



---

**MC1-MK Installation Guide**

# Thank You for Choosing Ross

You've made a great choice. We expect you will be very happy with your purchase of Ross Technology. Our mission is to:

1. Provide a Superior Customer Experience
  - offer the best product quality and support
2. Make Cool Practical Technology
  - develop great products that customers love

Ross has become well known for the Ross Video Code of Ethics. It guides our interactions and empowers our employees. I hope you enjoy reading it below.

If anything at all with your Ross experience does not live up to your expectations be sure to reach out to us at [solutions@rossvideo.com](mailto:solutions@rossvideo.com).



David Ross  
CEO, Ross Video  
[dross@rossvideo.com](mailto:dross@rossvideo.com)

## Ross Video Code of Ethics

Any company is the sum total of the people that make things happen. At Ross, our employees are a special group. Our employees truly care about doing a great job and delivering a high quality customer experience every day. This code of ethics hangs on the wall of all Ross Video locations to guide our behavior:

1. We will always act in our customers' best interest.
2. We will do our best to understand our customers' requirements.
3. We will not ship crap.
4. We will be great to work with.
5. We will do something extra for our customers, as an apology, when something big goes wrong and it's our fault.
6. We will keep our promises.
7. We will treat the competition with respect.
8. We will cooperate with and help other friendly companies.
9. We will go above and beyond in times of crisis. *If there's no one to authorize the required action in times of company or customer crisis - do what you know in your heart is right. (You may rent helicopters if necessary.)*

# MC1-MK · Installation Guide

- Ross Part Number: **8229DR-104-15**
- Release Date: October 14, 2020.

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

## Copyright

©2020 Ross Video Limited, Ross®, and any related marks are trademarks or registered trademarks of Ross Video Limited. All other trademarks are the property of their respective companies. PATENTS ISSUED and PENDING. All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, mechanical, photocopying, recording or otherwise, without the prior written permission of Ross Video. While every precaution has been taken in the preparation of this document, Ross Video assumes no responsibility for errors or omissions. Neither is any liability assumed for damages resulting from the use of the information contained herein.

## Patents

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

## Notice

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

## Safety Notices

Refer to the “**Important Regulatory and Safety Notices**” document that accompanied your product.

## Statement of Compliance

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

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

## EMC Notices

### US FCC Part 15

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

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

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

---

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

---

#### Canada

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

Cet appareil numérique de la classe “A” est conforme a la norme NMB-003 du Canada.

#### European Union

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



---

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

---

#### Australia/New Zealand

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

#### Korea

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

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

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

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

#### International

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

---

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

---

## Maintenance/User Serviceable Parts

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

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

## Environmental Information

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

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

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



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

## Company Address



### **Ross Video Limited**

8 John Street  
Iroquois, Ontario  
Canada, K0E 1K0

### **Ross Video Incorporated**

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

---

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

Fax: (+1) 613 • 652 • 4425

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

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

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

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

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



# Contents

<b>Introduction</b>	<b>13</b>
Related Publications .....	13
Documentation Conventions .....	13
Interface Elements .....	14
User Entered Text .....	14
Referenced Guides .....	14
Menu Sequences .....	14
Important Instructions .....	14
Contacting Technical Support .....	14
<b>Before You Begin</b>	<b>15</b>
Product Summary .....	15
Functional Overview .....	16
Interfaces .....	16
DashBoard .....	16
MC1-PANEL-16 .....	17
SNMP Monitoring .....	17
Serial Protocols .....	17
<b>Hardware Overview</b>	<b>19</b>
Card Overview .....	19
Card-edge LEDs .....	20
Supported Rear Modules .....	21
8320AR-033 Cabling .....	21
8320AR-055 Cabling .....	21
<b>Getting Started</b>	<b>23</b>
System Integration Example .....	23
Installing the openGear Frame .....	24
Installing the MC1-MK Card .....	24
Power Fail Relay on the Rear Module .....	24
Installing the MC1-PANEL-16 .....	24
Installing the Rack Mount PC .....	24
Installing the Touchscreen Display .....	24
Using DashBoard to Access the MC1-MK .....	24
Device Control .....	25
<b>Physical Installation</b>	<b>27</b>
Before You Begin .....	27
Static Discharge .....	27
Unpacking .....	27
Installing the MC1-MK Card .....	27
<b>Cabling</b>	<b>29</b>
Video Connections .....	29
Input Cabling .....	29
Input Mapping .....	29
Output Cabling .....	29
Output Mapping .....	30
Reference Cabling .....	30

openGear Frame Reference Source .....	30
Local Reference Source .....	31
Ethernet Communications .....	31
Ethernet Cabling for the MC1-MK .....	31
GPI/Tally Setup .....	32
Rear Module Overview .....	32
8320AR-033 Cabling .....	32
8320AR-055 Cabling .....	32
<b>Using DashBoard .....</b>	<b>35</b>
Before You Begin .....	35
Launching DashBoard .....	35
Accessing the Configuration Interface in DashBoard .....	35
<b>Router Setup .....</b>	<b>37</b>
Ross NK Series Router Setup .....	37
Cabling Overview .....	37
Communications Setup .....	38
Ross Ultrix Series Setup .....	39
Cabling Overview .....	39
Communications Setup .....	40
Setup for Third-Party Routers .....	42
Installing the MC1-RTR License Key .....	42
Before You Begin .....	42
Troubleshooting the Protocol Communications .....	42
Specifying the Router Switch Retries .....	43
<b>MC1-MK Configuration .....</b>	<b>45</b>
Ethernet Communication Setup .....	45
Using the 3G Video Mode .....	46
Before You Begin .....	46
Enabling 3G Video Mode .....	46
Selecting the Sources .....	47
Crosspoint Mapping .....	49
Default Crosspoint Mapping .....	49
Specifying the Number of Available Crosspoints .....	49
Output Mapping .....	49
Reserving Crosspoints for Automation Use .....	51
Configuring the Input Signal Timing Display .....	51
Configuring the GPI/Tally Communications .....	51
Configuring a GPIO Program Crosspoint Tally .....	52
Configuring a Pre-roll Time .....	53
Enabling GPIs to Override Take Transitions .....	53
Linear Timecode Setup .....	53
Serial Setup .....	53
GPI Setup .....	54
SqueezeBack Setup .....	55
Specifying the Key Order .....	55
Configuring a Tally for a SqueezeBack .....	56
Configuring GPI Control of SqueezeBacks .....	56
Verifying the GPIO Functions .....	57
Using the Presmaster Protocol for VGPIs .....	58
Assigning a VGPI to a SqueezeBack Preset .....	58
Configuring the Edit Permissions .....	58
Auto Swapping of Program and Preset Buses .....	59



Specifying the Preset Keys Behavior .....	59
Disabling the Fade to Black Button .....	60
Automation Switch Request .....	60
Using Multiple MC1-MK Cards .....	61
Updating the Icons .....	61
Overview of the Graphic Files .....	61
Managing the Graphic Files .....	61
Configuring the Channel Select Buttons .....	61
Notes on Using Multiple MC1-MK Cards .....	63
Channel Ganging .....	63
Before You Begin .....	64
Assigning a Role to the MC1-MK .....	64
Channel Ganging Status .....	65
Master Status .....	65
Remote Status .....	66
Troubleshooting .....	66
Loading the Factory Defaults .....	67
<b>Audio Configuration</b> .....	<b>69</b>
Audio Overview .....	69
Workflow .....	69
Audio Shuffling .....	69
Voice Over and EAS .....	69
Audio Profiles .....	70
Audio Downmixers .....	70
Specifying Embedded Audio Groups .....	70
Audio Shuffling .....	71
Audio Processing .....	72
Downmix Setup .....	73
Overview of the Audio Modes .....	73
LtRt Mode .....	73
LoRo Mode .....	73
Sum Mode .....	74
Configuring a Downmixer .....	74
Voice Over Setup .....	75
Clean Feed Audio Selection .....	76
Setting up the Audio for EAS .....	76
Configuring the Audio Source for EAS .....	77
Setting the EAS Duck and Gain Levels .....	77
Resetting the Audio Gain Level During Transitions .....	78
Audio Transitions during a TAKE .....	78
Creating an Audio Profile .....	78
<b>Configuring the Text Overlay</b> .....	<b>81</b>
Customizing the EAS Text Overlay .....	81
<b>Stand-alone MC1-MK</b> .....	<b>83</b>
Overview .....	83
Stand-alone Branding and Logo Insertion .....	83
Stand-alone Emergency A/B Mixing .....	83
Stand-alone EAS Insertion .....	83
Stand-alone SqueezeBack .....	83
Stand-alone Audio/Voice Over Mixing .....	83
System Integration .....	83
Setup .....	84

Input Cabling .....	84
Communications Setup .....	85
Source Mapping .....	85
Output Mapping .....	85
Crosspoint Mapping .....	86
<b>Software Upgrades .....</b>	<b>87</b>
<b>DashBoard Menus .....</b>	<b>89</b>
Status Tabs .....	89
Signal Tab .....	89
Hardware Tab .....	90
Product Tab .....	91
Video Tab .....	92
Audio Tab .....	93
GPI/Tally Tab .....	94
GPI Configuration .....	94
Tally Configuration .....	95
Remote Control Tab .....	96
Default Values .....	99
Serial Port .....	99
Ethernet Port .....	100
Ethernet Tab .....	100
Video Inputs Tab .....	101
SqueezeBack Tab .....	103
Licenses Tab .....	103
Load/Save Tab .....	103
Loading the Factory Defaults .....	104
Router Status Tab .....	104
NK Router Setup Tab .....	105
Ultrix Router Setup Tab .....	105
Probel Router Setup Tab .....	106
GVG Router Setup Tab .....	107
Audio Tabs .....	108
Voice Over and EAS Tabs .....	108
Audio Shuffle Tab .....	109
Audio Processing Tab .....	109
Audio Profiles Tab .....	109
Downmix Tab .....	110
Presmaster VGPI Tab .....	111
TFT EAS Setup Tab .....	111
Sage EAS Setup Tab .....	113
Personality Tab .....	115
GPIO Override Tab .....	117
Channel Gang Tabs .....	118
Channel Gang Master Tab .....	118
Channel Gang Remote Tab .....	120
<b>Technical Specifications .....</b>	<b>123</b>
SDI Inputs Specifications .....	123
SDI Outputs Specifications .....	123
Maximum Cable Lengths .....	124
Environment .....	124
Power .....	124

<b>Communication Specifications</b>	<b>125</b>
Serial Port .....	125
8320AR-033 Rear Module .....	125
8320AR-055 Rear Module .....	125
LTC Serial Cabling Requirements .....	126
8320AR-033 Rear Module .....	126
8320AR-055 Rear Module .....	126
Ethernet Port .....	126
GPI/Tally Connections .....	127
Tally Connections .....	127
Video Characteristics .....	127
Video Processing .....	127
Output Format Reference Compatibility .....	128
<b>Third-Party Protocols</b>	<b>129</b>
Miranda™ Presmaster Control System Protocol .....	129
Commands .....	129
Automation Switch Request .....	132
Tallies .....	132
Take Command .....	133
GVG Series 7000 Native Protocol .....	134
Probel SW-P-08 Protocol .....	134
Using RossTalk .....	134
Enabling the RossTalk Protocol .....	135
Sending RossTalk Commands .....	135
Supported RossTalk Commands .....	135
<b>Software Licenses</b>	<b>137</b>
BSD .....	137
Dual GPL/Free Type .....	137
GPL .....	137
IJG .....	141
LGPL .....	141
MIT .....	142
zlib .....	142
<b>Service Information</b>	<b>145</b>
Troubleshooting Checklist .....	145
Software Upgrades .....	145
Warranty and Repair Policy .....	145
In Case of Problems .....	146
<b>Glossary</b>	<b>147</b>



# Introduction

This guide covers the installation and configuration of the MC1-MK. The following chapters are included:

- “**Introduction**” summarizes the guide and provides important terms, and conventions.
- “**Before You Begin**” provides general information to keep in mind before installing and configuring your card.
- “**Hardware Overview**” provides a basic introduction to the hardware features including the cabling and monitoring features of the rear module.
- “**Getting Started**” outlines how to display the card interfaces in DashBoard.
- “**Physical Installation**” provides instructions for the physical installation of the card and its rear module into an openGear frame.
- “**Cabling**” provides an overview of connecting input and output devices to the rear module of the card.
- “**Using DashBoard**” outlines how to display the MC1-MK interfaces in the DashBoard window
- “**Router Setup**” provides instructions for the basic physical installation and communications setup of your Ross router to the MC1-MK
- “**MC1-MK Configuration**” provides instructions for configuring the MC1-MK using the options available in DashBoard.
- “**Audio Configuration**” provides instructions for configuring the audio features of the MC1-MK using the options available in DashBoard.
- “**Configuring the Text Overlay**” provides a summary of using the text overlay feature of the MC1-MK.
- “**Stand-alone MC1-MK**” summarizes how to setup an MC1-MK workflow without using a router.
- “**Software Upgrades**” outlines how to upgrade the card via DashBoard.
- “**DashBoard Interface Overview**” summarizes the menus and parameters of the card tabs in DashBoard.
- “**Technical Specifications**” provides information on the specifications for your MC1-MK.
- “**Communication Specifications**” provides additional information on the different connector types of the MC1-MK rear modules.
- “**Third-Party Protocols**” provides additional information on the serial and/or ethernet communications protocols used with the MC1-MK.
- “**Software Licenses**” provides third-party software license information for your card.
- “**Service Information**” provides information on the warranty and repair policy for your card.
- “**Glossary**” provides a list of terms used throughout this guide.

## Related Publications

It is recommended to consult the following Ross documentation before installing and configuring your MC1-MK:

- *DashBoard User Manual*, Ross Part Number: 8351DR-004
- *OGX-FR Series Frames User Manual*, Ross Part Number 8300DR-005
- *MC1-MK Operation Manual*, Ross Part Number: 8229DR-105
- *MC1-DB-CLN Quick Start Guide*, Ross Part Number: MC1DBCLNDR-002
- *MFC-OG3 Series User Manual*, Ross Part Number: 8300DR-004
- *MUX-8258 (-A, -4C, -8C) User Manual*, Ross Part Number: 8258DR-004

## Documentation Conventions

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

## Interface Elements

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

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

## User Entered Text

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

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

## Referenced Guides

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

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

## Menu Sequences

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

## Important Instructions

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

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

## Contacting Technical Support

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

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

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

# Before You Begin

This chapter provides general information to keep in mind before installing and configuring your MC1-MK.

## Product Summary

The MC1-MK includes the following features:

- Compliance with SDI SMPTE 424M (2.97Gbps), SMPTE 292M (1.485Gbps), and SMPTE 259M (270Mbps)
- Up to four<sup>1</sup> separate stills/animations in use at any time (Logos 1 to 4); each logo may also have an optional Alpha channel (Alpha 1 to 4)
- 2GB of DDR playout memory with support for TGA, PNG, and JPG formats (*MC1-MK only*)
- 4GB of DDR playout memory with support for TGA, PNG, and JPG formats (*MC1-MK-4GB only*)
- Support of popular formats such as 1080i, and 720p
- Eight bi-directional ports that are user programmable to be a GPI or a Tally
- Support for VGPIs when using the Miranda™ Presmaster Automation Protocol
- Channel ganging capability to switch multiple MC1-MKs in tandem, either manually or under automation
- Four SDI inputs that include two background inputs (A, B), External Key Video, and External Key Alpha
- Four SDI outputs that may be configured as Program, Preview, or Clean Feeds
- Bypass relay from BKGD A to OUT 1 protects your on-air feed when the device is taken off-line and ensures critical program content is not lost
- Ethernet 10/100Mbit connectivity for easy upgrades in the field and for transferring files
- Reports status and configuration remotely via DashBoard
- Provides remote serial control of the card using the Miranda™ Presmaster protocols
- Three options for specifying the card reference
- Supports SNMP alarms for the input and reference signals
- Specify how the input signal timing is reported (relative to the reference or the output)
- Provides an overlay engine capable of displaying one layer of text in real time
- V-Fade, Take-Fade, Fade-Take, or Cross fade between video sources
- Stand-alone SqueezeBack
- Stand-alone audio/voice over mixing
- Clean audio switching for embedded audio at 48kHz
- Fade to Black function
- Provides keyer controls such as clip and gain, key invert, and transparency
- Audio processing for 16 embedded audio channels
- Audio shuffling from any embedded input (or mute or tone) for each embedded output
- Configure up to 4 audio profiles that can be recalled on any crosspoint
- Fully compliant with openGear specifications and installs in the openGear frames
- 5 year transferable warranty

---

1. Or three if EAS is used; in this case one channel is reserved for EAS. A maximum of two logo channels are available when the 3G Video Mode option is enabled.

# Functional Overview

This section provides a functional block diagram for the MC1-MK card only.

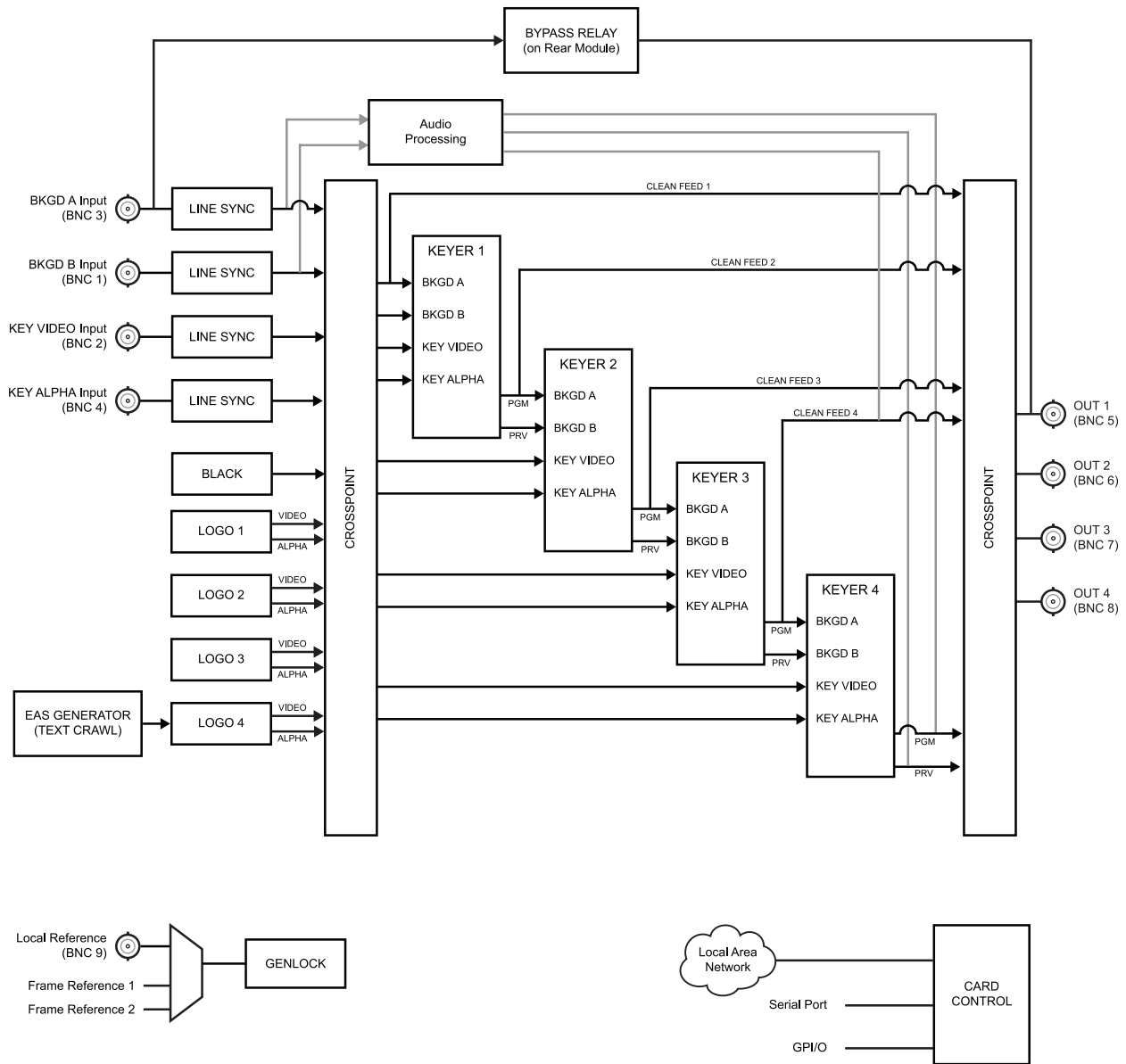


Figure 2.1 Simplified Block Diagram — MC1-MK Card

## Interfaces

The MC1-MK is intended to be controlled primarily via an automation system such as the Miranda™ Presmaster. Secondary control is available via the DashBoard client software, as well as through GPI signals. Optional SNMP monitoring is also available.

## DashBoard

The DashBoard client software enables you to monitor and control openGear frames and cards from a computer. DashBoard communicates with cards in the openGear frames through a Network Controller Card. This controller card is required in order to use DashBoard to control and monitor openGear cards.

The MC1-MK includes two DashBoard interfaces: Configuration and On Air Controls. Both interfaces are accessed by expanding the MC1-MK node in the DashBoard Tree View and selecting the appropriate sub-node. The



Configuration interface is intended for setup purposes such as specifying sources, setting up serial and ethernet communications, and bus mapping. The On Air Controls interface includes operational controls such as configuring keyer sources, loading media files to logo channels, and performing transitions.

**For More Information on...**

- configuring the Network Controller Card, refer to the *MFC-OG3 Series User Manual*.
- installing and using DashBoard, refer to the *DashBoard User Manual*.

## MC1-PANEL-16

The MC1-PANEL-16 is a stand-alone control panel that provides all the basic user input of the MC1-MK card (channel) it is controlling. Up to 10 channels can be configured independently, allowing a single MC1-PANEL-16 to communicate and control 10 cards.

**For More Information on...**

- configuring an MC1-PANEL-16, refer to the *MC1-PANEL-16 User Manual*.

## SNMP Monitoring

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

**For More Information on...**

- the available SNMP monitoring features, refer to the Management Information Base (MIB) file that came with your openGear card(s).
- SNMP Monitoring, refer to the *MFC-OG3 Series User Manual*.

## Serial Protocols

The MC1-MK serial interface provides a communication link between a computer based editing or automation system and the MC1-MK.

**For More Information on...**

- setting up an automation system with the MC1-MK, refer to the MC1-MK setup sheet for your device. This setup sheet is available from our website.
- the Miranda™ Presmaster protocol, refer to the *Miranda Presmaster Automation Protocol Manual*.



# Hardware Overview

This chapter provides an overview for the basic physical installation of your MC1-MK.

## Card Overview

This section provides an overview of the card components.

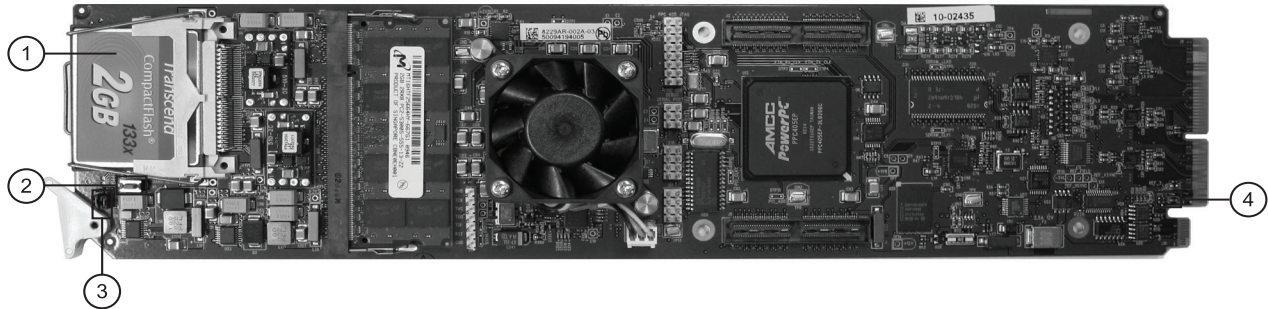


Figure 3.1 Components

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

### 1. CompactFlash® Card

The CompactFlash card provides 2GB (MC1-MK) or 4GB (MC1-MK-4GB) of flash memory for storage of media files, such as stills and animations.

### 2. Board Reset Button (SW1)

Pressing this button resets the microprocessor and re-initializes the card. This is a hard reset of the card. This should only be performed as advised by Ross Video Technical Support.

### 3. JP5, JP6

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

### 4. 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 Rear Module.

- › **Pin 1** (left) + **Pin 2** (center) position — In this position, the analog reference is terminated with an 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 3.2**).

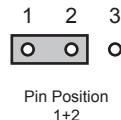


Figure 3.2 J7 — Default Position

- › **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 to be terminated.

## Card-edge LEDs

This section describes the card-edge LEDs that are used to monitor communication. (**Figure 3.3**)

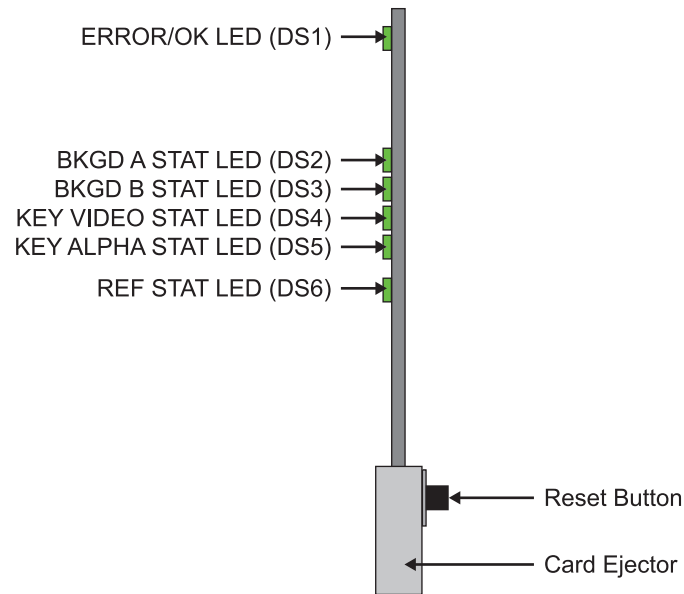


Figure 3.3 Card-edge Controls

**Table 3.1 LEDs on the Card-edge**

LED	Color	Display and Description
<b>ERROR/OK</b>	Green	When this LED is green, the card is in normal operation with no errors.
	Red	When this LED is red, the card is experiencing internal errors.
	Off	When this LED is off, there is no power to the card.
<b>BKGD A STAT</b>	Green	When this LED is green, the BKGD A video input is valid.
	Red	When this LED is red, the BKGD A input is not present or is invalid.
<b>BKGD B STAT</b>	Green	When this LED is green, the BKGD B video input is valid.
	Red	When this LED is red, the BKGD B input is not present or is invalid.
<b>KEY VIDEO STAT</b>	Green	When this LED is green, the external Key Video input is valid.
	Red	When this LED is red, the external Key Video input is not present or is invalid.
<b>KEY ALPHA STAT</b>	Green	When this LED is green, the external Key Alpha video input is valid.
	Red	When this LED is red, the external Key Alpha video input is not present or is invalid.
<b>REF STAT</b>	Green	When this LED is green, the reference signal is valid.
	Red	When this LED is red, the reference signal is not present or is invalid.

## Supported Rear Modules

This section provides an overview of the cabling designations for each rear module the MC1-MK supports.

### 8320AR-033 Cabling

This rear module occupies four slots in the frame and accommodates one card.

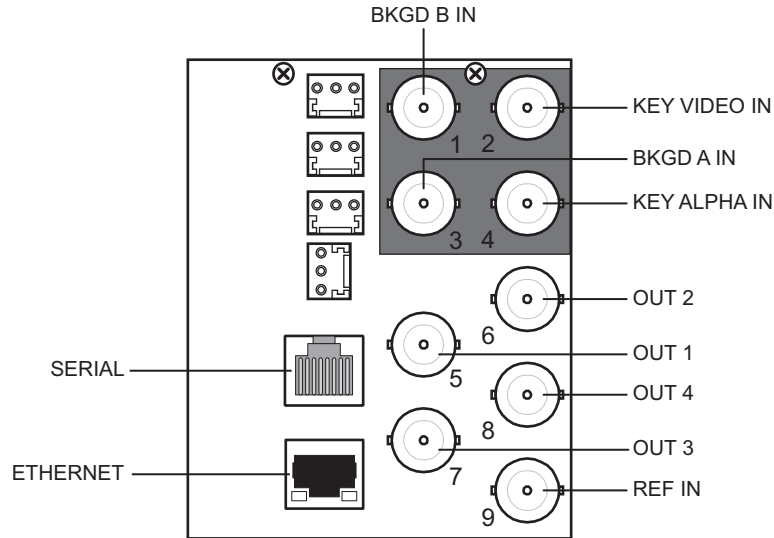


Figure 3.4 Cabling — 8320AR-033 Rear Module

### 8320AR-055 Cabling

This rear module occupies four slots in the frame and accommodates one card.

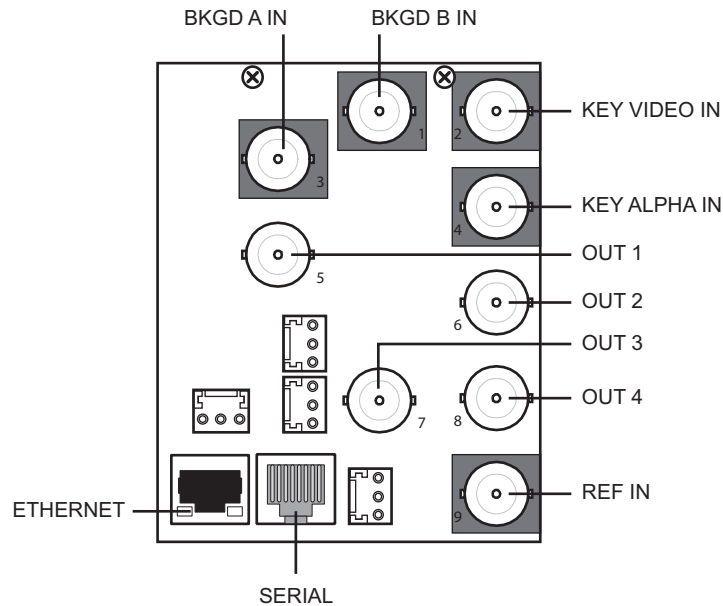


Figure 3.5 Cabling — 8320AR-055 Rear Module



# Getting Started

The MC1-MK includes a system of openGear cards installed in an openGear frame that communicate via DashBoard to external devices such as routers and Emergency Alert Systems (EAS). This chapter provides general information for setting up the frame, cards, and DashBoard before you can proceed to cabling and communicating with external devices.

## System Integration Example

This section provides a system diagram that illustrates one way to integrate your MC1-MK into a Master Control System. Please note that this is only an example and your facility needs may differ from what is presented here.

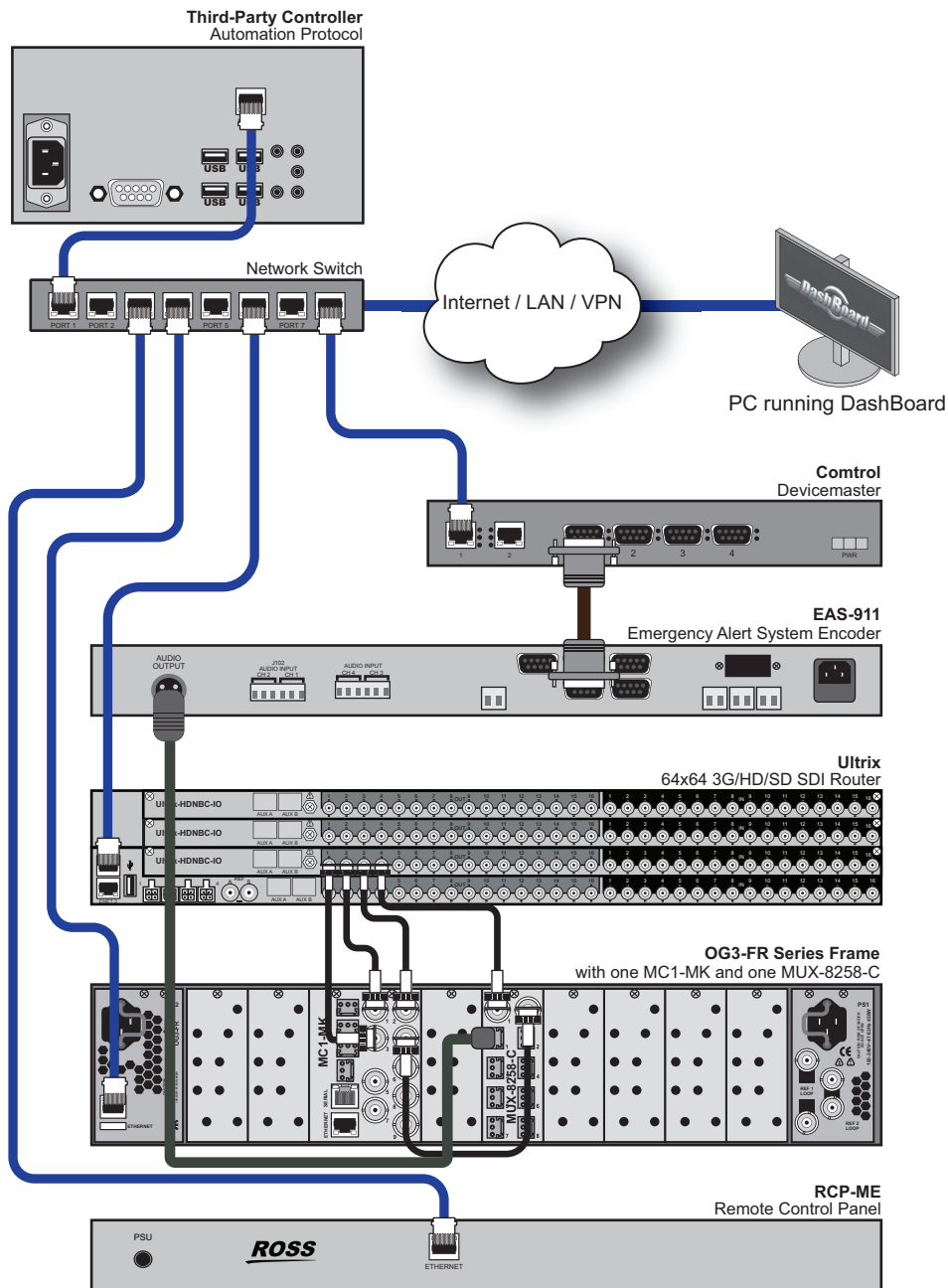


Figure 4.1 Example of a System Integration with the MC1-MK

## Installing the openGear Frame

The openGear frame is a 2RU high density modular frame, designed to accommodate up to 20 openGear cards.

When you are facing the openGear frame front, the Network Controller card is located in the furthest slot to the right. This card features an ethernet interface which allows the openGear cards in the frame to be monitored and controlled using DashBoard.

### For More Information on...

- physically installing your frame, refer to the *OGX-FR Series User Manual*.
- configuring an openGear card, refer to the associated product user manual.

## Installing the MC1-MK Card

This section provides a brief overview of the required Rear Modules and physical installation of the MC1-MK.

The MC1-MK consists of a PCB and a rear module. For a list of supported rear modules, refer to “**Supported Rear Modules**” on page 21.

### Power Fail Relay on the Rear Module

There is a power fail relay from the BKGD A input to OUT 1 on the Rear Module. 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 OUT 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 MC1-PANEL-16

Install and configure your MC1-PANEL-16 as outlined in the *MC1-PANEL-16 Quick Start Guide* that came with your panel. Refer to the *MC1-PANEL-16 User Manual* for configuration details.

## Installing the Rack Mount PC

Install and configure your rack mount PC as outlined in the *MC1-DB-CLN Quick Start Guide* that came with your system.

## Installing the Touchscreen Display

The interactive touchscreen display provides all of the menu interaction for the MC1-MK, including functions such as configuration, crosspoint selection, and performing transitions. Ensure that the touchscreen is connected to the PC via a USB cable. It is recommended to use a touchscreen with 1680x1050 resolution.

Refer to the documentation that came with your touchscreen for specific installation and setup instructions.

## Using DashBoard to Access the MC1-MK

Before proceeding, ensure that the DashBoard client software is installed on a PC connected to your facility network. The DashBoard software and user manual are available from the Ross Video website.



### **To launch DashBoard**

1. Ensure that you are running DashBoard software version 6.2.0 or higher.
2. Launch DashBoard by double-clicking its icon on your desktop.
3. Ensure that the openGear frame with the MC1-MK is displayed in the Basic Tree View. If not, consult the *MFC-OG3 Series User Manual* and *DashBoard User Manual*.

### **To access the MC1-MK Configuration Interface**

1. From the **Tree View**, expand the node for the MC1-MK you want to access.
2. Select the **Configuration** node to display the interface in the right-half of DashBoard.

## **Device Control**

The MC1-MK can communicate with a number of external devices, such as EAS and automation systems.

### **For More Information on...**

- how to set up communications with these devices, refer to the Setup Sheets available on our website.
- how to set up and configure communications with a Ross router, refer to the chapter “**Router Setup**” on page 37.



# Physical Installation

This chapter provides an overview for the basic physical installation of your MC1-MK.

## Before You Begin

Before you begin, ensure that you are using DashBoard version 6.2.0 or higher. The DashBoard Control System software and user manual are available to download from the Ross Video website.

