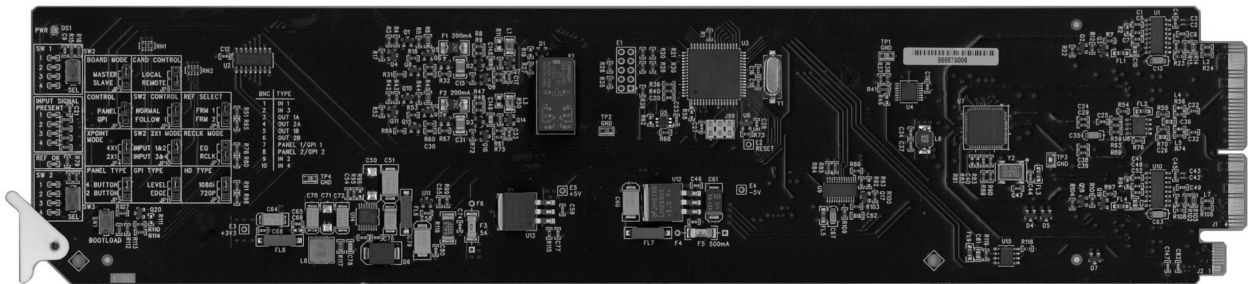


DSS-8224

Dual MD-SDI Switch

User Manual



DSS-8224 • Dual MD-SDI Switch User Manual

- Ross Part Number: **8224DR-004-04**
- Release Date: November 26, 2010. Printed in Canada.

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

Copyright

© 2010 **Ross Video Limited**. All rights reserved.

Contents of this publication may not be reproduced in any form without the written permission of Ross Video Limited. Reproduction or reverse engineering of copyrighted software is prohibited.

Patents

This product is protected by the following US Patents: 4,205,346; 5,115,314; 5,280,346; 5,561,404; 7,034,886; 7,508,455. This product is protected by the following Canadian Patents: 2039277; 1237518; 1127289. Other patents pending.

Notice

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

Trademarks

-  is a trademark of Ross Video Limited.
- Ross, ROSS, ROSS® are registered trademarks of Ross Video Limited.
- openGear® is a registered trademark of Ross Video Limited.
- DashBoard Control System™ is a trademark of Ross Video Limited.
- All other product names and any registered and unregistered trademarks mentioned in this guide are used for identification purposes only and remain the exclusive property of their respective owners.

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.

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 appareil numérique de la classe “A” est conforme à 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

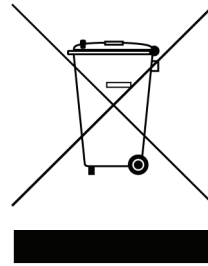
Routine maintenance to this openGear product is not required. This product contains no user serviceable parts. If the module does not appear to be working properly, please contact Technical Support using the numbers listed under the “Contact Us” section on the last page of this manual. All openGear products 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.

Company Address



Ross Video Limited

8 John Street
Iroquois, Ontario
Canada, K0E 1K0

Ross Video Incorporated

P.O. Box 880
Ogdensburg, New York
USA 13669-0880

General Business Office: (+1) 613 • 652 • 4886

Fax: (+1) 613 • 652 • 4425

Technical Support: (+1) 613 • 652 • 4886

After Hours Emergency: (+1) 613 • 349 • 0006

E-mail (Technical Support): techsupport@rossvideo.com

E-mail (General Information): solutions@rossvideo.com

Website: <http://www.rossvideo.com>

Contents

Introduction	1
Overview.....	1-2
Features.....	1-2
Functional Block Diagrams	1-3
Documentation Terms and Conventions.....	1-4
Installation	2
Before You Begin	2-2
Static Discharge	2-2
Unpacking.....	2-2
Installing the DSS-8224.....	2-3
Rear Modules for the DSS-8224	2-3
Installing a Rear Module	2-3
Installing the DSS-8224	2-4
Cabling for the DSS-8224.....	2-5
DFR-8310 Series Frame Cabling Overview.....	2-5
DFR-8321 Series Frame Cabling Overview.....	2-5
Software Upgrades for the DSS-8224	2-6
Performing Software Upgrades	2-6
User Controls	3
Card Overview	3-2
Control Modes	3-4
Configuring Card Control	3-4
Selecting the Control Mode.....	3-4
Operation Modes.....	3-5
Configuring the Operating Mode	3-5
Configuring SW1 and SW2.....	3-5
Auto Change Over (ACO) Mode	3-6
7x1 Mode Setup.....	3-6
Selecting the Timing.....	3-7
Selecting the Reclocking Mode	3-8
Control and Monitoring Features.....	3-9
Status and Selection LEDs on the DSS-8224.....	3-9
Operation	4
Overview.....	4-2
Operating Modes with the RCM-8120 Control Module.....	4-4
Multiple Remote Module Operation.....	4-5
GPI Operation	4-6
GPI Switch Operation.....	4-6
GPI Level Operating Modes.....	4-7

Menus	5
SNMP Monitoring and Control.....	5-2
DashBoard Menus for the DSS-8224.....	5-3
Status Menus.....	5-3
Setup Menus	5-4
Remote Control Menus.....	5-5
Alarms Menus.....	5-8
Jumpers Menus	5-9
Specifications	6
Technical Specifications	6-2
Service Information	7
Troubleshooting Checklist	7-2
Bootload Button.....	7-2
Warranty and Repair Policy	7-3

Introduction

In This Chapter

This chapter contains the following sections:

- Overview
- Functional Block Diagrams
- Documentation Terms and Conventions

A Word of Thanks

Congratulations on choosing an openGear **DSS-8224 Dual MD-SDI Switch**. Your DSS-8224 is part of a full line of Digital Products within the openGear Terminal Equipment family of products, backed by Ross Video's experience in engineering and design expertise since 1974.

You will be pleased at how easily your new DSS-8224 fits into your overall working environment. Equally pleasing is the product quality, reliability and functionality. 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 DSS-8224, 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 DSS-8224 is a dual serial switch designed for broadcast use in a multi-definition broadcast environment. This card supports both standard definition 270Mbps and high definition 1485Mbps SDI video, as well as other common serial digital signals at 143, 360, and 540 Mbps.

Each card has four inputs and two outputs. Each output is available on two BNCs. The DSS-8224 can be configured for 7x1, 4x2, 4x1, Dual 2x1, or 2x1 operation.

Each switch is controlled by an optional control module (RMC-8120 or RMC-8120-1), by GPI contact, or by logic level. All switching is done in the vertical interval, and timed to an external analog reference. The DSS-8224 can use either of the two frame references that are distributed to all cards in the openGear frame. The appropriate switching line is automatically determined by the reference frame rate (50Hz or 59.94Hz), and the SDI data rate. The last input selected for each output is stored in non-volatile memory for power failure protection.

The DSS-8224 equalizes the incoming SDI signal, which compensates for up to 300m of cable at 270Mbps, and over 120m of cable at 1.485Gbps. The serial data rate is determined automatically, and the signal is optionally reclocked on output.

LEDs are provided to indicate input and reference signal presence, and to show which input source is selected for each output.

The DSS-8224 is fully compliant with all openGear technical specifications and supports remote monitoring via DashBoard Control System™ software.

Features

The following features make the DSS-8224 the best solution for multi-definition SDI video switching:

- Switches SD and HD serial digital video (270 or 1485 Mbps)
- 4 inputs
- 4 outputs (2 per switch)
- Can be configured as a 7x1¹, 4x2, 4x1, 2x1, or Dual 2x1 switch
- Controllable by the RCM-8120 module or GPIs
- Switch selections are saved to non-volatile memory
- Vertical interval switching compliant with SMPTE RP168-2002
- Economical cost per switch
- Indicators for input signal presence and reference
- Reports status and configuration remotely via the DashBoard Control System™
- Fits DFR-8300 series frames
- Fully compliant with openGear specifications
- 5-year transferable warranty

1. Requires two DSS-8224 cards.

Functional Block Diagrams

This section provides the functional block diagrams that outline the workflow of the DSS-8224.

