

MasterConfig

iMC Configuration Tool for MCEs and MCPMs

User's Guide

UG0061-01

7 Nov 2012



A **BELDEN** BRAND

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- To avoid fire hazard, use only the specified fuse(s) with the correct type number, voltage and current ratings as referenced in the appropriate locations in the service instructions or on the equipment. Always refer fuse replacements to qualified service personnel.
- To avoid explosion, do not operate this equipment in an explosive atmosphere.
- Have qualified service personnel perform safety checks after any service.

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- Use only the specified replacement parts.
- Follow static precautions at all times when handling this equipment.
- This product should only be powered as described in the manual. To prevent equipment damage, select the proper line voltage on the power supply(ies) as described in the installation documentation.
- To prevent damage to the equipment, read the instructions in the equipment manual for proper input voltage range selection.
- Some products include a backup battery. There is a risk of explosion if the battery is replaced by a battery of an incorrect type. Dispose of batteries according to instructions.
- Products that have (1) no on/off switch and (2) use an external power supply must be installed in proximity to a main power output that is easily accessible.

toc

Table of Contents

1 Preface	1
Chapter Structure	1
The PDF Document	1
Terms, Conventions and Abbreviations	2
Prerequisites	3
Options	3
How to Use This Manual	4
2 Introduction	5
Master Control System Overview	5
NV9000 Router Control System	6
Control Panels	6
Transition Processors	6
MCPMs	7
Imagestore 750	7
Other Miranda Products	7
Tally Processor	7
DC21	8
EBCP	8
Intuition XG	8
MCPM Overview	9
Video Effects and Audio Overs	10
Intuition XG	10
Transition Types	11
MCPM Types	11
Common Features	11
MCPM-SD	14
MCPM-HD, -HD2	15
MCPM-SDHD	15
MCPM-MK-SD	16
MCPM-MK-HD	17
MCE	18
Emergency Bypass	19
Bypass at System Startup	20
Emergency Bypass Relay Behavior	20
GPI	20
GPI Inputs	20
GPI Outputs	21
Router Output Cards	21
Machine Control	21
MasterConfig Overview	22

3 Usage.....	23
MasterConfig Summary	23
Starting MasterConfig	24
Orientation	25
Main Window	25
Menus	27
File Menu	27
Actions Menu	31
Communications Menu.....	31
View Menu	32
Window Menu	33
Tools Menu	34
Help Menu	35
Tool Bar.....	37
Editing Basics	37
Making Changes	37
Parameters Only.....	37
List-Based Parameters	37
Asterisks	38
Selection Numbers	38
Numbering	39
MCPM Numbering.....	39
MCE Numbering.....	39
Audio Channel Numbering	39
Configuration Topics.....	40
Source-to-Button Mapping	40
Button Mapping.....	40
Source Groups	41
Router Pre-Select	41
External Router Sources	42
'ExtRtrSrc Settings' Page	42
Compared to Router Preselect	42
IP Addresses	43
Operational Overview	44
New Configuration	45
Modifying an Active Configuration	45
Modifying a Stored Configuration	46
Understanding Your System.....	46

4	Operation.....	49
	New Configurations	50
	General Settings	51
	Machine Control	56
	Machine Control	56
	Cue Button	56
	Device Controller IP Address	56
	Pre-Roll	56
	Main Sources	58
	Purpose	59
	Page Organization.....	60
	Main Source List	60
	Bulk Add and Delete	62
	Bulk Add for 'Master Control' Sources	63
	Bulk Add for 'External Router' Sources.....	65
	Bulk Delete.....	68
	Source Section	69
	Source Type Selection	69
	Dolby E Subsection	71
	Router Pre-Select Subsection	73
	Audio Channels Section	74
	Automatic Channel Numbering	75
	Audio Section Structure	75
	Audio Channel Types	76
	Mixed Audio Configurations	79
	Backup Audio for Dolby E Signals	79
	Audio for External Router Sources.....	81
	Pre-Roll Section	83
	Machine Control Section	84
	Type/Protocol	84
	Control Port or GPIO Pair	85
	Default Transition Type	85
	Default Transition Rate	85
	Options Section	86
	Completing a Main Source Configuration	86
	Source Groups	87
	Purpose.....	88
	Page Organization.....	88
	Source Group List	88
	Add and Delete Buttons	89
	Adding a Source.....	89
	Deleting a Source	89
	Apply Button.....	89
	Group Information	89
	Source Pool.....	89
	Member Sources	89
	Function Buttons.....	90
	Bulk Add and Delete.....	90
	Bulk Add	91
	Bulk Delete.....	93

Table of Contents

Over Sources	94
Purpose	95
Page Organization	96
Over Source List	96
Source Section	97
Source Type Selection	98
Audio Channels Section	100
Automatic Channel Numbering	100
Audio for Local Sources	101
Audio for External Sources	102
Options Section	102
Completing an Over Source Configuration	103
Audio Monitors and Meters	103
MCPMs	104
Purpose	104
Meters and Monitors Section	105
Page Organization	107
Monitor Distribution	107
Monitor Crosspoint	108
Dim Level	109
Analog Output	109
Meter Source	109
Aux In and Off Air Inputs	109
Completing the Audio Monitor Configuration	110
MCEs	111
Purpose	112
Meters and Monitors Section	112
Page Organization	113
Monitor and Meter Control	114
Dim Level	114
AES Output Section	114
Aux In and Off Air Inputs	115
Completing an Audio Monitor Configuration	115
Keyer Sources	116
Purpose	117
Page Organization	117
Keyer Source List	117
Source Selection	118
Source Type Selection	118
Keyer Parameters	120
Completing the Keyer Settings Configuration	121
Logo Images	121
Purpose	122
Page Organization	122
Logo Image List	122
Logo Image Information	123
Completing a Logo Image Configuration	123

Logo Keyer Sources	124
Purpose	124
Page Organization	124
Settings List	125
Logo Selection	125
Logo Parameters	126
Completing the Logo Keyer Settings	128
Logo Keyer Notes	128
Logo Storage	128
Logos and Automation	128
Alternative Logo Positioning Methods	129
Squeeze Settings	130
Variations	131
Purpose	131
Page Organization	131
Squeeze Settings List	132
Source Selection	132
Basic Parameters	134
Border Options	135
Completing a Squeeze Setting	136
Squeezeback Notes	137
Squeezeback and Automation	137
Alternative Squeezeback Positioning Methods	137
Squeeze 2 Settings	138
Purpose	139
Page Organization	139
Squeeze 2 Settings List	139
Setting Selection	140
Squeezeback 2 Parameters	140
Border Options	142
Completing a Squeeze 2 Setting	142
Squeezeback 2 Notes	143
Squeezeback and Automation	143
Alternative Squeezeback Positioning Methods	143
RS-422 Communication Settings	144
Purpose	144
Parameters	144
Keyer Layer Remapping	145
Completing the RS-422 Configuration	146
Button Mapping—Main Source	147
Purpose	148
Page Organization	148
Button List	148
Mapping Section	149
Completing the Button Mapping Configuration	149
Button Mapping—Over Source	150
Purpose	151
Page Organization	151
Button List	151
Mapping Section	151
Completing the Button Mapping Configuration	152

Table of Contents

Misc. Settings	152
Purpose	153
Page Organization	154
Source Section	154
Active Video	155
Metadata	155
MCPM	155
MCE	156
Emergency Bypass	156
LOS	156
Completing the 'Misc Settings' Configuration	156
Video Effect and Over Settings	157
Purpose	157
Page Organization	158
Default Keyer Sources	158
Squeezeback Edge Crop	158
Squeeze Image 2	159
Dolby Backup	159
Video Effect Behavior	159
Audio Over Behavior	160
Completing the 'Video Effect Settings' Configuration	160
Transition and Fade to Black Settings	161
Purpose	161
Page Organization	161
Transition Parameters	161
Fade-to-Black Parameters	162
Completing the Configuration	162
GPI Inputs	163
Purpose	163
Page Organization	163
GPI Input List	164
GPI Input Mode	164
Completing the Configuration	165
GPI Outputs	165
Purpose	165
Page Organization	166
GPI Output List	166
GPI Output Mode	166
Completing the Configuration	168
Wing Outputs	169
Purpose	169
Options	170
Aux Outputs	170
Aux Bus	171

ExtRtrSrc Settings (for MCEs)	172
Purpose	173
Page Organization	173
NV9000 IP Address	173
Naming Option	173
Bus Switch	173
Connectors	174
Program/Preset Page	174
Main Source Connections	174
Mono AES	180
Key Source Connections	181
Squeezeback Source Connections	182
Audio Over Source Connections	182
Preview/Aux Page	184
Key Source Connections	186
Squeezeback Source Connections	186
Audio Over Source Connections	187
Aux Bus Connections	188
ExtRtrSrc Settings (for MCPMs)	189
Purpose	190
Page Organization	190
NV9000 IP Address	190
Connectors	190
Main Source Connections	191
Mono AES	193
Key Source Connections	194
Squeezeback Source Connections	195
Audio Over Source Connections	195
Intuition XG	196
Purpose	197
Page Organization	197
XG Keyer Channel 1	197
XG Keyer Channel 2	198
Pre-Roll	199
Audio	199
Options	199
Keyer Behavior	199
Maximum Keyer Layers	200

Appendix A: Reference 201

Audio Gain	201
Color Values	202
Y, Cr, Cb	202
Mapping RGB to Y, Cr, Cb	202
HSB	203
Mapping HSV to RGB	204
XStudio Add-On Commands	205
Squeezeback	205
Audio Over	206
NV9000 Integration	207
Testing Configurations against Installed MCEs	207

Table of Contents

Glossary211

Index213

Contact Us 227

1

Preface

Chapter 1 is an introduction to the MasterConfig User's Guide.

Topics

<i>Chapter Structure</i>	1
<i>The PDF Document</i>	1
<i>Terms, Conventions and Abbreviations</i>	2
<i>Prerequisites</i>	3
<i>Options</i>	3
<i>How to Use This Manual</i>	4

Chapter Structure

This user's guide provides installation instructions and operating instructions for the MasterConfig application — software that configures the master control processing modules in an Miranda master control system. This guide includes the following chapters:

- Chapter 1, [Preface](#), outlines effective ways to use this guide, provides a list of terms and conventions, and prerequisites for operating MasterConfig to configure an MCPM or an MCE.
- Chapter 2, [Introduction](#), presents an overview of the Miranda master control system, review of MCPM features, and a summary of the MasterConfig application.
- Chapter 3, [Usage](#), provides orientation to MasterConfig and editing and basic operating instructions.
- Chapter 4, [Operation](#), provides detailed configuration instructions for the MasterConfig application.
- Appendix A, [Reference](#), provides useful references that pertain to MCPM or MCE configuration.
- An [Index](#) is also provided.

The PDF Document

This guide is provided in PDF format, allowing you to use Acrobat's "bookmarks" to navigate to any desired location. You can also easily print a hardcopy. Please note:

- Use the Table of Contents or the bookmarks page to jump to any desired section.
- Many hyperlinks are provided within the chapters.
- Use the Index to jump to specific topics within a chapter. Each entry in the index is a hyperlink.
- Use Acrobat's 'Go to Previous View' and 'Go to Next View' buttons to retrace your complete navigational path.

- Use the 'First Page', 'Previous Page', and 'Next Page', and 'Last Page' buttons to go to the first, previous, next, or last page within a PDF file.

Note

To display the navigation buttons, right-click the Tool Bar area, and check 'Navigation'.

- Use Acrobat's extensive search capabilities, such as the 'Find' tool and 'Search' tool to perform comprehensive searches as required.

Terms, Conventions and Abbreviations

The following conventions are used throughout this guide:

- The symbol ▲ denotes an example or a special message.
- Entries enclosed in single quotation marks or written in a sans-serif font or Capital Letters denote GUI menus and buttons, and on occasion, physical control panel buttons and knobs. Click 'Apply' to . . .

The following terms and abbreviations are used throughout this guide:

- "MC" is an abbreviation for "master control."
- The terms "panel" and "control panel" refer to any of the master control panels. These include:
 - iMC-Panel-GUI—a software control panel (or GUI).
 - iMC-Panel-100—a 3RU button panel coupled with a third-party monitor.
 - iMC-Panel-200—a compact hardware control panel.
 - iMC-Panel-300—a full-sized hardware control panel.
- "MCPM" stands for Master Control Processing Module—a "transition processor." One MCPM provides one master control channel.
- "MCE" stands for Master Control Engine. An MCE is a type of MCPM.
- *MasterConfig* is the software that configures MCPMs and MCEs.
- *MasterDiag* is the software used to assign MCPMs and MCEs network addresses and perform diagnostics.
- *MasterLogo* is the software that converts your graphic images into logos in the format required by the MCPM or MCE.
- The *MCS Panel Configuration Editor* is the software that configures control panels.

Other terms, used occasionally, include the following:

- Intuition XG is a single- or dual-channel graphics processor. The term "Intuition XG" can encompass all the hardware and software involved in the Intuition XG component of master control.
- XMedia is a term that includes different software applications that create and manage images, keyers, logos, etc. used by Intuition XG.
- Xplay and the XG Dashboard are software applications under XMedia. Both of these are used to configure the Intuition XG processor.
- Xbuilder and Xstudio are creative software applications under XMedia.

- Oxtel is a division of Miranda. Its name is used to identify certain ports of the Intuition XG hardware. The Oxtel protocol is used by the Imagestore 750s in the master control system.
- The term "DC21" identifies the master control device controller used for machine control. "DC21" is trademark of DNF Controls.

Prerequisites

Please observe the following important prerequisites:

- Master control frame (and its control cards, I/O cards, and MCPMs) properly installed.
At least one MCPM (or MCE) is required.
- At least one configuration PC is required.
MasterConfig and other configuration software are to be installed on this PC. The software is available on the master control software and documentation CD (SB0243).
GUI software is available on the SB0244 CD.
- At least one master control panel properly configured.
For operation, the configuration PC, MCPMs, MCEs, and master control panels must be connected on an Ethernet LAN.
- NV9000 requirements met.
You are using a master control system in conjunction with an NV9000 router control system. Ensure that the NV9000 is properly installed and that your master control system and NV9000 are communicating with each other.
- User accounts for PCs used for master control set to 'Standard User' or better.
Master control software does not function properly when user accounts are set to 'Restricted User' or its equivalent.

MasterConfig allows you to create MCPM and MCE configurations off-line. You do not need a connection to an MCPM or an MCE or to an NV9000 system to perform most configuration tasks. A connection to an NV9000 system is required to specify portions of an MCPM or MCE configuration that reference NV9000 devices and device categories. It is possible, but more difficult, to make those configurations from memory or from written notes. Ultimately, a connection between your configuration PC and an MCPM (or MCE) is required to upload the configuration.

Options

The Master Control Tally Processor is an option. It provides 32 GPI inputs and 32 GPI outputs. It can monitor master control events and trigger master control events.

The Master Control (DC21) Device Controller is an option but is required if your master control system is to perform machine control. It also has 32 GPI inputs and 32 GPI outputs and has 4 serial ports.

Intuition XG is an option that can be enabled for specific MCEs. Intuition XG adds rich branding to master control because it includes sophisticated design tools and a powerful graphics processors.

If Intuition XG is integrated with master control, at least one SWB input card (and backplane module) is required.

How to Use This Manual

If you have already read the *Master Control Reference Manual*, you can skip much of the introductory material.

Please do read the chapter entitled "Usage." Many characteristics of the menus, buttons, and configuration pages in MasterConfig are obvious, but some are not.

MasterConfig is necessarily complex and the material describing the configuration pages is likewise complex. We recommend that you first skim through all the operations sections. Then read carefully the sections you need to read, one at a time.

If you intend to use the Intuition XG component of master control, please obtain Intuition documentation from Miranda. It is not included on the SB0243 CD.

2 Introduction

Chapter 2 is an introduction to MasterConfig.

Topics

Master Control System Overview	5
MCPM Overview	9
MasterConfig Overview	22

Master Control System Overview

Miranda's master control system—a multi-channel switcher—might include one or more MCPMs or MCEs in NV5100MC frames and one or more Imagestore 750s. The frames are 8RU assemblies that have 16 I/O card slots that can operate in conjunction with other switchers, routers, an NV9000 router control system, and other products.

Each frame holds one or more transition processors (MCEs or MCPMs) and optionally a multi-format router. The MCEs, MCPMs, and Imagestore 750s are the modules that actually perform the master control switching. Each MCE, MCPM, or Imagestore 750 is considered a *channel*.

The Imagestore 750 is an independent 1RU transition processor.

MasterConfig has no relationship to Imagestore 750s. Therefore, aside from its brief mention in this chapter, the Imagestore 750 will not be discussed.

MCPMs, MCEs, and control panels communicate on an Ethernet LAN. When an operator presses control panel buttons (the 'Transition' button, for example), the control panel issues commands to an MCPM (or MCE). The MCPM (or MCE) responds with status and (unless a problem exists) executes the command. When a command is successfully executed, the MCPM or MCE notifies the panel, which updates its displays and indicators accordingly.

Figure 2-1 shows the basic relationships in a master control system:

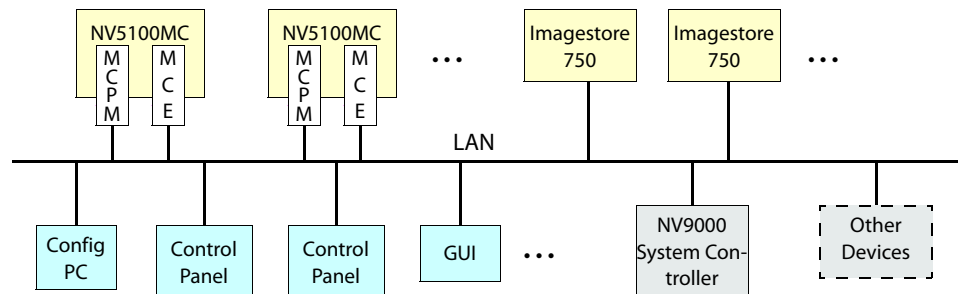


Fig. 2-1: iMC Network

Master control can work in conjunction with the NV9000 router control system. In such a configuration, a channel (MCPM or MCE) has access to the *entire* router input space, with the ability to assign any router source dynamically to control panel buttons.

Most control panels can control one or more channels (MCPM) at any time — but usually one at a time. Operators can select which channel(s) to control. When you change channels, control panel updates take about a second. We say that the panel *attaches* the newly selected channel, and the channel's own source layout, transition rates, and layer presets are available for use.

Each MCPM and MCE can also be operated under automation. An MCPM or MCE can be controlled by multiple control panels.

NV9000 Router Control System

A master control system can be viewed as a part of an NV9000 system. Alternatively, the NV9000 can be regarded as a provider of inputs to the master control system.

In either case, master control allows router outputs as master control inputs and allows an operator (or automation) to take any router source to the master control output.

An MC system used in conjunction with an NV9000 system must be connected to the NV9000 (in the control section of the master control frame).

Control Panels

Presently there are 2 hardware control panels and 1 software control panel (GUI):

- | | |
|---------------|--|
| iMC-Panel-GUI | A software control panel, also called the "GUI." This panel also runs on a PC and has a graphical user interface. This GUI is a software emulation of the <i>iMC-Panel-200</i> . This GUI is designed to operate with (or without) a touch-sensitive screen. |
| iMC-Panel-200 | A compact hardware control panel that has a large LCD touchscreen, many function buttons, and a joystick. The iMC-Panel-200 mounts on a desktop or work surface. All buttons have LCD legends and color-coding. |
| iMC-Panel-300 | A "full-size" control panel that has a large LCD touchscreen, many function buttons, and a joystick. The iMC-Panel-300 mounts on a desktop or work surface. All but 2 buttons have LCD legends and color-coding. |

Transition Processors

Transition processors include MCEs, MCPMs, and Imagestore 750s.

MCEs are a specific type of MCPM, although they have advanced features that other MCPMs do not have.

MCPMs

MCPMs (master control processing module) are the devices that perform master control switching and mixing. There are several types of MCPMs:

MCPM-SD	2-slot modules that process standard definition (SD) video. Provides 3 keyers, 2 logos, 1 squeezeback layer, 4 AES outputs, and 8 analog audio outputs in addition to program output.
MCPM-HD, MCPM-HD2	4-slot modules that process either high definition (HD) video. Provides 3 keyers, 2 logos, 1 squeezeback layer, 4 AES outputs, and 8 analog audio outputs in addition to program output. Two slots can be filled with router output cards.
MCPM-SDHD	4-slot modules that process either HD or SD video, as a field-programmable option. Provides 3 keyers, 2 logos, 1 enhanced squeezeback layer, 4 AES outputs, and 8 analog audio outputs in addition to program output. One of the slots can be occupied by a router output card.
MCPM-MK-SD	1-slot modules that process standard definition (SD) video. Provides 3 keyers, 1 logo, but no squeezeback. These modules are also named "mixer/keyers" or "branding engines."
MCPM-MK-HD	2-slot modules that process high definition (HD only) video. Provides 3 keyers, 1 logo, and no squeezeback. Unlike other MCPMs, this model accepts inputs (16) from its backplane, not the frame's motherboard. These modules are also named "mixer/keyers" or "branding engines."
MCE	A 1- to 3-slot module that processes either HD or SD video, as a field-programmable option. MCEs are considered "next generation" processors and have new architecture. See MCE , on page 18.

Imagestore 750

The Imagestore 750 (called a "channel branding processor") is an independent 1RU transition processor. It supports either HD or SD video input. It supports A/B mixing for program and preview, and provides 4 "downstream keyers" and optionally 2 DVEs for both program and preview. Refer to XREF and the Master Control Reference Manual for details.

"Preview," to Imagestore 750s, is approximately what "preset" is to MCEs and MCPMs.

Other Miranda Products

Listed here are products that relate to master control.

Tally Processor

Miranda offers a third-party "tally processor"—a 1RU device that provides 32 optically isolated inputs and 32 relay outputs, also optically isolated. Through Miranda's NVISION Ethernet protocol (NVEP), the tally processor can sense master control events such as main source selections and transitions and trigger master control events.

Multiple tally processors can be added to a master control network.

DC21

The DC21 is a 1RU device (from DNF)—very much like the Tally Processor—that (1) performs GPIO functions and (2) has 4 serial ports in support of machine control.

Each of the serial ports can be configured for one of 3 protocols: Sony, Odetics, or VDCP.

The GPOs can be configured, in adjacent pairs, to control up to 16 devices with 100ms start and stop pulses. The odd member of the pair carries the start pulse and the even member carries the stop pulse. GPOs not used for master control may be programmed to respond to GPI and device control events.

EBCP

The emergency bypass control panel (EBCP) is a simple one: it is a 1RU panel that has two large button switches. One says “Main” and the other says “Bypass.” Pressing the red “Bypass” button places an MCPM or MCE in bypass mode. Pressing the green “Main” button enables normal mode. (The panel controls only the MCPM to which it is connected.)

Intuition XG

Intuition XG is a combination of the following:

- A single- or dual-channel HD/SD graphics processor.

This processor stores video “key layers” and transmits the keys (fill and key) on demand. Fully In its maximum configuration, the processor can store up to 1.8 TB of video (about 360 hours at 10 Mbps).

The processor can “play out” video upon a signal from an MCE. The MCE treats the video as a key source and mixes the video from the with program or preset output.

The keys can also include CG and real-time or “live” data feeds.

The processor receives information regarding what to play and when to play it from an MCE over its Ethernet connection.

- XMedia software for configuration and for composing, rendering, and previewing graphics. Xmedia includes these applications among others:

XG Dashboard. An application that allows you to modify the settings and behavior of the Intuition XG and its software.

XPlay—“media event sequencer” used to configure the Intuition XG and to manage clips. Xplay must be running on the Intuition XG processor for correct operation under master control.

Xbuilder—“template population” and “promo timeline control.”

Xstudio—“template creation.” Xstudio can create video segments that, while executing in the Intuition XG processor, control an MCE’s squeeze effects and audio overs.

- There is an ‘Int XG’ button on the main menu of the panels (when they are controlling MCEs or MCPMs). Each causes a menu of Intuition XG key layers to be displayed. These control panels might also have ‘XG layer’ buttons on the preset, program, and preview button rows and an ‘XG keyer control’ among the configurable buttons.
- The panels also have a ‘Preview Int XG’ button that works with an MCE’s preview bus.

MCPM Overview

An MCPM is a “master control processing module.” An MCPM is also called a *transition processor*. It performs the bulk of what occurs in master control. A Miranda master control system has one or more MCPMs.

The most basic function of the MCPM is to switch its output from one program source to another and to maintain a smooth and noise-free transition as it does so. A transition involves both video and audio. A secondary MCPM function is to apply video effects and audio “overs” to program output. A program source is called a *main* source in contrast to other sources, such as those for video keyers.

What the MCPM produces as output is called *program* and what is to appear next on the program output is called *preset*. An operator at a control panel or an automation system presets a *main* source (video and audio) and one or more video effects or audio overs. When the operator or the automation system initiates a transition, the MCPM mixes the preset and program video and the preset and program audio. The video effects and audio overs fade in or out as required by the transition rate and transition type. (Not all transitions involve mixing.) At the end of the transition, what was on preset is now on program. The MCPM also has options to swap the preset and program settings and to clear effects from preset after the transition.

The MCPM applies video effects and audio overs in the sequence shown in Figure 2-2.