## Static Discharge

Throughout this chapter, please heed the following cautionary note:



---

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

---

## Unpacking

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

## Installing the MC1-MK Card

This section provides a brief overview of the physical installation of the MC1-MK into an openGear frame.

### To install a rear module in an openGear frame

1. Remove the Blank Plates from the rear of the selected card frame slots.
2. Seat the bottom of the Rear Module in the seating slot at the base of the backplane of the frame.
3. Align the top hole of the Rear Module with the screw hole on the top-edge of the frame backplane.
4. Using a Phillips screwdriver and the supplied screw, fasten the Rear Module to the backplane. Do not over tighten.
5. The Rear Module Label is self-adhesive. Remove the wax sheet before affixing the label.
6. Affix the supplied Rear Module Label to the BNC area of the Rear Module.
7. To ensure proper frame cooling and ventilation, verify that all unused slots are covered with Rear Modules or Blank Plates.

★ Verify that the card aligns with the Rear Module before fully tightening any of the slot screws.

### To install a card in the openGear frame

1. Ensure that the openGear frame is properly installed.
2. Ensure the Rear Module is properly installed.
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.



# Cabling

This chapter provides an overview of the cabling designations for each rear module the MC1-MK supports.

## Video Connections

Connect your input video signals to the BNCs on the rear module as required. In the following figures, the rear module depicted on the left is for the MC1-MK while the rear module on the right is for the MUX-8258-C. Note that the location of your rear modules in the frame may differ than what is presented here.

## Input Cabling

Connect your MC1-MK input video signals as illustrated in **Figure 6.1**. Ross Video does not supply these cables.

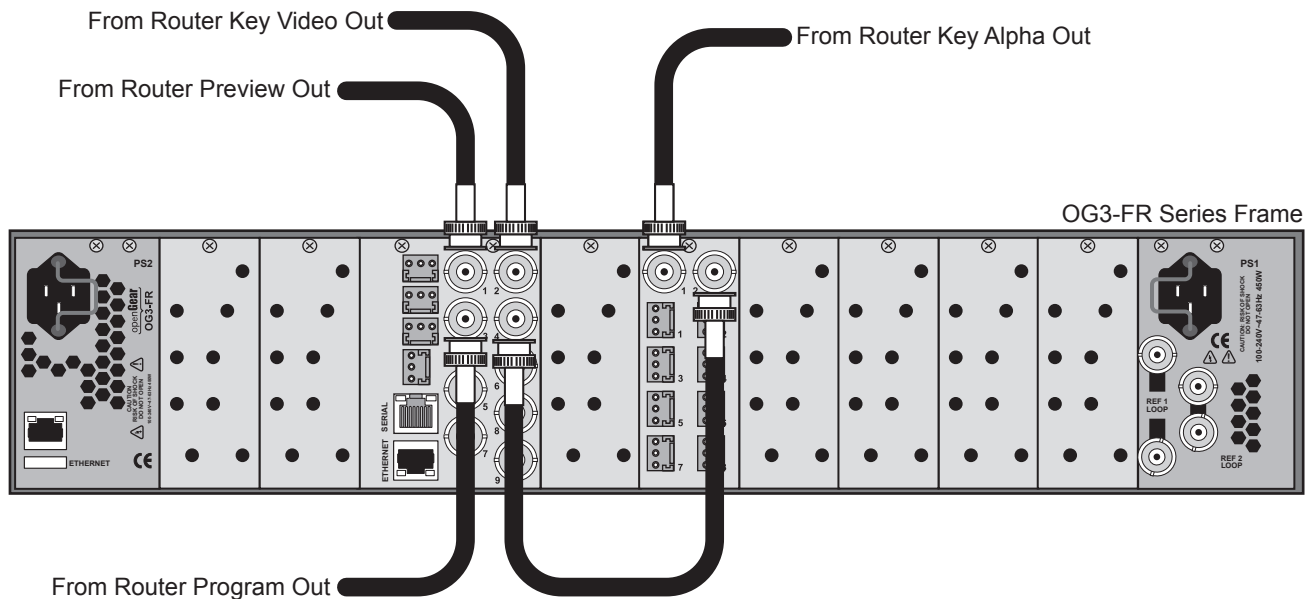


Figure 6.1 openGear Frame Cabling — Inputs and Outputs

## Input Mapping

The default mapping includes router inputs, but it is first necessary to configure the router outputs and crosspoints. Inputs are mapped as outlined in the section “**Crosspoint Mapping**” on page 9-49.

### For More Information on...

- interpreting the type of router crosspoints, refer to the section “**To establish communications to an Ross NK series router**” on page 38.

## Output Cabling

Connect your output video signals as illustrated in **Figure 6.2**. Ross Video does not supply these cables.

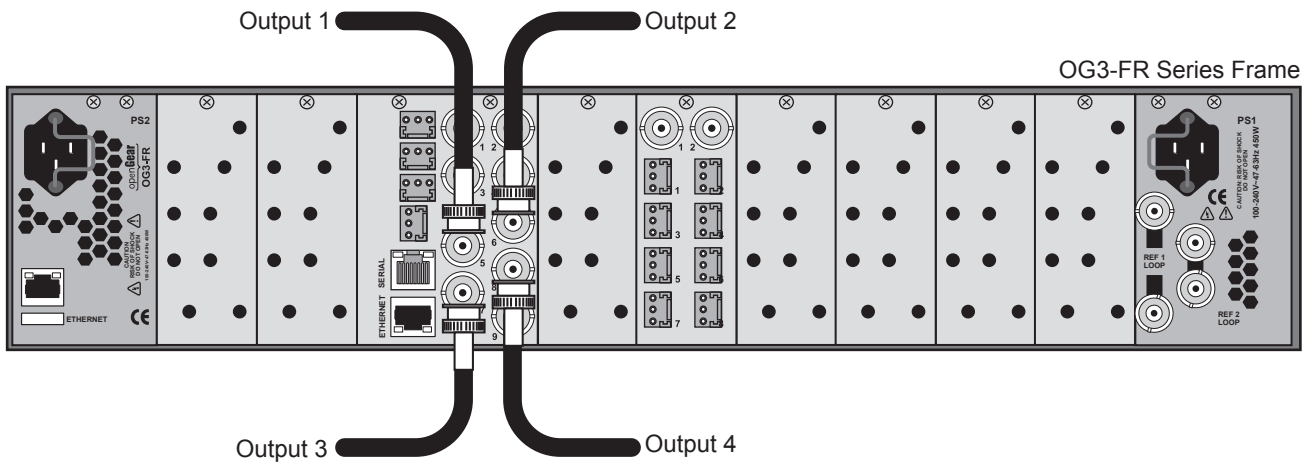


Figure 6.2 openGear Frame Cabling — Inputs and Outputs

## Output Mapping

By default, the following MC1-MK outputs are mapped as follows:

**Table 6.1 MC1-MK to Router Mapping**

MC1-MK Input	Router Source
Output 1 (BNC 5)	Program
Output 2 (BNC 6)	Program
Output 3 (BNC 7)	Preview
Output 4 (BNC 8)	Clean Feed 1

### For More Information on...

- output mapping, refer to “**Selecting the Sources**” on page 47.

## Reference Cabling

Connect the reference source for MC1-MK as illustrated in the following figures. Ross Video does not supply this cable.

### openGear Frame Reference Source

**Figure 6.3** illustrates the cabling connection when using the reference signal available via the openGear frame.

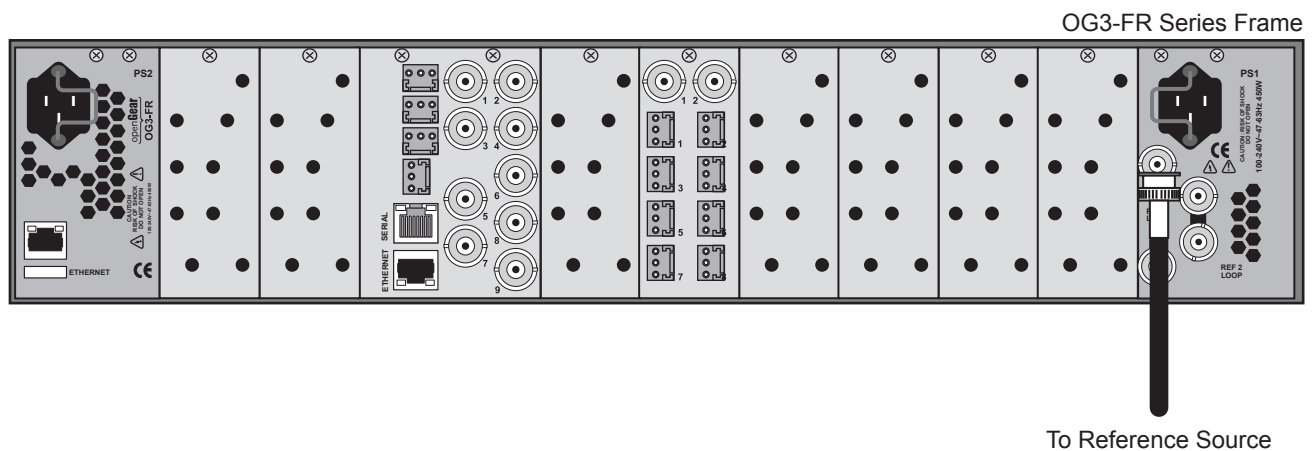


Figure 6.3 Cabling — Reference Input from the openGear Frame

## Local Reference Source

Figure 6.4 illustrates the cabling connection when using the reference signal available via the rear module for your card. Note that Figure 6.4 depicts the 8320AR-033 rear module.

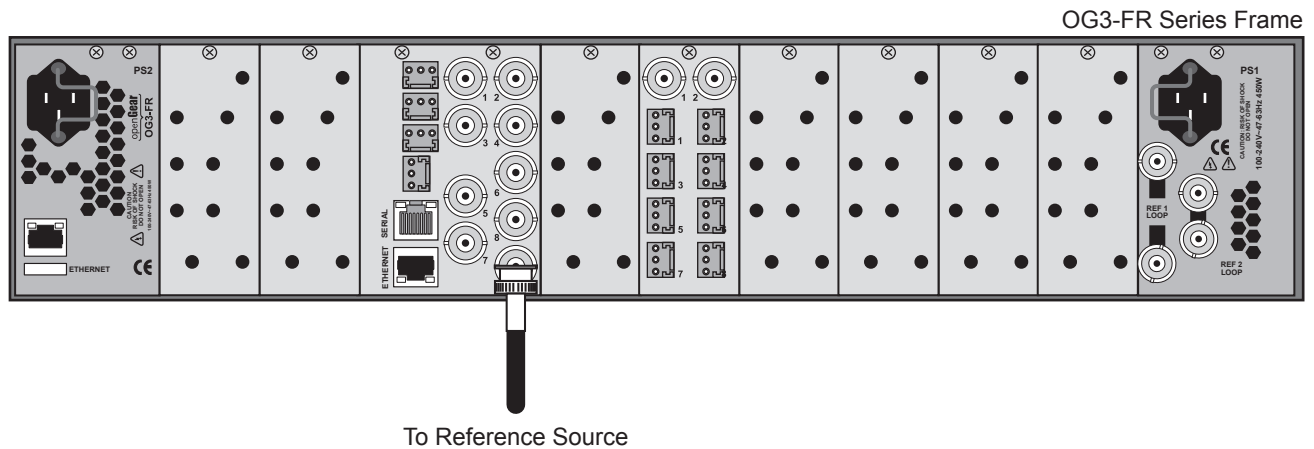


Figure 6.4 Cabling — Reference Input from the 8320AR-033 Rear Module

## Ethernet Communications

The MC1-MK communicates over an ethernet connection to the router, and EAS. The **Ethernet** port on the Rear Module is also used for software upgrades, and media file transfers. The exact steps for connecting to your facility via an ethernet network depends on the network requirements of your facility. Note that in addition to the **Ethernet** port on the Rear Module, you must also provide an ethernet connection to the openGear frame as outlined in the *OGX-FR Series Frames User Manual*. Set up of ethernet connections between the devices, such as a router, and the MC1-MK are outlined in later chapters of this manual.

★ Ross Video strongly recommends installing your Master Control System on a network that is segregated from your facility LAN.

## Ethernet Cabling for the MC1-MK

Contact your IT Department before connecting to your facility network to ensure that there are no conflicts. They will provide you with an appropriate value for the IP Address, Subnet Mask, and Gateway for the MC1-MK.

You will require a standard network CAT-5 cable to connect the MC1-MK to your facility network. (Figure 6.5) There is no need for a crossover cable as the MC1-MK includes an Auto-MDIX ethernet PHY that will switch from straight to crossover automatically as needed. Ross Video does not supply these cables.

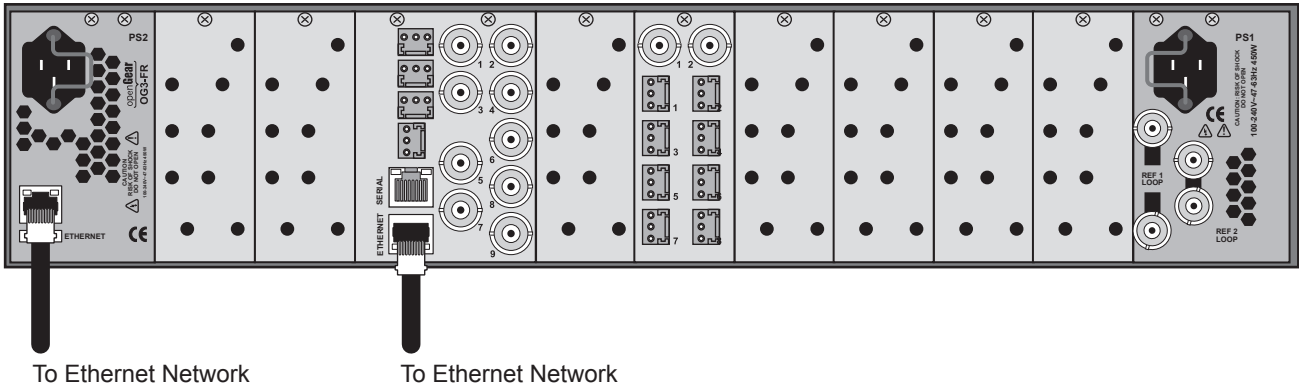


Figure 6.5 MC1-MK — Ethernet Connection

### GPI/Tally Setup

The MC1-MK has eight bi-directional pins labeled GPI/O 1-8 on the terminal block of the Rear Module. Ports are user programmable to be either an input (GPI) or an output (Tally) using the **GPI/Tally Setup** tab in Dashboard. Electrically, the ports are setup for contact closure to ground, with 4.75kohm pull-up resistor to +5V, so they default to a logical high state.

### Rear Module Overview

The ports are available on four 3-pin connectors located on the Rear Module. The 3-pin mating connectors are provided with the Rear Module. The default state for the GPI/O contacts is active low signaling. This way, if the card is removed from the openGear frame, no external events will be inadvertently asserted by the card. This also means that if a cable is absent from the Rear Module, no GPI or Tally will be triggered and executed inadvertently by the card.

### 8320AR-033 Cabling

Refer to **Figure 6.6** for GPIO designations when using the 8320AR-033 Rear Module.

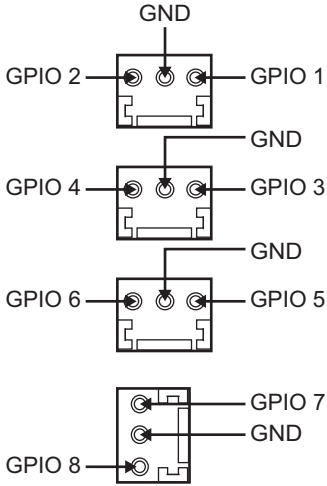


Figure 6.6 GPI Connections — 8320AR-033 Rear Module

### 8320AR-055 Cabling

Refer to **Figure 6.7** for GPIO designations when using the 8320AR-055 Rear Module.



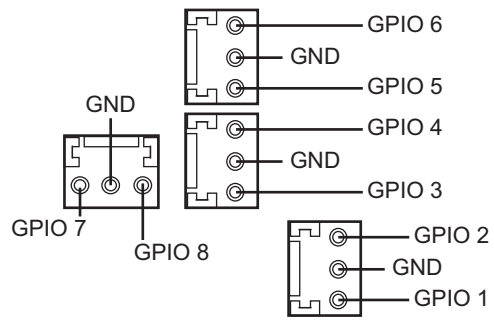


Figure 6.7 GPI Connections — 8320AR-055 Rear Module



# Using DashBoard

Once you install the MC1-MK, you can access its interfaces in DashBoard. These interfaces provide options for configuring, monitoring, and operating your card in DashBoard.

## Before You Begin

Ensure that:

- The openGear frame that houses the MC1-MK displays in the Basic Tree View of DashBoard.
- The MC1-MK displays as a sub-node in the openGear frame tree.
- Your facility IT Department provided the required network settings to be assigned to the MC1-MK.
- The DashBoard software is installed on a PC connected to your facility network. The DashBoard software and user manual are available from the Ross Video website.

## Launching DashBoard

DashBoard must run on a computer that has a physical wired ethernet connection. Wireless connections do not allow device discovery.

### For More Information on...

- downloading and installing the DashBoard client software, refer to the *DashBoard User Manual*.
- the MC1-MK interfaces in DashBoard, refer to the chapter “**DashBoard Menus**” on page 89.

### To launch DashBoard

1. Ensure that you are running DashBoard software version 8.4.0 or higher.
2. Launch DashBoard by double-clicking its icon on your computer desktop.

## Accessing the Configuration Interface in DashBoard

This section outlines how to display the MC1-MK interfaces in the DashBoard window.

### For More Information on...

- the tabs and menus in DashBoard, refer to the chapter “**DashBoard Interface Overview**” on page 83.

### To display the Global interface in DashBoard

1. Launch DashBoard.
2. In the Basic Tree View of DashBoard, locate the openGear frame the MC1-MK is installed in.
3. Expand the openGear frame node to display a list of sub-nodes.
  - ★ Each sub-node is a card installed in the specified slot of that frame.
4. Locate the MC1-MK node in the frame tree.
5. Expand the MC1-MK node.
6. To access the MC1-MK Configuration Interface:
  - a. From the **Tree View**, expand the node for the MC1-MK you want to access.
  - b. Select the **Configuration** node to display the interface in the right-half of DashBoard.



# Router Setup

This chapter provides instructions for the basic physical installation and communications setup of your Ross router to the MC1-MK. It is recommended to consult your router documentation for specific information on installing and configuring your router.

★ For systems with multiple channels of MC1-MK or multiple remote control interfaces, contact your Ross Technical Sales representative for system configuration requirements.

## Ross NK Series Router Setup

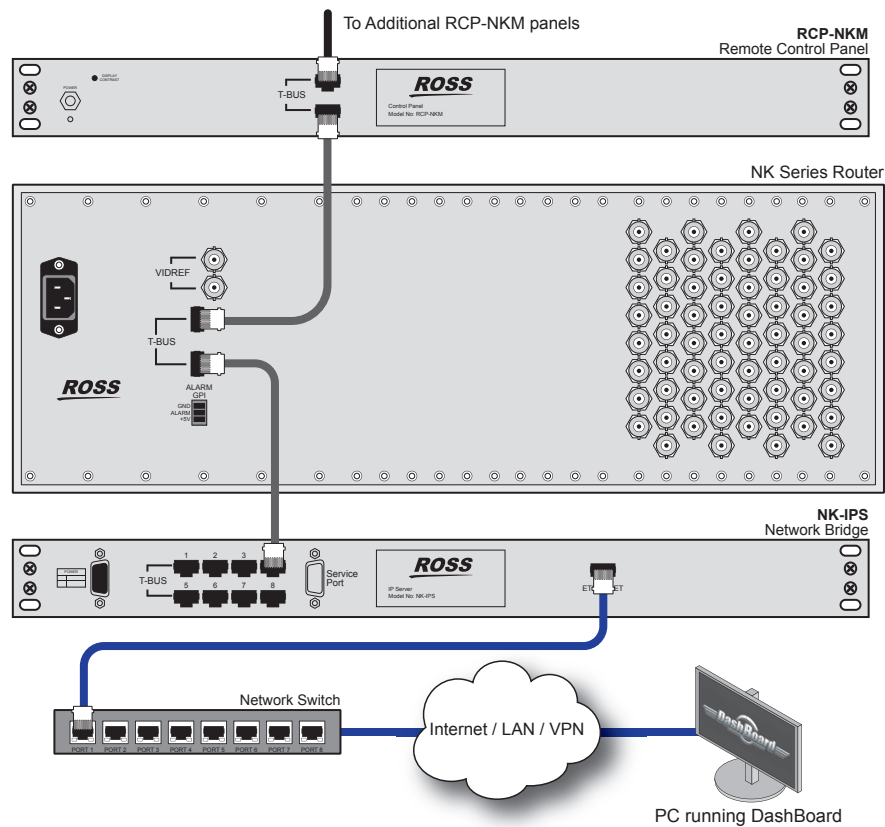
The Ross NK series routers communicate via the NK-IPS over the Ross T-Bus protocol. The NK-IPS then communicates with the MC1-MK via an ethernet protocol. Ensure that your Ross NK series devices are running the following software versions:

**Table 8.1 Recommended Software Versions**

Product	Software Version
NK-IPS	3.11 or higher
NK-NET	Not supported

## Cabling Overview

**Figure 8.1** illustrates the physical connections between an RCP-NKM, a Ross NK series router, and an NK-IPS when setting up the MC1-MK. Ross Video does not supply these cables. Note that your facility requirements may differ from what is presented here.



**Figure 8.1 Connections for a Simplified Ross NK Series Routing System**

## Communications Setup

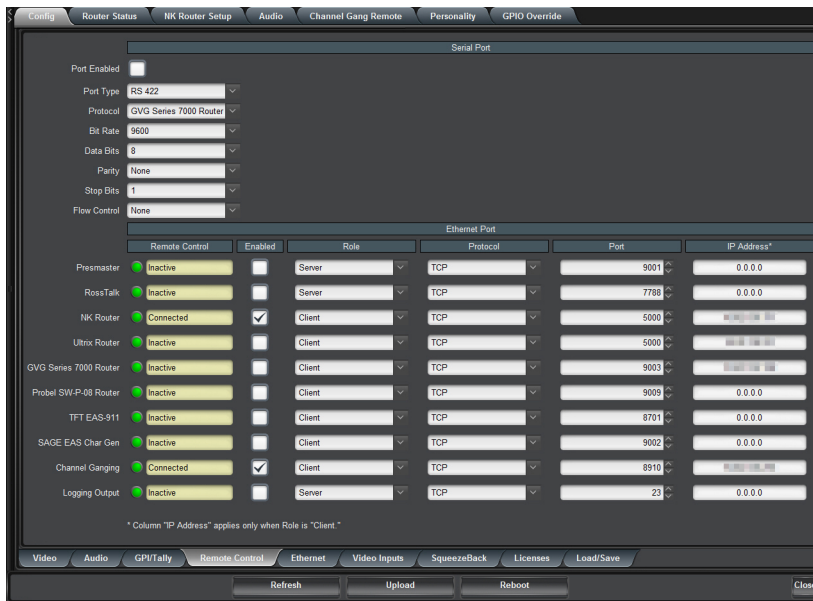
This section outlines how to configure the MC1-MK to communicate with the NK-IPS via an ethernet protocol. Before proceeding, ensure that the NK-IPS is set up for ethernet communications by referring to its user manual.

### For More Information on...

- the **Remote Control** tab, refer to **Table 14.8**.
- the **Router** tab, refer to **Table 14.18**.
- specifying a delay or a retry value, refer to “**Specifying the Router Switch Retries**” on page 43.

### To specify the communications protocol for MC1-MK

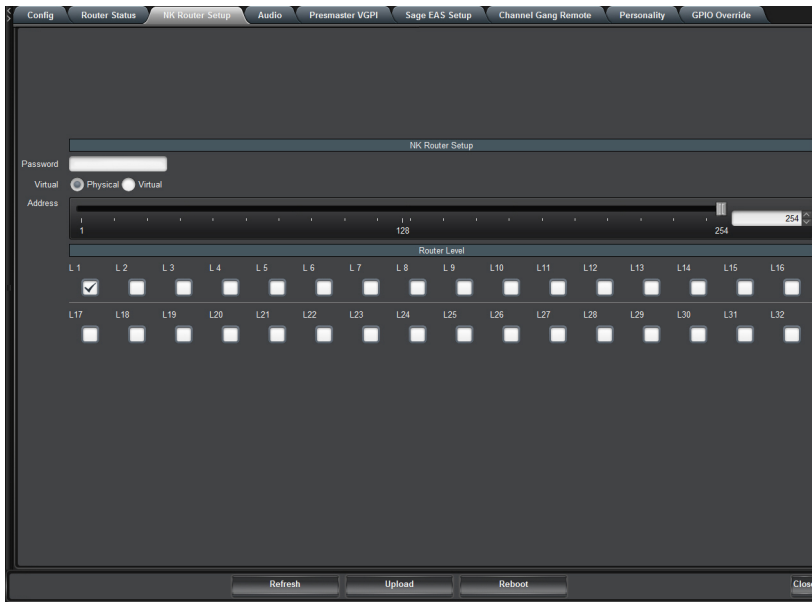
1. From the **Tree View**, expand the node for the MC1-MK you want to access.
2. Select the **Configuration** node to display the interface in the right-half of Dashboard.
3. Select the **Remote Control** tab located at the bottom of the **Config** tab.



4. Locate the **NK Router** row in the **Ethernet Port** area of the tab.
5. From the **Role** menu, select **Client**.
6. From the **Protocol** menu, select **TCP**.
7. From the **IP Address** menu, specify the IP address of the NK-IPS.
8. From the **Port** menu, specify the port number of the NK-IPS. Note that the standard port used by the NK-IPS is 5000.
9. Select the **Enabled** box.
10. Verify that the **NK Router Setup** tab displays in the Dashboard window.

### To establish communications to an Ross NK series router

1. From the **Tree View**, expand the node for the MC1-MK you want to access.
2. Select the **Configuration** node to display the interface in the right-half of Dashboard.
3. Select the **NK Router Setup** tab.



4. If you have locked your NK-IPS from its interface, you must enter the required password in the **Password** field in the **Router** tab of Dashboard.
5. Specify how crosspoints are interpreted by selecting an option from the **Virtual** menu. Select **Virtual** if you are using an NK-VRC.
6. Use the **Router Level** field to specify the level in the Ultrix router that the transition will include.
7. Specify the T-Bus address to be used by the MC1-MK in the **Address** field. Note that this is typically the default address of 254 which is the same as the NK-IPS or any available unassigned T-Bus address.<sup>1</sup>

## Ross Ultrix Series Setup

The Ross Ultrix router communicates with the MC1-MK over an ethernet connection. Before proceeding, ensure that the Ultrix router is set up for third-party communications by referring to its user manual.

- ★ Before proceeding, ensure the Ross Ultrix router is connected to your facility network and displays in the Tree View of your Dashboard client.

Ensure that your Ultrix routing system is running the following software versions:

**Table 8.2 Recommended Software Versions**

Product	Software Version
Ultrix router	v1.1
Ultracore Central Controller (optional)	v1.0

## Cabling Overview

**Figure 8.2** illustrates the physical connections in a routing system that includes a Ross Ultrix router and the MC1-MK. Ross Video does not supply these cables. Note that your facility requirements may differ from what is presented here.

1. When using Virtual Resource Management, the T-Bus address is set in the V-Core. Check all your NK devices to see which T-Bus address(es) are assigned to your devices and ensure that you do not specify these addresses in the IP Address field for the MC1-MK.

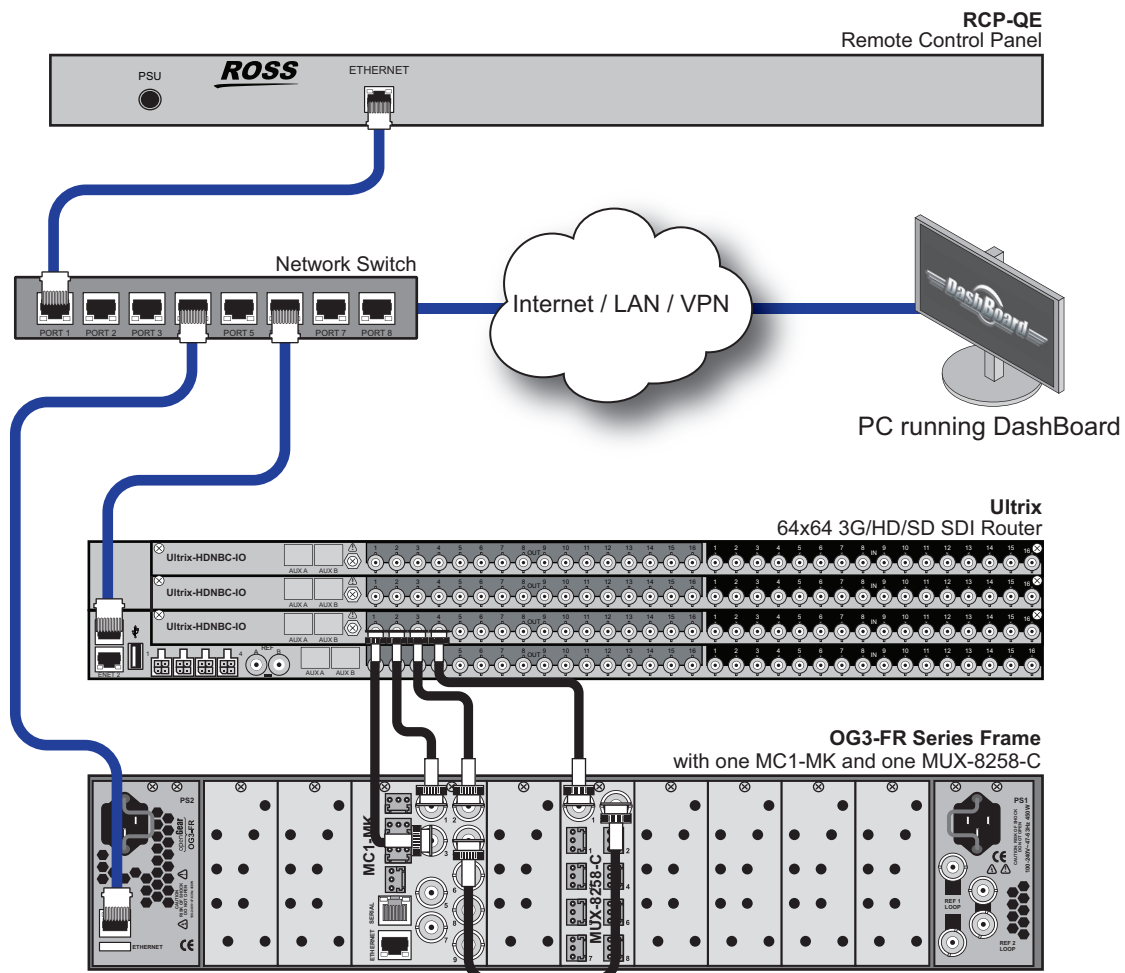


Figure 8.2 Routing System Workflow with a Ross Ultrix Router and an MC1-MK

## Communications Setup

This section outlines how to configure the MC1-MK to communicate with the Ross Ultrix router. When using the Ultrix protocol, virtual routing and a T-Bus Address of 254 are hard coded.

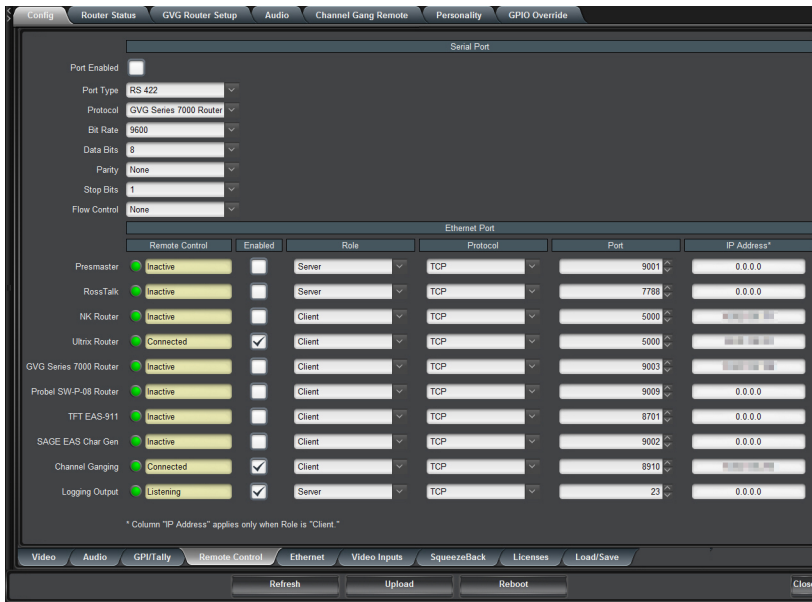
### For More Information on...

- the **Remote Control** tab, refer to **Table 14.8**.
- the **Router** tab, refer to **Table 14.18**.

### To specify the communications protocol for MC1-MK

1. From the **Tree View**, expand the node for the MC1-MK you want to access.
2. Select the **Configuration** node to display the interface in the right-half of DashBoard.
3. Select the **Config** tab.
4. Select the **Remote Control** tab located at the bottom of the **Config** tab.

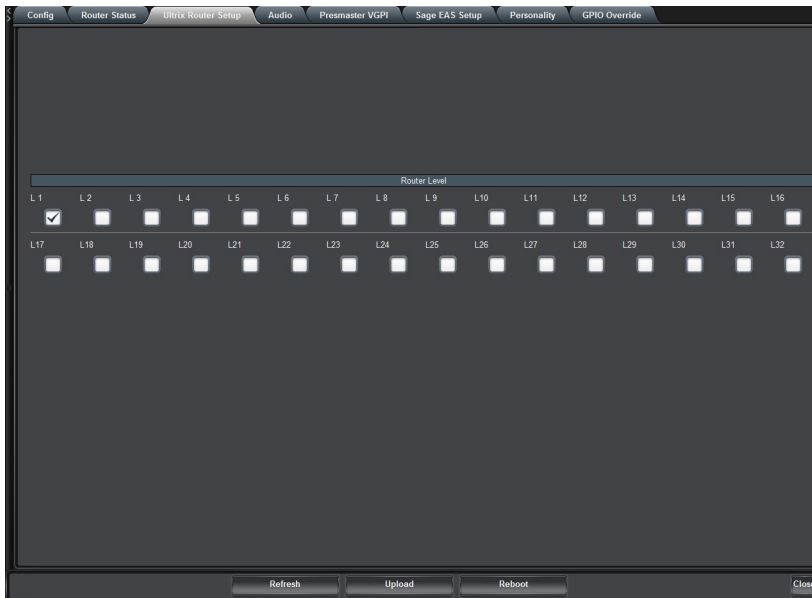




5. Locate the **Ultrix Router** row in the **Ethernet Port** area of the tab.
6. From the **Role** menu, select **Client**.
7. From the **Protocol** menu, select **TCP**.
8. From the **IP Address** menu, specify the IP address of the Ross Ultrix router that will communicate with the MC1-MK.
9. From the **Port** menu, specify the port number of the Ultrix router.
10. Select the **Enabled** box.
11. Verify that the **Ultrix Router Setup** tab displays in the DashBoard window.

**To specify the levels for the router switches**

1. Select the **Ultrix Router Setup** tab.



2. Use the **Router Level** field to specify the level in the Ultrix router that the transition will include.

## Setup for Third-Party Routers

The MC1-MK can communicate with third-party routers via the GVG 7000 Native ethernet protocol and the Probel-SW-08 protocol.

★ A license key is not required when setting up the MC1-MK with a Ross NK series router or an Ultrix router.

### For More Information on...

- configuring the third-party router communications on the MC1-MK with these protocols, refer to the Setup Sheets available from our website.
- how to set up your third-party router to communicate with the MC1-MK, refer to the user documentation that accompanied your router.

## Installing the MC1-RTR License Key

You must install the MC1-RTR license key before you can access the setup options for establishing communications between your router and the MC1-MK. This section outlines how to install a license key on the MC1-MK to enable router communications via one of the supported protocols.

### Before You Begin

When installing the MC1-RTR license key on the MC1-MK:

- You must have DashBoard installed and communicating with the openGear frame that houses the card you wish to install the key for.
- Ensure that you are using version 8.0.0 or higher of DashBoard. This information is available by selecting **Help** > **About DashBoard** from the DashBoard main toolbar.

### To install the MC1-RTR license key

1. Display the Config tabs in DashBoard as outlined in “**To access the MC1-MK Configuration Interface**” on page 25.
2. Display the **Licenses** tab as follows:
  - a. Select the **Config** tab.
  - b. Select the **License** sub-tab located at the bottom of the **Config** tab.
3. Make a note of the **MC1-RTR Request Code** from the **License** tab. You will need this code to obtain your **License Key**.
4. Contact Ross Technical Support. When you speak to the Technical Support representative, tell them the **Request Code** from 3
5. In the **Third Party Router Feature** field, enter the **License Key** provided by Ross Technical Support.
6. Press **Enter**.
7. When the installation is complete, verify that the **Third Party Router Feature** field now reports “**Licensed**”.

## Troubleshooting the Protocol Communications

When using a third-party router, you can also choose to enable the **Logging Output** feature in the **Config** > **Remote Control** tab. This feature is intended for troubleshooting incompatibilities between the MC1-MK and the third-party router by allowing the card to track communication messages. The first field of every logging output message is a timestamp. This timestamp is a field counter which counts from 0000 to 9999 before wrapping back to 0000.