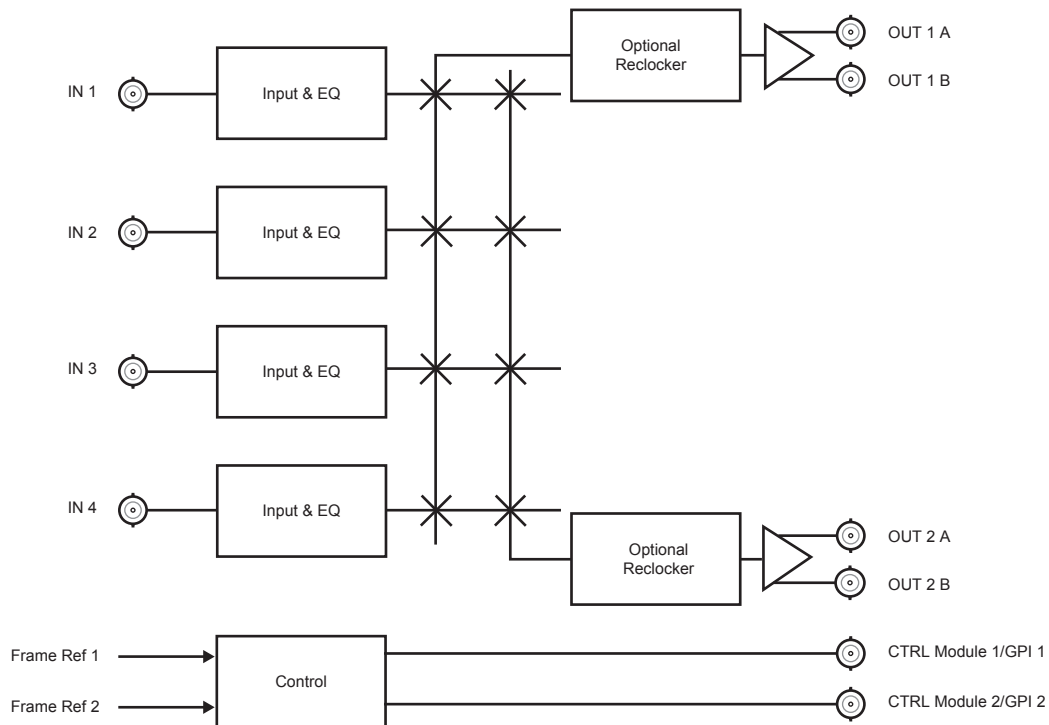


Figure 1.1 DSS-8224 4x2 Mode — Simplified Block Diagram

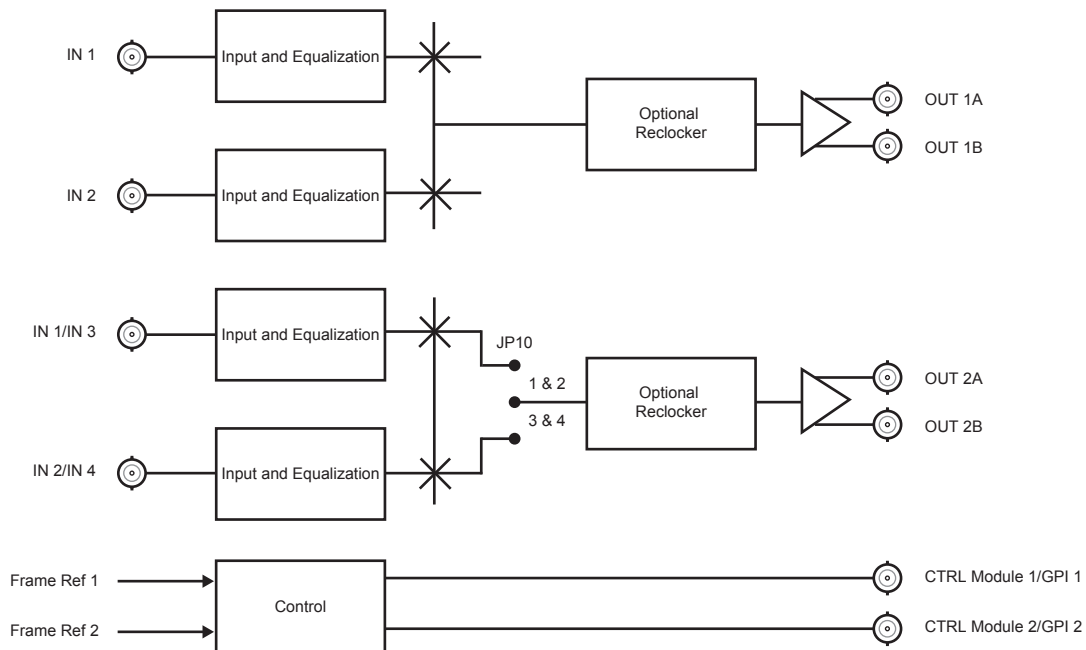


Figure 1.2 DSS-8224 Dual 2x1 Mode — Simplified Block Diagram

Documentation Terms and Conventions

The following terms and conventions are used throughout this manual:

- All references to the **DFR-8300 series frame** also includes all version of the 10-slot (DFR-8310 series) and 20-slot (DFR-8321 series) frames and any available options unless otherwise noted.
- “**Board**”, and “**Card**” refer to openGear terminal devices within openGear frames, including all components and switches.
- “**DashBoard**” refers to the DashBoard Control System™.
- “**Frame**” refers to DFR-8300 series frame that houses the DSS-8224, as well as any openGear frames.
- “**Operator**” and “**User**” refer to the person who uses DSS-8224.
- “**System**” and “**Video system**” refer to the mix of interconnected production and terminal equipment in your environment.
- The “**Operating Tips**” 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 Module(s) for the DSS-8224, installing the card into the frame, cabling details, and updating the card software.

The following topics are discussed:

- Before You Begin
- Installing the DSS-8224
- Cabling for the DSS-8224
- Software Upgrades for the DSS-8224

Before You Begin

Before proceeding with the instructions in this chapter, ensure that your DFR-8300 series frame is properly installed according to the instructions in the ***DFR-8300 Series User Manual***.

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 DSS-8224 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 DSS-8224

This section outlines how to install a Rear Module in a DFR-8300 series frame. The same procedure applies regardless of the frame or card type. However, the specific Rear Module you need to install depends on the frame you are using.

Rear Modules for the DSS-8224

The Rear Module for the DSS-8224 depends on the openGear frame you are installing the card into.

- **DFR-8310 series frame** — When installing the DSS-8224 in the DFR-8310 series frames, the **8310AR-030** (R1-8224) Rear Module is required. The DSS-8224 is also compatible with the DFR-8310-BNC frame.
- **DFR-8321 series frame** — When installing the DSS-8224 in the DFR-8321 series frame, the **8320AR-030** Full Rear Module (R2-8224) or the **8320AR-031** Split Rear Module (R2S-8224) can be used. Note that the available cable designations differ between the type of module used. Refer to the section “**DFR-8321 Series Frame Cabling Overview**” on page 2-5 for details.

Installing a Rear Module

If you are installing the DSS-8224 in a DFR-8310-BNC frame, or the Rear Module is already installed, proceed to the section “**Installing the DSS-8224**” on page 2-4.

Use the following procedure to install a Rear Module in your DFR-8300 series 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 DSS-8224 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**)

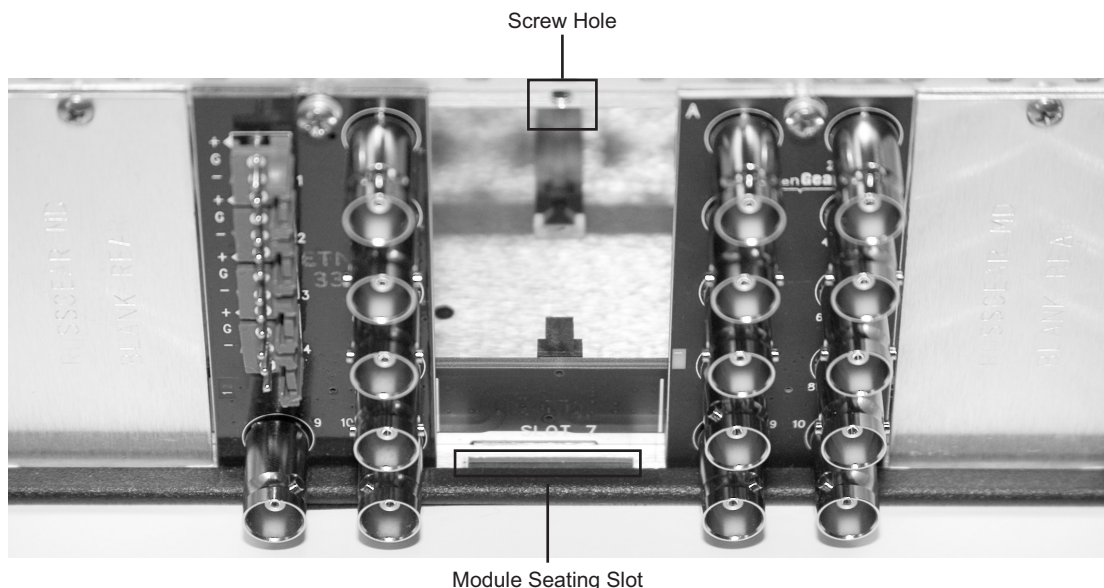


Figure 2.1 Rear Module Installation in a DFR-8310 Series Frame (DSS-8224 not shown)

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.

