MDK-111A-Lite

Multi-Definition Digital Keyer
Owner’s Manual
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 appareil numerique de la classe “A” est conforme a la norme NMB-003 du Canada.

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

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

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

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

Environmental Information

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

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

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

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

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

### Introduction

<table>
<thead>
<tr>
<th>Topic</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>In This Chapter</td>
<td>1-1</td>
</tr>
<tr>
<td>A Word of Thanks</td>
<td>1-1</td>
</tr>
<tr>
<td>Overview</td>
<td>1-2</td>
</tr>
<tr>
<td>Features</td>
<td>1-2</td>
</tr>
<tr>
<td>Functional Block Diagrams</td>
<td>1-3</td>
</tr>
<tr>
<td>Documentation Terms and Conventions</td>
<td>1-4</td>
</tr>
</tbody>
</table>

### Installation

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

### Configuration

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

- **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
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.

![MDK-111A-Lite Components](image)

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).

     ![Pin Position](image)

     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

<table>
<thead>
<tr>
<th>LED</th>
<th>Color</th>
<th>Display and Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERROR/OK</td>
<td>Green</td>
<td>When this LED is green, the card is in normal operation with no errors.</td>
</tr>
<tr>
<td></td>
<td>Red</td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>Off</td>
<td>When this LED is off, there is no power to the card.</td>
</tr>
<tr>
<td>IN1 BKGD A STAT</td>
<td>Green</td>
<td>When this LED is green, the BKGD A video input on BNC 3 is valid.</td>
</tr>
<tr>
<td></td>
<td>Red</td>
<td>When this LED is red, the BKGD A input on BNC 3 is not present or is invalid.</td>
</tr>
<tr>
<td>IN2 BKGD B STAT</td>
<td>Green</td>
<td>When this LED is green, the BKGD B video input on BNC 1 is valid.</td>
</tr>
<tr>
<td></td>
<td>Red</td>
<td>When this LED is red, the BKGD B input on BNC 1 is not present or is invalid.</td>
</tr>
<tr>
<td>IN3 KEY VIDEO STAT</td>
<td>Green</td>
<td>When this LED is green, the Key Video input on BNC 2 is valid.</td>
</tr>
<tr>
<td></td>
<td>Red</td>
<td>When this LED is red, the Key Video input on BNC 2 is not present or is invalid.</td>
</tr>
<tr>
<td>IN4 KEY ALPHA STAT</td>
<td>Green</td>
<td>When this LED is green, the Key Alpha video input on BNC 4 is valid.</td>
</tr>
<tr>
<td></td>
<td>Red</td>
<td>When this LED is red, the Key Alpha video input on BNC 4 is not present or is invalid.</td>
</tr>
<tr>
<td>REF STAT</td>
<td>Green</td>
<td>When this LED is green, the reference signal is valid.</td>
</tr>
<tr>
<td></td>
<td>Red</td>
<td>When this LED is red, the reference signal is not present or is invalid.</td>
</tr>
</tbody>
</table>
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.

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>
<thead>
<tr>
<th>RJ45 Pin</th>
<th>RS-232</th>
<th>RS-422</th>
<th>RS-422 Null</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>n/c</td>
<td>Tx+</td>
<td>Rx+</td>
</tr>
<tr>
<td>2</td>
<td>Rx</td>
<td>Tx-</td>
<td>Rx-</td>
</tr>
<tr>
<td>3</td>
<td>Tx</td>
<td>Rx+</td>
<td>Tx+</td>
</tr>
<tr>
<td>4</td>
<td>+12V</td>
<td>+12V</td>
<td>+12V</td>
</tr>
<tr>
<td>5</td>
<td>+12V</td>
<td>+12V</td>
<td>+12V</td>
</tr>
<tr>
<td>6</td>
<td>n/c</td>
<td>Rx-</td>
<td>Tx-</td>
</tr>
<tr>
<td>7</td>
<td>GND</td>
<td>GND</td>
<td>GND</td>
</tr>
<tr>
<td>8</td>
<td>GND</td>
<td>GND</td>
<td>GND</td>
</tr>
</tbody>
</table>

a. Two pins are reserved for +12V to provide power to a handheld 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](image)
![Figure 2.7 8320AR-033 GPI Connections](image)