★ The Logging Output is a text stream which is compatible with Telnet. By default, the MC1-MK Logging Output port is set to 23 (the port that Telnet uses by default).

### For More Information on...

- the types of messages to log between the MC1-MK and a third-party router, refer to the applicable setup sheet for your protocol available from our website.

### To enable the MC1-MK to log communications for a router

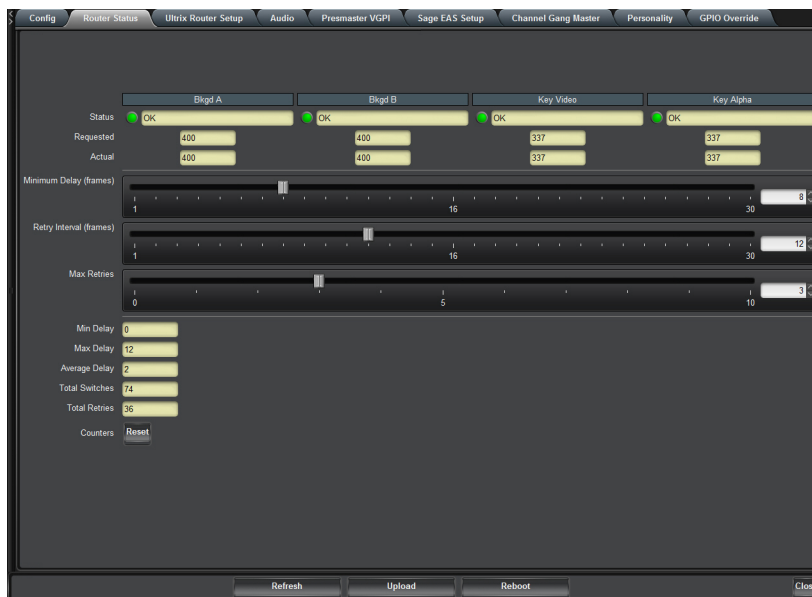
1. From the **Tree View**, expand the node for the MC1-MK you want to access.
2. Select the **Configuration** node to display the interface in the right-half of DashBoard.
3. Configure the communication settings for the MC1-MK and your router as outlined earlier in this manual or the set up sheet for your third-party router.
4. Select the **Config** tab.
5. Select the **Remote Control** tab.
6. Locate the **Logging Output** row in the tab.
7. Set the **Role** to **Server**.
8. Set the **Protocol** to **TCP**.
9. In the **IP Address** field, specify the IP address assigned to the MC1-MK card.

## Specifying the Router Switch Retries

The MC1-MK provides options for delaying transitions to wait for the router switch to complete. You can also specify a re-try value when the router switch has not completed within a specified length of time. Once the maximum number of re-tries is reached, the MC1-MK pushes back the crosspoints to the previous state.

### To configure the router switch command retries

1. From the **Tree View**, expand the node for the MC1-MK you want to access.
2. Select the **Configuration** node to display the interface in the right-half of DashBoard.
3. Select the **Router Status** tab.



4. Use the **Minimum Delay** slider to specify the number of frames the MC1-MK waits between sending the next switch command to the router.
5. Use the **Retry Interval** slider to specify the number of frames the MC1-MK waits before re-sending the same switch command to the router.

6. Use the **Maximum Retries** slider to specify the maximum number of times the MC1-MK will send the same switch command to the router before the switch is abandoned and an error condition is raised.

**For More Information on...**

- the read-only fields in the **Router Status** tab, refer to the section “**Router Status Tab**” on page 14-104.

# MC1-MK Configuration

This chapter provides instructions for configuring the MC1-MK using the options available in DashBoard.

- ★ Before proceeding, ensure that you are running DashBoard software version 6.2.0 or higher. The DashBoard Control System software and user manual are available to download from the Ross Video website.

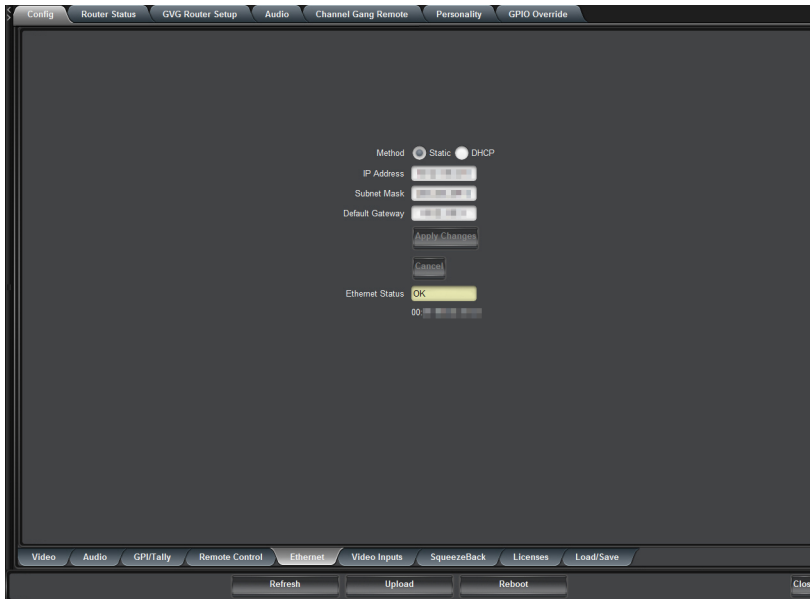
## Ethernet Communication Setup

You can use the **Ethernet** port to connect to an ethernet network for communications, software upgrades using DashBoard, media file management via an FTP client, and for viewing thumbnails. To use the rear module **Ethernet** port, the card must be configured with valid ethernet settings. The settings can be specified manually (**Static**) or may be obtained automatically from a server on your network (**DHCP**).

- ★ Connect the card to the same network as your DashBoard client computer or to a network that has a route to the network your DashBoard client computer is on. Refer to the section “**Ethernet Communications**” on page 31 for installation details.

### To set up ethernet communications for the MC1-MK

1. From the **Tree View**, expand the node for the MC1-MK you want to access.
2. Select the **Configuration** node to display the interface in the right-half of DashBoard.
3. Select the **Config** tab.
4. Select the **Ethernet** tab located at the bottom of the **Config** tab.



5. If you are manually configuring the ethernet settings:
  - a. Select **Static**.
  - b. Enter the **IP Address**, **Subnet Mask**, and **Default Gateway** settings for the card.
  - c. Ross Video recommends using a static IP Address.
6. If you want network settings to be automatically obtained, select **DHCP**.
7. Click **Apply Changes** to save the new settings.

## Using the 3G Video Mode

Keep the following in mind before enabling 3G Video Mode:

### Before You Begin

When 3G Video Mode is enabled:

- The number of logo channels is automatically reduced from four to two. The Logos tab in the On Air Control interface also now displays only two logo channels (Logo 1, Logo 2).
  - › When using the MC1-MK with a 2GB CompactFlash™ card, 480MB are automatically allocated on the CompactFlash™ card for 3G Video Mode.
  - › When using the MC1-MK with a 4GB CompactFlash™ card, 960MB are automatically allocated on the CompactFlash™ card for 3G Video Mode.
- The number of keys is automatically reduced on the On Air Control interface from four to two. The Keyers tab in the On Air Control interface also now displays only two keyers (Key 1, Key 2).
- EAS is automatically remapped to Key 2 and Logo 2.
- The number of Clean Feeds is automatically reduced from four to two. If an output is currently assigned to Clean Feed 3 or 4, via the **Video** sub-tab, when 3G Video Mode is enabled, the fields of the **Output Setup** area report on the **Video** sub-tab. You must re-configure those outputs. Refer to the section “**To configure your video outputs**” on page 48 for details on selecting your outputs.
- If a crosspoint, via the **Video Inputs** sub-tab, is currently assigned to Logo 3, Logo 4, Key 1, or Key 2, when 3G Video Mode is enabled, the associated fields of the tab report the change. You must re-assign a source for the crosspoint(s) from the **Type** menu. Refer to the section “**To map router output sources to MC1-MK inputs**” on page 50 for details on mapping crosspoints.
- You will need to re-load the Logo Channels.

### Enabling 3G Video Mode

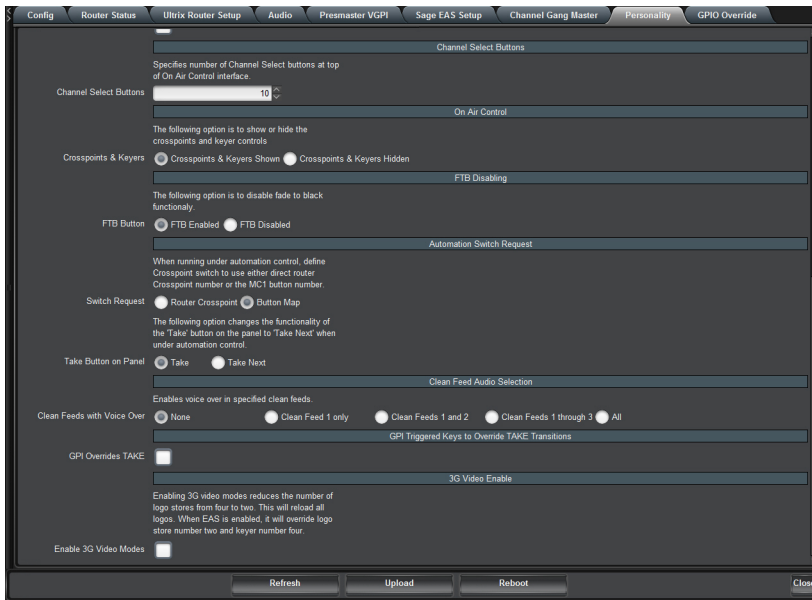
It is recommended to enable the 3G Video Mode before configuring the options for your MC1-MK first. If not, the 1080p 59.94Hz and 1080p 50Hz output formats will not be available in the **Video** sub-tab of the Configuration interface. Any logo channels which you may have loaded will also have to be re-loaded after changing this personality setting and some menus may not be available.

#### For More Information on...

- selecting output formats, refer to the section “**Selecting the Sources**” on page 47.
- logo channels, refer to the *MC1-MK Operation Manual*.

#### To enable 3G Video Mode

1. From the **Tree View**, expand the node for the MC1-MK you want to access.
2. Select the **Configuration** node to display the interface in the right-half of Dashboard.
3. Select the **Personality** tab.



4. To enable the 3G Video Mode, select the **Enable 3G Video Modes** box. You may need to scroll to the bottom of the tab to locate this option.

## Selecting the Sources

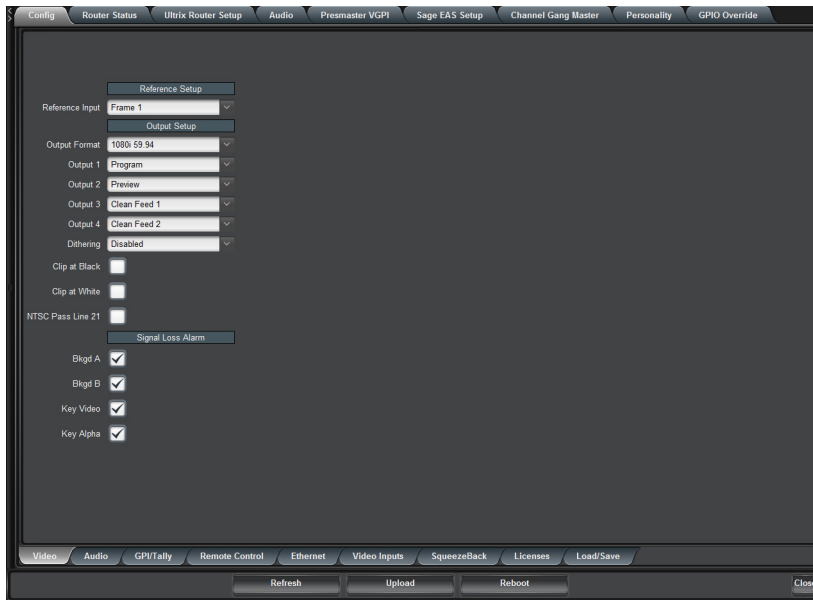
This section provides information for selecting the video format and the reference source for your card. Use the **Signal** tab to monitor the Signal status, including the reference and the Background sources. Refer to the section refer to the section “**Signal Tab**” on page 89 for more information.

### For More Information on...

- configuring your video inputs and outputs, refer to the section “**Video Characteristics**” on page 127.
- assigning MC1-MK inputs to router outputs, refer to the section “**Default Crosspoint Mapping**” on page 49.
- the Signal Loss Alarm options, refer to the **Table 14.4**.
- the type of messages displayed in the **Timing** fields, refer to **Table 14.1**.

### To select the video format and reference source

1. From the **Tree View**, expand the node for the MC1-MK you want to access.
2. Select the **Configuration** node to display the interface in the right-half of DashBoard.
3. Select the **Config** tab.
4. Select the **Video** tab located at the bottom of the **Config** tab.



5. Select a reference source from the **Reference Input** menu.
  6. Select the card output video format from the **Output Format** menu. Ensure that it is the same format as in the input video format.
- ★ You cannot disable 3G Video Mode while a 1080p format is selected in the Video tab. Refer to the section “Using the 3G Video Mode” on page 46 for information on using this mode.

#### To configure your video outputs

1. From the **Tree View**, expand the node for the MC1-MK you want to access.
2. Select the **Configuration** node to display the interface in the right-half of Dashboard.
3. Select the **Config** tab.
4. Select the **Video** tab located at the bottom of the **Config** tab.
5. From the **Output Setup** area, locate the Output BNC you want to configure.
6. Select the output type for the four SDI outputs (on the rear module) from the **Output** field.
7. From the **Dithering** field, select the type of dithering you want to apply to all outputs.
8. Enable the Clip at White or Clip at Black feature(s) as required. Refer to **Table 14.4** for details on these features.
9. Enable the **NTSC Pass Line 21** when using NTSC (480i) video format and when Line 21 contains closed captions.

#### To set up the signal loss alarm feature

1. From the **Tree View**, expand the node for the MC1-MK you want to access.
2. Select the **Configuration** node to display the interface in the right-half of Dashboard.
3. Select the **Video** tab located at the bottom of the **Config** tab.
4. Enable or disable the alarms by selecting or clearing the required boxes in the **Signal Loss Alarm** area as needed.



## Crosspoint Mapping

Any router source can be mapped to any crosspoint button on the MC1-MK On Air Control interface using the options in the **Video Inputs** tab. Each crosspoint button can have two inputs assigned: the video source and an optional alpha source. The alpha source is used only when selecting an external key.

### For More Information on...

- the menu items in the **Video Inputs** tab, refer to **Table 14.12**.

## Default Crosspoint Mapping

The MC1-MK is shipped with a factory default mapping for the available inputs to the crosspoint buttons on the DashBoard control panel. However, you can also change the sources assigned to the router destinations that are associated with the MC1-MK using the options in the **Video Inputs** tab.

**Table 9.1** outlines the default crosspoint mapping for the MC1-MK.

**Table 9.1 Default Crosspoint Mapping**

Crosspoint Button	Unshifted Row	Shifted Row
1	Black	Black
2	Router 1	Router 7
3	Router 2	Router 8
4	Router 3	Router 9
5	Router 4	Router 10
6	Router 5	Router 11
7	Router 6	Router 12
8	Logo 1	Logo 3
9	Logo 2	Logo 4
10	RTR Extra 1	RTR Extra 2
11	SHIFT	SHIFT

## Specifying the Number of Available Crosspoints

This number is in addition to the **Shift** button.

### To specify the number of available crosspoints

1. From the **Tree View**, expand the node for the MC1-MK you want to access.
2. Select the **Configuration** node to display the interface in the right-half of DashBoard.
3. Select the **Personality** tab.
4. Use the **Number of Crosspoints** slider to specify:
  - the number of crosspoint buttons to display in the Active Channel On Air Control interface, and
  - the number of active crosspoint buttons on the MC1-MK chassis. Buttons that are unavailable are unlit on the physical panel.

## Output Mapping

Four SDI video signals are normally sent from the router to the MC1-MK. These are Program, Preset, Key Video, and Key Alpha. In order for the MC1-MK to send the correct switch commands to the router, it must know which router outputs correspond to the four SDI signals. This section enables you to specify this information.

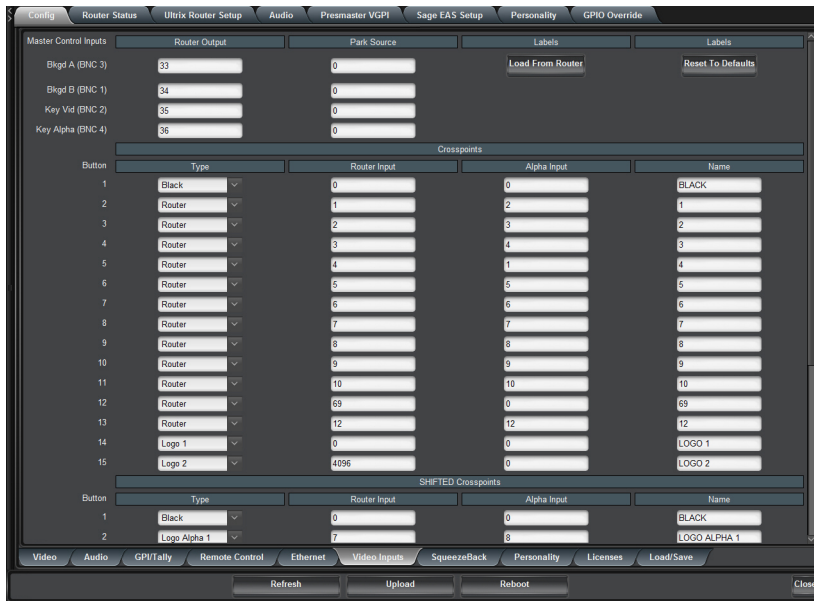
- ★ When interfacing the MC1-MK to a Ross NK Series router with Resource Management, it may be necessary to limit the number of router outputs controlled by the MC1-MK. If there are less than four format converters available, then the external key inputs of the MC1-MK must be set to zero (0). Otherwise a resource conflict may arise and this could prevent the Program or Preset bus from switching.

**For More Information on...**

- output cabling, refer to the section “**Video Connections**” on page 29.

**To map router output sources to MC1-MK inputs**

1. From the **Tree View**, expand the node for the MC1-MK you want to access.
2. Select the **Configuration** node to display the interface in the right-half of DashBoard.
3. Select the **Video Inputs** tab located at the bottom of the **Config** tab.



4. For each of the four SDI signals, enter the router output number in the **Router Output** field. The MC1-MK will use this value when sending switch commands to the router.
  - A value of zero (0) disables the router functionality. Use this option in situations where there are not sufficient resource converters available on the router.
  - Positive numbers (1 and up) are assumed to be valid router crosspoints. For a Ross NK series router, the maximum value is 1000. The MC1-MK does not validate the number, so you must ensure that the correct value is entered.
5. To apply the virtual labels from the router to the MC1-MK crosspoint buttons, perform one of the following:
  - Click **Load from Router** to port the virtual labels directly from the router. Use this option if the router supports automatic label retrieval.
  - Click **Reset to Defaults** to generate labels based on the router sources.

**To map a crosspoint button in MC1-MK**

1. From the **Tree View**, expand the node for the MC1-MK you want to access.
2. Select the **Configuration** node to display the interface in the right-half of DashBoard.
3. Select the **Video Inputs** tab located at the bottom of the **Config** tab.
4. In the provided list, locate the crosspoint button you want to assign a video signal to.

5. Use the options in the **Type** menu to configure the crosspoint as follows:
  - **Black** — Assigns black as the source for the crosspoint button.
  - **Router** — Specifies that the crosspoint is assigned to a router input.
  - **RTR Extra #** — Refer to the section “**Reserving Crosspoints for Automation Use**” on page 51 for details on selecting this option.
  - **Logo #** — Assigns the specified logo channel as the source for the crosspoint button.
  - **Logo Alpha #** — Assigns the specified logo alpha channel as the source for the crosspoint button.
  - **Bkgd A** — Assigns BKGD A (source connected to BNC 3 on the rear module) as the source for the crosspoint button.
  - **Bkgd B** — Assigns BKGD B (source connected to BNC 1 on the rear module) as the source for the crosspoint button.
6. If you selected **Router** in the **Type** menu, use the **Router Input**, and **Alpha Input** fields as required.
7. Use the **Name** field to change the displayed name if required.

## Reserving Crosspoints for Automation Use

Under Automation control with the MC1-MK **Switch Request** feature set to **Router Crosspoint**, the MC1-MK will use the first crosspoint with its **Type** set to **Router** that matches the desired crosspoint source. When the desired crosspoint source is not permanently mapped to a crosspoint button, the first available **RTR Extra** button will be temporarily mapped to the desired crosspoint source. If all **RTR Extra** buttons are in use, or there are none assigned, the automated switch request will fail.

By default, there are two **RTR Extra** buttons, with one mapped to each row. If you are not using an Automation system, or have a small number of router sources to switch, you may wish to re-map these buttons to other functions. Otherwise it is recommended to keep the default mapping of one **RTR Extra** button per crosspoint row.

### For More Information on...

- configuring the Switch Request feature, “**Automation Switch Request**” on page 60.

## Configuring the Input Signal Timing Display

The **Timing Display** feature enables you to configure how the input signal timing is reported by DashBoard. This information is displayed in the **BKGD A, B, Key Video**, and **Key Alpha 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.

### To configure the input signal timing for your card

1. From the **Tree View**, expand the node for the MC1-MK you want to access.
2. Select the **Configuration** node to display the interface in the right-half of DashBoard.
3. Select the **Personality** tab.
4. Configure how the signal timing is reported by selecting an option from the **Timing Display** menu.

## Configuring the GPI/Tally Communications

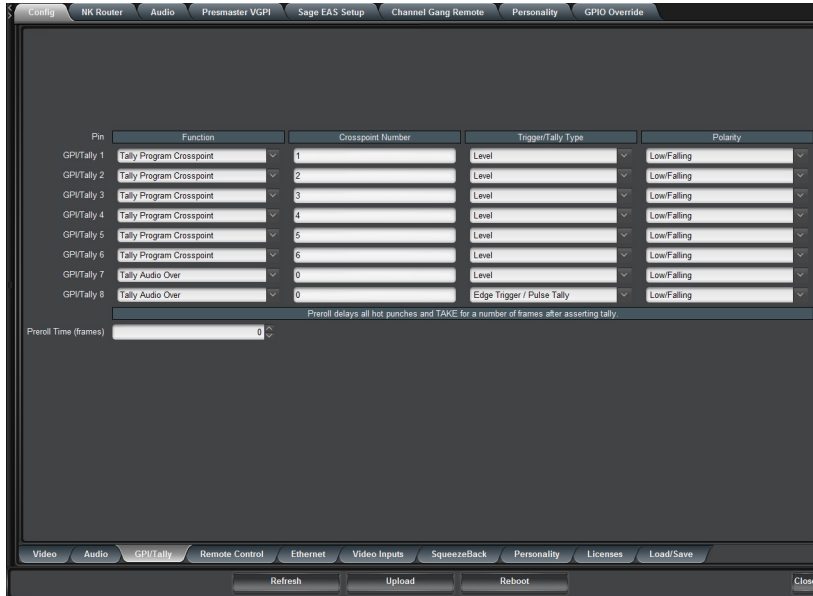
The **GPI/Tally** tab lists all the options for configuring each GPI/Tally available on the MC1-MK rear module. Each GPI/Tally can be configured independently from the others, allowing you to customize the function of each connection.

### For More Information on...

- how the MC1-MK GPI and tallies operate, “**GPI/Tally Connections**” on page 127.
- the GPI setup options in the **GPI/Tally** tab, refer to **Table 14.6**.
- the tally setup options in the **GPI/Tally** tab, refer to **Table 14.7**.

### To configure a port as a GPI

1. From the **Tree View**, expand the node for the MC1-MK you want to access.
2. Select the **Configuration** node to display the interface in the right-half of DashBoard.
3. Select the **Config** tab.
4. Select the **GPI/Tally** tab located at the bottom of the **Config** tab.



5. Assign a transition event to a GPI by selecting the function next to the GPI in the **Function** column.
6. Select a trigger for the GPI from the **Trigger/Tally Type** column.
7. Select a Polarity for the GPI from the **Polarity** column.

### To configure a port as a tally

1. From the **Tree View**, expand the node for the MC1-MK you want to access.
2. Select the **Configuration** node to display the interface in the right-half of DashBoard.
3. Select the **Config** tab.
4. Select the **GPI/Tally** tab located at the bottom of the **Config** tab.
5. Select what will drive the tally output when the input is on-air by selecting an option from the **Function** column next to the **Tally**.
6. Use the **Trigger/Tally Type** field to
7. Select the polarity of the tally from the **Polarity** column.

### Configuring a GPIO Program Crosspoint Tally

The MC1-MK enables you to specify that a tally changes state when a crosspoint or a router source is on air.

- When the **Tally Type** is set to **Level**, the GPIO output remains at the specified level as long as the specified crosspoint is on air.
- When the **Tally Type** is set to **Pulse Tally**, a 2 field pulse is generated when the selected crosspoint goes on air.

### To configure the GPIO Program crosspoint tally

1. From the **Tree View**, expand the node for the MC1-MK you want to access.
2. Select the **Configuration** node to display the interface in the right-half of DashBoard.

3. Select the **Personality** tab.
4. Set the **Switch Request** as outlined in the section “**Automation Switch Request**” on page 60.
- ★ The crosspoint number can be either a router source or a button number, as determined by the **Config > Personality > Switch Request** setting. This matches the crosspoint mapping in use by automation.
5. Select the **GPI/Tally** tab located at the bottom of the **Config** tab.
6. Configure your tally as outlined in the section “**To configure a port as a tally**” on page 52 ensuring to set the **Function to Tally Program Crosspoint**.
7. Use the **Crosspoint Number** field to specify the crosspoint on the MC1-MK panel that will trigger the Tally.

## Configuring a Pre-roll Time

The MC1-MK includes an optional pre-roll time to be used in conjunction with GPIO crosspoint tallies. The tally is asserted immediately on any TAKE or hot-punch operation. The operation is then delayed for the specified number of frames.

### To configure a pre-roll time

1. Configure your tally as outlined in the section “**To configure the GPIO Program crosspoint tally**”.
2. Select the **GPI/Tally** tab located at the bottom of the **Config** tab.
3. Use the **Preroll Time** field to specify the number of frames to pause before executing a command on any GPI/Tally connection. This value will apply to all GPI/Tally connections in use on the rear module.

## Enabling GPIs to Override Take Transitions

A personality setting enables the MC1-MK to prevent GPI-triggered keys from being taken off-air by a TAKE transition. On activation, this feature disables the corresponding key on the preset bus. Note that the key can still be taken off-air by a hot-punch.

### To enable GPIs to override Take transitions

1. From the **Tree View**, expand the node for the MC1-MK you want to access.
2. Select the **Configuration** node to display the interface in the right-half of Dashboard.
3. Select the **Personality** tab.
4. Scroll to the **GPI Triggered Keys to Override TAKE Transitions** area.
5. Select the **GPI Overrides TAKE** box.

## Linear Timecode Setup

The MC1-MK provides the option to receive Linear Timecode (LTC) on the **Serial** port, or via the **GPI** pins, then decodes and keys the timecode over the Background video. The outgoing video signal is rendered with a known and constant delay. This section describes the two methods of cabling an LTC input to the MC1-MK: via the **Serial** port, or via one of the **GPIO** ports, on the rear module. Note that how you connect to the LTC device determines how you must configure the communications between the LTC device and your card.

- ★ If you are using an automation system that requires a serial connection, you will need to connect your LTC device using the GPIO connectors.

## Serial Setup

Use the **Serial** port when the LTC device drives a balanced pair, following the recommended voltage amplitude defined in the SMPTE 12M specification. The LTC signal pair must be connected to the **Serial** port on the Rx+ and Rx- input pins. Ross Video does not supply this cable. Refer to the user manual for your LTC device for specific pinout information.

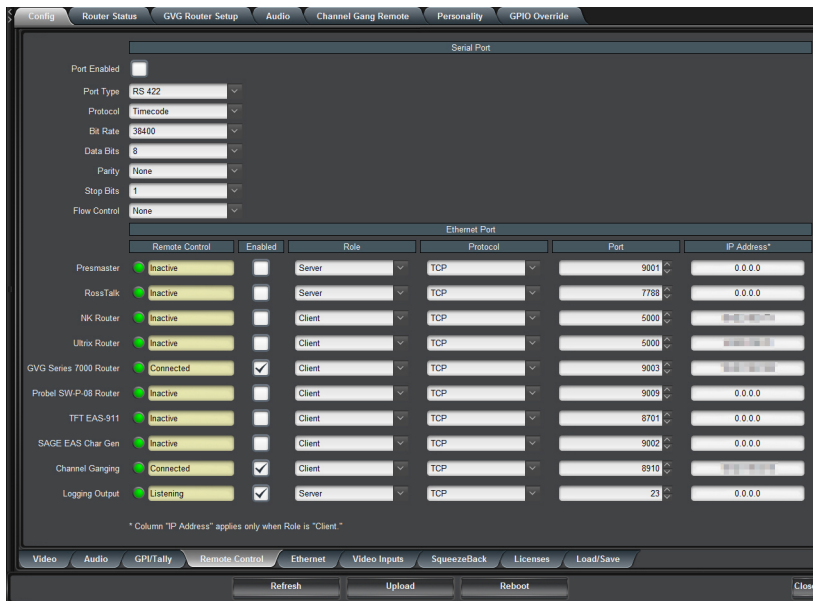
### For More Information on...

- the **Remote Control** tab, refer to the section “**Remote Control Tab**” on page 96.
- ★ Before proceeding, ensure that you connected the external device via a cable with an RJ-45 connector to the **Serial** port on the MC1-MK rear module. Refer to **Table 16.1** for pinout details.

**Notice** — Pins 4 and 5 on the 8320AR-033 rear module provide +12V @ 0.2A. Do not connect these pins if unused, these pins must be left unterminated (floating).

### To configure serial communications for an LTC input

1. From the **Tree View**, expand the node for the MC1-MK you want to access.
2. Select the **Configuration** node to display the interface in the right-half of DashBoard.
3. Select the **Config** tab.
4. Select the **Remote Control** tab located at the bottom of the **Config** tab.
5. Select **Timecode** from the **Protocol** box.
6. Select **RS 422 unterm** from the **Port Type** box.
7. Select the **Port Enabled** box. Note that when the Port is disabled, any incoming data on the serial port is discarded by the card. The **Bit Rate**, **Data Bits**, **Parity** and **Stop Bits** fields are ignored.



### GPI Setup

The GPI ports are available on four 3-pin connectors located on the Rear Module. Ross Video does not supply these cables. Use one of the **GPIO** ports when the LTC device drives a single-ended TTL compatible signal. The left and right pins are the two GPI/O signals while the center pin is the common Ground (GND). Refer to the section “**GPI/Tally Setup**” on page 32 for cabling details.

- ★ When using a GPI port for LTC, the LTC interface must be TTL compatible where V (IH) is 2.0V-5.0V, and V(IL) is 0.0V-0.8V.

### For More Information on...

- the **GPI/Tally** tab, “**GPI/Tally Tab**” on page 94.

### To configure GPI communications for an LTC input

- ★ Ensure that only one GPI port is configured as an LTC input at one time. If you attempt to configure a second GPI port for timecode communications, the first GPI will be automatically assigned to **None**.
1. From the **Tree View**, expand the node for the MC1-MK you want to access.
  2. Select the **Configuration** node to display the interface in the right-half of DashBoard.
  3. Select the **Config** tab.
  4. Select the **GPI/Tally** tab located at the bottom of the **Config** tab.
  5. From the **Function** box for the GPI you are configuring, select **Timecode Input**. The **Trigger** and **Polarity** fields are ignored.

## SqueezeBack Setup

The MC1-MK can be used to perform on-air SqueezeBack transitions to reveal another video source or graphic. If you wish to include a SqueezeBack with your transitions, you must first specify the key order using the **SqueezeBack** tab, a sub-tab of the **Config** tab.

### For More Information on...

- the options in the SqueezeBack tab, refer to **Table 14.13**.

### Specifying the Key Order

You can select the SqueezeBack point in the mixer tree. There are five possible options. The figures below shows some of the options. This setting is applied to all SqueezeBacks.

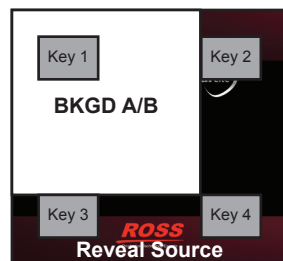


Figure 9.1 Background Only

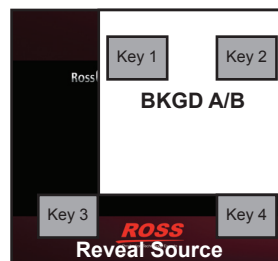


Figure 9.2 After Key 2

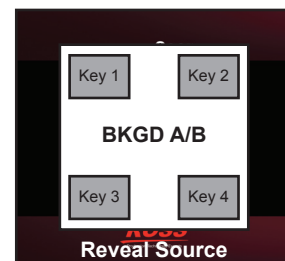
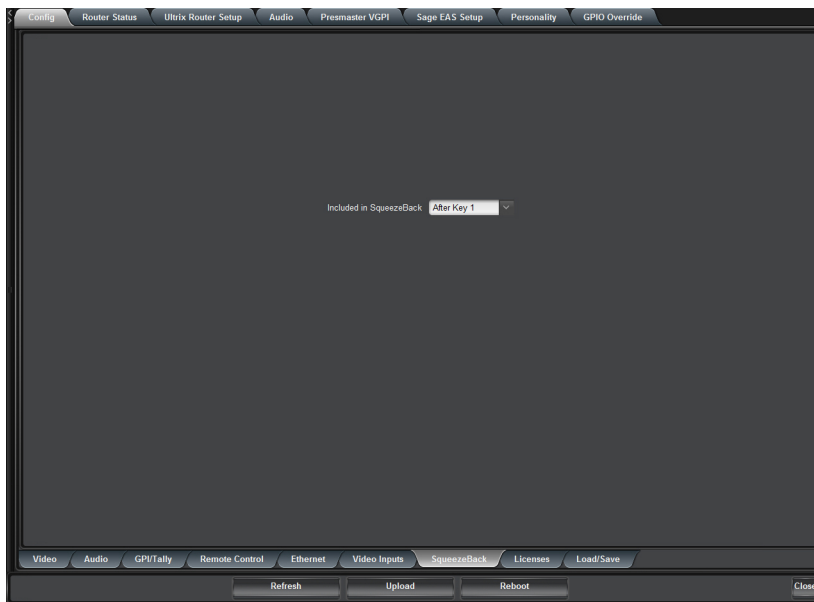


Figure 9.3 After Key 4

### To specify the key order of the SqueezeBacks

1. From the **Tree View**, expand the node for the MC1-MK you want to access.
2. Select the **Configuration** node to display the interface in the right-half of DashBoard.
3. Select the **SqueezeBack** tab located at the bottom of the **Config** tab.



4. Use the **Included in SqueezeBack** menu to specify the key order.

## Configuring a Tally for a SqueezeBack

You can configure an on air tally for the reveal source. This tally will be raised regardless of the configured source. This is useful when a graphics stations is providing the video and needs to know when to trigger a play of an animation.

### To configure a tally for SqueezeBack

1. Set up your tally as outlined in the section “**Rear Module Overview**” on page 32.
2. From the **Tree View**, expand the node for the MC1-MK you want to access.
3. Select the **Configuration** node to display the interface in the right-half of Dashboard.
4. Select the **Config** tab.
5. Select the **GPI/Tally** tab located at the bottom of the **Config** tab.
6. To configure a tally port:
  - a. Select **Tally SqueezeBack** from the **Function** column for the tally you wish to configure.
  - b. Select the polarity of the tally from the **Polarity** column.

## Configuring GPI Control of SqueezeBacks

You can trigger a SqueezeBack using a GPI trigger.

### To configure a GPI for SqueezeBacks

1. Set up your GPI as outlined in the section “**GPI/Tally Setup**” on page 32.
2. From the **Tree View**, expand the node for the MC1-MK you want to access.
3. Select the **Configuration** node to display the interface in the right-half of Dashboard.
4. Select the **Config** tab.
5. Select the **GPI/Tally** tab located at the bottom of the **Config** tab.
6. To configure a GPI:



- a. Select the **GPI SqueezeBack #** in the **Function** column for the SqueezeBack you wish to trigger using the GPI you set up in 1
- b. Select the polarity of the tally from the **Polarity** column.

## Verifying the GPIO Functions

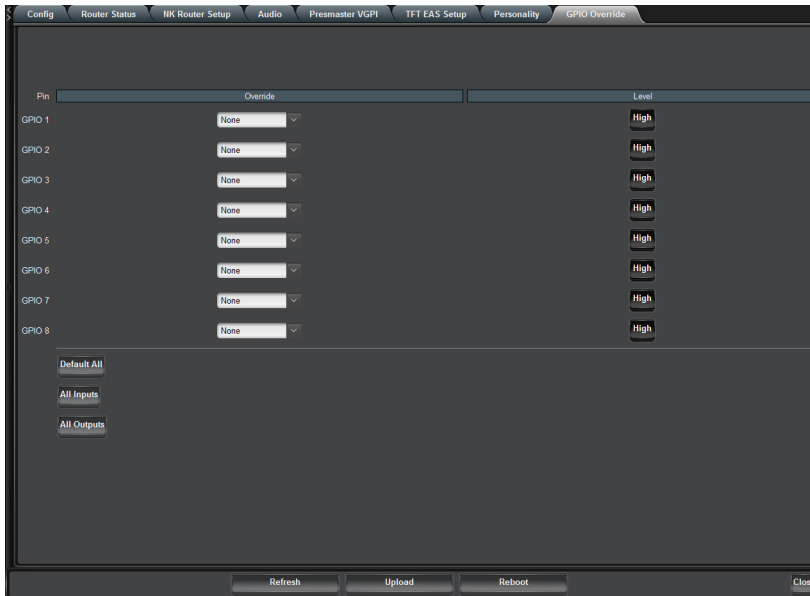
The MC1-MK uses General Purpose Interface (GPI) input and output signals to trigger events on external equipment, or have external equipment trigger events on the card.