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

Installing the DSS-8224

This section outlines how to install the DSS-8224 in a DFR-8300 series frame. If the DSS-8224 is to be installed in any compatible frame other than a Ross Video product, refer to the frame manufacturer's manual for specific instructions.

Use the following procedure to install the DSS-8224 in a DFR-8300 series frame:

1. Locate the Rear Module you installed in the procedure “**Installing a Rear Module**” on page 2-3.



Notice — *Heat and power distribution requirements within a frame may dictate specific slot placements of cards. Cards with many heat-producing components should be arranged to avoid areas of excess heat build-up, particularly in frames using convectional cooling.*

2. Hold the DSS-8224 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 plus is properly seated in the Rear Module.
4. Verify whether your Rear Module Label is self-adhesive by checking the back of the label for a thin wax sheet. You must remove the wax sheet before affixing the label.
5. Affix the supplied Rear Module Label to the rear module face.

This completes the procedure for installing the DSS-8224 in a DFR-8300 series frame.

Cabling for the DSS-8224

Connect the input and output cables according to the following sections. The inputs are internally terminated at 75ohm. It is not necessary to terminate unused outputs.

DFR-8310 Series Frame Cabling Overview

In the DFR-8310 series frames, use the **8310AR-030** (R1-8224) Rear Module. Each card occupies one slot and provides four inputs, four outputs and two GPI connections. (**Figure 2.2**).

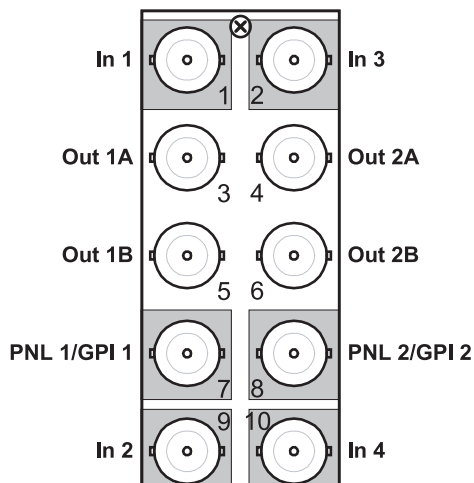


Figure 2.2 Cable Connections for the **R1-8224** and **R2-8224** Rear Modules

DFR-8321 Series Frame Cabling Overview

In the DFR-8321 series frames, the DSS-8224 is used with the following Rear Modules:

- **8320AR-030** (R2-8224) Full Rear Module — Each card occupies two slots and provides four inputs, four outputs, and two GPI connections. (**Figure 2.2**)
- **8320AR-031** (R2S-8224) Split Rear Module — Each card occupies one slot and provides two inputs, two outputs, and a GPI connection. (**Figure 2.3**)

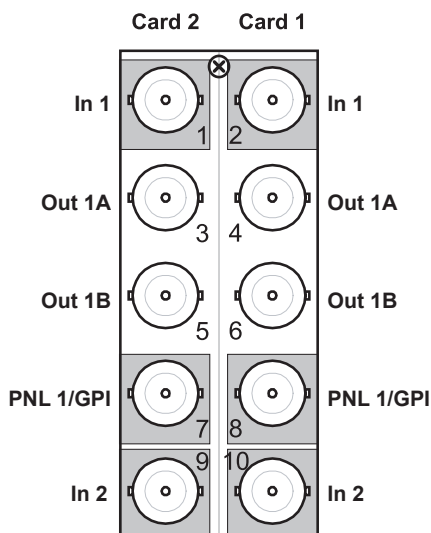


Figure 2.3 Cable Connections for the **R2S-8224** Rear Module

Software Upgrades for the DSS-8224

This section provides instructions for upgrading the software for your DSS-8224 using the DashBoard Control System™. This section assumes you are running DashBoard version 3.0.0 or higher.

Performing Software Upgrades

Use the following procedure to upload software to the DSS-8224:

1. Contact Ross Technical Support for the latest software version file.
2. Display the **Device View** of the card by double-clicking its status indicator in the **Basic Tree View**.
3. From the **Device View**, click **Upload** to display the **Select file for upload** dialog.
4. Navigate to the *.bin upload 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.
 - The **Upload Status** dialog enables you to monitor the 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 version 2.3 or lower, you must click **Reboot** in the **Device** tab to complete the upgrade process.*

This completes the procedure to upload software to the DSS-8224.

User Controls

In This Chapter

This chapter provides a general overview of the user controls available on the DSS-8224.

The following topics are discussed:

- Card Overview
- Control Modes
- Operation Modes
- Selecting the Timing
- Selecting the Reclocking Mode
- Control and Monitoring Features

Card Overview

This section provides a general overview of the DSS-8224 components.

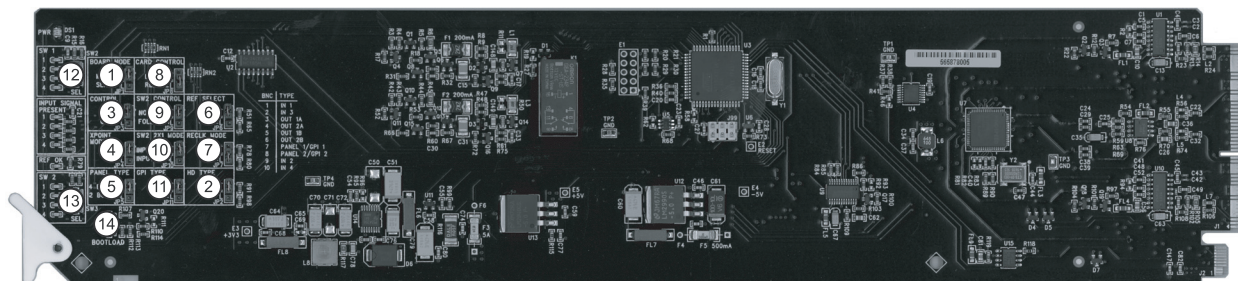


Figure 3.1 DSS-8224 — Components

1) Board Mode Jumper (JP1)	6) Reference Select Jumper (JP6)	11) GPI Type Jumper (JP11)
2) HD Type Jumper (JP2)	7) Reclock Mode Jumper (JP7)	12) Output 1 Select Button (SW1)
3) Control Jumper (JP3)	8) Card Control Jumper (JP8)	13) Output 2 Select Button (SW2)
4) Xpoint Mode Jumper (JP4)	9) Output 2 Control Mode Jumper (JP9)	14) Bootload Button (SW3)
5) Panel Type Jumper (JP5)	10) 2x1 Mode Jumper (JP10)	

1. Board Mode Jumper (JP1)

Use **JP1** in conjunction with **JP3** to configure the DSS-8224 as a Master or Slave card. One RCM-8120 can control up to ten cards by using one Master and nine Slave cards. The communication between the RCM-8120 and the card is controlled by the DSS-8224 that is configured as the Master card.

2. HD Type Jumper (JP2)

Use **JP2** to enable the DSS-8224 to automatically detect the input type, SD or HD, and switch on the appropriate switching line as defined by SMPTE RP-168-2002. However, the specific HD format cannot be detected automatically. **JP2** allows you to select the HD input format to determine the correct switching line for HD.

3. Control Jumper (JP3)

Use **JP3** to select the type of input control that is connect to the card on BNC 7 and BNC 8.

4. Xpoint Mode Jumper (JP4)

Use **JP4** to select the control mode of the DSS-8224.

5. Panel Type Jumper (JP5)

Use **JP5** in conjunction with **JP3** to select the type of RCM-810 remote control module connected to the DSS-8224.

6. Reference Select Jumper (JP6)

Use **JP6** to select the frame reference used on the DSS-8224.

7. Reclock Mode Jumper (JP7)

Use **JP7** to enable or disable the reclocking feature of the DSS-8224.

8. Card Control Jumper (JP8)

Use **JP8** to select whether the DSS-8224 is remotely configured using DashBoard or SNMP, or using the card-edge controls.

9. Output 2 Control Mode Jumper (JP9)

Use **JP9** to configure the control mode for Output 2.

10. 2x1 Mode Jumper (JP10)

Use **JP10** to configure which two inputs are available on Output 2, when operating in 2x1 Mode

11. GPI Type Jumper (JP11)

Use **JP11** in conjunction with **JP3** to select the type of GPI control used by the DSS-8224.

12. Output 1 Select Button (SW1)

SW1 selects the next input on Output 1.

13. Output 2 Select Button (SW2)

SW2 selects the next input on Output 2.

