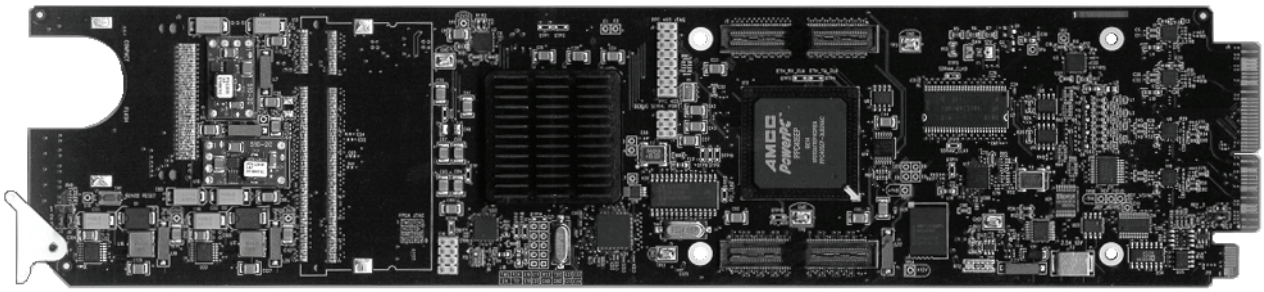
Ross Video Limited

MDK-111A-Lite

Multi-Definition Digital Keyer
Owner's Manual



Live Production Technology

openGear

MDK-111A-Lite • Multi-Definition Digital Keyer Owner's Manual

- Ross Part Number: **111MLDR-004-04**
- Release Date: April 13, 2011. Printed in Canada.

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

Copyright

© 2011 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; 7,602,446; 7,834,886. 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 registered trademark of Ross Video Limited.
- Ross, ROSS, ROSS®, and MLE 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.
- Dolby® is a registered trademark of Dolby Laboratories.
- 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 to Service Personnel

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.

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

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

EUROPE

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

INTERNATIONAL

This equipment has been tested to **CISPR 22:1997** along with amendments **A1:2000** and **A2:2002**, and found to comply with the limits for a Class A Digital device.

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

Maintenance/User Serviceable Parts

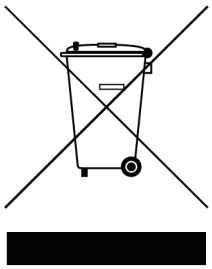
Routine maintenance to this openGear product is not required. This product contains no user serviceable parts. If the module does not appear to be working properly, please contact Technical Support using the numbers listed under the “Contact Us” section on the last page of this manual. All openGear products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

Environmental Information

The equipment that you purchased required the extraction and use of natural resources for its production. It may contain hazardous substances that could impact health and the environment.

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

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



If you need more information on the collection, reuse, and recycling systems, please contact your local or regional waste administration.

You can also contact Ross Video for more information on the environmental performances of our products.

Company Address

Ross Video Limited
8 John Street
Iroquois, Ontario, K0E 1K0
Canada

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

In This Chapter 1-1
A Word of Thanks 1-1
Overview 1-2
Features 1-2
Functional Block Diagrams 1-3
Documentation Terms and Conventions 1-4

Installation 2

In This Chapter 2-1
Before You Begin 2-2
Card Overview 2-3
Card-edge LEDs 2-4
Card Installation 2-5
Rear Modules 2-5
Power Fail Relay 2-5
Installing the Rear Modules 2-5
Card Installation 2-6
Cabling 2-7
Video Input and Output Cabling 2-7
Serial Port Cabling 2-8
Serial Communication Cabling 2-8
Serial COM Port Pin Assignment 2-8
Ethernet Port Cabling 2-9
Ethernet Communication Cabling 2-9
GPI/Tally Cabling 2-10
GPI/Tally Cable Connections 2-10

Configuration 3

In This Chapter 3-1
Selecting the Video Format and Reference Source 3-2
Output Format Reference Compatibility 3-2
Selecting the Video Format and Reference Source 3-2
Video Input and Output Configuration 3-4
Configuring the Video Outputs 3-4
Signal Loss Alarm Setup 3-5
Audio Mixing Configuration 3-6
Serial Communication Setup 3-7
Serial Communications via the Serial COM Port 3-7
Serial Communications via an Ethernet Connection 3-8
Ethernet Communication Setup 3-9
GPI/Tally Communication Setup 3-10
GPI Overview 3-10
Tally Overview 3-10
GPI Communication Setup 3-11
Tally Communication Setup 3-12

Loading the Factory Defaults 3-14
Personality Options 3-15
Configuring the Transition Behavior 3-15
Configuring the Input Signal Timing Display 3-15
Configuring the Card Lock Settings 3-16
Dual Mixer Mode 3-17
Enabling Dual Mixer Mode 3-17
Configuring the Video Outputs for Dual Mixer Mode 3-17
Configuring Dual Mixer Mode 3-18
Performing Transitions in Dual Mixer Mode 3-19
Software Upgrades 3-20
SNMP Monitoring 3-21

Operation 4

In This Chapter 4-1
Adjusting the Proc Amp Controls 4-2
Configuring Keys 4-4
Configuring a Key 4-4
Masking a Key 4-5
Performing Transitions 4-7
Transitions Setup 4-7
Configuring the Transition Buttons 4-8
Performing a Cut Transition 4-9
Performing an Auto Transition 4-9
Performing a Fade to Black 4-10

Appendix A. DashBoard Menus 5

In This Appendix 5-1
Status Tabs 5-2
Signal Tab 5-2
Hardware Tab 5-3
Product Tab 5-4
Configuration Menus 5-5
Video Configuration 5-5
Audio Configuration 5-6
GPI Configuration 5-7
Tally Configuration 5-8
Remote Control 5-8
Ethernet Configuration 5-9
Personality Configuration 5-10
Load/Save 5-11
Proc Amps Menus 5-12
Key Setup Menus 5-13
On Air Control Menus 5-14
On Air Control Menus 5-14
On Air Control Dual Mixer Menus 5-15

Appendix B. Serial Protocols 6

In This Appendix 6-1
GVG M-2100 Emulation Protocol 6-2
Pinout Connections 6-2
Communication Settings 6-2
Emulation Commands 6-2

Appendix C. Specifications **7**

In This Appendix 7-1
Technical Specifications 7-2

Appendix D. Service Information **8**

In This Chapter 8-1
Troubleshooting Checklist 8-2
Warranty and Repair Policy 8-3

Index **IX**

Introduction

In This Chapter

This chapter contains the following sections:

- Overview
- Functional Block Diagrams
- Documentation Terms and Conventions

A Word of Thanks

Congratulations on your purchase of the Ross Video MDK-111A-Lite Multi-Definition Digital Keyer. The MDK-111A-Lite is part of a full line of Ross Video digital products which are backed by over 25 years of engineering and design expertise. You will be pleased at how easily your new MDK-111A-Lite fits into your overall working environment. Equally pleasing is the product quality, reliability, and functionality.

Overview

The MDK-111A-Lite is a high quality HD/SD-SDI video keyer with A/B background inputs for background mixing. An excellent device for keying external devices such as character generators, graphic systems and EAS devices into a program feed. The MDK-111A-Lite offers full key control with shaped and unshaped keying, self key or auto key control. The Background A and B inputs allows for background dissolves and V-Fades behind the external key source. All four inputs have line synchronization, locked to an external analog reference, to ease system timing requirements. Four independent outputs for Program, Preview, and Clean Feed offer independent Proc-Amp control.

The MDK-111A-Lite processes embedded audio on the Background A and Background B inputs. Any audio groups present on the inputs are carried through to the outputs. During transitions, the audio ramps smoothly between A and B sources, matching the video transition.

The MDK-111A-Lite offers a wide range of control that includes GVG M-2100 serial control, and full DashBoard control and monitoring. Eight bi-directional GPI/O ports are also available which can be programmed for GPI inputs or Tally outputs.

The built in bypass relay from Input A to Output 1 protects your on-air feed when the device is taken off-line to ensure critical program content is not lost.

Features

The following features make the MDK-111A-Lite the best solution for background mixing with external keying:

- Compliance with SDI SMPTE 292M (1.485Gbps) and SMPTE 259M (270Mbps)
- A/B Mix, V-Fade, Take-Fade, Fade-Take or Cut with external key
- Four SDI inputs that include two background inputs (A, B), Key Video, and Key Alpha
- Four programmable SDI outputs that may be configured as Program, Preview, or Clean Feed
- Option to configure the card as a Dual A/B Mixer
- Passes audio, on the Background, to the Program and Preview outputs
- Multi-Definition support of popular formats such as 1080i, 720p, 480i, and 576i
- Eight bi-directional ports that are user programmable to be a GPI or a Tally
- Bypass relay from Input A to Output 1
- User selectable card reference
- Specify how the input signal timing is reported (relative to the reference or the output)
- Report status and configuration remotely via the DashBoard Control System™
- Remote serial control of the card using the GVG M-2100 protocol
- Ethernet 10/100 Mbit connectivity for easy upgrades in the field
- Independent Proc-Amp control on outputs
- Clip and gain, key invert, and transparency keyer controls
- Supports SNMP alarms for the input and reference signals
- Fade to Black ability
- Fits into DFR-8300 series frame
- 5 year transferable warranty
- Fully compliant with openGear specifications

Functional Block Diagrams

This section provides the functional block diagrams for the MDK-111A-Lite.

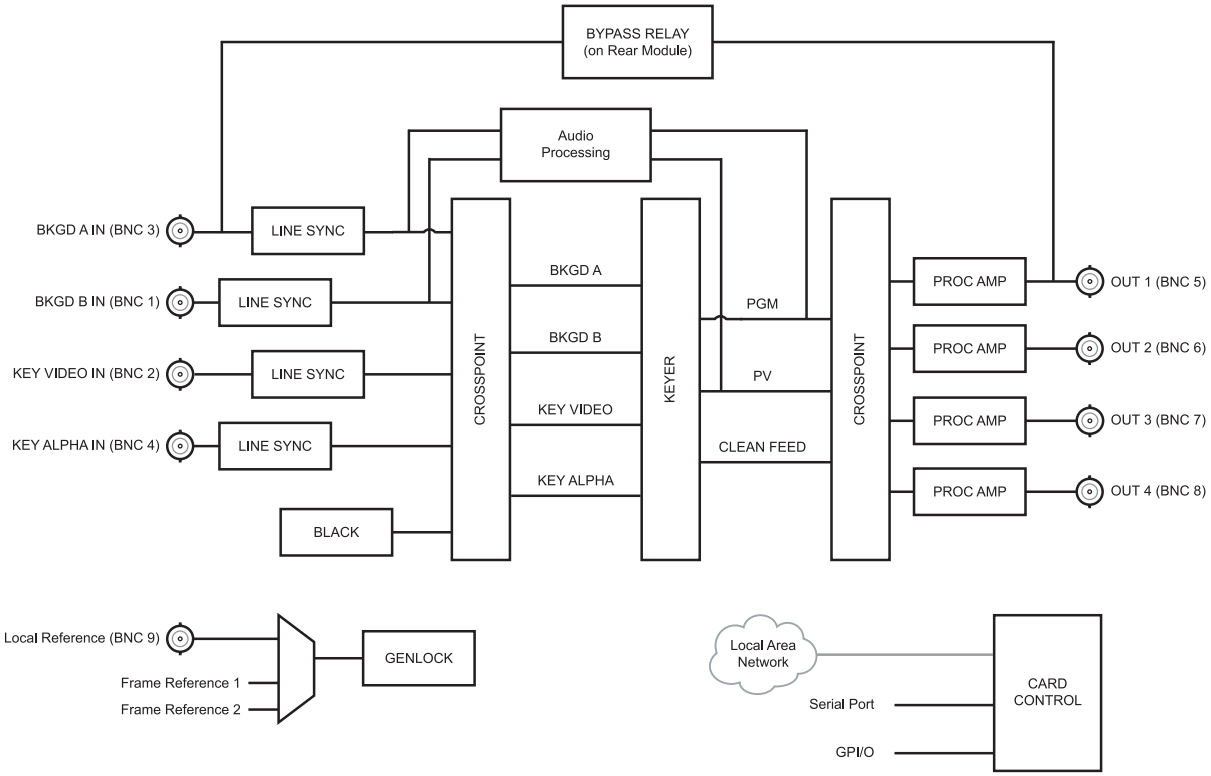


Figure 1.1 *Simplified Block Diagram — MDK-111A-Lite*

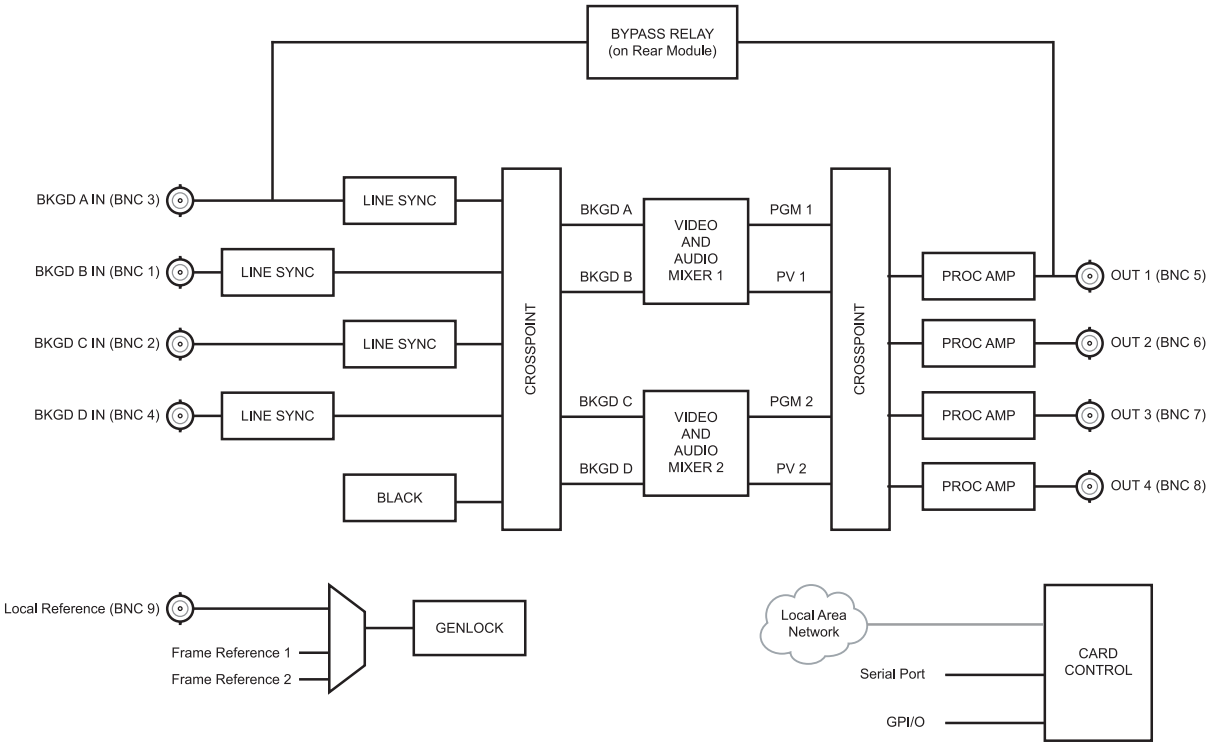


Figure 1.2 *Simplified Block Diagram — MDK-111A-Lite in Dual Mixer Mode*

Documentation Terms and Conventions

The following terms are used throughout this manual:

- All references to the **DFR-8300 series frames** also includes all versions of the 10-slot (DFR-8310 series) frames and 20-slot (DFR-8321 series) frames and any available options.
- "**Operator**" and "**User**" refer to the person who uses the MDK-111A-Lite.
- "**Board**" or "**Card**" refer to the MDK-111A-Lite card itself, including all components and switches.
- "**System**" and "**Video System**" refers to the mix of interconnected digital and analog production equipment in which the MDK-111A-Lite operates.
- "**DashBoard**" refers to the DashBoard Control System™.
- "**Multiple Transition**" refers to a transition between both the BKGD sources and the Key sources simultaneously
- "**SDI**" and "**Serial Digital Interface**" refer to the serial digital video signal that is distributed via a single coaxial cable with BNC connectors used by the MDK-111A-Lite.
- "**DashBoard**" refers to the DashBoard Control System™.
- The "**Operating Tip**" and "**Note**" boxes are used throughout this manual to provide additional user information.

Installation

In This Chapter

This chapter provides instructions for the basic physical installation and communications setup of your MDK-111A-Lite.

The following topics are discussed:

- Before You Begin
- Card Overview
- Card Installation
- Cabling
- Serial Port Cabling
- Ethernet Port Cabling
- GPI/Tally Cabling

Before You Begin

Before you begin, ensure that you are using DashBoard version 3.0.0 or higher. The DashBoard Control System software and user manual are available to download from the Ross Video website.

Static Discharge

Throughout this chapter, please heed the following cautionary note:

ESD Susceptibility — *Static discharge can cause serious damage to sensitive semiconductor devices. Avoid handling circuit boards in high static environments such as carpeted areas and when synthetic fiber clothing is worn. Always exercise proper grounding precautions when working on circuit boards and related equipment.*

Unpacking

Unpack each MDK-111A-Lite you received from the shipping container and ensure that all items are included. If any items are missing or damaged, contact your sales representative or Ross Video directly.