Once you have installed and configured the GPIs for your MC1-MK, you may wish to test the card's GPI functions. The options on the GPIO Override tab enable you to override the configured GPI function or view the current GPIO state, allowing you to verify the communication between the MC1-MK and your external equipment.

### To override the function of a GPIO

★ Before using the options in the GPIO Override tab, you must configure your GPI inputs and outputs using the options in the GPI/Tally tab. Otherwise the selections on the GPIO Override tab will have no effect.

1. From the **Tree View**, expand the node for the MC1-MK you want to access
2. Select the **GPIO Override** tab.



3. From the override **Function** menu for the GPI you want to verify, select the function you want to test. Choose from the following:
  - **None** — The current settings are not overridden. The **Level** button in the **GPIO Override** tab indicates the current physical state of the GPIO. This is the default setting.
  - **Input** — The MC1-MK disregards the GPI input levels from the rear module and enables the user to control the GPI operations from the **GPIO Override** tab as if the GPI inputs were connected.
  - **Output** — The MC1-MK enables the user to control of the GPO output levels on the rear module.
4. If you set the override **Function** to **Input** or **Output**, toggle the **Level** button for the GPIO to set the polarity of the level trigger to verify the trigger on your external equipment.

## Using the Presmaster Protocol for VGPIs

The Virtual GPI (VGPI) functionality of the Miranda™ Presmaster Automation Protocol can be used to trigger squeeze on/off transitions on the MC1-MK using a specified SqueezeBack preset. This section outlines how to associate a SqueezeBack preset with one of the four VGPIs that the MC1-MK can control.

### For More Information on...

- the Presmaster commands, refer to the Miranda™ Presmaster Automation Protocol documentation.
- the Presmaster VGPI commands the MC1-MK supports, refer to **Table 17.1**.
- the options in the Presmaster VGPI tab, refer to **Table 14.27**.
- the location of the **ATMN** button on the **On Air Control** interface, refer to the *MC1-MK Operation Manual*.

## Assigning a VGPI to a SqueezeBack Preset

When you select the Miranda™ Presmaster protocol on the Remote Control tab, the **Presmaster VGPI** tab is automatically displayed in the Device View of DashBoard. This Presmaster VGPI tab enables you to assign one of four Virtual GPIs (VGPIs) to a specific SqueezeBack preset. Note that these VGPIs are not associated with the physical GPIO ports on the rear module.

### For More Information on...

- enabling the Presmaster protocol, refer to the *openGear Miranda™ Presmaster Setup Sheet* available from our website.

### To assign a SqueezeBack Preset to an VGPI

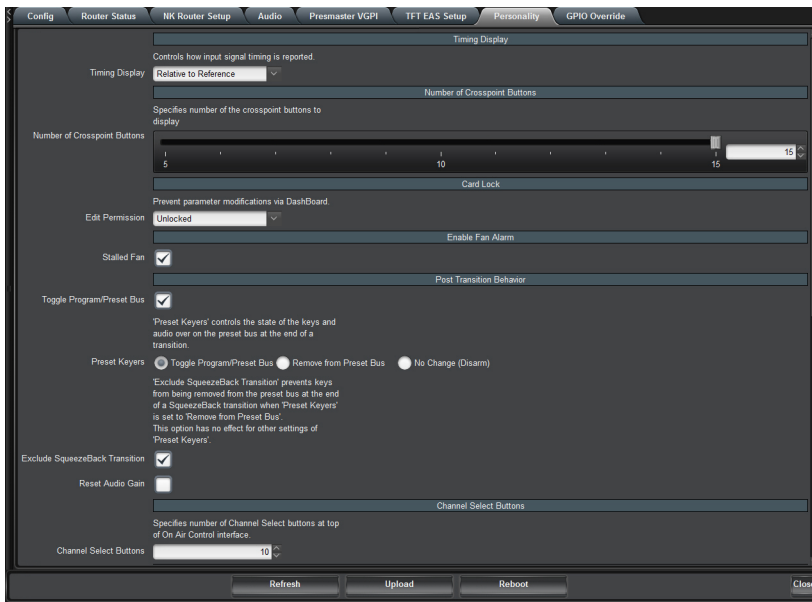
1. From the **Tree View**, expand the node for the MC1-MK you want to access.
2. Select the **Configuration** node to display the interface in the right-half of DashBoard.
3. Select the **Presmaster VGPI** tab. If the **Presmaster VGPI** tab is unavailable, verify that you have correctly installed your device and it is communicating with the MC1-MK.
4. Assign a specific SqueezeBack Preset for each VGPI using the **Function** menus.
5. Ensure the **ATMN** button is toggled to **ON** to enable your automation device to control the MC1-MK. This button is located on the **On Air Control** interface.

## Configuring the Edit Permissions

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

### To configure the card edit permissions

1. From the **Tree View**, expand the node for the MC1-MK you want to access.
2. Select the **Configuration** node to display the interface in the right-half of DashBoard.
3. Select the **Personality** tab.



4. Choose an option from the **Edit Permission** menu.

## Auto Swapping of Program and Preset Buses

A personality option is provided that allows the user to specify the behavior of the Program and Preset buses after a transition. You can choose to have the Program and Preset bus flip-flop after a transition (default setting), or have the Preset bus unchanged after a transition.

### To swap the buses after a transition

1. From the **Tree View**, expand the node for the MC1-MK you want to access.
2. Select the **Configuration** node to display the interface in the right-half of Dashboard.
3. Select the **Personality** tab.
4. From the **Post Transition Behavior** area, select the first **Toggle Program/Preset Bus** box.

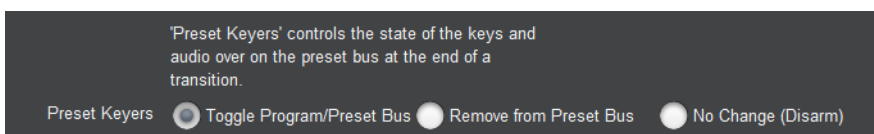
## Specifying the Preset Keyers Behavior

The Preset Keyers personality option allows the user to specify the behavior of the keyers and the Audio Over on the Preset bus after a transition.

★ This affects all Keyers unless EAS is enabled (on the Remote Control tab). When EAS is enabled, only Keyers 1-3 are affected.

### To configure the Preset Keyers option

1. From the **Tree View**, expand the node for the MC1-MK you want to access.
2. Select the **Configuration** node to display the interface in the right-half of Dashboard.
3. Select the **Personality** tab.



4. From the **Post Transition Behavior** area, select the one of the following **Preset Keyers** options:
  - **Toggle Program/Preset Bus** — The keyers will automatically flip-flop between Program and Preset after a transition.
  - **Remove from Preset Bus** — The keyers on the Preset bus will be turned off automatically after a transition. The operator must manually select the keyer(s) to be included in the next transition. If you select this option, enabling the Exclude SqueezeBack Transition feature will stop keys from being disarmed at the end of a Squeeze transition.
  - **No Change** — The Preset bus is unchanged after a transition. Preset keyers follow Program keyers on hot-punches.

## Disabling the Fade to Black Button

You can disable the functionality of the Fade to Black (**FTB**) button on the On Air Control interfaces and the physical button on the MC1-PANEL-16 chassis. Once disabled, pressing the button has no effect.

- ★ Ensure that **FTB** is not selected or in use before disabling its function. Disabling the button while it is selected (active) locks the on-air output to black.

### To disable the FTB button

1. From the **Tree View**, expand the node for the MC1-MK you want to access.
2. Select the **Configuration** node to display the interface in the right-half of Dashboard.
3. Select the **Personality** tab.
4. To disable the **FTB** button, select the **Disable FTB** option. You may need to scroll to the bottom of the tab to locate this option.

## Automation Switch Request

When the MC1-MK interfaces with an Automation System, you can choose how the MC1-MK defines automation switch requests. This feature applies to the Program bus, Preset bus, and external sources. Ensure the **ATMN** button is toggled to **ON** to enable your automation device to control the MC1-MK. This button is located on the **On Air Control** interface.

### To define the automation switch requests

1. From the **Tree View**, expand the node for the MC1-MK you want to access.
2. Select the **Configuration** node to display the interface in the right-half of Dashboard.
3. Select the **Personality** tab.
4. From the **Automation Switch Request** area, select how a crosspoint switch is defined:
  - **Router Crosspoint** — The received value refers to a physical or virtual router crosspoint. This is the default setting.
  - **Button Map** — The received value refers to a specific MC1-MK crosspoint button on the Dashboard control panel. Note that these crosspoint buttons are defined in the **Video Inputs** tab.

### To define the TAKE button behavior for automation

1. From the **Tree View**, expand the node for the MC1-MK you want to access.
2. Select the **Configuration** node to display the interface in the right-half of Dashboard.
3. Select the **Personality** tab.

4. From the **Take Button on Panel** area, define the behavior of the **TAKE** button for automation:
  - **Take** — No change to the **TAKE** button behavior. This is the default setting.
  - **Take Next** — The **TAKE** button sends a new tally to the automation device instead of performing a Take transition. The **TAKE** button in the On Air Control interface is now re-named to **TAKE NEXT**. The MC1-MK uses the same tally to inform the automation device the state of the ATMN button of the MC1-MK as outlined in the section “**Take Command**” on page 17-133.

## Using Multiple MC1-MK Cards

When using multiple MC1-MK Master Control Switchers, it may be desirable to control any MC1-MK from a DashBoard console. To facilitate switching between multiple MC1-MK cards, a row of dedicated Channel Select buttons is provided in the upper left of the On Air Control interface. You can change the icons displayed in the Channel Select Buttons, the Basic Tree View node, and the Home tab by updating the corresponding graphic files stored on the MC1-MK card.

This section outlines how to update the icons for an MC1-MK and how to assign a MC1-MK Master Control Switcher to a Channel Select button.

### Updating the Icons

It is intended for users to update the icon graphics for each MC1-MK with their own versions, particularly if they have more than one MC1-MK. For example, you may wish to identify each MC1-MK by using a specific station logo. This section summarizes the graphic files used by a card.

### Overview of the Graphic Files

The graphic files are stored on the CompactFlash™ of the MC1-MK in a top-level directory on the card named **ross**. Note that the underlying file system (ext3) is case-sensitive, and that both the directory and the filenames are lower-case. Inside the **ross** directory there are three files, containing icons (station logos) in various sizes. (Table 9.2) When replacing the content of these files, ensure that the image dimensions remain the same. For best results, also ensure that these images have a transparent background.

**Table 9.2 Image Files for Multi-Channel Setups**

Filename	Image Dimensions	Used for...
station_logo_icon.png	16 x 16 pixels	Basic Tree View node icon
station_logo_small.png	50 x 50 pixels	Channel Select button icon
station_logo_large.png	450 x 250 pixels	On Air Controls, Home tab icons

### Managing the Graphic Files

Use an FTP client to connect to the MC1-MK and replace the graphic files stored on the card. This is exactly the same procedure as is used to load other graphics files to logo channels on the MC1-MK. Refer to the *MC1-MK Operation Guide* for details.

Once new files are transferred to the MC1-MK via FTP, they will immediately be used. However, DashBoard software caches the images and may not display the new icons right away. Refreshing the card (click the **Refresh** button), or restarting DashBoard, generally fixes this problem.

### Configuring the Channel Select Buttons

The Channel Select buttons are located in the upper left corner of each card’s On Air Control interface. Until these are configured by the user, they appear as empty buttons. Clicking the empty buttons has no effect. You can specify the number of Channel Select buttons, to a maximum of 10, that display in the interface using an option in the Personality tab.

These buttons allow you to toggle between the On Air Control interfaces of multiple MC1-MK Master Control Switchers. Selecting a button displays the corresponding MC1-MK **On Air Control** interface in DashBoard. A lit button indicates that the corresponding On Air Control interface is the currently active card in DashBoard.

Prior to configuring the Channel Select buttons, each MC1-MK should be given a custom set of icon (station logo) graphics as described in the previous section. Channel Select buttons will operate with the default logos, but it may be confusing to the operator.

It is highly recommended to consistently assign MC1-MK cards to the Channel Select buttons. For example, assigning the same MC1-MK to the first Channel Select button regardless of the On Air Control interface ensures that the clicking the first Channel Select button displays the same MC1-MK.

#### **To specify the number of Channel Select buttons**

1. From the **Tree View**, expand the node for the MC1-MK you want to access.
2. Select the **Configuration** node to display the interface in the right-half of DashBoard.
3. Select the **Personality** tab.
4. Specify the number of buttons to display in the On Air Control interface of that MC1-MK by typing the number into the **Channel Select Buttons** field.
5. Repeat steps 1-4 for each MC1-MK you wish to configure.

#### **To configure the first MC1-MK**

1. Display the **On Air Control** interface of the first MC1-MK as follows:
  - a. From the **Tree View**, expand the node for the first MC1-MK you want to access.
  - b. Expand the node for the first MC1-MK.
  - c. Double-click its **On Air Control** node.
2. Return to the **Tree View**.
3. Assign the first MC1-MK to the first Channel Select button as follows:
  - a. Select the **On Air Control** node and keep the mouse button pressed.
  - b. Drag the node over the first Channel Select button. Notice the mouse pointer changes shape when over the target button.
  - c. Release the mouse button. The Channel Select button updates to show the appropriate logo for the first MC1-MK.
4. Repeat step 3 for the second MC1-MK, but ensuring to assign the second MC1-MK to the second Channel Select button.
5. Assign each additional MC1-MK to a button in **On Air Control** node of the first MC1-MK. Refer to **Figure 9.4** for an example of a possible button mapping.

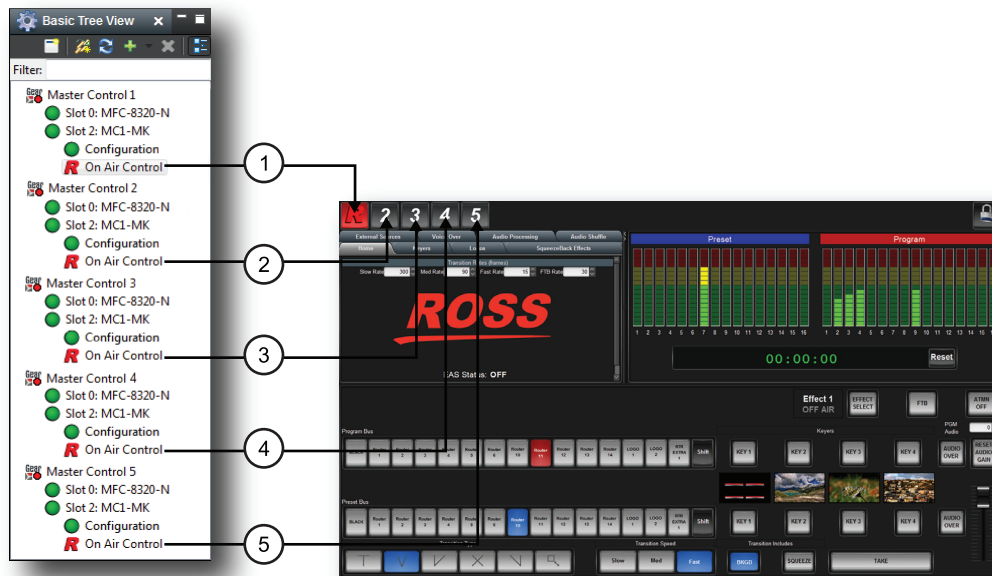


Figure 9.4 Example of Assigning Multiple MC1-MK to Channel Select Buttons

### To set up additional MC1-MK

1. Display the **On Air Control** interface of the next MC1-MK as follows:
  - a. From the **Tree View**, expand the node for the next MC1-MK.
  - b. Double-click its **On Air Control** node.
2. Return to the **Tree View**.
3. Drag the On Air Control node of the first MC1-MK to the first Channel Select button on the next MC1-MK On Air Control interface.
4. Drag the On Air Control node of the second MC1-MK to the second Channel Select button on the next MC1-MK.
5. Repeat for each additional MC1-MK to add the buttons to the On Air Control interface for each MC1-MK. Refer to **Figure 9.4** for an example of a possible button mapping.

### Notes on Using Multiple MC1-MK Cards

When setting up the Channel Select buttons, it is important that the sequence of devices be consistent. Otherwise the buttons will appear to “move around” when toggling between interfaces. This cannot be enforced automatically, the user must be careful when setting up the buttons.

If the IP address of any MC1-MK cards changes, then the Channel Select buttons will not work correctly. Specifically, the red background color that indicates the currently active device will not be correct. It is highly recommended to use static IP addresses to avoid this problem.

If either of these problems occur, they can easily be fixed by simply repeating the procedure “**Configuring the Channel Select Buttons**” on page 61.

### Channel Ganging

The **Channel Ganging** feature enables one master MC1-MK to control up to three remote MC1-MK over an ethernet connection. This functions as a master/slave (remote) system where the master MC1-MK is configured as a Server and each remote MC1-MK is configured as a Client.

## Before You Begin

Ensure each MC1-MK is connected to your facility network and configured for ethernet communications.

### For More Information on...

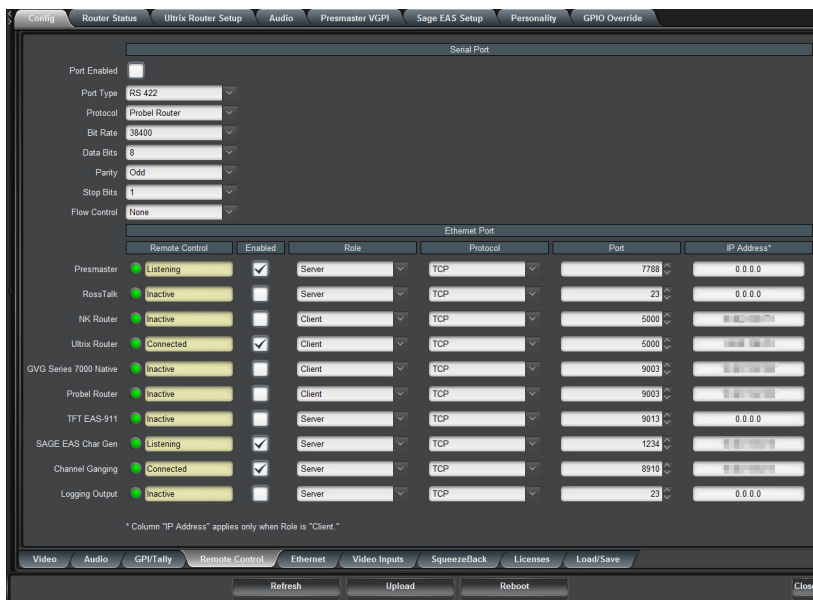
- cabling, refer to the section “**Ethernet Communications**” on page 31.
- configuring the network settings for your card, refer to the section “**To set up ethernet communications for the MC1-MK**” on page 45.

## Assigning a Role to the MC1-MK

Master and remote operation is determined by the role assigned to the MC1-MK in its **Remote Control** tab.

### To configure an MC1-MK as a master

1. From the **Tree View**, expand the node for the MC1-MK you want to access.
2. Select the **Configuration** node to display the interface in the right-half of Dashboard.
3. Select the **Config** tab.
4. Select the **Remote Control** tab located at the bottom of the **Config** tab.
5. Locate the **Channel Ganging** row in the **Ethernet Port** area of the tab.
6. Select **Server** from the **Role** menu.



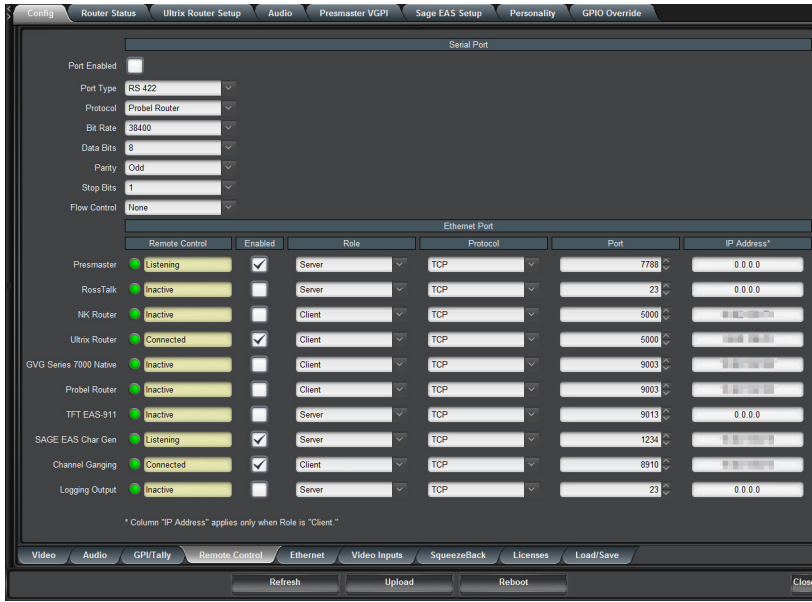
7. Use the **Protocol** menu to specify the Transmission Control Protocol (TCP).
8. Use the **Port** menu to specify the TCP port numbers where the MC1-MK will listen on.
9. Select the **Enabled** box to apply your changes and enable the channel ganging communications on the **Ethernet** port.

### To configure an MC1-MK as a remote

1. From the **Tree View**, expand the node for the MC1-MK you want to access.
2. Select the **Configuration** node to display the interface in the right-half of Dashboard.
3. Select the **Config** tab.
4. Select the **Remote Control** tab located at the bottom of the **Config** tab.
5. Locate the **Channel Ganging** row in the **Ethernet Port** area of the tab.



- Select **Client** from the **Role** menu.



- Use the **Protocol** menu to specify the MC1-MK uses the Transmission Control Protocol (TCP).
- Use the **Port** menu to specify the remote port number to which the current (remote) MC1-MK will try to connect to the master MC1-MK.
- Use the **IP Address** field to specify the IP address of the master MC1-MK.
- Select the **Enabled** box to apply your changes and enable the channel ganging communications on the **Ethernet** port.

## Channel Ganging Status

The master MC1-MK passes all commands to each remote MC1-MK in the channel gang. Each remote MC1-MK responds back to the master in minute intervals.

## Master Status

If the MC1-MK is configured as a master, the **Channel Gang Master** tab reports on the communications between it and each remote MC1-MK connected to it. Each remote is listed on the tab, with the most recently connected MC1-MK is displayed at the bottom of this list. The overall status of the master MC1-MK, including the number of remotes currently ganged to it, is reported in a black field above the remote MC1-MK status fields.

Should a remote MC1-MK become out of sync with the master MC1-MK, use the **Push** Setting buttons to update the set of commands sent to the specified remote MC1-MK or to all remote MC1-MKs currently connected.



Figure 9.5 Channel Gang Master Tab

## Remote Status

If the MC1-MK is a remote, the **Channel Gang Remote** tab reports on the communications between it and the master (specified in the IP address of the **Remote Control** tab of the remote MC1-MK).

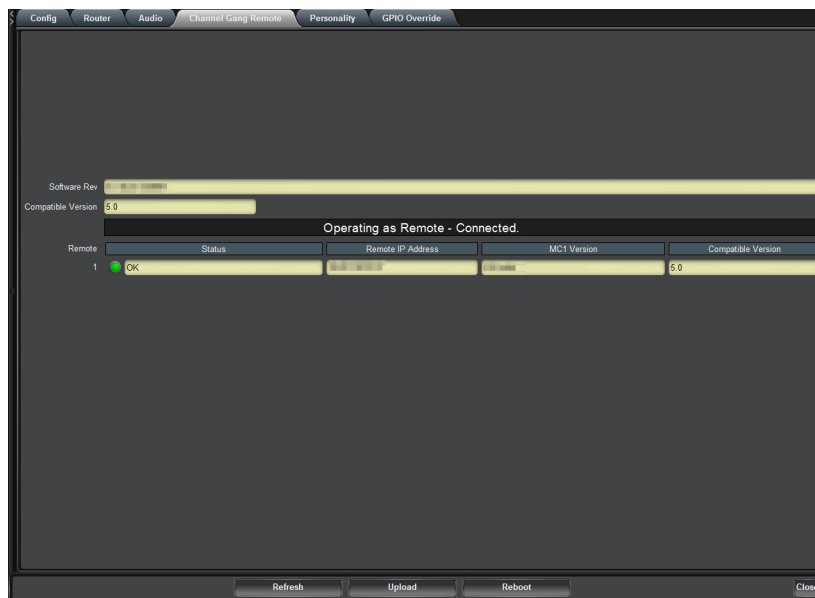


Figure 9.6 Channel Gang Remote Tab

## Troubleshooting

If you have lost communications between the master MC1-MK and its remote channels:

1. Verify that each MC1-MK card is securely installed in its openGear frame. Refer to the section “**Installing the MC1-MK Card**” on page 27 for details.
2. Verify that each MC1-MK is installed with a network connection to your facility. Refer to the section “**Ethernet Communications**” on page 31 for details.
3. Verify the ethernet settings for each MC1-MK card are valid. Refer to the section “**To set up ethernet communications for the MC1-MK**” on page 45 for details.

4. Verify that the master MC1-MK:
  - is configured as a Server. Refer to the section “**To configure an MC1-MK as a master**” on page 64.
  - displays the **Channel Gang Master** tab and reports a valid connection to the remote MC1-MK channel(s).
5. Verify that each remote MC1-MK:
  - is configured as a Client. Refer to the section “**To configure an MC1-MK as a remote**” on page 64.
  - displays the **Channel Gang Remote** tab and reports a valid connection to the master MC1-MK.
  - is running software that is compatible to the master MC1-MK.
6. Synchronize the remote MC1-MK channel(s) to the master MC1-MK by choosing one of the following:
  - Select the **Push** button on the master MC1-MK for the affected remote MC1-MK
  - Select the **Push to ALL Remotes** button to send the commands to all the remote MC1-MK channels.

## Loading the Factory Defaults

If required, the card menu parameters can be reset to the factory default values using the option available in the **Load/Save** tab. All parameters are reset except those listed in **Table 14.16**.

### To reset the card to the factory default settings in Dashboard

1. From the **Tree View**, expand the node for the MC1-MK you want to access.
  2. Select the **Configuration** node to display the interface in the right-half of Dashboard.
  3. Select the **Config** tab.
  4. Select the **Load/Save** tab located at the bottom of the **Config** tab.
  5. From the **Global Settings** area, click **Load Factory Defaults** to display the **Confirm** dialog.
  6. Click **Yes** to load the factory default values for all menu parameters, or **No** to cancel the load and close the dialog.
- ★ To ensure that the Dashboard fields display the updated settings, it is recommended to click the **Refresh** button, located at the bottom of the **Configuration** interface, after the factory defaults are fully loaded.



# Audio Configuration

This chapter provides instructions for configuring the audio features of the MC1-MK using the options available in DashBoard. This includes how to specify audio groups to embed, applying duck and gain levels, and specifying the Voice Over source.

★ Before proceeding, ensure that you are running DashBoard software version 6.2.0 or higher. The DashBoard Control System software and user manual are available to download from the Ross Video website.

## Audio Overview

The MC1-MK provides the ability to independently configure the audio channel map and gain of each input (up to 16) that can be selected on the crosspoint bus, and to adjust the gain, or mute, individually, each of the 16 embedded channels. The audio processing and shuffle settings are retained on a per crosspoint basis. In addition, audio settings can be saved to one of four audio profiles that can be applied to any crosspoint during a **TAKE** transition.

**For More Information on...**

- automation protocol support for audio, refer to the section “**Commands**” on page 129.

## Workflow

**Figure 10.1** provides a simplified workflow diagram of the MC1-MK audio processing.

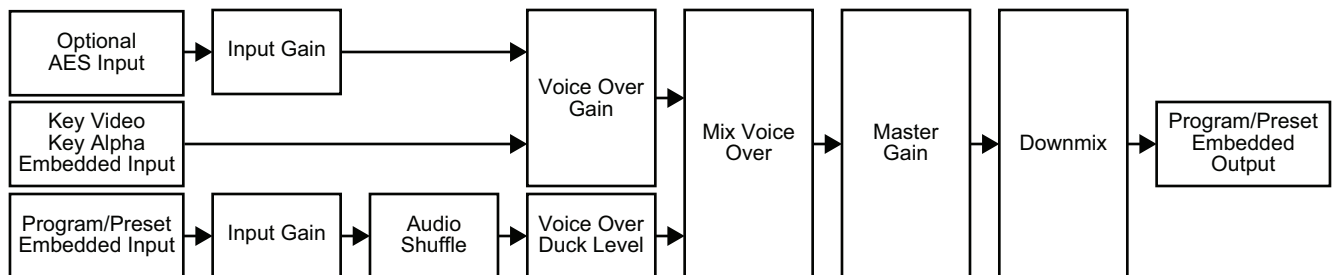


Figure 10.1 Audio Processing Workflow

## Audio Shuffling

The MC1-MK provides the flexibility to modify the map of audio channels inside the SDI bit stream. This is useful when the incoming feed has multiple languages, with each language consisting of a channel pair.

## Voice Over and EAS

The MC1-MK enables flexible audio/voice over mixing with a variable program audio duck level, audio over gain control, and preset mixing with transition control. When Voice Over or EAS is active, all channels are mixed. If the source may contain more audio channels that you want mixed, ensure to use the Mute setting for those channels.

When setting up the gain and duck levels, note that audio sources are layered with the EAS positioned downstream from the Voice Over channel. For example, applying a duck level when EAS is active, also applies that value to the Voice Over channel (if active) and the other incoming audio sources. That means when both Voice Over and EAS audio are in effect, it is possible to duck the incoming audio twice.

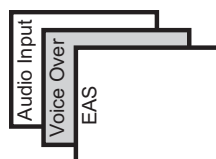


Figure 10.2 Audio Layering

## Audio Profiles

You can define up to four audio profiles. Each profile records the audio processing and shuffling settings for all 16 embedded channels including:

- which audio sources are re-mapped
- gain to the input(s)
- embedded audio source
- pass mode (enabled or disabled)
- mute (enabled or disabled)
- which channels are inverted (or not)

## Audio Downmixers

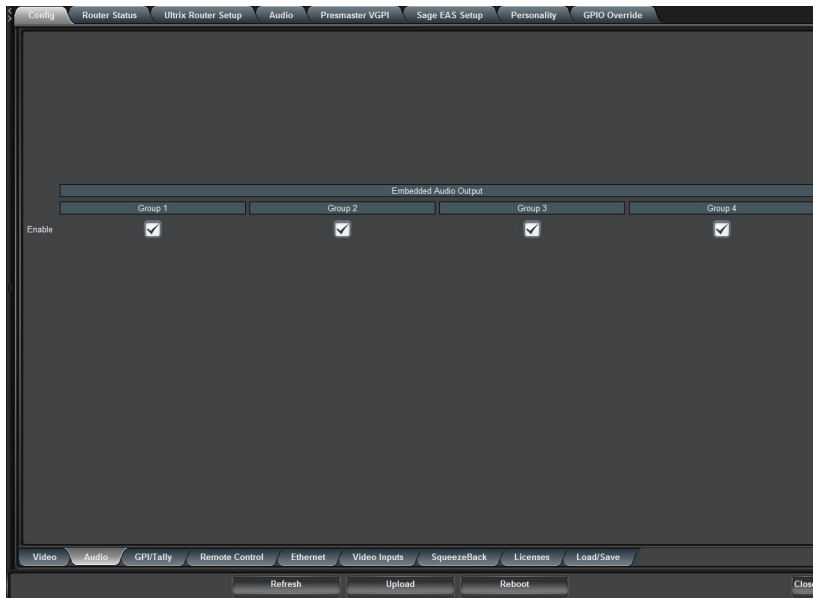
Two independent downmixers (Downmixer 1, Downmixer 2) enable the selection of any embedded audio sources serving as Left (L), Right (R), Center (C), Low-frequency Effects (LFE), Left Surround (Ls), and Right Surround (Rs) individual signals to be multiplexed into a stereo pair. The resulting stereo pairs can then be routed and processed as any other audio source.

## Specifying Embedded Audio Groups

The **Audio** tab enables you to specify which audio group is embedded in the output.

### To specify which audio groups to embed

1. From the **Tree View**, expand the node for the MC1-MK you want to access.
2. Select the **Configuration** node to display the interface in the right-half of Dashboard.
3. Select the **Config** tab.
4. Select the **Audio** tab located at the bottom of the **Config** tab.



5. Enable the embedding of each audio group by selecting the associated **Enable** check box.

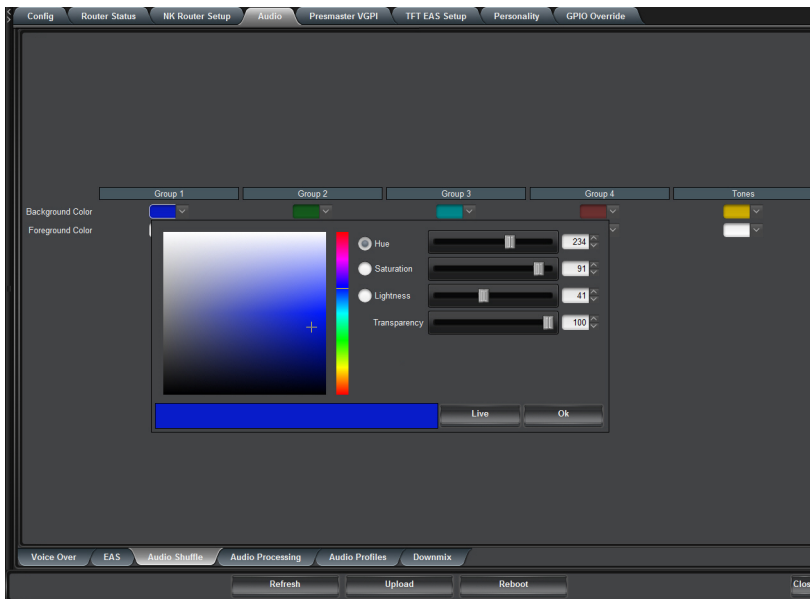
## Audio Shuffling

The MC1-MK provides the ability to change the color scheme of the audio group buttons in the On Air Control interface. This allows you to assign a unique color to each group, allowing you to quickly identify the groups on the interface.

★ The settings on the Audio Shuffle tab are included when saving audio profiles.

### To map the audio channels

1. From the **Tree View**, expand the node for the MC1-MK you want to access.
2. Select the **Configuration** node to display the interface in the right-half of Dashboard.
3. Select the **Audio** tab.
4. Select the **Audio Shuffle** tab located at the bottom of the **Audio** tab.
5. To change the color of an audio group button on the **On Air Control** interface:
  - a. Select the associated **Background Color** menu for the audio group button you want to configure. The **Audio Group Button Color** dialog displays.



- b. Use the **Hue** options to specify whether the color is red yellow, green, blue, purple etc. Or you can select the hue from the provided vertical color grid in the dialog.
  - c. Use the **Saturation** options to specify the depth of the color.
  - d. Use the **Lightness** options to specify the amount of white or black mixed with the selected hue.
  - e. Confirm that the field beneath the color grids displays the selected color.
6. To change the color of an audio group button on the **On Air Control** interface:
    - a. Select the associated **Foreground Color** menu for the audio group button you want to configure. The **Audio Group Button Text Color** dialog displays.
    - b. Use the **Hue** options to specify whether the button text color is red yellow, green, blue, purple etc. Or you can select the hue from the provided vertical color grid in the dialog.
    - c. Use the **Saturation** options to specify the depth of the color.
    - d. Use the **Lightness** options to specify the amount of white or black mixed with the selected hue.
    - e. Confirm that the field beneath the color grids displays the selected color.

7. Apply your changes using one of the following options:
  - Click **Live** to preview the color scheme and apply it but not close dialog; or
  - Click **OK** to apply the new color scheme and close the dialog.

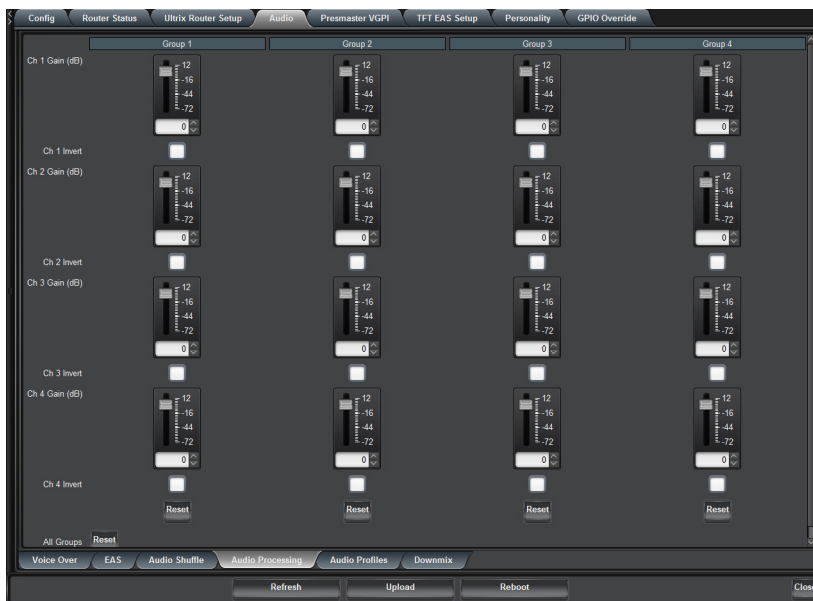
## Audio Processing

The MC1-MK provides the ability to adjust the gain of each of the 16 embedded channels. You can also choose to sum every adjacent pair of audio groups with the first channel on the Odd Channel numbers (e.g. Channels 1 and 2, 3 and 4, 5 and 6 etc.).

