DSS-8224 User Guide

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

David Ross
CEO, Ross Video
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5. We will do something extra for our customers, as an apology, when something big goes wrong and it's our fault.
6. We will keep our promises.
7. We will treat the competition with respect.
8. We will cooperate with and help other friendly companies.
9. We will go above and beyond in times of crisis. *If there's no one to authorize the required action in times of company or customer crisis - do what you know in your heart is right. (You may rent helicopters if necessary.)*

DSS-8224 · User Guide

- Ross Part Number: **8224DR-004-06**
- Release Date: August 21, 2019.

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

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Statement of Compliance

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

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

EMC Notices

US FCC Part 15

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

These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a Commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio

communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

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

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

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

European Union

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

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

Australia/New Zealand

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

Korea

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

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

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

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

International

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

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

Maintenance/User Serviceable Parts

Routine maintenance to this openGear product is not required. This product contains no user serviceable parts. If the module does not appear to be working properly, please contact Technical Support using the numbers listed under the "**Contact Us**" section of this manual. All openGear products are covered by a generous 5-year warranty

and will be repaired without charge for materials or labor within this period. See the "**Warranty and Repair Policy**" section in this manual for details.

Environmental Information

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

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

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

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

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Contents

Introduction 9

Related Publications 9
Documentation Conventions 9
Interface Elements 9
User Entered Text 9
Referenced Guides 9
Menu Sequences 10
Important Instructions 10
Contacting Technical Support 10

Before You Begin 11

Overview 11
Features 11
Functional Block Diagrams 12
User Interfaces 13
DashBoard Control System 13
Card-edge Control and Monitoring 13
SNMP Monitoring and Control 13

Hardware Overview 15

Card Overview 15
Control and Monitoring Features 16
Status and Selection LEDs on the DSS-8224 17

Physical Installation 19

Before You Begin 19
Static Discharge 19
Unpacking 19
Installing the DSS-8224 19
Rear Modules for the DSS-8224 19
Installing a Rear Module 19
Installing the DSS-8224 20
Cabling for the DSS-8224 21
DFR-8310 Series Frame Cabling 21
DFR-8321, OG3-FR, and OGX-FR Series Frame Cabling 21

Configuration 23

Control Modes 23
Configuring Card Control 23
Selecting the Control Mode 23
Operation Modes 23
Configuring the Operating Mode 24
Configuring SW1 and SW2 24
Auto Change Over (ACO) Mode 25
7x1 Mode Setup 25
Selecting the Timing 25
Selecting the Reclocking Mode 26

Operation 27
Overview 27
Cable Length Requirements 28
Operating Modes with the RCM-8120 Control Module 29
7x1 Mode 30
Multiple Remote Module Operation 30
GPI Operation 30
GPI Switch Operation 31
GPI Level Operating Modes 31
Software Upgrades 33
DashBoard Menus 35
Status Tabs 35
Signal Tab 35
Hardware Tab 36
Product Tab 36
Setup Tab 36
Remote Control Tab 37
4x2 Mode 37
4x1 Mode 37
Dual 2x1 Mode 38
Dual 2x1 with Tracking Mode 39
Alarms Tab 40
Jumpers Tab 40
Technical Specifications 43
Service Information 45
Troubleshooting Checklist 45
Bootload Button 45
Warranty and Repair Policy 45
Glossary 47

Introduction

This guide covers the installation, configuration, and use of the DSS-8224. The following chapters are included:

- **"Introduction**" summarizes the guide and provides important terms, and conventions.
- "**Before You Begin**" provides general information to keep in mind before installing and configuring your card.
- "**Hardware Overview**" provides a basic introduction to the hardware features including the cabling and monitoring features of the rear module.
- "**Physical Installation**" provides instructions for the physical installation of the card and its rear module, and provides an overview of connecting input and output devices to the rear module.
- "**Configuration**" provides a general overview of the configuring the DSS-8224.
- "**Software Upgrades**" provides instructions for upgrading the software for your DSS-8224 using DashBoard.
- "**DashBoard Menus**" summarizes the DSS-8224 menus, items, and parameters in DashBoard.
- "**Technical Specifications**" provides technical specification details on the DSS-8224.
- "**Service Information**" provides information on the warranty and repair policy for your card.
- "**Glossary**" provides a list of terms used throughout this guide.

Related Publications

It is recommended to consult the following Ross documentation before installing and configuring your DSS-8224 card:

- ***DashBoard User Manual***, Ross Part Number: 8351DR-004
- ***MFC-OG3-N and MFC-8322-S User Manual***, Ross Part Number: 8322DR-004
- ***OG3-FR Series User Manual***, Ross Part Number: 8322DR-005
- ***OGX-FR Series User Manual***, Ross Part Number: 8322DR-204

Documentation Conventions

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

Interface Elements

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

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

User Entered Text

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

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

Referenced Guides

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

For more information, refer to the ***DashBoard User Manual***.

