-033 and 8320AR-033 Specifications
- 8320AR-049 Specifications

8310AR-033 and 8320AR-033 Specifications

Table 6.1 provides technical specifications when using the 8310AR-033 or 8320AR-033 Rear Modules.

Table 6.1 QSP-8229 Technical Specifications - 8310AR-033 and 8320AR-033

Category	Parameter	Specification
Serial Digital Video Inputs	Number of Inputs	4
	SDI Data Rates and SMPTE Standards Accommodated	SMPTE 259M (270 Mbps) SMPTE 292M (1.485 Gbps)
	Impedance	75 Ohms
	Return Loss	< -15dB, 0 to 1.5GHz
	Equalization	80m
Serial Digital Video Outputs	Number of Outputs	4
	Impedance	75 Ohms
	Return Loss	OUT 1: -15dB, 0 to 1.5GHz OUT 2-4: <-15dB, 0 to 1.5GHz
	Signal Level	800mV +/-10%
	DC Offset	0+/-50mV
	Rise and Fall Time	SD: 900ps typical HD: 150ps typical
	Overshoot	<10% typical
Other	Power Consumption	22W

8320AR-049 Specifications

Table 6.2 provides technical specifications when using the 8320AR-049 Rear Module.

Table 6.2 QSP-8229 Technical Specifications - 8320AR-049

Category	Parameter	Specification
Serial Digital Video Inputs	Number of Looping Inputs	4
	SDI Data Rates and SMPTE Standards Accommodated	SMPTE 259M (270 Mbps) SMPTE 292M (1.485 Gbps)
	Impedance	75 Ohms
	Return Loss	Not applicable for looping input
	Equalization	50 m
Serial Digital Video Outputs	Number of Outputs	4
	Number of Looping Outputs	4 *(8320AR-049 Rear Module only)*
	Impedance	75 Ohms
	Return Loss	OUT 1-4: <15dB, 0 to 1.5GHz
	Signal Level	800mV +/-10%
	DC Offset	0+/-50mV
	Rise and Fall Time	SD: 900ps typical HD: 150ps typical
	Overshoot	<10% typical
Other	Power Consumption	22W

Appendix C. 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 QSP-8229, the following basic troubleshooting checklist may help identify the source of the problem. If the card or 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. **Reference Signal Status** — Verify that the analog reference (blackburst or tri-level) is supplied on one of the three reference inputs. Check the Reference Input and the Output Format settings. Also check the status of the reference by navigating to the Reference Status field located on the Signal tab in DashBoard.
4. **Input Signal Status** — Verify that source equipment is operating correctly and that a valid signal is being supplied.
5. **Output Signal Path** — Verify that destination equipment is operating correctly and receiving a valid signal.
6. **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.
7. **Re-load the Factory Defaults** — If the card appears to be working and reports no errors, but is not generating an active picture or outputs black, restoring the default factory configuration may fix the problem.

Warranty and Repair Policy

The QSP-8229 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 QSP-8229 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 QSP-8229 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 QSP-8229 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 QSP-8229 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 QSP-8229, 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 QSP-8229. 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

PHONE	**General Business Office and Technical Support**	613 • 652 • 4886
	After Hours Emergency	613 • 349 • 0006
	Fax	613 • 652 • 4425
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	Technical Support	techsupport@rossvideo.com
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	Ross Video Incorporated	P.O. Box 880, Ogdensburg, New York, USA 13669-0880

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