★ The settings on the Audio Processing tab are included when saving audio profiles.

### To configure the audio proc amps

1. From the **Tree View**, expand the node for the MC1-MK you want to access.
2. Select the **Configuration** node to display the interface in the right-half of DashBoard.
3. Select the **Audio** tab.
4. Select the **Audio Processing** tab located at the bottom of the **Audio** tab.



5. To apply a gain to a channel, use the associated **Ch #** slider to select a value between -72dB and +12dB.
6. To invert a channel, select the associated **Ch # Invert** box.
7. To reset the gain and invert values for a group, select the associated **Reset** button.
8. If required, repeat steps 5 to 6 for each channel in the group.

★ Changes made to settings on the Audio Processing tab do not take effect immediately. A **TAKE** transition must be made to apply the new settings.



## Downmix Setup

Two independent downmixers are available that each multiplex any embedded AES output audio channel sources (as Left, Right, Center, LFE, Left Surround, and Right Surround) into a stereo pair (Downmix 1 or Downmix 2).

### Overview of the Audio Modes

The options available for a Downmix channel depends on the audio mode you set the downmixer to.

#### LtRt Mode

When a Downmixer is set to LtRt Mode, the card creates a Left Total (Lt) and Right Total (Rt) group of your 5.1 surround mix.

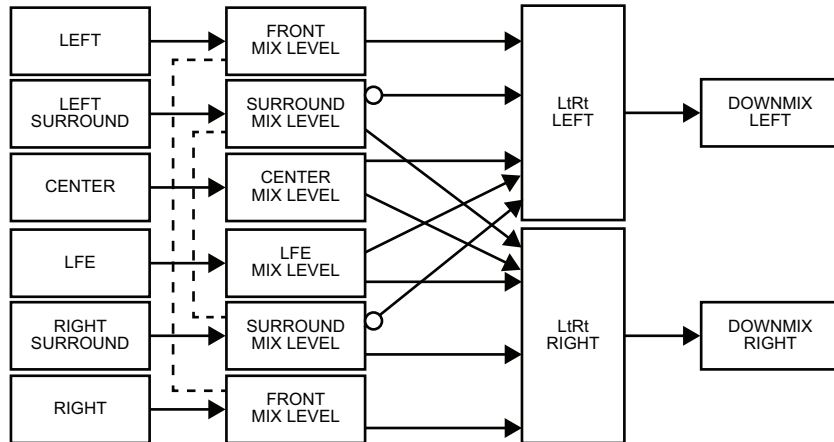


Figure 10.3 Downmix Channel — LtRt Mode

#### LoRo Mode

When a Downmixer is set to LoRo, the card routes the left and right channels only of the selected source.

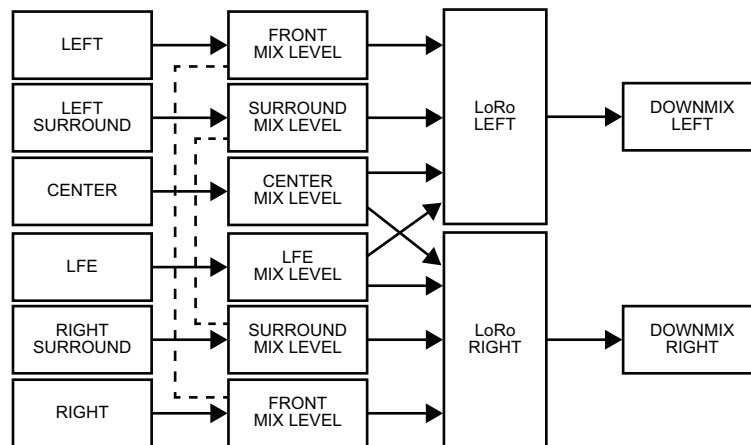


Figure 10.4 Downmix Channel — LoRo Mode

## Sum Mode

When a Downmixer is set to Sum, the card adds the Left and Right channels together.

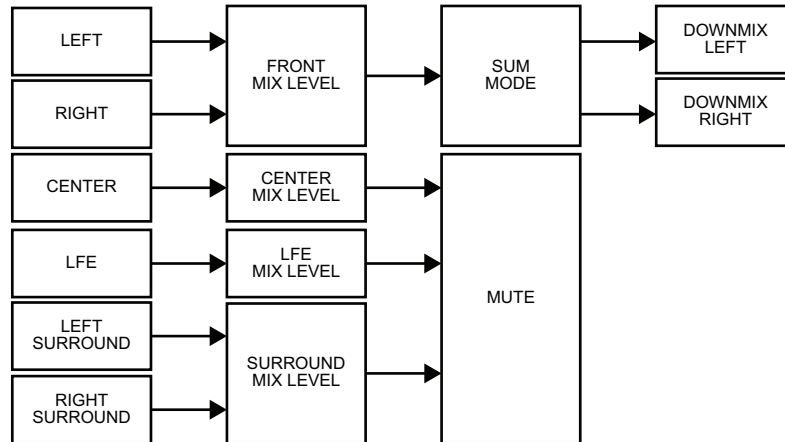


Figure 10.5 Downmix Channel — Sum Mode

## Configuring a Downmixer

This section outlines how to configure a downmixer channel including: assigning audio signals to a downmixer channel, and specifying the audio mode. Note that each downmixer channel is configured independently.

### To configure a Downmixer

1. From the **Tree View**, expand the node for the MC1-MK you want to access.
2. Select the **Configuration** node to display the interface in the right-half of Dashboard.
3. Select the **Audio** tab.
4. Select the **Downmix** tab located at the bottom of the **Audio** tab.
5. Use the options in the **From Audio Shuffle** column to assign an audio input channel to each downmixer channel. Unused channels should be set to Mute.
6. Select the **Include LFE** box if the Downmixer will include the LFE channel.
7. To configure a downmixer for LtRt Mode, click the **LtRt** Mode button.

The button is lit green and the read-only fields update.

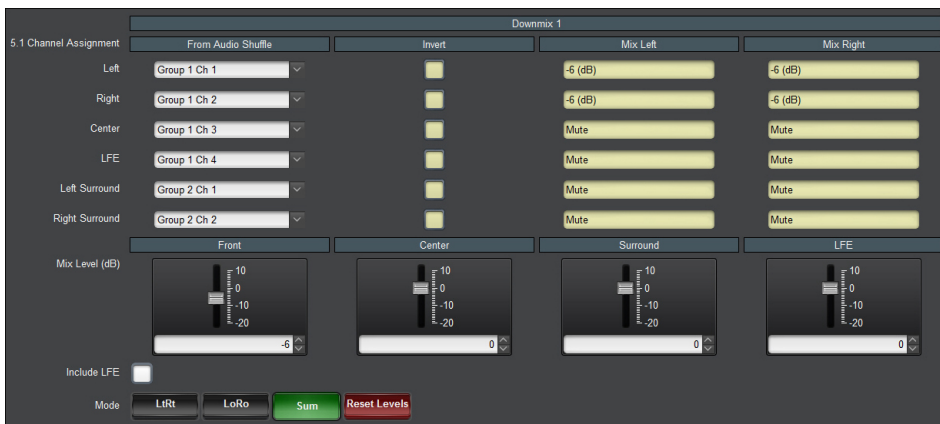


8. To configure a downmix channel in LoRo mode, click the **LoRo** Mode button.

The button is lit green and the read-only fields update.



- To configure a downmix channel in Sum mode, click the **Sum** Mode button. The button is lit green and the read-only fields update.



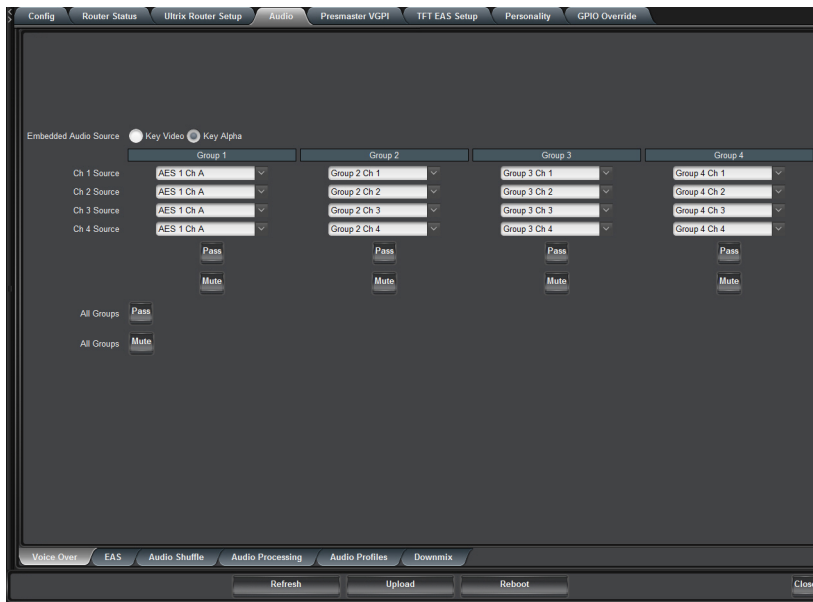
- Use the **Mix Level** sliders to adjust the required audio levels for the downmixer.

## Voice Over Setup

This section outlines how to configure the embedded audio sources for the Voice Over feature for audio transitions.

### To set up the voice over source

- From the **Tree View**, expand the node for the MC1-MK you want to access.
- Select the **Audio** tab.
- Select the **Voice Over** tab located at the bottom of the **Audio** tab.



4. Use the options in the **Embedded Audio Source** area to specify which video source the embedded audio will be used for the voice over.
5. To map a channel:
  - a. From the associated **Ch # Source** menu, select an audio source to include in the voice over output.
  - b. Note that if the selected source is not present on the input video, silence is embedded.
6. To reset the settings of a group to pass the input channels to the output channels in a direct 1:1 configuration, click **Pass** for the specific group.
7. To mute a group, click **Mute** for the specified group. Note that this overrides the gain setting for the group.
8. To pass all groups, click **Pass** in the **All Groups** area.
9. To mute all groups, click **Mute** in the **All Groups** area.
10. Repeat steps 5 to 7 for each group/channel pair you wish to configure.

## Clean Feed Audio Selection

You can choose to enable voice over in specific Clean Feeds or none of the Clean Feeds.

### To set up the voice over source

1. From the **Tree View**, expand the node for the MC1-MK you want to access.
2. Select the **Personality** tab.
3. Use the options in the **Clean Feeds with Voice Over** area to specify which Clean Feed signal will include the voice over audio. You may need to scroll to the bottom of the tab to locate this option.

## Setting up the Audio for EAS

You must first setup communications between your EAS device and the MC1-MK.

### For More Information on...

- setting up an EAS with the MC1-MK, refer to the MC1-MK setup sheet for your device. This setup sheet is available from our website.
- the **TFT EAS Setup** tab, refer to **Table 14.28**.

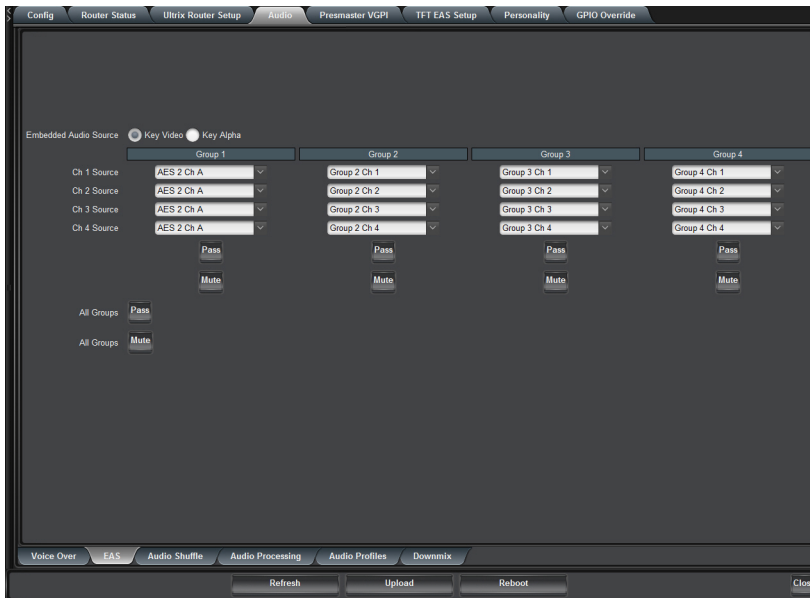
- the **Sage EAS Setup** tab, refer to **Table 14.29**.

## Configuring the Audio Source for EAS

This section outlines how to configure the embedded audio sources for the EAS audio transitions.

### To set up an EAS source

1. From the **Tree View**, expand the node for the MC1-MK you want to access.
2. Select the **Audio** tab.
3. Select the **EAS** tab located at the bottom of the **Audio** tab.



4. Use the options in the **Embedded Audio Source** area to specify which video source the embedded audio will be used for the EAS.
5. To map a channel:
  - a. From the associated **Ch # Source** menu, select an audio source to include in the EAS output.
  - b. Note that if the selected source is not present on the input video, silence is embedded.
6. To reset the settings of a group to pass the input channels to the output channels in a direct 1:1 configuration, click **Pass** for the specific group.
7. To mute a group, click **Mute** for the specified group.
8. To pass all groups, click **Pass** in the **All Groups** area.
9. To mute all groups, click **Mute** in the **All Groups** area.
10. Repeat steps 5 to 7 for each group/channel pair you wish to configure for the SDI input.

## Setting the EAS Duck and Gain Levels

The MC1-MK supports two types of EAS devices: TFT EAS-911 and SAGE EAS. However, only one of the two available types can be selected at a time and the selected device includes an EAS Setup tab in the Device View of DashBoard. This section outlines the option to specify how much the Program bus audio level is reduced when an EAS alert is active.

- ★ If both Voice Over and EAS audio are in effect, the incoming audio is ducked twice.

### To set the EAS duck level

1. Ensure that you have configured a port on the MC1-MK rear module for the EAS protocol you are using.
2. From the **Tree View**, expand the node for the MC1-MK you want to access.
3. Select the **Configuration** node to display the interface in the right-half of Dashboard.
4. Select the **Config** tab.
5. Select the **EAS Setup** tab for your device.

If the **EAS Setup** tab for your device is unavailable, verify that you have correctly installed your EAS device and it is communicating with the MC1-MK.

6. Use the **EAS Duck Level** slider to specify the amount (dB) to reduce the audio level on the Program bus during an EAS alert.

## Resetting the Audio Gain Level During Transitions

An option in the **Personality** tab enables you to specify the audio gain level is reset, to the factory default value of 0dB during transitions. When enabled, this option ramps the audio gain level to the default level as the Preview bus is transitioned. When disabled, this option keeps the audio gain level at the current level after the transition completes (the audio gain is not adjusted).

### To reset the audio gain level after a transition

1. From the **Tree View**, expand the node for the MC1-MK you want to access.
2. Select the **Configuration** node to display the interface in the right-half of Dashboard.
3. Select the **Personality** tab.
4. Select the **Reset Audio Gain** box to reset the audio gain level after a transition.

## Audio Transitions during a TAKE

You can also specify the behavior of the audio during a video TAKE transition and the duration of the audio transition.

### To specify the behavior of the audio during a video TAKE transition

1. From the **Tree View**, expand the node for the MC1-MK you want to access.
2. Select the **Configuration** node to display the interface in the right-half of Dashboard.
3. Select the **Personality** tab.
4. Use the **Audio Transition on TAKE** menu to specify whether the audio is transition via a Cross fade or a V-fade (default).
5. Use the **Audio TAKE Duration** field to specify the maximum number of frames the audio transition will be during a video TAKE transition.

## Creating an Audio Profile

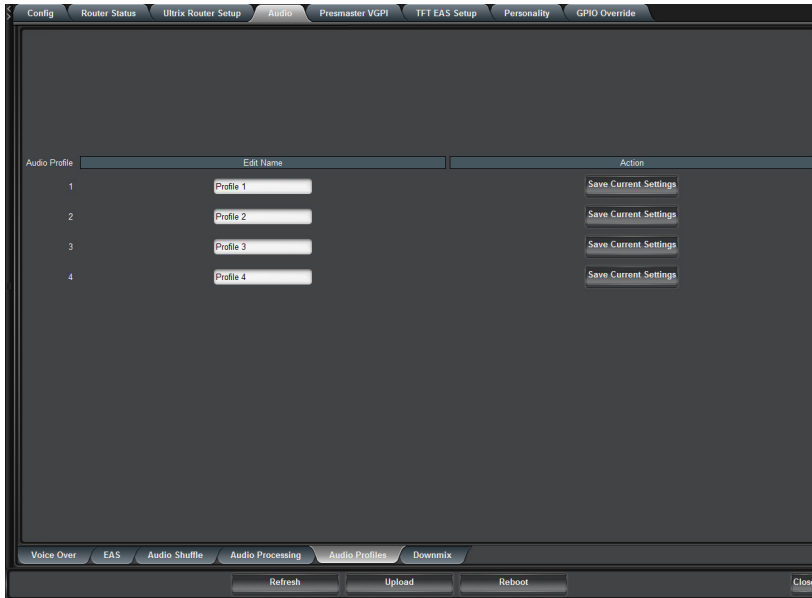
From the Audio tab in the Configuration interface you can create up to four user defined audio profiles. A profile captures all the audio settings, except the Voice Over or EAS settings, currently in use. Each profile displays as a selectable button on the **Audio Processing** tab and **Audio Shuffle** tab of the On Air Control interface.

### For More Information on...

- recalling audio profiles, refer to the *MC1-MK Operation Manual*.

### To create an audio profile

1. Specify which audio group is embedded for output as outlined in the section “**Specifying Embedded Audio Groups**” on page 70.
2. Re-map your audio channels as outlined in the section “**Audio Shuffling**” on page 71.
3. If required, adjust the gain for your audio channels as outlined the section “**Audio Processing**” on page 72.
4. Select the **Audio Profiles** tab in the main **Audio** tab.



5. In the **Edit Name** field for the audio profile, type a unique identifier for your profile. This becomes the button label on the **Audio Processing** tab and **Audio Shuffle** tab of the On Air Control interface.
6. Click the **Save Current Settings** button to save your settings.





# Configuring the Text Overlay

The text overlay feature of the MC1-MK is capable of displaying one layer of text in real time that contains EAS text crawls. This chapter provides a summary of using the text overlay feature of the MC1-MK.

## For More Information on...

- installing and configuring your device to communicate with the MC1-MK, refer to the Setup Sheet for your EAS device available from our website.
- message categories, refer to the *FCC's EAS regulations at 47 C.F.R. Part 11*.

## Customizing the EAS Text Overlay

The MC1-MK provides an overlay engine that is capable of displaying an EAS horizontal text crawl in real time. EAS messages are grouped into categories in the **EAS Setup** tab as determined by the EAS device you are using. The **EAS Setup** tab provides options for customizing the appearance of each message category such as font size and color, background color, and pan speed.

The overlay is automatically loaded into Logo 4 and associated with Keyer 4 of the MC1-MK, therefore do not use Logo 4 and Keyer 4 for any other purpose when EAS is enabled.

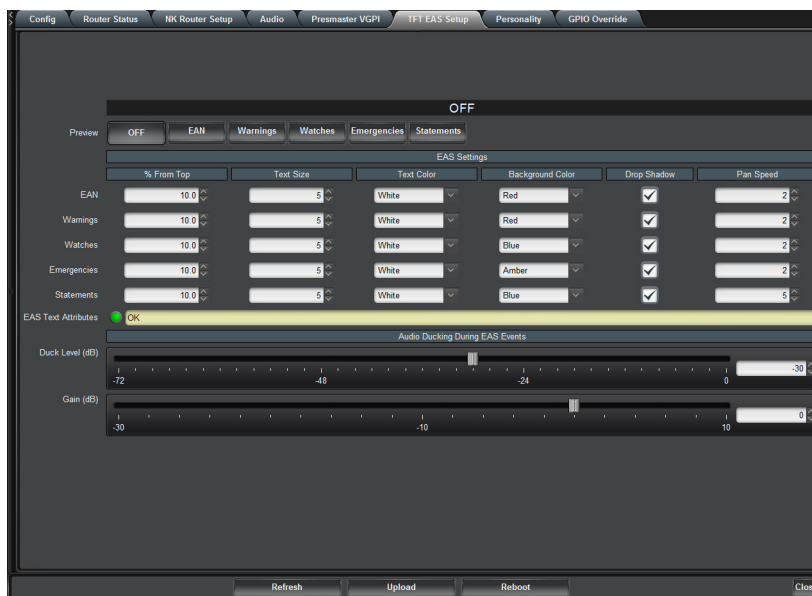
- Leave Logo 4 assigned to Keyer 4 to ensure that EAS text crawls output properly.
  - Ensure that the **Included in Squeeze** menu is not set to **After Key 4**.
- ★ The settings in the EAS Setup tab are not restored using DataSafe, nor when porting configuration data from a setup file or another card. These settings are also not affected when you load the factory default values.

## For More Information on...

- the **TFT EAS Setup** tab, refer to **Table 14.28**.
- the **Sage EAS Setup** tab, refer to **Table 14.29**.

## To customize the EAS text overlay

1. From the **Tree View**, expand the node for the MC1-MK you want to access.
2. Select the **Configuration** node to display the interface in the right-half of Dashboard.
3. Select the **EAS Setup** tab for your device.



- ★ If the EAS Setup tab is unavailable, verify that you have correctly installed your EAS device and it is communicating with the MC1-MK.
- 4. From the **Preview** area, select the type of event message you want to customize. The following will occur once you select a category button:
  - The **EAS Setup** tab settings display the stored values for the selected category.
  - A test EAS message automatically displays on the Preset bus (the **Key 4** button is now lit on the Preset bus). This enables you to verify your changes to the EAS text overlay.
- 5. Use the **Top Row** slider to adjust the vertical position of the EAS text overlay. Note that this setting is not applicable to the Emergency Alert (High Priority) categories as these messages are fixed to the top of the screen.
- 6. Use the **Text Size** slider to adjust the font size of the text overlay from smallest (1) to largest (10). Note that actual text size is dependent on the video format.
- 7. Select a text color and/or background color for the text overlay using the provided fields. The **EAS Text Attributes** field reports an error when the text color and the background color match.
- ★ When using very long EAS messages, the MC1-MK may use a smaller font size and/or may disable transparency. The exact length depends on the characters used in the message (widths of each font character).
- 8. To apply a drop shadow to the text overlay, select the **Drop Shadow** box.
- 9. Use the **Pan Speed** slider to specify the speed of the EAS text crawl across the screen.
- 10. Use the **Repeat Count** to specify the number of times to display the entire text crawl before taking it off air.
- 11. Repeat 4 to 10 for each message category you want to configure.
- 12. Select **Off** from the **Preview** to disable the EAS text crawl. The Preset bus no longer displays a test EAS message, and the **Key 4** button (on the Preset bus) is no longer lit.

# Stand-alone MC1-MK

The MC1-MK card can be used without a router for stand-alone applications. This chapter briefly summarizes how to setup an MC1-MK workflow without using a router.

## Overview

The MC1-MK is available without a routing matrix while still providing access to four live inputs on the card to be used as sources to switch between, and access to the four internal logo channels. The stand-alone MC1-MK can be used for any combination of the following:

- Stand-alone Branding and Logo Insertion
- Stand-alone Emergency A/B Mixing
- Stand-alone EAS Insertion
- Stand-alone SqueezeBack
- Stand-alone Audio/Voice Over Mixing

## Stand-alone Branding and Logo Insertion

Four downstream keyers offer the flexibility to add multiple layers of animated logo insertion and branding. Branding content is brought to air from the on-board internal media store and the external key and fill inputs for external graphic support.

## Stand-alone Emergency A/B Mixing

The MC1-MK supports embedding Emergency Alert (EAS) audio.

## Stand-alone EAS Insertion

The MC1-MK provides an overlay engine that is capable of displaying an EAS horizontal text crawl in real time. By default, the overlay is automatically loaded into Logo 4 and associated with Keyer 4 of the MC1-MK.

## Stand-alone SqueezeBack

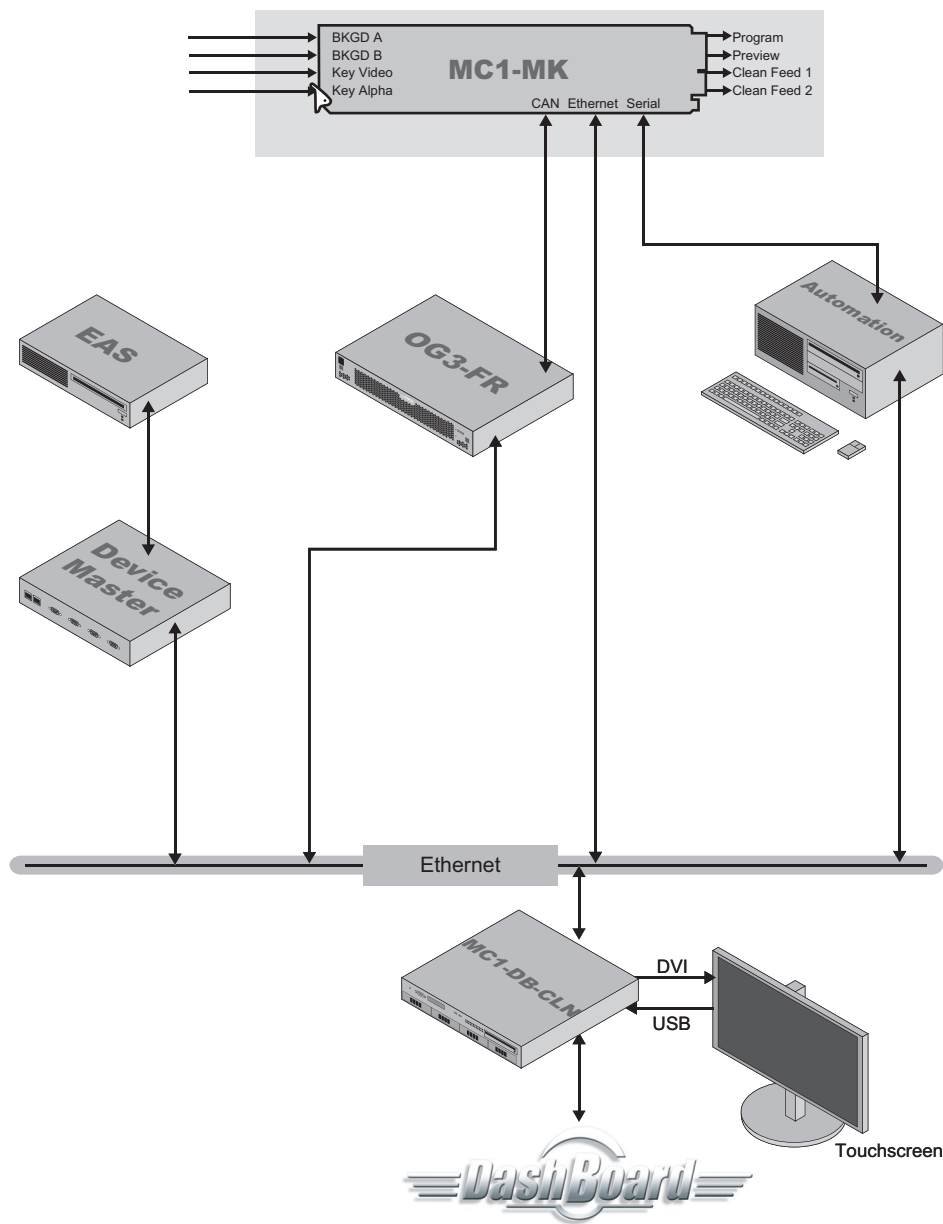
You can still perform smooth on-air SqueezeBack transitions to reveal another source or graphic, and transition to pre-squeezed effects with standard transitions.

## Stand-alone Audio/Voice Over Mixing

Flexible audio/voice over mixing is provided with a variable program audio duck level, audio over gain control, and preset mixing with transition control.

## System Integration

This section provides a system diagram that illustrates one way to integrate your MC1-MK into a Master Control System when not using a router. Please note that this is only an example and your facility needs may differ from what is presented here.



 Housed in the OG3-FR series frame

Figure 12.1 Stand-Alone MC1-MK

## Setup

The stand-alone MC1-MK is cabled much like described in the chapter “**Physical Installation**” on page 27 except for the inputs.

## Input Cabling

Connect your MC1-MK input video signals as illustrated in **Figure 12.2**. Ross Video does not supply these cables.

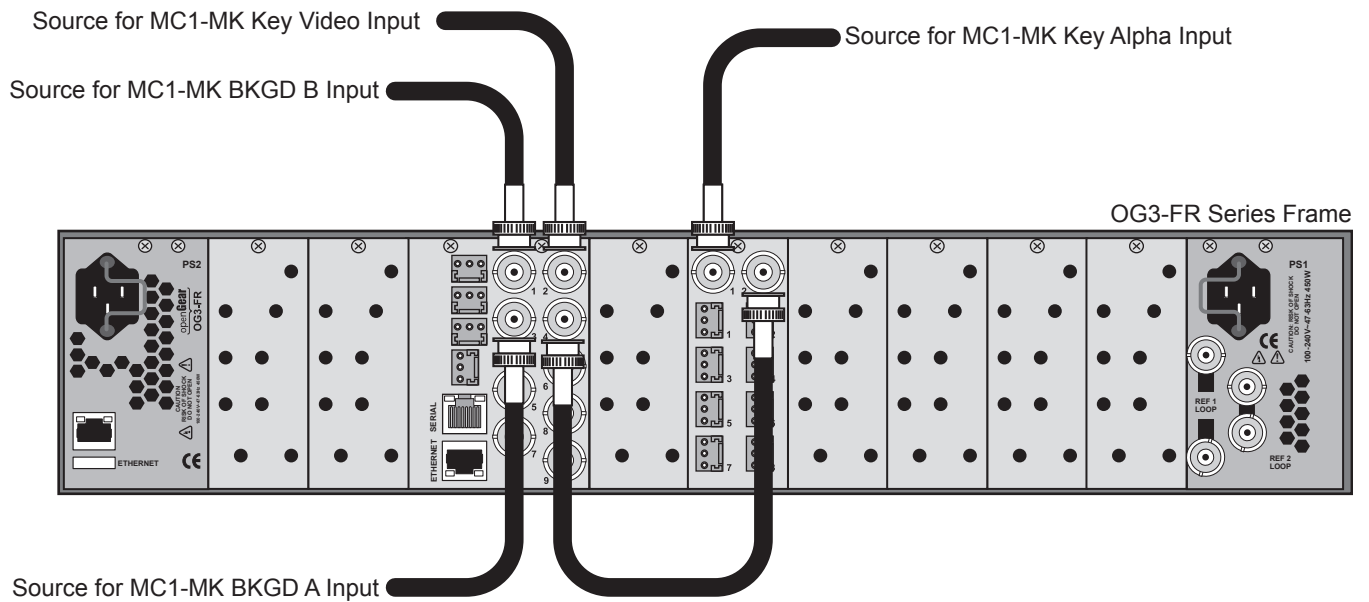


Figure 12.2 MC1-MK Rear Module Cabling — Inputs

## Communications Setup

Before proceeding, ensure that the MC1-MK is setup for communication without a router.

### To specify the stand-alone setup for MC1-MK

1. From the **Tree View**, expand the node for the MC1-MK you want to access.
2. Select the **Configuration** node to display the interface in the right-half of DashBoard.
3. Select the **Remote Control** tab located at the bottom of the **Config** tab.
4. Locate the **NK Router** row in the **Ethernet Port** area of the tab.
5. Verify that its associated **Enabled** box is clear (unchecked).

## Source Mapping

Next you will map your sources to the crosspoint buttons on the MC1-MK On Air Control interface using the options in the **Video Inputs** tab. Each crosspoint button can have two inputs assigned: the video source and an optional alpha source. The alpha source is used only when selecting an external key.

## Output Mapping

This section enables you to disable the router output mapping for the MC1-MK. Refer to the section “**Video Connections**” on page 29 for output cabling details.

### To disable the default router output mapping

1. From the **Tree View**, expand the node for the MC1-MK you want to access.
2. Select the **Configuration** node to display the interface in the right-half of DashBoard.
3. Select the **Video Inputs** tab located at the bottom of the **Config** tab.

4. For each of the four SDI signals, enter zero (0) in the **Router Output** field. This disables the router functionality.

## Crosspoint Mapping

The MC1-MK is shipped with a factory default mapping using the available router sources to the crosspoint buttons on the DashBoard control panel. When configuring a stand-alone MC1-MK, you must change the default sources assigned to the crosspoints of the MC1-MK.


### To change the crosspoint map for the MC1-MK

1. From the **Tree View**, expand the node for the MC1-MK you want to access.
2. Select the **Configuration** node to display the interface in the right-half of DashBoard.
3. Select the **Video Inputs** tab located at the bottom of the **Config** tab.
4. In the provided list, locate the crosspoint button you want to assign a video signal to.
5. Use the options in the **Type** menu to configure the crosspoint as follows:
  - **Black** — Assigns black as the source for the crosspoint button.
  - **Logo #** — Assigns the specified logo channel as the source for the crosspoint button.
  - **Logo Alpha #** — Assigns the specified logo alpha channel as the source for the crosspoint button.
  - **Bkgd A** — Assigns BKGD A (source connected to BNC 3 on the rear module) as the source for the crosspoint button.
  - **Bkgd B** — Assigns BKGD B (source connected to BNC 1 on the rear module) as the source for the crosspoint button.
6. Use the **Name** field to change the displayed name if required.
7. Repeat steps 4-6 for each crosspoint.
8. If you are using an automation system, set the Automation Switch Request feature to Button Map as outlined in the section “**Automation Switch Request**” on page 60.

# Software Upgrades

The card can be upgraded in the field using the **Ethernet** port on the Rear Module and using the options available in DashBoard. Refer to the section “**Ethernet Communication Setup**” on page 45 for setting up ethernet communications.

## To upgrade the software on a card

1. Contact Ross Technical Support for the latest software version file.
  2. Ensure the ethernet cable is connected to the **Ethernet** port on the Rear Module. Refer to the section “**Ethernet Communications**” on page 31 for details.
  3. From the **Tree View**, expand the node for the MC1-MK you want to access.
  4. Select the **Configuration** node to display the interface in the right-half of DashBoard.
  5. Select **Upload**, located near the bottom of the Config tab, to display the **Select file Upload** dialog.
  6. Navigate to the **\*.bin** file you want to upload.
  7. Click **Open**.
  8. If you are upgrading a single card, click **Finish** to start the upgrade. Proceed to step 10.
  9. If you are upgrading multiple cards:
    - a. Click **Next >** to display the **Select Destination menu**. This menu provides a list of the compatible cards.
    - b. Specify the card(s) to upload the file to by selecting the check box(es) for the cards you want to upload the file to.
    - c. Verify the card(s) you want to upload the file to. The **Error/Warning** fields indicate any errors, such as incompatible software or card type mismatch.
    - d. Click **Finish**.
  10. Monitor the upgrade.
    - An **Upload Status** dialog enables you to monitor the upgrade process.
    - Notice that each card is listed in the dialog with a  button. This button is replaced with a **Reboot** button once the software file is loaded to that card.
- ★ Avoid clicking the individual **Reboot** buttons until all cards have successfully completed the file upload process and the **OK** button, located in the bottom right corner of the dialog, is enabled.
- Click **OK** to reboot all the cards listed in the **Uploading to Selected Devices** dialog.
  - The **Reboot Confirm** dialog displays, indicating the number of cards that will reboot. Click **Yes** to continue the upgrade process. Note that clicking **Cancel** or **No** returns you to the **Uploading to Selected Devices** dialog without rebooting the card(s).
  - The card(s) are temporarily taken off-line during the reboot process. The process is complete once the status indicators for the **Card State** and **Connection** return to their previous status.





# DashBoard Menus

This chapter briefly summarizes the installation menus, items, and parameters available in the MC1-MK Configuration interface. Default values are noted with an asterisk (\*).

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

## Status Tabs

Some fields in the DashBoard tabs vary in severity from green (valid), yellow (caution), to red (alarm). DashBoard reports the most severe alarm for a single field. Alarm colors are noted as text set in brackets next to the menu parameter name.

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

## Signal Tab

**Table 14.1** summarizes the read-only information displayed in the **Signal** tab.

**Table 14.1 Signal Tab Items**

Item	Parameters	Description
Reference Status	No Reference (Red)	No signal detected on selected reference input
	Incompatible: ###	A reference signal is detected but the format is incompatible with the current output mode
	Unlocked: ###	A reference signal is detected, but the card is not locked to it
	###	Indicates the reference format detected
Bkgd A Status	### (Green)	Normal operation
	Alarm suppressed (Green)	An alarm condition exists but is silenced
	Incompatible: ### (Yellow)	Signal present but format does not match the video output format configuration of the card
	Unsupported: ### (Yellow)	Signal detected by format is not recognized
	No Signal (Red)	No signal present on the input
Bkgd B Status	Same parameters as above	
Key Video Status	Same parameters as above	
Key Alpha Status	Same parameters as above	
Bypass Relay	Normal (not in bypass) (Green)	BKGD A is available for processing, and OUT 1 is driven by the card
	Active (in bypass) (Red)	BKGD A bypasses the card and is looped passively on OUT 1 through the relay. Note BKGD A cannot be detected by the card in this state.