Menu Sequences

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

Important Instructions

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

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

Contacting Technical Support

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

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

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

Before You Begin

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 1.485Gbps SDI video, as well as other common serial digital signals at 143Mbps, 360Mbps, and 540Mbps.

Each DSS-8224 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

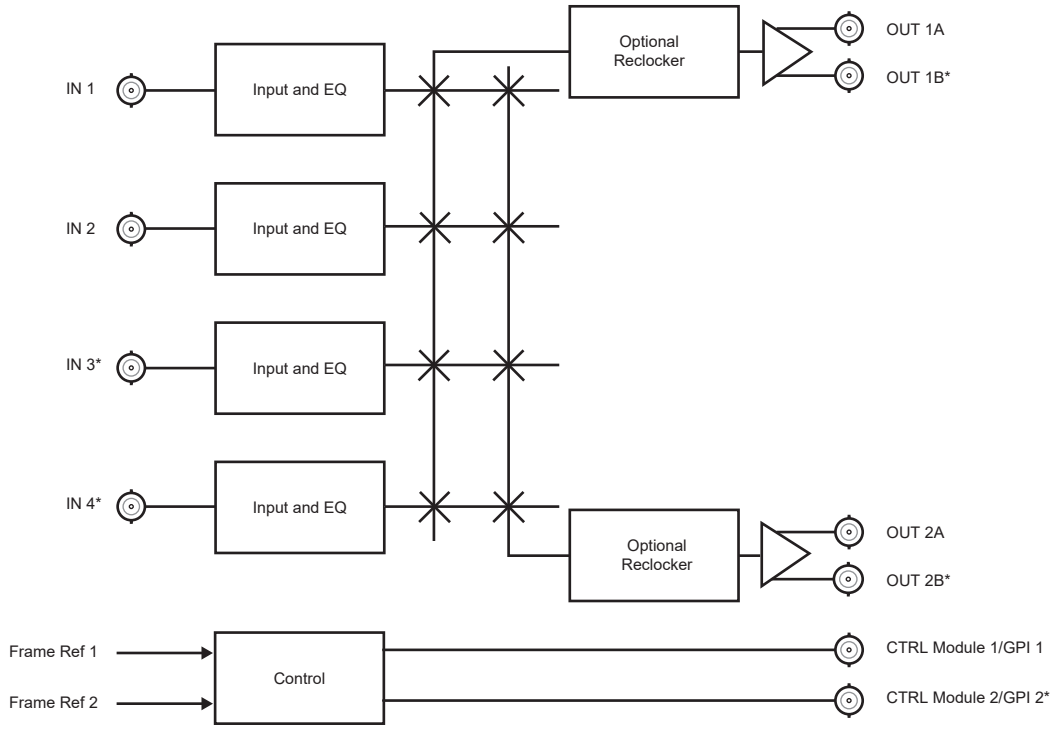
The following features make the DSS-8224 the best solution for multi-definition SDI video switching:

- Switches SD and HD serial digital video (270Mbps or 1.485Gbps)
- 4 inputs
- 4 outputs (2 per switch)
- Can be configured as a 7x1[1], 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 DashBoard Control System
- Fits openGear 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 work-flow of the DSS-8224.



* Not available in 2x2 mode with split rear module.