14. Bootload Button (SW3)

This button is used for factory service in the unlikely event of a complete card failure. Do not press this button unless instructed to do so by Ross Technical Support.

For More Information...

- on the LEDs available on the card-edge, refer to the section “**Control and Monitoring Features**” on page 3-9.
- on the control mode for the DSS-8224, refer to the section “**Selecting the Control Mode**” on page 3-4.
- on the operating modes for the DSS-8224, refer to the section “**Operation Modes**” on page 3-5.
- on the switch timing of the DSS-8224, refer to the section “**Selecting the Timing**” on page 3-7.
- on the reclocking mode of the DSS-8224, refer to the section “**Selecting the Reclocking Mode**” on page 3-8.
- on the Bootload process, refer to the section “**Bootload Button**” on page 7-2.

Control Modes

This section outlines how to set up your DSS-8224 by configuring the card for remote control, selecting the control mode, and selecting the GPI type.

Configuring Card Control

Use the following procedure to configure the card control for the DSS-8224:

1. Set **JP8** as follows:
 - **REMOTE** — Select this option to enable remote configuration. The DSS-8224 can be configured using the card jumpers, but the existing controls on the remote control panel or card-edge continue to function.
 - **LOCAL** — Select this option to disable remote configuration. The card can only be configured using the card-edge controls, but the status and configuration can still be monitored remotely.

Selecting the Control Mode

The DSS-8224 is controlled by a GPI or the RCM-8120 or RCM-8120-1 remote control panels.

Selecting Control Panel Control Mode

Use the following procedure to enable control from a remote control panel:

1. Set **JP3** to **PANEL** to enable one or two RCM-810 remote control modules to control the input selection.
2. Set **JP1** as follows:
 - **MASTER** — Use this setting to designate the DSS-8224 as a Master card. Only one card can be designated as a Master card on a bus.
 - **SLAVE** — Use this setting to designate the DSS-8224 as a Slave card.
3. Set **JP5** as follows:
 - **4 BUTTON** — Select this option if the DSS-8224 is connected to a four-button RCM-8120 control module. This is the default setting.
 - **2 BUTTON** — Select this option if the DSS-8224 is connected to a two-button RCM-8120-1 control module.

This completes the procedure for enabling control from a remote control panel.

Selecting GPI Control Mode

Use the following procedure to enable the DSS-8224 to be controlled by a GPI:

1. Set **JP3** to **GPI** to enable a GPI to control the input selection.
2. Set **JP11** as follows:
 - **LEVEL** — Select this option if the input selection is determined via GPI Levels on BNC 7 and BNC 8. This is the default setting.
 - **EDGE** — Select this option if the input selection is determined by high-to-low GPI transitions.

This completes the procedure for enabling the DSS-8224 to be controlled by a GPI.

Operation Modes

This section outlines how to select an operating mode. The DSS-8224 can be configured for any of the following operating modes:

- 4x1 switch
- 4x2 switch
- 7x1 switch
- Dual 2x1 switch with input selection for each output
- Dual 2x1 switch with tracking, where Output 2 tracks Output 1



Note — When in **Dual 2x1 Mode**, there is an option in *DashBoard* to enable an *Auto Change Over (ACO) Mode*. This option is disabled in the 4x1 or 4x2 Modes. The card-edge controls, the panel input, GPI input, and remote control panel are all disabled when ACO Mode is enabled. For more information, refer to the section “*Auto Change Over (ACO) Mode*” on page 3-6.

Configuring the Operating Mode

Use the following procedure to configure the operating mode of the DSS-8224:

1. Set **JP4** as follows:
 - **4x1** — Select this option to enable the DSS-8224 to operate as a 4x1 switch with four inputs selectable on each output.
 - **2x1** — Select this option to enable the DSS-8224 to operate as a 2x1 switch with two inputs selectable. Ensure to configure **JP10** as required.
2. Set **JP9** as follows:
 - **NORMAL** — Select this option to control Output 2 independently by the control module or GPI on BNC 8. This is the default setting.
 - **FOLLOW** — Select this option to configure Output 2 settings to follow Output 1. Switching Output 1 will also switch Output 2.
3. If **JP4** is set to **2x1**, set **JP10** as follows:
 - **INPUT 1&2** — SDI input 1 and 2 are available on Output 2. This is the default setting.
 - **INPUT 3&4** — SDI input 3 and 4 are available on Output 2.

This completes the procedure for configuring the operating mode of the DSS-8224.

Configuring SW1 and SW2

SW1 and **SW2** select the next input on Output 1 and Output 2 respectively.

Use the following procedure to configure the behavior of **SW1** and **SW2**:

1. Set **JP3** to **PANEL**.
2. Set **JP1** to **MASTER**.
3. Configure the behavior of **SW1** by setting **JP4** as follows:
 - **4x1** — Select this option to have **SW1** cycle through inputs 1 through 4.
 - **2x1** — Select this option to have **SW1** cycle between inputs 1 and 2.

4. Configure the behavior of **SW2** as follows:
 - Set **JP9** to **NORMAL**.
 - Set **JP4** as follows:
 - › **4x1** — Select this option to have **SW2** cycle through inputs 1 through 4.
 - › **2x1** — Select this option to have **SW2** cycle based on the **JP10** settings.
 - If **JP4** is set to **2x1**, set **JP10** as follows:
 - › **INPUT 1&2** — Select this option to have **SW2** cycle through inputs 1 and 2 only.
 - › **INPUT 3&4** — Select this option to have **SW2** through inputs 3 and 4 only.

This completes the procedure for configuring the behavior of **SW1** and **SW2**.

Auto Change Over (ACO) Mode

When in ACO Mode, a Loss of Signal (LOS) or Loss of Lock (LOL) on the primary input will cause the output to switch to the secondary input. Once the output is switched, the card will check the presence of the primary input to return. When the primary input has returned for 30 seconds, the output will switch back. DashBoard enables you to configure the trigger for the ACO Mode when operating in Dual 2x1 mode or Dual 2x1 Tracking mode. If you are operating in 4x2 or 4x1 modes, the ACO Trigger is automatically set to Loss of Signal. For information on the available options for the ACO Trigger, refer to the section “**Remote Control Menus**” on page 5-5.

7x1 Mode Setup

This section outlines how to configure the jumpers on the DSS-8224 cards for operating in 7x1 mode, and enabling the mode on the downstream card. Note that only the downstream, or Master, card is enabled for 7x1 operation.

For More Information...

- on operating in 7x1 mode, refer to the section “**7x1 Mode**” on page 4-4.
- for diagrams illustrating possible 7x1 configurations, refer to **Figure 4.3** and **Figure 4.4**.

Setting the Jumpers

Use the following procedure to configure the jumpers on the DSS-8224 cards for 7x1 mode:

1. Set **JP1** to **SLAVE** on the upstream DSS-8224 card.
2. Set **JP1** to **MASTER** on the downstream DSS-8224 card.
3. Set **JP3** to **PANEL** on both cards.
4. Set **JP4** to **4x1** on both cards.
5. Set **JP5** to **4 Button** on both cards.

Enabling 7x1 Mode

Use the following procedure to enable 7x1 mode for the downstream, or Master, card:

1. In DashBoard, display the **Device View** of the DSS-8224 by double-clicking its status indicator in the Basic Tree View.
2. Select the **Setup** tab from the **Device View**.
3. To enable 7x1 mode, select the **7x1 Mode** check box.

Selecting the Timing

The DFR-8300 series frames accept two external analog references which are distributed to all the cards in the frame. Either of these references can be used to synchronize the DSS-8224.

The DSS-8224 will switch on the vertical interval when provided with an analog reference. The switching line is determined via the frame rate (50 or 59.94) and the data rate (SD or HD). The DSS-8224 can switch without an analog reference, but the switch timing will be random. Use **JP2** and **JP6** in conjunction to configure the switch timing settings of the DSS-8224.

Use the following procedure to configure the switch timing of the DSS-8224:

1. Set **JP2** as follows:

- **1080i** — HD video switches at line 7 of the 1080i signal. This is the default setting.
- **720p** — HD video switches at line 7 of the 720p signal.



Note — *The 720p switching point is approximately 50 microseconds earlier than the 1080i switching point.*

2. Set **JP6** as follows:

- **FRM 1** — Selects the source connected to the **REF 1** port on the back of the frame. This is the default setting.
- **FRM 2** — Selects the source connected to the **REF 2** port on the back of the frame.

This completes the procedure for configuring the switch timing of the DSS-8224.

Selecting the Reclocking Mode

The DSS-8224 provides an optional reclocker on each output. Reclockers provide a cleaner signal over long cable lengths, but can sometimes increase jitter if connected to another reclocking device over a short cable.