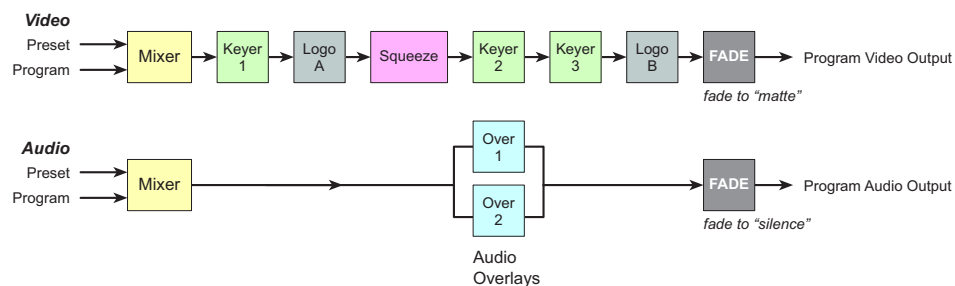


Fig. 2-2: Video and Audio Layering

Video effects on the right are considered *downstream* and those on the left are considered *upstream*. Downstream effects modify any upstream effects. For instance, a squeeze effect affects logo A, because logo A is upstream of the squeeze function, but does not affect logo B, which is downstream. Downstream effects appear on top of upstream effects.

Audio overs are mutually exclusive and layering does not apply to the audio overs, although the over does overlay the main source audio.

The MCPM adheres to the “audio follows video” paradigm: a main source in the MCPM is considered a video input with attached audio inputs. There are two ways the MCPM can obtain an audio input:

- From a discrete audio connector: analog, AES, or Dolby E.
- From audio embedded in the video signal: AES or Dolby E.

The MCPM can process Dolby-E encoded audio input if the MCPM has a Dolby module installed.

The MCPM provides 8 channels of audio processing. Each main source (on both program and preset) can have 8 channels of audio. Each audio channel can be individually configured.

- ▲ MCEs provide 16 channels of audio processing.

A third function (provided by some MCPMs) is to “host” one or more router output cards. These MCPMs have one or two “wing” connectors into which you can plug SWB router cards. These

MCPMs contain one or more crosspoints that provide the outputs, 16 for each router output card. (The router output cards are optional.)

A fourth function is to switch from normal program output to emergency program output during periods of “emergency” or malfunction. MCPMs have an *emergency bypass* control that performs the switch.

All MCPMs provide audio metering outputs and audio monitoring outputs. Some MCPMs provide analog audio outputs. All MCPMs have auxiliary functions (such as GPIs). The set of auxiliary functions varies among the MCPM models.

Video Effects and Audio Overs

Applicable effects and audio overs include

keyer 1, logo A, squeezeback, keyer 2, keyer 3, logo B.

The MCPM applies video effects, layered cumulatively, to the selected main source (preset or program) in the order listed here. Some MCPMs do not support all effects.

A *key*¹ is a video overlay. A key can have two video sources: key (or mask) and fill. Some keys have only one source — fill — and the mask is derived from the luminance of the fill. These keys are called “self-keys.” A *keyer* is a key processor and is selectable at the control panel or by automation.

▲ For MCEs only, an external Intuition XG subsystem can provide video fill and key sources for 1 or 2 of the keyers. See [Intuition XG](#), following.

A *logo* is a graphic overlay. Logos are stored in the MCPM and are selectable at the control panel or by automation. Logos overlays require no video input. Logos can be single-frame images or animations. Animations can either loop or play once. The number of logos and animations is limited by available MCPM memory.

Squeezeback means that program output is reduced to a set portion of the video image gradually over the transition period while a video source (the squeeze “background”) is displayed under the squeezed image. There are 3 forms of squeezeback — basic, enhanced (single), and enhanced (dual). Dual squeezeback involves two images (main sources); single squeezeback involves just one image. Enhanced squeezeback allows the squeeze regions to have borders of variable width and color.

An *over* is an audio overlay. An audio over requires an audio source. The MCPM mixes audio over and program audio in a ratio that can be preconfigured and also adjusted at the control panel.

Not all MCPMs support all effects. Some control panels can be configured with a reduced set of effects. Only the MCPM-SDHD and MCE support enhanced squeezeback.

Intuition XG

MCEs can be connected to Intuition XG subsystems. The Intuition XG stores video keys and plays them out when directed by a signal from the MCE.

An Intuition XG processor has either one or two channels. Each channel provides up to 4 layers. The layers are selected or deselected with XG layer buttons. Each channels uses one of the MCE’s keyers. Which keyer to use is configurable and depends on a number of factors. See [Intuition XG](#) on page 196 for configuration details.

1. A *keyer* is the firmware that mixes key signals with upstream video.

It is MasterConfig that defines the connections between the MCE and Intuition XG hardware. The MCS Panel Configuration Editor configures the control panel buttons that operate the Intuition key layers.

Note that Intuition XG can provide real-time or “live” character generation.

Transition Types

A transition can be fast, medium, slow, or controlled by a transition lever arm (TLA). The exact duration of “fast,” “medium,” and “slow” is configurable. A transition controlled by a TLA is also called a “manual” transition.

Basic transition types include cut, V-fade (or fade-fade), cut-fade, cross-fade (or X-fade), and fade-cut. “Preset black” transitions include cut/cut, V-fade, cut-fade, and fade-cut, but cross-fade. The MCPM performs audio transitions that match the rate and period of the video transitions. Audio transition types are analogous to the video transition types, but are not exactly the same. They involve smoothing to eliminate audio artifacts.

- ▲ The TLA, manual transitions, and preset black transitions are concepts relegated to legacy equipment. However, MCEs, MCPMs and control panels still acknowledge PB transition types. The MCEs and MCPMs substitute normal transition types when they encounter PB transition types.

The MCPM can also perform a “fade-to-black” or FTB transition. An FTB transitions the program output to a pre-defined matte (and program audio to silence) — after all effects and overs — in the transition period defined for the FTB. The matte can be any color, not just black.

The master control system allows “hot cuts” although they are not recommended. A “hot cut” is where the operator switches a main source immediately (on program output) or turns an effect on or off *without benefit of transition processing*. A hot cut should be considered an emergency measure — to correct an error quickly — because it can have noticeable artifacts that would be absent in a normal transition.

A transition that involves pre-roll is called a *pre-roll transition*. When a pre-roll transition is pending, the transition button turns red and displays the word “Preroll. As the transition begins, there is a pre-roll period (that depends on the longest pre-roll value pending). During the pre-roll period, the transition button blinks between high- and low-tally red. After the pre-roll period, the transition button reverts to orange.

MCPM Types

There are 7 MCPM types:

MCPM-SD	MCPM-MK-SD (“Mixer/Keyer”)	MCPM-SDHD
MCPM-HD	MCPM-MK-HD (“Mixer/Keyer”)	MCE
MCPM-HD2		

All MCPMs have common characteristics, such as audio meter outputs, GPIO, clean-feed outputs, and emergency bypass capability, but also have many differences.

Common Features

All MCPM models have a diagnostic/configuration port, a reset button, and an emergency bypass switch (and bypass indicator) at the front. All MCPMs also have a set of LED status indicators.

All MCPMs have program output, preview¹ output, and clean-feed output. Each of these provides video output with embedded audio. Some models provide additional AES outputs. All MCPMs have an emergency bypass video input (that supports embedded audio). Some models have additional (AES) emergency bypass inputs.

Older MCPMs have 2 video reference connectors and meter/monitor connectors. MCEs have 1 video reference connector, internally terminated.

All MCPMs have control connectors and auxiliary connectors, although the number of pins of auxiliary connectors differ. The aux connectors provide GPI inputs and outputs and emergency bypass relay connections, at a minimum.

Figure 2-3 shows the backplane connectors of the MCPMs:

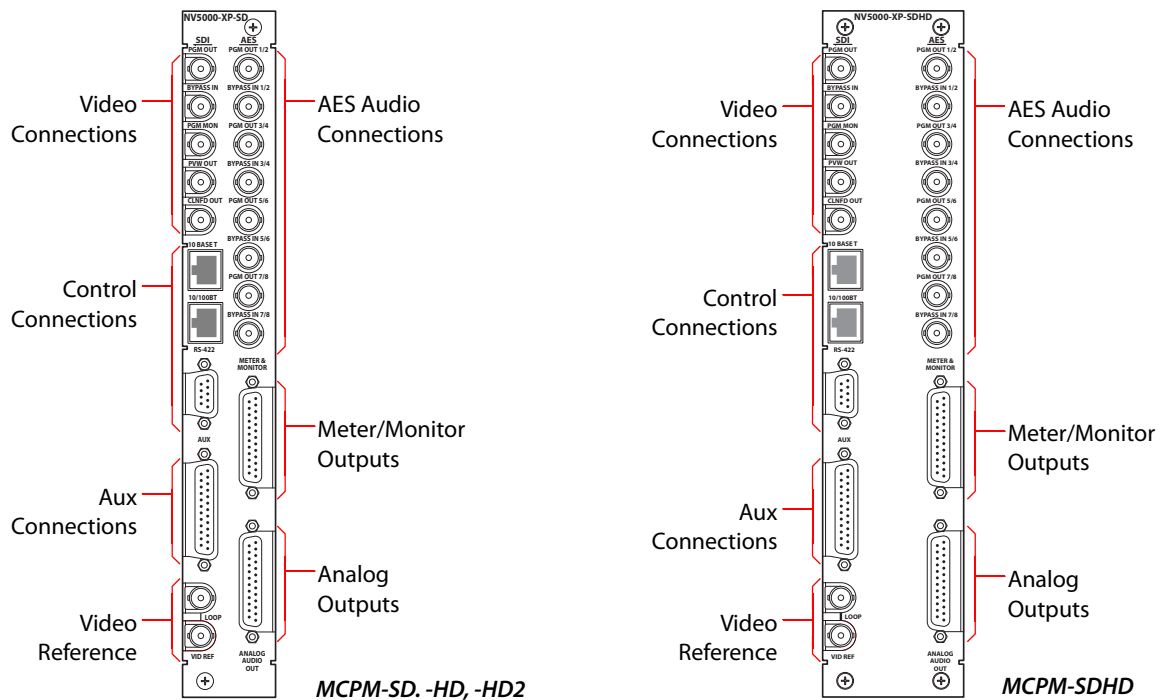


Fig. 2-3: MCPM Backplanes

1. The preview output presents the source and effects of the *preset bus*. On MCEs, this output is called *pre-set* output.

Figure 2-4 shows the backplane connectors of the Mixer/Keyers:

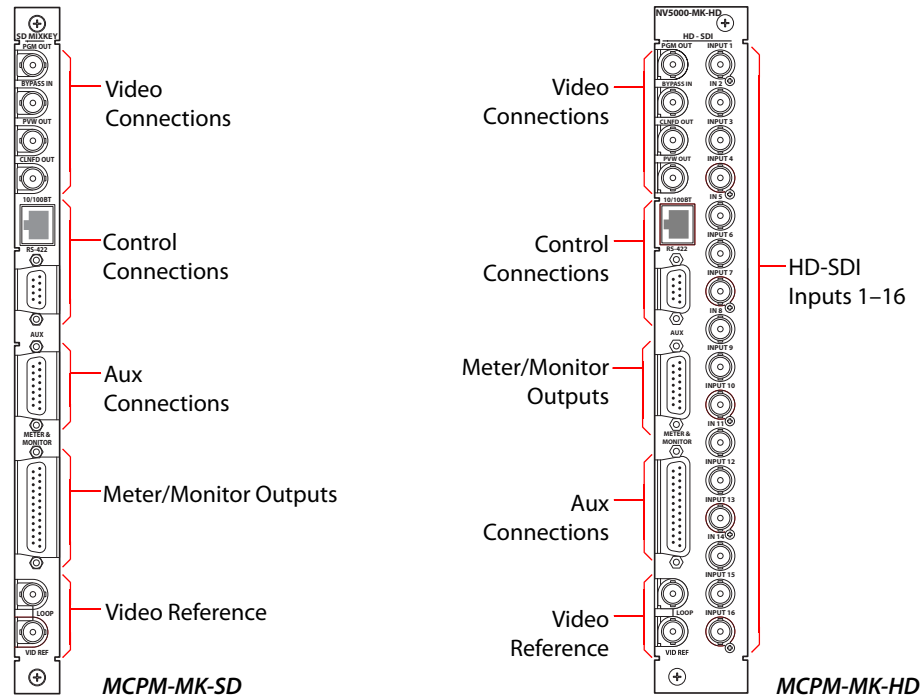


Fig. 2-4: MPCM (Mixer/Keyer) Backplanes

Figure 2-5 shows the (3) backplane connectors of the MCE:

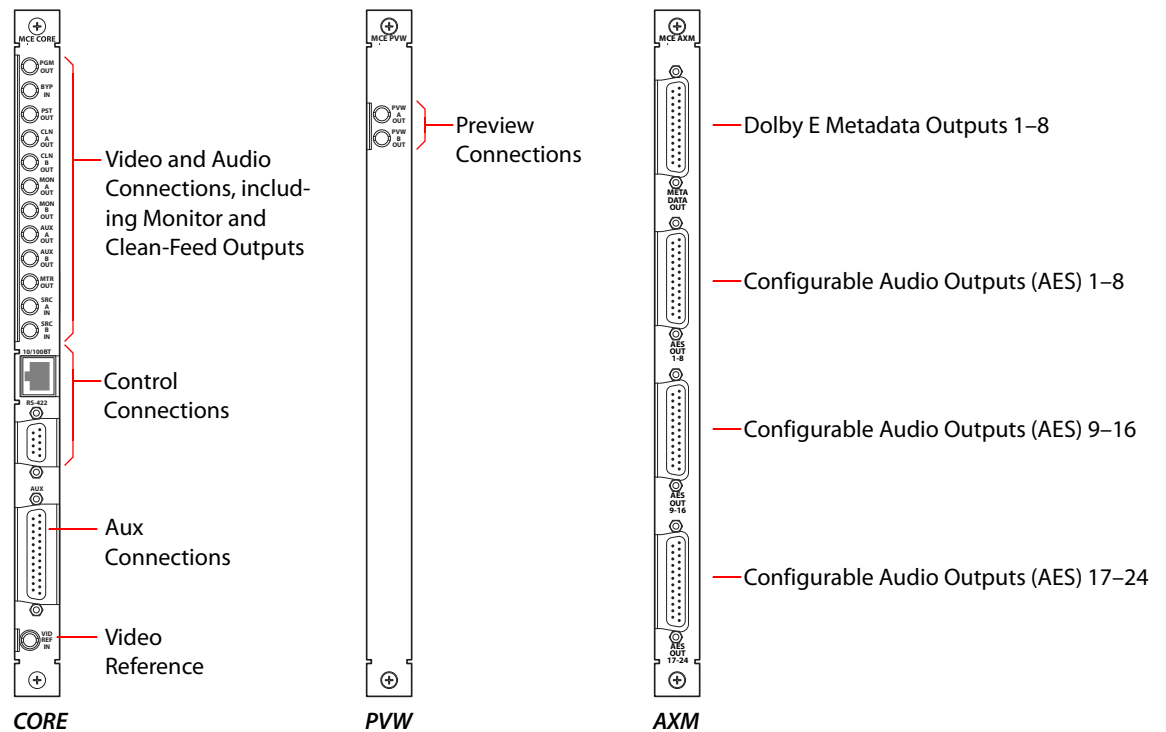


Fig. 2-5: MCE Backplanes

Figure 2-6 shows the 2-slot core backplane that has BNCs instead of 1.0/2.3 connectors:

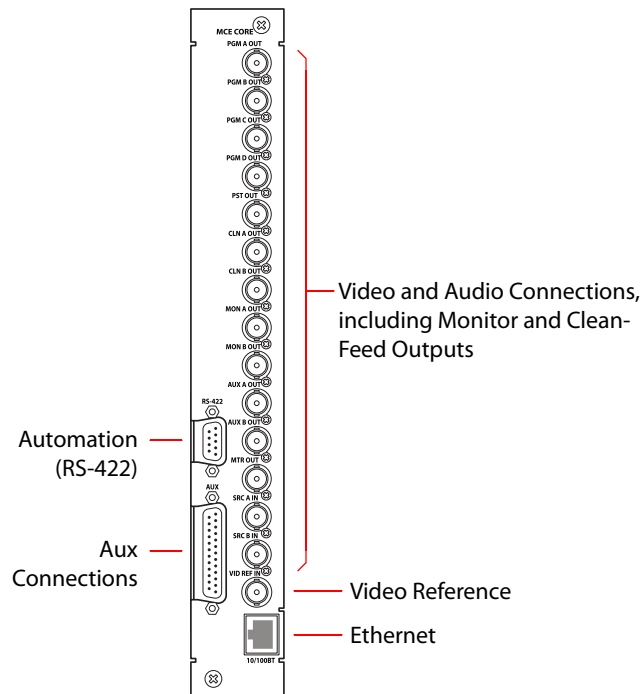


Fig. 2-6: MCE Backplanes with BNCs

MCPM-SD

The MCPM-SD is a 2-slot module that processes standard definition (SD) video.

The MCPM-SD receives video and audio input from the motherboard — up to 128 video sources or 128 stereo (256 mono) sources, or a combination thereof, in multiples of 16 sources. Video sources may contain embedded audio. The MCPM-SD provides 3 video keyers, 2 logo keyers, 1 squeezeback layer, and 2 audio overs. These MCPMs accept optional Dolby E decoder modules.

At the backplane, the MCPM-SD has 4 video outputs: program, program monitor, preview (a.k.a. preset), and clean-feed. The MCPM-SD also has 4 discrete AES program outputs.

The backplanes also have 5 emergency bypass inputs, one video (with or without embedded audio) and 4 AES inputs.

The MCPM-SD has 8 analog audio outputs in addition to audio meter and monitor outputs.

The MCPM-SD has Ethernet (control) and RS-422 (automation) connections. (An additional 10BaseT port is unused.) The aux connector has time-code inputs and Dolby metadata outputs in addition to GPI and relay contacts.

The MCPM-SD has an internal black/silence generator for use as a program or preset main source, or as a squeeze background.

MCPM-HD, -HD2

The MCPM-HD and -HD2 are 4-slot modules. Each processes SWB (either HD or SD) video. The MCPM-HD2 is an improved version of the -HD.

The MCPM-HD (and -HD2) receives video and audio input from the motherboard — up to 64 video sources or 64¹ stereo (128 mono) sources, or a combination thereof, in multiples of 16 sources. Video sources may contain embedded audio. The MCPM-HD and -HD2 provide 3 video keyers, 2 logo keyers, 1 squeezeback layer, and 2 audio overs. These MCPMs accept optional Dolby E decoder modules.

At the backplane, the MCPM-HD and -HD2 have 4 video outputs: program, program monitor, preview (a.k.a. preset), and clean-feed. They also have 4 discrete AES program outputs. The backplanes also have 5 emergency bypass inputs, one video (with or without embedded audio) and 4 AES inputs. The MCPM-HD and -HD2 both have 8 analog audio outputs in addition to audio meter and monitor outputs.

The MCPM-HD has an internal black/silence generator for use as a program or preset main source, or as a squeeze background.

The MCPM-HD and -HD2 both Ethernet (control) and RS-422 (automation) connections. (An additional 10BaseT port is unused.) The aux connector has time-code inputs and Dolby meta-data outputs in addition to GPI and relay contacts.

The MCPM-HD and -HD2 both have a 2-slot wing that accepts one or two SWB router output cards. The output cards have little (or nothing) to do with master control. These MCPMs provide two 16-output crosspoints for the multi-format router that might optionally occupy the NV5100MC frame. The output cards connect to the wing and not to the NV5100MC motherboard.

The MCPM-HD does not have control over its wing output cards. The MCPM-HD2 has *some* control over its wing output cards. In the MCPM-HD2, wing outputs 1–16 (in wing slot 1) can be individually configured:

- To be controlled only by the router control card. (This is the default setting.)
- Emit program main video.
- Emit preset main video.

Wing outputs 17–32 (in wing slot 2) cannot be configured. They are controlled only by the router output card.

- ▲ If you have an SWB output card in a wing slot, you must also have an SWB output backplane in the corresponding backplane slot.

MCPM-SDHD

The MCPM-SDHD is a 4-slot module. It processes either HD or SD video, as a field-programmable option. It provides all the features of an SD or HD processor plus this extension:

- It provides enhanced squeezeback. Enhanced squeezeback can manipulate 2 squeezeback video sources and an audio source for the second video image.

(The second video source is a main source. The squeezeback audio is from that main source and is accessible when the panel operator selects the squeeze audio as an audio over.)

1. Inputs 1–64 are committed to HD video sources; inputs 65–128 are available for other signals.

The MCPM-SDHD has an internal black/silence generator for use as a program or preset main source, or as a squeeze background.

The MCPM-SDHD receives video and audio input from the motherboard — up to 64 video sources or 64 stereo (128 mono) sources, or a combination thereof, in multiples of 16 sources. Video sources may contain embedded audio. The MCPM-SDHD provide 3 video keyers, 2 logo keyers, 1 *enhanced* squeezeback layer, and 2 audio overs. It accepts optional Dolby E decoder modules.

At the backplane, the MCPM-SDHD has 4 video outputs: program, program monitor, preview (a.k.a. preset), and clean-feed. The MCPM-SDHD also has 4 discrete AES program outputs. The backplanes also have 5 emergency bypass inputs, one video (with or without embedded audio) and 4 AES inputs. The MCPM-SDHD has 8 analog audio outputs in addition to audio meter and monitor outputs.

The MCPM-SDHD has Ethernet (control) and RS-422 (automation) connections. (An additional 10BaseT port is unused.) The aux connector has time-code inputs and Dolby metadata outputs in addition to GPI and relay contacts.

The MCPM-SDHD has a 1-slot wing that accepts an SWB router output card. This card has relatively little to do with master control. The MCPM-SDHD provides a 16-output crosspoint for the multi-format router that might optionally occupy the NV5100MC frame. The output card connects to the wing and not to the NV5100MC motherboard.

The MCPM-SDHD has *some* control over its wing output card. Each of the 16 wing outputs can be individually configured:

- To be controlled only by the router control card. (This is the default setting).
- Emit program main video.
- Emit preset main video.
- Emit program main audio (if embedded).
- Emit preset main audio (if embedded).

▲ If you have an SWB output card in a wing slot, you must also have an SWB output backplane in the corresponding backplane slot.

MCPM-MK-SD

The MCPM-MK-SD is a 1-slot module. MCPM-MK-SDs are also named “mixer/keyers” or “branding engines.” The MCPM-MK-SD processes standard definition (SD) video. The MCPM-MK-SD is a lower-cost and smaller alternative to the MCPM-SD, but has a reduced feature set:

- One logo generator, not two.
- No squeezeback generator.
- No analog outputs.
- No Dolby E decoders (and no Dolby metadata output).
- No “program monitor” output. (Its clean-feed output can be used as a program monitor.)
- No AES outputs (except for monitor/meter output).

Otherwise, it has all the many features found in the MCPM-SD.

The MCPM-MK-SD receives video and audio input from the motherboard — up to 128 video sources or 128 stereo (256 mono) sources, or a combination thereof, in multiples of 16 sources.

Video sources may contain embedded audio. The MCPM-MK-SD provides 3 video keyers, 1 logo keyer, and 2 audio overs.

At the backplane, the MCPM-MK-SD has 3 video outputs: program, preview (aka preset), and clean-feed. The MCPM-MK-SD has no AES output connectors (except for meter/monitor outputs). Emergency bypass audio input must be embedded in the emergency bypass video input.

The MCPM-MK-SD has no analog audio outputs, but does have audio meter and monitor outputs.

The MCPM-MK-SD has Ethernet (control) and RS-422 (automation) connections. The aux connector has time-code inputs in addition to GPI and relay contacts. Because the MCPM-MK-SD does not have a Dolby E decoder, the aux connector does not have Dolby metadata outputs.

MCPM-MK-HD

The MCPM-MK-HD is a 2-slot module. MCPM-MK-HDs are also named “mixer/keyers” or “branding engines.” The MCPM-MK-HD processes high-definition (HD) video only. The MCPM-MK-HD is a lower-cost and smaller alternative to the MCPM-HD, but has a reduced feature set:

- One logo generator, not two.
- No squeezeback generator.
- No analog audio outputs.
- No Dolby E decoders (and no Dolby metadata output).
- No “program monitor” output. (The clean-feed output can be used as a program monitor.)
- No AES outputs (except for monitor/meter output).
- Video inputs are restricted to the 16 connectors on the -MK-HD’s backplane module.

Otherwise, it has the many features found in the MCPM-HD.

Unlike other master control processors, the MCPM-MK-HD obtains video inputs (16) from its own backplane, *not* from the NV5100MC motherboard. These inputs can contain embedded audio. However, they are HD inputs, *not* SWB inputs and therefore do not accept SD signals. Further, key and fill signals must also be taken from among the 16 backplane connectors. The -MK-HD does not obtain key and fill from the motherboard.

The MCPM-MK-HD does, however, receive audio input from the motherboard — up to 64 stereo (128 mono) sources, or a combination thereof, in multiples of 16 sources. The MCPM-MK-HD provides 3 video keyers, 1 logo keyer, and 2 audio overs.

At the backplane, the MCPM-MK-HD has 3 video outputs: program, preview (aka preset), and clean-feed. The MCPM-MK-HD also has no AES connectors. Emergency bypass audio input must be embedded in the emergency bypass video input.

The MCPM-MK-HD has no analog audio outputs, but does have audio meter and monitor outputs.

The MCPM-MK-HD has Ethernet (control) and RS-422 (automation) connections. The aux connector has time-code inputs in addition to GPI and relay contacts. Because the MCPM-MK-HD does not have a Dolby E decoder, the aux connector does not have Dolby metadata outputs.

MCE

MCEs (master control engines) are the “next generation” of MCPMs — devices that perform master control switching and mixing.

The MCE is an extendable product, occupying up to 3 card slots, with a full set of features. There are 4 modules in the MCE card set:

- MCE-CORE. The minimum MCE comprises this single (full-size) card that performs *core* master control functions.
- MCE-PVW. The *preview* module (not available yet) provides functions that allow the use of the “next generation” preview bus.
- MCE-AXM. The *audio expansion module* supports Dolby E and additional audio functions. The AXM provides Dolby E decoders for the program and preset buses and audio outputs at its backplane. (The AXM has slots for up to 8 third-party Dolby E modules.)
- MCE-DVE. The *digital video effect* cards are mezzanine (small) cards that can be added to the core and the preview cards for additional video effects.