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>
<thead>
<tr>
<th>Reference</th>
<th>480i 59.94</th>
<th>720p 59.94</th>
<th>1080i 59.94</th>
<th>576i 50Hz</th>
<th>720p 50Hz</th>
<th>1080i 50Hz</th>
<th>1080pSF 23.98</th>
<th>1080pSF 24Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td>480i 59.94Hz</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>720p 59.94Hz</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1080i 59.94Hz</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>576i 50Hz</td>
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<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>720p 50Hz</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<td>1080i 50Hz</td>
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<td></td>
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<tr>
<td>1080pSF 23.98Hz</td>
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<td>✓</td>
<td></td>
</tr>
<tr>
<td>1080pSF 24Hz</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
</tbody>
</table>

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.
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 selecting 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.
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, an 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 GPs:

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. 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 GPs.

**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.

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**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:

- **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.

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

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.
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.

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**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.

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.

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:

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**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.*

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- 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.

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.

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:

---

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.
• 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.

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.

   • 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>
<thead>
<tr>
<th>Tab Title</th>
<th>Item</th>
<th>Parameters</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Reference Status</td>
<td>Green - OK</td>
<td>Valid reference signal</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Red - No reference</td>
<td>No signal detected on selected reference input</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Red - Reference Unlocked</td>
<td>Signal detected, but not locked (or lock lost)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Red - Invalid Reference</td>
<td>Signal detected, but incompatible with the current video mode</td>
</tr>
<tr>
<td></td>
<td>Reference Format</td>
<td>Unknown</td>
<td>No signal present, or format not recognized</td>
</tr>
<tr>
<td></td>
<td></td>
<td>480i 59.94</td>
<td>Composite NTSC reference detected</td>
</tr>
<tr>
<td></td>
<td></td>
<td>720p 59.94</td>
<td>720p, tri-level sync, detected at 59.94Hz</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1080i 59.94</td>
<td>1080i, tri-level sync, detected at 59.94Hz</td>
</tr>
<tr>
<td></td>
<td>Bkgd A Status</td>
<td>Green - OK</td>
<td>Normal operation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Green - Alarm Suppressed</td>
<td>An alarm condition exists but has been silenced</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Orange - Invalid Signal</td>
<td>Signal detected but format not recognized</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Orange - Incompatible format</td>
<td>Signal present but format does not match operating mode of card</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Red - No signal</td>
<td>No signal present on the input</td>
</tr>
<tr>
<td></td>
<td>Bkgd B Status</td>
<td>Same parameters as above</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Key Status</td>
<td>Same parameters as above</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Alpha Status</td>
<td>Same parameters as above</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bypass Relay</td>
<td>Green - Normal (not in bypass)</td>
<td>Video is being routed through the card; keyers may be active</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Red - Active (in bypass)</td>
<td>BKGD A is on Output 1 (BNC 5)</td>
</tr>
<tr>
<td></td>
<td>Timing Display</td>
<td>Relative to Reference</td>
<td>The Timing fields display the input signal timing values relative to the selected analog reference</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Input to Output</td>
<td>The Timing fields display the input signal timing values relative to the SDI output of the card</td>
</tr>
</tbody>
</table>
Table 5.2 summarizes the read-only information in the Hardware tab.