**Table 14.1 Signal Tab Items**

Item	Parameters	Description
Timing Display	Relative to Reference	<b>Input Timing</b> fields display the input signal timing values relative to the reference
	Input to Output	<b>Input Timing</b> fields display the input signal timing values relative to the SDI output of the card
Bkgd A Timing	(Green)	BKGD A input signal is within the valid range
	(Yellow)	BKGD A input signal is outside the valid range; a vertical shift will occur <sup>a</sup>
	(Grey)	BKGD A input signal is not available
Bkgd A Timing	## Clocks ## lines	Indicates the timing of the BKGD A input signal as specified in the <b>Timing Display</b> feature
Bkgd B Timing	Same parameters as above	
Key Video Timing	Same parameters as above	
Key Alpha Timing	Same parameters as above	
Output Timing	## Clocks ## lines	Indicates the timing of the output signals relative to the reference
Bkgd A Audio	1# 2# 3# 4#	Displays the audio status for each of the four audio groups where 1-4 indicates the group and # indicates the status of the group as follows: <ul style="list-style-type: none"> <li>• an <b>s</b> indicates the presence of synchronous audio on the group</li> <li>• an <b>x</b> indicates that audio is not present</li> <li>• an <b>a</b> indicates the presence of asynchronous audio on the group</li> </ul>
Bkgd B Audio	Same parameters as above	
Key Video Audio	Same parameters as above	
Key Alpha Audio	Same parameters as above	

a. The inputs on the card are line-synchronized. Therefore, in order to avoid vertical shifts of the video, the input signals must be timed within approximately +/- 0.5 line.

## Hardware Tab

**Table 14.2** summarizes the read-only information displayed in the **Hardware** tab.

**Table 14.2 Hardware Tab Items**

Item	Parameters	Description
HW Status	OK (Green)	Normal operation; no hardware errors and the correct rear module is installed
	Incomp I/O Module (Red)	Card is connected to an unsupported rear module
Voltage (V)	#	Measured input voltage
Current (mA)	#	Current consumption of card in milliamperes
Power (W)	#	Calculated power of the card

**Table 14.2 Hardware Tab Items**

Item	Parameters	Description
FPGA Temp	##C / ##F	Indicates the FPGA core temperature. A warning is displayed in DashBoard when the FPGA Core Temperature reaches 85°C. If the temperature reaches 100°C, the card will automatically shut down to avoid permanent damage and will have to be reset, rebooted, or power cycled to resume normal operation.
FPGA Fan	# RPM	Indicates the card fan speed. If the <b>Stalled Fan</b> alarm is enabled on the Personality tab, this field reports when the card fan is not operating correctly.
CPU Usage	x.xx/y.yy/z.zz	CPU Load average where: <ul style="list-style-type: none"> <li>• <b>x.xx</b> represents in the last minute</li> <li>• <b>y.yy</b> represents the last five minutes</li> <li>• <b>z.zz</b> is the last fifteen minutes.</li> </ul>
RAM Available	###	CPU Memory Used / Total CPU Memory
CF Card Status	### of #GB used	Displays the amount of memory used on the CompactFlash® card
	Missing	CompactFlash card is not present
	Unreadable	An error has occurred such as incompatible CompactFlash card, or an error reading the card
Playout RAM	a / b / c / d	Displays RAM memory usage where: <ul style="list-style-type: none"> <li>• <b>a</b> represents the memory in use</li> <li>• <b>b</b> represents the memory cache from previously loaded files</li> <li>• <b>c</b> represents the memory dedicated to the frame sync buffers and related functions. Note that this memory is unavailable for images and animations.</li> <li>• <b>d</b> represents the total playout memory</li> </ul>

## Product Tab

**Table 14.3** summarizes the read-only information displayed in the **Product** tab.

**Table 14.3 Product Tab Items**

Item	Parameters	Description
Product	#	Indicates the marketing code of the card
Supplier	Ross Video Ltd.	
Board Rev	##	Indicates the board issue
Serial Number	#####	Indicates the board serial number
Rear Module	#	Indicates the type of Rear Module in this slot
Software Rev	## build ###	Indicates the software and build versions
Firmware Rev	##.##	Indicates the FPGA version number

## Video Tab

**Table 14.4** summarizes the options available in the **Video** tab. The **Video** tab is located at the bottom of the **Config** tab.

**Table 14.4 Video Tab Options**

Item	Parameters	Description
Video State	Active (Green)	The card is in normal operation with no errors and the Bypass mode is disabled
	Relay in Bypass (Red)	The card is either off-line or experiencing signal errors. The Bypass relay from BKGD A to OUT 1 is enabled.
<b>Reference Setup</b>		
Reference Input	Frame 1	Uses the source connected to the <b>REF 1</b> port on the frame
	Frame 2	Uses the source connected to the <b>REF 2</b> port on the frame
	Local	Uses the external reference source connected to <b>REF IN</b> on the rear module. Use <b>J7</b> on the card to enable or disable a 75ohm terminator on the External Reference input. Refer to “ <b>Card Overview</b> ” on page 19 for information on configuring <b>J7</b> .
	Bkgd A	Uses the source connected to the BKGD A IN (BNC 3) on the rear module
	Bkgd B	Uses the source connected to the BKGD B IN (BNC 1) on the rear module
	Key Video	Uses the source connected to the KEY VIDEO IN (BNC 2) on the rear module
	Key Alpha	Uses the source connected to the KEY ALPHA IN (BNC 4) on the rear module
<b>Output Setup</b>		
Output Format	480i 59.94	The format of the output signal of the card
	720p 59.94	
	1080i 59.94	
	1080p 59.94 <sup>a</sup>	
	576i 50	
	720p 50	
Output Format	1080i 50	The format of the output signal of the card
	1080p 50 <sup>a</sup>	
Output 1	Program*	Assigns the source to the Program output
	Preview	Assigns the source to the Preview output
	Clean Feed # <sup>b</sup>	Assigns the source to one of the Clean Feeds
Output 2	Same parameters as above <sup>c</sup> .	
Output 3	Same parameters as above <sup>d</sup> .	

**Table 14.4 Video Tab Options**

Item	Parameters	Description
Output 4	Same parameters as above <sup>e</sup> .	
Dithering	Disabled*	Dithering is disabled
	Enabled - low	Dithering is enabled and set to 2bits
	Enabled - med	Dithering is enabled and set to 3bits
	Enabled - high	Dithering is enabled and set to 4bits
Clip at Black	Selected	Enables the card to clip to SMPTE black on all outputs
	Cleared*	SuperBlack is not clipped (allows super-black)
Clip at White	Selected	Enables the card to clip to SMPTE white on all outputs
	Cleared*	SuperWhite is not clipped (allows super-white)
NTSC Pass Line 21	Selected	Line 21 passes through unaltered. This setting should only be used when closed-captioning, or other data, is present on Line 21.
	Cleared*	Line 21 is treated as active video
<b>Signal Loss Alarm</b>		
Bkgd A	Selected*	An alarm is triggered when a missing or an invalid signal is detected on the BKGD A input
	Cleared	The alarm is suppressed when a missing or an invalid signal is detected on the BKGD A input
Bkgd B	Selected*	An alarm is triggered when a missing or an invalid signal is detected on the BKGD B input
	Cleared	The alarm is suppressed when a missing or an invalid signal is detected on the BKGD B input
Key Video	Selected*	An alarm is triggered when a missing or an invalid signal is detected on the Key Video input source
	Cleared	The alarm is suppressed when a missing or an invalid signal is detected on the Key Video input
Key Alpha	Selected*	An alarm is triggered when a missing or an invalid signal is detected on the Key Alpha input source
	Cleared	The alarm is suppressed when a missing or an invalid signal is detected on the Key Alpha input

- a. This option is only available when 3G Video Mode is enabled in the Personality tab. The 3G Video Mode menu is locked to Enabled as long as a 1080p format is selected in the Video tab.
- b. Clean Feed 3 and 4 are unavailable when the 3G Video Mode option is enabled in the Personality tab.
- c. The default value is Program.
- d. The default value is Preview.
- e. The default value is Clean Feed 1.

## Audio Tab

**Table 14.5** summarizes the audio output options in the **Audio** tab. This **Audio** tab is located at the bottom of the **Config** tab.

**Table 14.5 Audio Menu Items**

Item	Parameter	Description
<b>Embedded Audio Output - Group #</b>		
Enable	Selected*	The specified audio group is embedded into the output
	Cleared	The specified audio group is not embedded

## GPI/Tally Tab

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 MC1-MK. The **GPI/Tally Setup** tab is located at the bottom of the **Config** tab.

## GPI Configuration

**Table 14.6** summarizes the GPI menu options in the **GPI/Tally Setup** tab.

**Table 14.6 GPI Setup Menu Items**

Item	Parameter	Description
<b>GPI #</b>		
Function	None*	The GPIO port is not configured and the GPI has no effect
	GPI Cut Key #	The key is cut on-air or off-air when this GPI input is triggered
	GPI Auto Key #	An auto transition is performed to bring the key on-air or off-air when this GPI input is triggered
	GPI Take	A take transition is performed when this GPI input is triggered.
	GPI Fade to Black	A fade to black is performed when this GPI input is triggered
	GPI EAS Audio Over	Configures the GPI port communicate with an EAS device to receive an EAS audio voice over when this GPI is triggered
	GPI Voice Over	Configures the GPI port communicate with a device to receive an audio voice over when this GPI is triggered
	GPI SqueezeBack Effect #	The specified SqueezeBack preset is performed when this GPI input is triggered
	Timecode Input	The GPI port is used to communicate with an LTC device to input timecode. The <b>Trigger</b> and <b>Polarity</b> settings are ignored.
Crosspoint Number	#	Only applicable when the <b>Function</b> is set to <b>Tally Program Crosspoint</b>
Trigger/Tally Type	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.

**Table 14.6 GPI Setup Menu Items**

Item	Parameter	Description
Polarity	High/Rising	Sets the polarity of the edge or level trigger. In the case of edge trigger, a Low-to-High transition starts the function. In the case of level trigger, a high level starts the function.
	Low/Falling*	Sets the polarity of the edge or level trigger. In the case of the edge trigger, a High-to-Low transition starts the function. In the case of level trigger, a low level starts the function.

## Tally Configuration

Table 14.7 summarizes the Tally menu options in the **GPI/Tally Setup** tab.

**Table 14.7 Tally Setup Menu Items**

Item	Parameter	Description
<b>Tally #</b>		
Function	None*	The GPI/O port is not configured and the tally has no effect
	Tally Bkgd #	Configures the GPI/O port as an output and reflects the on-air status of the specified BKGD
	Tally Key Video	Configures the GPI/O port as an output and reflects the on-air status of the Key Video
	Tally Key Alpha	Configures the GPI/O port as an output and reflects the on-air status of the Key Alpha
	Tally Key #	Configures the GPI/O port as an output and reflects the on-air status of the Key Video
	Tally Any Key	Configures the GPI/O port as an output; the tally active when any of the Keys are on-air
	Tally SqueezeBack	Configures the GPI/O port as an output; the tally is active when a SqueezeBack preset is on-air
	Tally Program Crosspoint	Configures the GPI/O port as an output and reflects the on-air status of the crosspoint specified in the Crosspoint Number field
	Tally Audio Over	Configures the GPI/O port as an output; the tally is active when an Audio Over channel is on-air
Crosspoint Number	#	Specifies the crosspoint on the MC1-MK panel that will trigger the tally. The crosspoint number can be either a router source or a button number, as determined by the <b>Config &gt; Personality &gt; Switch Request</b> setting.
Trigger/Tally Type	Level	This item is ignored when the port is configured as a tally.
	Edge Trigger/Pulse Tally*	A 2 field pulse is generated when the tally is on air

**Table 14.7 Tally Setup Menu Items**

Item	Parameter	Description
Polarity	High/Rising	When asserted, the Tally output is driven High
	Low/Falling*	When asserted, the Tally output is driven Low
Preroll Time (frames)	#	Specifies the number of frames to pre-roll delay all hot-punches, key punches, and TAKE transitions after asserting a tally

## Remote Control Tab

The **Remote Control** tab enables you to set up serial and ethernet communications between the MC1-MK and external devices. Note that the default values for the Port Type, Bit Rate, Data Bits, Parity, and Stop Bits values change depending on the Protocol selected. The **Remote Control** tab is located at the bottom of the **Config** tab.

- ★ 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 box is cleared).

**Table 14.8 Remote Control Tab Items**

Item	Parameter	Description
<b>Serial Port<sup>a</sup></b>		
Port Enabled	Selected	Enables the serial port on the Rear Module to communicate with a serial device
	Cleared*	Disables the serial port on the Rear Module
Port Type	RS 232	Select this option if the card is connected to an external device that uses the RS-232 (TIA/EIA-232) transmission standard.
	RS 422	Select this option if the card 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 card.
	RS 422 unterm	Select this option if the card 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 card. This mode is used to daisy-chain several card Rx ports, where only the last one would be terminated. This setting is recommended when the <b>Protocol</b> is set to <b>Timecode</b> .
Port Type	RS 422 NULL	Select this option if the card 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 card port and the Rx receive end is terminated with a 120ohm resistor on the card.
	RS 422 NULL unterm	Select this option if the card 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 card port and the Rx receive end is not terminated on the card. This mode is used to daisy-chain several card Rx ports, where only the last one would be terminated.
	None*	No transmission standard is specified.



**Table 14.8 Remote Control Tab Items**

Item	Parameter	Description
Protocol	Presmaster	Select this option if the external device connected to the Serial port requires the Miranda™ Presmaster protocol to communicate with the MC1-MK
	RossTalk	Select this option to use the RossTalk text-based protocol that enables control of Ross Video equipment. Refer to the <i><b>RossTalk Commands Setup Sheet</b></i> available from our website.
	GVG Series 7000 Router	Select this option if the router connected to the Serial port requires the GVG Series 7000 Native serial protocol to communicate with the MC1-MK
	Probel SW-P-08 Router	Select this option if the router connected to the Serial port requires the Probel SW-P-08 serial protocol to communicate with the MC1-MK
	TSL UMD v3.1	Select this option if the external device connected to the Serial port requires the Tally Systems Ltd. (TSL) v3.1 protocol to communicate with the MC1-MK
	TFT EAS-911	Select this option if the external device connected to the Serial port requires the TFT, Inc.™ EAS-911 protocol to communicate with the MC1-MK
	SAGE EAS Char Gen	Select this option if the external device connected to the Serial port requires the Sage EAS Generic Character Generator protocol to communicate with the MC1-MK
	Logging Output	Messages between the MC1-MK and the external device are logged via the Serial port connection
	Timecode	Select this option if you are communicating with an LTC device. Refer to “ <b>Linear Timecode Setup</b> ” on page 53.
Bit Rate	9600	Selects the bit rate for the external device connected to the Serial port
	19200	
	38400*	
	57600	
	115200	
Data Bits	7	Sets the number of data bits transmission (character length)
	8*	
Parity	None*	Sets the Parity type
	Even	
	Odd	
Stop Bits	1*	Sets the number of stop bits transmission
	2	

**Table 14.8 Remote Control Tab Items**

<b>Item</b>	<b>Parameter</b>	<b>Description</b>
Flow Control	None*	Data flow is continuous between the MC1-MK and the serial device it is communicating with.
	SW	The MC1-MK notifies the serial device when it is experiencing a data overflow and to stop sending data. The MC1-MK will notify the serial device when to re-start sending data.
<b>Ethernet Port<sup>b</sup></b>		
Remote Control	Inactive (Green)	<b>Enabled</b> box is not selected for this protocol
	Connected (Green)	<ul style="list-style-type: none"> <li>• <b>Enabled</b> box is selected for this protocol</li> <li>• <b>Role</b> is set to <b>Client</b></li> <li>• Specified IP address and Port number are valid</li> <li>• MC1-MK has successfully established connection to the given IP address and port</li> </ul>
	Listening (Green)	<ul style="list-style-type: none"> <li>• <b>Enabled</b> box is selected for this protocol</li> <li>• <b>Role</b> is set to <b>Server</b></li> <li>• Specified Port number is valid</li> <li>• MC1-MK is ready to accept connections on the specified port</li> </ul>
	Reconnecting (Yellow)	<ul style="list-style-type: none"> <li>• <b>Enabled</b> box is selected for this protocol</li> <li>• <b>Role</b> is set to <b>Client</b></li> <li>• MC1-MK attempts to connect periodically to the specified IP address and Port number. The interval between connection attempts start at 10 seconds, increases by 10 seconds, to a maximum of 60 seconds.</li> </ul>
	Connecting (Yellow)	<ul style="list-style-type: none"> <li>• <b>Enabled</b> box is selected for this protocol</li> <li>• <b>Role</b> is set to <b>Client</b></li> <li>• MC1-MK is attempting to connect to the specified IP address and Port Number</li> </ul>
	Port in use (Red)	<ul style="list-style-type: none"> <li>• <b>Enabled</b> box is selected for this protocol</li> <li>• <b>Role</b> is set to <b>Server</b></li> <li>• Port Number specified in the Port field is invalid or in use by another service</li> </ul>
Remote Control	Cannot connect (Red)	<ul style="list-style-type: none"> <li>• <b>Enabled</b> box is selected for this protocol</li> <li>• <b>Role</b> is set to <b>Client</b></li> <li>• Specified IP address and Port Number are invalid or in use by another device</li> </ul>
Enabled	Selected	Enables the specified communication protocol on the ethernet port
	Cleared*	Disables the specified communication protocol on the ethernet port. When the check box is cleared, any incoming data from the service is ignored.

**Table 14.8 Remote Control Tab Items**

Item	Parameter	Description
Role	Server*	MC1-MK functions as a host, or socket listener, on the network
	Client	MC1-MK functions as a service requester that initiates communications with a server
Protocol	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).
Port	# <sup>c</sup>	<p>When <b>Role</b> is set to <b>Server</b>:</p> <ul style="list-style-type: none"> <li>specifies the TCP or UDP port numbers where the MC1-MK will listen on.</li> <li>TCP ports 0, 21, 80, 5253, and 6667 are unavailable for ethernet communications</li> </ul> <p>When <b>Role</b> is set to <b>Client</b>:</p> <ul style="list-style-type: none"> <li>specifies the remote port number to which the MC1-MK will try to connect</li> </ul>
	#	When <b>Role</b> is set to <b>Client</b> , specifies the port number of the external device
IP Address	###.###	<ul style="list-style-type: none"> <li>Only applicable when <b>Role</b> is set to <b>Client</b></li> <li>Specifies the IP address of the external device. The default is 0.0.0.0 and this must be changed to the actual IP address of the external device.</li> </ul>

- The default values for the Serial Port parameters, bit rate, data bits, parity, and stop bits are protocol dependent.
- Each ethernet protocol is listed as a separate row in the Ethernet Port area of the tab.
- The default values vary by device type.

## Default Values

This section provides the default values for the Serial and Ethernet menus on the **Remote Control** tab.

### Serial Port

**Table 14.9** lists the default values for the Serial Port menus.

**Table 14.9 Serial Port — Default Values**

Protocol	Bit Rate	Data Bits	Parity	Stop Bits	Flow Control
Presmaster	38400	8	Even	1	None
RossTalk	115200	8	None	1	None
GVG Series 7000 Router <sup>a</sup>	9600	8	None	1	None

**Table 14.9 Serial Port — Default Values**

Protocol	Bit Rate	Data Bits	Parity	Stop Bits	Flow Control
Probel SW-P-08 Router <sup>a</sup>	38400	8	None	1	None
TSL UMD v3.1	38400	8	Even	1	None
TFT EAS-911	9600	8	None	1	None
SAGE EAS Char Gen	9600	8	None	1	None
Timecode	38400	8	None	1	None

a. This option is only available if the MC1-RTR license is installed.

## Ethernet Port

**Table 14.10** lists the default values for the Ethernet Port menus.

**Table 14.10 Ethernet Port — Default Values**

Protocol	Enabled	Role	Protocol	Port	IP Address
Presmaster	No	Server	TCP	9001	0.0.0.0
RossTalk	No	Server	TCP	7788	0.0.0.0
NK Router	No	Client	TCP	5000	0.0.0.0
Ultrix Router	No	Client	TCP	5000	0.0.0.0
GVG Series 7000 Native <sup>a</sup>	No	Client	TCP	12345	0.0.0.0
Probel SW-P-08 Router <sup>a</sup>	No	Client	TCP	9003	0.0.0.0
TSL UMD v3.1	No	Client	TCP	5727	0.0.0.0
TFT EAS-911	No	Client	TCP	8701	0.0.0.0
SAGE EAS Char Gen	No	Client	TCP	9002	0.0.0.0
Channel Ganging	No	Client	TCP	8910	0.0.0.0
Logging Output <sup>a</sup>	No	Server	TCP	23	0.0.0.0

a. This option is only available if the MC1-RTR license is installed.

## Ethernet Tab

**Table 14.11** summarizes the **Ethernet** options for setting up network communications for your card. The **Ethernet** tab is located at the bottom of the **Config** tab.

**Table 14.11 Ethernet Tab Items**

Item	Parameter	Description
Method	Static	User manually supplies the Ethernet settings. This is the recommended setting.
	DHCP	Automates the assignment of the Ethernet settings
IP Address	###.###.###.###	The IP Address for the card
Subnet Mask	###.###.###.###	The subnet mask for the card
Default Gateway	###.###.###.###	The gateway for communication outside of the local area network (LAN)

**Table 14.11 Ethernet Tab Items**

Item	Parameter	Description
Apply Changes		Applies and saves any changes made to the <b>Ethernet Settings</b>
Cancel		Cancels any setting changes and resets the <b>Ethernet Settings</b> to the previous values
Ethernet Status (read-only)	OK	Ethernet communications for the card are valid
	Link Down	Ethernet communications for the card are invalid. The ethernet cable may be disconnected on the rear module or the ethernet network may be down or experiencing problems.
	No IP Address	The following conditions are occurring: <ul style="list-style-type: none"> <li>• The <b>Method</b> is set to <b>DHCP</b>.</li> <li>• The ethernet cable connected to card rear module is connected.</li> <li>• A valid IP Address could not be obtained. The DHCP server may be down or is still powering up after a power outage.</li> </ul>
	##:##:##:##:##:##	Indicates the MAC Address for the card

## Video Inputs Tab

The menu items available in the **Video Inputs** tab enable you to map the video sources to crosspoint buttons on the On Air interface. The tab is divided into three areas based on function: mapping router outputs to the MC1-MK input BNCs, mapping router inputs to the crosspoint rows, and mapping router inputs to the shifted crosspoint rows.

★ The **Video Inputs** tab is located at the bottom of the **Config** tab.

**Table 14.12 Video Inputs Tab Items**

Item	Parameter	Description
<b>Router Output</b>		
Bkgd A (BNC 3)	0* -#	<ul style="list-style-type: none"> <li>• Specifies the router output source connected to the specified MC1-MK input BNC</li> <li>• A value of 0 means the MC1-MK will not attempt any router switches.</li> <li>• Positive values (1-32767) are interpreted as router inputs (either physical or virtual depending on the settings specified in the <b>Router</b> tab)</li> </ul>
Bkgd B (BNC 1)		
Key Vid (BNC 2)		
Key Alpha (BNC 4)		
<b>Park Source</b>		
Bkgd A (BNC 3)	#	When any internal source, such as internal logo, black, BKGD A/B or Key Video/Alpha, is selected, the MC1-MK routes this router input to the corresponding router output
Bkgd B (BNC 1)	#	
Key Vid (BNC 2)	#	
Key Alpha (BNC 4)	#	
<b>Labels</b>		
Load From Router <sup>a</sup>		Crosspoint labels are retrieved from the router

**Table 14.12 Video Inputs Tab Items**

Item	Parameter	Description
Reset To Defaults		Crosspoint labels are generated based on the router source
<b>Crosspoints Button #, SHIFTED Crosspoints Button #</b>		
Type <sup>b</sup>	Black	Assigns Black as the source for the crosspoint button
	Router	Crosspoint source as specified by the Router Input field. The External Sources tab is now displayed in the On Air interface.
	RTR Extra #	Crosspoint source as specified by the Router Input field. However, the router input is automatically updated whenever the Automation requests a crosspoint that is not already mapped.
	Logo # <sup>c</sup>	Assigns the specified logo channel as the source for the crosspoint button
	Logo Alpha #	Assigns the specified logo alpha channel as the source for the crosspoint button
	Bkgd A	Assigns BKGD A as the source for the crosspoint button. Select when not using a router.
	Bkgd B	Assigns BKGD B as the source for the crosspoint button. Select when not using a router.
	Key Video	Assigns the Key Video as the source for the crosspoint button
Key Alpha	Assigns the Key Alpha as the source for the crosspoint button	
Router Input <sup>d</sup>	#	Assigns the router input source to the crosspoint button. Only applies when <b>Type</b> is set to <b>Router</b> or <b>RTR Extra</b> .
Alpha Input	#	Assigns the router source that MC1-MK takes on the alpha input when an external Auto Select Key is selected. Only applicable when <b>Type</b> is set to <b>Router</b> or <b>RTR Extra</b> .
Name		Use this field to enter a label for the crosspoint

- a. This option is disabled (grayed out) when using a Ross NK router.
- b. Refer to **Table 9.1** for information on the default crosspoint mapping.
- c. Logo 3 and 4 are unavailable when the 3G Video Mode option is enabled in the Personality tab.
- d. If the Type is not set to Router, the Router Input, and Alpha Input fields are ignored. But the Name field is updated with the default value of the source selected in the Type menu (e.g. If you selected Logo 1 in the Type field, the Name field will display Logo 1).

## SqueezeBack Tab

Table 14.13 summarizes the **SqueezeBack** setup options.

★ The **SqueezeBack** tab is located at the bottom of the **Config** tab

**Table 14.13 SqueezeBack Tab Items**

Item	Parameters	Description
Included in SqueezeBack	Background Only*	No keys are included in the SqueezeBack effect.
	After Key # <sup>a</sup>	The specified number of keys are scaled with the background. The default is After Key 4.

a. Refer to “**SqueezeBack Setup**” on page 55 for more information.

## Licenses Tab

The **Licenses** tab enable you to install software keys for licensed features.

★ The **Licenses** tab is located at the bottom of the **Config** tab.

**Table 14.14 Licenses Tab Items**

Item	Parameter	Description
<b>Licensable Features</b>		
# License Request Code (read-only)	#	Specifies the Request Code that you must provide to Ross Technical Support in order to obtain a License Key for the indicated feature
Third Party Router Feature	Enter license key here	Indicates that the licensed feature is not enabled. You must enter the License Key provided by Ross Technical Support to enable the licensed feature.
	Licensed (read-only)	Indicates that the licensed feature is enabled

## Load/Save Tab

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

★ The **Load/Save** tab is located at the bottom of the **Config** tab.

**Table 14.15 Load/Save Tab Items**

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

## Loading the Factory Defaults

All parameters are reset except those listed in **Table 14.16**.

**Table 14.16 Excluded Parameters From a Reset**

Interface	Tab	Parameter that is not reset
Configuration	Video	Reference Input
	Video	Output Format
	Ethernet	All parameters <sup>a</sup>
	EAS Setup	<b>Off</b> button is selected <sup>b</sup>
On Air	Logo #	All logo channels are set to None <sup>c</sup>
	Time counter	If the time counter was running before the reset, it will continue counting without resetting to 00:00:00.

- The Ethernet Port settings in the Remote Control tab are reset to the factory default values.
- The remaining parameters in the EAS Setup tab are not reset.
- The logo properties (one for each image/animation) are not reset. Each image (stored on the CompactFlash™) has properties associated with it. These properties are not affected by loading the factory defaults.

## Router Status Tab

**Table 14.17** provides a summary of the options in the **Router Status** tab.

**Table 14.17 Router Status Tab Items**

Item	Parameter	Description
<b>Bkgd #, Key Video, Key Alpha (read-only)</b>		
Status	OK (Green)	All router sources are available to the crosspoints
	Parked (Green)	The specified output is parked because a crosspoint was selected that was not a router source
Requested	#	Specifies the number of requested crosspoint switches the MC1-MK has sent to the router
Actual	#	Reports the number of successful crosspoint switches made on the router
Minimum Delay (frames)	1-30 <sup>a</sup>	Specifies the length of time, in frames, that the MC1-MK will wait after sending a command to the router before it assumes the router output is switched. This could be extended up to the Retry Interval value before either the switch is re-tried or abandoned.
Retry Interval (frames)	1-30 <sup>b</sup>	Specifies the number of frames the MC1-MK will wait before re-sending a command to the router
Max Retries	0-10 <sup>c</sup>	Specifies the maximum number of attempts the MC1-MK will re-send a command to the router. Once the maximum is reached, the MC1-MK abandons the switch (pushes back to the original crosspoint number).
<b>Status (read-only)</b>		
Min Delay	#	Reports the measured Minimum Delay time since the counters were reset



**Table 14.17 Router Status Tab Items**

Item	Parameter	Description
Max Delay	#	Reports the measured Maximum Delay time since the counters were reset
Average Delay	#	Reports the average delay based on the Min. Delay and the Max. Delay values
Total Switches	#	Reports the total number of crosspoint switch commands the MC1-MK has sent to the router
Total Retries	#	Reports the total number of times the same crosspoint switch command was sent by the MC1-MK to the router
Counters	Reset	Clears the Min. Delay, Max. Delay, Average Delay, Total Switches, and Total Retries fields to zero (0)

- a. The default value is 3.
- b. The default value is 4.
- c. The default value is 3.

## NK Router Setup Tab

The **NK Router Setup** tab provides additional configuration options for setting up communications between a Ross NK router and the MC1-MK. This tab only displays when the NK Router option is enabled on the **Config > Remote Control** tab.

**Table 14.18** provides a summary of the options in the **NK Router Setup** sub-tab.

**Table 14.18 NK Router Setup Tab Items**

Item	Parameter	Description	
<b>NK Router Setup</b>			
Password	#	Enter the password for the NK-IPS if this feature is enabled on your device	
Virtual	Physical*	Router references the physical connections for its crosspoints	
	Virtual	Router references the virtual connections for its crosspoints	
Address	1-254*	Specifies the T-Bus address of the MC1-MK	
Router Level	L1	Selected*	Specifies the router level(s) to include for every transition the MC1-MK executes between router sources
		Cleared	
	L2-L32	Selected	
		Cleared*	

## Ultrix Router Setup Tab

The **Ultrix Router Setup** tab provides additional configuration options for setting up communications between a Ross Ultrix router and the MC1-MK. This tab only displays when the Ultrix Router option is enabled on the **Config > Remote Control** tab.

**Table 14.19** provides a summary of the options in the **Ultrix Router Setup** sub-tab.

**Table 14.19 Ultrix Router Setup Tab Items**

Item	Parameter	Description
<b>Router Level</b>		
L1	Selected*	Specifies the router level(s) to include for every transition the MC1-MK executes between router sources
	Cleared	
L2-L32	Selected	
	Cleared*	

## Probel Router Setup Tab

**Table 14.17** provides a summary of the options in the **Probel Router Setup** tab. This tab only displays when the MC1-RTR license key is installed and the Probel Router option is enabled on the **Config > Remote Control** tab.

**Table 14.20 Probel Router Setup Tab Items**

Item	Parameter	Description
<b>PROBEL Native Protocol Router Setup</b>		
Matrix	# <sup>a</sup>	Specifies the number of databases the router uses
Level	# <sup>b</sup>	Specifies the maximum number of levels that the router is configured for
<b>PROBEL Personality Settings</b>		
Log in Hexadecimal	Selected	The SEND and RECV log messages are displayed in hexadecimal (enabled via the Enable Log Messages area).
	Cleared*	Disables this feature
Read Back Label Size	# Characters <sup>c</sup>	Specifies the label size polled from the router when <b>Config &gt; Video Inputs &gt; Load from Router</b> is selected
INFO	Selected	The MC1-MK provides a summary of commands sent to and responses from the router
	Cleared*	Disables this feature
SEND	Selected	The MC1-MK provides a detailed report of commands sent to router
	Cleared*	Disables this feature
RECV	Selected	The MC1-MK provides a detailed report of router responses
	Cleared*	Disables this feature
WARN	Selected	Indicates failed communications between the MC1-MK and router such as command time outs and checksum errors where applicable
	Cleared*	Disables this feature

**Table 14.20 Probel Router Setup Tab Items**

Item	Parameter	Description
ERR	Selected	Reports internal errors and unrecognized or invalid responses from the router. This is intended for debugging incompatibilities between the MC1-MK and the third party router.
	Cleared*	Disables this feature

- a. The default value is 1.
- b. The default value is 1.
- c. The default value is 8 characters.

## GVG Router Setup Tab

**Table 14.17** provides a summary of the options in the **GVG Router Setup** tab. This tab only displays when the MC1-RTR license key is installed and the GVG Series 7000 Native option is enabled on the **Config > Remote Control** tab.

**Table 14.21 GVG Router Setup Tab Items**

Item	Parameter	Description
<b>GVG Native Protocol Router Setup</b>		
Level Index	# <sup>a</sup>	Specifies the level that the router will perform crosspoint switches on
<b>GVG Personality Settings</b>		
Take All Levels	Selected	Specifies that all transitions take effect on all router levels
	Cleared*	Disables this feature. Only the level specified in the Level Index field will be affected during a transition
Send Optional Tabs	Selected	
	Cleared*	
Log in Hexadecimal	Selected	The log messages are displayed in hexadecimal
	Cleared*	
<b>Enable Log Messages</b>		
INFO	Selected	The MC1-MK provides a summary of commands sent to and responses from the router
	Cleared*	Disables this feature
SEND	Selected	The MC1-MK provides a detailed report of commands sent to router
	Cleared*	Disables this feature
RECV	Selected	The MC1-MK provides a detailed report of router responses
	Cleared*	Disables this feature
WARN	Selected	Indicates failed communications between the MC1-MK and router such as command time outs and checksum errors where applicable
	Cleared*	Disables this feature

**Table 14.21 GVG Router Setup Tab Items**

Item	Parameter	Description
ERR	Selected	Reports internal errors and unrecognized or invalid responses from the router. This is intended for debugging incompatibilities between the MC1-MK and the third party router.
	Cleared*	Disables this feature

a. The default value is 1.

## Audio Tabs

The **Audio** tab includes five sub-tabs that enable you to configure the Voice Over and EAS sources, set up audio shuffling, apply audio proc amps, and saving audio settings to one of four presets to recall later.

### Voice Over and EAS Tabs

**Table 14.22** summarizes the options for the **Voice Over** and **EAS** tabs.

**Table 14.22 Voice Over and EAS Tab Items**

Item	Parameters	Description
Embedded Audio Source <sup>a</sup>	Key Video	Maps the embedded audio from the Key Video source as the audio over source
	Key Alpha	Maps the embedded audio from the Key Alpha video source as the audio over source
<b>Group #</b>		
Ch # Source	Mute	Mutes the channel on the input
	Group # Ch#* <sup>b</sup>	Embeds the specified Group and Channel pair
	# Hz Tone	Embeds the selected test tone
	# kHz Tone	
Pass		Resets the specified group settings to pass the default input channels to the output channels
Mute		Mutes the specified group on the output
<b>All Groups</b>		
Pass		Resets all group settings to pass the default input channels to the output channels
Mute		Mutes all groups on the output

a. The Voice Over tab defaults to Key Video, while the EAS tab defaults to Key Alpha.

b. Default is embedded 1:1 mapping (e.g. G1C1 OUT is mapped to G1C1 IN)

## Audio Shuffle Tab

**Table 14.23** summarizes the options on the **Audio Shuffle** tab.

**Table 14.23 Audio Shuffle Tab Items**

Item	Parameters	Description
<b>Group #</b>		
Background Color	#	Selects the display color of the buttons on the Audio Shuffle tab (in the On Air Control interface), for the specified group
Foreground Color	#	Selects the display color of the text on the buttons of the Audio Shuffle tab (in the On Air Control interface), for the specified group

## Audio Processing Tab

**Table 14.24** summarizes the options on the **Audio Processing** tab.

**Table 14.24 Audio Processing Tab Items**

Item	Parameters	Description
<b>Group #</b>		
Ch # Gain (dB)	-72 to +12 <sup>a</sup>	<ul style="list-style-type: none"> <li>Adjusts the gain of the specified channel of audio</li> <li>Select zero (0) when using non-PCM audio data</li> </ul>
Ch # Invert	Selected	Inverts the audio signal of the specified channel
	Cleared*	<ul style="list-style-type: none"> <li>Audio signal of the specified channel is not inverted</li> <li>Use for non-PCM audio data</li> </ul>
Reset		Resets the gain value to 0 and disables the invert (box is unselected) for the specified group.
<b>All Groups</b>		
Reset		Resets all gain values to 0 and disables the invert (boxes are unselected) for all audio groups

a. The default value is 0.

## Audio Profiles Tab

**Table 14.25** summarizes the options on the **Audio Profile** tab.

**Table 14.25 Audio Profile Tab Items**

Item	Parameters	Description
<b>Audio Profile #</b>		
Edit Name	# <sup>a</sup>	Enables you to assign a unique identifier to the selected audio profile. This name displays in the following tabs located in the On Air Control interface: <ul style="list-style-type: none"> <li>Audio Processing tab</li> <li>Audio Shuffle tab</li> </ul>
Action	Save Current Settings	Saves the current audio shuffle and processing settings to the selected profile.

a. The first profile button name defaults to Profile 1, the second to Profile 2, the third to Profile 3, and the last button defaults to Profile 4.