MCEs have inputs and outputs similar to those for MCPMs, such as audio meter outputs, GPIO, clean-feed outputs, and emergency bypass capability. All MCEs have a reset switch, a bypass toggle (for the emergency bypass relay) and an diagnostic port at their front. Like the MCPM-SDHD, the MCE can process either HD or SD signals as a field-programmable option.

Notable differences between the MCEs and older MCPMs include:

- Audio output is embedded.
- MCE audio and video connectors are coaxial (1.0/2.3 DIN) connectors; MCPM audio and video connectors are BNCs.
- MCEs have 2 clean feed outputs and 2 aux outputs.
- The audio monitor outputs of MCEs are completely independent and have 16 audio channels each.
- MCEs that have AXM cards have more AES outputs and more Dolby metadata outputs than MCPMs have. Those outputs are configurable.
- All MCE logos are stored in non-volatile memory.
- MCEs can receive key inputs from Intuition XG processors.
- MCEs provide machine control and pre-roll functions.

There are other minor differences.

Figure 2-7 shows the front of one of 4 possible MCE assemblies and its associated backplanes:

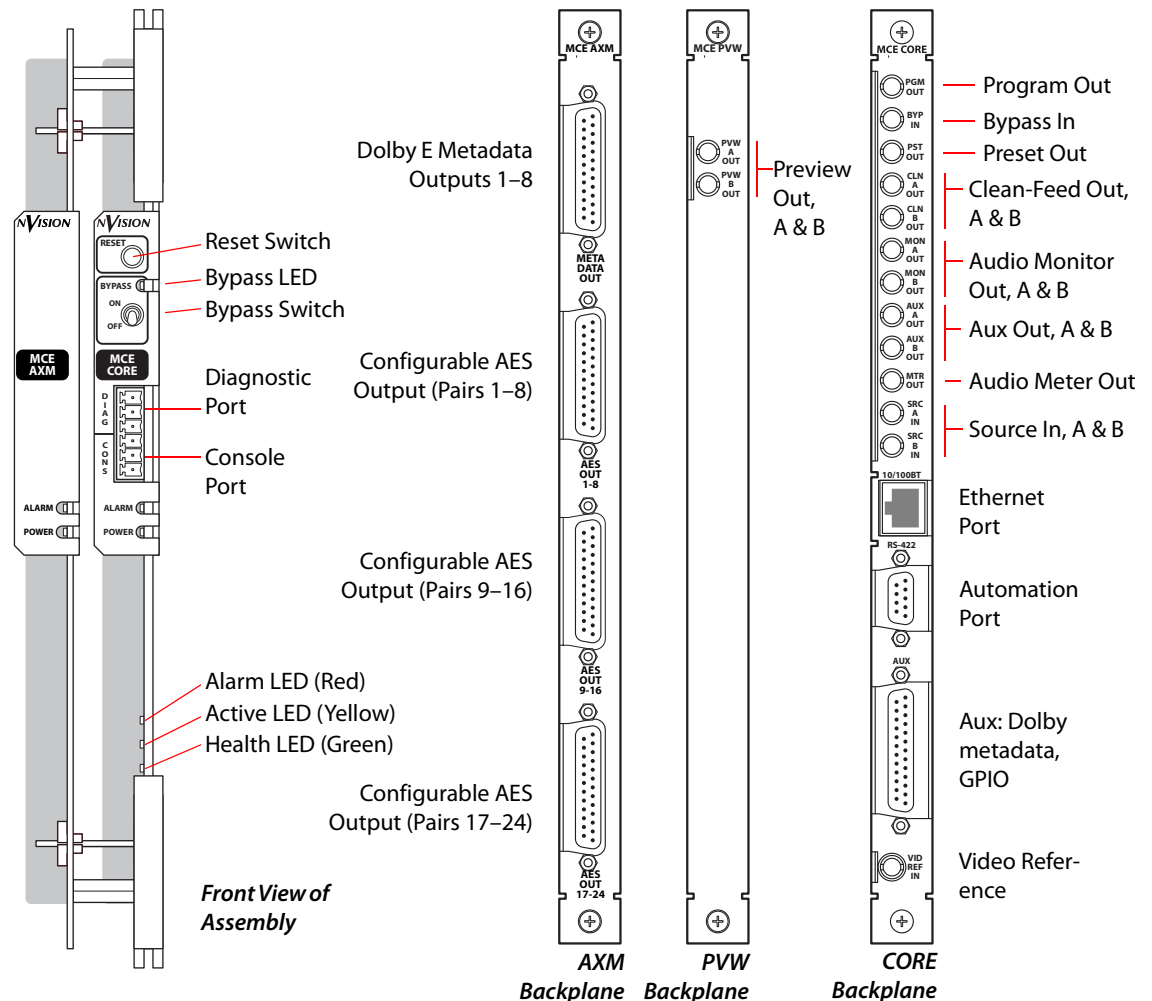


Fig. 2-7: MCE Assembly, Core, Preview, and AXM Backplane Modules

(There is also a 2-slot core backplane having BNCs instead of 1.0/2.3 connectors. See Figure 2-6.)

Emergency Bypass

MCPMs provide emergency bypass inputs for program video and audio. The MCPMs use relays on their backplanes that switch between the program signal path and the emergency bypass inputs. A relay control signal from the MCPM's internal "system controller" controls those relays. The relay control signal is driven by a one-shot (watchdog) timer that, if not reset periodically, will cause the relays to change to the bypass position. This ensures that if the system controller is not operating correctly, that the emergency bypass inputs are routed to the program video and audio outputs.

The emergency bypass LED on the front of the MCPM indicates the state of the bypass relay. The emergency bypass relay will switch to 'bypass' if any of the following conditions are true:

- There is a physical problem with the MCPM (e.g., power failure or component failure).
- The MCPM determines that it is not capable of passing video and audio (e.g., bad configuration or FPGAs not loaded).
- If the bypass toggle switch located on the front of the MCPM forces the emergency bypass relays into the bypass mode.
- A GPI input, configured to control the emergency bypass relay, forces the MCPM into bypass mode.

Note that the emergency bypass relay will be set to non-bypass or "normal" mode (i.e., passing program video) only if all of these conditions are false.

The optional emergency bypass control panel (EBCP) can use a GPI input to trigger emergency bypass mode.

Bypass at System Startup

When the MCPM restarts, the program outputs are fed by the bypass inputs. When the MCPM has initialized and is stable, the system controller switches the program outputs to the master control outputs. To avoid pops, its audio begins in silence and fades up.

Emergency Bypass Relay Behavior

When error conditions exist, the MCPM ignores any external control of the emergency bypass relay. An external control will not be able to set the emergency bypass relay to "normal." If the bypass switch on the front of the MCPM is set to bypass, the MCPM will also ignore any external control of the emergency bypass relay.

The MCPM's aux connector provides an external connection to the emergency bypass relay. The MCPM-SD, -HD, and -SDHD provide all 3 relay terminals, NC, COM, and NO. The MCPM-MK-SD and -HD provide only 2 terminals, COM and NO.

There are 3 ways in which the emergency bypass relay can be controlled externally:

- From the MCPM's GPI inputs.
- From a control panel.
- By automation.

GPI

GPI stands for "general-purpose interface." The GPI is available on the MCPM's aux connector.

GPI Inputs

The MCPM has two configurable GPI inputs. The MCPM configuration software lets you select a GPI input and specify one of 5 behaviors for the input:

- Toggle control of the emergency bypass relay.
- Level control of the emergency bypass relay.
- Set the EBR to "bypass."
- Set the EBR to "normal."
- Disabled. The MCPM ignores the GPI input.

Typically, router outputs connect to the bypass input connectors. This allows, for example, the same program to continue to broadcast during the emergency or break, albeit without the transitions and effects provided by the MCPM.

Another use of the bypass BNCs would be to provide a “technical difficulties” message.

GPI Outputs

The MCPM's two GPI output are SPDT relays (24VDC, 100mA). Connections to the relay terminals are present on the MCPM's aux connector. The Mixer/Keyers (MCPM-MK-SD and -MK-HD) provide COM and NO connections; other MCPMs provide COM, NO, and NC connections.

The MCPM can be configured so that when certain conditions are met, the MCPM activates an output relay—triggering the device that you have connected to the outputs (e.g., a cart machine).

(Activation means that the NO-COM circuit closes and the NC-COM circuit opens.)

There are 7 ways a GPI output can be activated:

- Disabled. (It does not activate.)
- Controlled from a control panel button press.
- A selected video effect on the program or preset bus.
- For the duration of any transition.
- A selected main source is on the program or preset bus.
- A selected over source is on the program or preset bus.
- The Dolby decoder is in use by any main source on the preset or program bus.

Router Output Cards

The MCPM-HD, MCPM-HD2, and MCPM-SDHD all have “wings” that accept SWB router output cards. The MCPM-SDHD accepts one SWB card; the MCPM-HD and -HD2 accept two.

Each of these MCPMs includes a 16-output crosspoint for each SWB card. An NV5128 multi-format router (in the same frame) can route any of up to 64 SWB inputs to outputs on these cards.

The MCPMs have little or nothing to do with the router output except to supply the crosspoints and connectors. However, the -HD2 and -SDHD both allow limited control over the outputs. See [MCPM-HD, -HD2](#), page 15, and [MCPM-SDHD](#), page 15, for more information.

Machine Control

MCEs have machine control functions and can initiate pre-roll in selected media.

MasterConfig can enable machine control functions and pre-roll in the [General Settings](#) page.

MasterConfig sets machine control and pre-roll parameters in the [Main Sources](#) page and also in the [Intuition XG](#) page.

Master control uses the DC21 device controller to carry out machine control operations. Please refer to the *DC21 Device Controller User's Guide* for information.

There are some methods and requirements for setting up machine control—in MasterConfig, in MCS Panel Configuration Editor, and in the DC20 itself.

MasterConfig Overview

MasterConfig is the tool with which you configure MCPMs and MCEs.

You create and edit configurations on your PC and store them in your PC's file system.

You read and write the configurations you created to and from MCPMs or MCEs. A configuration can include logos you created in MasterLogo.

When you create a configuration, you designate the type of MCPM and its video frame rate. The configuration is "locked" to that MCPM type and rate.

The principal functions of the configuration are (1) to enumerate video and audio connections and their relationships, (2) to define video effects, and (3) to specify as far as possible what a panel operator can and cannot control for that MCPM type.

The MCPMs and MCEs in a master control system can all have different configurations. Or, all MCPM of the same type can have the same configuration. Generally, there will be some amount of configuration overlap—I/O definitions, for example—and some differences, perhaps a set of logos, depending on the use of the MCPM or MCE.

These are the MCPM/MCE features that MasterConfig addresses:

- The inputs at the rear of the master control frame.
- Router inputs and whether they are present.
- Source-to-button mapping.
- The audio associated with each video input.
- Definition of video effects.
- Identification of audio overs.
- Emergency bypass and the GPI inputs and outputs.
- Automation.
- Audio monitors.
- Default sources and default video effects.
- Wing outputs (for MCPM-HD2, and -SDHD).
- Squeezeback enhancement (for MCPM-SDHD and MCE).
- The aux buses A and B (for MCE).
- Interface to Intuition XG.
- Machine control and pre-roll.

MasterConfig also addresses a few other minor features.

3 Usage

Chapter 3 provides orientation, and presents editing and operating instructions for the MasterConfig application. It presents the following topics:

Topics

MasterConfig Summary	23
Starting MasterConfig	24
Orientation	25
Editing Basics	37
Configuration Topics	40
Operational Overview	44

MasterConfig Summary

MasterConfig is the tool used for generating, editing, and uploading MCPM and MCE configuration files.¹

MCPM and MCE configuration files exist in your configuration PC's file system. Any configuration can be uploaded to as many MCPMs (or MCEs) as you like. All your MCPMs and MCEs can have unique configurations or several MCPMs can share a configuration. Several MCEs can share a configuration.

▲ You can also create and edit configuration files off-line.

MasterConfig supports 7 MCPM types, described in the [Introduction](#):

MCPM-SD	MCPM-MK-SD	MCPM-SDHD
MCPM-HD	MCPM-MK-HD	MCE
MCPM-HD2		

An MCPM or MCE configuration, when installed, affects what a master control operator can do at a master control panel. You, the configurator, should keep in mind the way the different control panels work.

An MCPM or MCE configuration might permit an operator to make changes to configuration data and optionally to save that data in the MCPM or MCE (in flash). Other panel operators who control the same MCPM or MCE will be affected by any change to the configuration.

MasterConfig, MasterDiag, and MasterLogo all share a list of MCPM and MCEs (called the master control "tree"). The master control software folder contains a set of .XML files that implement the list. When you run MasterConfig, you can use the "tree" to select MCPM and MCEs. You might want to build the tree if no one else has done so, but it is not necessary. MasterConfig allows you

1. MCPM configurations are *data* describing the video and audio sources and processing effects of the MCPM. In contrast, MCPM applications — firmware, not data — execute the MCPM functions. MCPM *applications* are handled in MasterDiag. MCPM *configurations* are handled in MasterConfig.

to add MCPMs and MCEs to the tree and to remove MCPMs and MCEs from the tree. MCPMs and MCEs are always identified by their IP address on the master control network.

During the configuration process, MasterConfig assembles various lists that define the choices an operator will see at a control panel. The operator might be able to change some configuration values (such as the position of a logo) but the operator can never create or delete configuration entries, and typically cannot access the configuration *file* (on the configuration PC) in any way.

MCPM and MCE configurations are typed (or tagged) according to a specific MCPM type. You are safeguarded¹ against uploading the wrong configuration type to an MCPM.

We recommend that you enter your MCPM or MCE configuration settings by progressing from general settings to detailed settings, approximately in the order presented in this user's guide, applying and saving each change to the configuration, and finally, writing the configuration to the MCPM or MCE. Saving frequently allows you to recover easily from any mistakes you make. This approach provides exposure to all system options and you will avoid missing any required settings.

The following sections in this chapter outline the available settings for each of the 18 configuration pages. Chapter 4, [Operation](#), presents all the configuration pages in detail.

Starting MasterConfig

There are 3 ways to start (or launch) MasterConfig:

- Use the Windows Start menu of your configuration PC.
Programs > Miranda > Master Control > MasterConfig - Configure MCPM (...)
- Double-click the actual program file. This is its default pathname:
C:\Program Files\Miranda\Master Control\bin\MasterConfig.exe.
- Double-click a shortcut (that you have created) to the actual program file. The PC desktop is a commonly accepted place to put a shortcut.

This shows a typical MasterConfig shortcut:



The locations of files in your system might differ.

1. You can defeat the safeguards, but we do not recommend it.

Orientation

Main Window

Figure 3-1 shows MasterConfig's main window (with a configuration file open):

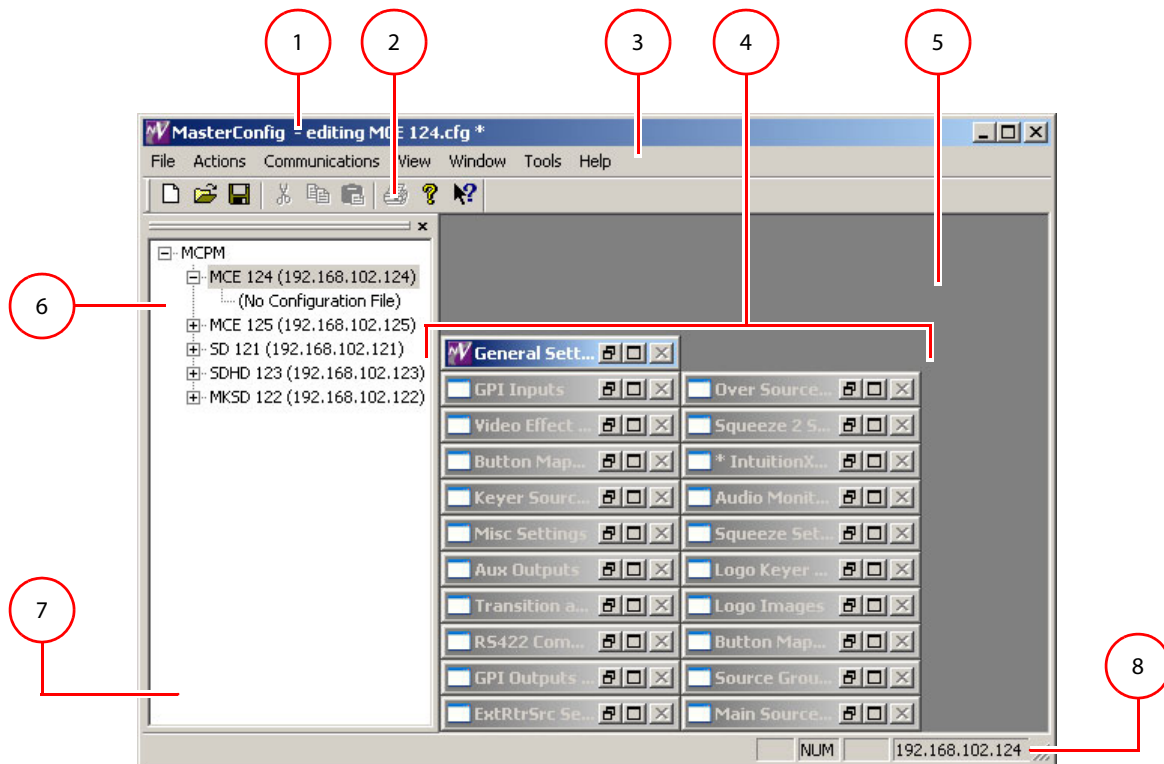


Fig. 3-1: MasterConfig Main Screen (Sample)

1	Title bar	3	Menu bar	5	Workspace	7	Status bar
2	Tool bar	4	Configuration pages (minimized)	6	Master control tree	8	Target IP address

Figure 3-1 shows *minimized* or *collapsed* configuration pages. When you are working on a particular page, the page would be expanded.

If you have no file open, the configuration pages do not appear and many of the menus are inactive (grayed out). Following are descriptions of each main window feature:

1 Title bar

If you have a file open, the title bar shows the name of the configuration file that you are currently editing. It displays "[New]" if you have a new configuration that you have not yet saved.

2 Tool bar

The tool bar contains icons that can be used as editing shortcuts if you wish. Some of the icons are always inactive. You can hide or show the tool bar by clicking 'Tool Bar' in the 'View' menu. See [Tool Bar](#) on page 37 for details.

3 Menu bar

The menu bar provides access to several important configuration functions. See [Menus](#) on page 27 for details.

4 Configuration pages

Figure 3-1 shows *minimized* or *collapsed* configuration pages. When you are working on a particular configuration page, the page would be expanded.

The array of minimized pages typically falls at the bottom of the workspace. You can move and open and close these windows as you wish. (You cannot remove them.) You can arrange them (relative to your current workspace area) by clicking 'Cascade', 'Tile', or 'Arrange Icons' in the Window menu.

5 Workspace

The workspace provides a working area for open configuration pages. (There are up to 19 configuration pages, depending on MCPM type.) You can open, or minimize, any combination of configuration pages. Until you have opened or created a configuration file, no configuration pages are visible and certain menus are grayed out (disabled). See [Menus](#) on page 27 for details.

6 Master control tree

The master control "tree" lists the IP addresses of the MCPMs and MCEs you have identified. The tree is a great convenience, although not strictly required. The tree may contain MCPMs and MCEs that do not exist yet.

When you first launch MasterConfig, MasterDiag, or MasterLogo, the tree will be empty. You can add, remove, or change entries at any time in any of these 3 applications.

When you highlight an IP address in the tree, that address becomes the *current IP address* and the various commands in the 'File' menu apply to that specific IP address (and its associated MCPM or MCE). If you have read a file from an MCPM or MCE or written a file to an MCPM or MCE, the file's pathname appears under the IP address in the tree.

An MCPM or MCE need not appear in the tree. You can read from and write to an MCPM or MCE directly by entering its IP address independently. (See [Communications Menu](#) on page 31.)

This guide refers to the MCPM or MCE at the current IP address as the *current MCPM*.

You can adjust the width of the master control tree area by pointing to, and dragging, its right-hand border left or right. You can close the master control tree area by clicking the small **X** in the upper right corner of the tree area. You can redisplay the tree by choosing 'Master Control Tree' from the 'View' menu.

7 Status bar

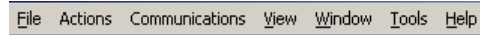
The Status Bar displays a brief line of "help" information for some of the menu and tool bar commands. You can hide or show the status bar by clicking 'Status Bar' from the 'View' menu.

8 Target IP address

At the right end of the status bar (if it is visible) MasterConfig displays the current IP address and also indicates (as a side effect) whether the keyboard functions 'Caps Lock', 'Num Lock' and 'Scroll Lock' are on.

Menus

This is the menu bar:



The following sections describe the menus:

[File Menu](#)

[Communications Menu](#)

[Window Menu](#)

[Help Menu](#)

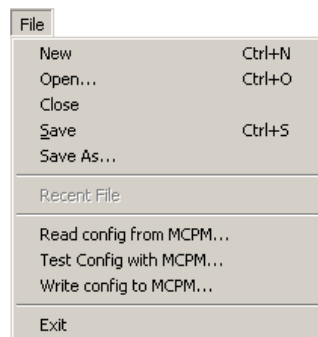
[Actions Menu](#)

[View Menu](#)

[Tools Menu](#)

File Menu

The 'File' menu lets you open and save configuration files and transfer configuration data to and from MCPMs or MCEs:

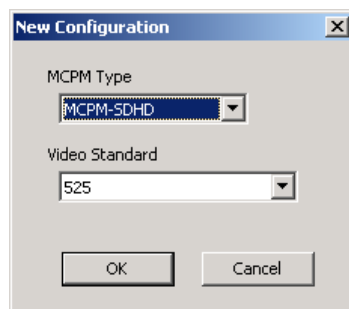


Following are descriptions of the File menu commands.

New

Click 'New' to create a new configuration. If you have not saved changes to current configuration data, you will be asked whether you want save changes.

When you create a new configuration, MasterConfig presents a dialog in which you specify the MCPM type and video standard:



Thereafter, the configuration is locked to that MCPM type and video standard.

▲ The file extension for MCPM configuration files is **.cfg**.

Open

Click 'Open' to display the standard Open dialog, which allows you to open an existing configuration for editing. If you have not saved changes to current configuration data, you will be asked whether you want save changes.

Close

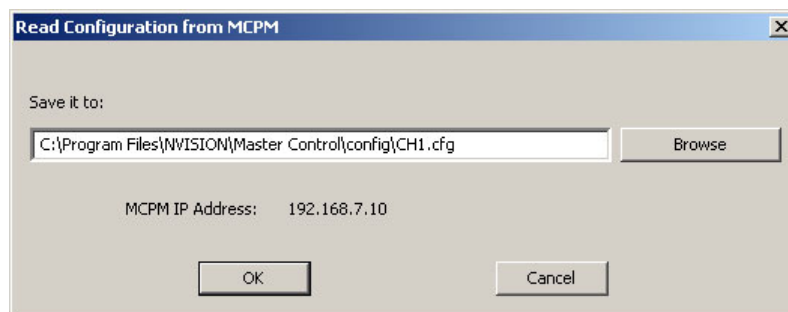
Click 'Close' to close the configuration that you are editing. If you have not saved changes to current configuration data, you will be asked whether you want save changes.

Save, Save As

Click 'Save' to save the current configuration file. Click 'Save As' to save the current configuration to a file with another name.

Read Config from MCPM

Click 'Read Config from MCPM' to get a configuration from the current MCPM. A "Read Configuration from MCPM" dialog appears:



The command transfers the MCPM or MCE configuration data to the file named in the dialog. You can browse to select or name a file.

The dialog shows the following:

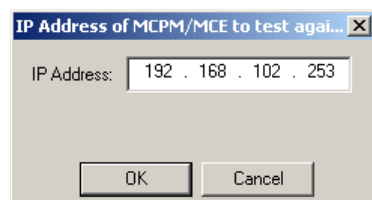
- The "Save it to" field shows the pathname of the file in which to save the configuration.
- The "MCPM IP Address" field identifies the MCPM or MCE from which you will read the data.

Click 'OK' to start the read or click 'Cancel' to cancel the read.

After it reads and saves the files, MasterConfig will ask whether you also want to open the file for editing. Click 'OK' if you wish to open the file.

Test config with MCPM

Click 'Test Config with MCPM' to test you present configuration against the features of an installed MCE. A dialog appears in which you may enter the IP address of the MCE:



If you have selected an MCE in the master control tree, the dialog will suggest its IP address.

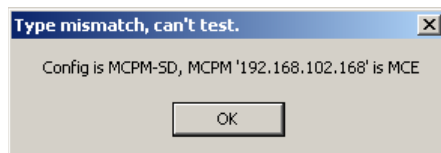
If the IP address you enter is non-existent, you will see an Ethernet socket error message:



If the IP address you enter does not correspond to an MCE, you will see an error message:



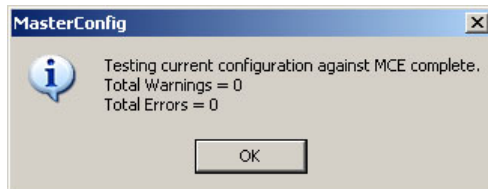
If you have attempted to test a configuration for an MCPM other than an MCE, you will see an error message:



If you are testing an MCE configuration against an existing MCE, you will see zero or more warnings or errors messages followed by a summary report. These are samples of report messages:



The summary report tells you the number of warnings and errors.