<table>
<thead>
<tr>
<th>Tab Title</th>
<th>Item</th>
<th>Parameters</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardware (Read-only)</td>
<td>Voltage (V)</td>
<td>#</td>
<td>Supply Voltage, in Volts</td>
</tr>
<tr>
<td></td>
<td>Current (mA)</td>
<td>#</td>
<td>Current consumption of card in milliAmperes</td>
</tr>
<tr>
<td></td>
<td>Power (W)</td>
<td>#</td>
<td>Power consumption of card in Watts</td>
</tr>
<tr>
<td></td>
<td>FPGA Temp</td>
<td>##C° / ##F</td>
<td>FPGA core temperature</td>
</tr>
<tr>
<td></td>
<td>CPU Usage</td>
<td>x.xx/y.yy/z.zz</td>
<td>CPU Load average</td>
</tr>
<tr>
<td></td>
<td>RAM Available</td>
<td>##/###</td>
<td>Memory Used / Total Memory</td>
</tr>
</tbody>
</table>

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>
<thead>
<tr>
<th>Tab Title</th>
<th>Item</th>
<th>Parameters</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product (Read-only)</td>
<td>Product</td>
<td>MDK-111A-Lite</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Supplier</td>
<td>Ross Video Ltd.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Board Rev</td>
<td>##</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Serial Number</td>
<td>#######</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rear Module</td>
<td>#</td>
<td>Type of Rear Module installed in this slot</td>
</tr>
<tr>
<td></td>
<td>Software Rev</td>
<td>##.## build ###</td>
<td>Indicates the software and build versions</td>
</tr>
<tr>
<td></td>
<td>Firmware Rev</td>
<td>##.##</td>
<td>Indicates the FPGA version number</td>
</tr>
</tbody>
</table>
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>
<thead>
<tr>
<th>Option</th>
<th>Item</th>
<th>Parameters</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reference Setup</td>
<td>Reference Input</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Frame 1*</td>
<td>Frame 1*</td>
<td>The card is using Frame Reference 1</td>
</tr>
<tr>
<td></td>
<td>Frame 2</td>
<td>Frame 2</td>
<td>The card is using Frame Reference 2</td>
</tr>
<tr>
<td></td>
<td>External</td>
<td>External</td>
<td>The card is using the reference on BNC 9</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Output Format</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>480i 59.94</td>
<td>480i 59.94</td>
<td>The format of the output signal of the card</td>
</tr>
<tr>
<td></td>
<td>720p 59.94</td>
<td>720p 59.94</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1080i 59.94</td>
<td>1080i 59.94</td>
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<tr>
<td></td>
<td>576i 50</td>
<td>576i 50</td>
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<tr>
<td></td>
<td>720p 50</td>
<td>720p 50</td>
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<td></td>
<td>1080i 50</td>
<td>1080i 50</td>
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<td>1080PsF 24</td>
<td>1080PsF 24</td>
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<td>1080PsF 23.98</td>
<td>1080PsF 23.98</td>
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<td></td>
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</tr>
<tr>
<td>Output Setup</td>
<td>Output 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Program*</td>
<td>Program*</td>
<td>Output 1 displays the program output</td>
</tr>
<tr>
<td></td>
<td>Preview</td>
<td>Preview</td>
<td>Output 1 displays the preview output</td>
</tr>
<tr>
<td></td>
<td>Clean</td>
<td>Clean</td>
<td>Output 1 displays the clean feed output</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Output 1 (Dual Mixer mode)</td>
<td>Program 1*</td>
<td>Output 1 displays the Program 1 output</td>
</tr>
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</tbody>
</table>
Audio Configuration

Table 5.5 summarizes the Audio tab options available in DashBoard.