Card Overview

This section provides an overview of the MDK-111A-Lite components.

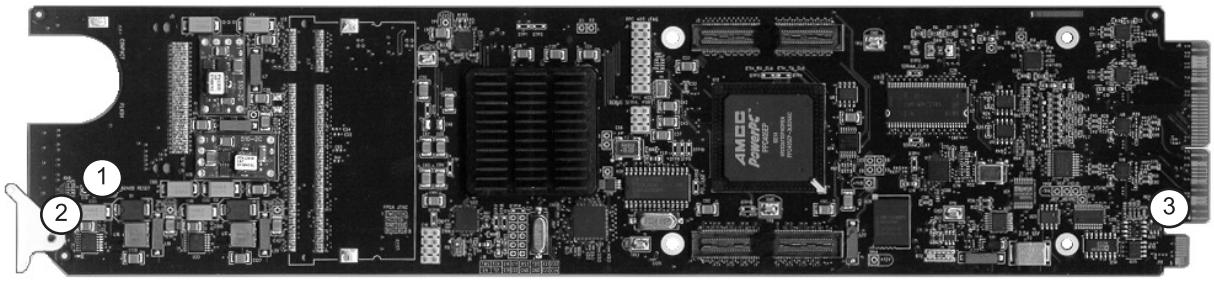


***Figure 2.1** MDK-111A-Lite — Components*

1) Board Reset Button (**SW1**)	2) **J5** and **J6**	3) Reference Termination (**JP7**)

1. Board Reset Button (SW1)

Use **SW1** to reset the MDK-111A-Lite to perform a hard reboot of the card, resets the microprocessor, and re-initializes the card. Note that this is a hard reset of the MDK-111A-Lite and settings are not saved. This may cause loss of data and should only be performed as advised by Ross Video Technical Support.

2. J5 and J6

These jumpers are not yet implemented and must be left in the default position of Pin 2 (center) and Pin 3 (bottom).

3. Reference Termination (JP7)

J7 is a 3-position jumper block used to configure the 75ohm termination on the local analog reference input on **BNC 9** of the MDK-111A-Lite Rear Module.

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

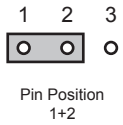


***Figure 2.2** J7 — Default Position*

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

Card-edge LEDs

This section describes the MDK-111A-Lite LED and button locations and conditions. **Figure 2.3** outlines the locations of the card-edge controls of the MDK-111A-Lite.

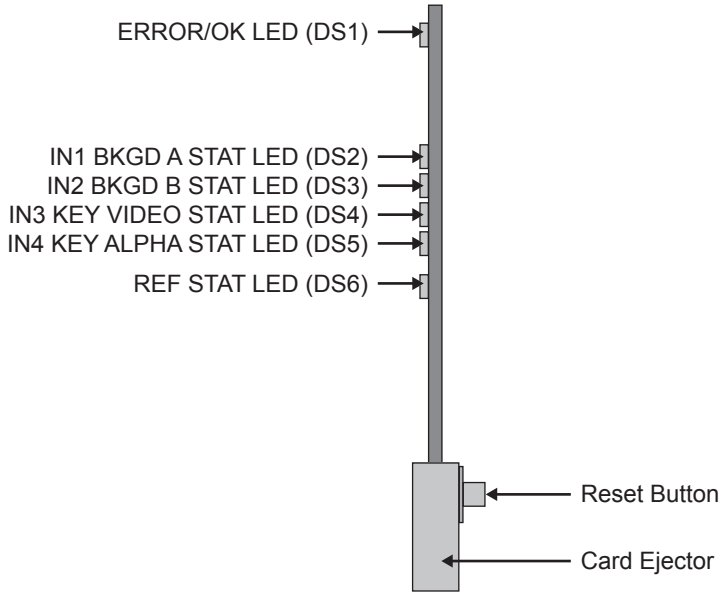


***Figure 2.3** Card-edge Controls on the MDK-111A-Lite*

Table 2.1 LEDs on the Card-edge

LED	Color	Display and Description
ERROR/OK	Green	When this LED is green, the card is in normal operation with no errors.
	Red	When this LED is red, the card is experiencing internal errors. Refer to the section "**Status Tabs**" on page 5-2 for a list of possible errors displayed in DashBoard.
	Off	When this LED is off, there is no power to the card.
IN1 BKGD A STAT	Green	When this LED is green, the BKGD A video input on BNC 3 is valid.
	Red	When this LED is red, the BKGD A input on BNC 3 is not present or is invalid.
IN2 BKGD B STAT	Green	When this LED is green, the BKGD B video input on BNC 1 is valid.
	Red	When this LED is red, the BKGD B input on BNC 1 is not present or is invalid.
IN3 KEY VIDEO STAT	Green	When this LED is green, the Key Video input on BNC 2 is valid.
	Red	When this LED is red, the Key Video input on BNC 2 is not present or is invalid.
IN4 KEY ALPHA STAT	Green	When this LED is green, the Key Alpha video input on BNC 4 is valid.
	Red	When this LED is red, the Key Alpha video input on BNC 4 is not present or is invalid.
REF STAT	Green	When this LED is green, the reference signal is valid.
	Red	When this LED is red, the reference signal is not present or is invalid.

Card Installation

The MDK-111A-Lite is compatible with the DFR-8300 series frame. This section provides a brief overview of the required Rear Modules and physical installation of the MDK-111A-Lite card.

Note — *The MDK-111A-Lite requires either the 8310AR-033 or the 8320AR-033 Rear Module and therefore is not compatible with the DFR-8310-BNC frames. You must install the card with its 8310AR-033 Rear Module occupying two slots in the DFR-8310-C or DFR-8310-N frames. Install the card with its 8320AR-033 Rear Module occupying 4 slots in the DFR-8321 series frames.*

Rear Modules

The procedure for installing the Rear Module in your DFR-8300 series frame is the same regardless of the frame or module used. However, a different module is required depending on the frame you are using.

- **DFR-8310 series frames** — Use the **8310AR-033** (R1-MDK) Rear Module.
- **DFR-8321 series frame** — Use the **8320AR-033** (R2-MDK) Rear Module.

Power Fail Relay

There is a power fail relay from the BKGD A input to Output 1 on the Rear Modules. The purpose of this relay is as follows:

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

Installing the Rear Modules

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

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

1. Refer to the ***DFR-8300 Series User Manual*** to ensure that the frame is properly installed according to instructions.
2. When installing the card in a **DFR-8310 series frame**, Ross Video recommends installing the Rear Module in one of the following slot combinations:

   - Slots 3, 4
   - Slots 5, 6
   - Slots 7, 8
   - Slots 9, 10

Note — *Ross Video does not recommend installing the card in the Slots 1,2 combination. This combination proves the least air flow cooling in the frame and the card may overheat if installed in this location.*

3. When installing in a **DFR-8321 series frame**, use the following slot combinations:

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

Note — *Ross Video does not recommend installing the card in the Slots 1, 2, 3, 4 combination in a DFR-8321 series frames. This combination provides the least air flow cooling in the frame.*

4. Remove the Blank Plates from the rear of the selected card frame slots.
5. Seat the bottom of the Rear Module in the seating slot at the base of the backplane of the frame.
6. Align the top hole of the Rear Module with the screw hole on the top-edge of the frame backplane.
7. Using a Phillips screwdriver and the supplied screw, fasten the Rear Module to the backplane. Do not over tighten.

Note — *Verify that the MDK-111A-Lite aligns with the Rear Module before fully tightening any of the slot screws.*

8. Ensure proper frame cooling and ventilation by having all rear frame slots covered with Rear Modules or Blank Plates.

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

Card Installation

Use the following procedure to install the MDK-111A-Lite in a DFR-8300 series frame:

1. Ensure that the DFR-8300 series frame is properly installed.
2. Ensure the Rear Module is properly installed into the correct slots. This allows for proper cooling of the card and allows adequate spacing to avoid damaging the card, cards installed in the neighboring slots, or both.
   - **DFR-8310 series frames —** Install the card into slot 3, 5, 7, or 9. The slot number is dependent on the slot combination you installed the Rear Module in.
   - **DFR-8321 series frame —** Install the card in slot 6, 10, 14, or 18. The slot number is dependent on the slot combination you installed the Rear Module in.
3. Hold the card by the edges and carefully align the card edges with the rails in the frame.
4. Fully insert the card into the frame until the card is properly seated in the Rear Module.
5. 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.
6. Affix the supplied Rear Module Label to the BNC area of the Rear Module.

This completes the procedure for installing the MDK-111A-Lite in a DFR-8300 series frame.

Cabling

The MDK-111A-Lite features four video inputs and four programmable video outputs. You can use up to 80m of industry standard 75ohm coaxial cable. This section provides general instructions for video input and output cabling the Rear Module for the MDK-111A-Lite.

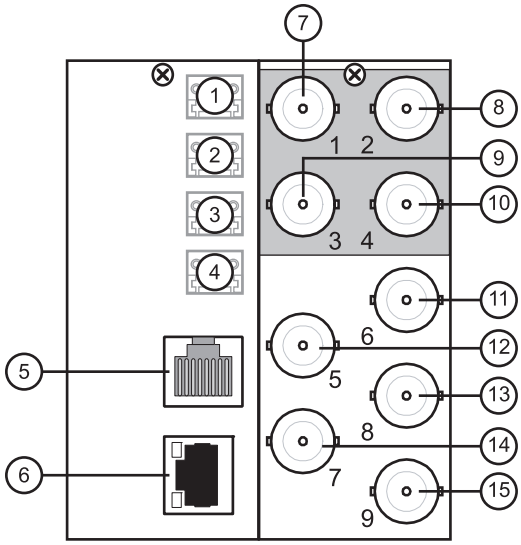


Figure 2.4 *8310AR-033 Cable Connections*

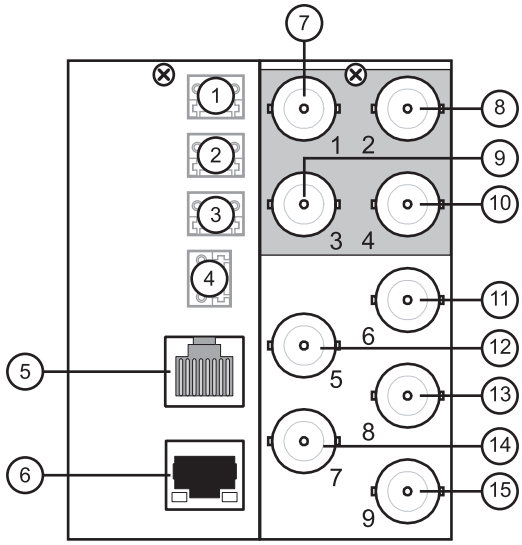


Figure 2.5 *8320AR-033 Cable Connections*

1) GPI/O 1,2 Port	6) Ethernet 10/100 Port	11) OUT 2 BNC
2) GPI/O 3,4 Port	7) IN 1 BKGD B BNC	12) OUT 1 BNC
3) GPI/O 5,6 Port	8) IN 2 KEY VIDEO BNC	13) OUT 4 BNC
4) GPI/O 7,8 Port	9) IN 3 BKGD A BNC	14) OUT 3 BNC
5) Serial COM Port	10) IN 4 KEY ALPHA BNC	15) REF IN BNC

Video Input and Output Cabling

Refer to **Figure 2.4**, **Figure 2.5**, and the Rear Module silk-screen labels for cabling designations.

Note — *When operating in Dual Mixer mode, BNC 2 is the source for BKGD C and BNC 4 is the source for BKGD D.*

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

1. Connect the appropriate input video sources to the BNC connectors on the Rear Module:
   - Connect the Background video signals to the BNC 1 and BNC 3.
   - Connect the Key Video signal to BNC 2.
   - Connect the Key Alpha signal, if applicable, to BNC 4.
2. Connect the output video sources to the BNC connectors as required for your facility.
3. To use an external reference source, other than the Frame Ref 1 and Frame Ref 2 available on the DFR-8300 series frames, connect the reference input source to the **REF IN** (**BNC 9**) connector. Refer to the section "**Card Overview**" on page 2-3 for information on setting **J7** to configure the 75ohm termination on the local reference.

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

Serial Port Cabling

The MDK-111A-Lite includes an RS-422/232 serial communications port which can be used to remotely control the operations of the MDK-111A-Lite. This section applies if you wish to control the MDK-111A-Lite via a serial protocol, such as the GVG M-2100 protocol.

Serial Communication Cabling

This section outlines how to cable serial communications for the MDK-111A-Lite. In order to properly complete this procedure, you need the following cables and equipment:

- **Serial Interface Cable** — This is a serial cable with a RJ-45 connector on one end and a connector on the other end to connect to your serial device. For the best performance, Ross Video recommends using a standard ethernet cable such as a CAT-5 or CAT-5e. **Table 2.2** includes serial cable pinout details. Ross Video does not supply this cable.

Use the following procedure to set up serial communications for the MDK-111A-Lite:

1. Refer to **Table 2.2** for pinout information for your required **Serial Interface Cable**.
2. Connect and secure the RJ45 connector of the **Serial Interface Cable** to the **Serial COM** port on the Rear Module (**Figure 2.4** and **Figure 2.5**).
3. Connect and secure the other end of the **Serial Interface Cable** to the appropriate port on your serial device. Refer to the user manual for your serial device for pinout information and the required port to use.

This completes the procedure for setting up serial communications for the MDK-111A-Lite. For information on configuring the **Serial COM** port for communications, refer to the section "**Serial Communication Setup**" on page 3-7.

Serial COM Port Pin Assignment

When building cables to interface to the MDK-111A-Lite **Serial COM** port, it is recommended to use CAT-5 or CAT-5e cable with the standard ethernet wiring color coding. **Table 2.2** shows the pin assignment of the **Serial COM** port located on the MDK-111A-Lite Rear Module.

Table 2.2 RJ45 Pin Assignment

RJ45 Pin	RS-232	RS-422	RS-422 Null
1	n/c	Tx+	Rx+
2	Rx	Tx-	Rx-
3	Tx	Rx+	Tx+
4[a]	+12V	+12V	+12V
5[a]	+12V	+12V	+12V
6	n/c	Rx-	Tx-
7	GND	GND	GND
8	GND	GND	GND

a. Two pins are reserved for +12V to provide power to a hand-held remote control panel.

Ethernet Port Cabling

The **Ethernet 10/100** port on the Rear Module is used to connect to an ethernet network for communications and software upgrades using DashBoard.

This section presents a general overview of the ethernet connection process. The exact steps for connecting your MDK-111A-Lite to your facility via an ethernet network depends on the network requirements of your facility.

Note — *Contact your IT Department before connecting the MDK-111A-Lite to your facility network to ensure that there are no conflicts. They will provide you with an appropriate value for the IP Address, Subnet Mask, and Gateway for the MDK-111A-Lite.*

Ethernet Communication Cabling

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

- **Ethernet Cable** — This is a standard network CAT-5 cable to connect the MDK-111A-Lite to your facility network. You can use a standard straight-through ethernet cable, with no need for a crossover cable as the MDK-111A-Lite includes an Auto-MDIX ethernet PHY that will switch from straight to crossover automatically as needed. Ross Video does not supply this cable.

Use the following procedure to connect the MDK-111A-Lite to an ethernet network:

1. Ensure that you are running DashBoard version 3.0.0 or higher before proceeding. The DashBoard Control System software and user manual are available to download from the Ross Video website.
2. Connect the MDK-111A-Lite to the same subnet as your DashBoard computer or to a network that has a route to the network your DashBoard computer is on. Refer to **Figure 2.4** and **Figure 2.5** for the **Ethernet 10/100** port location on the Rear Module.
3. Make a note of the IP Address and Port Number as this information is required when configuring the communication settings for your MDK-111A-Lite.
    - Network topologies vary greatly between facilities. Contact your IT Department for assistance in connecting your MDK-111A-Lite to the appropriate network at your location.

This completes the procedure for connecting the MDK-111A-Lite to an ethernet network. For information on setting up the ethernet communications for the MDK-111A-Lite, refer to the section "**Ethernet Communication Setup**" on page 3-9.

GPI/Tally Cabling

The MDK-111A-Lite includes eight General Purpose Input (GPI) and Tally pins to interface with external equipment. There are eight bi-directional pins labelled GPI/O 1-8 on the terminal block of the Rear Module. Ports are user programmable to be either an input (GPI) or a output (Tally) using the **GPI/Tally Setup** tab in DashBoard. Electrically, the ports are setup for contact closure to ground, with 1Kohm pull-up resistor to +5V, so they default to a logical high state.

Note — *The default state for the GPI/O contacts is active low signalling. This way, if the card is removed from the DFR-8300 series frame, no external events will be inadvertently asserted by the MDK-111A-Lite. This also means that if a GPI cable is absent from the Rear Module, no GPI or Tally will be triggered and executed inadvertently by the MDK-111A-Lite.*

GPI/Tally Cable Connections

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

Use the following procedure to cable the MDK-111A-Lite for GPIs and Tallies:

1. Locate the GPI/Tally ports on the Rear Module. Refer to the Rear Module labelling and **Figure 2.4**, and **Figure 2.5** for port locations.
2. Wire the GPI/Tally ports as follows:
   - The left and right pins are the two GPI/O signals while the center pin is the common Ground (GND).
   - Refer to **Figure 2.6** and **Figure 2.7** for GPI/Tally configuration on the Rear Module.