Figure 2.1 DSS-8224 4x2 Mode — Simplified Block Diagram

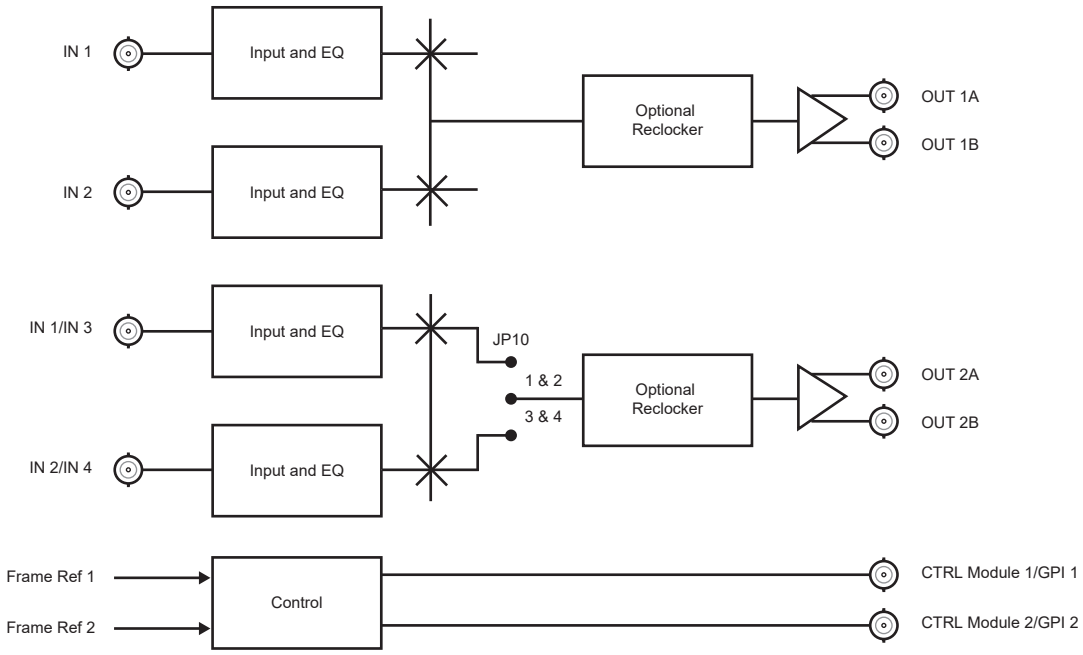


Figure 2.2 DSS-8224 Dual 2x1 Mode — Simplified Block Diagram

User Interfaces

The following interfaces are available for control and monitoring of your DSS-8224.

DashBoard Control System

DashBoard Control System enables you to monitor and control openGear frames and cards from a computer. DashBoard communicates with other cards in the frame through the Network Controller card.

For More Information on...

- the menus in DashBoard, refer to the chapter "**DashBoard Menus**" on page 35.
- installing and using DashBoard, refer to the ***DashBoard User Manual***.

Card-edge Control and Monitoring

The card-edge provides jumpers for configuring DSS-8224 and LEDs for monitoring the status of the input and output signals.

For More Information on...

- the DSS-8224 control modes, refer to the section "**Control Modes**" on page 4.
- the DSS-8224 operation modes, refer to the section "**Operation Modes**" on page 5.
- configuring the switch timing of the DSS-8224, refer to the section "**Selecting the Timing**" on page 7.
- selecting the reclocking mode of the DSS-8224, refer to the section "**Selecting the Reclocking Mode**" on page 8.
- the card-edge LEDs, refer to the section "**Control and Monitoring Features**" on page 9.

SNMP Monitoring and Control

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

For More Information on...

- SNMP controls on your card, refer to your DSS-8224 Management Information Base (MIB) file.
- SNMP Monitoring and Control, refer to your ***MFC-8300 Series*** or ***MFC-OG3 Series User Manual***.

Hardware Overview

This chapter provides a general overview of the DSS-8224 components, supported rear modules, and cabling designations.

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

Card Overview

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

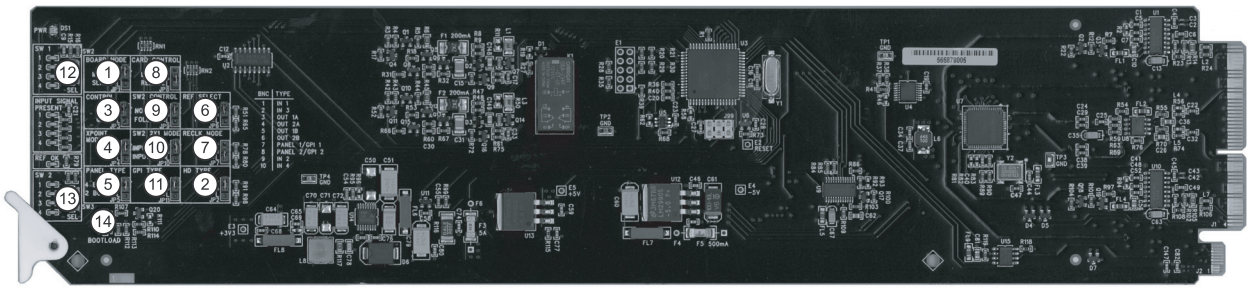


Figure 3.1 DSS-8224 — Components

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. This jumper also impacts the ACO feature of the card. Refer to "**Auto Change Over (ACO) Mode**" on page 25 for more information.

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 operating modes for the DSS-8224, refer to the section "**Operation Modes**" on page 23.
- the switch timing of the DSS-8224, refer to the section "**Selecting the Timing**" on page 25.