Table 5.5  Audio Options

<table>
<thead>
<tr>
<th>Menu Title</th>
<th>Item</th>
<th>Parameters</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audio</td>
<td>Audio Mixing</td>
<td>Enabled*</td>
<td>Audio follows video; use for normal PCM audio</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Disabled</td>
<td>Audio is hard-cut during transition; use for non-PCM audio such as Dolby®</td>
</tr>
</tbody>
</table>

**Table 5.4  Video Tab Options**

<table>
<thead>
<tr>
<th>Option</th>
<th>Item</th>
<th>Parameters</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output Setup</td>
<td>Clip at Black</td>
<td>Selected</td>
<td>SuperBlack is clipped on all outputs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cleared*</td>
<td>SuperBlack is not clipped</td>
</tr>
<tr>
<td></td>
<td>Clip at White</td>
<td>Selected</td>
<td>SuperWhite is clipped on all outputs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cleared*</td>
<td>SuperWhite is not clipped</td>
</tr>
<tr>
<td></td>
<td>NTSC Pass Line 21</td>
<td>Selected</td>
<td>Any Line 21 Vertical Blanking Interval (VBI) Closed Captioning (CC) is passed to the output</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cleared*</td>
<td>Any Line 21 VBI CC is affected by transitions</td>
</tr>
<tr>
<td>Signal Loss Alarm</td>
<td>Bkgd A</td>
<td>Selected*</td>
<td>The Signal tab reports the status of BKGD A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cleared</td>
<td>The Signal tab does not report the status of BKGD A</td>
</tr>
<tr>
<td></td>
<td>Bkgd B</td>
<td>Same parameters as above</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Key (Bkgd C)</td>
<td>Same parameters as above</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Alpha (Bkgd D)</td>
<td>Same parameters as above</td>
<td></td>
</tr>
</tbody>
</table>
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 |
|----------------|------------------|--------------------------------|
| **GPI #** | **Function** | **Parameter** | **Description** |
| | 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 starts the function. |
| | Low/Falling* | | Sets the polarity of the edge or level trigger. In the case of 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>
<thead>
<tr>
<th>Menu Title</th>
<th>Item</th>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tally # Function</td>
<td>Tally A</td>
<td>Configures the selected GPI/O port as an output and reflects the on-air status of BKGD A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tally B</td>
<td>Configures the GPI/O port as an output and reflects the on-air status of BKGD B</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tally Key (Tally C)</td>
<td>Configures the GPI/O port as an output and reflects the on-air status of the Key video</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tally Alpha (Tally D)</td>
<td>Configures the GPI/O port as an output and reflects the on-air status of the Key Alpha</td>
<td></td>
</tr>
<tr>
<td></td>
<td>None*</td>
<td>The GPI/O port is not configured</td>
<td></td>
</tr>
<tr>
<td>Polarity</td>
<td>High/Rising</td>
<td>When asserted, the Tally output is driven High</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Low/Falling*</td>
<td>When asserted, the Tally output is driven Low</td>
<td></td>
</tr>
</tbody>
</table>

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

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

Table 5.9 Ethernet Tab Items

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

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

---

**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

**Table 5.9 Ethernet Tab Items**

<table>
<thead>
<tr>
<th>Menu Title</th>
<th>Item</th>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ethernet Status</td>
<td>OK</td>
<td>Ethernet communications for the card are valid</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Link Down</td>
<td>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.</td>
</tr>
</tbody>
</table>
|              |            | 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 |
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 5.10  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. |
| 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

<table>
<thead>
<tr>
<th>Menu Title</th>
<th>Item</th>
<th>Parameters</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enable</td>
<td>Selected</td>
<td>Enables the adjustment of Proc Amp settings for the selected output</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cleared*</td>
<td>The Proc Amp settings for the selected output are inactive</td>
<td></td>
</tr>
<tr>
<td>Out #</td>
<td>Video Gain (%)</td>
<td>0 to 200&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Adjusts the Chroma and Luma Gain values simultaneously</td>
</tr>
</tbody>
</table>
|            | Chroma Gain (%) | 0 to 200<sup>b</sup> | 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<sup>c</sup> | 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<sup>d</sup> | 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 |

---

<sup>a.</sup> The default value is 100.  
<sup>b.</sup> The default value is 100.  
<sup>c.</sup> The default value is 100.  
<sup>d.</sup> The default value is 0.
### Key Setup Menus

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

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

\(^a\) 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.