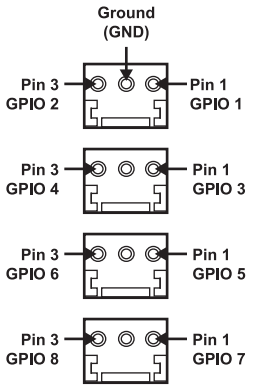


Figure 2.6 *8310AR-033 GPI Connections*

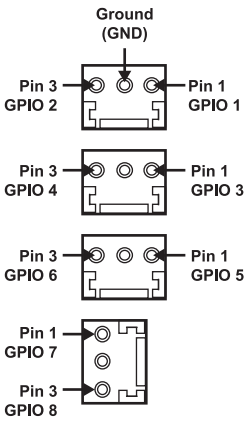


Figure 2.7 *8320AR-033 GPI Connections*

This completes the procedure for cabling the MDK-111A-Lite for GPIs and Tallies. For details on setting up the communications for the GPI/Tally ports and the MDK-111A-Lite, refer to the section "**GPI/Tally Communication Setup**" on page 3-10.

Configuration

In This Chapter

This chapter provides instructions for configuring the MDK-111A-Lite using the options available in the DashBoard Control System™. Note that menu item names are dependent on whether you are operating in Dual Mixer mode and those names set within brackets denote the name displayed when operating in Dual Mixer mode.

The following topics are discussed:

- Selecting the Video Format and Reference Source
- Video Input and Output Configuration
- Audio Mixing Configuration
- Serial Communication Setup
- Ethernet Communication Setup
- GPI/Tally Communication Setup
- Loading the Factory Defaults
- Personality Options
- Dual Mixer Mode
- Software Upgrades
- SNMP Monitoring

Note — *Before proceeding, ensure that you are running DashBoard software version 3.0.0 or higher. The DashBoard Control System software and user manual are available to download from the Ross Video website.*

Selecting the Video Format and Reference Source

This section provides information on selecting the video format and reference source for your card.

Output Format Reference Compatibility

Depending on the reference format you use, the card will only be able to operate in certain formats (**Table 3.1**).

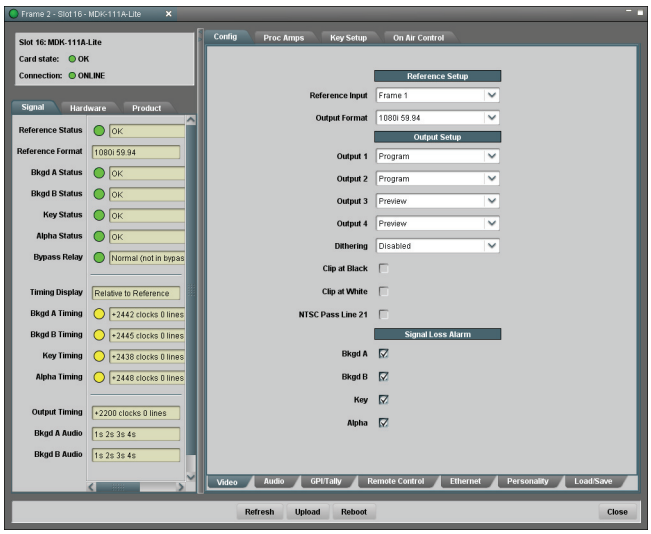
Table 3.1 Output/Reference Compatibility

Reference	Output							
	480i 59.94	720p 59.94	1080i 59.94	576i 50Hz	720p 50	1080i 50	1080pSF 23.98	1080pSF 24
480i 59.94Hz	✓	✓	✓					
720p 59.94Hz		✓						
1080i 59.94Hz	✓	✓	✓					
576i 50Hz				✓	✓	✓		
720p 50Hz					✓			
1080i 50Hz				✓	✓	✓		
1080pSF 23.98Hz							✓	
1080pSF 24Hz								✓

Selecting the Video Format and Reference Source

Use the following procedure to select the video format and reference source:

1. Display the **Device** tab of the MDK-111A-Lite by double-clicking its status indicator in the **Basic Tree View**.
2. Display the **Video** tab as follows:
   - From the **Device** tab, select the **Config** tab.
   - Select the **Video** tab located at the bottom of the **Config** tab.



Config Tab — Video Tab

3. Select a reference source from the **Reference Setup** area. Choose from the following:

   - **Frame 1** — Select this option to use the reference source connected to the **FRAME REF 1** port on the DFR-8300 series frame.
   - **Frame 2** — Select this option to use the reference source connected to the **FRAME REF 2** port on the DFR-8300 series frame.
   - **External** — Select this option to use the external reference source connected to **BNC 9** on the MDK-111A-Lite Rear Module. Use **J7** on the MDK-111A-Lite to enable or disable a 75ohm terminator on the External Reference input. Refer to the section "**Card Overview**" on page 2-3 for information on configuring **J7**.

4. Select the card output video format from the **Output Format** menu. Ensure that it is the same format as in the input video format.

This completes the procedure for select the video format and the reference source.

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

Video Input and Output Configuration

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

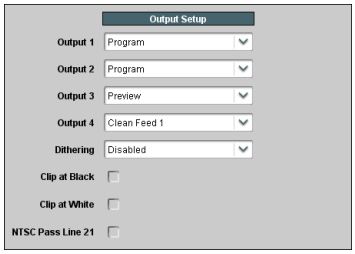
- Each video input has a line sync that can support a full line of SD or HD video including horizontal blanking.
- All video inputs must be timed with the reference. The input tolerance is +/- 0.5 line. Exceeding this tolerance will result in the output shifting.
- All of the video inputs must be the same video format as specified in the **Config** tab for the card. If the formats do not match, the MDK-111A-Lite reports an error in the DashBoard **Signal Status** area and on the card-edge LEDs.
- The Program and Preview sources can be any of the four inputs, or an internally generated black.
- Each of the four outputs can be configured as Program, Preview, or Clean Feed.
- Each output has a Proc Amp that can adjust the black offset, the video gain, the chroma gain, and the CB gain.
- All of the outputs can be enabled to add dither, clip to SMPTE black or allow super-black, or clip to SMPTE white or allow super-white.

Configuring the Video Outputs

This section assumes that you are not operating in Dual Mixer mode. For details on setting up your outputs while in Dual Mixer mode, refer to the section "**Configuring the Video Outputs for Dual Mixer Mode**" on page 3-17.

Use the following procedure to configure your video outputs on the MDK-111A-Lite:

1. Display the **Device** tab of the MDK-111A-Lite by double-clicking the status indicator in the **Basic Tree View**.
2. Display the **Video** tab as follows:
   - From the **Device** tab, select the **Config** tab.
   - Select the **Video** tab located at the bottom of the **Config** tab.
3. From the **Output Setup** area, locate the Output BNC you want to configure.



Config Tab — Output Setup Area

4. Choose an output to configure as follows:
   - **Output 1** — Use this menu to configure the source on Output 1 (**BNC 5**).
   - **Output 2** — Use this menu to configure the source on Output 2 (**BNC 6**).
   - **Output 3** — Use this menu to configure the source on Output 3 (**BNC 7**).
   - **Output 4** — Use this menu to configure the source on Output 4 (**BNC 8**).
5. From the **Output** menu, select the output that you want to assign to the selected Output BNC. You can choose between the following:

- **Program** — Select this option to assign the source to the Program output.
- **Preview** — Select this option to assign the source to the Preview output.
- **Clean** — Select this option to assign the source to Clean Feed.

6. From the **Dithering** menu, select the type of dithering you want to apply to all outputs. You can choose between the following:
   - **Disabled** — Select this option to disable the Dithering feature.
   - **Enabled low** — Select this option to enable dithering at a rate of 2bits/frame.
   - **Enabled medium** — Select this option to enable dithering at a rate of 3bits/frame.
   - **Enabled high** — Select this option to enable dithering at a rate of 4bits/frame.
7. Enable the Clip White or Clip Black feature as follows:
   - **Clip at Black** — Select this check box to enable the MDK-111A-Lite to clip to SMPTE black on all outputs. Clear the check box to allow super-black.
   - **Clip at White** — Select this check box to enable the MDK-111A-Lite to clip to SMPTE white on all outputs. Clear the check box to allow super-white.
8. Enable the **NTSC Pass Line 21** when using NTSC (480i) video format:
   - Select the check box to have Line 21 to pass through unaltered. This setting should only be used when closed-captioning, or other data, is present on Line 21.
   - Clear this check box to treat Line 21 as active video.

This completes the procedure for configuring your outputs on the MDK-111A-Lite.

Signal Loss Alarm Setup

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

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

1. Display the **Device** tab of the MDK-111A-Lite by double-clicking its status indicator in the **Basic Tree View**.
2. Display the **Video** tab as follows:
   - From the **Device** tab, select the **Config** tab.
   - Select the **Video** tab located at the bottom of the **Config** tab.
3. In the **Signal Loss Alarm** area, enable or disable the alarms by selecting or clearing the required check boxes. Note that the option names change depending on whether the card is operating in Dual Mixer mode.
   - **Bkgd A** — Select this check box to enable DashBoard to report the status of the input source on **BNC 3**.
   - **Bkgd B** — Select this check box to enable DashBoard to report the status of the input source on **BNC 1**.
   - **Key (Bkgd C)** — Select this check box to enable DashBoard to report the status of the input source on **BNC 2**.
   - **Alpha (Bkgd D)** — Selecting this check box enables DashBoard to report the status of the input source on **BNC 4**.

This completes the procedure for set up the Signal Loss Alarm feature in DashBoard.

Audio Mixing Configuration

The Audio Mixing feature in the **Config** tab for the MDK-111A-Lite configures how audio mixing, including Fade to Black, is performed.

Note — *The Audio Mixing feature must be disabled to allow non-PCM audio to pass.*

Use the following procedure to configure the Audio Mixing feature:

1. Display the **Device** tab of the card by double-clicking its status indicator in the **Basic Tree View**.
2. Display the **Audio** tab as follows:
   - From the **Device** tab, select the **Config** tab.
   - Select the **Audio** tab located at the bottom of the **Config** tab.
3. Configure the **Audio Mixing** feature as follows:
   - **Check box is selected** — Enables the Audio Mixing feature, the audio follows the video.
   - **Check box is cleared** — Disables the Audio Mixing feature,. This option is required when passing non-PCM audio, such as Dolby®.

This completes the procedure for configuring the Audio Mixing feature.

Notes on using the Audio Mixing Feature

When the Audio Mixing feature is enabled:

- When using HD formats, the MDK-111A-Lite assumes the audio is PCM format with a 24-bit word length.
- When using SD formats, the MDK-111A-Lite assumes the audio is PCM format with a 20-bit word length. If you input 24-bit, the word length is automatically truncated to 20-bit. If all four groups are present in 24-bit, the output may have errors.
- The MDK-111A-Lite does not verify the type of audio it is receiving, and will not issue any alarms if the wrong audio format is used.
- If you are using non-PCM audio, you must disable the Audio Mixing feature so as to avoid unwanted modification of the audio data.

When the Audio Mixing feature is disabled:

- audio data and HANC is passed through unmodified
- the card performs a hard-cut during an audio transition. This may result in unclean audio transitions.

Serial Communication Setup

The MDK-111A-Lite serial interface can be configured to provide a variety of data rates and protocols. You can communicate with an external device using a serial protocol through the **Serial COM** port on the rear module, or via an ethernet connection. This section briefly outlines how to set up serial communications using DashBoard.

Note — *A protocol can only be active on the serial port, or on the ethernet port, but not both. Should you attempt to enable the same protocol on both ports, the card automatically disables the first port (the **Enabled** checkbox is cleared).*

For More Information...

- on cabling the **Serial COM** port, refer to the section "**Serial Port Cabling**" on page 2-8.
- on cabling the **Ethernet 10/10** port, refer to the section "**Ethernet Port Cabling**" on page 2-9

Serial Communications via the Serial COM Port

Use the following procedure to configure the card to communicate with a serial device via the **Serial COM** port:

1. Display the **Device** tab of the MDK-111A-Lite by double-clicking its status indicator in the **Basic Tree View**.
2. Display the **Serial** tab as follows:
   - From the **Device** tab, select the **Config** tab.
   - Select the **Serial** tab located at the bottom of the **Config** tab.
3. Select a protocol from the **Protocol** menu. You can select between the following:
   - **M-2100** — Select this option if you are using the GVG M-2100 protocol to communicate with the MDK-111A-Lite.

Note — *The GVG M-2100 protocol does not support control for more than a single mixer. Therefore, when operating the MDK-111A-Lite in Dual Mixer mode, only the first mixer can be fully controlled via GVG M-2100.*

4. Select the electrical standard from the **Port Type** menu. Choose from the following:
   - **RS 232** — Select this option if the MDK-111A-Lite is connected to an external device that uses the RS-232 (TIA/EIA-232) transmission standard.
   - **RS 422** — Select this option if the MDK-111A-Lite is connected to an external device that uses the RS-422 (TIA/EIA-422) transmission standard. In this mode, the RX receive end is terminated with a 120ohm resistor on the MDK-111A-Lite.
   - **RS 422 unterm** — Select this option if the MDK-111A-Lite is connected to an external device that uses an unterminated RS-422 transmission standard. In this mode, the Rx receive end is not terminated on the MDK-111A-Lite. This mode is used to daisy-chain several MDK-111A-Lite Rx ports, where only the last one would be terminated.
   - **RS 422 Null** — Select this option if the MDK-111A-Lite is connected to an external device that uses the standard RS-422 transmission standard with a null pinout. In this mode, the Rx and Tx are swapped on the MDK-111A-Lite port and the RX receive end is terminated with a 120ohm resistor on the MDK-111A-Lite.
   - **RS 422 Null unterm** — Select this option if the MDK-111A-Lite is connected to an external device that uses the standard RS-422 unterminated transmission

standard with a null pinout. In this mode, the Rx and Tx are swapped on the MDK-111A-Lite port and the Rx receive end is not terminated on the MDK-111A-Lite. This mode is used to daisy-chain several MDK-111A-Lite Rx ports, where only the last one would be terminated.

- Use the **Bit Rate, Data Bits, Parity** and **Stop Bits** fields to set the required parameters for the external serial device.

5. Select the **Port Enabled** box. When the Port is disabled, any incoming data on the serial port is discarded by the MDK-111A-Lite.

This completes the procedure for configuring the MDK-111A-Lite to communicate with a serial device.

Serial Communications via an Ethernet Connection

Use the following procedure to configure the card to communicate via an ethernet connection:

1. Display the **Device** tab of the card by double-clicking its status indicator in the **Basic Tree View**.
2. Display the **Remote Control** tab as follows:
   - From the **Device View**, select the **Config** tab.
   - Select the **Remote Control** tab located at the bottom of the **Config** tab.
3. To use the GVG M-2100 Protocol to control the card via ethernet:
   - Select the **M-2100 Enabled** check box located in the **Ethernet Protocol** area. When the box is cleared, any incoming data from the serial device is discarded by the card. Note that a protocol can only be active on the serial port, or on the ethernet port, but not both.
   - From the **Protocol** box, select a Transport Layer Protocol. Choose from the following:
     - › **TCP** — Select this option if your device is connected to the card through a network and uses the Transmission Control Protocol (TCP/IP).
     - › **UDP** — Select this option if your device is connected to the card through a network and uses the User Datagram Protocol (UDP/IP).
   - From the **Port** box, specify the Port Address for your serial device. Choose a unique port number between 1 and 32767.

Note — *TCP ports 0, 21, 22, 80, and 6667 are unavailable for serial communications.*

This completes the procedure for configuring the card to communicate with a serial device via an ethernet connection.

Ethernet Communication Setup

To enable the MDK-111A-Lite to perform software upgrades, or to use an automation protocol to control the card via ethernet, the MDK-111A-Lite must be configured with valid ethernet settings for the **10/100 Ethernet** port on the Rear Module of the MDK-111A-Lite. The settings can be specified manually (**Static**) or may be obtained automatically from a server on your network (**DHCP**).

Use the following procedure to set up ethernet communications for the MDK-111A-Lite:

1. Display the **Device** tab of the MDK-111A-Lite by double-clicking its status indicator in the **Basic Tree View**.
2. Display the **Ethernet** tab as follows:
   - From the **Device** tab, select the **Config** tab.
   - Select the **Ethernet** tab located at the bottom of the **Config** tab.
3. To manually configure the ethernet settings:
   - Select **Static**.
   - Enter the **IP Address**, **Subnet Mask**, and **Default Gateway** settings for the MDK-111A-Lite.
   - To save the new settings, click **Apply Changes**. Note that clicking **Cancel** will revert to the previous settings.
4. To enable the network to automatically assign the ethernet settings to the card:
   - Select **DHCP**.
   - To save the new settings, click **Apply Changes**. Note that clicking **Cancel** will revert to the previous settings.

This completes the procedure for setting up ethernet communications for the MDK-111A-Lite.

GPI/Tally Communication Setup

This section explains how to configure communications for GPIs and Tallies on the MDK-111A-Lite using the menus and options available in DashBoard.

GPI Overview

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

Typically, users will configure the GPI for Edge trigger. This means that the action is carried out *either* on the falling edge (button is pushed), or rising edge (button is released), depending on which Polarity is selected. Alternatively, users may configure the GPI for Level trigger. In this mode, the action is carried out on both the rising and falling edges, so there are effectively two states. The Polarity control can be used to invert the behavior. Regardless of the trigger type, GPI commands may be overridden by other command inputs such as serial protocols.