Control and Monitoring Features

This section provides information on the jumpers, buttons and LEDs for the DSS-8224. (**Figure 3.1**)

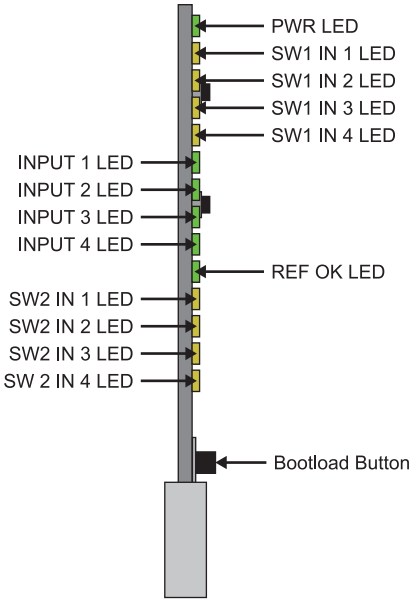


Figure 3.2 DSS-8224 Card-edge Controls

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 green, 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.
SW1 IN #	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 IN #	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 #	Green	When lit green, 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.

Physical Installation

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.

Before You Begin

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

Static Discharge

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 an openGear frame. The same procedure applies regardless of the frame or card type. However, the specific Rear Module you need to install depends on 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.

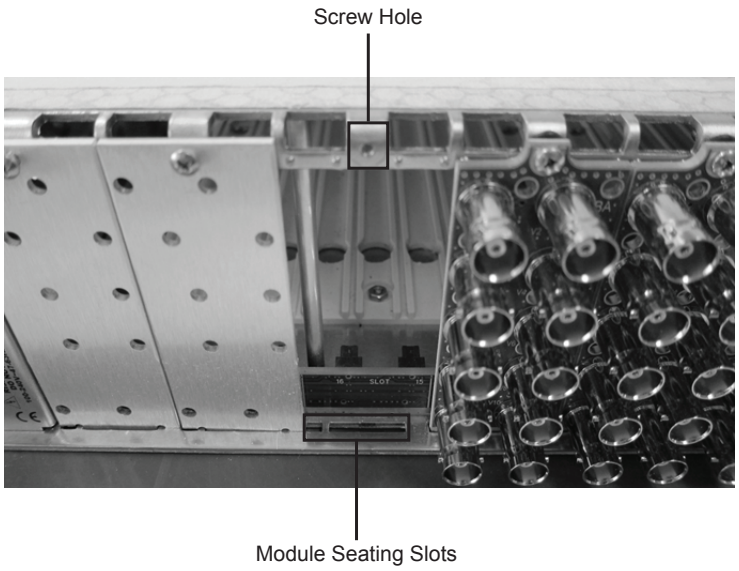
- **DFR-8310 series frame** — The 8310AR-030 Rear Module is required. The DSS-8224 is also compatible with the DFR-8310-BNC frame.
- **DFR-8320**, **OG3-FR**, or **OGX-FR series frame** — The 8320AR-030 Full Rear Module or the 8320AR-031 Split Rear Module can be used. Note that the available cable designations differ between the type of rear module used. Refer to the section Refer to the section "**DFR-8321, OG3-FR, and OGX-FR Series Frame Cabling**" on page 21 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 Refer to the section "**Installing the DSS-8224**" on page 20.

To install a Rear Module in your openGear frame

1. Locate the card frame slots on the rear of the frame.
2. Remove the Blank Plate from the slot you have chosen for the 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.



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

Installing the DSS-8224

This section outlines how to install the DSS-8224 in an openGear 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.

To install the DSS-8224 in an openGear frame

1. Locate the Rear Module you installed in the procedure Refer to the section "**Installing a Rear Module**" on page 19.

Caution — *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.

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

Each R1A-8258 occupies one slot and accommodates one card. This rear module provides four inputs, four outputs and two GPI connections. **Figure 4.1**.