### Background Control

#### 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>
<thead>
<tr>
<th>Menu Title</th>
<th>Item</th>
<th>Parameters</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program</td>
<td>Black</td>
<td></td>
<td>Assigns Black as the program output</td>
</tr>
<tr>
<td></td>
<td>Bkgd A</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bkgd B</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Key</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Alpha</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preview</td>
<td>Black</td>
<td></td>
<td>Assigns Black as the preview output</td>
</tr>
<tr>
<td></td>
<td>Bkgd A</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bkgd B</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Key</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Alpha</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bkgd Cut</td>
<td>Cut</td>
<td>Performs an instantaneous transition between the BKGD video sources</td>
</tr>
<tr>
<td></td>
<td>Bkgd Auto</td>
<td>Auto</td>
<td>Performs the transition, as specified in the <strong>Auto Trans Type</strong> menu, between the BKGD video sources at a specified rate</td>
</tr>
</tbody>
</table>

### Keyer Control

#### Key Status (read-only)

<table>
<thead>
<tr>
<th>Item</th>
<th>Parameters</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFF_AIR</td>
<td></td>
<td>The key is not on-air (text is set in gray)</td>
</tr>
<tr>
<td>ON_AIR</td>
<td></td>
<td>The key is on-air (text is set in red)</td>
</tr>
</tbody>
</table>

#### Key Cut

<table>
<thead>
<tr>
<th>Item</th>
<th>Parameters</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cut</td>
<td></td>
<td>Performs an instantaneous transition to take the Key on-air or off-air</td>
</tr>
</tbody>
</table>

#### Key Auto

<table>
<thead>
<tr>
<th>Item</th>
<th>Parameters</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auto</td>
<td></td>
<td>Performs a dissolve to transition the key on or off air</td>
</tr>
</tbody>
</table>

### Multiple Transition (using Bkgd rate)

#### Cut Both

<table>
<thead>
<tr>
<th>Item</th>
<th>Parameters</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cut</td>
<td></td>
<td>Performs a cut between both the BKGD sources and the Key sources simultaneously</td>
</tr>
</tbody>
</table>

#### Auto Both

<table>
<thead>
<tr>
<th>Item</th>
<th>Parameters</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auto</td>
<td></td>
<td>Performs an auto transition between both the BKGD sources and the Key sources simultaneously</td>
</tr>
</tbody>
</table>

#### Fade To Black

<table>
<thead>
<tr>
<th>Item</th>
<th>Parameters</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fade Down*</td>
<td></td>
<td>The Program output fades to black (both the BKGD and the Key)</td>
</tr>
<tr>
<td>Fade Up</td>
<td></td>
<td>The Program output fades from black back to its normal state; both the BKGD and Key are visible (if on-air)</td>
</tr>
</tbody>
</table>
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 5.14 On Air Control Options

<table>
<thead>
<tr>
<th>Menu Title</th>
<th>Item</th>
<th>Parameters</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transition Rates</td>
<td>Auto Trans Type</td>
<td>Mix*</td>
<td>A Video Cross Fade is performed for BKGD transitions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fade-Fade</td>
<td>A Video V-Fade, through black, is performed for BKGD transitions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Take-Fade</td>
<td>A cut to black is performed then a fade up to the next BKGD source</td>
</tr>
<tr>
<td></td>
<td>Bkgd Rate</td>
<td>Slow</td>
<td>Sets the BKGD transition rate to Slow</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Medium*</td>
<td>Sets the BKGD transition rate to Medium</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fast</td>
<td>Sets the BKGD transition rate to Fast</td>
</tr>
<tr>
<td>Key Rate</td>
<td>Same parameters as above(^a)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Slow Rate</td>
<td>1 to 999(^b)</td>
<td>Defines the Slow Rate in frames</td>
<td></td>
</tr>
<tr>
<td>Medium Rate</td>
<td>1 to 999(^c)</td>
<td>Defines the Medium Rate in frames</td>
<td></td>
</tr>
<tr>
<td>Fast Rate</td>
<td>1 to 999(^d)</td>
<td>Defines the Fast Rate in frames</td>
<td></td>
</tr>
</tbody>
</table>

---

\(a\) 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.