Use the following procedure to select the reclocking mode of the DSS-8224:

1. Set **JP7** as follows:
 - **EQ** — SDI signals are equalized, but not reclocked. This is the default setting.
 - **RCLK** — SDI signals are reclocked on output.

This completes the procedure for selecting the reclocking mode of the DSS-8224.

For More Information...

- on jumper locations, refer to the section “**Card Overview**” on page 3-2.
- on the available DashBoard menus, refer to the section “**DashBoard Menus for the DSS-8224**” on page 5-3.

Control and Monitoring Features

This section provides information on the jumpers, buttons and LEDs for the DSS-8224. Refer to **Figure 3.2** for the location of the LEDs for communications.

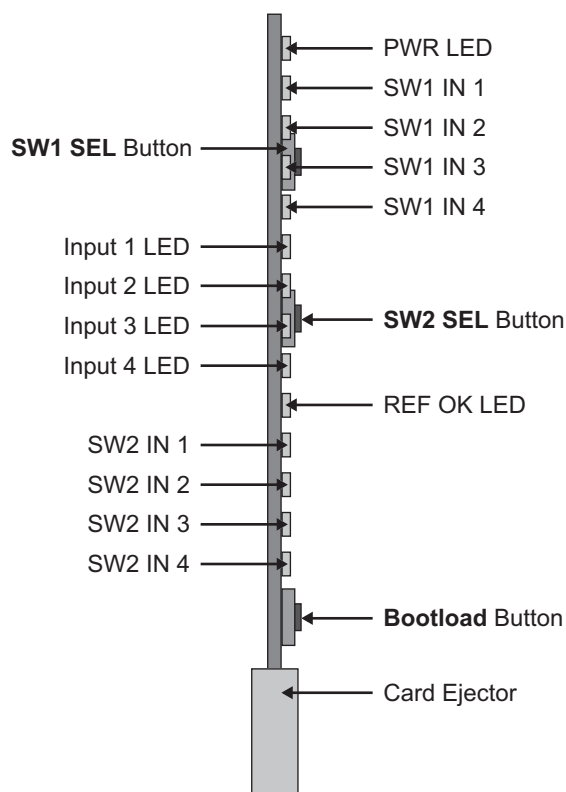


Figure 3.2 DSS-8224 Card-edge Controls

Status and Selection LEDs on the DSS-8224

The front-edge of the DSS-8224 has LED indicators for card power, and communication activity. Basic LED displays and descriptions are provided in **Table 3.1**.

Table 3.1 LEDs on the DSS-8224

LED	Color	Display and Description
PWR	Green	When lit, this LED indicates that the card is functioning correctly.
	Flashing Green	When flashing green, this LED indicates that the card does not have a valid software load.
	Amber	When lit amber, this LED indicates a hardware failure.
	Red	When lit red, this LED indicates that the card is powering on.
	Off	When unlit, this LED indicates a lack of power to the card.

Table 3.1 LEDs on the DSS-8224

LED	Color	Display and Description
SW1	Yellow	The four LEDs present in this area report which input is selected for Output 1. The LED for the selected input is illuminated yellow when selected. This input is routed to Outputs 1A and 1B.
	Flashing Yellow	When flashing, these LEDs indicate the ACO Mode is enabled.
SW2	Yellow	The four LEDs present in this area report which input is selected for Output 2. The LED for the selected input is illuminated yellow when selected. This input is routed to outputs 2A and 2B.
	Flashing Yellow	When flashing, these LEDs indicate the ACO Mode is enabled.
Input Signal Present	Green	When lit, this LED indicates that an SDI signal is present on the specified input.
	Off	When unlit, this LED indicates that no SDI signal is detected on the specified input.
REF OK	Green	When lit green, this LED indicates than an analog reference is present and locked.
	Off	When unlit, this LED indicates that the analog reference is not present, or not locked.

Operation

In This Chapter

This chapter provides a detailed explanation of operating your DSS-8224 via GPI or remote panel.

The following topics are discussed:

- Overview
- Operating Modes with the RCM-8120 Control Module
- Multiple Remote Module Operation
- GPI Operation

Overview

The DSS-8224 can be operated using a remote control module. Each control module provides push buttons inserts with LED indicators. The following diagram shows a MRP-8120 Rackmount Control Panel with one of each type of remote control module.

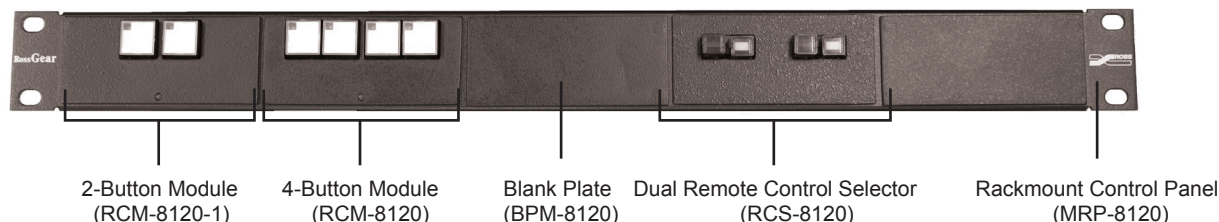


Figure 4.1 MRP-8120 Panel with RCM-8120-1, RCM-8120, and RCS-8120 Installed

Up to ten cards can be controlled simultaneously by a single RCM-8120 control module (one Master card and nine Slave cards). Also, up to three control modules may be connected to a control bus. When multiple modules are connected to a control bus, selecting the active module is accomplished via a GPI connection on the back of each control module. Only one module can be active at a time, to avoid bus contention. Non-active modules will indicate the currently selected Output. The control bus is a single coax cable. It originates at the Master card (BNC 7 for Output 1, BNC 8 for Output 2).



Note — Output 1 (BNC 7) and Output 2 (BNC 8) cannot be connected to the same control bus.

The control bus provides both power and data communications to the remote modules. Female T-connectors may be used to split the coax at each card or module to loop the control bus to the next module. Remote modules may also be connected together via audio/control cable such as Belden 1503A audio/control cable (22 AWG shielded pair).

Remote modules may also be GPI controlled with closed contact or logic low (level or pulse). Four GPI terminals are provided on the back of each control module, one for each input. For more information, refer to the User Manual for your RCM-8120.

When operating the DSS-8224 with the control module, connecting multiple cards to the same bus allows you to switch multiple channels of SDI video, Analog video, AES, and Analog audio simultaneously.

Figure 4.2 displays a common configuration using the AVS-8764 and DSS-8224 cards with an RCM-8120.

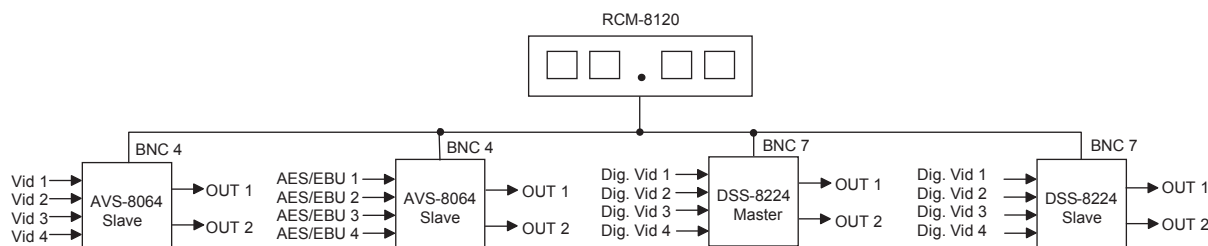
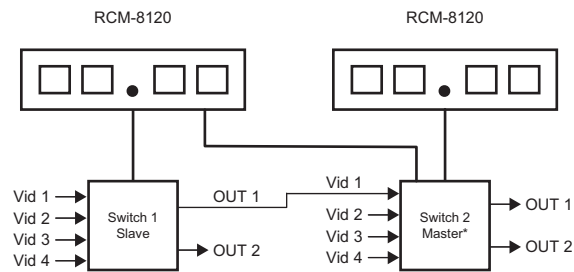


Figure 4.2 Example of Signal Flow with 4x1 Operation

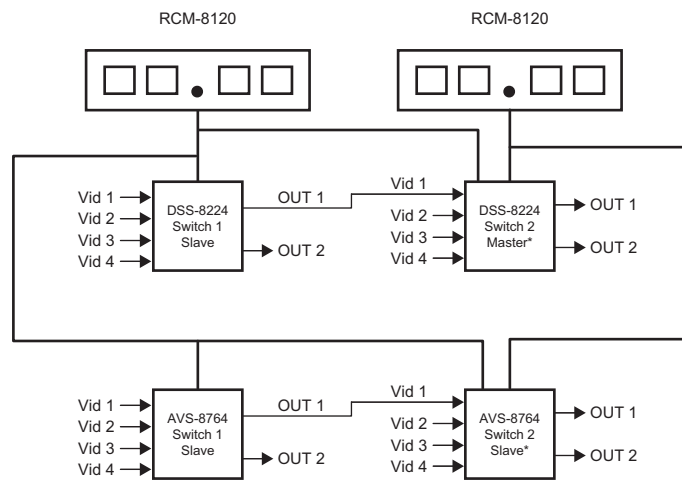
Figure 4.3 displays a 7x1 configuration where two DSS-8224 cards are used. You must have two DSS-8224 cards with one configured as the Master. The Master card must be enabled for 7x1 operation.