Edge

This option enables the GPI to act as a latching trigger. Edge triggers are used when you want to toggle between settings. This option enables the GPI to execute a specific function.

- If configured for Falling Edge, the selected function is executed when the GPI input signal transitions from High to Low.
- If configured for Rising Edge, the selected function is executed when the GPI input signal transitions from Low to High.
- Edge triggered GPI signals are sampled once a frame and the associated function is executed only once per frame. The minimum pulse width is 1 millisecond.
- Typically, the edge triggered GPI is driven by external equipment that generates one pulse per event.

Level

Level triggers are used when you want to assert a particular state for a setting. You define the on-air state of the function as being either Level High or Level Low. Therefore, if the on-air state of the Key is defined as Level High for example, when the GPI is a Level High signal, the Key will stay on air. If a Level Low is received, the Key will be taken off air.

- If configured for Active Low, the selected function is executed when the GPI input signal is driven Low.
- If configured for Active High, the selected function is executed when the GPI input signal is driven High.

Tally Overview

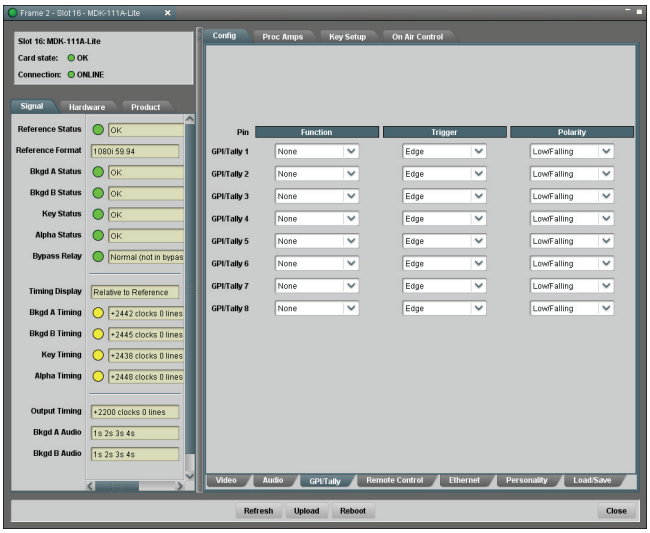
When configured as a Tally, a port becomes an output, providing a status indicator. Typically this is used to indicate which input(s) are on-air at any given moment. Each tally output on the MDK-111A-Lite can be configured to be active when any of the four inputs are on air. They can be configured as Active High or Active Low. The Trigger type (Edge or Level) is only relevant for GPI inputs and has no effect on Tally outputs.

The tally outputs defaults to a logical high level when inactive. When the tally becomes active, for example the signal is on-air, then the output is driven low.

GPI Communication Setup

Use the following procedure to configure remote control for GPIs:

1. Display the **Device** tab of the MDK-111A-Lite by double-clicking its status indicator in the **Basic Tree View**.
2. Display the **GPI/Tally** tab as follows:
   - From the **Device** tab, select the **Config** tab.
   - Select the **GPI/Tally** tab located at the bottom of the **Config** tab.



Config Tab — GPI/Tally Tab

3. Assign a transition event to a specific GPI by selecting an option from the **Function** menu. The options change depending on whether the card is operating in Dual Mixer mode. Choose from the following:
   - **GPI Cut Bkgd** — Select this option to have a cut performed between the Background sources when a trigger is received by that GPI input. This option is unavailable when operating in Dual Mixer mode.
   - **GPI Cut Bkgd 1** — Select this option to have a cut performed between the Mixer 1 sources when a trigger is received by that GPI input. (Dual Mixer mode only)
   - **GPI Cut Bkgd 2** — Select this option to have a cut performed between the Mixer 2 sources when a trigger is received by that GPI input. (Dual Mixer mode only)
   - **GPI Auto Bkgd** — Select this option to have an auto transition performed between the Background sources when a trigger is received by that GPI input. This option is unavailable when operating in Dual Mixer mode.
   - **GPI Auto Bkgd 1** — Select this option to have an auto transition performed between the Mixer 1 sources when a trigger is received by that GPI input. (Dual Mixer mode only)
   - **GPI Auto Bkgd 2** — Select this option to have an auto transition performed between the Mixer 2 sources when a trigger is received by that GPI input. (Dual Mixer mode only)
   - **GPI Cut Key** — Select this option to have a cut transition performed between the Key sources when a trigger is received by that GPI input. This option is unavailable when operating in Dual Mixer mode.
   - **GPI Auto Key** — Select this option to have an auto transition performed between the Key sources when a trigger is received by that GPI input. This option is unavailable when operating in Dual Mixer mode.

- **GPI Cut Both** — Select this option to have a cut performed simultaneously between the Key sources and the Background sources when a trigger is received by that GPI input. This option is unavailable when operating in Dual Mixer mode.
- **GPI Auto Both** — Select this option to have an auto transition performed simultaneously between the Key sources and Background sources when a trigger is received by that GPI input. This option is unavailable when operating in Dual Mixer mode.
- **GPI Fade to Black** — Select this option to perform a fade to black when a trigger is received by that GPI input. This option is unavailable when operating in Dual Mixer mode.
- **GPI Fade to Black 1** — Select this option to perform a fade to black for Mixer 1 when a trigger is received by that GPI input. (Dual Mixer mode only)
- **GPI Fade to Black 2** — Select this option to perform a fade to black for Mixer 2 when a trigger is received by that GPI input. (Dual Mixer mode only)
- **None** — Select this option to not assign a function to the selected GPI. This is the default setting. The Trigger and Polarity settings are ignored.

4. Select a trigger for the GPI from the **Trigger** column. Choose from the following:
   - **Edge** — Select this option to configure the MDK-111A-Lite to perform the Function (selected in step 3.) on either the Rising or Falling Edge of the GPI signal (as determined by the **Polarity** set in step 5.).
   - **Level** — Select this option to have the GPI action controlled by a static voltage level. The MDK-111A-Lite performs the function (selected in step 3.) when the GPI state is either High or Low (as determined by the **Polarity** set in step 5.). The action triggered by the GPI input will remain in that state until the GPI level changes.
5. Select a Polarity for the GPI from the **Polarity** column. Choose from the following:
   - **High/Rising** — Select this option to have the GPI triggered on a static High level, or on a Low-to-High pulse.
   - **Low/Falling** — Select this option to have the GPI triggered on a static Low level or on a High-to-Low pulse.

This completes the procedure for configuring remote control for GPIs.

Tally Communication Setup

When configured as a tally, a port becomes an output, providing a status indicator. Typically this is used to indicate which input(s) are on-air at any given moment. The tally outputs default to a logical high level when inactive. When the tally becomes active, such as the signal is on-air, then the output is driven low. It is possible to invert the signal using the **Polarity** feature in DashBoard.

Note — *The **Trigger** feature for tallies is not supported at this time.*

Use the following procedure to configure a Tally for a selected MDK-111A-Lite:

1. Display the **Device** tab of the MDK-111A-Lite by double-clicking its status indicator in the **Basic Tree View**.
2. Display the **GPI/Tally** tab as follows:
   - From the **Device** tab, select the **Config** tab.
   - Select the **GPI/Tally** tab located at the bottom of the **Config** tab.

3. Select what will drive the tally output when the input is on-air by selecting the function next to the **Tally** in the **GPI/Tally** area. Choose from the following:

Note — *In Dual Mixer mode, a tally is active if the source is selected on either mixer.*

- **Tally A** — Select this option to associate the Bkgd A input source with the selected Tally port on the MDK-111A-Lite.
- **Tally B** — Select this option to associate the Bkgd B input source with the selected Tally port on the MDK-111A-Lite.
- **Tally Key (Tally C)** — Select this option to associate the Key Video (Bkgd C when in Dual Mixer mode) input source with the selected Tally port on the MDK-111A-Lite.
- **Tally Alpha (Tally D)** — Select this option to associate the Key Alpha input Bkgd D when in Dual Mixer mode) source with the selected Tally port on the MDK-111A-Lite.
- **None** — Select this option not to assign a function to the selected GPI. This is the default setting. The Polarity setting is ignored.

4. Select the polarity of the tally from the **Polarity** column. Choose from the following:
   - **High/Rising** — Select this option to send a high (+5 Volts) tally output signal.
   - **Low/Falling** — Select this option to send a low (0 Volts) tally output signal.

This completes the procedure for configuring a Tally connection for selected MDK-111A-Lite.

Loading the Factory Defaults

If required, the MDK-111A-Lite menu parameters can be reset to the factory default values using the option available in the **Load/Save** tab.

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

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

1. Display the **Device** tab of the MDK-111A-Lite by double-clicking the status indicator in the **Basic Tree View**.
2. Display the **Load/Save** tab as follows:
   - From the **Device** tab, select the **Config** tab.
   - Select the **Load/Save** tab located at the bottom of the **Config** tab.
3. From the **Global Settings** area, click **Load Factory Defaults** to display the **Confirm** dialog.
4. Click **Yes** to load the factory default values for all menu parameters, or **No** to cancel the load and close the dialog.

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

Personality Options

This section outlines how to configure some of the options available in the **Personality** tab. This section summarizes the Transition Behavior, Timing Display, and Card Lock features.

For More Information...

- on configuring your card for Dual Mixer mode, refer to the section "**Dual Mixer Mode**" on page 3-17.

Configuring the Transition Behavior

The **Transition Behavior** feature enables you to specify how the **Cut** and **Auto** buttons, in the **On Air Control** tab, behave when toggled during a transition.

Note — *The selected behavior also applies to GPI/Os.*

Use the following procedure to configure the transition buttons:

1. Display the **Device** tab of the card by double-clicking its status indicator in the **Basic Tree View**.
2. Display the **Personality** tab as follows:
   - From the **Device** tab, select the **Config** tab.
   - Select the **Personality** tab located at the bottom of the **Config** tab.
3. Configure the **Cut** button behavior by choosing an option from the **Cut Button** field.
   - **Abort** — Select this option to return the transition to the beginning when the **Cut** button is pressed again while a transition is in progress. This is the default setting.
   - **Finish** — Select this option to instantly finish the transition when the **Cut** button is toggled.
   - **Ignore** — Select this option to disregard any successive presses of the **Cut** button until the transition is complete.
4. Configure the **Auto** button behavior by choosing an option from the **Auto Button** field.
   - **Pause/Resume** — Select this option to pause the transition when the **Auto** button is toggled, and resume the transition when the button is pressed again.
   - **Reverse** — Select this option to reverse the transition back to the start.
   - **Ignore** — Select this option to disregard any successive presses of the **Auto** button until the transition is complete.

This completes the procedure for configuring the transition buttons.

Configuring the Input Signal Timing Display

The **Timing Display** feature enables you to configure how the input signal timing is reported by DashBoard. This information is displayed in the **Bkgd A, Bkgd B, Key (Bkgd C)**, and **Alpha (Bkgd D) Timing** fields of the **Signal** tab in the number of clocks and lines. Negative values indicate the input signal timing is earlier than the reference. Positive values indicate the input signal timing is later than the reference.

Use the following procedure to configure the input signal timing for your card:

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

This completes the procedure for configuring the input signal timing for your card.

Configuring the Card Lock Settings

The **Card Lock** feature in DashBoard enables you to lock the card permission so that parameters are read-only and cannot be changed.

Use the following procedure to configure the card edit permissions:

1. Display the **Device** tab of the card by double-clicking its status indicator in the **Basic Tree View**.
2. Display the **Personality** tab as follows:
   - From the **Device** tab, select the **Config** tab.
   - Select the **Personality** tab located at the bottom of the **Config** tab.
3. Configure the edit permissions by choosing an option from the **Card Lock** area.
   - **Unlocked** — Select this option to enable card parameters to be edited from DashBoard. This is the default setting.
   - **Locked** — Select this option to lock all the card parameters to read-only except the Edit Permission. The card can still be controlled by GPI and/or GVG M-2100 commands if were enabled prior to locking the card.

This completes the procedure for configuring the card edit permissions.

Dual Mixer Mode

An option in the **Personality** menu that enables the MDK-111A-Lite to operate as a dual A/B Mixer. This option enables the card to have two A/B Mixers where the Key fill is used as a second mixer, and you can assign any of the Bkgd signals as inputs to the mixers. Each mixer has a Program and Preview output, with the four SDI outputs configurable to show the Program or Preview from either mixer.

Note — *The Dual Mixer mode is disabled when the card is reset to factory defaults.*

Enabling Dual Mixer Mode

Use the following procedure to enable Dual Mixer mode on your MDK-111A-Lite:

1. Display the **Device** tab of the MDK-111A-Lite by double-clicking its status indicator in the **Basic Tree View**.
2. Select the **Config** tab to display the menu options in the **Device View**.
3. Select the **Personality** tab from the **Config** tab.
4. To enable the Dual Mixer mode, select the **Dual Mixer** check box. Notice that the **Key Setup** tab is not displayed in the **Device View**.

This completes the procedure for enabling Dual Mixer mode on your MDK-111A-Lite. Next you will configure the outputs for your card when in Dual Mixer mode.

Configuring the Video Outputs for Dual Mixer Mode

Use the following procedure to configure your video outputs for Dual Mixer mode:

1. Display the **Device** tab of the MDK-111A-Lite by double-clicking the status indicator in the **Basic Tree View**.
2. Display the **Video** tab as follows:
   - From the **Device** tab, select the **Config** tab.
   - Select the **Video** tab located at the bottom of the **Config** tab.
3. From the **Output Setup** area, locate the Output BNC you want to configure.
4. Choose an output to configure as follows:
   - **Output 1** — Use this menu to configure the source on Output 1 (**BNC 5**). Note that when in Dual Mixer mode, the default setting is Program 1.
   - **Output 2** — Use this menu to configure the source on Output 2 (**BNC 6**). Note that when in Dual Mixer mode, the default setting is Program 1.
   - **Output 3** — Use this menu to configure the source on Output 3 (**BNC 7**). Note that when in Dual Mixer mode, the default setting is Preview 1.
   - **Output 4** — Use this menu to configure the source on Output 4 (**BNC 8**). Note that when in Dual Mixer mode, the default setting is Program 2.
5. From the **Output** menu, select the output that you want to assign to the selected Output BNC. You can choose between the following:
   - **Program 1** — Select this option to assign the source to the Program 1 output.
   - **Program 2** — Select this option to assign the source to the Program 2 output.

- **Preview 1** — Select this option to assign the source to the Preview 1 output.
- **Preview 2** — Select this option to assign the source to the Preview 2 output.

6. Continue setting up your outputs as outlined in the section "**Configuring the Video Outputs**" on page 3-4.

This completes the procedure for configuring your video outputs for Dual Mixer mode. Next you will configure the options in the **On Air Control** tab.

Configuring Dual Mixer Mode

The options in the **On Air Control** tab enable you to assign sources to the Program and Preview of each mixer, select an Auto Trans type, and set the Background transition rates.

Use the following procedure to configure the Dual Mixer mode on your MDK-111A-Lite:

1. Display the **Device** tab of the MDK-111A-Lite by double-clicking its status indicator in the **Basic Tree View**.
2. Select the **On Air Control** tab to display the menu options in the **Device View**.
3. Select a Program source for Mixer 1 from the **Program** menu in the **Mixer 1** area. Choose from the following:
   - **Black** — Sets the source for the Mixer 1 Program output to Black.
   - **Bkgd A** — Select this option to assign the input source on **BNC 3** as the Program output for Mixer 1.
   - **Bkgd B** — Select this option to assign the input source on **BNC 1** as the Program output for Mixer 1.
   - **Bkgd C** — Select this option to assign the input source on **BNC 2** as the Program output for Mixer 1.
   - **Bkgd D** — Select this option to assign the input source on **BNC 4** as the Program output for Mixer 1.
4. Select a Preview source for Mixer 1 from the **Preview** menu in the **Mixer 1** area. Choose from the following:
   - **Black** — Sets the source for the Mixer 1 Preview output to Black.
   - **Bkgd A** — Select this option to assign the input source on **BNC 3** as the Preview output for Mixer 1.
   - **Bkgd B** — Select this option to assign the input source on **BNC 1** as the Preview output for Mixer 1.
   - **Bkgd C** — Select this option to assign the input source on **BNC 2** as the Preview output for Mixer 1.
   - **Bkgd D** — Select this option to assign the input source on **BNC 4** as the Preview output for Mixer 1.
5. Select an **Auto Trans Type** as follows:
   - **Mix** — Select this option to perform a gradual fade from one source to the next. The MDK-111A-Lite performs a cross fade between sources.
   - **Fade-Fade** — Select this option to perform a double transition from the Program source to Black to the Preview source. The MDK-111A-Lite fades down from one source to black and then transition to the next source.
   - **Take-Fade** — Select this option to perform a cut to black, then fade up to the next source.

- **Fade-Take** — Select this option to fade from one source to black and then cut to the next source.

6. Set the **Background Transition Rate** as follows:
   - From the **Bkgd Rate** menu, select a transition rate to set up. Choose from Slow, Medium, or Fast.
   - Specify the rate, in number of frames, as required, in the **Slow Rate**, **Medium Rate**, and **Fast Rate** fields.
7. Repeat steps 3 to 6 for Dual Mixer 2.