### Table 5.15 On Air Control Dual Mixer Options

<table>
<thead>
<tr>
<th>Menu Title</th>
<th>Item</th>
<th>Parameters</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mixer # Program</td>
<td>Black</td>
<td>Assigns Black as the program output</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bkgd A*</td>
<td>Assigns the selected input source as the program output</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bkgd B</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bkgd C</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bkgd D</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preview</td>
<td>Black</td>
<td>Assigns Black as the preview output</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bkgd A</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bkgd B*</td>
<td>Assigns the selected input source as the preview output</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bkgd C</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bkgd D</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Table 5.15 On Air Control Dual Mixer Options

<table>
<thead>
<tr>
<th>Menu Title</th>
<th>Item</th>
<th>Parameters</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bkgd Cut</td>
<td>Cut</td>
<td></td>
<td>Performs an instantaneous transition between the BKGD video sources</td>
</tr>
<tr>
<td>Bkgd Auto</td>
<td>Auto</td>
<td></td>
<td>Performs the transition, as specified in the <strong>Auto Trans Type</strong> menu, between the BKGD video sources at a specified rate</td>
</tr>
<tr>
<td>Auto Trans Type</td>
<td>Mix*</td>
<td></td>
<td>A Video Cross Fade is performed for BKGD transitions</td>
</tr>
<tr>
<td></td>
<td>Fade-Fade</td>
<td></td>
<td>A Video V-Fade, through black, is performed for BKGD transitions</td>
</tr>
<tr>
<td></td>
<td>Take-Fade</td>
<td></td>
<td>A cut to black is performed then a fade up to the next BKGD source</td>
</tr>
<tr>
<td></td>
<td>Fade-Take</td>
<td></td>
<td>The BKGD fades to black then performs a cut to the next BKGD source</td>
</tr>
<tr>
<td>Bkgd Rate</td>
<td>Slow</td>
<td></td>
<td>Sets the BKGD transition rate to Slow</td>
</tr>
<tr>
<td></td>
<td>Medium*</td>
<td></td>
<td>Sets the BKGD transition rate to Medium</td>
</tr>
<tr>
<td></td>
<td>Fast</td>
<td></td>
<td>Sets the BKGD transition rate to Fast</td>
</tr>
<tr>
<td>Fade to Black</td>
<td>Fade Down*</td>
<td></td>
<td>The Program output fades to black (both the BKGD and the Key)</td>
</tr>
<tr>
<td></td>
<td>Fade Up</td>
<td></td>
<td>The Program output fades from black back to its normal state; both the BKGD and Key are visible (if on-air)</td>
</tr>
</tbody>
</table>

### Transition Rates

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slow Rate</td>
<td>1 to 999&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Defines the Slow Rate in frames</td>
</tr>
<tr>
<td>Medium Rate</td>
<td>1 to 999&lt;sup&gt;b&lt;/sup&gt;</td>
<td>Defines the Medium Rate in frames</td>
</tr>
<tr>
<td>Fast Rate</td>
<td>1 to 999&lt;sup&gt;c&lt;/sup&gt;</td>
<td>Defines the Fast Rate in frames</td>
</tr>
</tbody>
</table>

---

<sup>a</sup>  The default value is 60 frames (2 seconds) when using 59.94Hz formats. When using 50Hz formats, the default value is 50 frames.

<sup>b</sup>  The default value is 30 frames (1 second) when using 59.94Hz formats. When using 50Hz formats, the default value is 25 frames.