* Card is configured for 7x1 operation.

Figure 4.3 Example of Signal Flow with 7x1 Operation — Two DSS-8224

Figure 4.4 displays a 7x1 configuration where two DSS-8224 cards and two AVS-8764 cards are used. Note that you must have one DSS-8224 card configured as the Master. This Master card must be enabled for 7x1 operation. One of the AVS-8764 cards must also be enabled for 7x1 operation.



* Cards are configured for 7x1 operation.

Figure 4.4 Example of Signal Flow with 7x1 Operation — Two DSS-8224 and Two AVS-8764

Operating Modes with the RCM-8120 Control Module

The DSS-8224 can be configured to operate in several different modes. The following table summarizes the modes supported on the DSS-8224 when controlled via the RCM-8120.

Table 4.1 Switch Operation Modes

Operating Mode	JP4	JP9	JP10	JP5	Modules Required	Description
4x2 Panel	4x1	NORMAL	n/a	4-button ^a	2 x RCM-8120	- Each output is controlled independently. - Each output can select inputs 1-4.
4x1 Panel	4x1	FOLLOW	n/a	4-button	RCM-8120	- Output 1 can select inputs 1-4. - Output 2 tracks Output 1.
Dual 2x1 (one panel)	2x1	NORMAL	As needed	4-button	RCM-8120	- Output 1 is controlled by buttons 1 and 2. Output 2 is controlled by buttons 3 and 4. - Output 1 can select between inputs 1 and 2, and Output 2 can be configured to select between inputs 1 and 2 or inputs 3 and 4.
Dual 2x1 (two panels)	2x1	NORMAL	As needed	2-button	2 x RCM-8120-1	- Each Output is controlled independently - Output 1 can select between inputs 1&2 - Output 2 can be configured to select between inputs 1&2 or inputs 3&4
2x1 Panel (2 outputs)	2x1	FOLLOW	As needed	2-button ^b	RCM-8120-1	- Output 1 can select between inputs 1&2. Output 2 tracks Output 1. - Output 2 can be configured to select between inputs 1&2 or inputs 3&4

a. Can also use a 2-button panel, but could then only select inputs 1 and 2.

b. Can also use a 4-button panel, but buttons 3 and 4 will be inactive.

7x1 Mode

When the DSS-8224 is configured for 7x1 mode, two four-button panels are connected together with the two 7x1 switches. Note that Panel 1 connects to GPI 1 on both DSS-8224 cards. The upstream switch will have one panel connected in slave mode and will listen for button presses and changes the outputs accordingly. The downstream switch will have both panels connected in master mode. When a button press is detected on the panel this connected to the upstream switch, the downstream switch will change to Input 1 which originates from the upstream switch. This switch is delayed for approximately 1-2 fields in order to allow the upstream switch time to make the change. Refer to the section “**7x1 Mode Setup**” on page 3-6 for setup details.

Multiple Remote Module Operation

Up to three control modules can be connected to a control bus. To avoid bus contention, only 1 module may be active at a time. Active modules have a red LED on the front of the panel lit up. Non-active modules will continue to indicate the currently selected Output. Pressing buttons on a non-active module will have no effect on the utility switch connected to the module.

To select which module is active, a GPI must short the module GPI. On the back of each module is a three-pin connector for the GPI. Shorting pins 1 and 2 together, or bringing pin 1 to a low logic level, will enable the module.

In installations where two modules are connected to a control bus, the RCS-8120 may be connected to the 2 remote modules to select which module is active. The RCS-8120 has two dual push button switches, so one RCS-8120 can control four RCM-8120 modules.

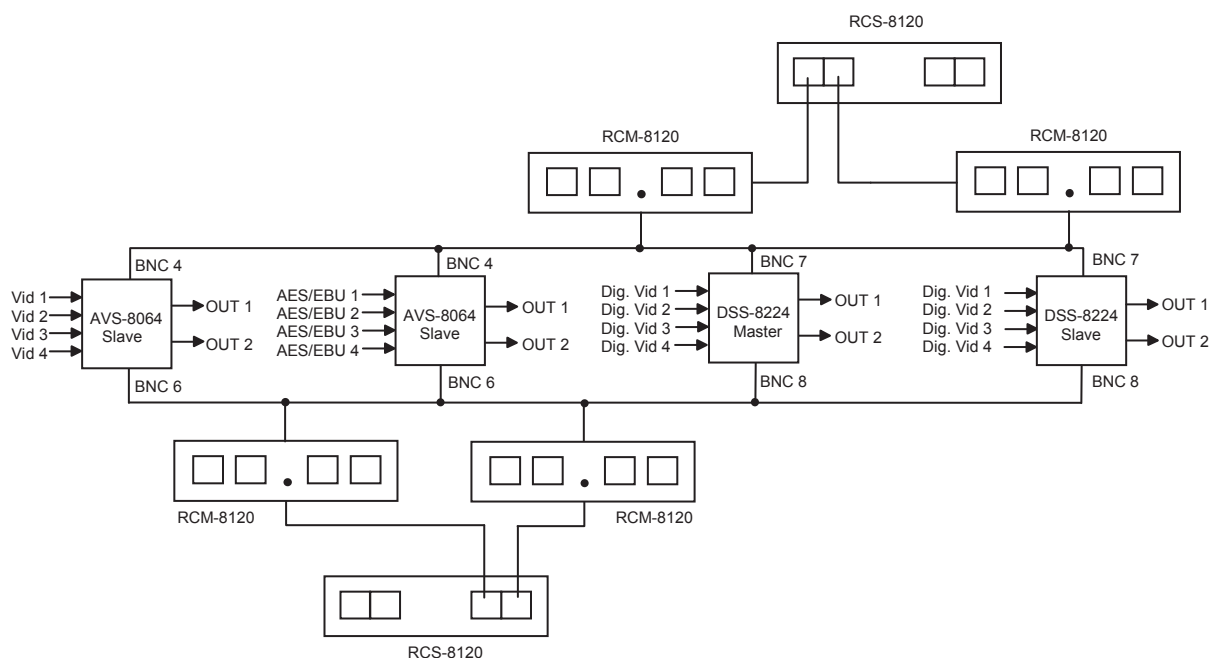


Figure 4.5 Example of Signal Flow with Multiple Module Operation

GPI Operation

The following sections explain common configurations using GPI Level and GPI Edge controls. When configured in 2x1 Mode, the DSS-8224 can be controlled by the RCS-8120 Remote Control Module. This module has dual push-button switches for GPI triggering.

GPI Switch Operation

This section briefly outlines the operating modes when using GPI Switch control.

GPI Level Operation

To control the card by GPI Level, use the following jumper configurations:

- Set **JP3** to **GPI**. This enables input selection to be controlled by GPI.
- Set **JP11** to **LEVEL**. This enables input selection to be determined via GPI levels on BNC 7 and 8.

In this mode, the DSS-8224 can operate either as a 4x1 switch, or a Dual 2x1 switch.

4x1 Switch Operation

If the card is configured as a 4x1 switch, the GPIs are binary encoded, and Output 2 tracks Output 1. Input selection is as follows:

Table 4.2 Input Selection

GPI 1	GPI 2	Output 1 and 2
Open	Open	Input 1
Open	Short	Input 2
Short	Open	Input 3
Short	Short	Input 4

Dual 2x1 Switch Operation

If the card is configured as a Dual 2x1 switch, Output 1 is controlled by GPI 1. Output 2 can be controlled independently by GPI 2, or can track Output 1. Input selection for Output 1 is as follows:

- GPI 1 Open Input 1
- GPI 1 Short Input 2

GPI Level Operating Modes

The following operating modes are available when using GPI Level control:

Table 4.3 GPI Level Control Operation Modes

Operating Mode	JP4	JP9	JP10	Description
4x1 GPI	4x1	n/a	n/a	• GPIs are binary encoded • Output 1 can select inputs 1-4 • Output 2 tracks Output 1
Dual 2x1 GPI	2x1	NORMAL	As needed	• GPI 1 (BNC 7) controls Output 1 • GPI 2 (BNC 8) controls Output 2 • Output 1 can select between Inputs 1 and 2 • Output 2 can be configured to select between Inputs 1 and 2, or Inputs 3 and 4
Dual 2x1 GPI, Tracking	2x1	FOLLOW	As needed	• GPI 1 (BNC 7) controls Output 1 and Output 2 • GPI 2 (BNC 8) is not used • Output 1 can select between Inputs 1 and 2 • Output 2 can be configured to select between Inputs 1 and 2, or Inputs 3 and 4

GPI Edge Operation

To control the DSS-8224 via the GPI Edge configuration, use the following jumper configurations:

1. Set **JP3** to **GPI** to control the Input selection by GPI.
2. Set **JP1** to **EDGE** to determine the input selection by high-to-low GPI transitions.