This completes the procedure for configuring the Dual Mixer mode on your MDK-111A-Lite.

Performing Transitions in Dual Mixer Mode

When operating in Dual Mixer mode, you can perform a background cut, a background auto transition, or a fade to black, for each mixer. The **Personality** tab in DashBoard enables you to specify how the **Cut** and **Auto** buttons, in the **On Air Control** tab, behave when toggled during a transition. Note that the two mixers have independent transitions states, with specific options to configure the transition type, and transition rate. There is also a separate **Fade to Black** button for each mixer.

For More Information...

- on specifying how the **Cut** and **Auto** buttons behave, "**Configuring the Transition Behavior**" on page 3-15.
- on performing a fade to black transition, "**Performing a Fade to Black**" on page 4-10.

Software Upgrades

The MDK-111A-Lite can be upgraded in the field using the **Ethernet 10/100** port on the Rear Module and using the options available in DashBoard. Refer to the section "**Ethernet Communication Setup**" on page 3-9 for setting up ethernet communications.

Note — *This procedure assumes that you are running DashBoard version 3.0.0 or higher.*

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

1. Contact Ross Technical Support for the latest software version file.
2. Ensure the ethernet cable is connected to the **Ethernet 10/100** port on the Rear Module. Refer to the section "**Ethernet Port Cabling**" on page 2-9 for details.
3. Display the **Device** tab of the card by double-clicking its status indicator in the **Basic Tree View**.
4. From the **Device** tab, click **Upload** to display the **Select file Upload** dialog.
5. Navigate to the ***.bin** file you wish to upload.
6. Click **Open**.
7. Click **Finish** to start the upgrade.
8. Monitor the upgrade.
   - A **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 v2.3 or lower, you must click **Reboot** in the **Device** tab to complete the upgrade process.*

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

Troubleshooting

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

- Your network settings on the card are valid. Refer to **Table 5.9** for a list of settings.
- Ethernet communication is properly configured.
- The file you are attempting to load is a ***.bin** file that is for the card you are upgrading.

SNMP Monitoring

The MFC-8300 Series Network Controller cards in the DFR-8300 series frames provide optional support for remote monitoring of your frame using the Simple Network Management Protocol (SNMP), which is compatible with many third-party monitoring tools.

Refer to the Management Information Base (MIB) file for your card for a breakdown of the available SNMP monitoring features. Refer to the ***DFR-8300 Series User Manual*** and the ***MFC-8300 Series User Manual*** for additional information on SNMP Monitoring.

Operation

In This Chapter

This chapter provides a summary of the operational features, such as Proc Amp controls, Key Setup, and performing transitions in DashBoard.

The following topics are discussed:

- Adjusting the Proc Amp Controls
- Configuring Keys
- Performing Transitions

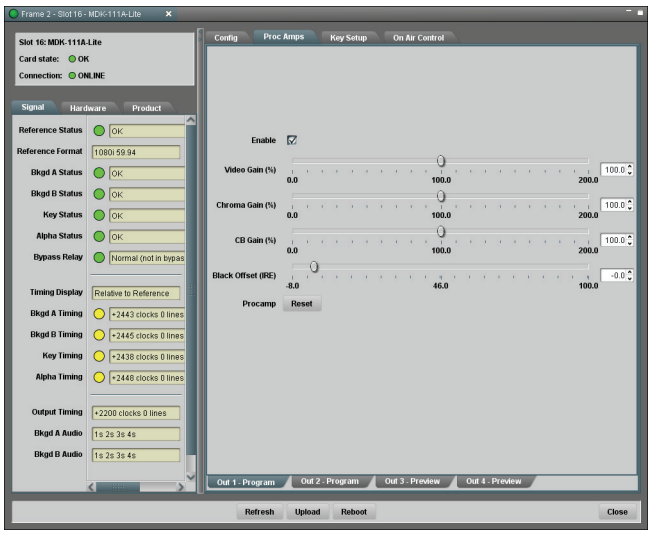
Note — *Before proceeding, ensure that you are running DashBoard software version 3.0.0 or higher. The DashBoard Control System software and user manual are available for download from the Ross Video website.*

Adjusting the Proc Amp Controls

Each output on the MDK-111A-Lite has a Proc Amp that can adjust the black offset, the video gain, the chroma gain and the CB gain. This section briefly outlines how to adjust the options available in the **Proc Amp** tab. The options described in this section are also available when operating in Dual Mixer mode.

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

1. Display the **Device** tab of the MDK-111A-Lite by double-clicking its status indicator in the **Basic Tree View**.
2. Select an output signal to adjust as follows:
   - Select the **Proc Amps** tab.
   - Select the **Output** tab for the output signal. The **Output** tabs are located at the bottom of the **Proc Amps** tab. Notice that the tab names reflect how the output is configured.



Proc Amps Tab — Out 1 Tab

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

increasingly saturated with blue. Decreasing the Cb Gain value desaturates blue from the video signal.

7. Adjust the **Black Offset** of the Background and Key Video as follows:

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

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

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

Configuring Keys

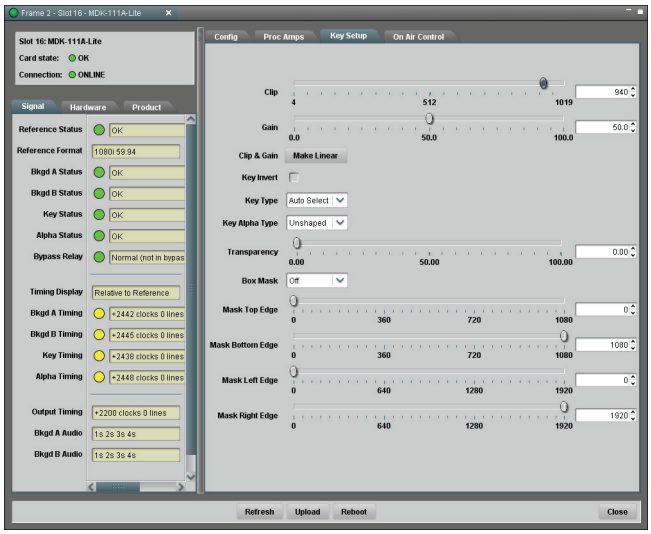
This section briefly describes how to set up Key Alphas, Auto Keys, adjust the Clip and Gain values, and how to apply a box mask.

Note — *The **Key Setup** tab is unavailable when operating in Dual Mixer mode.*

Configuring a Key

Use the following procedure to configure a key:

1. Display the **Device** tab of the MDK-111A-Lite by double-clicking its status indicator in the **Basic Tree View**.
2. From the **Device** tab, select the **Key Setup** tab.



Key Setup Tab

3. Set the **Key Type** by choosing one of the following from the **Key Type** menu:
   - **Auto Select** — Select this option to use the source on BNC 2 as the Key Video and the source on BNC 4 as the Key Alpha. An Auto Select Key is a key in which two video signals are required to insert the key. The Key Alpha is used to cut the hole in the video and Key Video is used to fill the hole. Note that the **Key Alpha Type** is automatically set to **Shaped**.
   - **Self** — Select this option to use the source on BNC 2 as the Key Video and its own luminance value of the same video as the Key Alpha. A Self Key is a key in which the luminance, or brightness, values of the key source is used as the alpha for the key. Note that the **Key Alpha Type** is automatically set to **Unshaped**.
4. If required, select the **Key Alpha Type** from the **Key Alpha Type** menu. Choose from the following:
   - **Unshaped** — Select this option to set the Key Alpha to unshaped. With an Unshaped Key, the Key Alpha luminance value mixes linearly the Key Video with the Background. Shades of gray, in the Key Alpha, are translated into transparency levels, giving the key a soft edge. Self Keys are set to Unshaped by default.
   - **Shaped** — Select this option to set the Key Alpha to shaped. With a Shaped Key, the Key Alpha cuts a hole in the Background based on the luminance value of the

Key Alpha and adds the Key Video to the Background hole. Shaped Key alphas are sometimes used with Character Generators to cut very precise holes for the Key Video fill.

Note — *Ross Video strongly recommends leaving the Clip and Gain values at the default settings to avoid undesirable effects.*

5. Adjust the **Clip** value of the key as follows:
   - Use the **Clip** slider to adjust the luminance level of the key. The lower the threshold setting, the more the Key is visible.
   - To reset the Clip and Gain values, press **Make Linear**.
6. Adjust the **Gain** value of the key as follows:
   - Use the **Gain** slider to adjust the softness of the edges of the key.
   - To reset the Clip and Gain values, press **Make Linear**.
7. Adjust the **Transparency** level of the key as follows:
   - Use the **Transparency** slider to adjust the transparency level of the key. The values range as follows:
     - **0%** — The key is completely opaque. At this value, there is no difference between the original key and the key with the transparency effect applied to it.
     - **100%** — The key is completely transparent. At this value, the key is not visible on the screen.
8. To invert the key, select the **Key Invert** check box.

Note — *The **Key Invert** feature reverses the polarity of the Key Alpha. A Key Invert can be applied to any key type.*

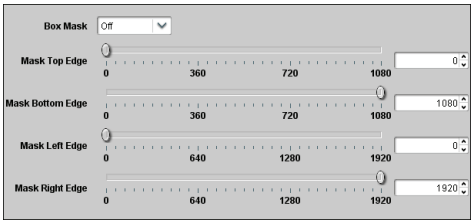
This completes the procedure for configuring a key.

Masking a Key

The Box Mask uses a simple box shape to mask the key and can be adjusted for size and location, but cannot be rotated. All key types can be masked.

Use the following procedure to apply a box mask to a key:

1. Display the **Device** tab of the MDK-111A-Lite by double-clicking its status indicator in the **Basic Tree View**.
2. From the **Device** tab, select the **Key Setup** tab.



Key Setup Tab — Box Mask Area

3. Set the **Box Mask** by choosing one of the following from the **Key Type** menu:
   - **Off**— Select this option to not apply a mask to the key.
   - **On** — Select this option to apply the mask to the key. The key is masked, only the portion inside the box is displayed.

- **On Inverted** — Select this option to reverse the mask. The portion of the image that was masked out is now visible, and the portion that was visible is now masked.

4. Adjust the position of the mask as follows:

Operating Tip — *The values of the Box Mask parameters are set in number of lines and pixels, and are therefore dependent on the video format you are using.*

- Use the **Mask Top Edge** slider to adjust the location of the top edge of the mask.
- Use the **Mask Bottom Edge** slider to adjust the location of the bottom edge of the mask.
- Use the **Mask Left Edge** slider to adjust the location of the left edge of the mask.
- Use the **Mask Right Edge** slider to adjust the location of the right edge of the mask.

This completes the procedure for applying a box mask to a key.

Performing Transitions

The external key transition can be set up in a number of ways. This section briefly outlines how to configure the MDK-111A-Lite transitions options in the DashBoard menus and how to perform basic transitions. This section assumes that you are not operating in Dual Mixer mode.

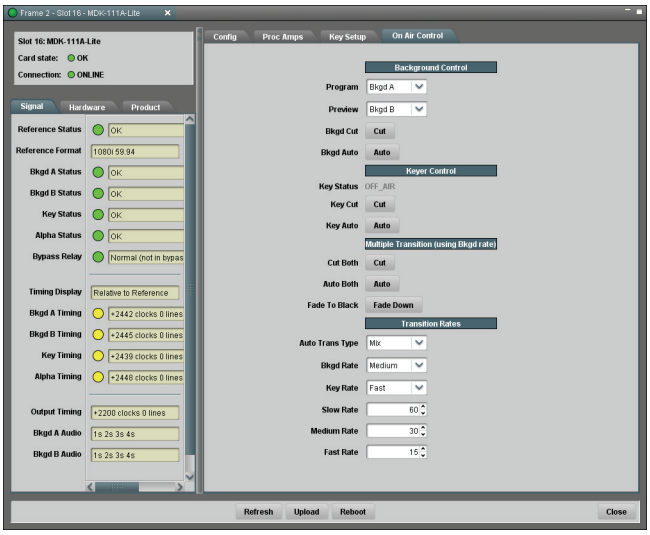
For More Information...

- on operating in Dual Mixer mode, refer to the section "**Performing Transitions in Dual Mixer Mode**" on page 3-19.

Transitions Setup

Use the following procedure to set up the transition options on the MDK-111A-Lite:

1. Display the **Device** tab of the MDK-111A-Lite by double-clicking its status indicator in the **Basic Tree View**.
2. Set up your Keys as outlined in the section "**Configuring Keys**" on page 4-4.
3. Select the **On Air Control** tab to display the menu options in the **Device View**.



On Air Control Tab

4. Select the **Background Program** output from the **Program Select** field. The source can be any of the four inputs, or an internally generated black. Choose from the following:
   - **Black** — Sets the source for the Background Program output to Black.
   - **Bkgd A (Bkgd A)** — Select this option to assign the input source on **BNC 3** as the Program output.
   - **Bkgd B (Bkgd B)** — Select this option to assign the input source on **BNC 1** as the Program output.
   - **Key (Bkgd C)** — Select this option to assign the input source on **BNC 2** as the Program output.
   - **Alpha (Bkgd D)** — Select this option to assign the input source on **BNC 4** as the Program output.

5. Set the source for the Preview output from the **Preview** field. The source can be any of the four inputs, or an internally generated black. Choose from the following:
   - **Black** — Sets the source for the Preview output to Black.
   - **Bkgd A (Bkgd A)** — Select this option to assign the input source on **BNC 3** as the Preview output.
   - **Bkgd B (Bkgd B)** — Select this option to assign the input source on **BNC 1** as the Preview output.
   - **Key (Bkgd C)** — Select this option to assign the input source on **BNC 2** as the Preview output.
   - **Alpha (Bkgd D)** — Select this option to assign the input source on **BNC 4** as the Preview output.
6. Select an **Auto Trans Type** as follows:
   - **Mix** — Select this option to perform a gradual fade from one source to the next. The MDK-111A-Lite performs a cross fade between sources.
   - **Fade-Fade** — Select this option to perform a double transition from the Program source to Black to the Preview source. The MDK-111A-Lite fades down from one source to black and then transition to the next source.
   - **Take-Fade** — Select this option to perform a cut to black, then fade up to the next source.
   - **Fade-Take** — Select this option to fade from one source to black and then cut to the next source.
7. Set the **Background Transition Rate** as follows:
   - From the **BKGD Rate** menu, select a transition rate to set up. Choose from Slow, Medium, or Fast.
   - Specify the rate, in number of frames, as required, in the **Slow Rate**, **Medium Rate** and **Fast Rate** fields.

This completes the procedure for setting up the transition options on the MDK-111A-Lite.

Configuring the Transition Buttons

The **Personality** tab in DashBoard enables you to specify how the **Cut** and **Auto** buttons, in the **On Air Control** tab, behave when toggled during a transition.

Note — *The selected behavior also applies for GPI/Os.*

Use the following procedure to configure the transition buttons:

1. Display the **Device** tab of the MDK-111A-Lite by double-clicking its status indicator in the **Basic Tree View**.
2. Display the **Personality** tab as follows:
   - From the **Device** tab, select the **Config** tab.
   - Select the **Personality** tab located at the bottom of the **Config** tab.
3. Configure the **Cut** button behavior by choosing an option from the **Cut Button** field.
   - **Abort** — Select this option to return the transition to the beginning when the **Cut** button is pressed again while a transition is in progress. This is the default setting.
   - **Finish** — Select this option to instantly finish the transition when the **Cut** button is toggled.

- **Ignore** — Select this option to disregard any successive presses of the **Cut** button until the transition is complete.

4. Configure the **Auto** button behavior by choosing an option from the **Auto Button** field.
   - **Pause/Resume** — Select this option to pause the transition when the **Auto** button is toggled, and resume the transition when the button is pressed again.
   - **Reverse** — Select this option to reverse the transition back to the start.
   - **Ignore** — Select this option to disregard any successive presses of the **Auto** button until the transition is complete.

This completes the procedure for configuring the transition buttons.

Performing a Cut Transition

Use the following procedure to perform a Cut transition on the MDK-111A-Lite:

1. Display the **Device** tab of the MDK-111A-Lite by double-clicking its status indicator in the **Basic Tree View**.
2. Select the **On Air Control** tab to display the menu options in the **Device View**.
3. To perform a Cut transition between Background sources:
   - Ensure the Background sources are configured in the **Program** and **Preview** menus.
   - Click **Cut** in the **Background Control** area.
   - The selections for the Program and Preview menus swap in anticipation of the next transition.
4. To perform a Cut Key transition:
   - Click **Cut** in the **Keyer Control** area.
   - The Key is transitioned on or off air.
   - The **Status** field indicates the on-air status of the key.
5. To perform a multiple Cut transition between the Background and Key sources simultaneously, click **Cut** in the **Multiple Transition** area.

This completes the procedure for performing a Cut transition on the MDK-111A-Lite.

Note — *Clicking **Cut** while a transition is already in progress can either abort, or instantly finish the transition depending on the option selected in the **Personality** tab. "**Configuring the Transition Buttons**" on page 4-8 for details.*

Performing an Auto Transition

The speed at which the Auto transition is performed, in number of frames, is determined by the Transition Rate (Slow, Medium, or Fast) set in the **Transition Rate** area.