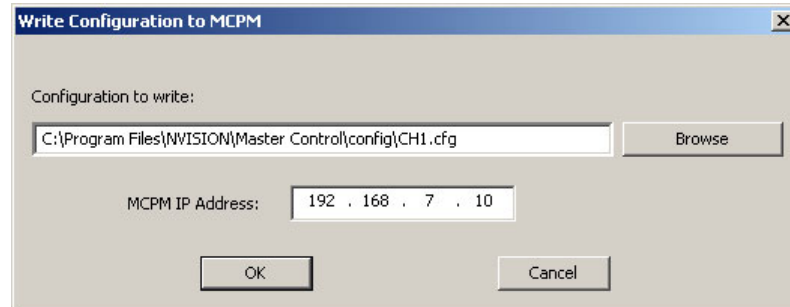
The configuration you are testing matches the installed MCE if the number of warnings is 0 and the number of errors is 0.

There are a number of warnings and one error message that you might see. Please refer to [Testing Configurations against Installed MCEs](#) on page 207 for a complete list.

Note that these tests are run automatically for any MCE configuration when you write the configuration to the MCE.

Write config to MCPM

Click 'Write Config to MCPM' to write a configuration to the current MCPM. A "Write Configuration to MCPM" dialog appears:



The command transfers configuration data from the file named in the dialog to the MCPM or MCE identified. You can browse to select or name a file. You can change the IP address in the dialog.

The 'Configuration to Write' field shows the pathname of the file whose data will be written to the MCPM or MCE.

The 'MCPM IP Address' field identifies the MCPM or MCE to which to write the data. You may specify the IP address in the dialog. If you specify an address that is not in the Master Control tree, MasterConfig will present a query that asks you whether you want to add the address to the tree. Click 'OK' if you wish to do so. That IP address becomes the current address (and appears in the lower right corner of the MasterConfig window.)

Finally, click 'OK' to write the file to the MCPM (or MCE) or click 'Cancel' to cancel the transfer.

Configuration data differ for each MCPM type. Writing a configuration to an MCPM of the wrong type will have disastrous results. Accordingly, MasterConfig does not allow you to write a file of the wrong type. If you attempt it, it presents a message such as the following:



A write to an MCPM can involve logos. If you have many logos and if they are large, the write can take several minutes. You have the choice of whether to include logos in the write.

A write to an MCE can involve up to 400 logos. The write can take a long time. MCEs, unlike other MCPMs, store logos in non-volatile memory. Once loaded, the logos need not be reloaded. You have the choice of whether to include logos in the write.

(Logos will have been defined in MasterLogo. MasterConfig, in fact, uses MasterLogo to transfer the logos.)

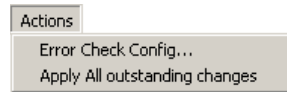
For MCEs, the 'Write Config to MCPM' command detects version discrepancies.

Exit

Click 'Exit' to quit MasterConfig. If you have not saved changes to current configuration data, you will be asked whether you want save changes.

Actions Menu

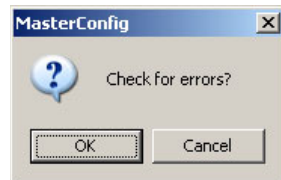
The 'Actions' menu has two commands:



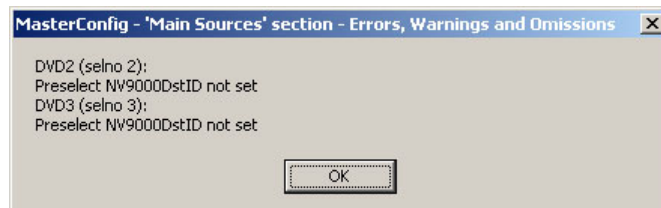
Following are descriptions of the Actions menu commands.

Error Check Config...

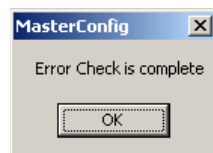
Click 'Error Check Config...' to display the 'Check for errors' dialog:



If you want MasterConfig to perform error checking, click 'OK'. If MasterConfig detects errors, it produces a report such as the following:



If it finds no errors, MasterConfig produce no report, but notifies you that the error check is finished:



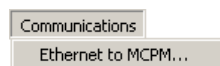
- ▲ MasterConfig performs partial error checking any time you click an 'Apply' button to apply changes to the configuration.

Apply All Outstanding Changes

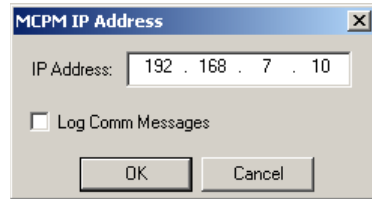
Click 'Apply All Outstanding Changes' to commit all uncommitted changes to the configuration. This command does not cause the configuration to be saved to a file. The configuration remains open for further editing.

Communications Menu

The 'Communications' menu has just one command:



Click Ethernet to MCPM... to display the “MCPM IP Address” dialog:



This dialog lets you enter an IP address for an MCPM or MCE. The address you enter here becomes the *current IP address*, representing the *current MCPM*. If the address is not in the master control tree, MasterConfig asks you whether you want to add it to the tree.

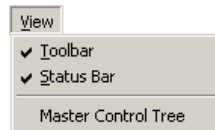
The current IP address is always displayed in the lower right corner of the MasterConfig window. It remains active until you select another address.

▲ The current IP address must correspond to an actual MCPM or MCE only when you want to read from or write to an MCPM or MCE. It is in MasterDiag that you set the actual IP address.

Check the ‘Log Comm Messages’ box if you want to create a log of all communications messages.

View Menu

This is the ‘View’ menu:



Following are descriptions of the View menu commands.

Toolbar

Click ‘Toolbar’ to show or hide the tool bar. This command is a toggle. (The check mark indicates that the tool bar is enabled.) See [Tool Bar](#) on page 37 for more information.

Status Bar

Click ‘Status Bar’ to show or hide the status bar. This command is a toggle. (The check mark indicates that the status bar is enabled.)

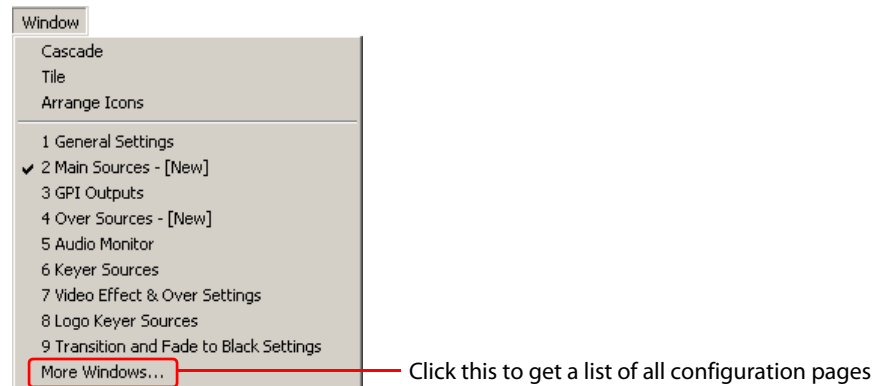
Master Control Tree

Click ‘Master Control Tree’ to make the master control tree visible. This command is not a toggle. Once the tree is visible, the command has no apparent effect. To hide the master control tree, click the small **X** in its upper right corner of the tree area.

You can resize the master control tree area by clicking and dragging its right-hand border.

Window Menu

This is the 'Window' menu:



The menu is partitioned: the first 3 commands control the appearance of the configuration pages in the work area. The other commands show various configuration pages. The list of configuration pages in the menu can vary. The number of configuration pages depends on the MCPM type specified in the configuration.

Cascade

Click 'Cascade' to cascade (and resize) all open configuration pages, with the current page on top so it is visible. All minimized pages remain minimized at the bottom of the screen.

Tile

Click 'Tile' to tile (and resize) all open configuration pages, based on the current width of the Main Screen. All minimized pages remain minimized at the bottom of the screen.

(Tiling means that all open pages are distributed equally and visibly in the work area.)

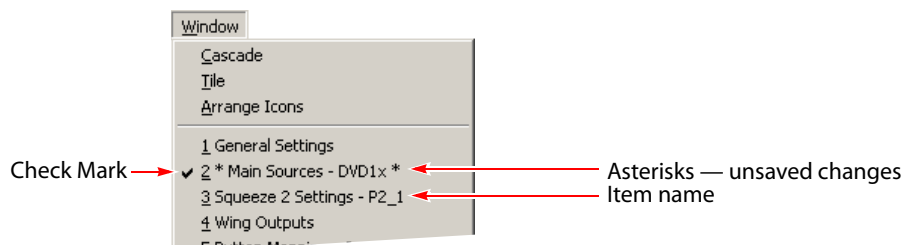
Arrange Icons

Click 'Arrange Icons' to arrange all minimized pages in a compact array at the bottom of the work area, relative to the current width of the main window. Open pages are left unchanged.

The term "icon" here means a minimized page image.

The Other Commands

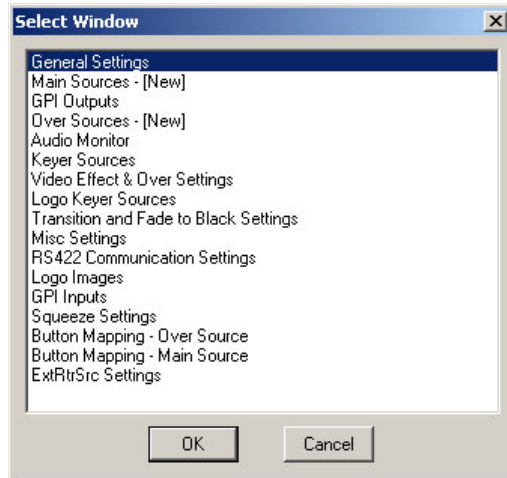
Choose one of the listed configuration pages (e.g., 'Main Sources') to open that page for editing. While you are editing, the 'Window' menu shows additional information:



A check mark appears adjacent to the *active* configuration page.

Asterisks appear when unsaved changes are present.

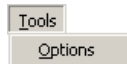
When edits are in progress, the menu shows the item being edited next to the page name. Click 'More Windows...' to display the 'Select Window' dialog (which lists all¹ configuration pages).



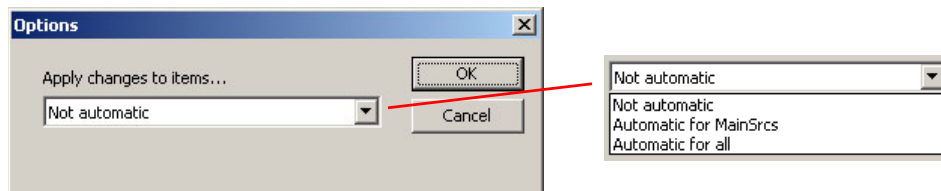
Select the configuration page you want and click 'OK' to open that page for editing. See Chapter 4, [Operation](#) on page 49, for details regarding configuration pages.

Tools Menu

The 'Tools' menu has just one command:



Click 'Options' to display the following dialog:



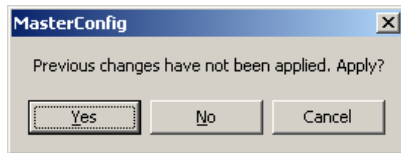
Choose one of the 3 options in the drop-down list and click 'OK'. Click 'Cancel' if you do not wish to choose an option.

These options do not affect the MCPM, but control how MasterConfig applies changes to your configuration data:

- Not automatic.

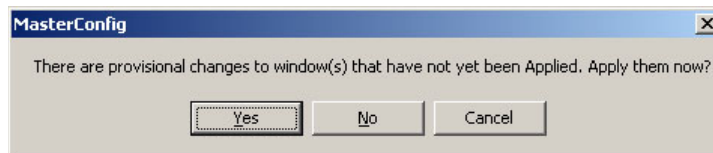
1. Some configuration pages might not apply to the MCPM you are configuring and will not be listed.

You must click the 'Apply' button to commit changes made in configuration pages. If you switch to another item in a list before applying changes, MasterConfig displays this dialog:



You would click 'Yes' to apply the changes, 'No' to discard the changes, or 'Cancel' to discontinue switching to the other list item.

If you save a configuration that has outstanding changes, MasterConfig displays this dialog:



Click 'Yes' to save the file with the changes. Click 'No' or 'Cancel' stop the save operation, preserving the changes but leaving the file unchanged.

- Automatic for all.

When you change any item, MasterConfig applies the changes to the item without a confirmation dialog.

When you save the file, MasterConfig applies all changes and saves the file without displaying any confirmation dialog.

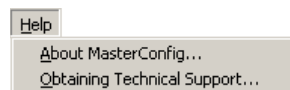
- Automatic for MainSrcs.

When you change a main source, MasterConfig applies the changes to the source without a confirmation. All other parameters require you to click 'Apply'.

When you save the file, MasterConfig does display the "provisional changes" dialog if there are changes to items other than main sources.

Help Menu

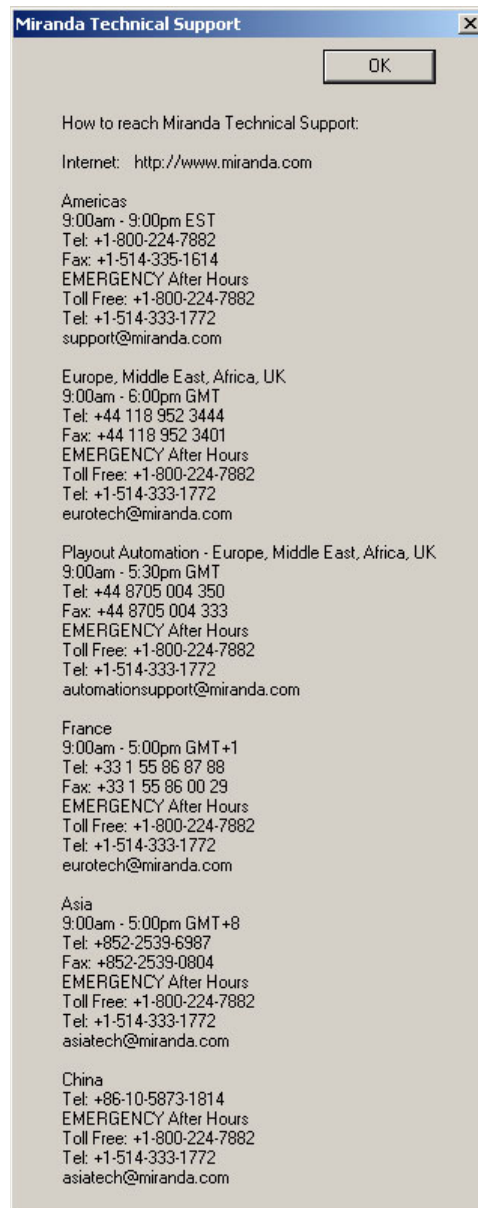
The 'Help' menu has two commands:



Click 'About MasterConfig...' to display the software version:



Click 'Obtaining Technical Support' to see technical support contact information:












Tool Bar

The Tool Bar provides an array of icons that are meant to be editing shortcuts.



Many of the icons are not operational. You can show or hide the tool bar with the "Toolbar" command in the 'View' menu. These are the icons, from left to right:

- | | |
|--|---|
|  Same as File > New |  Paste, <i>not implemented</i> |
|  Same as File > Open |  Print, <i>not implemented</i> |
|  Same as File > Save |  Same as Help > About MasterConfig |
|  Cut, <i>not implemented</i> |  Unimplemented function |
|  Copy, <i>not implemented</i> | |

Editing Basics

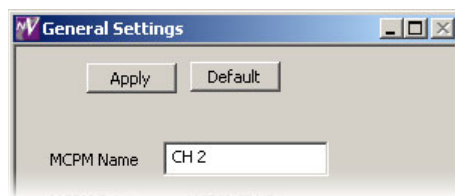
Following are general guidelines for editing in any of the configuration pages.

See Chapter 4, [Operation](#) on page 49, for detail regarding each configuration page.

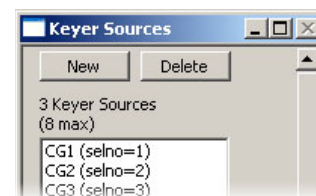
Making Changes

MasterConfig's configuration pages fall into two classes:

Parameters Only



List-Based Parameters



Parameters Only

When you make a change to one or more parameters, click 'Apply' for the changes to take effect. Click 'Cancel' to discard your changes. Click 'Default' to obtain default values.

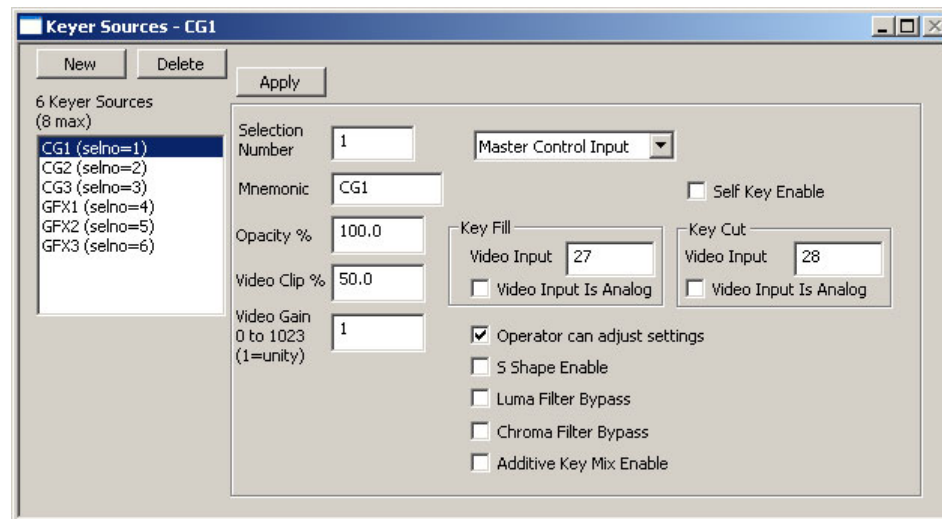
You also can click 'Apply all outstanding changes' from the 'Actions' menu.

"Applied" changes do not affect the saved configuration file until you actually save the configuration to the file.

List-Based Parameters

Configuration pages with lists (such as the 'Keyer Sources' page) require that you either select an entry in a list or create a new entry in a list. Click 'New' to create a new entry. Click 'Delete' to delete an entry. Click an entry in the list to select the entry. You might need to scroll the list to find the entry you want.

When you click 'New', or when you select an entry in the list, the configuration page expands to allow you make changes to your list entry. An additional button appears — 'Apply':



After making changes, click 'Apply' for your changes to take effect. If you are creating a new list entry, you must click 'Apply' to add the new entry to the list.

▲ See the 'Options' command in the 'Tools' menu for information about applying changes.

Asterisks

When you make a change to any setting within a configuration page, an asterisk appears in the header. This is a visual reminder that you have unapplied changes:

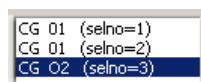


If you have made any changes to a configuration, an asterisk appears next to the configuration file name in the Title Bar. This is a visual reminder for you to save the configuration file:



Selection Numbers

Many configuration pages refer to a "selection number" or "selno" in a list:



Selection numbers define the position of items in a list. For example, the main sources belong to a list. When you add a main source to the list, its "selno" places it in the ordering of the list entries. The lists are used in MasterConfig and also appear in the menus of a control panel.

By default, the selection number given to a new list entry is the lowest unused selection number. If the list is full, you cannot create a new source.

Many lists allow gaps in the numbering. In all cases, the items in the list are ordered by the selection numbers, from lowest to highest.

In the case of GPI inputs and outputs, selection numbers identify the actual GPI inputs or outputs as well as the position of the configuration in the GPI list.

Be careful when numbering list items because it is a nuisance to renumber them.

Numbering

In MasterConfig's configuration pages, a zero (0) entered in a data field disables the function represented by the field, unless otherwise stated.

All numbered items start counting at 1, not 0.

MCPM Numbering

Main source inputs are numbered from 1 to 128, from 1 to 64, or from 1 to 16, depending on the MCPM.

Discrete audio sources are numbered either from 1 to 128 or from 65 to 128, depending on the MCPM. An audio source is a stereo pair, comprising two channels, nominally left (L) and right (R). Each channel can be treated as an independent (mono) source, however.

Embedded audio sources have no connectors and therefore no connector numbers. MCPMs however accept up to 8 embedded audio channels, numbered from 1 to 8.

MCE Numbering

Main source inputs are numbered from 1 to 128, some of which can be obtained from connectors 1–64 of the NV5100MC backplane.

Discrete audio sources are numbered from 65 to 128. An audio source is a stereo pair, comprising two channels, nominally left (L) and right (R). Each channel can be treated as an independent (mono) source, however.

Embedded audio sources have no connectors and therefore no connector numbers. MCEs however accept up to 16 embedded audio channels, numbered from 1 to 16.

Audio Channel Numbering

Main sources can be associated with up to 16 audio channels. Over sources can use up to 16 audio channels. There is an 'Initial Values' button in the [Main Sources](#) configuration page and in the [Over Sources](#) configuration page that automatically enables and fills all the audio channels.

The details are specified in the descriptions of the pages.

Configuration Topics

Source-to-Button Mapping

A typical system has far more sources than panels have buttons. There are several ways to map sources to source buttons:

- Button mapping
 - Source groups
 - Router preselect
- ▲ A control panel's button mapping menu provides source group selection when it is controlling an MCE for which source groups are enabled and supports main source button mapping when it is controlling an MCE for which source groups are disabled.

Button Mapping

"Button mapping" is a feature you can enable or disable in the 'General Settings' page.

An NV5100MC master control frame supports up to 128 main sources and up to 4 over sources. Router pre-select further allows any router source (of perhaps thousands) to be mapped to any main source button or to any over source button.

Master control panels have up to 24 main source buttons. Master control panels also have up to 2 audio over buttons.

Control panels must have a way to access any of up to 128 main sources on 16 buttons. They must have a way to access any of 4¹ over sources on 2 buttons.

The method is called source-to-button mapping, or just button mapping. It is fairly simple. In MasterConfig, you designate one or more buttons as user-modifiable or system-modifiable, or both. The panel operator can then assign any main source to a user-modifiable button (by choosing the source from a menu) and automation can assign a main source to a system-modifiable button. (The operator's panel must be configured to support this.)

MasterConfig provides two button-mapping configuration pages, one for main sources, and one for over sources.

Please note:

- Automation does not "care" about buttons. If a button is defined 'system-modifiable' then it will use the button; otherwise, it will use any other button. However, if any button has been assigned a source that automation is to use, automation will choose that button. Automation is not affected by program/preset button states.
- Automation uses an LRU (least-recently used) button selection scheme.
- (Unless or until something interferes with the automation, the LRU scheme is also round-robin.)
- Where there is automation, it is advisable to designate more than one button as system-modifiable. Four system-modifiable buttons are optimal.
- It is possible for the operator to turn automation off.

1. (Or 5 overs.) An extra over is in use when dual squeezeback is enabled (in the MCE or MCPM-SDHD).

See [Button Mapping—Main Source](#) (page 147) and [Button Mapping—Over Source](#) (page 150) in Chapter 4, [Operation](#).

Source Groups

“Source Groups” can also be enabled or disabled in the ‘General Settings’ page.

You can define any number of source *groups*. A group defines what sources appear on a control panel and on which buttons they appear. Panel operators can select which source group they want on their panel at any time.

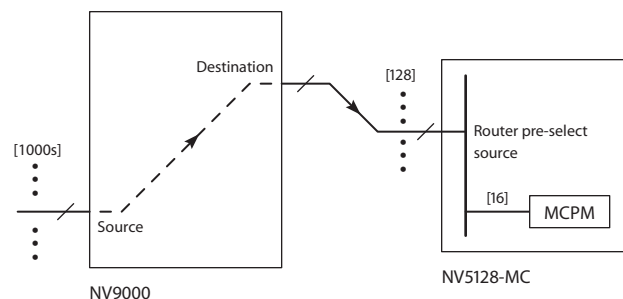
A group may have up to 24 sources because that is the maximum number of source buttons on any panel. Typically, your source groups would be smaller. Source groups are defined for each MCE, so source groups can differ for panels that control different MCEs.

Sources can be replicated in multiple source groups. For instance, you could have a particular source always available on source button 1, regardless of which group is selected.

Router Pre-Select

“Router Preselect” is a feature you can enable or disable in the ‘General Settings’ page.

If you have an NV9000 router control system connected to your master control system, you can define a main source or an over source as a “router preselect” source. When a source is a router pre-select source, the operator can assign one of potentially thousands of router sources to a button:



If the router source (and destination) are multi-level, there would be one cable for each level.

Any router source can be routed to a router destination. The router destination is connected (by cable typically) to one of the master control inputs. That input will have been assigned to one of the panel's main source button.

- ▲ Router preselection applies to *sources* whereas the terms “user-modifiable” and “system-modifiable” apply to *buttons*.
- ▲ A router pre-select source can also be a user-modifiable button.
- ▲ It is in the panel configuration software, not MasterConfig, that router source selection is configured.
- ▲ A master control frame can accommodate both a master control system and a multi-format router (MFR). The MFR and master control system can be used in conjunction. See application note *AN0004-xx Routing and Master Control* for more information.

External Router Sources

“External router sources” is a feature you can enable or disable in the ‘General Settings’ page. The concept of “external router sources” extends the notion of “router pre-select.” External router sources simplifies some of the panel operator’s tasks and adds a small amount of complexity to MCPM configuration.

“External router sources” is like router pre-select, where an operator may select a router source as a main source, but note these differences:

- You, the configurer, decide which router sources are selectable and add those to the ‘Main Sources’ list or to the ‘Over Sources’ list as you deem appropriate. That way, the operator selects external router sources in exactly the same way as local sources (those connected directly to the NV5100MC frame).
- Key sources and squeeze image sources may be external router sources.
- You can intermix external and local key sources in the ‘Key Sources’ list and you can intermix external and local squeeze images in the ‘Squeeze’ and ‘Squeeze 2’ lists.
- The numbers of external sources (main, over, key, squeeze) are limited by the size of the list in the MCPM (at most 128 list entries).