## Downmix Tab

Table 14.26 summarizes the options on the **Downmix** tab.

**Table 14.26 Downmix Tab Items**

Item	Parameters	Description
<b>Output Map - Group #</b>		
Ch # Source	Mute	Mutes the specified output
	Group# Ch#	Routes the specified embedded channel to be included in the specified Output group
	Downmix # Left	Assigns the downmixer left channel to be included in the specified Output group
	Downmix # Right	Assigns the downmixer right channel to be to be included in the specified Output group
<b>Downmix # - 5.1 Channel Assignment</b>		
From Audio Shuffle	Mute	Mutes the specified downmixer channel
	Group# Ch#	Assigns the specified audio input signal to the downmixer channel
Invert (read-only)	Selected	The selected channels are inverted for the downmixer.
	Cleared	Disables this feature. The channels are not inserted.
Mix Left (read-only)	:0dB	The specified input signal is included without changes
	Mute	The specified channel is muted in the downmixer setup
	# (dB)	Reports the Mix Level applied to the channel
Mix Right (read-only)	:0dB	The specified input signal is included without changes
	Mute	The specified channel is muted in the downmixer setup
	# (dB)	Reports the Mix Level applied to the channel
Mix Level (dB)	#	Adjusts the audio level for the specified channel. The default value is 0.
Include LFE	Selected	Includes the LFE channel in the downmixer
	Cleared*	Disables the LFE channel. It is not included in the downmixer setup.
Mode <sup>a</sup>	LtRt*	Sets the Downmixer to Left Total (Lt) and Right Total (Rt) mode
	LoRo	Sets the Downmixer to Left Only (Lo) and Right Only (Ro) mode
	Sum	The Left and Right channels will carry the average of the two input channels
	Reset Levels	Resets the Mix Level sliders for the Front, Center, Surround, and LFE channels to 0dB.
Downmix	Reset All	Resets all Downmixer settings on the tab to the default settings

a. Refer to “**Overview of the Audio Modes**” on page 73 for details on each mode.

## Presmaster VGPI Tab

The **Presmaster VGPI** tab provides configuration options for Virtual GPIs (VGPIs) when using the Miranda™ Presmaster protocol. **Table 14.27** provides a summary of the options in the **Presmaster VGPI** tab.

### For More Information on...

- the Presmaster commands that the MC1-MK supports, refer to **Table 17.1**.

**Table 14.27 Presmaster VGPI Tab Items**

Item	Parameters	Description
<b>Function</b>		
VGPI #	SqueezeBack Effect 1 <sup>a</sup>	<ul style="list-style-type: none"> <li>An ARM command (0x0130) will enable/disable SqueezeBack Preset 1 on the Preset bus</li> <li>A STATE command (0x0140) will enable/disable SqueezeBack Preset 1 on the Program bus</li> </ul>
	SqueezeBack Effect 2 <sup>b</sup>	<ul style="list-style-type: none"> <li>An ARM command (0x0130) will enable/disable SqueezeBack Preset 2 on the Preset bus</li> <li>A STATE command (0x0140) will enable/disable SqueezeBack Preset 2 on the Program bus</li> </ul>
	SqueezeBack Effect 3 <sup>c</sup>	<ul style="list-style-type: none"> <li>An ARM command (0x0130) will enable/disable SqueezeBack Preset 3 on the Preset bus</li> <li>A STATE command (0x0140) will enable/disable SqueezeBack Preset 3 on the Program bus</li> </ul>
	SqueezeBack Effect 4 <sup>d</sup>	<ul style="list-style-type: none"> <li>An ARM command (0x0130) will enable/disable SqueezeBack Preset 4 on the Preset bus</li> <li>A STATE command (0x0140) will enable/disable SqueezeBack Preset 4 on the Program bus</li> </ul>

- The default value for VGPI 0.
- The default value for VGPI 1.
- The default value for VGPI 2.
- The default value for VGPI 3.

## TFT EAS Setup Tab

The **TFT EAS Setup** tab enables you to customize the EAS text overlay received by your TFT EAS 911. The text overlay is automatically assigned to Logo channel 4 in Key 4, therefore do not use Logo 4 and Keyer 4 for any other purpose when EAS is enabled.

**Table 14.28 TFT EAS Setup Tab Items**

Item	Parameter	Description
<b>EAS Settings</b>		
Preview	Off*	Disables the setup mode; removes test message from the PST output
	EAN	Note that if Key 4 is in use with other content, it will be re-configured. Refer to the FCC's EAS regulations at 47 C.F.R. Part 11 for more information on message categories.
	Warnings	
	Watches	
	Emergencies	
	Statements	

**Table 14.28 TFT EAS Setup Tab Items**

Item	Parameter	Description
% From Top	0-100 <sup>a</sup>	Adjusts the vertical position of the EAS text overlay where 0 sets the top of the overlay at the top of the active video, 50 is centered horizontally, and 100 sets the bottom of the overlay on the bottom of the active video.
Text Size	1-10	Specifies the text size where 1 is smallest and 10 is largest. The actual text size depends on the video format. The default is 5.
Text Color	White*	Specifies the foreground color of the text
	Red	
	Green	
	Blue	
	Amber	
	Yellow	
	Cyan	
Background Color	White	Specifies the background color behind the text. Each message category has a unique default value as follows: <ul style="list-style-type: none"> <li>• Red — Emergency Alert and All Warnings</li> <li>• Blue — All Watches</li> <li>• Amber — All Emergencies</li> <li>• Transparent — All Statements</li> </ul>
	Red	
	Green	
	Blue	
	Amber	
	Yellow	
	Cyan	
	Black	
	Transparent	
Drop Shadow	Selected*	Applies a visual effect that makes the text appear three-dimensional
	Cleared	Disables this feature
Pan Speed	1 to 5	Determines how fast the EAS message scrolls across the screen (from left to right) where: 5 is the fastest speed and 1 is the slowest.  The default value is dependent on the video format as follows: 1 for SD video formats, 2 for HD video formats.
EAS Text Attributes	OK (Green)	Text color and background color do not match; text can be read on-screen
	EAN not visible (Yellow)	Text color and Background color match for EAN messages; text cannot be read on-screen
	Warnings not visible (Yellow)	Text color and Background color match for Warnings; text cannot be read on-screen



**Table 14.28 TFT EAS Setup Tab Items**

Item	Parameter	Description
EAS Text Attributes	Watches not visible (Yellow)	Text color and Background color match for Watches; text cannot be read on-screen
	Emergencies not visible (Yellow)	Text color and Background color match for Emergencies; text cannot be read on-screen
	Statements not visible (Yellow)	Text color and Background color match for Statements; text cannot be read on-screen
<b>Audio Ducking During EAS Events<sup>b</sup></b>		
EAS Duck Level (dB)	-30 to 0 <sup>c</sup>	This gain is applied to normal input audio on the Program bus while an EAS alert is active.
Gain (dB)	-30 to 10 <sup>d</sup>	This adjusts the overall output gain on the Program bus while an EAS alert is active (applies to the input audio and the EAS input audio)

- a. The default value is 10.0.
- b. Refer to “**Audio Overview**” on page 69 for details on audio layering.
- c. The default value is -10dB.
- d. The default value is 0.

## Sage EAS Setup Tab

The **Sage EAS Setup** tab enables you to customize the EAS text overlay received by your SAGE EAS. The text overlay is automatically assigned to Logo channel 4 in Key 4, therefore do not use Logo 4 and Keyer 4 for any other purpose when EAS is enabled.

**Table 14.29 Sage EAS Setup Tab Items**

Item	Parameter	Description
Preview	Off*	Disables the setup mode; removes test message from the PST output
	Low Priority	Refer to the FCC’s EAS regulations at 47 C.F.R. Part 11 for more information on message categories.
	Medium Priority	
	High Priority	
<b>SAGE Generic Character Generator Settings</b>		
% From Top	0-100 <sup>a</sup>	Adjusts the vertical position of the EAS text overlay where 0 sets the top of the overlay at the top of the active video, 50 is centered horizontally, and 100 sets the bottom of the overlay on the bottom of the active video.
Text Size	1-10	Specifies the text size where 1 is smallest and 10 is largest. The actual text size depends on the video format. The default is 5.
Text Color	White*	Specifies the foreground color of the text
	Red	
	Green	
	Blue	
	Amber	
	Yellow	

**Table 14.29 Sage EAS Setup Tab Items**

Item	Parameter	Description
Text Color	Cyan	Specifies the foreground color of the text
	Black	
Background Color	White	Specifies the background color behind the text. Each message category has a unique default value as follows: <ul style="list-style-type: none"> <li>• Red — High Priority</li> <li>• Yellow — Medium Priority</li> <li>• Green — Low Priority</li> </ul>
	Red	
	Green	
	Blue	
	Amber	
	Yellow	
	Magenta	
	Cyan	
	Black	
Drop Shadow	Selected*	Applies a visual effect that makes the text appear three-dimensional
	Cleared	Disables this feature
Pan Speed	1 to 5	Determines how fast the EAS message scrolls across the screen (from left to right) where: 5 is the fastest speed and 1 is the slowest.  The default value is dependent on the video format as follows: 1 for SD video formats, 2 for HD video formats.
Repeat Count	1 to 10 <sup>b</sup>	Specifies the number of times to display the entire text crawl before taking it off air
EAS Text Attributes	OK (Green)	Text color and background color do not match; text can be read on-screen
	Low Priority not visible (Yellow)	Text color and Background color match for Low Priority messages; text cannot be read on-screen
	Medium Priority not visible (Yellow)	Text color and Background color match for Medium Priority messages; text cannot be read on-screen
	High Priority not visible (Yellow)	Text color and Background color match for High Priority messages; text cannot be read on-screen
<b>Audio Ducking During EAS Events<sup>c</sup></b>		
EAS Duck Level (dB)	-30 to 0 <sup>d</sup>	This gain is applied to normal input audio on the Program bus while an EAS alert is active.
Gain (dB)	-30 to 10 <sup>e</sup>	This adjusts the overall output gain on the Program bus while an EAS alert is active (applies to the input audio and the EAS input audio)

- a. The default value is 10.0.
- b. The default value is 2.
- c. Refer to “**Audio Overview**” on page 69 for details on audio layering.
- d. The default value is -10dB.
- e. The default value is 0.

## Personality Tab

Table 14.30 lists the available options in the **Personality** tab.

**Table 14.30 Personality Tab Items**

Item	Parameter	Description
<b>Timing Display</b>		
Timing Display	Relative to Reference*	The <b>BKGD Timing</b> , <b>Key Video Timing</b> , and the <b>Key Alpha Timing</b> fields in the <b>Signal</b> tab displays the timing values relative to the reference: <ul style="list-style-type: none"> <li>• A negative offset value indicates that the SDI signal is earlier than the analog reference.</li> <li>• A positive value indicates that the SDI signal is later than the analog reference.</li> </ul>
	Input to Output	The <b>BKGD Timing</b> , <b>Key Video Timing</b> , and the <b>Key Alpha Timing</b> fields in the <b>Signal</b> tab displays the timing values relative to the output: <ul style="list-style-type: none"> <li>• A negative offset value indicates that the SDI BKGD input signal is earlier than the SDI OUT signal.</li> <li>• A positive value indicates that the SDI BKGD input signal is later than the SDI OUT signal.</li> </ul>
<b>Number of Crosspoint Buttons</b>		
Number of Crosspoint Buttons	# <sup>a</sup>	Specifies the number of crosspoint buttons to display in each Program and Preview bus row. Applies to the On Air Control interface and the MC1-PANEL-16 (if using).  The MC1-MK also sends the button number for crosspoint tallies.
<b>Card Lock</b>		
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 external device commands if these features were enabled prior to locking.
<b>Enable Fan Alarm</b>		
Stalled Fan	Selected*	The <b>FPGA Fan</b> field in the <b>Hardware</b> tab reports when the fan on the card surface is not operating correctly
	Cleared	Disables this feature
<b>Post Transition Behavior</b>		
Toggle Program/ Preset Bus	Selected*	After a transition, the Preset bus switches to the former Program bus selections
	Cleared	The Preset bus will not change after a transition. The user must manually select the next Preset source.
Preset Keyers <sup>b</sup>	Toggle Program/Preset Bus*	Keyers will toggle between Program and Preset after a transition

**Table 14.30 Personality Tab Items**

<b>Item</b>	<b>Parameter</b>	<b>Description</b>
Preset Keyers <sup>b</sup>	Remove from Preset Bus	After a transition, the keyers on the Preset bus will be turned off automatically. The user must manually select keyers to be included in the next transition. This option must be enabled before the Exclude SqueezeBack Transition option can take affect.
	No Change (Disarm)	The Preset Bus state does not change.
Exclude SqueezeBack Transition	Selected*	If the Disarm Preset Keyers option is enabled, selecting Exclude SqueezeBack Transition will stop keys from being disarmed at the end of a SqueezeBack transition. If the Disarm Preset Keyers option is disabled, this option has no effect.
	Cleared	Disables this feature
Reset Audio Gain	Selected*	Audio gain will be set back to 0dB during a transition
	Cleared	Disables this feature
Audio Transition on Take	V-fade*	The audio is transitioned with a V-fade when a video TAKE transition occurs
	Cross fade	The audio is transitioned with a Cross fade when a video TAKE transition occurs
Audio Take Duration (frames)	#	Sets the duration of the audio transition during a video TAKE transition. The default is 2 frames.
<b>Channel Select Buttons</b>		
Channel Select Buttons	1-10 <sup>c</sup>	Specifies the number of Channel Select buttons to display on the On Air Control interface for the MC1-MK.
<b>On Air Control</b>		
Crosspoints & Keyers	Crosspoints & Keyers Shown*	Displays the entire On Air Control interface in DashBoard including the crosspoint buses and keyers.
	Crosspoints & Keyers Hidden	Displays only the Config tabs and the audio meters of the On Air Control interface in DashBoard. The crosspoint buses and keyers do not display in DashBoard.
<b>FTB Disabling</b>		
FTB Button	FTB Enabled*	The Fade to Black (FTB) button functions as expected.
	FTB Disabled	The FTB button has no impact when pressed. The button displays as grayed out and unavailable.
<b>Automation Switch Request</b>		
Switch Request <sup>d</sup>	Router Crosspoint*	Defines switch requests as physical or virtual router crosspoints
	Button Map	Defines switch requests as a button numbers which is defined by the Video Inputs tab.

**Table 14.30 Personality Tab Items**

Item	Parameter	Description
Take Button on Panel	Take*	No change to the <b>TAKE</b> button function.
	Take Next	When the <b>ATMN</b> button is toggled to <b>ON</b> and the Remote Control protocol is set to Presmaster, this setting re-configures the <b>TAKE</b> button to send a new tally to the automation system <i>instead</i> of performing a Take transition. Refer to “ <b>Take Command</b> ” on page 133 for more information.
<b>Clean Feed Audio Selection</b>		
Clean Feeds with Voice Over	None	Voice over is not enabled in any of the Clean Feeds
	Clean Feed 1 only	Voice over is enabled for Clean Feed 1 only
	Clean Feeds 1 and 2	Voice over is enabled for Clean Feed 1 and 2 only
	Clean Feeds 1 to 3	Voice over is enabled for Clean Feeds 1-3only
	All	Voice over is enabled for all Clean Feeds
<b>GPIO Triggered Keys to Override TAKE Transitions</b>		
GPIO Overrides TAKE	Selected	Prevents GPI-triggered keys from being taken off-air by a TAKE transition. On activation, this feature disables the corresponding key on the preset bus.
	Cleared	Disables this feature
<b>3G Video Enable</b>		
Enable 3G Video Modes	Selected	Enabling 3G Video Mode reduces the number of Logo channels from four to two. Refer to “ <b>Using the 3G Video Mode</b> ” on page 46 for details.  This option must be selected in order for the 1080p 59.94Hz and 1080p 50Hz output formats to be listed in the <b>Output Format</b> menu on the <b>Video</b> tab.  This control is locked when the box is selected, and a 3G output format remains selected in the <b>Output Format</b> menu.
	Cleared*	Disables 3G video mode.

- a. The default is 10.
- b. The Disarm Preset Keyers option affects all Keyers unless EAS is enabled (on the Remote Control tab) in which case only Keyers 1-3 are affected.
- c. The default is 2.
- d. This feature also impacts the GPIO Program Crosspoint setting.

## GPIO Override Tab

Table 14.31 summarizes the options available in DashBoard for the **GPIO Override** tab.

**Table 14.31 GPIO Override Menu Items**

Item	Parameters	Description
<b>GPIO #<sup>a</sup></b>		
Override	None*	The settings for the specified GPIO are not overridden.
	Input	The specified GPIO functions as an input

**Table 14.31 GPIO Override Menu Items**

Item	Parameters	Description
Override	Output	The specified GPIO functions as an output
Level <sup>b</sup>	High*	If Override is set to Input or Output, sets the polarity of the level trigger where a high level starts the function.
	Low	If Override is set to Input or Output, sets the polarity of the level trigger where a low level starts the function.
Default All	Sets all GPIO settings on this tab to the factory default settings	
All Inputs	Configures all GPIOs as inputs	
All Outputs	Configures all GPIOs as outputs	

- a. The settings on this tab are not retained after a re-boot.
- b. When Override is set to None, this button reports the current status of the specified GPIO and toggling this button will have no effect.

## Channel Gang Tabs

The specific Channel Gang tab displayed in the Configuration interface depends on whether the MC1-MK is configured as a master or as a remote. This section summarizes the **Channel Gang Master** tab and the **Channel Gang Remote** tab.

### For More Information on...

- on configuring your MC1-MK for channel ganging, refer to “**Channel Ganging**” on page 63.

## Channel Gang Master Tab

**Table 14.33** summarizes the read-only information displayed in the **Channel Gang Master** tab. This tab only displays when Channel Ganging is enabled in the **Remote Control** tab and the MC1-MK is configured as a Server (master).

**Table 14.32 Channel Gang Master Tab Items**

Item	Parameters	Description
Software Rev	#	Reports the software and build versions of this specific MC1-MK
Compatible Version	#	Reports the oldest backwards-compatible software versions for attached remote MC1-MKs
Operating as Master - Not Connected.		Communication was lost between this MC1-MK and one of the MC1-MK that it controls. The master MC1-MK is attempting to re-establish communications with the remote(s).
Operating as Master - # Remotes Connected.		Communication is valid between this MC1-MK and the indicated number of remote MC1-MK it controls
<b>Remote #</b>		
Status	OK (Green)	<ul style="list-style-type: none"> <li>• If the MC1-MK is configured as a remote, communication is valid between it and the Master MC1-MK</li> <li>• The MC1-MK is not configured for channel ganging</li> </ul>

**Table 14.32 Channel Gang Master Tab Items**

Item	Parameters	Description
Status	Out of Sync (Yellow)	The MC1-MK is configured as a remote but is out of sync with the Master MC1-MK. One or more of the following has occurred: <ul style="list-style-type: none"> <li>• Power was lost by one of the MC1-MK</li> <li>• A button was selected on the hard panel of the remote MC1-MK</li> <li>• A button was selected on the On Air Control interface of the remote MC1-MK</li> <li>• A remote MC1-MK has fewer External Sources than are currently selected on the master MC1-MK. Refer to the <i>MC1-MK Operation Manual</i> about setting up external sources in the On Air Control interface.</li> </ul>
	Negotiating Connection (Yellow)	The master MC1-MK is attempting to establish communications with this MC1-MK
	Remote MC1 is out of date (Yellow)	One or more of the following has occurred: <ul style="list-style-type: none"> <li>• A button was selected on the hard panel of the remote MC1-MK</li> <li>• A button was selected on the On Air Control interface of the remote MC1-MK</li> </ul>
	Buffer Overrun (Red)	The remote MC1-MK was unable to keep pace with the Master MC1-MK and commands were lost.
Remote IP Address	N/A	Communication was lost between this MC1-MK and the Master MC1-MK or this MC1-MK is not configured for channel ganging
	###.##	This field specifies the IP address of the specified MC1-MK remote
MC1 Version	N/A	Communication was lost between this MC1-MK and the Master MC1-MK or this MC1-MK is not configured for channel ganging
	#	Specifies the software and build version the current remote MC1-MK is running
Compatible Version	N/A	Communication was lost between the remote MC1-MK and the Master MC1-MK or the remote MC1-MK is not configured for channel ganging
	#	Specifies the minimum compatible software version for a Master MC1-MK.  The software and build versions of the master and remote MC1-MK must be compatible.

**Table 14.32 Channel Gang Master Tab Items**

Item	Parameters	Description
Push Settings	Push	Re-sends the commands to the specified remote MC1-MK to re-sync the communication queue between the master and the remote
	Push to ALL Remotes	Re-sends the commands to all remote MC1-MK to re-sync the communication queue between the master and all remote channels currently connected to it  If a remote MC1-MK has fewer external sources than are currently selected on the Master MC1-MK, the remote will report an error in its Status field.

## Channel Gang Remote Tab

**Table 14.33** summarizes the read-only information displayed in the **Channel Gang Remote** tab. This tab only displays when Channel Ganging is enabled in the **Remote Control** tab and the MC1-MK is configured as a Client (remote).

**Table 14.33 Channel Gang Remote Tab Items**

Item	Parameters	Description
Software Rev	#	Reports the software and build versions of this specific MC1-MK
Compatible Version	#	Reports the oldest backwards-compatible software versions for a master MC1-MK to communicate with this remote MC1-MK
Operating as Remote - Not Connected to Master.		Communication was lost between this MC1-MK and the master MC1-MK controlling it. The master MC1-MK is attempting to re-establish connection with this MC1-MK.
Operating as Remote - Connected to Master.		Communication is valid between this MC1-MK and the master MC1-MK controlling it
Status	OK (Green)	<ul style="list-style-type: none"> <li>If the MC1-MK is configured as a remote, communication is valid between it and the Master MC1-MK</li> <li>The MC1-MK is not configured for channel ganging</li> </ul>
	Negotiating Connection (Yellow)	The master MC1-MK is attempting to establish communications with this MC1-MK
	Master MC1 is out of date (Yellow)	One or more of the following has occurred: <ul style="list-style-type: none"> <li>A loss of power</li> <li>A button was selected on the hard panel of the master MC1-MK</li> <li>A button was selected on the On Air Control interface of the master MC1-MK</li> </ul>
	Buffer Overrun (Red)	The remote MC1-MK was unable to keep pace with the Master MC1-MK and commands were lost.



**Table 14.33 Channel Gang Remote Tab Items**

<b>Item</b>	<b>Parameters</b>	<b>Description</b>
Remote IP Address	N/A	Communication was lost or not configured correctly between this MC1-MK and the master MC1-MK. Verify that this MC1-MK is configured for channel ganging.
	###.#	Specifies the IP address of the master MC1-MK currently controlling this MC1-MK
MC1 Version	N/A	Communication was lost or not configured correctly between this MC1-MK and the master MC1-MK. Verify that this MC1-MK is configured for channel ganging
	#	Specifies the software and build version the current card is running
Compatible Version	N/A	Communication was lost between this MC1-MK and the master MC1-MK. Verify that this MC1-MK is configured for channel ganging
	#	Specifies the minimum software and build version that is compatible with the current card. The software and build versions of the master and remote MC1-MK must be compatible.



# Technical Specifications

This chapter provides information on the specifications for your MC1-MK.

★ Specifications are subject to change without notice.

## SDI Inputs Specifications

**Table 15.1 Technical Specifications — SDI Inputs**

Item	Specifications	
Number of Inputs	4	
Standards Accommodated	SMPTE 259M (270Mbps)	
	SMPTE 292M (1.485Gbps)	
	SMPTE 424M (2.985Gbps) <sup>a</sup>	
Impedance	75ohms	
<b>Return Loss</b>		
8320AR-033 Rear Module	SDI IN 1: 15dB to 1.485GHz	
	SDI IN 2-4: >15dB to 1.485GHz	
8320AR-055 Rear Module	SD: >15dB	
	HD: >15dB	
	3G: >10dB	
<b>Equalization (using Belden 1694A cable)</b>		
8320AR-033 Rear Module	SD: 120m	
	HD: 100m	
8320AR-055 Rear Module	SD:	SDI IN 1-3: 300m
		SDI IN 4: 160m
	HD:	SDI IN 1-4: 140m
	3G:	SDI IN 1-4: 60m

a. Supported only on the 8320AR-055 rear module.

## SDI Outputs Specifications

**Table 15.2 Technical Specifications — SDI Outputs**

Item	Specifications	
Number of Outputs	4	
Impedance	75ohms	
<b>Return Loss</b>		
8320AR-033 Rear Module	SDI OUT 1: 15dB to 1.485GHz	
	SDI OUT 2-4: >15dB to 1.485GHz	

**Table 15.2 Technical Specifications — SDI Outputs**

Item	Specifications
8320AR-055 Rear Module	SD: >13dB
	HD: >13dB
	3G: >10dB
Signal Level	800mV +/-10%
DC Offset	0+/-50mV
<b>Rise and Fall Time</b>	
8320AR-033 Rear Module	SD: 900ps typical
	HD: 150ps typical
8320AR-055 Rear Module	SD: 900ps typical
	HD: 150ps typical
	3G: 130ps typical
Overshoot	<10% typical

## Maximum Cable Lengths

**Table 15.3 Technical Specifications — Cable Lengths**

Item	Specifications
RS-232 Serial Interface	10m (33ft)
RS-422 Serial Interface	300m (984ft)

## Environment

**Table 15.4 Technical Specifications — Environment**

Item	Specifications
Maximum Ambient Temperature	40°C (104°F)

## Power

**Table 15.5 Technical Specifications — Power**

Item	Specifications
Maximum Power Consumption	22W

# Communication Specifications

This chapter provides additional information on the different connector types of the MC1-MK rear module.

## Serial Port

When building cables to interface to the card **Serial** port, it is recommended to use CAT-5 or CAT-5e cable with the standard wiring color coding.

### 8320AR-033 Rear Module

**Table 16.1** shows the pin assignment of the **Serial** port located on the 8320AR-033 Rear Module.

★ Pins 4 and 5 provide +12V @ 0.2A. Do not connect these pins if unused, these pins must be left unterminated (floating).

**Table 16.1 RJ-45 Pin Assignment — 8320AR-033**

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

### 8320AR-055 Rear Module

**Table 16.2** shows the pin assignment of the **Serial** port located on the 8320AR-055 Rear Module.

**Table 16.2 RJ-45 Pin Assignment — 8320AR-055**

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

## LTC Serial Cabling Requirements

When building cables to interface to the card **Serial** port and an LTC device, it is recommended to use CAT-5 or CAT-5e cable with the standard ethernet wiring color coding.

### 8320AR-033 Rear Module

**Table 16.3** shows the pin assignment of the **Serial** port on the 8320AR-033 Rear Module.

**Table 16.3 Interface Cable for LTC Input — 8320AR-033**

RJ45 Pin	RS-422 Serial Rx Port	LTC Signal
1	Tx+	
2	Tx-	
3	Rx+	LTC+
4	+12V	
5	+12V	
6	Rx-	LTC-
7	GND	GND
8	GND	GND

### 8320AR-055 Rear Module

**Table 16.3** shows the pin assignment of the **Serial** port on the 8320AR-055 Rear Module.

**Table 16.4 Interface Cable for LTC Input — 8320AR-055**

RJ45 Pin	RS-422 Serial Rx Port	LTC Signal
1	Tx+	
2	Tx-	
3	Rx+	LTC+
4	n/c	
5	n/c	
6	Rx-	LTC-
7	GND	GND
8	GND	GND

## Ethernet Port

The **Ethernet** port on the Rear Module is used to connect to an ethernet network for communications, software upgrades using DashBoard, media file management via an FTP client, and for viewing thumbnails

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

## GPI/Tally Connections

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.

The **Edge** 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 per 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** 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 Connections

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 card 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 default 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.

## Video Characteristics

This section provides additional information for configuring video sources.

### Video Processing

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

- The SDI output timing is fixed on the MC1-MK and is set to approximately 0.5 lines after the reference.
- 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 approximately +/- 0.5 line. Exceeding this tolerance will result in the output shifting of 1 line. The **Timing** status fields in the **Signal** tab displays a Yellow indicator when operating outside the range of the line sync. In such cases, a vertical shift of 1 line or more may occur.
- All of the video inputs must be the same video format as specified in the **Video** tab for the card. If the formats do not match, the card reports an error in the Dashboard **Signal Status** area and on the card-edge LEDs.

- The Program and Preset sources can be any of the four internally generated Logo channels or external inputs, or an internally generated black.
- Each of the four outputs can be configured as Program, Preset, or one of four Clean Feeds.
- 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.

## Output Format Reference Compatibility

Depending on the reference format you use, the card will only be able to operate in certain formats as outlined in **Table 16.5**.

**Table 16.5 Output/Reference Compatibility**

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



# Third-Party Protocols

This chapter provides additional information on the serial and/or ethernet communications protocols used with the MC1-MK.

## Miranda™ Presmaster Control System Protocol

The MC1-MK supports a subset of Miranda™ Presmaster Control System automation commands and automation tallies. Ensure the **ATMN** button is toggled to **ON** to enable your automation device to control the MC1-MK. This button is located on the **On Air Control** interface of the MC1-MK.

### For More Information on...

- the Miranda™ Presmaster protocol, refer to the *Miranda Presmaster Automation Protocol Manual*
- the location of the **ATMN** button on the **On Air Control** interface, refer to the *MC1-MK Operation Manual*.

## Commands

**Table 17.1** summarizes the automation commands supported by the MC1-MK.

**Table 17.1 Supported Commands**

Command	Code	Supported	Notes
<b>Simple Commands</b>			
SET_TRANS_TYPE	0x01	✓	<ul style="list-style-type: none"> <li>• Transition type 00 is a protocol extension used to deactivate BKGD INCL. It does not affect the transition type.</li> <li>• Transition types 01-05 are supported</li> <li>• Transition types 06-19 are used to select the SqueezeBack transition type</li> </ul>
ENQ_STAT	0x02	✓	Results in the return of the following tallies: current crosspoint state on the Program and Preset buses, voice over states, and the current transition type. The following tallies are not returned: DSK states, transition rate, auxiliary bus source.
SET_TRANS_RATE	0x03	✓	<ul style="list-style-type: none"> <li>• Sets the transition rate in frames.</li> <li>• Range is between 1 and 99 inclusive.</li> <li>• Default rate is set to 60 frames.</li> <li>• Upon setting a rate a tally is also sent.</li> </ul>
SET_DSK1_STATE	0x06		
SET_DSK2_STATE	0x07		
SET_PRG_VID_SRC	0x09	✓	Refer to “ <b>Automation Switch Request</b> ” on page 132.
SET_PRG_AUD_SRC	0x0A		Audio follows video
SET_PRESET_VID_SRC	0x0B	✓	Activates BKGD INCL. Refer to “ <b>Automation Switch Request</b> ” on page 132.
SET_PRESET_AUD_SRC	0x0C		Audio follows video
SET_AUX_VID_SRC	0x0D	✓	Refer to “ <b>Automation Switch Request</b> ” on page 132.
SET_AUX_AUD_SRC	0x0E		Audio follows video
TAKE_ALL	0x0F	✓	
TAKE_AUDIO	0x10		

**Table 17.1 Supported Commands**

Command	Code	Supported	Notes
AO_STATE	0x13		
AO_SRC	0x14		
SRC_TABLE_SET	0x1A		
MIXER_POLL	0x1E	✓	Always returns 0xFF 0x1E
AO_LEVEL	0x24		
PRG_LEVEL	0x25		
SRC_CHN_LEVEL	0x26		
DSK_CLIP_LEVEL	0x27		
DSK_GAIN_LEVEL	0x28		
SRC_GAIN	0x29		
SET_AUTO_STATE	0x2B		
START_AUDIO_LEAD	0x2C		Audio leading fixed at 1 frame
ABORT_AUDIO_LEAD	0x2E		
START_AUDIO_LAG	0x2F		
ABORT_AUDIO_LAG	0x31		
DSK1_SETTING	0x32		
DSK2_SETTING	0x33		
SET_AUDIO_MODE	0x34	✓	<ul style="list-style-type: none"> <li>• Supports 4 pairs, plus mute and phase inversion</li> <li>• Select from any of the 8 possible input pairs (and of the 16 embedded channels)</li> <li>• Mute bits apply to both channels of an audio pair</li> <li>• Phase Reverse bits apply to the second channel of the pair only</li> <li>• Crosspoint selection applies to either a crosspoint number or to a router input, as defined by the Automation Switch Request. Refer to “<b>Automation Switch Request</b>” on page 132. <ul style="list-style-type: none"> <li>› When using a router input, the Audio Mode applies to all crosspoints mapped to the specified router input.</li> <li>› When the specified router input is not mapped to any crosspoint, the command is ignored.</li> </ul> </li> <li>• Takes effect the next time the specified crosspoint is selected on a TAKE or hot-punch transition.</li> </ul>
SET_AO_RATE	0x38		
SET_U_FADE_TIMES	0x3C		
<b>Extended Commands</b>			
IS2_TUNNEL	0x0001		
TAKE_VIDEO	0x0010		Video and audio are switched together.
DSK_ARM	0x0006	✓	
DSK_STATE	0x0007	✓	<ul style="list-style-type: none"> <li>• Enables you to activate/deactivate a specified key using a fade or a cut transition on the Program bus.</li> <li>• The transition rate used will always be determined by the automation rate, as specified by the Simple Command 0x03.</li> </ul>
LOAD_PREV_IMG	0x0032		

**Table 17.1 Supported Commands**

Command	Code	Supported	Notes
LOAD_IMG	0x0033	✓	Load file into specified DSK. DSK 0 to 3 load specified file into DDR for Logo 1 to 4 respectively. DSK 127 (7Fh) pre-loads file into the DDR only for fast recall into usable Logo 1 to 4, when needed. A tally is sent regardless of the outcome. The expected tally is now returned if the file is already loaded. On a failure to load a file, a tally is returned with a zero-length filename.
VO_ARM	0x0013	✓	Arms the voice over state on the Preset bus for the next Take All command. Only VO number 0 is supported.
VO_STATE	0x0014	✓	Immediately sets the voice over state on the Program bus. Only VO number 0 is supported. Avoid using VO number 1 as it is reserved for EAS audio (voice) over.
VO_PRESET	0x0024	✓	Sets the voice over preset level. Expressed in 1/10 dB steps with unity at 0x0800. The allowable range is -30 (0x06D4) to +10 (0x0864). VO number 0 is the ON AIR Voice Over Gain and VO number 1 is the EAS gain.
VO_DUCK	0x0025	✓	Sets the voice over duck level. Expressed in Expressed in 1/10 dB steps with unity at 0x0800. The allowable range is -30 (0x06D4) to 0 (0x0800). VO number 0 is the ON AIR Voice Over ducking, and VO number 1 is the EAS ducking.
ENQ_DSK_IMG	0x0034	✓	Inquire DSK image exists; causes return of four tallies (one for each logo). Includes a tally for DSK 127.
VO_RATE	0x0038		
VO_SHUFFLE	0x0026		
VGPI_ARM <sup>a</sup>	0x0130	✓	<ul style="list-style-type: none"> <li>• Supports a maximum of four VGPIs (VGPI 0 to VGPI 3)</li> <li>• This command will be ignored when the specified SqueezeBack Preset is on Program</li> <li>• When in Arm Up state, the command includes the specified SqueezeBack Preset in the transition (the <b>SQUEEZE</b> button is lit on the On Air Control interface)</li> <li>• When in Arm down/Disarm state, the command excludes the specified SqueezeBack Preset in the transition (the <b>SQUEEZE</b> button is unlit on the On Air Control interface)</li> </ul>
VGPI_STATE <sup>a</sup>	0x0140		<ul style="list-style-type: none"> <li>• When no SqueezeBack Preset is on Program and this command is in the Up state, selects the effect type of VGPI and transitions the selected effect on Program.</li> <li>• When a SqueezeBack Preset is on Program and this command is in the Down state, the VGPI which has the same effect as the current one will be handled and the current effect will be off air or on Preview.</li> <li>• In other cases, the command will be ignored.</li> </ul>
SET_PCS_CHN	0x0040		
GET_PCS_CHN	0x0041		
AUTO_TALLY_ENA	0x0042		
SET_PAN_SHOTBOX	0x0043		
GET_PAN_SHOTBOX	0x0044		
CHECK_MEDIA	0x0047		
DISCONN_PAN	0x0048		

- a. The Presmaster protocol must be enabled on the Remote Control tab in DashBoard. Refer to the section “Using the Presmaster Protocol for VGPIs” on page 58 for details.

## Automation Switch Request

The Automation Switch Request feature uses Simple Commands 0x09, 0x0B, and 0x0D and is applicable when operating with an Automation system. This feature defines the crosspoint switch as a router crosspoint number or as an MC1-MK button map number.

In order to access button 20, an extended message must be provided as specified in the Presmaster protocol specification. For example, FF 09 7F 00 14 would be sent for the Program bus.

Ensure that the Switch Request feature in the **Personality** tab is set as required for your setup. Refer to the section “Automation Switch Request” on page 60 for details.