Use the following procedure to perform an Auto transition on the MDK-111A-Lite:

1. Display the **Device** tab of the MDK-111A-Lite by double-clicking its status indicator in the **Basic Tree View**.
2. Select the **On Air Control** tab to display the menu options in the **Device View**.
3. Ensure the **Auto Trans Type** is set to the desired type in the **Transition Rate** area.
4. Ensure the **Transitions Rates** are configured in the **Transition Rate** area.
5. To perform an Auto Background transition:

- Ensure the Background sources are configured in the **Program Select** and **Preview** menus.
- Click **Auto** in the **Background Control** area.
  - › If the **Auto Trans Type** is set to **Mix**, the transition performs a fade directly between Background sources.
  - › If the **Auto Trans Type** is set to **Fade-Fade**, it fades to black then to the next Background source.
  - › If the **Auto Trans Type** is set to **Take-Fade**, it cuts to black, then fades up to the next Background source.
  - › If the **Auto Trans Type** is set to **Fade-Take**, it fades from one Background source to black and then cuts to the next Background source.
- The selections for the Program and Preview menus swap in anticipation of the next transition.

6. To perform an Auto Key transition:
   - Click **Auto** in the **Keyer Control** area.
   - The Key is transitioned on or off air.
   - The **Status** field indicates the on-air status of the key.

Note — *Clicking **AUTO** while a transition is already in progress can either pause, ignore or reverse the transition depending on the option selected in the **Personality** tab. "**Configuring the Transition Buttons**" on page 4-8 for details.*

7. To perform a multiple Auto Background and an Auto Key transition simultaneously, click **Auto** in the **Multiple Transition** area.

This completes the procedure for performing an Auto transition on the MDK-111A-Lite.

Performing a Fade to Black

The **Fade to Black** feature allows you to fade to black, where the Program bus is faded to black at the Background Rate.

Use the following procedure to perform a **Fade to Black**:

1. Display the **Device** tab of the MDK-111A-Lite by double-clicking its status indicator in the **Basic Tree View**.
2. Select the **On Air Control** tab to display the menu options in the **Device View**.
3. To perform a Fade to Black, toggle the **Fade to Black** button as follows:
   - **Fade Down** — When the button displays this label, clicking it performs an Auto transition to black. The button label changes to **Fade Up**.

Note — *If the **Fade Down/Fade Up** button is clicked while a Fade to Black is in transition, the Fade will reverse.*

   - **Fade Up** — When the button displays this label, clicking it performs an Auto transition from black. The button label changes to **Fade Down**.

This completes the procedure for performing a **Fade to Black**.

Appendix A. DashBoard Menus

In This Appendix

This appendix briefly summarize the menus, items, and parameters available from the DashBoard Control System™ for the MDK-111A-Lite. Parameters noted with an asterisk (*) are the default values.

The DashBoard Control System enables you to monitor and control openGear frames and cards from a computer. DashBoard communicates with other cards in the openGear DFR-8300 series frames through a MFC-8300 Series Network Controller Card. This controller card is required in order to use DashBoard to monitor the MDK-111A-Lite. Names in brackets indicate the display names when operating in Dual Mixer mode.

The DashBoard Control System software and user manual can be downloaded from the Ross Video website.

The following topics are discussed:

- Status Tabs
- Configuration Menus
- Proc Amps Menus
- Key Setup Menus
- On Air Control Menus

Note — *Before proceeding, ensure that you are running DashBoard software version 3.0.0 or higher. The DashBoard Control System software and user manual are available for download from the Ross Video website.*

Status Tabs

This section summarizes the read-only information displayed in the **Status** tabs of DashBoard.

Signal Tab

Table 5.1 summarizes the read-only information in the **Signal** tab.

Table 5.1 Signal Tab Items

Tab Title	Item	Parameters	Description
Signal (Read-only)	Reference Status	Green - OK	Valid reference signal
		Red - No reference	No signal detected on selected reference input
		Red - Reference Unlocked	Signal detected, but not locked (or lock lost)
		Red - Invalid Reference	Signal detected, but incompatible with the current video mode
	Reference Format	Unknown	No signal present, or format not recognized
		480i 59.94	Composite NTSC reference detected
		720p 59.94	720p, tri-level sync, detected at 59.94Hz
		1080i 59.94	1080i, tri-level sync, detected at 59.94Hz
		576i 50	Composite PAL reference detected
		720p 50	720p, tri-level sync, detected at 50Hz
		1080i 50	1080i, tri-level sync, detected at 50Hz
	Bkgd A Status	Green - OK	Normal operation
		Green - Alarm Suppressed	An alarm condition exists but has been silenced
		Orange - Invalid Signal	Signal detected but format not recongized
		Orange - Incompatible format	Signal present but format does not match operating mode of card
		Red - No signal	No signal present on the input
	Bkgd B Status	Same parameters as above	
	Key Status	Same parameters as above	
	Alpha Status	Same parameters as above	
	Bypass Relay	Green - Normal (not in bypass)	Video is being routed through the card; keyers may be active
		Red - Active (in bypass)	BKGD A is on Output 1 (BNC 5)
	Timing Display	Relative to Reference	The **Timing** fields display the input signal timing values relative to the selected analog reference
		Input to Output	The **Timing** fields display the input signal timing values relative to the SDI output of the card

Table 5.1 Signal Tab Items

Tab Title	Item	Parameters	Description
Signal (Read-only)	Bkgd A Timing	## Clocks ## lines	Indicates the timing of the Background A input signal
	Bkgd B Timing	Same parameters as above	
	Bkgd C Timing	Same parameters as above (Dual Mixer mode only)	
	Bkgd D Timing	Same parameters as above (Dual Mixer mode only)	
	Output Timing	## Clocks ## lines[a]	Indicates the timing of the output signals relative to the reference. This value is fixed at one-half a line in the current video mode.
	Bkgd A Audio	1**s** 2**x** 3**a** 4s	Displays the audio status for each of the four audio groups where: • an **s** indicates the presence of synchronous audio on the group • an **x** indicates that audio is not present • an **a** indicates the presence of asynchronous audio on the group
	Bkgd B Audio	Same parameters as above	
	Bkgd C Audio	Same parameters as above (Dual Mixer mode only)	
	Bkgd D Audio	Same parameters as above (Dual Mixer mode only)	

a. Negative values indicate the output signal timing is ahead of the reference. Positive values indicate the output signal timing is behind the reference.

Hardware Tab

Table 5.2 summarizes the read-only information in the **Hardware** tab.

Table 5.2 Hardware Tab Items

Tab Title	Item	Parameters	Description
Hardware (Read-only)	Voltage (V)	#	Supply Voltage, in Volts
	Current (mA)	#	Current consumption of card in milliAmperes
	Power (W)	#	Power consumption of card in Watts
	FPGA Temp	##C[a] / ##F	FPGA core temperature
	CPU Usage	x.xx/y.yy/z.zz[b]	CPU Load average
	RAM Available	#/##	Memory Used / Total Memory

a. A warning is displayed in DashBoard when the FPGA Core Temperature reaches 85°C. When the temperature reaches 110°C, the card shuts down.

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

Product Tab

Table 5.3 summarizes the read-only information in the **Product** tab.

Table 5.3 Product Tab Items

Tab Title	Item	Parameters	Description
Product (Read-only)	Product	MDK-111A-Lite	
	Supplier	Ross Video Ltd.	
	Board Rev	##	
	Serial Number	######	
	Rear Module	#	Type of Rear Module installed in this slot
	Software Rev	#.# build ###	Indicates the software and build versions
	Firmware Rev	##.##	Indicates the FPGA version number

Configuration Menus

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

Video Configuration

Table 5.4 summarizes the **Video** tab options available in Dashboard.

Table 5.4 Video Tab Options

Option	Item	Parameters	Description
Reference Setup	Reference Input	Frame 1*	The card is using Frame Reference 1
		Frame 2	The card is using Frame Reference 2
		External	The card is using the reference on BNC 9
	Output Format	480i 59.94	The format of the output signal of the card
		720p 59.94	
		1080i 59.94	
		576i 50	
		720p 50	
		1080i 50	
		1080PsF 24	
		1080PsF 23.98	
Output Setup	Output 1	Program*	Output 1 displays the program output
		Preview	Output 1 displays the preview output
		Clean	Output 1 displays the clean feed output
	Output 1 (Dual Mixer mode)	Program 1*	Output 1 displays the Program 1 output
		Program 2	Output 1 displays the Program 2 output
		Preview 1	Output 1 displays the Preview 1 output
		Preview 2	Output 1 displays the Preview 2 output
	Output 2	Same parameters as above. Default value is Program.	
	Output 2 (Dual Mixer mode)	Same parameters as above. Default value is Program 1.	
	Output 3	Same parameters as above. Default value is Preview.	
	Output 3 (Dual Mixer mode)	Same parameters as above. Default value is Preview 1.	
	Output 4	Same parameters as above. Default value is Clean.	
	Output 4 (Dual Mixer mode)	Same parameters as above. Default value is Program 2.	
	Dithering	Disabled*	Dithering is disabled
		Enabled - low	Dithering is enabled and set to 2bits
		Enabled - medium	Dithering is enabled and set to 3bits
		Enabled - high	Dithering is enabled and set to 4bits

Table 5.4 Video Tab Options

Option	Item	Parameters	Description
Output Setup	Clip at Black	Selected	SuperBlack is clipped on all outputs
		Cleared*	SuperBlack is not clipped
	Clip at White	Selected	SuperWhite is clipped on all outputs
		Cleared*	SuperWhite is not clipped
	NTSC Pass Line 21	Selected	Any Line 21 Vertical Blanking Interval (VBI) Closed Captioning (CC) is passed to the output
		Cleared*	Any Line 21 VBI CC is affected by transitions
Signal Loss Alarm	Bkgd A	Selected*	The **Signal** tab reports the status of BKGD A
		Cleared	The **Signal** tab does not report the status of BKGD A
	Bkgd B	Same parameters as above	
	Key (Bkgd C)	Same parameters as above	
	Alpha (Bkgd D)	Same parameters as above	

Audio Configuration

Table 5.5 summarizes the **Audio** tab options available in DashBoard.

Table 5.5 Audio Options

Menu Title	Item	Parameters	Description
Audio	Audio Mixing	Enabled*	Audio follows video; use for normal PCM audio
		Disabled	Audio is hard-cut during transition; use for non-PCM audio such as Dolby®

GPI Configuration

The menu items available in the **GPI/Tally Setup** tab enable you to configure the functions, trigger, and polarity of each GPI connected to the MDK-111A-Lite.

Table 5.6 GPI Setup Menu Items

Menu Title	Item	Parameter	Description
GPI #	Function	GPI Cut Bkgd (GPI Cut Bkgd #)	A cut is performed between the Background sources when this GPI input is triggered
		GPI Auto Bkgd (GPI Cut Auto #)	An auto transition is performed between the Background sources when this GPI input is triggered
		GPI Cut Key	A cut is performed between the Key sources when this GPI input is triggered
		GPI Auto Key	An auto transition is performed between the Key sources when this GPI input is triggered
		GPI Cut Both	A cut is performed between both the Key sources and Background sources simultaneously when this GPI input is triggered
		GPI Auto Both	An auto transition is performed between both the Key sources and Background sources simultaneously when this GPI input is triggered
		GPI Fade to Black	A fade to black is performed when this GPI input is triggered
		None*	The GPIO port is not configured
	Trigger	Edge*	Performs the function when a transition edge is detected on the GPI input. The Low-to-High or High-to-Low active edge is set by the Polarity control.
		Level	Performs the function when a voltage level is driven on the GPI input. The voltage level High or Low is set by the Polarity control.
	Polarity	High/Rising	Sets the polarity of the edge or level trigger. In the case of edge trigger, a Low-to-High transition starts the function. In the case of level trigger, a high level stars the function.
		Low/Falling*	Sets the polarity of the edge or level trigger. In the case of the edge trigger, a High-to-Low transition starts the function. In the case of level trigger, a low level starts the function.

Tally Configuration

The menu items available in the **GPI/Tally** tab enable you to configure each Tally connected to the MDK-111A-Lite. Note that the **Trigger** feature for tallies is not supported at this time.

Table 5.7 Tally Setup Menu Items

Menu Title	Item	Parameter	Description
Tally #	Function	Tally A	Configures the selected GPI/O port as an output and reflects the on-air status of BKGD A
		Tally B	Configures the GPI/O port as an output and reflects the on-air status of BKGD B
		Tally Key (Tally C)	Configures the GPI/O port as an output and reflects the on-air status of the Key video
		Tally Alpha (Tally D)	Configures the GPI/O port as an output and reflects the on-air status of the Key Alpha
		None*	The GPI/O port is not configured
	Polarity	High/Rising	When asserted, the Tally output is driven High
		Low/Falling*	When asserted, the Tally output is driven Low

Remote Control

The **Remote Control** tab enables you to set up serial communications between the MDK-111A-Lite and a device connected to the **Serial COM** on the Rear Module or via a network connection.

Table 5.8 Remote Control Menu Items

Menu Title	Item	Parameter	Description
Serial Port	Port Enabled	Selected	Enables the serial port on the Rear Module to communicate with a serial device
		Cleared*	Disables the serial port on the Rear Module
	Protocol	M-2100*	Selects the serial communication protocol for the external device connected to the Serial COM port
	Port Type	RS 232*	Selects the electrical standard for the Serial COM port on the rear module
		RS 422	
		RS 422 unterm	
		RS 422 NULL	
		RS 422 NULL unterm	
	Bit Rate	9600	Selects the bit rate for the external device connected to the Serial COM port
		19200	
		38400*	
		57600	
		115200	

Table 5.8 Remote Control Menu Items

Menu Title	Item	Parameter	Description
Serial Port	Data Bits	7	Sets the number of data bits transmission (character length)
		8*	
	Parity	None*	Sets the Parity type
		Even	
		Odd	
	Stop Bits	1*	Sets the number of stop bits transmission
		2	
Ethernet Port - M-2100	Enabled	Selected	Enables M-2100 communication on the ethernet port
		Cleared*	Disables M-2100 communication on the ethernet port
	Protocol	TCP*	Specifies the Transport Layer Protocol to use for M-2100 communications over an ethernet connection
		UDP	
	Port	0-32767[a]	Specifies the port address. Note that TCP ports 0, 21, 22, 80, and 6667 are unavailable for serial communications.

a. The default value is 9000.

Ethernet Configuration

The **Ethernet** tab enables you to set up ethernet communications for the MDK-111A-Lite.

Table 5.9 Ethernet Tab Items

Menu Title	Item	Parameter	Description
Ethernet	Method	Static	User manually supplies the ethernet setup settings
		DHCP*	Automates the assignment of the ethernet settings
	IP Address	##.#.#.###	The IP Address for the MDK-111A-Lite
	Subnet Mask	###.#.#.#	The subnet mask for the MDK-111A-Lite
	Default Gateway	##.#.#.#	The gateway for communication outside of the local area network (LAN)
	Apply Changes		Applies and saves any changes made to the **Ethernet Settings**
	Cancel		Cancels any setting changes and resets the **Ethernet Settings** to the previous values

Table 5.9 Ethernet Tab Items

Menu Title	Item	Parameter	Description
Ethernet	Ethernet Status	OK	Ethernet communications for the card are valid
		Link Down	Ethernet communications for the card are invalid. The ethernet cable may be disconnected from the rear module or the ethernet network may be down or experiencing problems.
		No IP Address	The following conditions are occurring: • The **Method** is set to **DHCP** • The ethernet cable is properly connected to the rear module • A valid IP Address could not be obtained. The DHCP server may be down or is still powering up after a power outage
	MAC Address (read-only)	##:##:##:##:##:##	The MAC Address for the MDK-111A-Lite

Personality Configuration

The menu items available in the **Personality** tab enable you to specify the transition behavior of the buttons available in the **On Air Controls** tab for the MDK-111A-Lite.

Table 5.10 Personality Tab Items

Menu Title	Item	Parameter	Description
Transition Behavior	Cut Button	Abort*	Returns the transition to the beginning when the **Cut** button is toggled
		Finish	Instantly finish the transition when the **Cut** button is toggled
		Ignore	Disregard any successive presses of the **Cut** button until the transition is complete
	Auto Button	Pause/Resume*	Pause the transition when the **Auto** button is toggled, and resume the transition when the button is pressed again
		Reverse	Reverses the transition back to the start
		Ignore	Disregard any successive presses of the **Auto** button until the transition is complete
Timing Display	Timing Display	Relative to Reference*	The **Timing** fields in the **Signal** tab display the timing values relative to the reference
		Input to Output	The **Timing** fields in the **Signal** tab display the timing values relative to the output
Dual Mixer	Dual Mixer	Selected	Dual Mixer mode is enabled. The keying features are disabled and the card operates as a Dual A/B mixer.
		Cleared*	Dual Mixer mode is disabled

Table 5.10 Personality Tab Items

Menu Title	Item	Parameter	Description
Card Lock	Edit Permission	Unlocked*	All menu items are unlocked and can be edited
		Locked	All menu items, except this one, are locked and read-only. The card can still be controlled by GPI and/or GVG M-2100 commands if these feature were enabled prior to locking.

Load/Save

The menu items available in the **Load/Save** tab enable you to reset menu parameters for the MDK-111A-Lite to the factory default values.

Table 5.11 Load/Save Tab Items

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

Proc Amps Menus

Table 5.12 summarizes the **Proc Amps** tab options available in DashBoard.