‘ExtRtrSrc Settings’ Page

Use this configuration page to connect router destinations to master control inputs. The connections consume up to 30 input ports at the back of the master control frame, depending on which external router sources are enabled and how many discrete audio inputs are required. The ‘ExtRtrSrc Settings’ page differs for MCEs and other MCPMs. For MCEs, there are two sub-pages, one that configures external connections to the program and preset buses, and another that configures external connections to the preview bus. For other MCPMs there is just a single page (that configures connections to the program and preset buses).

The router destinations are

Main sources A and B	Over sources A and B
Keyer sources 1, 2, and 3	Squeeze background and “image 2 video.”

- ▲ Some MCPMs do not have squeezeback and some do not have “image 2 video.” Some MCEs might lack certain video effects also.

Because there are two (active) buses, program and preset, the pool for main sources and the pool for over sources each have two members. Because there are 3 keyers, the pool of key destinations has 3 members.

- ▲ The use of the ‘ExtRtrSrc’ configuration page requires that you specify a virtual IP address for your NV9000 router control system. (The NV9000 you have must therefore support virtual IP addresses.)

Compared to Router Preselect

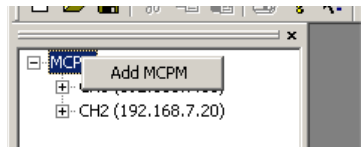
Compared with router pre-select, “external router sources” saves a few keystrokes (and time and thought) while the operator selects external main and over sources, but also allows the selection of external key sources and squeeze sources, which router pre-select does not allow.

The drawback is this: external source selection is limited to the small number of sources the MCPM or MCE allows, not the entire space of the router system.

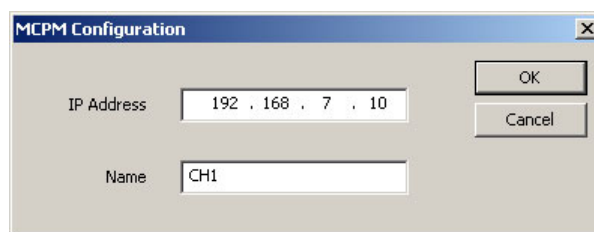
IP Addresses

An MCPM's IP address, once assigned in MasterDiag, cannot be changed except in MasterDiag. In MasterConfig, you can enter IP addresses or choose different IP addresses. There are several ways to do so:

- 1 Right-click "MCPM" in the master control tree:

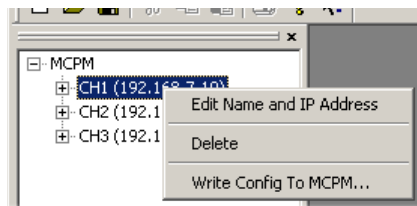


Click 'Add MCPM'. You will get the MCPM Configuration dialog:

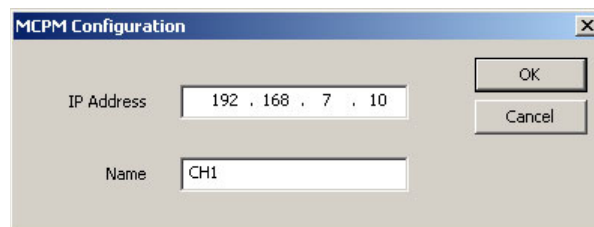


Key in the address and optionally a name for the MCPM. Click 'OK'.

- 2 Right-click an IP address in the Master Control tree:

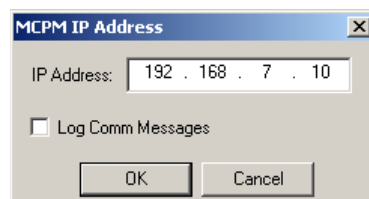


Click 'Edit Name and IP Address' to get the MCPM Configuration dialog:

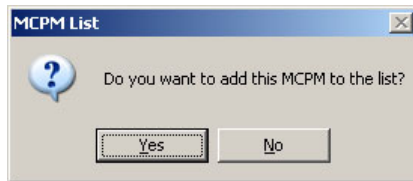


Key in the address and optionally a name for the MCPM. Click 'OK'.

- 3 Choose Communications > Ethernet to MCPM to get a dialog:

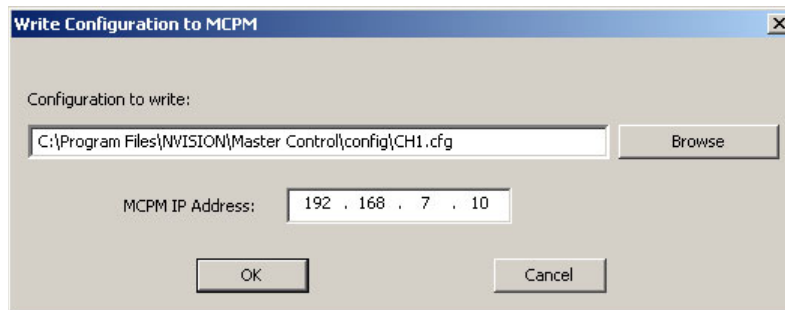


Key in the address and click 'OK'. If the address you specify is not in the master control tree, MasterConfig will display this dialog:



Click 'Yes' if you want to add the IP address to the master control tree.

- 4 Choose File > Write Config to MCPM. Enter a new IP address in the resulting 'Write Configuration to MCPM' dialog:



Operational Overview

Following are three typical operating procedures for MasterConfig:

- [New Configuration](#)
 - Create a new configuration
 - Edit
 - Save to file
 - Write to the MCPM or MCE.
- [Modifying an Active Configuration](#)
 - Read from MCPM
 - Edit
 - Save to file
 - Write back to the MCPM or MCE.
- [Modifying a Stored Configuration](#)
 - Open a file
 - Edit
 - Save the file
 - (Optionally) write to the MCPM or MCE.

Please review these procedures before you continue with Chapter 4, [Operation](#).

New Configuration

Follow these basic steps to create a new configuration file and write it to an MCPM:

- 1 Launch MasterConfig.
- 2 Click File > New to create a new configuration file.
- 3 Go through all configuration pages, entering all appropriate data for your audio and video sources, key sources, logos, squeezeback effects, etc.
- 4 When you have completed all configuration pages, save the configuration file by clicking File > Save (or Save As). In the dialog, name the file and click 'OK'. Browse if you need to select a folder for the file.
- 5 To send the configuration to the MCPM or MCE, click File > Write Config to the MCPM.
In the 'Write Configuration to MCPM' dialog, verify that the IP address correctly identifies the MCPM you want to configure. Double-check that the configuration file name displayed is the right file.
Click 'OK' to write the file to the MCPM or MCE.
- 6 At a control panel, systematically test the new configuration.
Make further changes to the configuration file if they are needed. Refer to [Modifying an Active Configuration](#), next, for a basic procedure.

Modifying an Active Configuration

Follow these steps to modify an existing *active* configuration (one that is running on an MCPM in the master control system):

- 1 Launch MasterConfig.
- 2 Select an MCPM.
Either highlight the MCPM in the master control tree or choose Communications > Ethernet to MCPM... to select an MCPM.
- 3 Read the configuration data from the MCPM or MCE.
Click 'File > Read Config from MCPM' to get the configuration data.
In the 'Read Configuration from MCPM' dialog, verify that the IP address correctly identifies the MCPM or MCE you want to read. Browse if you need to select a folder and file for the data.
Click 'OK' to read the data.
- 4 Select and edit the parameters in all configuration pages applicable to your intended change.
- 5 When you have finished editing, save the configuration file by clicking File > Save.
- 6 Write the file back to the MCPM or MCE by clicking File > Write Config to MCPM.
In the 'Write Configuration to MCPM' dialog, verify that the IP address correctly identifies the MCPM or MCE you want to configure. Double-check that the configuration file name displayed is the right file.
Click 'OK' to write the file to the MCPM or MCE.
- 7 At a control panel, test the parameters of the new configuration.
Make further changes to the configuration file if they are needed.

Modifying a Stored Configuration

Follow these basic steps to edit an configuration that is stored on the configuration PC:

- 1 Launch MasterConfig.
- 2 Click File > Open.
- 3 In the 'Open' dialog, select the configuration file that you want to edit. Browse if you need to select a folder for the file.
Click 'OK' to read the file.
- 4 Select and edit the parameters in all configuration pages applicable to your changes.
- 5 When you have finished editing, save the configuration file by clicking File > Save.
- 6 Optionally, write the file to the MCPM or MCE by clicking File > Write config to MCPM. If all you want to do is change the file, you need not write to the MCPM or MCE.
In the 'Write Configuration to MCPM' dialog, verify that the IP address correctly identifies the MCPM or MCE you want to configure. Double-check that the configuration file name displayed is the right file.
Click 'OK' to write the file to the MCPM or MCE.
- 7 At a control panel, test the parameters of the new configuration.
Make further changes to the configuration file if they are needed.

Understanding Your System

Working with MasterConfig requires a detailed understanding of the physical structure of your system. Designing the physical structure of your system depends to some small degree on knowing what you can configure your MCPMs and control panels to do.

These are some of the details you will have to know to configure an MCPM or MCE:

- The MCPM types in use in your system.
What are their signal types?
How many inputs does each support?
Which ones have Dolby decoders?
Which have wing outputs and how are they to be used?
Which of the MCPMs are MCEs? How many cards do the MCEs have? How many DVEs? How many Dolby decoders?
- The input type and connector numbers for all inputs at the rear of the frame.
Which audio inputs are used with which video source?
Which inputs are for video keyers?
Which inputs are audio overs?
Which inputs are for squeezeback?
- The number and type of all embedded audio signals
Which are Dolby?
How many audio channels do you want to embed as output?
- Whether an NV9000 router control system is in use.
Which router outputs are to be used for router-preselect?
What are the source devices (identified by category and index) to be used in master control.

- Whether an Intuition XG graphics processor (with its companion software) is present.
Is the Intuition XG processor a single- or dual-channel processor?
How many XG layers (up to 4) do you want?
XG keys operate using MCE keyers. Can you sacrifice an MCE keyer (or two) while an XG key is in effect?
The presence of XG layer buttons on a panel mean that other functions must be sacrificed.
- What are the machine control and pre-roll parameters of the devices in your system?
Do you have at least one DC21 Device Controller?

There are many other higher-level issues that cannot be addressed in this guide. You might wish to read Miranda's application note *AN0004 Routing and Master Control* for information about building a master control system.

4 Operation

Chapter 4 provides operating instructions for the MasterConfig application.

Topics

New Configurations	50
General Settings	51
Machine Control	56
Main Sources	58
Source Groups	87
Over Sources	94
Audio Monitors and Meters	103
Keyer Sources	116
Logo Images	121
Logo Keyer Sources	124
Squeeze Settings¹	130
Squeeze 2 Settings²	138
RS-422 Communication Settings	144
Button Mapping — Main Source	147
Button Mapping — Over Source	150
Misc. Settings	152
Video Effect and Over Settings	157
Transition and Fade to Black Settings	161
GPI Inputs	163
GPI Outputs	165
Wing Outputs³	169
Aux Outputs⁴	170
ExtRtrSrc Settings (for MCEs)	172
ExtRtrSrc Settings (for MCPMs)	189
Intuition XG	196

These topics cover the 21 individual configuration pages. You should always start a new configuration by completing the *general settings*. (Most MCPMs use a subset of the 21 configuration pages.)

-
1. Not for MCPM-MK-SD or -MK-HD.
 2. MCPM-SDHD and MCE only.
 3. MCPM-HD, -HD2, and -SDHD only.
 4. MCE only.

New Configurations

Choose 'New' from the 'File' menu to create a new configuration. The 'New Configuration' dialog appears:

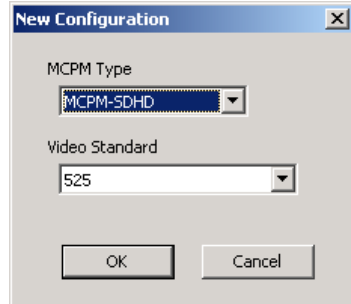


Fig. 4-1: New Configuration Dialog (Sample)

It is in this dialog that you specify the MCPM type for the configuration and the video standard for that MCPM type. MCEs are included in the list. The standards available in the drop-down menu depend on the MCPM type.

Click 'OK' to create the new configuration. Click 'Cancel' if you do not want to create a new configuration. Once you have created a new configuration, it becomes bound to the MCPM type and video standard you have chosen. If you make a mistake, you can simply discard the new configuration and start over.

As a reminder, there are 7 types of MCPMs:

MCPM-SD	MCPM-MK-SD	MCPM-SDHD
MCPM-HD	MCPM-MK-HD	MCE
MCPM-HD2		

Also as a reminder, there are two categories for video standard:

For SD systems (MCE or other), you can select either 525 or 625.

For HD systems, you can select 1080i 59.94 Hz, 1080i 50 Hz, or 720p 59.94 Hz.

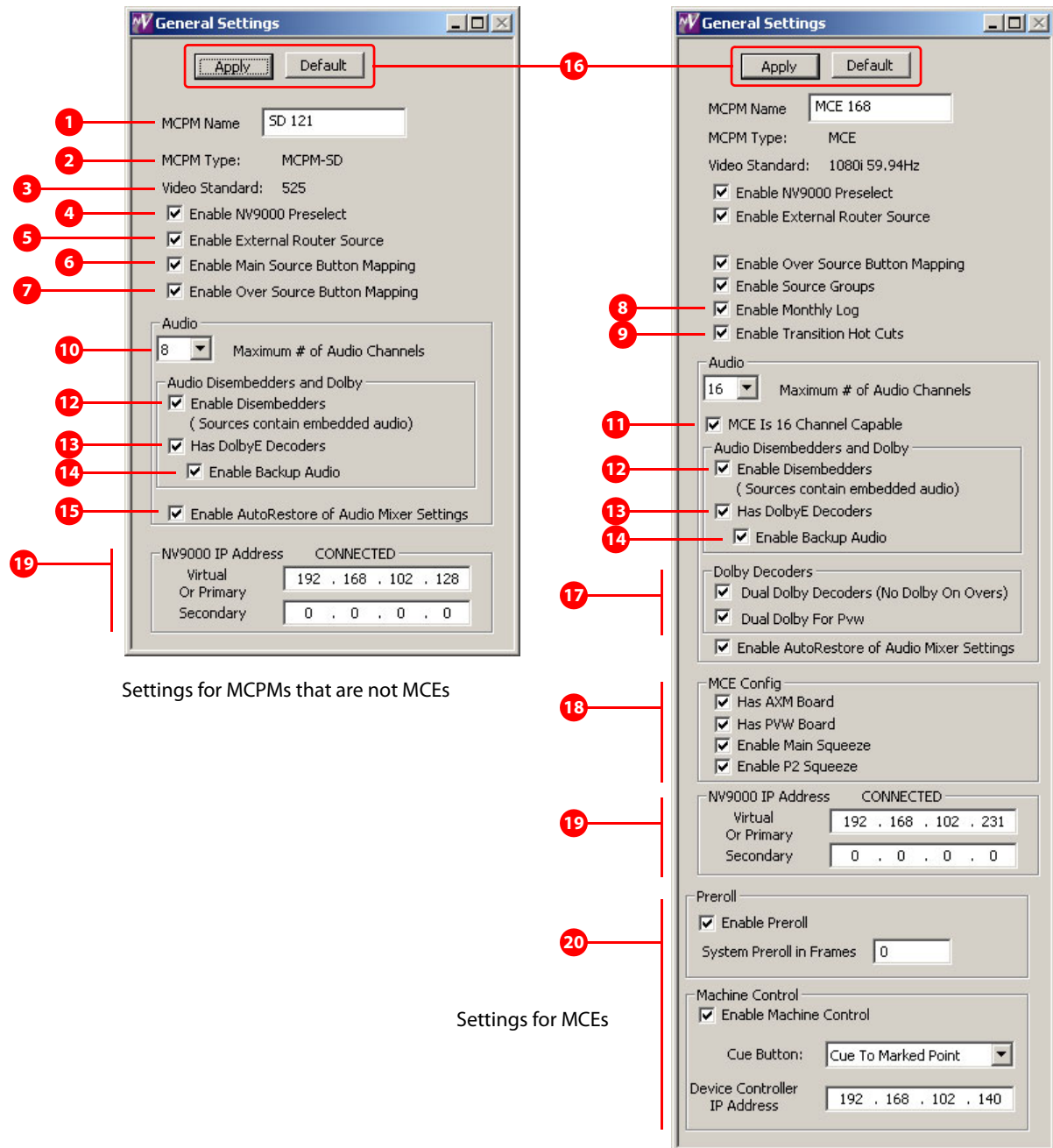
For HD MCEs, the choices are:

1080i 50 Hz	1080i 59.94 Hz
720p 50 Hz	720p 59.94 Hz

Configurations for one type/standard combination cannot be applied to MCPMs (or MCEs) of another type or standard.

General Settings

The 'General Settings' configuration page defines fundamental MCPM attributes:



Settings for MCPMs that are not MCEs

Settings for MCEs

Fig. 4-2: General Settings Page (Sample)

Follow these guidelines to enter your MCPM's general settings:

- 1 The 'MCPM Name' field displays the MCPM or MCE name, up to eight characters in length. This is simply a readable tag that is associated with the MCPM's IP address. When you read a configuration from an MCPM or MCE, its name is displayed here. You can enter or change the name in this field.
- 2 The 'MCPM Type' field displays the MCPM type. The MCPM type was specified when the configuration was created. This setting identifies the MCPM(s) or MCE(s) to which this configuration can apply.
- 3 The 'Video Standard' field displays the video standard for the MCPM or MCE. The video standard was specified when the configuration was created.
For SD systems, you will have selected either 525 or 625.
For HD systems, you will have selected 1080i 50Hz, 1080i 59.94Hz, or 720p 59.94Hz.
For an MCE, you will have selected 1080i 50Hz, 1080i 59.94Hz, 720p 50Hz, or 720p 59.94Hz.
This line rate *must* match the video reference signal supplied to the MCPM(s) or MCE(s) you want to configure. If the reference and the video rate do not match, the system might not pass video to the MCPM (or MCE) outputs.
- 4 Check the 'Enable NV9000 Preselect' box if you want to use any NV5100MC backplane input as a router pre-select source. Router pre-selection applies to main sources and over sources *only*. Router pre-selection lets operators select video and audio signals from potentially thousands of router sources.
When router pre-select is enabled, a "Pre-select" section appears in the 'Main Sources' configuration page. We recommend you have an NV9000 router control system properly configured and connected to the MC network when configuring these functions.
- 5 Check the 'Enable External Router Source' box if you want to use router sources as main sources, over sources, keyer sources, or squeeze image sources. See [External Router Sources](#) on page 42 for more information.
Checking this option enables the '[ExtRtrSrc Settings \(for MCEs\)](#)' configuration page.
When this feature is enabled and you have enabled specific groups of router sources in the 'ExtRtrSrc Settings' configuration page, "external router source" options appear in related configuration pages. We recommend you have an NV9000 router control system properly configured and connected to the MC network when configuring these functions.
- 6 Check the 'Enable Main Source Button Mapping' box if any of these points apply to you.
 - You have more than 16 main sources.
 - You want a specific source-to-button mapping, not the default.
 - You want operators (or automation) to be able to assign main sources to a button.Checking this option enables the 'Button Mapping - Main Source' configuration page with which you define main-source-to-button mappings. If you do not check this option, that page will not be available.
We recommend that you check this option. You can also enable main button mapping later.
 - ▲ The 'Enable Main Source Button Mapping' check box is absent if you check 'Enable Source Groups'. Button mapping and source groups are mutually exclusive concepts that accomplish the same purpose.

7 Check the 'Enable Over Source Button Mapping' box if any of these points apply to you:

- You have more than 2 audio over sources.
- You want a specific source-to-button mapping, not the default.
- You want operators (or automation) to be able to assign over sources to a button.

Checking this option enables the 'Button Mapping - Over Source' configuration page with which you define over-source-to-button mappings. If you do not check this option, that page will not be available.

We recommend that you check this option. You can also enable over button mapping later.

8 'Enable Source Groups'

(This option appears only when you are editing an MCE configuration.)

Check this option if you want the MCE to use *source groups*. Source groups are groups of main sources. The sources in the group are assigned to specific positions among a panel's main source buttons. A panel operator can then select one source group or another and use the sources that appear subsequently on the panel's buttons.

Checking this option enables the '[Source Groups](#)' configuration page, in which you can define the source groups for an MCE configuration.

- ▲ In the MCE in which source groups are enabled, bank selection is disabled. In addition, the button mapping page of panels controlling the MCE has an entry for source groups, but lacks an entry for mapping main source buttons. For MCEs where source are not enabled, or for other MCPM types, the panels' button mapping page has the entry for mapping main sources and lacks the source group function.

9 'Enable Monthly Log'

(This option appears only when you are editing an MCE configuration.)

Check this option to enable a monthly log. Otherwise, there will be no monthly log.

This option does not affect the startup log and the running log. You can browse the monthly logs using *MasterDiag* and save any log file to a directory where you can read the log.

10 In the 'Maximum # of Audio Channels' field, specify the maximum number of audio channels that you wish to control. MCPMs allow 2, 4, 6 or 8 channels. The MCPM has an 8-channel audio processor and embeds 8 audio channels in program output no matter how many channels you use. MCEs allow 2, 4, 6, 8, 10, 12, 14, or 16 channels. MCEs have 16 internal audio channels and allow up to 16 embedded audio channels. MCEs embed 16 channels in program output no matter how many channels you use. Any unused channels are forced to silence.

This entry affects the number of audio channels that appear in the 'Audio Channels' section of the 'Main Sources' configuration page, and the number of channels that appear in the audio menus of a control panel.

11 'MCE is 16 Channel Capable' (for MCEs only).

Under most conditions, this check box should be checked. What it does is enable all the advanced features of the MCE, including 2048 main sources and 16-channel audio.

It is only when you want an MCE to be compatible with older MCPMs, for instance so that an MCE can be ganged with an MCPM, that you would uncheck this check box.

- 12 Check the 'Enable Disembedders' box if you want to use main sources having embedded audio. Clear the check box if the MCPM or MCE does not need to process embedded audio. When the disembedders are enabled, additional items appear in the 'Main Sources' page that allow you to configure and route the embedded audio sources. It is always safe to check this box, even if no sources have embedded audio.
- 13 Check the 'Has DolbyE Decoders' box if your MCPM includes the Dolby E decoder option. Clear the check box if the Dolby E option is not installed.
 - ▲ Dolby E audio is not available in the MCPM-MK-SD or -MK-HD. If you have selected either of these as the MCPM type, MasterConfig does not display any Dolby E options.
 - ▲ MCEs can include up to 8 Dolby E modules.
 - ▲ Dolby E requires an interlaced video reference format. Dolby E is compatible with a 720p video source as long as the video reference is 525i, 625i, or 1080i.
- 14 If you check the 'Has DolbyE Decoders' box, an additional check box ('Enable Backup Audio') appears. Check this box if you wish to specify backup source(s) for your Dolby-E main sources. The actual backup source you choose depends on how your system hardware is set up. When you check the 'Has DolbyE Decoders' box, an additional checkbox appears in the 'Main Sources' configuration page, providing additional Dolby E options.
- 15 Check the 'Enable AutoRestore of Audio Mixer Settings' box to enable "Auto Restore" capability for all main sources. If you check this box, an 'Auto Restore Audio Mixer Settings' appears on the [Main Sources](#) configuration page. When it is enabled in the 'General Settings' page, 'Auto Restore' can be applied to main sources individually. What "Auto Restore" does is cause the main source to revert to its default audio settings every time it is chosen on the preset bus.
- 16 Click 'Apply' to commit all changes, updating the configuration with the new general information. Or click 'Default' to start over with default settings. You can change general settings at any time. (Note that some configuration data that depend on general settings can be affected.)
- 17 Dolby Decoder Options. This section appears only if you are configuring an MCE. Check the boxes in this section that apply:

As of software release 6.3.3, it is possible to use two Dolby decoders for a source. Thus, it is possible to have Dolby stream 1 assigned to audio output channels 1–8 and Dolby stream 2 assigned to audio output channels 9–16.

Note that, for Dolby, the MCE requires an AXM board. The AXM board can have from 0 to 8 Dolby decoders.

If the MCE has no preview board, the AXM's decoders might be enough to support unrestricted dual decoder operation. In such a configuration, 4 decoders are allocated to program and preset main sources and 4 decoders are allocated to program and preset over sources. That accounts for all 8 decoders.

If the MCE has a preview board, you can have dual decoders on either the program/preset overs or on preview main sources, but not both. These are the options:

- No preview board. The option is simply whether you want dual Dolby decoders:

Dolby Decoders
 Dual Dolby Decoders

This allows dual decoders for main sources and over sources on program and preset.

- Preview board plus dual decoders for main sources on program, preset, and preview.

Dolby Decoders
 Dual Dolby Decoders (No Dolby On Overs)
 Dual Dolby For Pvw

- Preview board plus dual decoders for main sources and overs on program and preset:

Dolby Decoders
 Dual Dolby Decoders (No Dolby On Pvw)
 Dual Dolby For Pvw

This does not allow dual decoders for the preview bus.

Note that the dual Dolby decoder options allow an MCE with no preview board and 4 Dolby decoders (A–D) to support dual decoders for main sources but not over sources.

The dual Dolby decoder options affect certain fields in the ‘Main Sources’ page.

- 18 MCE Configuration Options. This section appears only if you are configuring an MCE. Check the boxes in this section that apply:
- Has AXM board. Check this box if the MCE includes an MCE-AXM (audio expansion) card.
 - Has PVW board. Check this box if the MCE includes an MCE-PVW (preview) card.
 - Enable main squeeze. Check this box if the MCE has DVE cards appropriate for basic squeezeback. (The term “main squeeze” means the squeeze background image.)
 - Enable P2 squeeze. Check this box if the MCE has the additional DVE cards appropriate for image 2 squeezeback. (The term “P2 squeeze” means squeeze image 2.)