<sup>c</sup>  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>
<thead>
<tr>
<th>Table 6.1 GVG M-2100 Communication Settings</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Setting</strong></td>
</tr>
<tr>
<td>Baud</td>
</tr>
<tr>
<td>Data Bits</td>
</tr>
<tr>
<td>Parity</td>
</tr>
<tr>
<td>Stop Bits</td>
</tr>
</tbody>
</table>

Emulation Commands

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

<table>
<thead>
<tr>
<th>Table 6.2 Supported GVG M-2100 Emulation Commands</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Emulation Command</strong></td>
</tr>
<tr>
<td>Next Transition (0x01, TX_NEXT)</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Start Transition (0x02, TX_START)</td>
</tr>
<tr>
<td>Select Transition Type (0x03, TX_TYPE)</td>
</tr>
<tr>
<td>Select Transition Rate (0x04, TX_RATE)</td>
</tr>
</tbody>
</table>
### Table 6.2 Supported GVG M-2100 Emulation Commands

<table>
<thead>
<tr>
<th>Emulation Command</th>
<th>Supported</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transition Status (0x05, TX_STAT)</td>
<td></td>
<td>• Not currently supported. The card always returns 03.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Audio is quiescent (01).</td>
</tr>
<tr>
<td>Transition Status (0x15, TX_STAT2)</td>
<td></td>
<td>• Not currently supported. The card always returns 03.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Audio is silent (01).</td>
</tr>
<tr>
<td>Crosspoint Take (0x06, XPT_TAKE)</td>
<td>✓</td>
<td>• <strong>Bus Select</strong> Bit values 2-15 are ignored/reserved.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• <strong>Crosspoint</strong> byte values 01-16 designate the crosspoint number.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• <strong>Audio Only Crosspoint</strong> byte value is not supported.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Hot cuts (XPT-Take, 0x06) are not allowed when a transition is in progress.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Refer to Table 6.3 for details on crosspoint mapping.</td>
</tr>
<tr>
<td>Break Away (0x07, BREAK_AWAY)</td>
<td></td>
<td>Not currently supported.</td>
</tr>
<tr>
<td>Audio Over Select (0x08, OVER_SELECT)</td>
<td></td>
<td>Not currently supported.</td>
</tr>
<tr>
<td>Audio Over to Main Ratio (0x09, OVER_RATIO)</td>
<td></td>
<td>Not currently supported.</td>
</tr>
<tr>
<td>Key Modifier (0x0A, KEY_MOD)</td>
<td>✓</td>
<td><strong>Keyer Select</strong> byte value: Bit 4 is not supported</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Keyer Modifier</strong> byte value is supported as follows:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Bit 0 where 0 = Self, 1 = External</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Bit 1 is not supported</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Bit 2-4 is ignored</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>SqueezeBack</strong> byte value is not supported.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not recommended when operating in Dual Mixer mode</td>
</tr>
<tr>
<td>Key Enable (0x0B, KEY_ENABLE)</td>
<td>✓</td>
<td>Bit 4 is not currently supported.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not recommended when operating in Dual Mixer mode</td>
</tr>
<tr>
<td>Key Status (0x0C, KEY_STAT)</td>
<td>✓</td>
<td>Bit 4 is not currently supported.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not recommended when operating in Dual Mixer mode</td>
</tr>
<tr>
<td>Automation Enable Status (0x0D, AUTO_STAT)</td>
<td>✓</td>
<td>This command sends an Enabled reply to a Status query.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>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.</td>
</tr>
<tr>
<td>Stop Ongoing Transition (0x0E, ALL_STOP)</td>
<td></td>
<td>Not currently supported.</td>
</tr>
<tr>
<td>Current Preroll Time (0x0F, PREROLL)</td>
<td></td>
<td>Not currently supported.</td>
</tr>
<tr>
<td>Configuration Preroll Time (0x10, CONFIG_PREROLL)</td>
<td></td>
<td>Not currently supported.</td>
</tr>
<tr>
<td>Remaining Time Display (0x11, REMAINING_TIME)</td>
<td></td>
<td>Not currently supported.</td>
</tr>
<tr>
<td>System Status (0x12, SYSTEM_STAT)</td>
<td>✓</td>
<td>This reply returns only a value of 0, indicating an “OK” condition.</td>
</tr>
<tr>
<td>System Configuration (0x13, SYSTEM_CONFIG)</td>
<td>✓</td>
<td>This reply returns only a value of 0, indicating an “OK” condition.</td>
</tr>
</tbody>
</table>
### Supported GVG M-2100 Emulation Commands