Table 5.12 Proc Amps Options

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

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

Key Setup Menus

Table 5.13 summarizes the **Key Setup** tab options available in DashBoard.

Table 5.13 Key Setup Menu Items

Menu Title	Item	Parameters	Description
Key Setup	Clip	4 to 1019[a]	Adjusts the clip values
	Gain	0 to 100[b]	Adjusts the gain values
	Clip & Gain	Make Linear	Resets the clip and gain values to the default settings
	Key Invert	Selected	The polarity of the Key Alpha is inverted
		Cleared*	The Key Alpha is not inverted
	Key Type	Auto Select*	A Key which two video signals (Alpha and Fill) are used
		Self	A Key that uses the luminance values of the key source for the alpha
	Key Alpha Type	Unshaped	The MDK-111A-Lite performs a multiplicative key. The Key Alpha mixes the Key Video with the BKGD.
		Shaped*	The MDK-111A-Lite performs an additive key. The Key Alpha cuts a hole in the BKGD and the Key Video is added to the BKGD.
	Transparency	0 to 100[c]	Adjusts the transparency level of the key
	Box Mask	Off*	Disables this feature
		On	Applies the mask to the key
		Inverted	Reverses the mask. The portion of the image that was masked is now visible and the portion that was visible is now masked.
	Mask Top Edge	0 to #[d]	Adjusts the location of the top edge of the mask
	Mask Bottom Edge	0 to #[d]	Adjusts the location of the bottom edge of the mask
	Mask Left Edge	0 to #[d]	Adjusts the location of the left edge of the mask
	Mask Right Edge	0 to #[d]	Adjusts the location of the right edge of the mask

a. The default value is 940.
b. The default value is 50.
c. The default value is 0.
d. The range of values are dependent on the video format.

On Air Control Menus

This section provides a summary of the options available on the **On Air Control** tab. Note that the menus displayed in this tab depend on whether the **Dual Mixer** feature is enabled.

On Air Control Menus

Table 5.14 summarizes the **On Air Control** options available in DashBoard when the card is not operating in Dual Mixer mode (the feature is disabled in the **Personality** tab).

Table 5.14 On Air Control Options

Menu Title	Item	Parameters	Description
Background Control	Program	Black	Assigns Black as the program output
		Bkgd A	Assigns the selected input source as the program output
		Bkgd B	
		Key	
		Alpha	
	Preview	Black	Assigns Black as the preview output
		Bkgd A	Assigns the selected input source as the preview output
		Bkgd B	
		Key	
		Alpha	
	Bkgd Cut	Cut	Performs an instantaneous transition between the BKGD video sources
	Bkgd Auto	Auto	Performs the transition, as specified in the **Auto Trans Type** menu, between the BKGD video sources at a specified rate
Keyer Control	Key Status (read-only)	OFF_AIR	The key is not on-air (text is set in gray)
		ON_AIR	The key is on-air (text is set in red)
	Key Cut	Cut	Performs an instantaneous transition to take the Key on-air or off-air
	Key Auto	Auto	Performs a dissolve to transition the key on or off air
Multiple Transition (using Bkgd rate)	Cut Both	Cut	Performs a cut between both the BKGD sources and the Key sources simultaneously
	Auto Both	Auto	Performs an auto transition between both the BKGD sources and the Key sources simultaneously
	Fade To Black	Fade Down*	The Program output fades to black (both the BKGD and the Key)
		Fade Up	The Program output fades from black back to its normal state; both the BKGD and Key are visible (if on-air)

Table 5.14 On Air Control Options

Menu Title	Item	Parameters	Description
Transition Rates	Auto Trans Type	Mix*	A Video Cross Fade is performed for BKGD transitions
		Fade-Fade	A Video V-Fade, through black, is performed for BKGD transitions
		Take-Fade	A cut to black is performed then a fade up to the next BKGD source
		Fade-Take	The BKGD fades to black then performs a cut to the next BKGD source
	Bkgd Rate	Slow	Sets the BKGD transition rate to Slow
		Medium*	Sets the BKGD transition rate to Medium
		Fast	Sets the BKGD transition rate to Fast
	Key Rate	Same parameters as above[a]	
	Slow Rate	1 to 999[b]	Defines the Slow Rate in frames
	Medium Rate	1 to 999[c]	Defines the Medium Rate in frames
	Fast Rate	1 to 999[d]	Defines the Fast Rate in frames

a. The default value is Fast.
b. The default value is 60 frames (2 seconds) when using 59.94Hz formats. When using 50Hz formats, the default value is 50 frames.
c. The default value is 30 frames (1 second) when using 59.94Hz formats. When using 50Hz formats, the default value is 25 frames.
d. The default value is 15 frames (0.5 second) when using 59.94Hz formats. When using 50Hz formats, the default value is 12 frames.

On Air Control Dual Mixer Menus

Table 5.14 summarizes the **On Air Control** options available in DashBoard when the Dual Mixer feature is enabled in the **Personality** tab.

Table 5.15 On Air Control Dual Mixer Options

Menu Title	Item	Parameters	Description
Mixer #	Program	Black	Assigns Black as the program output
		Bkgd A*	Assigns the selected input source as the program output
		Bkgd B	
		Bkgd C	
		Bkgd D	
	Preview	Black	Assigns Black as the preview output
		Bkgd A	Assigns the selected input source as the preview output
		Bkgd B*	
		Bkgd C	
		Bkgd D	

Table 5.15 On Air Control Dual Mixer Options

Menu Title	Item	Parameters	Description
Mixer #	Bkgd Cut	Cut	Performs an instantaneous transition between the BKGD video sources
	Bkgd Auto	Auto	Performs the transition, as specified in the **Auto Trans Type** menu, between the BKGD video sources at a specified rate
	Auto Trans Type	Mix*	A Video Cross Fade is performed for BKGD transitions
		Fade-Fade	A Video V-Fade, through black, is performed for BKGD transitions
		Take-Fade	A cut to black is performed then a fade up to the next BKGD source
		Fade-Take	The BKGD fades to black then performs a cut to the next BKGD source
	Bkgd Rate	Slow	Sets the BKGD transition rate to Slow
		Medium*	Sets the BKGD transition rate to Medium
		Fast	Sets the BKGD transition rate to Fast
	Fade to Black	Fade Down*	The Program output fades to black (both the BKGD and the Key)
		Fade Up	The Program output fades from black back to its normal state; both the BKGD and Key are visible (if on-air)
Transition Rates	Slow Rate	1 to 999[a]	Defines the Slow Rate in frames
	Medium Rate	1 to 999[b]	Defines the Medium Rate in frames
	Fast Rate	1 to 999[c]	Defines the Fast Rate in frames

a. The default value is 60 frames (2 seconds) when using 59.94Hz formats. When using 50Hz formats, the default value is 50 frames.
b. The default value is 30 frames (1 second) when using 59.94Hz formats. When using 50Hz formats, the default value is 25 frames.
c. The default value is 15 frames (0.5 second) when using 59.94Hz formats. When using 50Hz formats, the default value is 12 frames.

Appendix B. Serial Protocols

In This Appendix

This appendix describes the communications protocol systems used with the MDK-111A-Lite.

Note — *The GVG M-2100 protocol does not support control for more than a single mixer. Therefore, when operating the MDK-111A-Lite in Dual Mixer mode, only the first mixer can be fully controlled via GVG M-2100.*

The following topics are discussed:

- GVG M-2100 Emulation Protocol

GVG M-2100 Emulation Protocol

The MDK-111A-Lite serial interface provides a communication link between a computer based editing or automation system and the MDK-111A-Lite. This section briefly outlines the GVG M-2100 emulation protocol system used with the MDK-111A-Lite.

For specific details on the protocol, refer to your ***GVG M-2100 Automation Interface Protocol Manual***.

Note — *Using the GVG M-2100 protocol may cause the MDK-111A-Lite to enter a condition where DashBoard may not properly reflect the current status of the card.*

Pinout Connections

When connecting to a device using the GVG M-2100 protocol, refer to the section "**Serial COM Port Pin Assignment**" on page 2-8 for pinout information for the **Serial COM** port. Refer to the documentation that came with your M-2100 protocol device for specific pinout information.

Communication Settings

Unless otherwise stated by the GVG M-2100 Automation Interface Protocol Manual, use the following communication settings when connecting a GVG M-2100 protocol device to the MDK-111A-Lite.

Table 6.1 GVG M-2100 Communication Settings

Setting	Value
Baud	38.4kbps
Data Bits	8
Parity	None
Stop Bits	1

Emulation Commands

This section provides a brief description of the M-2100 emulation commands supported by the MDK-111A-Lite.

Table 6.2 Supported GVG M-2100 Emulation Commands

Emulation Command	Supported	Notes
Next Transition (0x01, TX_NEXT)	✓	• Either bit 0, or bit 1, or both must be selected. • Bit 00 is ignored.
Start Transition (0x02, TX_START)	✓	**Trigger Mod** Bit 1-7 are ignored/reserved.
Select Transition Type (0x03, TX_TYPE)	✓	The card does not support wipes. If a wipe transition is selected, the card returns an error. The card does not support custom transitions.
Select Transition Rate (0x04, TX_RATE)	✓	The card supports Slow, Medium, and Fast Rates, selectable in DashBoard, and not based on the transition type selected. The **Rate type** 04 byte value will not be returned by the card. Note that the maximum transition rate is 999 frames.

Table 6.2 Supported GVG M-2100 Emulation Commands

Emulation Command	Supported	Notes
Transition Status (0x05, TX_STAT)		• Not currently supported. The card always returns 03. • Audio is quiescent (01).
Transition Status (0x15, TX_STAT2)		• Not currently supported. The card always returns 03. • Audio is silent (01).
Crosspoint Take (0x06, XPT_TAKE)	✓	• **Bus Select** Bit values 2-15 are ignored/reserved. • **Crosspoint** byte values 01-16 designate the crosspoint number. • **Audio Only Crosspoint** byte value is not supported. • Hot cuts (XPT-Take, 0x06) are not allowed when a transition is in progress. • Refer to **Table 6.3** for details on crosspoint mapping.
Break Away (0x07, BREAK_AWAY)		Not currently supported.
Audio Over Select (0x08, OVER_SELECT)		Not currently supported.
Audio Over to Main Ratio (0x09, OVER_RATIO)		Not currently supported.
Key Modifier (0x0A, KEY_MOD)	✓	**Keyer Select** byte value: Bit 4 is not supported **Keyer Modifier** byte value is supported as follows: • Bit 0 where 0 = Self, 1 = External • Bit 1 is not supported • Bit 2-4 is ignored **SqueezeBack** byte value is not supported. Not recommended when operating in Dual Mixer mode
Key Enable (0x0B, KEY_ENABLE)	✓	Bit 4 is not currently supported. Not recommended when operating in Dual Mixer mode.
Key Status (0x0C, KEY_STAT)	✓	Bit 4 is not currently supported. Not recommended when operating in Dual Mixer mode.
Automation Enable Status (0x0D, AUTO_STAT)	✓	This command sends an Enabled reply to a Status query. On the card, the Automation interface can be disabled on the DashBoard Remote tab by clearing the Port Enabled check box. If you disable the Automation interface, there will be no response to commands including this one.
Stop Ongoing Transition (0x0E, ALL_STOP)		Not currently supported.
Current Preroll Time (0x0F, PREROLL)		Not currently supported.
Configuration Preroll Time (0x10, CONFIG_PREROLL)		Not currently supported.
Remaining Time Display (0x11, REMAINING_TIME)		Not currently supported.
System Status (0x12, SYSTEM_STAT)	✓	This reply returns only a value of 0, indicating an “OK” condition.
System Configuration (0x13, SYSTEM_CONFIG)	✓	This reply returns only a value of 0, indicating an “OK” condition.

Table 6.2 Supported GVG M-2100 Emulation Commands

Emulation Command	Supported	Notes
Crosspoint Audio Mode (0x14, XPT_AUDIO_MODE)		Not currently supported.
GPI Button Operation (0x17, GPI)		Not currently supported.
Select Wipe Patterns (0x18, WIPE_SEL)		Not currently supported.
Error Status (0x20, ERROR_STAT)	✓	This query should only be issued after a NAK was received from the card or the card did not perform the desired action. If no errors have occurred since the last message was received by the card, an error code of NO_ERR is returned.
Protocol/Version (0x21, PROTO_VER)	✓	Protocol version is set to 3.0.

Crosspoint Take (0x06, XPT_TAKE)

Table 6.3 provides a list of crosspoints for the XPT_TAKE command. Note that values not listed in this card are undefined and are not recommended for use.

Table 6.3 Crosspoint Take (0x06, XPT_TAKE)

Crosspoint Number	Selects	
	Non-Dual Mixer Mode	Dual Mixer Mode
0x00	No Change	No Change
0x01	Black	Black
0x05	BKGD A	BKGD A
0x06	BKGD B	BKGD B
0x07	Key Video	BKGD C
0x08	Key Alpha	BKGD D

Appendix C. Specifications

In This Appendix

This appendix provides information on the specifications for your MDK-111A-Lite. Note that specifications are subject to change without notice.

The following topics are discussed:

- Technical Specifications

Technical Specifications

This section includes the technical specifications table for the MDK-111A-Lite.

Table 7.1 MDK-111A-Lite Technical Specifications

Category	Parameter	Specification
Serial Digital Video Inputs	Number of Inputs	4
	SDI Data Rates and SMPTE Standards Accommodated	SMPTE 259M (270Mbps) SMPTE 292M (1.485 Gbps)
	Impedance	75ohms
	Return Loss	< -15dB, 0 to 1.5GHz
	BKGD A Equalization	80m
	BKGD B Equalization	80m
	Key Video Equalization	80m
	Key Alpha Equalization	80m
Serial Digital Video Outputs	Number of Outputs	4
	Impedance	75ohms
	Return Loss	OUT 1: -15dB, 0 to 1.5GHz OUT 2-4: <-15dB, 0 to 1.5GHz
	Signal Level	800mV +/-10%
	DC Offset	0+/-50mV
	Rise and Fall Time	SD: 900ps typical HD: 150ps typical
	Overshoot	<10% typical
Other	RS232 Serial Interface Maximum Cable Length	10m
	RS422/485 Serial Interface Maximum Cable Length	300m
	Power Consumption	11W

Appendix D. 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 MDK-111A-Lite, 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. **Reference Signal Status** — Verify that the analog reference (blackburst or tri-level) is supplied on one of the three reference inputs. Check the Reference Input and the Output Format settings. Also check the status of the reference by navigating to the Reference Status field located on the Signal tab in DashBoard.
4. **Input Signal Status** — Verify that source equipment is operating correctly and that a valid signal is being supplied.
5. **Output Signal Path** — Verify that destination equipment is operating correctly and receiving a valid signal.
6. **Unit Exchange** — Exchanging a suspect unit with a unit that is known to be working correctly is an efficient method for localizing problems to individual units.

Warranty and Repair Policy

The MDK-111A-Lite 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 MDK-111A-Lite 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 MDK-111A-Lite 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 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 MDK-111A-Lite is 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 MDK-111A-Lite, 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 MDK-111A-Lite. 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.