## Tallies

**Table 17.2** summarizes the automation tallies supported by the MC1-MK.

**Table 17.2 Supported Presmaster Tallies**

Name	Tally ID	Supported	Notes	Included in ENQ_STAT (0x02)
Program Video Source	49	✓	Refer to “Automation Switch Request” on page 132	✓
Program Audio Source	4A	✓	Audio follows video	✓
Preset Video Source	4B	✓	Refer to “Automation Switch Request” on page 132	✓
Preset Audio Source	4C	✓	Audio follows video	✓
Aux Video Source	4D	✓	Refer to “Automation Switch Request” on page 132	✓
Aux Audio Source	4E		Audio follows video	
Take Complete	4F	✓		
Take Audio	50			
V/O State	53	✓	Sent on change in voice over state	✓
U-Fade Rate	7C			
Transition Type	41	✓		✓
Transition Rate	43	✓		✓
Mixer Poll	5E	✓	Always returns 0xFF, 0x5E	
Source Audio Parameters	6E			
DSK Clip Value	67			
DSK Gain	68			
DSK State	Ext 0x0806			
VO Arm State	Ext 0x0813	✓		✓
VO Parameters	Ext 0x0826			

**Table 17.2 Supported Presmaster Tallies**

Name	Tally ID	Supported	Notes	Included in ENQ_STAT (0x02)
Image Load State	Ext 0x0833	✓	Sent whenever a new image file has loaded, via automation or otherwise. Reports DSK 0 to 3 when loaded file into DDR for Logo 1 to 4, respectively. Reports DSK 127 (7Fh) when file is pre-loaded into DDR only (this can only originate via automation).	
DSK Image Existence	Ext 0x0834	✓	Response to the “ENQ_DSK_IMG” command. Includes DSK 0 to 3, Logo 1 to 4 respectively, a flag byte set if specified file is loaded on the corresponding logo and the filename.	
Current VGPI State	Ext 0x0940	✓		
Set Panel to Channel on PCS	Ext 0x0840			
Get Which Channel a Panel is connected to	Ext 0x0841			
Automation Control Status	Ext 0x0842			
Current Shot Box Selected on Panel	Ext 0x0843			
Tally Sent when a Panel Acquires a Channel	Ext 0x0845			
Tally Sent when a Panel Drops a Channel	Ext 0x0846			
Tally Sent Back from Intuition to Show which Files, if any, are Missing in a Template	Ext 0x0847			
Automation Assist Command	Ext 0x0928			

**Take Command**

**Table 17.3** outlines the additional tallies available when the **Take Button on Panel** setting in the **Personality** tab is set to **Take Next**.

**Table 17.3 Additional Tallies**

Name	Tally	Notes
Automation Disabled	FF 6B 01 00	Sent when the operator disables automation using the ATMN button on the MC1-MK interfaces.
Automation Enabled	FF 6B 01 01	Sent when the operator enables automation using the ATMN button on the MC1-MK interfaces.
Take Next Released	FF 6B 03 00	Sent on completion of a TAKE operation and after the “Take Next Asserted” tally. Automation must be enabled on the MC1-MK.
Take Next Asserted	FF 6B 03 01	Sent when the operator presses the TAKE button on the On Air Control interface, or MC1-PANEL-16 control panel. Automation must be enabled on the MC1-MK.

## GVG Series 7000 Native Protocol

The MC1-MK supports a subset of GVG 7000 Native protocol commands.

### For More Information on...

- configuring the MC1-MK to communicate with a Ross Ultrix router, refer to the section “**Ross NK Series Router Setup**” on page 37.
- general setup requirements, refer to the MC1-MK to GVG 7000 Native Setup sheet that is available from our website.

**Table 17.4** summarizes the GVG 7000 Native commands supported by the MC1-MK.

**Table 17.4 Supported GVG 7000 Native Commands**

Command	Code	Notes
QI	Query by Index	The MC1-MK first issues this command 2 fields before “Minimum Delay” (4 fields when using the Serial protocol). Minimum delay before issuing the QI is 1 field following the TI command. The MC1-MK continues issuing QI commands until the expected result occurs or until reaching the Retry Interval value on the TI command.
QN, IS	Query Names	The MC1-MK supports Query Names: Sources with source indexes for label read-back.
TI	Take by Index	Supports two forms of this command: either on a specified level index or on all levels.

## Probel SW-P-08 Protocol

The MC1-MK supports a number of Probel SW-P-08 commands. The exact commands and how the card reacts to the commands is outlined in **Table 17.5**.

- ★ The MC1-MK attempts to use the short form of the interrogate and connect message. The extended form is used whenever the source or destination numbers exceed 1024 or the level number exceeds 16.

**Table 17.5 Probel SW-P-08 Commands**

Command	Command Byte	Description
Crosspoint Interrogate	01	Where Levels are less than or equal to 16, and Destinations are less than or equal to 1024.
Extended Crosspoint Interrogate	129	Where Levels are greater than 16, and Destinations are greater than 1024.
Crosspoint Connect	02	Where Levels are less than or equal to 16, Sources are less than or equal to 1024, and Destinations are less than or equal to 1024
Extended Crosspoint Connect	129	Where Levels are greater than 16 or Sources are greater than 1024, or Destinations are greater than 1024.
All Source Names Request	100	User selectable choice of 4, 8, or 12 character labels.

## Using RossTalk

RossTalk is a plain text based protocol that allows control of Ross Video equipment. The MC1-MK can be controlled from a remote editor or computer via RossTalk commands. These commands can be sent to the MC1-MK card over an ethernet connection (TCP/UDP) or via a serial port (RS-232/RS-422) on the card’s rear module.

## Enabling the RossTalk Protocol

This section outlines how to configure the MC1-MK to communicate with a device via RossTalk.

### To enable the RossTalk protocol

1. From the Tree View, expand the node for the card you want to access.
2. Select the **Config** tab.
3. Select the **Remote Control** tab.
4. If you are sending the commands via a serial connection:
  - a. Locate the **Serial Port** area.
  - b. Select **RossTalk** from the **Protocol** menu.
  - c. Configure the Port Type, Bit Rate, Data Bits, Parity, and Stop Bits settings.
  - d. Select the **Port Enabled** box.
5. If you are sending the commands via an ethernet connection:
  - a. Locate the **RossTalk** row in the **Ethernet Port** area.
  - b. From the **Protocol** menu, select the ethernet protocol your device will use to communicate with the card.
  - c. Ensure the **Port** field is set to **7788**.
  - d. Select the **RossTalk Enabled** box.

## Sending RossTalk Commands

RossTalk commands are generally case-sensitive, and must be terminated with carriage return and linefeed (CR+LF). When using with the MC1-MK, the command can be uppercase or lowercase, and the terminator can be simply linefeed.

For example,

```
MSPATH 1:0:ColorRamp.tga
```

```
MSPATH 1:0:directory/filename.png
```

### To send RossTalk Commands

1. Verify that you have created a network connection to the MC1-MK.
2. Enter the commands you want to send to the MC1-MK.

## Supported RossTalk Commands

**Table 17.6** outlines the RossTalk commands the MC1-MK supports.

**Table 17.6 RossTalk Commands**

Command	Description
FTB	Performs a fade-to-black transition
FTB level	<ul style="list-style-type: none"><li>• Level 0 = always clears FTB. No impact if already FTB</li><li>• Level 1 = always sets FTB state. No impact if already FTB</li></ul>
GPI xx	Triggers action associated with GPI number 1 through 8
GPI xx:level	Triggers GPI number 1 to 4 where: <ul style="list-style-type: none"><li>• Level 0 = logically OFF</li><li>• Level 1 = logically ON</li></ul>
KEYAUTO 1:keyer	Fades a key on/off air where <i>keyer</i> is between 1 to 4.

Command	Description
KEYAUTO 1:keyer:level	<ul style="list-style-type: none"> <li>• Level 0 = always take key off air; no change if key is already off air</li> <li>• Level 1 = always take key on air; no change if key is already on air</li> </ul>
KEYCUT 1:keyer	Cuts a key on/off air where <i>keyer</i> is between 1 to 4.
KEYCUT 1:keyer:level	<ul style="list-style-type: none"> <li>• Level 0 = always take key off air; no change if key is already off air</li> <li>• Level 1 = always take key on air; no change if key is already on air</li> </ul>
MSPATH <i>chan:0:filename</i>	<p>Load a still or animation from CompactFlash™ where:</p> <ul style="list-style-type: none"> <li>• <i>chan</i> is logo channel, 1 to 4.</li> <li>• <i>filename</i> is the directory/filename to be loaded. There is a maximum filename length of 256bytes.</li> </ul> <p>Note that the <i>filename</i> is case-sensitive and must match exactly how the files are stored on the CompactFlash.</p>
VGPIARM <i>vgpi:arm</i>	<p>Arms the specified effect defined for <i>vgpi</i> number on preset where:</p> <ul style="list-style-type: none"> <li>• <i>vgpi</i> is between 0-17</li> <li>• <i>arm</i> = 0; disarms the effect</li> <li>• <i>arm</i> = 1; arms the effect on the Preset bus</li> <li>• <i>arm</i> = 2; disarms the effect</li> </ul>
VPGISTATE <i>vgpi:state</i>	<p>Activates the specified effect defined for <i>vgpi</i> number on air</p> <ul style="list-style-type: none"> <li>• <i>vgpi</i> is between 0-17</li> <li>• <i>state</i> = 0; takes the effect off air</li> <li>• <i>state</i> = 1; takes the effect on air</li> </ul>



# Software Licenses

This chapter provides third-party software license information for your MC1-MK card. This product includes multiple software components which are individually licensed under one or more of the following licenses included in this chapter.

## BSD

Copyright (c) 1991,1993, The Regents of the University of California. All rights reserved.

This code is derived from software contributed to Berkeley by Kenneth Almquist.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
3. <BSD Advertising Clause omitted per the July 22, 1999 licensing change <ftp://ftp.cs.berkeley.edu/pub/4bsd/README.Impt.License.Change>> California, Berkeley and its contributors.
4. Neither the name of the University nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE REGENTS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE REGENTS OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

## Dual GPL/Free Type

Portions of this software are copyright (C) 1996-2002 The FreeType Project ([www.freetype.org](http://www.freetype.org)). All rights reserved.

This project is also covered under the GPL v2.

## GPL

### GNU GENERAL PUBLIC LICENSE

Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <<http://fsf.org/>>

Preamble

The GNU General Public License is a free, copyleft license for software and other kinds of works.

The licenses for most software and other practical works are designed to take away your freedom to share and change the works. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change all versions of a program—to make sure it remains free software for all its users. We, the Free Software Foundation, use the GNU General Public License for most of our software; it applies also to any other work released this way by its authors. You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for them if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs, and that you know you can do these things.

To protect your rights, we need to prevent others from denying you these rights or asking you to surrender the rights. Therefore, you have certain responsibilities if you distribute copies of the software, or if you modify it: responsibilities to respect the freedom of others.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must pass on to the recipients the same freedoms that you received. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

Developers that use the GNU GPL protect your rights with two steps: (1) assert copyright on the software, and (2) offer you this License giving you legal permission to copy, distribute and/or modify it.

For the developers' and authors' protection, the GPL clearly explains that there is no warranty for this free software. For both users' and authors' sake, the GPL requires that modified versions be marked as changed, so that their problems will not be attributed erroneously to authors of previous versions.

Some devices are designed to deny users access to install or run modified versions of the software inside them, although the manufacturer can do so. This is fundamentally incompatible with the aim of protecting users' freedom to change the software. The systematic pattern of such abuse occurs in the area of products for individuals to use, which is precisely where it is most unacceptable. Therefore, we have designed this version of the GPL to prohibit the practice for those products. If such problems arise substantially in other domains, we stand ready to extend this provision to those domains in future versions of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents. States should not allow patents to restrict development and use of software on general-purpose computers, but in those that do, we wish to avoid the special danger that patents applied to a free program could make it effectively proprietary. To prevent this, the GPL assures that patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and modification follow.

### TERMS AND CONDITIONS

#### 0. Definitions.

"This License" refers to version 3 of the GNU General Public License.

"Copyright" also means copyright-like laws that apply to other kinds of works, such as semiconductor masks.

"The Program" refers to any copyrightable work licensed under this License. Each licensee is addressed as "you". "Licensees" and "recipients" may be individuals or organizations.

To "modify" a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting work is called a "modified version" of the earlier work or a work "based on" the earlier work.

A "covered work" means either the unmodified Program or a work based on the Program.

To "propagate" a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it on a computer or modifying a private copy. Propagation includes copying, distribution (with or without modification), making available to the public, and in some countries other activities as well.

To "convey" a work means any kind of propagation that enables other parties to make or receive copies. Mere interaction with a user through a computer network, with no transfer of a copy, is not conveying.

An interactive user interface displays "Appropriate Legal Notices" to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2) tells the user that there is no warranty for the work (except to the extent that warranties are provided), that licensees may convey the work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.

## 1. Source Code.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

A "Standard Interface" means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The "System Libraries" of an executable work include anything, other than the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A "Major Component", in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The "Corresponding Source" for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the work's System Libraries, or general-purpose tools or generally available free programs which are used unmodified in performing those activities but which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms and other parts of the work.

The Corresponding Source need not include anything that users can regenerate automatically from other parts of the Corresponding Source.

The Corresponding Source for a work in source code form is that same work.

## 2. Basic Permissions.

All rights granted under this License are granted for the term of copyright on the Program, and are irrevocable provided the stated conditions are met. This License explicitly affirms your unlimited permission to run the unmodified Program. The output from running a covered work is covered by this License only if the output, given its content, constitutes a covered work. This License acknowledges your rights of fair use or other equivalent, as provided by copyright law.

You may make, run and propagate covered works that you do not convey, without conditions so long as your license otherwise remains in force. You may convey covered works to others for the sole purpose of having them make modifications exclusively for you, or provide you with facilities for running those works, provided that you comply with the terms of this License in conveying all material for which you do not control copyright. Those thus making or running the covered works for you must do so exclusively on your behalf, under your direction and control, on terms that prohibit them from making any copies of your copyrighted material outside their relationship with you.

Conveying under any other circumstances is permitted solely under the conditions stated below. Sublicensing is not allowed; section 10 makes it unnecessary.

## 3. Protecting Users' Legal Rights From Anti-Circumvention Law.

No covered work shall be deemed part of an effective technological measure under any applicable law fulfilling obligations under article 11 of the WIPO copyright treaty adopted on 20 December 1996, or similar laws prohibiting or restricting circumvention of such measures.

When you convey a covered work, you waive any legal power to forbid circumvention of technological measures to the extent such circumvention is effected by exercising rights under this License with respect to the covered work, and you disclaim any intention to limit operation or modification of the work as a means of enforcing, against the work's users, your or third parties' legal rights to forbid circumvention of technological measures.

## 4. Conveying Verbatim Copies.

You may convey verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice; keep intact all notices stating that this License and any non-permissive terms added in accord with section 7 apply to the code; keep intact all notices of the absence of any warranty; and give all recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey, and you may offer support or warranty protection for a fee.

## 5. Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to produce it from the Program, in the form of source code under the terms of section 4, provided that you also meet all of these conditions:

- a) The work must carry prominent notices stating that you modified it, and giving a relevant date.
- b) The work must carry prominent notices stating that it is released under this License and any conditions added under section 7. This requirement modifies the requirement in section 4 to "keep intact all notices".
- c) You must license the entire work, as a whole, under this License to anyone who comes into possession of a copy. This License will therefore apply, along with any applicable section 7 additional terms, to the whole of the work, and all its parts, regardless of how they are packaged. This License gives no permission to license the work in any other way, but it does not invalidate such permission if you have separately received it.
- d) If the work has interactive user interfaces, each must display Appropriate Legal Notices; however, if the Program has interactive interfaces that do not display Appropriate Legal Notices, your work need not make them do so.

A compilation of a covered work with other separate and independent works, which are not by their nature extensions of the covered work, and which are not combined with it such as to form a larger program, in or on a volume of a storage or distribution medium, is called an "aggregate" if the compilation and its resulting copy-

right are not used to limit the access or legal rights of the compilation's users beyond what the individual works permit. Inclusion of a covered work in an aggregate does not cause this License to apply to the other parts of the aggregate.

## 6. Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms of sections 4 and 5, provided that you also convey the machine-readable Corresponding Source under the terms of this License, in one of these ways:

- a) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by the Corresponding Source fixed on a durable physical medium customarily used for software interchange.
- b) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by a written offer, valid for at least three years and valid for as long as you offer spare parts or customer support for that product model, to give anyone who possesses the object code either (1) a copy of the Corresponding Source for all the software in the product that is covered by this License, on a durable physical medium customarily used for software interchange, for a price no more than your reasonable cost of physically performing this conveying of source, or (2) access to copy the Corresponding Source from a network server at no charge.
- c) Convey individual copies of the object code with a copy of the written offer to provide the Corresponding Source. This alternative is allowed only occasionally and noncommercially, and only if you received the object code with such an offer, in accord with subsection 6b.
- d) Convey the object code by offering access from a designated place (gratis or for a charge), and offer equivalent access to the Corresponding Source in the same way through the same place at no further charge. You need not require recipients to copy the Corresponding Source along with the object code. If the place to copy the object code is a network server, the Corresponding Source may be on a different server (operated by you or a third party) that supports equivalent copying facilities, provided you maintain clear directions next to the object code saying where to find the Corresponding Source. Regardless of what server hosts the Corresponding Source, you remain obligated to ensure that it is available for as long as needed to satisfy these requirements.
- e) Convey the object code using peer-to-peer transmission, provided you inform other peers where the object code and Corresponding Source of the work are being offered to the general public at no charge under subsection 6d.

A separable portion of the object code, whose source code is excluded from the Corresponding Source as a System Library, need not be included in conveying the object code work.

A "User Product" is either (1) a "consumer product", which means any tangible personal property which is normally used for personal, family, or household purposes, or (2) anything designed or sold for incorporation into a dwelling. In determining whether a product is a consumer product, doubtful cases shall be resolved in favor of coverage. For a particular product received by a particular user, "normally used" refers to a typical or common use of that class of product, regardless of the status of the particular user or of the way in which the particular user actually uses, or expects or is expected to use, the product. A product is a consumer product regardless of whether the product has substantial commercial, industrial or non-consumer uses, unless such uses represent the only significant mode of use of the product.

"Installation Information" for a User Product means any methods, procedures, authorization keys, or other information required to install and execute modified versions of a covered work in that User Product from a modified version of its Corresponding Source. The information must suffice to ensure that the continued functioning of the modified object code is in no case prevented or interfered with solely because modification has been made.

If you convey an object code work under this section in, or with, or specifically for use in, a User Product, and the conveying occurs as part of a transaction in which the right of possession and use of the User Product is transferred to the recipient in perpetuity or for a fixed term (regardless of how the transaction is characterized), the Corresponding Source conveyed under this section must be accompanied by the Installation Information. But this requirement does not apply if neither you nor any third party retains the ability to install modified object code on the User Product (for example, the work has been installed in ROM).

The requirement to provide Installation Information does not include a requirement to continue to provide support service, warranty, or updates for a work that has been modified or installed by the recipient, or for the User Product in which it has been modified or installed. Access to a network may be denied when the modification itself materially and adversely affects the operation of the network or violates the rules and protocols for communication across the network.

Corresponding Source conveyed, and Installation Information provided, in accord with this section must be in a format that is publicly documented (and with an implementation available to the public in source code form), and must require no special password or key for unpacking, reading or copying.

## 7. Additional Terms.

"Additional permissions" are terms that supplement the terms of this License by making exceptions from one or more of its conditions. Additional permissions that are applicable to the entire Program shall be treated as though they were included in this License, to the extent that they are valid under applicable law. If additional permissions apply only to part of the Program, that part may be used separately under those permissions, but the entire Program remains governed by this License without regard to the additional permissions.

When you convey a copy of a covered work, you may at your option remove any additional permissions from that copy, or from any part of it. (Additional permissions may be written to require their own removal in certain cases when you modify the work.) You may place additional permissions on material, added by you to a covered work, for which you have or can give appropriate copyright permission.

Notwithstanding any other provision of this License, for material you add to a covered work, you may (if authorized by the copyright holders of that material) supplement the terms of this License with terms:

- a) Disclaiming warranty or limiting liability differently from the terms of sections 15 and 16 of this License; or
- b) Requiring preservation of specified reasonable legal notices or author attributions in that material or in the Appropriate Legal Notices displayed by works containing it; or
- c) Prohibiting misrepresentation of the origin of that material, or requiring that modified versions of such material be marked in reasonable ways as different from the original version; or
- d) Limiting the use for publicity purposes of names of licensors or authors of the material; or
- e) Declining to grant rights under trademark law for use of some trade names, trademarks, or service marks; or
- f) Requiring indemnification of licensors and authors of that material by anyone who conveys the material (or modified versions of it) with contractual assumptions of liability to the recipient, for any liability that these contractual assumptions directly impose on those licensors and authors.

All other non-permissive additional terms are considered "further restrictions" within the meaning of section 10. If the Program as you received it, or any part of it, contains a notice stating that it is governed by this License along with a term that is a further restriction, you may remove that term. If a license document contains a further restriction but permits relicensing or conveying under this License, you may add to a covered work material governed by the terms of that license document, provided that the further restriction does not survive such relicensing or conveying.

If you add terms to a covered work in accord with this section, you must place, in the relevant source files, a statement of the additional terms that apply to those files, or a notice indicating where to find the applicable terms.

Additional terms, permissive or non-permissive, may be stated in the form of a separately written license, or stated as exceptions; the above requirements apply either way.

## 8. Termination.

You may not propagate or modify a covered work except as expressly provided under this License. Any attempt otherwise to propagate or modify it is void, and will automatically terminate your rights under this License (including any patent licenses granted under the third paragraph of section 11).

However, if you cease all violation of this License, then your license from a particular copyright holder is reinstated (a) provisionally, unless and until the copyright holder explicitly and finally terminates your license, and (b) permanently, if the copyright holder fails to notify you of the violation by some reasonable means prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is reinstated permanently if the copyright holder notifies you of the violation by some reasonable means, this is the first time you have received notice of violation of this License (for any work) from that copyright holder, and you cure the violation prior to 30 days after your receipt of the notice.

Termination of your rights under this section does not terminate the licenses of parties who have received copies or rights from you under this License. If your rights have been terminated and not permanently reinstated, you do not qualify to receive new licenses for the same material under section 10.

### **9. Acceptance Not Required for Having Copies.**

You are not required to accept this License in order to receive or run a copy of the Program. Ancillary propagation of a covered work occurring solely as a consequence of using peer-to-peer transmission to receive a copy likewise does not require acceptance. However, nothing other than this License grants you permission to propagate or modify any covered work. These actions infringe copyright if you do not accept this License. Therefore, by modifying or propagating a covered work, you indicate your acceptance of this License to do so.

### **10. Automatic Licensing of Downstream Recipients.**

Each time you convey a covered work, the recipient automatically receives a license from the original licensors, to run, modify and propagate that work, subject to this License. You are not responsible for enforcing compliance by third parties with this License.

An "entity transaction" is a transaction transferring control of an organization, or substantially all assets of one, or subdividing an organization, or merging organizations. If propagation of a covered work results from an entity transaction, each party to that transaction who receives a copy of the work also receives whatever licenses to the work the party's predecessor in interest had or could give under the previous paragraph, plus a right to possession of the Corresponding Source of the work from the predecessor in interest, if the predecessor has it or can get it with reasonable efforts.

You may not impose any further restrictions on the exercise of the rights granted or affirmed under this License. For example, you may not impose a license fee, royalty, or other charge for exercise of rights granted under this License, and you may not initiate litigation (including a cross-claim or counterclaim in a lawsuit) alleging that any patent claim is infringed by making, using, selling, offering for sale, or importing the Program or any portion of it.

### **11. Patents.**

A "contributor" is a copyright holder who authorizes use under this License of the Program or a work on which the Program is based. The work thus licensed is called the contributor's "contributor version".

A contributor's "essential patent claims" are all patent claims owned or controlled by the contributor, whether already acquired or hereafter acquired, that would be infringed by some manner, permitted by this License, of making, using, or selling its contributor version, but do not include claims that would be infringed only as a consequence of further modification of the contributor version. For purposes of this definition, "control" includes the right to grant patent sublicenses in a manner consistent with the requirements of this License.

Each contributor grants you a non-exclusive, worldwide, royalty-free patent license under the contributor's essential patent claims, to make, use, sell, offer for sale, import and otherwise run, modify and propagate the contents of its contributor version.

In the following three paragraphs, a "patent license" is any express agreement or commitment, however denominated, not to enforce a patent (such as an express permission to practice a patent or covenant not to sue for patent infringement). To "grant" such a patent license to a party means to make such an agreement or commitment not to enforce a patent against the party.

If you convey a covered work, knowingly relying on a patent license, and the Corresponding Source of the work is not available for anyone to copy, free of charge and under the terms of this License, through a publicly available network server or other readily accessible means, then you must either (1) cause the Corresponding Source to be so available, or (2) arrange to deprive yourself of the benefit of the patent license for this particular work, or (3) arrange, in a manner consistent with the requirements of this License, to extend the patent license to downstream recipients. "Knowingly relying" means you have actual knowledge that, but for the patent license, your conveying the covered work in a country, or your recipient's use of the covered work in a country, would infringe one or more identifiable patents in that country that you have reason to believe are valid.

If, pursuant to or in connection with a single transaction or arrangement, you convey, or propagate by procuring conveyance of, a covered work, and grant a patent license to some of the parties receiving the covered work authorizing them to use, propagate, modify or convey a specific copy of the covered work, then the patent license you grant is automatically extended to all recipients of the covered work and works based on it.

A patent license is "discriminatory" if it does not include within the scope of its coverage, prohibits the exercise of, or is conditioned on the non-exercise of one or more of the rights that are specifically granted under this License. You may not convey a covered work if you are a party to an arrangement with a third party that is in the business of distributing software, under which you make payment to the third party based on the extent of your activity of conveying the work, and under which the third party grants, to any of the parties who would receive the covered work from you, a discriminatory patent license (a) in connection with copies of the covered work conveyed by you (or copies made from those copies), or (b) primarily for and in connection with specific products or compilations that contain the covered work, unless you entered into that arrangement, or that patent license was granted, prior to 28 March 2007.

Nothing in this License shall be construed as excluding or limiting any implied license or other defenses to infringement that may otherwise be available to you under applicable patent law.

### **12. No Surrender of Others' Freedom.**

If conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot convey a covered work so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not convey it at all. For example, if you agree to terms that obligate you to collect a royalty for further conveying from those to whom you convey the Program, the only way you could satisfy both those terms and this License would be to refrain entirely from conveying the Program.

### **13. Use with the GNU Affero General Public License.**

Notwithstanding any other provision of this License, you have permission to link or combine any covered work with a work licensed under version 3 of the GNU Affero General Public License into a single combined work, and to convey the resulting work. The terms of this License will continue to apply to the part which is the covered work, but the special requirements of the GNU Affero General Public License, section 13, concerning interaction through a network will apply to the combination as such.

### **14. Revised Versions of this License.**

The Free Software Foundation may publish revised and/or new versions of the GNU General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies that a certain numbered version of the GNU General Public License "or any later version" applies to it, you have the option of following the terms and conditions either of that numbered version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of the GNU General Public License, you may choose any version ever published by the Free Software Foundation.

If the Program specifies that a proxy can decide which future versions of the GNU General Public License can be used, that proxy's public statement of acceptance of a version permanently authorizes you to choose that version for the Program.

Later license versions may give you additional or different permissions. However, no additional obligations are imposed on any author or copyright holder as a result of your choosing to follow a later version.

#### **15. Disclaimer of Warranty.**

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

#### **16. Limitation of Liability.**

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

#### **17. Interpretation of Sections 15 and 16.**

If the disclaimer of warranty and limitation of liability provided above cannot be given local legal effect according to their terms, reviewing courts shall apply local law that most closely approximates an absolute waiver of all civil liability in connection with the Program, unless a warranty or assumption of liability accompanies a copy of the Program in return for a fee.

## IJG

The authors make NO WARRANTY or representation, either express or implied, with respect to this software, its quality, accuracy, merchantability, or fitness for a particular purpose. This software is provided "AS IS", and you, its user, assume the entire risk as to its quality and accuracy.

This software is copyright (C) 1991-1998, Thomas G. Lane.

All Rights Reserved except as specified below.

Permission is hereby granted to use, copy, modify, and distribute this software (or portions thereof) for any purpose, without fee, subject to these conditions:

- (1) If any part of the source code for this software is distributed, then this README file must be included, with this copyright and no-warranty notice unaltered; and any additions, deletions, or changes to the original files must be clearly indicated in accompanying documentation.
- (2) If only executable code is distributed, then the accompanying documentation must state that "this software is based in part on the work of the Independent JPEG Group".
- (3) Permission for use of this software is granted only if the user accepts full responsibility for any undesirable consequences; the authors accept NO LIABILITY for damages of any kind.

## LGPL

GNU LESSER GENERAL PUBLIC LICENSE  
Version 3, 29 June 2007  
Copyright (C) 2007 Free Software Foundation, Inc. <<http://fsf.org/>>

Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

This version of the GNU Lesser General Public License incorporates the terms and conditions of version 3 of the GNU General Public License, supplemented by the additional permissions listed below.

#### **0. Additional Definitions.**

As used herein, "this License" refers to version 3 of the GNU Lesser General Public License, and the "GNU GPL" refers to version 3 of the GNU General Public License.

"The Library" refers to a covered work governed by this License, other than an Application or a Combined Work as defined below.

An "Application" is any work that makes use of an interface provided by the Library, but which is not otherwise based on the Library. Defining a subclass of a class defined by the Library is deemed a mode of using an interface provided by the Library.

A "Combined Work" is a work produced by combining or linking an Application with the Library. The particular version of the Library with which the Combined Work was made is also called the "Linked Version".

The "Minimal Corresponding Source" for a Combined Work means the Corresponding Source for the Combined Work, excluding any source code for portions of the Combined Work that, considered in isolation, are based on the Application, and not on the Linked Version.

The "Corresponding Application Code" for a Combined Work means the object code and/or source code for the Application, including any data and utility programs needed for reproducing the Combined Work from the Application, but excluding the System Libraries of the Combined Work.

#### **1. Exception to Section 3 of the GNU GPL.**

You may convey a covered work under sections 3 and 4 of this License without being bound by section 3 of the GNU GPL.

## 2. Conveying Modified Versions.

If you modify a copy of the Library, and, in your modifications, a facility refers to a function or data to be supplied by an Application that uses the facility (other than as an argument passed when the facility is invoked), then you may convey a copy of the modified version:

- a) under this License, provided that you make a good faith effort to ensure that, in the event an Application does not supply the function or data, the facility still operates, and performs whatever part of its purpose remains meaningful, or
- b) under the GNU GPL, with none of the additional permissions of this License applicable to that copy.

## 3. Object Code Incorporating Material from Library Header Files.

The object code form of an Application may incorporate material from a header file that is part of the Library. You may convey such object code under terms of your choice, provided that, if the incorporated material is not limited to numerical parameters, data structure layouts and accessors, or small macros, inline functions and templates (ten or fewer lines in length), you do both of the following:

- a) Give prominent notice with each copy of the object code that the Library is used in it and that the Library and its use are covered by this License.
- b) Accompany the object code with a copy of the GNU GPL and this license document.

## 4. Combined Works.

You may convey a Combined Work under terms of your choice that, taken together, effectively do not restrict modification of the portions of the Library contained in the Combined Work and reverse engineering for debugging such modifications, if you also do each of the following:

- a) Give prominent notice with each copy of the Combined Work that the Library is used in it and that the Library and its use are covered by this License.
- b) Accompany the Combined Work with a copy of the GNU GPL and this license document.
- c) For a Combined Work that displays copyright notices during execution, include the copyright notice for the Library among these notices, as well as a reference directing the user to the copies of the GNU GPL and this license document.
- d) Do one of the following:
  - 1) Convey the Minimal Corresponding Source under the terms of this License, and the Corresponding Application Code in a form suitable for, and under terms that permit, the user to recombine or relink the Application with a modified version of the Linked Version to produce a modified Combined Work, in the manner specified by section 6 of the GNU GPL for conveying Corresponding Source.
  - 2) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (a) uses at run time a copy of the Library already present on the user's computer system, and (b) will operate properly with a modified version of the Library that is interface-compatible with the Linked Version.
- e) Provide Installation Information, but only if you would otherwise be required to provide such information under section 6 of the GNU GPL, and only to the extent that such information is necessary to install and execute a modified version of the Combined Work produced by recombining or relinking the Application with a modified version of the Linked Version. (If you use option 4d0, the Installation Information must accompany the Minimal Corresponding Source and Corresponding Application Code. If you use option 4d1, you must provide the Installation Information in the manner specified by section 6 of the GNU GPL for conveying Corresponding Source.)

## 5. Combined Libraries.

You may place library facilities that are a work based on the Library side by side in a single library together with other library facilities that are not Applications and are not covered by this License, and convey such a combined library under terms of your choice, if you do both of the following:

- a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities, conveyed under the terms of this License.
- b) Give prominent notice with the combined library that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

## 6. Revised Versions of the GNU Lesser General Public License.

The Free Software Foundation may publish revised and/or new versions of the GNU Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library as you received it specifies that a certain numbered version of the GNU Lesser General Public License "or any later version" applies to it, you have the option of following the terms and conditions either of that published version or of any later version published by the Free Software Foundation. If the Library as you received it does not specify a version number of the GNU Lesser General Public License, you may choose any version of the GNU Lesser General Public License ever published by the Free Software Foundation.

If the Library as you received it specifies that a proxy can decide whether future versions of the GNU Lesser General Public License shall apply, that proxy's public statement of acceptance of any version is permanent authorization for you to choose that version for the Library.

# MIT

Copyright 1987, 1988 by MIT Student Information Processing Board.

Permission to use, copy, modify, and distribute this software and its documentation for any purpose is hereby granted, provided that the names of M.I.T. and the M.I.T. S.I.P.B. not be used in advertising or publicity pertaining to distribution of the software without specific, written prior permission. M.I.T. and the M.I.T. S.I.P.B. make no representations about the suitability of this software for any purpose. It is provided "as is" without express or implied warranty.

# zlib

Copyright (C) 1995-1998 Jean-loup Gailly and Mark Adler

This software is provided 'as-is', without any express or implied warranty. In no event will the authors be held liable for any damages arising from the use of this software.

Permission is granted to anyone to use this software for any purpose, including commercial applications, and to alter it and redistribute it freely, subject to the following restrictions:

1. The origin of this software must not be misrepresented; you must not claim that you wrote the original software. If you use this software in a product, an acknowledgment in the product documentation would be appreciated but is not required.
2. Altered source versions must be plainly marked as such, and must not be misrepresented as being the original software.
3. This notice may not be removed or altered from any source distribution. Jean-loup Gailly Mark Adler [jloup@gzip.org](mailto:jloup@gzip.org) [madler@alumni.caltech.edu](mailto:madler@alumni.caltech.edu)

The data format used by the zlib library is described by RFCs (Request for Comments) 1950 to 1952 in the files <ftp://ds.internic.net/rfc/rfc1950.txt> (zlib format), [rfc1951.txt](ftp://ds.internic.net/rfc/rfc1951.txt) (deflate format) and [rfc1952.txt](ftp://ds.internic.net/rfc/rfc1952.txt) (gzip format).





# Service Information

## Troubleshooting Checklist

Routine maintenance to this openGear product is not required. In the event of problems with your MC1-MK, 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.

## Software Upgrades

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

- Your network settings on the card are valid. Refer to **Table 14.11** 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.

## Warranty and Repair Policy

The MC1-MK 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 MC1-MK 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 MC1-MK 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 MC1-MK are to be conducted only by an authorized Ross Video Limited factory representative. Therefore, any unauthorized attempt to repair this product, by anyone other than an authorized Ross Video Limited factory representative, will automatically void the warranty. Please contact Ross Video Technical Support for more information.

## In Case of Problems

Should any problem arise with your MC1-MK, 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 MC1-MK. If required, a temporary replacement frame will be made available at a nominal charge. Any shipping costs incurred will be the responsibility of you, the customer. All products shipped to you from Ross Video Limited will be shipped collect.

The Ross Video Technical Support Department will continue to provide advice on any product manufactured by Ross Video Limited, beyond the warranty period without charge, for the life of the equipment.

# Glossary

The following terms are used throughout this guide:

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

**Auto Select Key** — 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 the Key Video is used to fill that hole.

**Card** — refers to all MC1-MK models unless otherwise noted.

**DashBoard** — the DashBoard Control System.

**DTVCC captions** — CEA-708 captions.

**Frame** — the openGear frame that houses the MC1-MK unless otherwise noted.

**HTTP** — Direct Hypertext Transfer Protocol.

**Input 1** — refers to SDI IN 1.

**Input 2** — refers to SDI IN 2.

**Input 3** — refers to SDI IN 3.

**Input 4** — refers to SDI IN 4.

**LTC** — Linear Timecode.

**MIB** — management information base.

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

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

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

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

**Production aperture** — the image lattice that represents the maximum possible image extent in a given standard (e.g. the full size of all active pixels and active lines). For example, the 1080i production aperture would be 1920x1080.

**Self Key** — a key in which the luminance, or brightness, values of the key source is used as the alpha for hte key.

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

**TCP** — Transmission Control Protocol.

**TTL** — Time To Live.

**MC1-MK** — refers to the model that does not include discrete audio processing features.

**UDC-8625A-A** — refers to the model with discrete audio processing features and eight unbalanced AES I/O.

**UDC-8625A-B** — refers to the model with discrete audio processing features and eight balanced AES I/O.

**MC1-MK series** — refers to all models unless otherwise noted.

**UDP** — User Datagram Protocol.

**User** — the person who uses the MC1-MK.