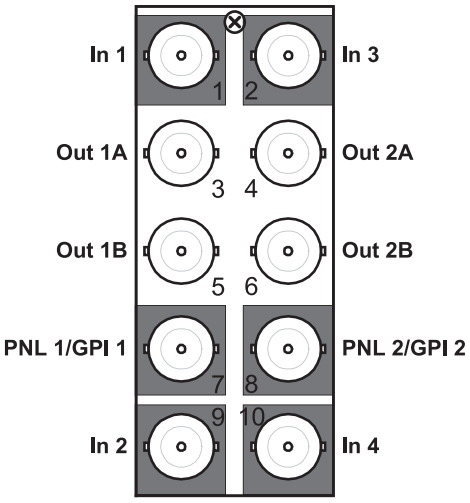


Figure 4.1 Cable Connections for the R1A-8258 and R2A-8258 Rear Modules

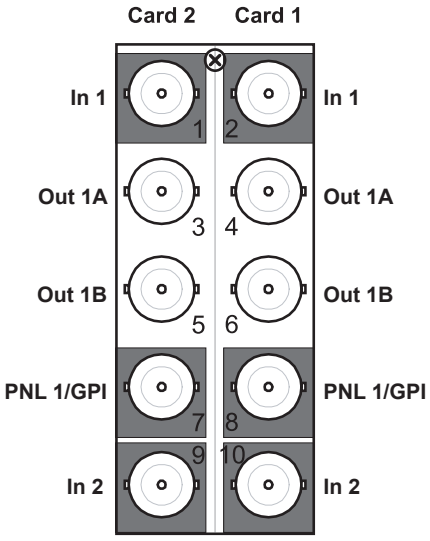


Figure 4.2 Cable Connections for the R2AS-8258 Rear Module

DFR-8321, OG3-FR, and OGX-FR Series Frame Cabling

The DSS-8224 is used with the following Rear Modules:

- **R2A-8258** Full Rear Module — Each rear module occupies two slots and accommodates one card. This rear module provides four inputs, four outputs, and two GPI connections. **Figure 4.1**
- **R2AS-8258** Split Rear Module — Each rear module occupies two slots and accommodates two cards. This rear module provides two inputs, two outputs, and a GPI connection per card. **Figure 4.2**

Configuration

Control Modes

This section outlines how to use the card-edge controls to configure the DSS-8224 for remote control, select the control mode, and select the GPI type.

Configuring Card Control

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

- 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.

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.

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.

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

✶ 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 25.

Configuring the Operating Mode

Use **JP4** to specify the operation mode of the DSS-8224, and **JP9** to specify the control mode for Output 2. **JP10** is used when operating in 2x1 mode to specify the two inputs available on Output 2.

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.

Configuring SW1 and SW2

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

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:
   a. Set **JP9** to **NORMAL**.
   b. 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.
5. 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.

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 Tab**" on page 37.

✶ To edit the Auto Change Over Mode, ensure that **JP7** is set to **RCLK** as outlined in the section "**To select the reclocking mode of the DSS-8224**" on page 26.

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 30.
- diagrams illustrating possible 7x1 configurations, refer to **Figure 6.3** and **Figure 6.4**.

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.

To enable 7x1 mode for the downstream/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 openGear 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.

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.

✶ 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.

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.

To select the reclocking mode of the DSS-8224

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

For More Information on...

- jumper locations, refer to the section "**Card Overview**" on page 15.
- the available DashBoard menus, refer to the chapter "**DashBoard Menus**" on page 35.

Operation

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

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.

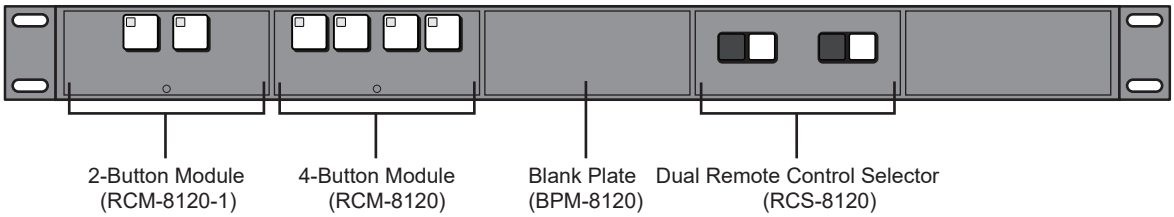


Figure 6.1 MRP-8120 Panel with RCM-8120-1, RCM-8120, and RCS-8120 Installed

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).

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

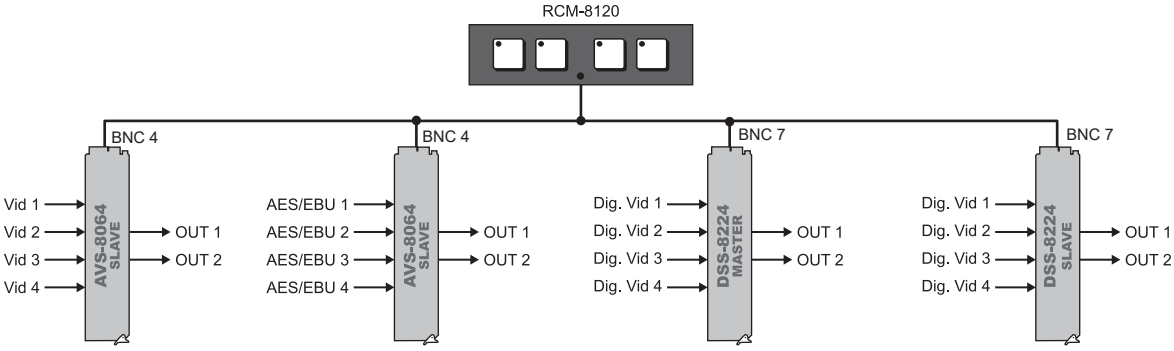


Figure 6.2 Example of Signal Flow with 4x1 Operation

Figure 6.3 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.