Index

Numerics

8310AR-033 rear module 2-5
8320AR-033 rear module 2-5

A

Adjusting
- black offset 4-3
- CB gain 4-2
- chroma gain 4-2
- video gain 4-2

Alarm, signal loss 3-5, 5-6
Alpha
- signal status, DashBoard 5-2

Alpha Signal Status, DashBoard 5-2
Apply Changes button 5-9
Audio
- BKGD A, status in DashBoard 5-3
- BKGD B, status in DashBoard 5-3

Audio Mixing
- overview 3-6
- parameters, DashBoard 5-6

Audio Over Select command 6-3
Audio Over to Main Ratio command 6-3
Auto Both button 5-14
Auto button, configuring 3-15, 4-9
Auto Select key 4-4
Auto Trans Type
- fade-fade option 3-18, 4-8
- fade-take option 3-19, 4-8
- mix option 3-18, 4-8
- selecting 3-18, 4-8, 5-15, 5-16
- take-fade option 3-18, 4-8

Auto transition, performing 4-9
Automation Enable Status command 6-3

B

Background
- selecting program output 4-7
- transition, rate 3-19, 4-8

Background Control Menu 5-14, 5-15, 5-16
Baud Rate, selecting 3-8
Bit Rate, selecting 5-8
BKGD A
- audio status, DashBoard 5-3
- BNC connector, rear module 2-7
- equalization, specification 7-2
- status, DashBoard 5-2
- timing status, DashBoard 5-3

BKGD Auto button 5-14, 5-16
BKGD B
- audio status, DashBoard 5-3
- BNC connector, rear module 2-7
- equalization, specification 7-2
- status, DashBoard 5-2
- timing status, DashBoard 5-3

BKGD Cut button 5-14, 5-16
BKGD Rate, selecting 5-15, 5-16
Black Offset, adjusting 4-3, 5-12
Block diagram 1-3
BNC connectors
- cabling 2-7
- overview 2-7

Board Reset button 2-3
Box Mask, adjusting 4-5, 5-13
Break Away command, GVG M-2100 6-3
Bypass Relay, DashBoard 5-2

C

Cable Length
- RS-232, specification 7-2
- RS-422, specification 7-2
- RS-485, specification 7-2

Cabling
- BNC designations 2-7
- ethernet communication 2-9
- serial communication 2-8

Card-edge LEDs 2-4
CB Gain, adjusting 4-2, 5-12
Checklist, troubleshooting 8-2
Chroma gain, adjusting 4-2, 5-12
Clip at Black, applying 3-5, 5-6
Clip at White, applying 3-5, 5-6
Clip, adjusting 4-5, 5-13
Commands, GVG M-2100 protocol 6-2
Communication
- ethernet settings 3-9
- GPI, setup 3-11
- GVG M-2100 protocol, settings 6-2
- GVG M-2100, selecting 3-7, 3-8
- network setup 3-9
- tally setup 3-12

Components, overview 2-3
Config Tab
- ethernet settings 3-9
- GPI and Tally setup 3-11, 3-12, 3-14, 4-8
- GPI/Tally setup 3-11
- Load Factory Defaults 3-14
- Load/Save 3-14
- output setup 3-4, 3-17
- personality 4-8
- reference setup 3-2
- signal loss alarm 3-5
- tally setup 3-12
- video formats 3-2

Configuration Menus
output setup 5-5
overview 5-5
reference setup 5-5
Configuration Preroll Time command 6-3
Configuring
input signal timing display 3-16
keys 4-4
timing setup 3-16
transition buttons 3-15
video format 3-2
video, notes on 3-4
Consumption, power 7-2
CPU Headroom 5-3
Crosspoint Audio Mode command 6-4
Current consumption 5-3
Current Preroll Time command 6-3
Cut
transition, performing 4-9
transitions, multiple 4-9
Cut Both button 5-14
Cut button
configuring 3-15, 4-8
using 4-9

D

DashBoard
Audio tab 5-6
Background Control setup 5-14, 5-15, 5-16
Clip at Black option 3-5
Clip at White option 3-5
Config tab 3-11, 3-12, 3-14, 4-8, 5-5
configuration menus 5-5
configuring outputs 3-4, 3-17
dithering option 3-5
Ethernet tab 3-9
GPI/Tally tab 3-12, 5-7, 5-8
hardware information 5-3
input signal timing display 3-16
Key Setup options 5-13
Key Setup tab 4-4
Keyer Control setup 5-14
Load/Save tab 3-14
Multiple Transition options 5-14
NTSC Pass Line option 3-5
On Air Control tab 4-7, 5-14, 5-15
Output Setup 3-4
Output Setup options 5-5
overview 5-1
Personality tab 3-15, 3-16, 3-19, 4-8
Proc Amps options 5-12
Proc Amps tab 4-2, 5-12
product information 5-4
Reference Setup options 5-5
remote control, configuring 3-7, 3-8
selecting reference input 3-2
selecting video formats 3-2
signal information 5-2
signal loss alarm setup 3-5
software upgrades 3-20
status 5-2
transition buttons, configuring 3-15
Transition Rate Control options 5-15
Video tab 3-2, 3-4, 3-5, 3-17
Data Bits, selecting 3-8, 5-9
DC Offset, specification 7-2
Default Gateway 5-9
DFR-8310 series frames
card installation 2-6
rear module 2-5
DFR-8321 series frames
card installation 2-6
rear module 2-5
slot combination 2-6
DHCP 3-9
Dithering 3-5, 5-5
Documentation terms 1-4
Dual Mixer mode
configuring sources 3-17
enabling 3-17
overview 3-17

E

Edge, GPI 3-10, 5-7
Edit permissions 3-16
Emulation commands
GVG M-2100 6-2
serial protocols 6-1
Enable checkbox, Proc Amps 5-12
Error Status, GVG M-2100 6-4
ERROR/OK LED 2-4
ESD Susceptibility 2-2
Ethernet
Apply Changes button 5-9
cabling 2-9
communication setup 3-9
Default Gateway, selecting a 5-9
DHCP option 3-9
IP Address, selecting a 5-9
MAC Address, selecting a 5-10
port, rear module 2-7
static option 3-9
Subnet Mask Address, selecting a 5-9

F

Factory Defaults, loading 5-11
Fade Down button 4-10
Fade to Black 5-14
Fade to Black, performing 4-10
Fade Up button 4-10
Fade-Fade transition 3-18, 4-8
Fade-Take transition 3-19, 4-8
Features, product 1-2

Format
output 5-5
video 3-2
FPGA Core Temperature 5-3
Frame, installing the MDK-Lite in 2-6
Function, tally 5-8

G

Gain
adjusting 4-5
CB, adjusting 4-2
chroma, adjusting 4-2
overview 5-13
video, adjusting 4-2
Gateway 3-9
Global Settings 5-11
GPI
communication setup 3-11
configuration 3-10
edge 5-7
high/rising 5-7
level 5-7
low/falling 5-7
polarity 5-7
ports, rear module 2-7
trigger 3-10, 5-7
GPI Auto Bkgd 5-7
GPI Auto Both 5-7
GPI Auto Key 5-7
GPI Button Operation command, GVG M-2100 . 6-4
GPI Cut Bkgd 5-7
GPI Cut Both 5-7
GPI Cut Key 5-7
GPI Fade to Black 5-7
GPI/Tally Setup tab 5-7
GVG M-2100 protocol
Audio Over Select command 6-3
Audio Over to Main Ratio command 6-3
Automation Enable Status command 6-3
Break Away command 6-3
communication settings 6-2
communication setup 3-7, 3-8
Configuration Preroll Time command 6-3
Crosspoint Audio Mode 6-4
Current Preroll Time command 6-3
emulation commands 6-2
Error Status for Previous command 6-4
GPI Button Operation command 6-4
Key Enable command 6-3
Key Modifier command 6-3
Key Status command 6-3
Next Transition command 6-2
overview 6-2
pinout connections 6-2
Protocol/Version command 6-4
Remaining Time Display command 6-3
Select Next Transition Type command 6-2
Select Transition Rate command 6-2
Select Wipe Patterns command 6-4
Start Transition command 6-2
Stop Ongoing Transition command 6-3
System Configuration command 6-3
System Status command 6-3
Take Crosspoint command 6-3
Transition Status command 6-3

H

Hardware information, read-only 5-3
High/Rising, GPI 5-7

I

I/O Modules, types used 2-5
Impedance
input, specification 7-2
output, specification 7-2
IN2 BKGD B STAT LED 2-4
IN3 Key Video STAT LED 2-4
IN4 Key Alpha STAT LED 2-4
Inputs
cables, connecting 2-7
configuration notes 3-4
reference 3-2, 5-5
return loss, specification 7-2
specifications 7-2
Installing
cables, ethernet communication 2-9
cables, rear module 2-7
cables, serial communication 2-8
card, DFR-8310 series frames 2-6
card, DFR-8321 series frames 2-6
MDK-Lite card 2-6
rear module 2-5
slot combinations 2-6
Invert, key 4-5
IP Address 3-9, 5-9

J

J7 ..... 2-3, 3-3

K

Key
auto select, type 4-4
BNC connector, rear module 2-7
box mask 4-5
clip, adjusting 4-5
configuring 4-4
gain, adjusting 4-5
invert option 4-5
self, type 4-4
shaped, selecting 5-13
status, DashBoard 5-2
timing status, DashBoard 5-3
transparency, adjusting 4-5

type, selecting 4-4
unshaped, selecting 5-13
Key Alpha
BNC connector, rear module 2-7
equalization, specification 7-2
shaped 5-13
unshaped 5-13
Key Auto button 5-14
Key Cut button 5-14
Key Enable command 6-3
Key Invert option 4-5, 5-13
Key Modifier command 6-3
Key Rate, selecting 5-15
Key Setup tab 4-4, 5-13
Key Status
displaying 5-2
Key Status command 6-3
Key Type
auto select 4-4, 5-13
selecting 4-4
self 4-4, 5-13
Key Video equalization, specification 7-2
Keyer Control
Key Auto button 5-14
Key Cut button 5-14
status 5-14
Keyer Control tab 5-14

L

LEDs
ERROR/OK 2-4
IN2 BKGD B STAT 2-4
IN3 Key Video STAT 2-4
IN4 Key Alpha STAT 2-4
overview 2-4
REF STAT 2-4
Level, GPI 5-7
Load Factory Defaults 3-14, 5-11
Load/Save tab 3-14, 5-11
Low/Falling, GPI 5-7

M

M-2100 protocol
Audio Over Select command 6-3
Audio Over to Main Ratio command 6-3
Automation Enable Status command 6-3
Break Away command 6-3
communication settings 6-2
communication setup 3-7, 3-8
Configuration Preroll Time command 6-3
Crosspoint Audio Mode command 6-4
Current Preroll Time command 6-3
emulation commands 6-2
Error Status for Previous command 6-4
GPI Button Operation command 6-4
Key Enable command 6-3
Key Modifier command 6-3
Key Status command 6-3
Next Transition command 6-2
overview 6-2
Protocol/Version command 6-4
Remaining Time Display command 6-3
Select Next Transition Type command 6-2
Select Transition Rate command 6-2
Select Wipe Patterns command 6-4
Start Transition command 6-2
Stop Ongoing Transition command 6-3
System Configuration command 6-3
System Status command 6-3
Take Crosspoint command 6-3
Transition Status command 6-3
MAC Address 3-9, 5-10
Make Linear option 4-5, 5-13
Mask, box 4-5
MDK-111A-K
rear module, 8310AR-033 2-5
rear module, 8320AR-033 2-5
MDK-111A-M
audio mixing feature 3-6
rear module, 8310AR-033 2-5
rear module, 8320AR-033 2-5
Menu
Background Control 5-14, 5-15, 5-16
GPI/Tally Setup 5-7
Key Setup 5-13
Keyer Control Setup 5-14
Multiple Transition option 5-14
Output Setup 5-5
overview 5-1
parameters, resetting 3-14
Tally Setup 5-8
Transition Rate Control option 5-15
Mix transition 3-18, 4-8
Mixing, audio 3-6
Module, Rear I/O 2-5
Multiple Transition option 5-14

N

Next Transition command, GVG M-2100 6-2
Non-PCM audio 3-6
NTSC Pass Line 21 ..... 3-5, 5-6

O

Offset, black 4-3
On Air Control tab 4-7
On Air Controls
Background Control setup 5-14, 5-15, 5-16
DashBoard 5-14, 5-15
Keyer Control setup 5-14
Multiple Transition option 5-14
Transition Rate Control option 5-15
Output Setup options 5-5

Outputs
BNC connectors, rear module 2-7
cables, connecting 2-7
Clip at Black feature 3-5
Clip at White feature 3-5
configuration notes 3-4
configuring 3-4, 3-17
dithering, applying 3-5
impedance, specification 7-2
NTSC Pass Line 21 feature 3-5
options 3-4
reference, selecting 5-5
return loss, specification 7-2
specifications 7-2
timing status, DashBoard 5-3
Overshoot, specification 7-2
Overview
BNC connector designations 2-7
components 2-3
Configuration Menus 5-5
DashBoard interface 5-1
GVG M-2100 protocol 6-2
Key Setup Menus 5-13
LEDs 2-4
On Air Control Menus 5-14, 5-15
Proc Amps Menus 5-12
product 1-2
Status Menus 5-2
Tally setup 3-10

P

Parameters
Audio Mixing 5-6
Parameters, Proc Amps 5-12
Parity, selecting 3-8, 5-9
Permission, edit 3-16
Personality
tab 3-19, 4-8
transition buttons, configuring 4-8, 5-10
Personality Tab
edit permission 3-16
overview 3-15
transition buttons, configuring 3-15
Pinout connections
GVG M-2100 6-2
serial cable 2-8
Polarity
high/rising 5-7
low/falling 5-7
Polarity, GPI 5-7
Polarity, tally 5-8
Policy, warranty and repair 8-3
Port Enabled option 5-8
Port Type, selecting 3-7, 5-8
Power consumption
specification 7-2
status 5-3
Preview, selecting 4-8
Proc Amps
black offset, adjusting 4-3
CB gain, adjusting 4-2
chroma gain, adjusting 4-2
Enable checkbox 5-12
outputs, configuring 5-12
overview 4-2, 5-12
parameters 5-12
reset button 4-3
resetting 5-12
tab 4-2
video gain, adjusting 4-2
Product
features 1-2
information, read-only 5-4
overview 1-2
Program Select option 5-14, 5-15
Protocol
GVG M-2100 6-2
remote control configuration 3-7, 3-8
serial 5-8, 6-1
Protocol/Version command 6-4

R

R1-MDK rear module 2-5
R2-MDK rear module 2-5
RAM Available 5-3
Rate
transition, selecting 3-19, 4-8, 5-15, 5-16
Read-only information
hardware 5-3
product 5-4
signal 5-2
Rear module
BKGD A connector, location 2-7
BKGD B connector, location 2-7
cabling 2-7
cabling, ethernet 2-9
cabling, serial 2-8
ethernet port, location 2-7
GPI ports, location 2-7
installing 2-5
key alpha connector, location 2-7
Key connector, location 2-7
output connectors, location 2-7
reference connector, location 2-7
serial port, location 2-7
status in DashBoard 5-4
tally connections 2-10
Rear modules
DFR-8310 series frames 2-5
DFR-8321 series frames 2-5
types used 2-5
REF STAT LED 2-4
Reference
BNC connector, rear module 2-7

configuration 3-2
format, status 5-2
input selection 5-5
JP7, setting 2-3
output format, selecting 5-5
termination 2-3
Reference Format 5-2
Reference Setup 5-5
Reference Status 5-2
Reference termination, J7 2-3
Remaining Time Display command 6-3
Remote control
baud rate, selecting 3-8
communication type, selecting 3-7
configuring 3-7, 3-8
data bits, selecting 3-8
parity, selecting 3-8
protocol, selecting a 3-7, 3-8
stop bits, selecting 3-8
Remote Control tab 3-7, 3-8
Repair and warranty policy 8-3
Reset
menu parameters 3-14
Proc Amps 4-3
Return Loss
input, specification 7-2
output, specification 7-2
Rise and Fall Time, specification 7-2
RS-232 communication 3-7
RS-422 communication 3-7

S

Select Next Transition Type command 6-2
Select Transition Rate command 6-2
Select Wipe Patterns command 6-4
Selecting
reference input 3-2
video format 3-2
Self key 4-4
Serial
Bit Rate 5-8
cabling 2-8
communication setup 3-7, 5-8, 5-9
Data Bits 5-9
Parity 5-9
Port Enabled option 5-8
Port Type option 5-8
port, pin assignment 2-8
port, rear module 2-7
Protocol option 5-8
Stop Bits 5-9
Serial digital inputs, specifications 7-2
Serial digital outputs, specifications 7-2
Serial number 5-4
Serial Protocols
emulation commands 6-1
selecting in DashBoard 5-8
Setup
ethernet connection 3-9
key 4-4
transitions 4-7
Shaped, key 5-13
Signal flow diagram 1-3
Signal information, read-only 5-2
Signal Level, specification 7-2
Signal Loss Alarm, setup 3-5, 5-6
Signal status, alpha 5-2
Signal timing 3-15
Slot combination
DFR-8321 frames 2-6
SMPTE standards 7-2
Software upgrades 3-20
Specifications
overview 7-2
serial digital video inputs 7-2
serial digital video outputs 7-2
SMPTE standards 7-2
Start Transition command 6-2
Static discharge 1-5, 2-2
Static, ethernet setup 3-9
Status Menus, DashBoard 5-2
Stop Bits, selecting 3-8, 5-9
Stop Ongoing Transition command 6-3
Subnet Mask Address 3-9, 5-9
SW1 button, location 2-3
System Configuration command 6-3
System Status command 6-3

T

Tab
Audio 5-6
Load/Save 5-11
On Air Control 4-7
Personality 3-15
personality 3-19, 4-8
Remote Control Configure 3-7, 3-8
Take Crosspoint command 6-3
Take-Fade transition 3-18, 4-8
Tally
communication setup 3-12
configuration 3-10
function 5-8
overview 3-10
polarity 5-8
rear module connections 2-10
Tally Alpha 5-8
Tally Key 5-8
Tally Setup Menu 5-8
Terms, documentation 1-4
Timing
BKGD A, status in DashBoard 5-3
BKGD B, status in DashBoard 5-3
Key, status in DashBoard 5-3
outputs, status in DashBoard 5-3

signal 3-15
Transition buttons, configuring 3-15
Transition Rate Control option 5-15
Transition Status command 6-3
Transitions
auto button, configuring 4-9
auto trans type, selecting 3-18, 4-8
auto, performing 4-9
background program, selecting 4-7
background transition rate 3-19, 4-8
buttons, configuring 3-15, 4-8
configuring 3-15
cut button, configuring 4-8
cut, performing 4-9
fade to black, performing 4-10
fade-fade 3-18, 4-8
fade-take 3-19, 4-8
mix 3-18, 4-8
multiple, cut 4-9
overview 4-7
preview output, selecting 4-8
take-fade 3-18, 4-8
Transparency, adjusting 4-5, 5-13
Trigger
edge 5-7
GPIs 5-7
level 5-7
Troubleshooting 8-2
Type, key 4-4

U

Unshaped, key 5-13
Upgrades, software 3-20
Upload software, how to 3-20

V

Video
configuration menus, DashBoard 5-5
format, configuration 3-2
gain, adjusting 4-2, 5-12
inputs, specifications 7-2
outputs, specifications 7-2
Video Tab 3-2
Voltage status 5-3

W

Warranty and repair policy 8-3

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

Ross Video Part Number: 111MLDR-004-04