- 19 NV9000 network address(es).

This section does not appear unless you have checked ‘Enable NV9000 Preselect’ or ‘Enable External Router Source’ (and you have clicked ‘Apply’).

If you have a NV9000 system connected to your master control system, you should enter the IP addresses of the primary (and optionally, secondary) NV9000 controllers here.

However, if your NV9000 system has a virtual IP address, enter that for the primary address.

If you have enabled external router sources and **not** router pre-select, this section of the general settings page changes:

NV9000 IP Address CONNECTED
 Virtual 192 . 168 . 102 . 230

In this case, you **must** enter a virtual IP address. (This requires that the NV9000 system support virtual IP addresses.) The ‘ExtRtrSrc’ page also requires you to enter the virtual IP address because external router sources require the use of a virtual IP address.

- 20 Machine control settings.

Machine control is available only for MCEs. See [Machine Control](#), following, for information.

21 Continue with the next page that you wish to edit. If you have a new configuration, that window would typically be the 'Main Sources' window.

Machine Control

There are 2 somewhat related parts to this general settings section:

- [Machine Control](#).
- [Pre-Roll](#). (Pre-roll also applies to Intuition XG operation.)

Machine Control

Place a check in the 'Enable Machine Control' checkbox to enable *machine control* features here, in the [Main Sources](#) configuration page, and ultimately in the MCE.

When the box is checked, these machine control options appear:

- Cue Button.
- Device Controller IP Address.

Cue Button

This option controls an MCE function that is triggered when the operator presses a 'Cue' button on a panel.

One choice is for the MCE to cue the device to the "marked point"—the beginning of the first frame of desired video. (A 'Mark' button on a control panel sets the "marked" point.)

The other choice is for the MCE to cue the device to the "pre-roll point"—the place at which to begin the pre-roll. (The pre-roll point is in advance of the mark point by a main source's pre-roll value.)

Device Controller IP Address

The IP address given here is the address on the master control network of the DC21 device controller that performs machine control on behalf of the MCE. This field is **not** optional when machine control is enabled.

▲ A DC21 is a requirement for machine control.

Pre-Roll

Place a check in the 'Enable Preroll' checkbox to enable *pre-roll* features, here, in the [Main Sources](#) configuration page, and ultimately in the MCE.

When the box is checked, the 'System Preroll in Frames' field appears. The system pre-roll value applies during all pre-roll transitions, whether under automation or under operator control. The system pre-roll is used this way:

A transition's pre-roll period is:

$$\max(\text{effective pre-roll}, \text{system pre-roll})$$

where *effective* pre-roll is:

$$\max[\text{all (source pre-roll + source latency)}]$$

(More than one source might be subject to pre-roll during a transition.)

A system pre-roll value of 0 essentially removes system pre-roll from calculations. If system pre-roll is longer than any effective pre-roll supported by the MCE, then all pre-roll transitions will have exactly the same pre-roll period.

- ▲ If your MCE processes interlaced video, use a pre-roll time based on 25 or 29.97 frames per second. If it processes a progressive format, use a pre-roll value based on 50 or 59.94 frames per second. That is, the pre-roll value for progressive formats is double the pre-roll value for interlaced formats.

(If pre-roll is enabled) each main source has a pre-roll value of its own, possibly 0. This pre-roll value defines the operating characteristics of that particular source. The MCE calculates the pre-roll point for all devices used in a transition according to the maximum of (1) the pre-roll value of those devices and (2) the system pre-roll value.

A system pre-roll value of 0 means that it is never considered in calculations. The maximum system pre-roll value is 300 (frames).

- ▲ Pre-roll is used when media such as VTRs are present in your master control system.
- ▲ Devices subject to machine control do not necessarily have pre-roll values.

Main Sources

The 'Main Sources' page lets you define an MCPM's or MCE's main sources (video inputs with associated audio). This is a representative view of the page as it might appear for an MCE:

Main Source List

- 33ne (selno=1)
- D_B_U8 (selno=2)
- D_B_L8 (selno=3)
- preselec (selno=4)
- dbby69 (selno=5)
- 2dby6868 (selno=6)
- dolby68 (selno=7)
- DB Bkup (selno=8)
- nenobk (selno=9)
- EDnobk (selno=10)
- ED (selno=11)
- ED_U_8 (selno=12)
- ED_L_8 (selno=13)
- ED2 (selno=14)
- 2DoEmb (selno=15)
- 2DoEmb (selno=16)
- 37ne (selno=17)
- 33disem (selno=18)
- 33pthru (selno=19)
- 38ne (selno=20)
- 38disem (selno=21)
- 38pthru (selno=22)
- dbbk67 (selno=23)
- dbbk67i (selno=24)
- dbbk67u (selno=25)
- dbbk68 (selno=26)
- dbbk68i (selno=27)
- dbbk68u (selno=28)
- EDbk (selno=29)
- ED_U_8bk (selno=30)
- ED_L_8bk (selno=31)
- LUMA RMP (selno=32)
- DTV (selno=33)
- CBARS (selno=34)
- HDVG (selno=35)
- DVHS1 (selno=36)
- DTV1 (selno=37)
- Purple1 (selno=38)
- Gray1 (selno=39)
- CBars (selno=40)
- auto 41 (selno=41)
- auto 42 (selno=42)

Options Section

Auto Restore Audio Mixer Settings Has Backup Audio

go to Backup

Audio Channels Section

Use	Pass from Thru Dolby	Dolby Xpt	Audio -108.0 to Channel	Gain 12.0 dB	Invert Phase
<input type="checkbox"/>			1		
<input type="checkbox"/>			2		
<input type="checkbox"/>			3		
<input type="checkbox"/>			4		
<input type="checkbox"/>			5		
<input type="checkbox"/>			6		
<input type="checkbox"/>			7		
<input type="checkbox"/>			8		
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Ch1/2	9	0.0	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Ch3/4	10	0.0	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Ch5/6	11	0.0	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Ch7/8	12	0.0	<input type="checkbox"/>
<input checked="" type="checkbox"/>			13	0.0	<input type="checkbox"/>
<input checked="" type="checkbox"/>			14	0.0	<input type="checkbox"/>
<input checked="" type="checkbox"/>			15	0.0	<input type="checkbox"/>
<input checked="" type="checkbox"/>			16	0.0	<input type="checkbox"/>

Machine Control Section

Preroll duration: 15

Machine Control Type / Protocol: Use GPIO

Control Port or GPIO Pair: GPO Pair 1/2

Default Trans Type: Use System Trans Type

Set Default Trans Rate: 30

Bulk Add and Delete

Bulk Add Window

Bulk Delete Window

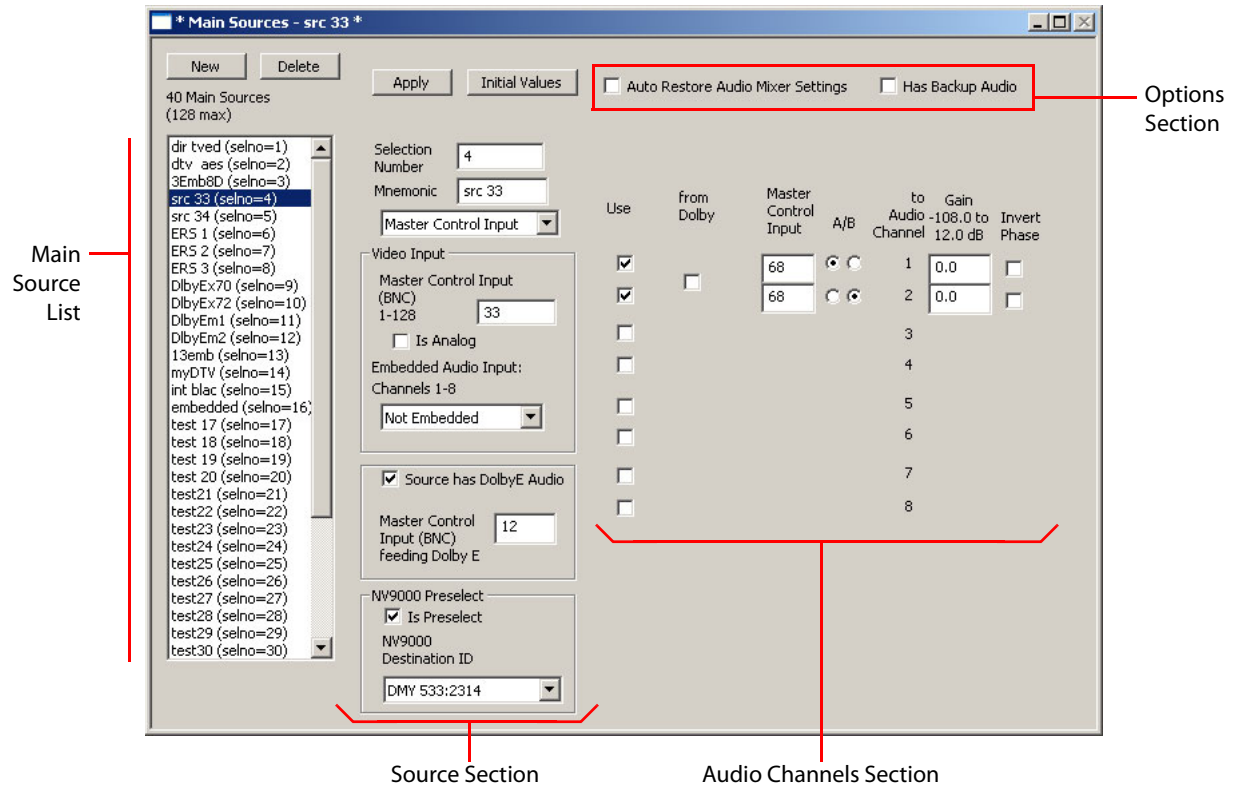
The main sources governed by this configuration page can include:

- Local sources (video connections at the master control frame's backplane).
- External sources (devices connected to routers under an NV9000 control system).
- External squeeze "background" images (i.e., squeeze 1 images).
- Local or external squeeze "image 2" images (i.e., squeeze 2 images).

The meanings of "main source" and "squeeze source" overlap.

A main source can also be internally generated black/silence.

This is a view of the 'Main Sources' page as it might appear for an MCPM-SD:



There are differences in the way MasterConfig handles the main sources of MCEs and MCPMs. The page for MCPM-SDs has fewer fields, only 8 audio channels, and no machine control fields. Machine control fields are available only for MCEs.

The main source pages for other MCPM types are similar to the page for the MCPM-SD, with some variation.

Purpose

In general, this is what the 'Main Sources' page does:

- Names the main sources. (The source names appear on the buttons of control panels.)
- Identifies the video input for a main source.
- Identifies the audio sources and describes the audio processing for a main source.
- Creates a permanent association between the video and audio sources selected.
- For MCEs, defines the machine control (and pre-roll) characteristics of the main source.

Your master control system has video and audio devices connected to inputs at the rear of the frame. These are *local* devices or *local* sources. This configuration page tells the MCPM which of those inputs to use, and how they are used.

This page also configures router pre-select sources. A router pre-select source identifies a router *destination* connected to the backplane of the NV5100MC frame. During operation, master control operators choose the router *source* to route to that destination. The router source becomes available — through the backplane — as a main source. (Router pre-select must be enabled in the 'General Settings' page.)

This page also configures “external router sources”—those feeding one or more routers in an NV9000 router control system. The source’s connections are defined in the NV9000 configuration. (External router sources must be enabled in the ‘General Settings’ page.)

The set of external router sources is determined during *configuration* (of the MCE or MCPM). The set of router pre-select sources is determined during NV9000 configuration and might vary during day-to-day operation.

The source list defined in this page can include squeezeback images. It **must** include squeezeback images if any squeezeback effect (regular or enhanced) uses a “main source.”

Regardless of the source type, the video portion of a main source appears as a video signal at a BNC connector at the backplane of the NV5100MC frame. Associated with the video source are (up to) 16 audio signals. Those audio signals can vary in type and origin. Thus, the audio portions of the ‘Main Sources’ configuration page vary and can be somewhat complex.

- ▲ The video signals you select must be compatible with the type and video standard of the MCPM or MCE.
- ▲ Local sources for an MCPM-MK-HD are from the 16 BNCs on the -MK-HD’s own backplane module only.

Page Organization

The ‘Main Sources’ configuration page has 6 sections:

- 1 The [main source list](#) shows sources that have already been created. They can be edited.
- 2 The [source section](#) specifies the video source and the type of audio to associate with the video. Choices for audio, which depend on options chosen under [General Settings](#), include:
 - Discrete AES or discrete analog audio.
 - Audio embedded in the video source.
 - Dolby E format, discrete or embedded, single or dual decoders.You can also specify the duration (in frames) of the pre-roll period for the selected source.
- 3 The [audio channels section](#) lets you specify the audio source and details of each audio channel to be associated with the video source.
- 4 The [machine control section](#) lets you specify the machine control and pre-roll characteristics of the main source.
 - (Machine control options assume the presence of a DC21 Device Controller in the master control system.)
- 5 The [options section](#) allows you to configure backup audio for embedded Dolby E and to enable or disable “auto restore” for the main source. Either or both of these options might not be enabled (visible).
- 6 The [bulk add and delete](#) section allows you to add multiple sources at one time and to delete multiple sources at one time. (It is available only for MCEs.)

Main Source List

The main source list includes all the main sources you have defined for the MCE or MCPM. The list does not have to include all sources, only those sources relevant to the MCE or MCPM. As mentioned, main sources can include local, external, router pre-select, or squeeze image sources.

If the list contains external router sources, the list shows the NV9000 configuration's names for the sources, and their database IDs, in parentheses:

```
ext0001 (selno=122) (SRC 0001:1)
ext0002 (selno=123) (SRC 0002:2)
ext0003 (selno=124) (SRC 0003:3)
ext0004 (selno=125) (SRC 0004:4)
ext0005 (selno=126) (SRC 0005:5)
ext0006 (selno=127) (SRC 0006:6)
ext0007 (selno=128) (SRC 0007:7)
ext0008 (selno=129) (SRC 0008:8)
ext0009 (selno=130) (SRC 0009:9)
ext0010 (selno=131) (SRC 0010:10)
```

To configure a source, it must be in the main source list. You can add entries to the list and remove or copy entries in the list. The mnemonic (name) of a source should be meaningful to control panel operators.

The list is ordered by selection number (selno). Be careful when numbering the sources because it is a nuisance to renumber them. Selection numbers may range from 1 to the maximum (128, 64, or 16, depending on the MCPM, or 2048 for MCEs). Gaps in the numbering are permissible.

- ▲ If you have not checked the 'Enable Main Source Button Mapping' option in the general settings page, the main source selection numbers are also button numbers. This *de facto* mapping places source n on button n where $1 \leq n \leq 16$ and sources with other selnos are inaccessible. See [Button Mapping—Main Source](#) on page 147.
- ▲ For MCEs, the 'Enable Main Source Button Mapping' option is not available if you have checked 'Enable Source Groups' in the general settings page. We recommend that you enable either button mapping or source groups.

To Create a Single New Source

Click 'New'. You may edit the source's parameters now or at any time. Click 'Apply' to commit changes to the main source definition.

- ▲ If you are developing an MCE configuration, you can create more than one source at time using the 'Bulk Add Window' button below the source list. See [Bulk Add and Delete](#) on page 62 following.

To Delete a Source

Highlight the source in the list and click 'Delete'.

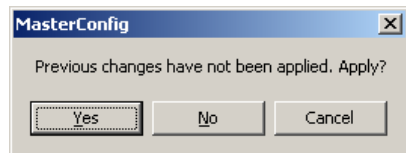
- ▲ If you are developing an MCE configuration, you can delete more than one source at time using the 'Bulk Delete Window' button below the source list. See [Bulk Add and Delete](#) on page 62 following.

To Copy a Source

Highlight the source in the list. Give it a new *unused* selection number (selno) and click 'Apply'. If you choose an existing selection number, you will overwrite an existing source definition.

To Edit a Source

Highlight the source in the main source list and modify the parameters you want to change. Click 'Apply' to confirm your changes at any time. If you wish to *cancel* your changes, either click another source or click 'New'. A query appears:



Click 'No' to discard your changes.

- ▲ Not all changes can be undone. In particular, if you have clicked 'Initial Values' the audio channel defined for the main source cannot be undone, except by manually changing the values.

Bulk Add and Delete

If you are developing an MCE configuration, you can create more than one source at time using the 'Bulk Add Window' button below the source list. And you can delete more than one source at time using the 'Bulk Delete Window' button below the source list.

- ▲ Bulk additions and bulk deletions are available only for MCEs.

When you click the 'Bulk Add Window' button, an 'Add Sources' dialog appears. There are two forms of the dialog, depending on whether you choose to add "master control" or external router sources. (Master control sources are those connected directly to the backplane of the NV5100MC frame. These are also called "local" sources.)

Either dialog allows you to specify

- The number of sources to add
- A base name for the new sources
- Whether to choose the starting number for the new sources automatically
- Several other parameters that depend on whether you are adding a "master control" (or local) source or an external router source.

When you click the 'Bulk Delete Window' button, a 'Delete Sources' dialog appears. In this dialog you can select the main sources to delete. Your selection does not have to be contiguous.

See [Bulk Add for 'Master Control' Sources](#) on page 63.

See [Bulk Add for 'External Router' Sources](#) on page 65.

See [Bulk Delete](#) on page 68.

Bulk Add for 'Master Control' Sources

This is the bulk add dialog for "master control" sources:

Fig. 4-3: Add Sources Dialog for "Master Control" Inputs

At the top left is a drop-down menu that lets you select whether to add local (i.e., master control) sources or external router sources. The fields in the window change, depending on which mode you select.

These are the fields of the window that are applicable to "master control" sources:

- **Template**

At the top right is a checkbox. If you check this box, the bulk add operation uses the (existing) source you have selected in the main sources window as a pattern, or "template," for creating the new sources. That means the new sources will take on the audio configuration of the template.

For master control (i.e., local) sources, if you choose a template, you should choose a local source as your template.

- **Starting Number**

Below the upper checkbox is a second checkbox. If you check this box, the bulk add operation will use the lowest available unused "selno" as starting point and work upward from there, consuming only unused selnos.

If you leave that checkbox unchecked, you should enter a valid selno in the 'Starting Source Number' field.

Note that 0 (zero) is not a valid selno.

- **Four Letter Mnemonic**

Enter up to 4 characters in this field. The name of each source created will have these characters as a base and a 4-digit numerical suffix. (If the 4th character of this string is a space, the bulk add operation will generate source names having a space between the base name and the suffix.)

- Number of Sources to Add

In this field, enter the number of sources you want to add to the source list.

- Starting Video BNC

Enter the video connector number for the first of your new sources. The connector numbers for your new sources will start at this connector number and work upward from that. These connectors are at the backplane of the NV5100MC frame supporting the sources. The assumption is that there are, or will be, real cable connection for these sources.

- Starting Audio BNC

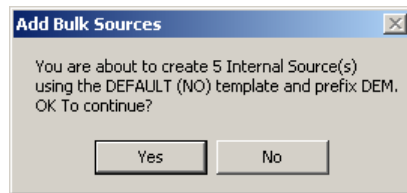
Enter the audio connector number for the first of your new sources. (If the new sources have no audio connectors, leave this field blank.)

The audio connector numbers for your new sources will start at this connector number and work upward from that. These connectors are at the backplane of the NV5100MC frame supporting the sources. Again, the assumption is that there are, or will be, real cable connection for these sources.

- ▲ It is expected that you might have to make some minor adjustments to the configuration of the automatically generated sources.

Operation

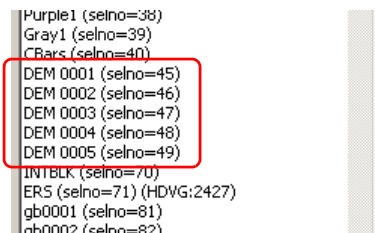
Specify the parameters for your new sources and click 'Add Sources'. The bulk add operation gives you a confirmation message about your addition before it continues:



Click 'Yes' if you accept the confirmation statement. The operation will respond with a completion message:

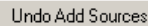


This is a typical result, and the result of the settings in Figure 4-3:



Undo

After you add sources, an 'Undo Add Sources' button appears in the bulk add window:

A rectangular button with the text "Undo Add Sources" inside.

If you make a mistake, you can “undo” the bulk add by clicking the 'Undo Add Sources' button. The button is persistent: it remains available until you open another configuration or restart MasterConfig.

Bulk Add for 'External Router' Sources

This is the bulk add dialog for “external router” sources:

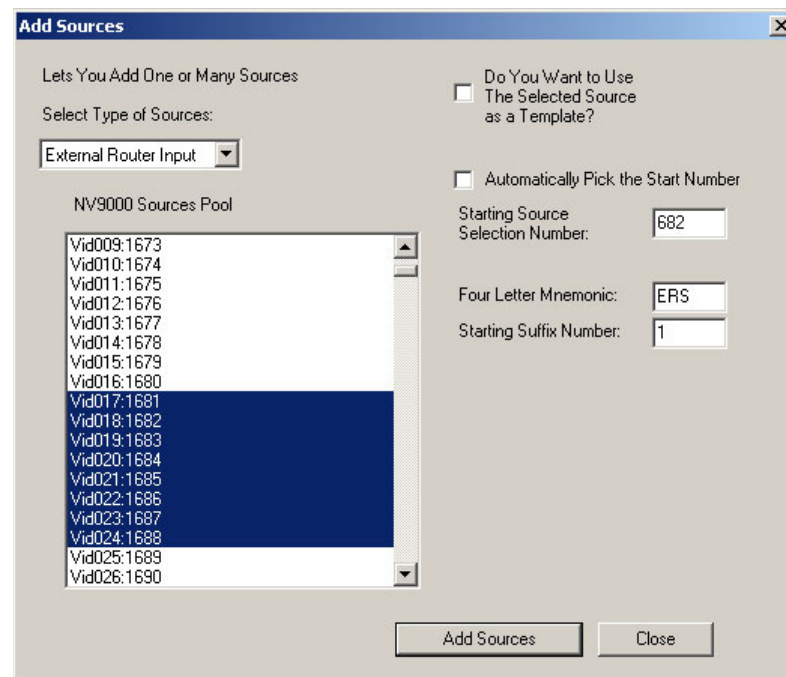


Fig. 4-4: Add Sources Dialog for External Router Sources

At the top left is a drop-down menu that lets you select whether to add local (i.e., master control) sources or external router sources. The fields in the window change, depending on which mode you select.

These are the fields of the window that are applicable to “external router” sources:

- NV9000 Sources Pool

The external router sources to be added are the ones you select in the 'NV9000 Sources Pool' list. You can select any sources you want in this list. Your selection does not have to be contiguous.

The sources you add are given local names consisting of a 4-letter mnemonic and a numeric index. The indexes are assigned to the sources in the order in which they appear in the 'NV9000 Sources Pool' list.

The number of sources you choose is the number of sources that will be added.

- **Template**

At the top right is a checkbox. If you check this box, the bulk add operation uses the existing source you have selected *in the main sources window* as a pattern or “template” for creating the new sources. The new sources will take on the audio configuration of the pattern.

For external router sources, you should choose an existing external router source as your template.

- **Mnemonic**

Enter up to 4 characters in this field. The name of each source created will have these characters as a base and a 4-digit numerical suffix. (If the 4th character of this string is a space, the bulk add operation will generate source names having a space between the base name and the suffix.)

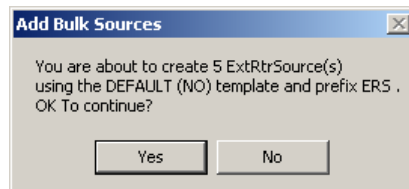
- **Starting Number**

Below the upper checkbox is another checkbox. If you check this box, the bulk add operation will use the lowest available unused “selno” as starting point and work upwards from there.

If you leave that checkbox unchecked, you should enter a valid selno in the ‘Starting Source Number’ field (which is not shown in the illustration).

Operation

Specify the parameters for your new sources, choose one or more sources from the NV9000 source pool, and click ‘Add Sources’. The bulk add operation gives you a confirmation message about your addition before it continues:



Click ‘Yes’ if you accept the confirmation statement. The operation will respond with a completion message:



This is a typical result:

```

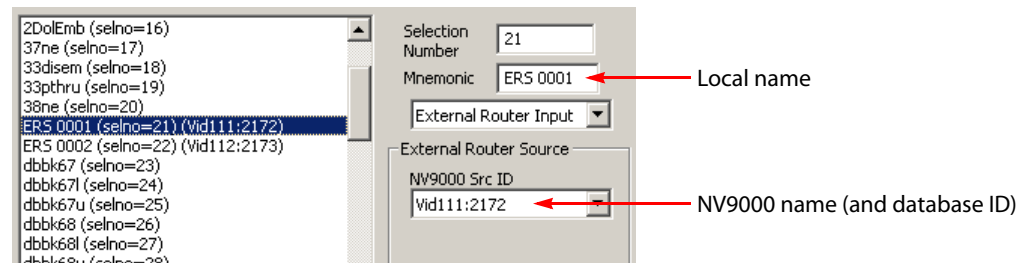
33pthru (selno=19)
38ne (selno=20)
ERS 0001 (selno=21) (Vid111:2172)
ERS 0002 (selno=22) (Vid112:2173)
dbbk67 (selno=23)
dbbk67l (selno=24)
dbbk67u (selno=25)
dbbk68 (selno=26)
dbbk68l (selno=27)
dbbk68u (selno=28)
EDbk (selno=29)
Gray1 (selno=39)
CBarc (selno=40)
ERS 0003 (selno=41) (Vid113:2174)
ERS 0004 (selno=42) (Vid114:2175)
ERS 0005 (selno=43) (Vid115:2176)
ERS 0006 (selno=44) (Vid116:2177)
DEM 0001 (selno=45)
DEM 0002 (selno=46)
DEM 0003 (selno=47)

```

The new sources added are named ERS 0001–ERS 0006.