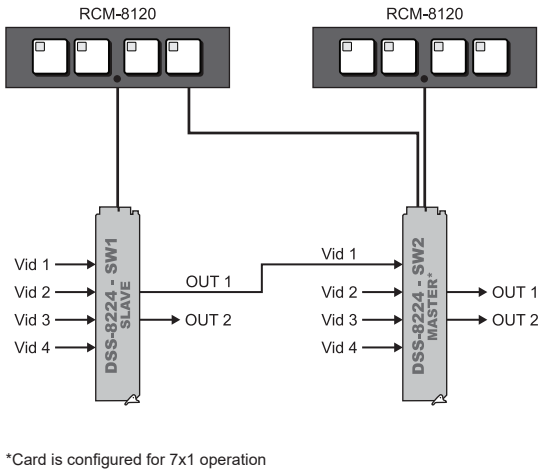


Figure 6.3 Example of Signal Flow with 7x1 Operation — Two DSS-8224

Figure 6.4 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.

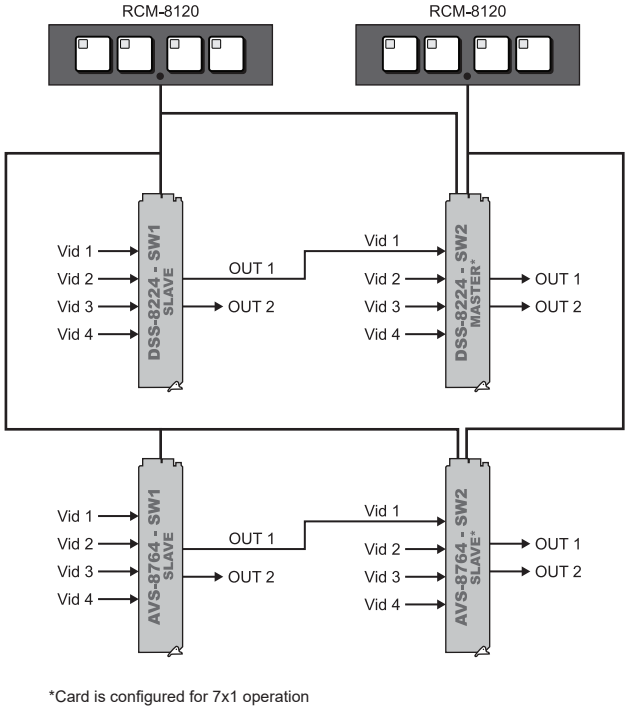


Figure 6.4 Example of Signal Flow with 7x1 Operation — Two DSS-8224 and Two AVS-8764

Cable Length Requirements

Keep the following in mind to ensure proper communication between the remote panel and the utility switch:

- Maximum coax length should not exceed 1200ft.
- If you are using audio/control cable to connect the panel to the utility switch, do not exceed 400tt.
- If you are controlling multiple cards with one panel, keep the slave cards as close as possible (i.e. less than 60ft) to the master card.

- If using the BNC to make the connection, the coax can be up to 1200ft long.
- If using the 3-pin audio connector, use a good quality audio/control cable (i.e. Belden 1503A 22AWG shielded pair).
- Do not exceed 400ft of audio/control cable.
- If you use the GPIs, keep the maximum cable length of the GPI cable to 500ft or less of a quality audio/control cable (i.e. Belden 1503A).
- To avoid communication problems, do not run a long length of cable from the master card and leave the far end disconnected from a control module. Either ensure that all cables originating from the master card end at a RCM-8120 or disconnect the unused cable.

Operating Modes with the RCM-8120 Control Module

The DSS-8224 can be configured to operate in several different modes. **Table 6.1** summarizes the modes supported on the DSS-8224 when controlled via the RCM-8120.

Table 6.1 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 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 two 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.