In this mode, the DSS-8224 operates as a 2x1 switch with both outputs controlled by GPI transitions on GPI 1 and 2. Output 1 can select Input 1 or 2 by toggling the following on GPI 1 and GPI 2:

1. Select **Input 1**. Toggle **GPI 1** low for 3 fields.
2. Select **Input 2**. Toggle **GPI 2** low for 3 fields.

GPI Card Edge Control

When the DSS-8224 is configured for Panel/Master control or GPI Edge control, inputs can also be selected using the **SW1** and **SW2** buttons. Refer to the section “**Card Overview**” on page 3-2 for the location of these buttons on the card-edge.

Pressing the **SW1** button selects the next input for Output 1, with the following behaviors based on the operating mode of the card:

- **4x1 Mode** — Cycles through Inputs 1 to 4.
- **2x1 Mode** — Toggled between Inputs 1 and 2.

If Output 2 is configured to track Output 1, then Output 2 will track selections made using **SW1**, and **SW2** is inactive.

Menus

In This Chapter

This chapter provides a summary of the menus available for the DSS-8224.

The following topics are discussed:

- SNMP Monitoring and Control
- DashBoard Menus for the DSS-8224

SNMP Monitoring and Control

The MFC-8300 series Network Controller Card provides optional support for remote monitoring of your frame and the DSS-8224 using Simple Network Management Protocol (SNMP), which is compatible with many third-party monitoring and control tools.

Refer to your DSS-8224 Management Information Base (MIB) file for a breakdown of SNMP controls on this card. Refer to the ***DFR-8300 Series User Manual*** or ***MFC-8300 Series User Manual*** for additional information on SNMP Monitoring and Control.

DashBoard Menus for the DSS-8224

This section briefly summarizes the menus, items, and parameters available from the DashBoard Control System™ for the DSS-8224. Default values are noted with an asterisk (*).

The DashBoard Control System enables you to monitor and control openGear frames and cards from a computer. DashBoard communicates with other cards in the DFR-8300 series frame through the MFC-8300 Series Network Controller Card.

Status Menus

This section summarizes the **Status** tab parameters available in DashBoard for the DSS-8224. The **Status** tabs provide read-only information such as software revision issue, signal status, and power consumption.

Signal Tab

Table 5.1 summarizes the information displayed in the **Signal** tab.

Table 5.1 Signal Tab Items

Tab Title	Item	Parameters	Description
Signal (Read-only)	Signal Status	Green	Indicates that the card is functioning normally and no anomalies are detected
		Yellow	No reference detected
		Red	A loss of output has occurred
			The reference does not match the input standard or an error has occurred
	Reference	Locked - 59.94Hz	Indicates the reference format and status
		Locked - 50Hz	
		No Signal	
	Input #	Signal Present	Signal present on indicated input
		No signal	Signal is not present on indicated input
	Output # Source	Input # (BNC #)	Indicates the input used for the specific Output Source
		No signal	
	Output # Status	Locked - HD	Valid signal at HD clock rate (1485Mbps)
		Locked - SD	Valid signal at SD clock rate (270Mbps)
		Locked - 143 Mbps	Valid signal at 143Mbps
		Locked - 360 Mbps	Valid signal at 360Mbps
		Locked - 540 Mbps	Valid signal at 540Mbps
		Unlocked	Signal present, with undetermined clock rate
		No Signal	No signal on selected input

Hardware Tab

Table 5.2 summarizes the information displayed in the **Hardware** tab.

Table 5.2 Hardware Tab Items

Tab Title	Item	Parameters	Description
Hardware (Read-only)	Voltage (mV)	#	Supply Voltage
	Current (mA)	#	Current consumption of card
	CPU Headroom	#	Processing power available
	RAM Available	###	On-board processing memory available
	EE Bank	#	Storage count

Product Tab

Table 5.3 summarizes the information displayed in the **Product** tab.

Table 5.3 Product Tab Items

Tab Title	Item	Parameters	Description
Product (Read-only)	Product	DSS-8224	
	Supplier	Ross Video Ltd.	
	Board Rev	##	
	Serial Number	#####	
	Rear Module	#	Type of rear module in the slot
	Software Rev	##.##	Indicates the software version

Setup Menus

Table 5.4 summarizes the **Setup Menu** options available in DashBoard for the DSS-8224.

Table 5.4 Setup Menu Items

Tab Title	Item	Parameters	Description
Setup	7x1 Mode	Selected	Enables 7x1 mode on the card. Note that only the downstream card needs to be enabled.
		Cleared*	Disables this feature
	Edit Permission	Unlocked	All menu options are unlocked and can be edited.
		Locked	All menu items, except this one, are locked and read-only.
	Factory Defaults	Reset	Resets all parameters to factory defaults.

Remote Control Menus

The **Remote Control** Menus are only available when the DSS-8224 is configured for Remote Control (**JP8** is set to **REMOTE**). The options available in the **Remote Control** menu depends on the mode that the DSS-8224 is operating in.

4x2 Mode

Table 5.5 summarizes the **Remote Control Menu** options available in DashBoard when the DSS-8224 is operating in 4x2 Mode.

Table 5.5 Remote Control Menu Items - 4X2 Mode

Tab Title	Item	Parameters	Description
Remote Control (Read-only)	Operating Mode	4x2	• Card is operating in 4x2 Mode • JP4 is set to 4x1 • JP9 is set to NORMAL
	Auto Change Over Trigger	Loss of Signal	On a Loss of Signal, the primary input causes the output to switch to the secondary input.
	Output 1 Auto Change Over Mode	Disabled	ACO Mode is disabled
	Output 2 Auto Change Over Mode	Disabled	ACO Mode is disabled
	Output # Source	Input 1	BNC 1 is the output source
		Input 2	BNC 9 is the output source
		Input 3	BNC 2 is the output source
		Input 4	BNC 10 is the output source

4x1 Mode

Table 5.6 summarizes the **Remote Control Menu** options available in DashBoard when the DSS-8224 is operating in 4x1 Mode.

Table 5.6 Remote Control Menu Items - 4X1 Mode

Tab Title	Item	Parameters	Description
Remote Control (Read-only)	Operating Mode	4x1	• Card is operating in 4x1 Mode • JP4 is set to 4x1 • JP9 is set to FOLLOW
	Auto Change Over Trigger	Loss of Signal	On a Loss of Signal, the primary input causes the output to switch to the secondary input.
	Output 1 Auto Change Over Mode	Disabled	ACO Mode is disabled
	Output 2 Auto Change Over Mode	Disabled	ACO Mode is disabled

Table 5.6 Remote Control Menu Items - 4X1 Mode

Tab Title	Item	Parameters	Description
Remote Control (Read-only)	Output 1 Source	Input 1	BNC 1 is the source for Output 1
		Input 2	BNC 9 is the source for Output 1
		Input 3	BNC 2 is the source for Output 1
		Input 4	BNC 10 is the source for Output 1
	Output 2 Source	Input #	Displays the source for Output 2 (the same source as assigned to Output 1)

Dual 2x1 Mode

Table 5.7 summarizes the **Remote Control Menu** options available in DashBoard when the DSS-8224 is operating in Dual 2x1 Mode.