<table>
<thead>
<tr>
<th>Emulation Command</th>
<th>Supported</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crosspoint Audio Mode (0x14, XPT_AUDIO_MODE)</td>
<td></td>
<td>Not currently supported.</td>
</tr>
<tr>
<td>GPI Button Operation (0x17, GPI)</td>
<td></td>
<td>Not currently supported.</td>
</tr>
<tr>
<td>Select Wipe Patterns (0x18, WIPE_SEL)</td>
<td></td>
<td>Not currently supported.</td>
</tr>
<tr>
<td>Error Status (0x20, ERROR_STAT)</td>
<td>✓</td>
<td>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.</td>
</tr>
<tr>
<td>Protocol/Version (0x21, PROTO_VER)</td>
<td>✓</td>
<td>Protocol version is set to 3.0.</td>
</tr>
</tbody>
</table>

### 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.

| 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

<table>
<thead>
<tr>
<th>Category</th>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serial Digital Video Inputs</td>
<td>Number of Inputs</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>SDI Data Rates and SMPTE Standards Accommodated</td>
<td>SMPTE 259M (270Mbps) SMPTE 292M (1.485 Gbps)</td>
</tr>
<tr>
<td></td>
<td>Impedance</td>
<td>75ohms</td>
</tr>
<tr>
<td></td>
<td>Return Loss</td>
<td>&lt;-15dB, 0 to 1.5GHz</td>
</tr>
<tr>
<td></td>
<td>BKGD A Equalization</td>
<td>80m</td>
</tr>
<tr>
<td></td>
<td>BKGD B Equalization</td>
<td>80m</td>
</tr>
<tr>
<td></td>
<td>Key Video Equalization</td>
<td>80m</td>
</tr>
<tr>
<td></td>
<td>Key Alpha Equalization</td>
<td>80m</td>
</tr>
<tr>
<td>Serial Digital Video Outputs</td>
<td>Number of Outputs</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Impedance</td>
<td>75ohms</td>
</tr>
<tr>
<td></td>
<td>Return Loss</td>
<td>OUT 1: -15dB, 0 to 1.5GHz</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OUT 2-4: &lt;-15dB, 0 to 1.5GHz</td>
</tr>
<tr>
<td></td>
<td>Signal Level</td>
<td>800mV +/-10%</td>
</tr>
<tr>
<td></td>
<td>DC Offset</td>
<td>0 +/-50mV</td>
</tr>
<tr>
<td></td>
<td>Rise and Fall Time</td>
<td>SD: 900ps typical HD: 150ps typical</td>
</tr>
<tr>
<td></td>
<td>Overshoot</td>
<td>&lt;10% typical</td>
</tr>
<tr>
<td>Other</td>
<td>RS232 Serial Interface Maximum Cable Length</td>
<td>10m</td>
</tr>
<tr>
<td></td>
<td>RS422/485 Serial Interface Maximum Cable Length</td>
<td>300m</td>
</tr>
<tr>
<td></td>
<td>Power Consumption</td>
<td>11W</td>
</tr>
</tbody>
</table>
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
croma 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
counting 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 .......................... 3-9
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
  configuration ........................................ 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 ................................ 6-2
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
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-032 ....................... 2-5
MDK-111A-M
  audio mixing feature ............................... 3-6
  rear module, 8310AR-033 ....................... 2-5
  rear module, 8320AR-032 ....................... 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 ....................................................... 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
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
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
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
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