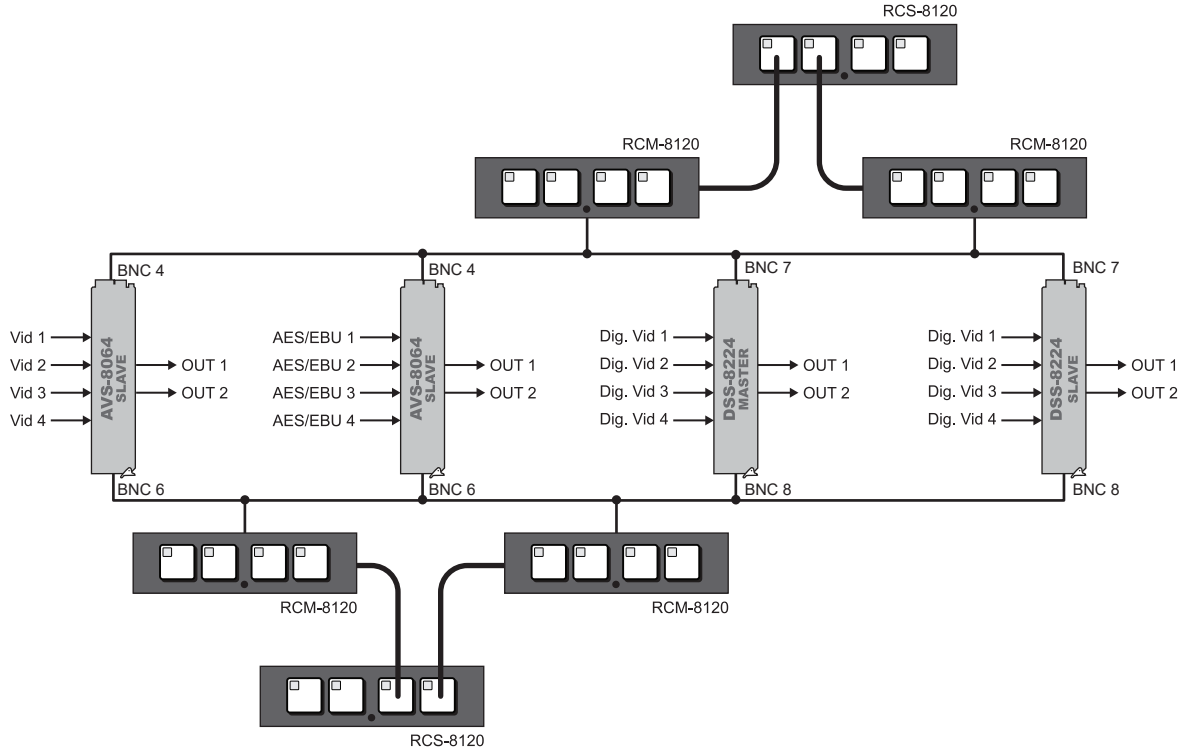


Figure 6.5 Example of Signal Flow with Multiple Module Operation

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 6.2 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 6.3 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 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.

Software Upgrades

This chapter provides instructions for upgrading the software for your DSS-8224 using the DashBoard Control System.

To upload software to the DSS-8224

1. Contact Ross Technical Support for the latest software version file.
2. In DashBoard, display the **Device** tab of the DSS-8224 by double-clicking its status indicator in the **Basic Tree View**.
3. From the **Device** tab, click **Upload** to display the **Select File for upload** dialog box.
4. Navigate to the *.bin upload file you wish to upload. DashBoard automatically selects the last directory that you loaded from.
5. Click **Open** to display a confirmation dialog box. This dialog box displays the selected upload file name, type, size, and the file creation date.
6. From the **Confirmation** dialog box, select one of the following:
   - **Cancel** — Select this option to cancel the upload of the file and return to the **Device View**.
   - **Continue** — Select this option to upload the file. While uploading, an **Uploading Progress** dialog opens.

   Notice — *Clicking the **Cancel** button while uploading will leave the card in an invalid state. Do not click* **Cancel** *unless the uploading progress has stopped completely for 60 seconds or more.*
7. Monitor the upgrade progress bar displayed in DashBoard while the software is upgraded on your DSS-8224.
8. To complete the upgrade process, you must reboot the card as follows:
   - From the **Device** tab, click **Reboot** to reboot DSS-8224. The reboot process takes up to 30 seconds.

✶ The communications processor of the DSS-8224 requires approximately 30 seconds to re-start and re-establish network communications.

- The DSS-8224 automatically saves all your settings before starting the reboot process.
- The status of all the cards in the frame are grayed out until the reboot process is complete.

DashBoard Menus

This chapter briefly summarizes the menus, items, and parameters available from DashBoard for your DSS-8224. Default parameters are noted with an asterisk (*).

Status Tabs

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

Signal Tab

Table 8.1 summarizes the read-only information displayed in the **Signal** tab.

Table 8.1 Signal Tab Items

Item	Parameters	Description
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 -143Mbps	Valid signal at 143Mbps
	Locked -360Mbps	Valid signal at 360Mbps
	Locked-540Mbps	Valid signal at 540Mbps
	Unlocked	Signal present, with undetermined clock rate
	No Signal	No signal on selected input

Hardware Tab

Table 8.2 summarizes the read-only information displayed in the **Hardware** tab.