Table 5.7 Remote Control Menu Items - Dual 2X1 Mode

Tab Title	Item	Parameters	Description
Remote Control	Operating Mode (read-only)	Dual 2x1, Two independent Outputs	- Card is operating in Dual 2x1 Mode JP4 is set to 2x1 JP9 is set to NORMAL
	Auto Change Over Trigger (read-only)	Loss of Signal*	On a Loss of Signal, the primary input causes the output to switch to the secondary input.
		Loss of Lock	On a Loss of Lock, the primary input causes the output to switch to the secondary input.
	Output 1 Auto Change Over Mode	Disabled	Disables the ACO Mode. User can assign any source for Output 1 from the Output Source Settings area.
		Enabled, Primary Source: Input 1 ^a	Assigns BNC 1 as the source for Output 1
		Enabled, Primary Source: Input 2 ^a	Assigns BNC 9 as the source for Output 1
		Enabled, Primary Source: Input 3 ^b	Assigns BNC 2 as the source for Output 1
		Enabled, Primary Source: Input 4 ^b	Assigns BNC 10 as the source for Output 1

Table 5.7 Remote Control Menu Items - Dual 2X1 Mode

Tab Title	Item	Parameters	Description
Remote Control	Output 2 Auto Change Over Mode	Disabled	Disables the ACO Mode. User can assign any source for Output 2 from the Output Source Settings area.
		Enabled, Primary Source: Input 1 ^a	Assigns BNC 1 as the source for Output 2
		Enabled, Primary Source: Input 2 ^a	Assigns BNC 9 as the source for Output 2
		Enabled, Primary Source: Input 3 ^b	Assigns BNC 2 as the source for Output 2
		Enabled, Primary Source: Input 4 ^b	Assigns BNC 10 as the source for Output 2
	Output 1 Source (read-only)	Input #	Displays the secondary source for Output 1
	Output 2 Source (ready-only)	Input #	Displays the secondary source for Output 2

- a. This option is only available when JP10 is set to Input 1&2.
b. This option is only available when JP10 is set to Input 3&4.

Dual 2x1 with Tracking Mode

Table 5.8 summarizes the **Remote Control Menu** options available in DashBoard when the DSS-8224 is operating in Dual 2x1 Tracking Mode.

Table 5.8 Remote Control Menu Items - Dual 2X1 Mode with Tracking Mode

Tab Title	Item	Parameters	Description
Remote Control	Operating Mode (read-only)	Dual 2x1, Output 2 tracks Output 1	- Card is operating in Dual 2x1 Mode and Output 2 tracks Output 1 JP4 is set to 2x1 JP9 is set to FOLLOW
	Auto Change Over Trigger (read-only)	Loss of Signal*	On a Loss of Signal, the primary input causes the output to switch to the secondary input.
		Loss of Lock	On a Loss of Lock, the primary input causes the output to switch to the secondary input.
	Output 1 Auto Change Over Mode	Disabled*	Disables the ACO Mode. User can assign any source for Output 1 from the Output Source Settings area.
		Enabled, Primary Source: Input 1 ^a	- ACO Mode is enabled - Assigns BNC 1 as the source for Output 1 - Automatically assigns BNC 2 as the source for Output 2
		Enabled, Primary Source: Input 2 ^a	- ACO Mode is enabled - Assigns BNC 9 as the source for Output 1 - Automatically assigns BNC 10 as the source for Output 2

Table 5.8 Remote Control Menu Items - Dual 2X1 Mode with Tracking Mode

Tab Title	Item	Parameters	Description
Remote Control	Output 1 Auto Change Over Mode	Enabled, Primary Source: Input 3 ^b	Assigns BNC 2 as the source for Output 1
		Enabled, Primary Source: Input 4 ^b	Assigns BNC 10 as the source for Output 1
	Output 2 Auto Change Over Mode	Enabled, Primary Source: Input 3 ^a	• ACO Mode is enabled • BNC 1 is the source for Output 1 • BNC 2 is the source for Output 2
		Enabled, Primary Source: Input 4 ^a	• ACO Mode is enabled • BNC 9 is the source for Output 1 • BNC 10 is the source for Output 2
	Output 1 Source (read-only)	Input #	Displays the secondary source for Output 1
	Output 2 Source (read-only)	Input #	Displays the secondary source for Output 2

- a. This option is only available when JP10 is set to Input 1&2.
b. This option is only available when JP10 is set to Input 3&4.

Alarms Menus

Table 5.9 summarizes the **Alarms Menu** options available in DashBoard for the DSS-8224.

Table 5.9 Alarms Menu Items

Tab Title	Item	Parameters	Description
Alarms	Loss of Output #	Ignore	Signal Status field in the Signal tab will ignore loss of input conditions
		Notify*	Signal Status field in the Signal tab reports loss of input conditions when they occur
	Loss of Reference	Ignore	Reference field in the Signal tab ignores loss of reference
		Notify*	Reference field in the Signal tab reports when a loss of reference occurs
	Loss of Input #	Ignore	Corresponding Input field in the Signal tab ignores a loss of the indicated input.
		Notify*	Corresponding Input field in the Signal tab reports when a loss of the indicated input occurs

Jumpers Menus

Table 5.10 summarizes the **Jumpers Menu** options available in DashBoard for the DSS-8224.

Table 5.10 Jumpers Menu Items

Tab Title	Item	Parameters	Description
Jumpers	Card Control	Local	Card control is performed on the card or with an RCM-8120 remote control module
		Remote	Card is remotely configured via DashBoard
	Control Mode ^a	Panel - Master	Designates the card as a Master; only one card can be configured as Master on a bus
		Panel - Slave	Designates the cards as a Slave
		GPI Level	Source selection GPI levels is controlled by GPI levels
		GPI Edge	Source selection is controlled by GPI transitions
	Panel Type	4-button	The card is connected to the RCM-8120
		2-button	The card is connected to the RCM-8120-1
	Xpoint Mode	4x1	The card is operating with four inputs for each output
		2x1	The card is operating with two inputs for each output
	SW2 Control	Normal	Output 2 is controlled independently
		Follow	Output 2 will follow Output 1
	SW2 Select	Input 1 & 2	Output 2 selects between input 1 and 2
		Input 3 & 4	Output 2 selects between input 3 and 4
	HD Timing	1080i	HD video will switch at line 7 of 1080i signal
		720p	HD video will switch at line 7 of 720p video
	Ref Selected	Frame 1	The card is using frame reference 1
		Frame 2	The card is using frame reference 2
	Reclock Mode	Equalize	All signals are equalized on output
		Reclock	All signals are reclocked on output

a. Based on the settings of JP1, JP3, and JP11.

Specifications

In This Chapter

This chapter provides the technical specifications for the DSS-8224. Note that specifications are subject to change without notice

The following topics are discussed:

- Technical Specifications

Technical Specifications

This section provides the technical specifications for the DSS-8224.

Table 6.1 DSS-8224 Technical Specifications

Category	Parameter	Specification
Serial Digital Video Inputs	Number of Inputs	4
	Data Rates and SMPTE Standards Accommodated	270 Mbps (SMPTE 259M-2006)
		1.485 Gbps (SMPTE 292-2006)
		195 Mbps, 360 Mbps, 540 Mbps
	Impedance	75ohm terminating
	Return Loss	15dB to 1.485GHz
Serial Digital Video Outputs	Number of Outputs	SW1 - 2
		SW2 - 2
	Impedance	75ohm
	Return Loss	15dB to 1.485 GHz
	Signal Level	800mV $\pm$ 10%
	DC Offset	0V $\pm$ 50mV
	Rise and Fall Time (20-80%)	700ps typical (270Mbps)
		200ps typical (1.485Gbps)
	Overshoot	<8%
Reference	Impedance	75ohm
	Signal	NTSC/PAL analog composite or Tri-Level Sync
Power	Power Consumption	4.5W

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 DSS-8224, 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. **Re-seat the Card in the Frame** — Eject the card and re-insert it in the frame.
4. **Check Control Settings** — Refer to the section “**Control and Monitoring Features**” on page 3-9 for information on verifying all user-adjustable component settings.
5. **Input Signal Status** — Verify that source equipment is operating correctly and that a valid signal is being supplied.
6. **Output Signal Path** — Verify that destination equipment is operating correctly and receiving a valid signal.
7. **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 DSS-8224.

Use the following procedure to reload the software on a DSS-8224:

1. Eject the card from the frame.
2. Press and hold the **Bootload** button, while re-inserting the card into the frame.
3. Release the button.
 - The **PWR LED** will flash green while the card is waiting for a new software load.
 - 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 DSS-8224 via the connection on the rear of the frame or uploaded to the DSS-8224 via DashBoard. Refer to the section, “**Software Upgrades for the DSS-8224**” on page 2-6 for details.

This completes the procedure for reloading the software on a DSS-8224.

Warranty and Repair Policy

The DSS-8224 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 DSS-8224 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 DSS-8224 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 DSS-8224 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 DSS-8224 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 DSS-8224, 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 DSS-8224. 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
E-MAIL	General Information	solutions@rossvideo.com
	Technical Support	techsupport@rossvideo.com
POSTAL SERVICE	Ross Video Limited	8 John Street, Iroquois, Ontario, Canada K0E 1K0
	Ross Video Incorporated	P.O. Box 880, Ogdensburg, New York, USA 13669-0880

Visit Us

Please visit us at our website for:

- Company information
- Related products and full product lines
- On-line catalog
- News
- Testimonials

www.rossvideo.com