Here, the bulk add operation of this example had an automatic starting point, using the lowest unused “selnos.” The new sources appear in separate places in the list, that is, wherever there were unused selnos.

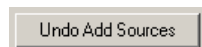
The new sources have individual names in the configuration and they also have names defined in the NV9000 configuration. In this example, the source named ERS 0001 is named Vid111 in the NV9000 system:



You can choose whether the NV9000 names or the MasterConfig names appear on panel buttons in the [ExtRtrSrc Settings \(for MCEs\)](#) configuration page.

Undo

If you make a mistake, you can “undo” the bulk add by clicking the ‘Undo Add Sources’ button that appears after a bulk add:



Bulk Delete

When you click the 'Bulk Delete Button' in the main sources window, the 'Delete Sources' dialog appears:

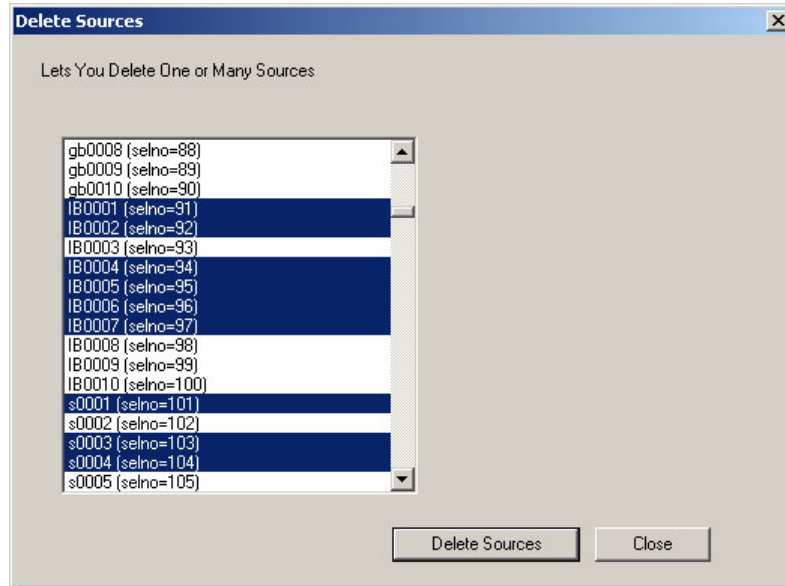
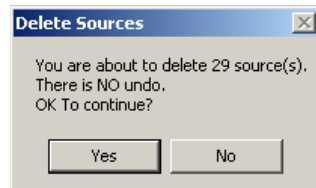
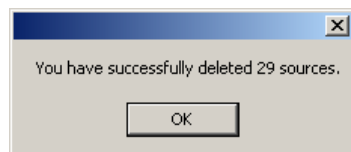


Figure 4-5. Bulk Delete Window

Highlight the sources that you wish to delete. Then click the 'Delete Sources' button. The following alert appears:



Click 'Yes' if you accept the confirmation statement. The operation will respond with a completion message:



Source Section

It is in the source section that you specify the type of main source and start to define the association between video and audio sources.

Parts of the source section vary according to choices you make in the 'General Settings' page and settings in the source section itself.

Selection Number

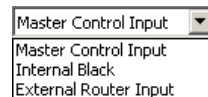
Either use the supplied value or enter a value from 1 to the maximum allowed. This number defines the source's position in the main source list. See [Selection Numbers](#) on page 38.

Mnemonic

Enter the name that you want to appear on a control panel's main source button, up to 8 characters. Use alphanumeric characters, spaces, or underbars. Although you can enter other characters, the panels will not display them.

Source Type Selection

Directly beneath the mnemonic field is a drop-down list for source type:

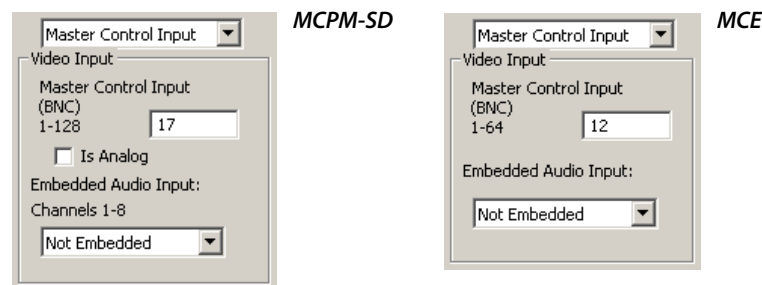


There are 3 choices:

- Master Control Input.
- Internal Black
- External Router Input.

Master Control Input

Choose 'Master Control Input' if you want a local video source — one that is connected directly at the NV5100MC backplane. The source section displays a 'Video Input' box:

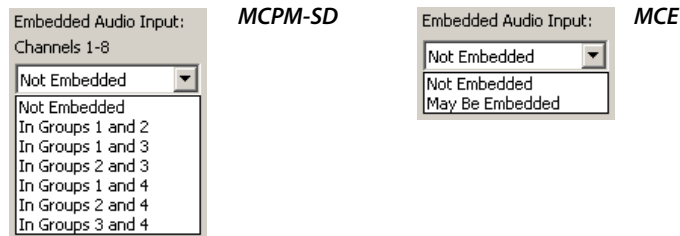


- Enter the BNC number of the input in the 'Master Control Input' field. (The BNC number is relative to the port numbering of the frame backplane unless you are configuring an MCPM-MK-HD, in which case the numbering is relative to the -MK-HD's backplane.)
- Check the 'Is Analog' box if the selected source is analog video.

Analog inputs are converted to SD at the input card. If the video standard of the MCPM is HD, the 'Is Analog' box is not present. There is no analog-to-HD conversion. There is no analog option for MCEs.

The choice you make in this field — if it is present — affects the content of the video input subsection and the audio channels section. Analog video **does not** contain embedded audio.

- If the general settings for the MCPM or MCE allow disembodied audio, the 'Embedded Audio Input' drop-down menu is present in the video input subsection. Otherwise it is absent.



If the video source does **not** have embedded audio, choose 'Not Embedded'.

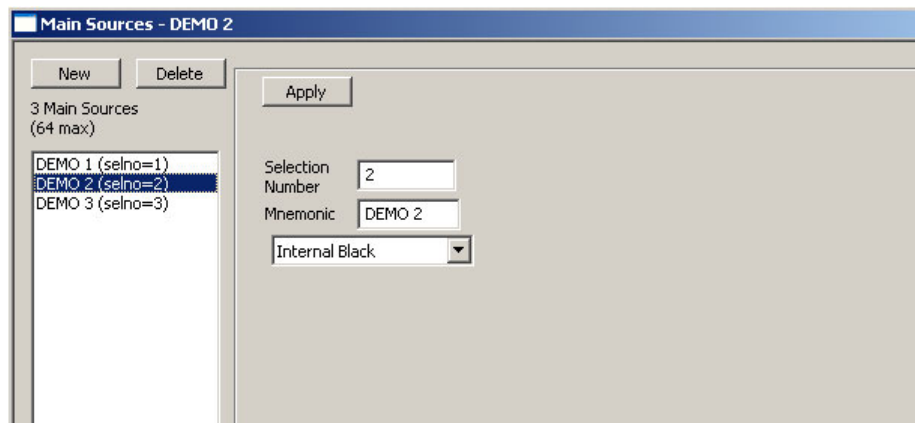
Otherwise, for MCEs, specify 'May Be Embedded'. Which embedded channels are to be used is specified in the audio channels section at the right.

For other MCPMs, however, you must specify in which AES groups the audio is to be found. If the input as analog, 'Not Embedded' is the only choice allowed.

The choice you make in this field — if it is present — affects the content of the Dolby E subsection and the audio channels section.

Internal Black

Choose 'Internal Black' if you want the main source to use the internal black/silence generator. If you do select this option, all other 'Main Sources' options disappear:



Audio for these sources is internally generated silence.

- ▲ The "mixer/keyers" (MCPM-MK-SD and -HD) do not provide an internal black signal.

External Router Input

- ▲ External Router Input is not available unless you have (1) enabled external router sources in the [General Settings](#) and (2) enabled external main sources in the [ExtRtrSrc Settings \(for MCEs\)](#) page.

Choose 'External Router Input' if you want an external video source — one that is connected to routers in an associated NV9000 router control system. If you choose this option, the source

section displays a drop-down list that allow you to select a source defined in the NV9000 configuration.

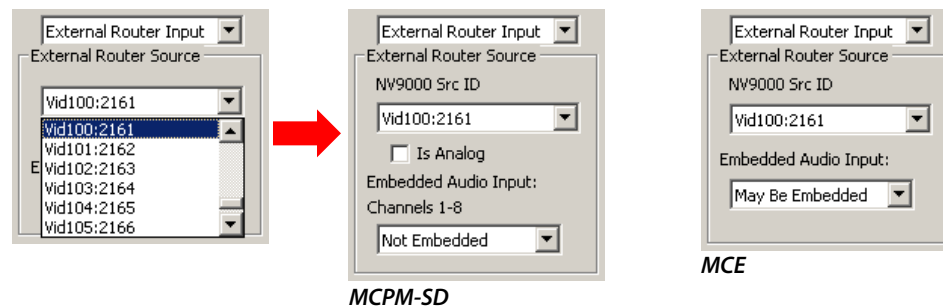


Fig. 4-6: External Main Source (Sample, MCPM-SD)

External router Input for MCEs and MCPMs is similar, but MCEs do not allow analog inputs and embedded audio for MCEs is handled in the audio channels section.

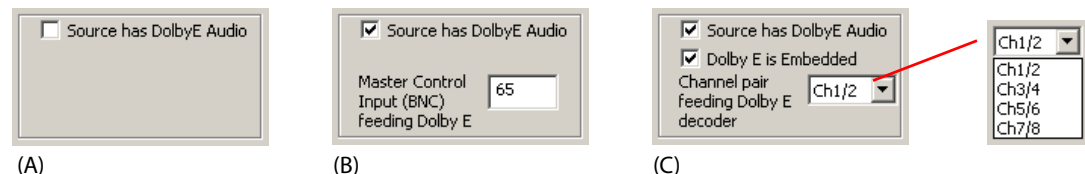
- ▲ If you don't have the NV9000 system connected during configuration, the drop-down list does not appear. In that case, you must enter by hand the database ID for the source you want.
 - Check the 'Is Analog' box (if present) if the selected source is analog video. Analog inputs are converted to SD at the input card. If the video standard of the MCPM is HD, the 'Is Analog' box is not present. There is no analog-to-HD conversion. There is no analog option for MCEs. The choice you make in this field — if it is present — affects the content of the video input subsection and the audio channels section. Analog video does not contain embedded audio.

Dolby E Subsection

This subsection of the configuration page describes the audio input when it is Dolby E encoded. The subsection is not present unless you check 'Has Main DolbyE Decoders' in the general settings page.

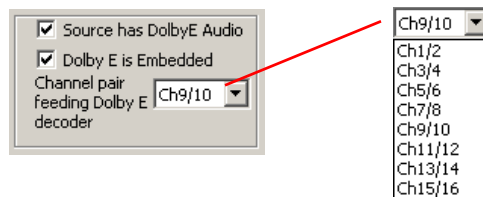
The appearance of the fields in this section change depending on what you have configured for 'Embedded Audio Input'.

The subsection has extra fields for MCEs that have dual Dolby decoders enabled (in the general settings). These samples illustrate some of the choices for MCPMs and MCEs that do **not** use dual Dolby decoders:



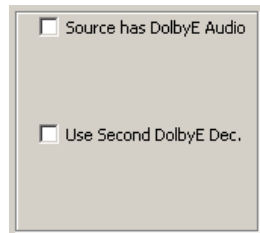
Follow these guidelines:

- Leave 'Source has DolbyE Audio' unchecked if the video source does **not** use Dolby E audio. No other options appear, as in sample (A). Otherwise you must specify the Dolby E source, as in samples (B) or (C). There are two choices:
 - A discrete Dolby E input. The video input can be analog or digital, but it does not have embedded audio. You must specify the input connector number, as in sample (B). It might or might not be a BNC connector.
 - The video source *does* have embedded audio, and the Dolby E audio can either be embedded or discrete. Check the 'Dolby E is Embedded' checkbox if it is embedded and choose the channel pair that is to feed the Dolby E decoders in the MCPM, as in sample (C). An MCE allows Dolby E from any channel pair:

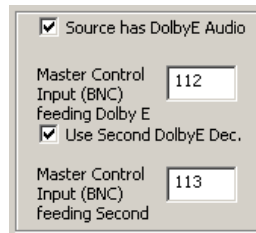


If the Dolby E audio is not embedded, specify an input connector as for sample (B).

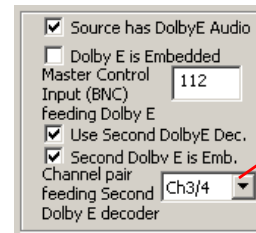
The following samples illustrate choices for MCEs that **do** use dual Dolby decoders:



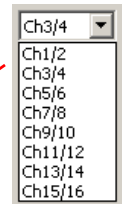
(D)



(E)



(F)



Follow these guidelines for dual decoders:

- Leave both 'Source has DolbyE Audio' and 'Use Second DolbyE Dec.' unchecked if the video source does **not** use Dolby E audio. No other options appear, as in sample (D). Otherwise you must specify the Dolby E source, as in samples (E) or (F). There are two choices *for each decoder*:
 - A discrete Dolby E input. The video input can be analog or digital, but it does not have embedded audio. You must specify the input connector number, as in sample (E). It might or might not be a BNC connector.
 - The video source *does* have embedded audio, and the Dolby E audio can either be embedded or discrete. Check the 'Dolby E is Embedded' checkbox if it is embedded and choose the channel pair that is to feed the Dolby E decoders in the MCPM, as in sample (F).

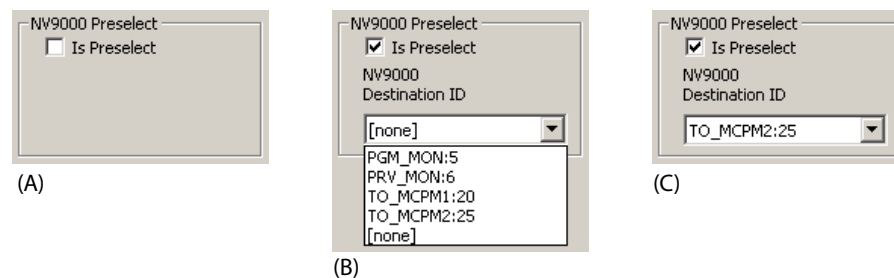
If the Dolby E audio is not embedded, specify an input connector as in sample (B) or (F).

Notes:

- 1 If you have checked 'Enable Main Backup Audio' in the general settings, and the main source uses Dolby E audio, the 'Has Backup Audio' checkbox appears in the options section. Checking that box enables further configuration options.
- 2 If your MCE has dual Dolby decoders, they apply either (1) to main sources and overs on the program and preset buses or (2) to main sources on program, preset, and preview.

Router Pre-Select Subsection

This section is present if (1) you have checked 'Enable NV9000 Preselect' in the general settings and (2) the source is a master control input, **not** an external router input. The pre-select options are the same for MCPMs and MCEs. These samples illustrate the choices:



Leave the 'Is Preselect' checkbox unchecked (sample A) if the main source is not a router pre-select source.

If you check the 'Is Preselect' box, you must select an NV9000 destination ID in the drop-down list. The drop-down list shows all the NV9000 destinations. Sample B shows 4 router destinations. (The numbers following the colons in the entries are the destination IDs in the NV9000 database.)

This field will **not** be a drop-down list unless your master control system is connected to an NV9000 system. In this case, you must enter a source ID directly.

Sample (C) shows a destination selected. The following points are two of the many factors to consider when connecting a router destination to the master control frame:

- An NV9000 destination often include signals on several "levels." For example, a destination might include an HD video signal and 4 AES signals. In that case, 5 cables must connect to the backplane's input section, one from an HD router and 4 from an AES router (or routers). The main source would be the video connector and the configuration for that main source would specify the 4 AES audio connectors.
- The destination might be SD or HD with embedded audio. In that case, a single video cable would connect to the backplane's input section, and the main source would be configured for embedded audio.
 - ▲ Control panel configuration in the *MCS Panel Configuration Editor* is required for router pre-select to work.

Audio Channels Section

The audio channels section supports many options. The functions that appear in the audio channels section vary depending on the MCPM type, other choices you have already made in the Main Sources page, and choices you have made in the General Settings page.

The audio channels section differs for local sources and external sources. It is not available for internal black sources. (See [Audio for External Router Sources](#) on page 81 for more information.)

The audio channels section differs for MCEs and MCPMs. One major difference is that MCEs support 16 audio channels and MCPMs support 8 channels. MCEs also do not accept analog audio.

The audio channels section for external router sources is also different from the audio channels section for local sources.

- ▲ MCEs and HD MCPMs allow discrete audio inputs in the range 65–128. The MCPM-SD and MCPM-MK-SD allow audio inputs in the range 1–128.

These are audio formats supported:

With Analog Video (Converted to SD at the Input Card)
No audio
Discrete audio: any combination of analog, AES, or Dolby E audio
With Digital Video (HD or SD)
No audio
Discrete audio: any combination of analog, AES, or Dolby E audio
A combination of embedded AES, embedded Dolby E, and discrete audio (analog, AES, or Dolby E)
With Any MCE
No audio
Discrete audio: any combination of AES or Dolby E audio
A combination of embedded AES, embedded Dolby E, and discrete audio (AES or Dolby E)

Discrete audio (at a backplane connector) is either AES, Dolby E, or analog (converted to AES). Connectors can be BNCs, Phoenix 3-pin (STP), or DB25.

Embedded audio (AES) is carried in a video signal in up to 16 channels (4 groups of 4 channels). MCPMs extract (disembed) 8 channels from any 2 of the groups. Your configured main source can either use the extracted audio or ignore it. MCEs extract (disembed) up to 16 channels from any of the 4 groups. Here too, your configured main source can either use the extracted audio or ignore it.

All internally processed audio is AES.

The MCE has an option where embedded audio can bypass internal processing and go directly to output. This is called *pass-through*. Discrete audio does not bypass internal processing.

MCPMs do not have the pass-through option.

Dolby E is a compression format carried in a single AES channel pair. The Dolby E decoder, if present, extracts the signal data from an input pair, producing 5 AES channel pairs as input to the internal audio processor. Each of the 5 generated channel pairs, when selected during configuration, consumes 2 internal audio channels.

Automatic Channel Numbering

There is an 'Initial Values' button in this configuration page that automatically enables and fills all the audio channels.

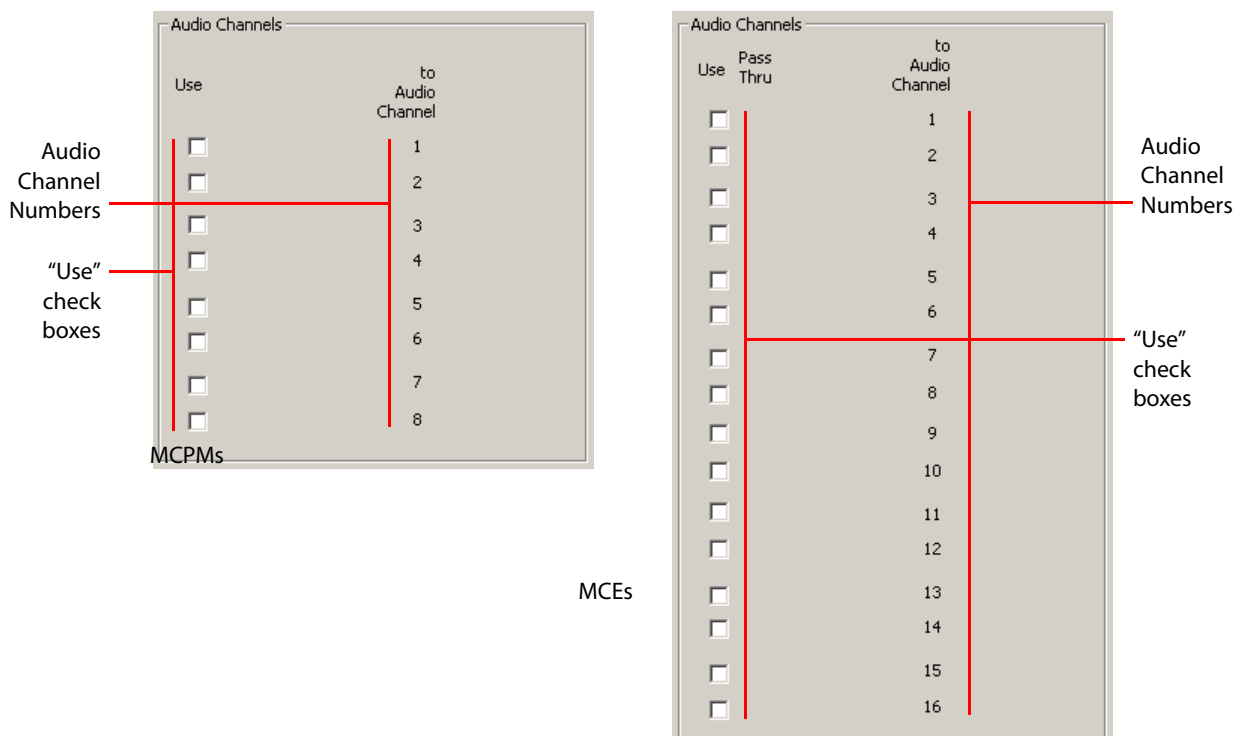
- ▲ Audio channel changes made using the 'Initial Values' button cannot be undone. We recommend you save your configuration prior to using the button.

There are 3 effects of clicking the 'Initial Values' button:

- When 'Not Embedded' is selected and no audio channels are enabled.
Clicking 'Initial Values' fills the entire audio channel list with default values, starting at connection number 65 and incrementing by 1, with alternating "A" and "B" channels.
- When 'Not Embedded' is selected and you have specified a starting number (at least 65) in the first channel.
Clicking 'Initial Values' fills the entire audio channel list with default values, starting at connection number you specified and incrementing by 1, with alternating "A" and "B" channels.
- When 'May Be Embedded' is selected.
Clicking 'Initial Values' fills the entire audio channel list with default values for embedded channels, starting at channel 1 and incrementing by 1 for each channel.
 - ▲ The operation completely overwrites any settings you previously assigned to the audio channels.
 - ▲ The number of audio channels is limited by the maximum you specify in the [General Settings](#) page.

Audio Section Structure

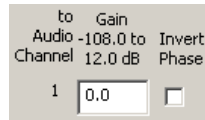
When you first create a main source, the audio channels section is empty:



An audio channel is represented by a row in this section. To enable an audio channel for the main source, check the 'Use' box in the row. Leave a box unchecked if you do not want to use that audio channel.

The number of rows in the section is equal to the maximum number of audio channels you set in the general settings. The illustration above shows all 8 or 16 channels. It is not necessary to use all available channels. Unused channels are forced to silence.

When you enable an audio channel, its gain field and invert checkbox appear.



(For MCEs only, the gain and invert fields disappear when you check a 'Pass-Thru' checkbox. Pass-through is available for embedded audio for which the embedding channels have been properly specified.)

The gain field expresses the *default* gain (audio level). Operators can generally adjust the gain, overriding this value. A gain of 0 dB is unity gain. Unity gain means the digital audio values are multiplied by 1 — essentially a no-op.

Check the "invert" checkbox if you wanted to invert the audio signal. Internally, audio signals are PCM values. The MCE or MCPM multiplies the PCM data by -1 when it inverts the audio.

▲ The word "phase" in the header is meaningless. Please ignore it.

Note

Audio sources should be applied to the MCPM or MCE at the correct level. Excessive use of internal gain can cause problems with overall headroom (clipping) or signal-to-noise ratio.

If you are configuring an MCE, you will see a column of 'Pass-Thru' checkboxes. *Pass-through* means that the audio goes directly to output with any internal processing. Consequently, the gain and invert options are absent for pass-through channels:

Use	Pass Thru	from Disem bedder	Channel 1-8	to Gain Audio -108.0 to 12.0 dB	Invert Phase
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	6	1	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	7	2	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	1	3	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	2	4	

Pass-through channels must be ordered pair-wise, as shown here. If the channel numbers are not ordered, the software removes the pass-through option for that pair.

Audio Channel Types

There are 3 basic types of audio channel data. They can be intermixed:

- Discrete audio input (analog or AES).
- Disembedded AES.
- Dolby channel (discrete or disembedded).
 - ▲ Parts of the column headers in the audio channels section can become obscured when the channel types are intermixed.
 - ▲ Although MCPMs accept analog audio, MCEs do not.

Discrete Audio

For a discrete audio input, specify the connector number and which of the two parts (L or R) of the input to use:

Use	Router Input 1-128	A/B	Ch
<input checked="" type="checkbox"/>	80	<input type="radio"/>	<input type="radio"/>

Here, the left input channel of the audio input is called A and the right audio input channel is called B. This is for generality: you might be treating the inputs as mono signals, for instance. A typical stereo input uses two paired audio channels:

Use	Router Input 1-128	A/B	Ch
<input checked="" type="checkbox"/>	80	<input type="radio"/>	<input type="radio"/>
<input checked="" type="checkbox"/>	80	<input type="radio"/>	<input type="radio"/>

Such a pairing is not a requirement.

The same method is used for both analog and AES inputs.

Disembedded AES

For MCPMs, embedded audio occurs in 4 AES channel pairs (1/2, 3/4, 5/6, and 7/8). For MCEs, audio can be embedded in AES pairs 1/2, 3/4, and so on, up to pair 15/16.

Here, check the box in the 'from Disembedder' column to specify disembedded audio. The row changes its appearance when you check the box:

Use	from Disembedder	Channel 1-8
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	3

Then indicate, in the 'Channel' column, from which embedded channel to obtain the signal.