Table 8.2 Hardware Tab Items

Item	Parameters	Description
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 8.3 summarizes the read-only information displayed in the **Product** tab.

Table 8.3 Product Tab Items

Item	Parameters	Description
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 Tab

Table 8.4 summarizes the **Setup** options available in DashBoard for the DSS-8224.

Table 8.4 Setup Menu Items

Item	Parameters	Description
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 Tab

The **Remote Control** tab is 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 8.5 summarizes the read-only information displayed in the **Remote Control** tab when the DSS-8224 is operating in 4x2 Mode.

Table 8.5 Remote Control Menu Items - 4X2 Mode

Item	Parameters	Description
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 8.6 summarizes the read-only information available in the **Remote Control** tab when the DSS-8224 is operating in 4x1 Mode.

Table 8.6 Remote Control Menu Items - 4X1 Mode

Item	Parameters	Description
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 8.6 Remote Control Menu Items - 4X1 Mode

Item	Parameters	Description
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 8.7 summarizes the options and read-only information available in the **Remote Control** tab when the DSS-8224 is operating in Dual 2x1 Mode.

Table 8.7 Remote Control Menu Items - Dual 2X1 Mode

Item	Parameters	Description
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[a]	Loss of Signal*	• **JP7** is set to **RCLK** or **EQ** • The primary input causes the output to switch to the secondary input
	Loss of Lock	• **JP7** is set to **RCLK** • 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[b]	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[c]	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	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

Table 8.7 Remote Control Menu Items - Dual 2X1 Mode

Item	Parameters	Description
Output 2 Auto Change Over Mode	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 menus is read-only when JP7 is set to EQ.
b. This option is only available when JP10 is set to Input 1&2.
c. This option is only available when JP10 is set to Input 3&4.

Dual 2x1 with Tracking Mode

Table 8.8 summarizes the options and read-only information available in the **Remote Control** tab when the DSS-8224 is operating in Dual 2x1 Tracking Mode.

Table 8.8 Remote Control Menu Items - Dual 2X1 Mode with Tracking Mode

Item	Parameters	Description
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	Loss of Signal*	• **JP7** is set to **RCLK** or **EQ** • The primary input causes the output to switch to the secondary input
	Loss of Lock	• **JP7** is set to **RCLK** • 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
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

Table 8.8 Remote Control Menu Items - Dual 2X1 Mode with Tracking Mode

Item	Parameters	Description
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 Tab

Table 8.9 summarizes the **Alarms** options available in DashBoard for the DSS-8224.

Table 8.9 Alarms Menu Items

Item	Parameters	Description
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 Tab

Table 8.10 summarizes the **Jumpers** options available in DashBoard for the DSS-8224.

Table 8.10 Jumpers Menu Items

Item	Parameters	Description
Card Control	Local	Card control is performed on the card or with an RCM-8120 remote control panel
	Remote	Card is remotely configured via DashBoard

Table 8.10 Jumpers Menu Items

Item	Parameters	Description
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.

Technical Specifications

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

✶ Specifications are subject to change without notice.

Table 9.1 DSS-8224 Technical Specifications

Category	Parameter	Specification
Serial Digital Video Inputs	Number of Inputs	4
	Data Rates and SMPTE Standards Accommodated	270Mbps (SMPTE 259M-2006
		1.485Gbps (SMPTE 292-2006)
		195Mbps, 360Mbps, 540Mbps
	Impedance	75ohm terminating
	Return Loss	15dB to 1.485GHz
	Equalization (Belden 1694A cable)	>120m @ 1.485Gbps >300m @ 270Mbps
Serial Digital Video Outputs	Number of Outputs	SW1 - 2
		SW2 - 2
	Impedance	75ohm
	Return Loss	15dB to 1.485GHz
	Signal Level	800mV ±10%
	DC Offset	0V ±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

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 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.

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**" on page 33 for details.

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.

Glossary

The following terms are used throughout this guide:

Active image — the portion of the video picture area (production aperture) that is being utilized for output content. Active image excludes letterbox bars and pillar-box bars.

Card — refers to the DSS-8224 unless otherwise noted.

DashBoard — the DashBoard Control System.

DTVCC captions — CEA-708 captions.

Frame — the openGear frame that houses the DSS-8224 unless otherwise noted.

MIB — management information base.

Network Controller Card — the MFC-OG3-N and any available options unless otherwise noted.

NTSC captions — the CEA-608-D: Line 21 Data Services captions.

openGear Frame — refers to the OG3-FR series and OGX-FR series frames unless otherwise noted.

PAL — PAL-B and PAL-G unless otherwise noted.

System— the mix of interconnected production and terminal equipment in your environment.

User — the person who uses the DSS-8224.