Observe that this column allows you to form an arbitrary mapping between embedded channels and the internal audio channels. You could, for instance, direct a single embedded channel to any or all internal audio channels.

Dolby Channel

To use Dolby E audio, you must have checked the 'Has Main Dolby E Decoders' in the general settings. (The MCPM or MCE must actually have the decoders if a Dolby configuration is to function.)

- ▲ The "mixer/keyers" (MCPM-MK-SD and -MK-HD) do not support Dolby E audio. Sections of the 'Main Sources' configuration pages that pertain to Dolby E audio do not appear when you are configuring one of the mixer/keyers.

MCEs have a dual Dolby decoder option. If your MCE has dual Dolby decoders, they apply either (1) to main sources and overs on the program and preset buses or (2) to main sources on program, preset, and preview. The 'Main Sources' page can specify sources for each of the dual decoders (when they are enabled in the general settings).

A row in the audio channels section has a 'From Dolby' checkbox if you have checked 'Source has Dolby E Audio' and have given a Dolby E source. The Dolby E source can be discrete (if you entered a connector number) or embedded (if you checked 'Dolby E is Embedded' and selected a channel pair).

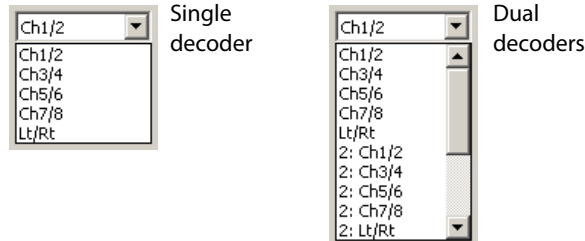
In either case, you must check the 'from Dolby' box if the internal audio channel is to obtain input from the Dolby E decoder. When you check the box, the row changes appearance:



A Dolby decoder generates 5 AES outputs:

- Channels 1/2 — L (left) and R (right).
- Channels 3/4 — C (center) and LFE (low-frequency effects)
- Channels 5/6 — Ls (left surround) and Rs (right surround)
- Channels 7/8 — Lt, Rt. (Lt and Rt are a stereo downmix of channels 1–6.)
- Aux (Lt, Rt).

If you have an MCE configured for dual decoders, you can choose any of 10 output pairs in the drop-down list in the 'Dolby Xpt' column. For other MCPMs and MCEs not configured for dual decoders, you can choose any of five output pairs in the drop-down list in the 'Dolby Xpt' column:



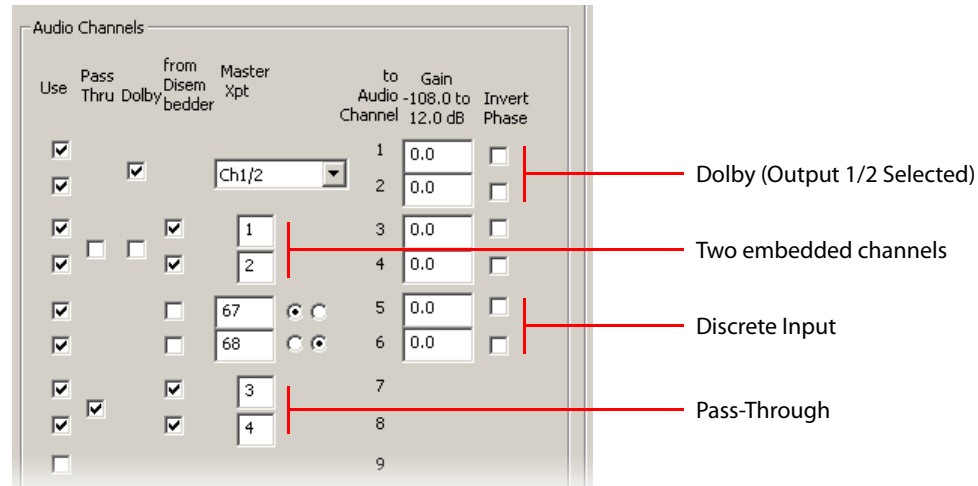
Because the outputs are paired, the Dolby output consumes two adjacent internal audio channels.

The 5 outputs of the second of two decoders are prefixed with '2:'

- ▲ Although the MCPM produces video output with embedded audio channels, it does not embed Dolby E audio or emit Dolby E output.

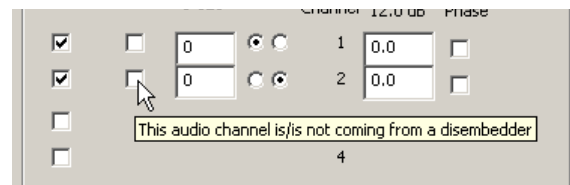
Mixed Audio Configurations

You can combine audio types in many ways. The limits are what you can do with your hardware and signal types. This is a sample of a main source with mixed audio sources:



Be aware that when audio channels are of mixed type, the column headers match only the first (used) row. Other rows might have data fields that do not match the header. If you need to remind yourself what the data fields mean, you can uncheck the 'Use' box in the rows above the row in which you are interested. The headers will then match the data in that row. Re-check the 'Use' boxes to restore those rows to their former state.

You can hover your mouse over data fields to display contextual help messages:

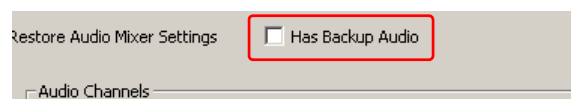


Backup Audio for Dolby E Signals

It is possible to lose the Dolby E signal. You can configure each source that uses Dolby E audio to have a backup audio source if loss occurs.

- ▲ Note that master control panels can have buttons that force Dolby E backup or display Dolby E backup status.

For sources that use Dolby E audio, you will have checked 'Source has DolbyE Audio'. You will have specified whether the Dolby E audio is embedded or discrete. You will also have checked 'Enable Main Backup Audio' in the general settings page. When these 3 conditions are met, the 'Has Backup Audio' checkbox appears in the options section of the 'Main Sources' page:



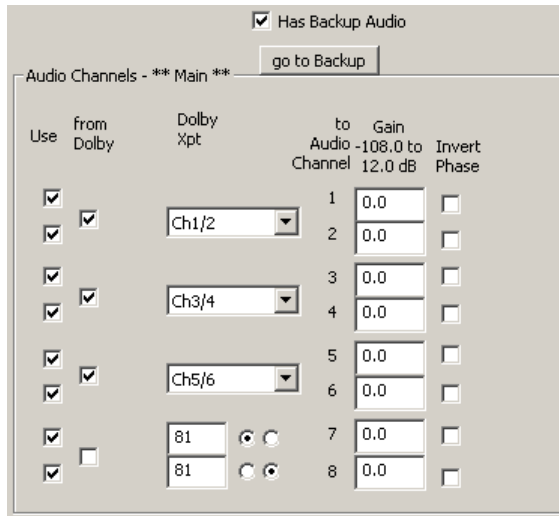
There is an option in the 'Video Effects and Over Settings' page that controls the rate at which the backup audio takes over. The rate can either be a fast fade (4 frames) or a "hard cut." If the MCE switches to backup audio and "hard cut" is enabled, there is **no** loss of audio.

See [Video Effect and Over Settings](#) on page 157.

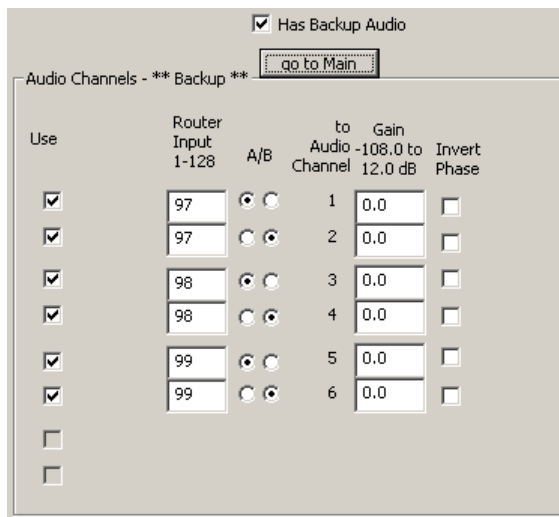
Check this box to enable backup audio. When you do, the 'Main Sources' page acquires additional buttons that allow you to toggle between the "main" and "backup" configurations:



The sample main source in this illustration has Dolby E audio from a local source. It uses 3 Dolby E channel pairs and audio from one addition connector (81):



Backup audio is enabled. Press 'Go to Backup' to switch to the backup view. The following illustration shows the backup view for this main source:



Only the audio channels that are assigned Dolby E input are enabled. In this sample, audio channels 1–6 carry Dolby E audio ordinarily. Therefore, audio channels 1–6 are enabled for backup.

This sample uses audio from 3 connectors, 97–99, as backup for the Dolby E.

Press 'Go to Main' to switch back to the "main" view.

- ▲ How you obtain the backup audio and synchronize it with the main Dolby E audio is a subject that MasterConfig does not address.

Audio for External Router Sources

Main sources (other than those used as squeeze images) reach the MCE or MCPM through the master control frame's A and B ports designated in the 'ExtRtrSrc Settings' page. The "A" ports include a principle video connector, 4 AES connectors, and an extra video connector for the case of embedded audio under breakaway. The "B" ports should be configured identically although the connector numbers differ. Not all audio connectors need be used.

- ▲ External router sources are available only for MCEs and MCPM-SDHDs.

If the external source's audio channels are not embedded (i.e., you chose "not embedded") the audio channel use the discrete AES inputs specified in the 'ExtRtrSrc Settings' page.

Use	Master Control Input	A/B	to Audio Channel	Gain -108.0 to 12.0 dB	Invert Phase
<input checked="" type="checkbox"/>		<input type="radio"/> A <input type="radio"/> B	1	0.0	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Uses AES	<input type="radio"/> A <input type="radio"/> B	2	0.0	<input type="checkbox"/>
<input checked="" type="checkbox"/>		<input type="radio"/> A <input type="radio"/> B	3	0.0	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Uses AES	<input type="radio"/> A <input type="radio"/> B	4	0.0	<input type="checkbox"/>
<input checked="" type="checkbox"/>		<input type="radio"/> A <input type="radio"/> B	5	0.0	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Uses AES	<input type="radio"/> A <input type="radio"/> B	6	0.0	<input type="checkbox"/>
<input checked="" type="checkbox"/>		<input type="radio"/> A <input type="radio"/> B	7	0.0	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Uses AES	<input type="radio"/> A <input type="radio"/> B	8	0.0	<input type="checkbox"/>
<input type="checkbox"/>			9		
<input type="checkbox"/>			10		
<input type="checkbox"/>			11		
<input type="checkbox"/>			12		
<input type="checkbox"/>			13		
<input type="checkbox"/>			14		
<input type="checkbox"/>			15		
<input type="checkbox"/>			16		

MCE

Use	Master Control Input	A/B	to Audio Channel	Gain -108.0 to 12.0 dB	Invert Phase
<input checked="" type="checkbox"/>		<input type="radio"/> A <input type="radio"/> B	1	0.0	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Uses AES	<input type="radio"/> A <input type="radio"/> B	2	0.0	<input type="checkbox"/>
<input checked="" type="checkbox"/>		<input type="radio"/> A <input type="radio"/> B	3	0.0	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Uses AES	<input type="radio"/> A <input type="radio"/> B	4	0.0	<input type="checkbox"/>
<input checked="" type="checkbox"/>		<input type="radio"/> A <input type="radio"/> B	5	0.0	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Uses AES	<input type="radio"/> A <input type="radio"/> B	6	0.0	<input type="checkbox"/>
<input checked="" type="checkbox"/>		<input type="radio"/> A <input type="radio"/> B	7	0.0	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Uses AES	<input type="radio"/> A <input type="radio"/> B	8	0.0	<input type="checkbox"/>

MCPM-SDHD

Audio channels 9–16 are not available on discrete AES inputs. Although there are fields for these channels in the page for an MCE configuration, you should not use them.

Some of the discrete channels might carry Dolby E:

<input checked="" type="checkbox"/>			1	0.0	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Ch1/2	2	0.0	<input type="checkbox"/>
<input checked="" type="checkbox"/>		<input type="radio"/> A <input type="radio"/> B	3	0.0	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Uses AES <input type="radio"/> A <input type="radio"/> B	4	0.0	<input type="checkbox"/>

The typical MCE source that has embedded audio has 16 channels:

Use	from Disem bedder	Channel	to Audio Channel	Gain -108.0 to 12.0 dB	Invert Phase
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1	1	0.0	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	2	2	0.0	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	3	3	0.0	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	4	4	0.0	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	5	5	0.0	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	6	6	0.0	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	7	7	0.0	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	8	8	0.0	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	9	9	0.0	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10	10	0.0	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	11	11	0.0	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	12	12	0.0	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	13	13	0.0	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	14	14	0.0	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	15	15	0.0	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	16	16	0.0	<input type="checkbox"/>

For these sources, you should specify that audio 'may be embedded' in the page's 'Embedded Audio Input' field. (An MCPM-SDHD requires that you select in which groups the embedded audio can be found.)

When you choose 'may be embedded' for an MCE or a pair of groups for an MCPM-SDHD, you can mix audio options in the audio channels section as you wish:

Use	from Dolby	Disem- bedder	Channel	to	Gain	Invert
				Audio -108.0 to	12.0 dB	Phase
				Channel		
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1	1	0.0	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	2	2	0.0	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	3	3	0.0	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	4	4	0.0	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Ch1/2	5	0.0	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Ch1/2	6	0.0	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Ch3/4	7	0.0	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Ch3/4	8	0.0	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Ch5/6	9	0.0	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Ch5/6	10	0.0	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Uses AES	11	0.0	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Uses AES	12	0.0	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Uses AES	13	0.0	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Uses AES	14	0.0	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Uses AES	15	0.0	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Uses AES	16	0.0	<input type="checkbox"/>

The channel specifications should match the router's source characteristics and correspond correctly to the backplane connections you have made and the backplane connection definitions in the 'ExtRtrSrc Settings' page.

Pre-Roll Section

▲ Pre-roll is available only for MCEs.

The pre-roll section is absent if pre-roll is not enabled in the general settings.

Preroll

Preroll duration
frames (0-300)

It specifies the pre-roll time (in frames) for the main source. A zero value means that pre-roll is turned off for the main source. The value must be in the range 0–300. When there is a non-zero pre-roll value among the preset sources, the pending transition becomes a pre-roll transition. Otherwise the transition is a normal transition. (However, when the system pre-roll value is non-zero, all transitions are pre-roll transitions.)

▲ If your MCE processes interlaced video, use a pre-roll value based on 25 or 29.97 frames per second. If it processes a progressive format, use a pre-roll value based on 50 or 59.94 frames per second.

Machine Control Section

▲ Machine control is available only for MCEs.

The machine control section is absent if machine control is not enabled in the general settings:

The screenshot shows the 'Machine Control' dialog box with the following settings:

- Type / Protocol: Use Serial Protocol
- Control Port or GPIO Pair: Serial Control Port 1
- Default TimeCode Mode: LTC Time Code
- Default Trans Type: Use System Trans Type
- Set Default Trans Rate: 15

When it is present, the machine control section has these fields:

- [Type/Protocol.](#)
- [Control Port or GPIO Pair.](#)
- [Default Transition Type.](#)
- [Default Transition Rate.](#)

Type/Protocol

There are 3 choices in drop-down menu of this field:

- None

This is your choice if the main source does not require machine control.

Machine control applies to VTRs and similar devices. If the main source device is not a VTR (or similar device), there is probably no need for machine control.

- Use GPIO

This choice allows you to choose a GPIO (output) port pair for machine control of this main source. There are 32 outputs so there are 16 pairs.

The odd-numbered member of a pair represents a 'Start' command. The even-numbered member of a pair represents a 'Stop' command. The 'Start' and 'Stop' commands are 100 ms pulses.

This is the appearance of the machine control section for GPIO control:

The screenshot shows the 'Machine Control' dialog box with the following settings:

- Type / Protocol: Use GPIO
- Control Port or GPIO Pair: GPO Pair 1/2
- Default Trans Type: Use System Trans Type
- Set Default Trans Rate: 30

There is no time-code field as there is for serial control.

- Use serial protocol

This choice allows you to choose one of the 4 serial ports for machine control.

This is the appearance of the machine control section for serial control:

The screenshot shows the 'Machine Control' dialog box with the following settings:

- Type / Protocol: Use Serial Protocol
- Control Port or GPIO Pair: Serial Control Port 1
- Default TimeCode Mode: LTC Time Code
- Default Trans Type: Use System Trans Type
- Set Default Trans Rate: 15

The 'Default TimeCode Mode' dropdown menu is open, showing the following options:

- LTC Time Code
- Ctl Track (Tape Timer)
- LTC Time Code
- VITC Time Code
- VDCP Elapsed Time

Choose an appropriate time-code “mode” for the device represented as the main source. The choices are

Ctrl track LTC VITC VDCP elapsed time

Usually LTC is the best choice. Devices that use VDCP require ‘VDCP elapsed time’.

Other than ‘None’, the choices refer to ports at the rear of the DC21 Device Controller. If you have selected a serial port or a GPO pair for one main source, it becomes unavailable in the drop-down lists for other sources.

Control Port or GPIO Pair

The drop-down menu in this field differs according to the choice you picked in the ‘Type/Protocol’ field:

If you picked ‘None’ for ‘Type/Protocol’, this field will not appear.

If you picked ‘Use GPIO’ for ‘Type/Protocol’, the drop-down menu is a list of GPIO port pairs that have not yet been assigned. You must choose a pair unless the list is empty (you’ve used up all the pairs). The limit is 16 sources that can do machine control through GPIO pairs for any particular MCE.

If you picked ‘Use serial protocol’ for ‘Type/Protocol’, the drop-down menu is a list of serial ports that have not yet been assigned. You must choose a port unless the list is empty (you’ve used up all the ports). (The limit is 4 sources that can do machine control through serial control for any particular MCE.)

In either of the latter cases, ‘Unassigned’ is a place-holder only and is not a viable choice.

Default Transition Type

There are 6 choice in this field:

System Trans Type Cut VFade CutFade XFade FadeCut

If you choose ‘System Trans Type’ the MCE makes no change to its transition type (which is reflected on the transition control buttons of a connected panel).

If you choose any of the other 5 entries, for instance ‘VFade’, the MCE switches to that particular transition type when the operator chooses the main source. (The operator may override the MCE’s selection.)

Default Transition Rate

You can enable a default transition rate by placing a check in the check box. If you leave this box unchecked, the MCE makes no change to its transition rate when the operator chooses the main source.

If you do check the box, specify a rate in the associated field. The field value is actually the inverse of rate: it is the duration of the transition expressed as a number of frames. Larger values represent slower transitions. The range for the default transition rate is 3–300 frames.

When the operator chooses this main source, the MCE switches to the default transition rate. (The operator may override the default rate.)

Options Section

The options section contains two checkboxes:

- Auto Restore Audio Mixer Settings.

This checkbox is present only if you checked 'Enable AutoRestore of Audio Mixer Settings' in the general settings.

If you check this box in the 'Main Sources' page, the main source's default audio settings are restored to their default values whenever the source is placed on the preset bus during operation. Otherwise, the source retains its current audio channel settings (which can include changes to gain, inversion, and channel swaps) until further changes are made.

- Has Backup Audio.

The 'Has Backup Audio' checkbox enables backup audio for the main source. See [Backup Audio for Dolby E Signals](#) on page 79.

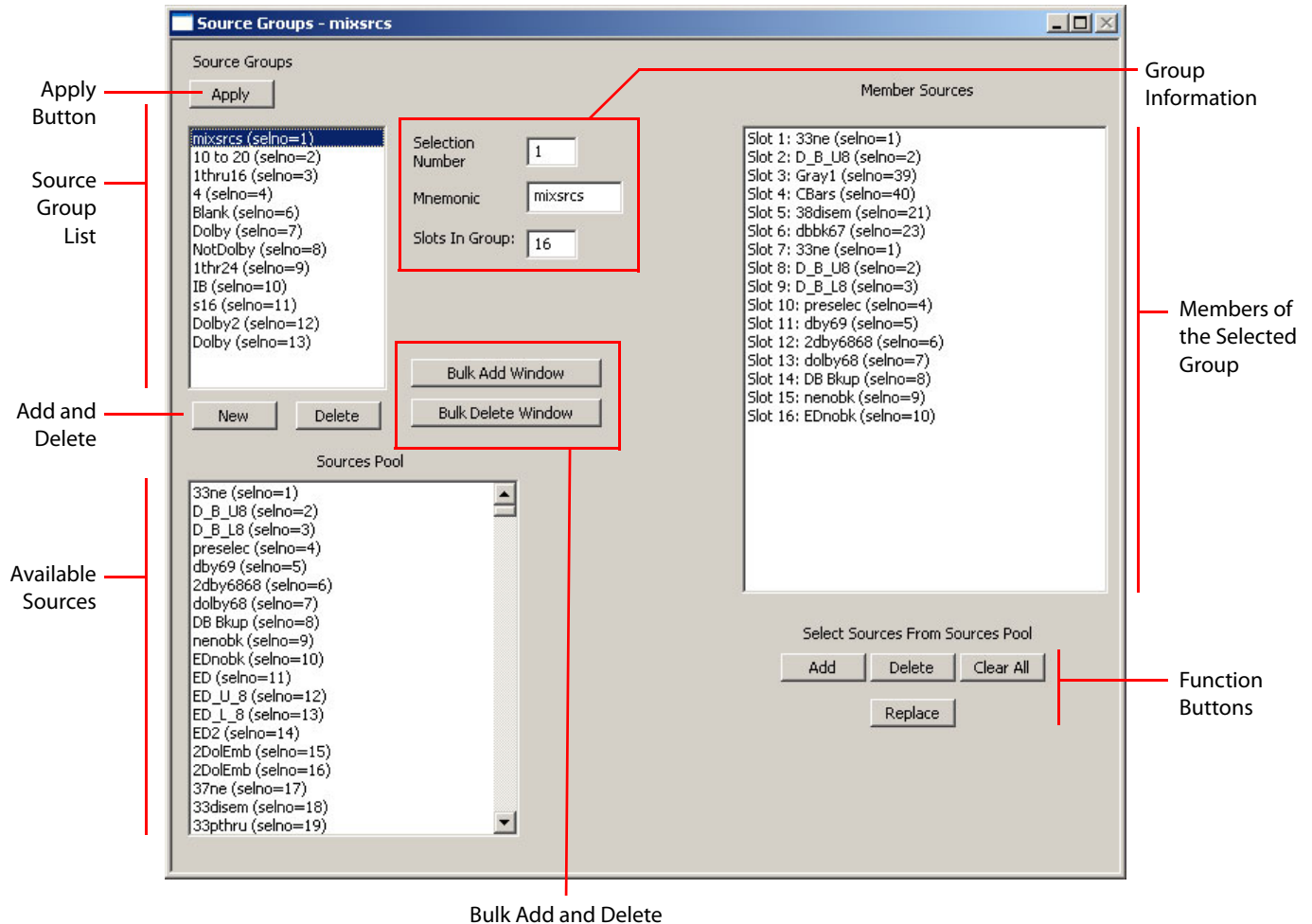
Completing a Main Source Configuration

Follow these steps to complete a main source configuration:

- 1 Review all changes.
- 2 Click 'Apply' to commit any changes that you have not already applied. This action updates the configuration records with the changed source information.
- 3 Save your configuration before continuing.
 - ▲ It is possible to define identical main sources (same name, same BNC, etc.) with different selection numbers. It is easy to do this inadvertently. We recommend that you save your file frequently and review your changes carefully.
 - ▲ The sources defined in the main source window are used in the [Button Mapping — Main Source](#) page (if you have checked 'Enable Main Source Button Mapping' in the [General Settings](#) window. They can also be used for [Squeeze Settings](#) and [Squeeze 2 Settings](#).

Source Groups

The 'Source Groups' page lets you define source groups for an MCE configuration. Source groups are not available for other MCPMs. This is a view of the page:



Source groups exist to provide a way for operators to be able to use hundreds, perhaps thousands, of sources on a small set of source buttons.

Source groups contain sets of sources, mapped to buttons. Each MCE configuration defines its own source groups. Different MCEs can also use the same source groups or have different source groups. A panel operator can select the source group that best suits the purpose at hand.

There is no real limit to the number of source groups.

However, the maximum number of sources in a group is 24. That is because the maximum number of source buttons on a panel is 24. An MCE's source groups need only support the panels that can control it. If no panel has more than 10 source buttons, no source group needs more than 10 sources.

Source groups can contain gaps. These gaps result in buttons that have no sources.

If a source group has more sources than a panel has source buttons, some truncation occurs. For instance, when a panel having 10 source buttons is using a source group having 24 source "slots," the uppermost 14 sources in the group are inaccessible to the operator. Any gaps in the

source group remain unchanged: the group is not reshaped in any way to fit a small number of buttons.

- ▲ For MCEs that support source groups, bank select is disabled. For these MCEs, also, a panel's button mapping menu contains a source group button instead of a main source mapping button (and main source button mapping is disabled).
- ▲ Source groups are enabled in the general settings for the 'Source Groups' window to be available.

Purpose

This is what the 'Source Groups' page does:

- Names the source groups.
- Provides a list of main sources from which to draw.
- Identifies the sources within the groups and specifies on which button the source is to appear. (The term "slot" in the 'Source Groups' page means a place in the group, but slots and buttons are in 1:1 correspondence. You can think of slots as buttons as the buttons are numbered from left to right on control panels. Slots that are empty correspond to panel buttons that have no source.)
- Allows you to add, remove, or change sources within a group.

Page Organization

The 'Source Groups' configuration page has 8 sections:

- 1 The 'Apply' button applies changes you have made to a new source group.
- 2 The [source group list](#) identifies the source groups you have defined.
- 3 The [add and delete buttons](#) add and delete single groups.
- 4 The [group information](#) section contains the name of the group and the number of slots in the group. The group is identified by its selection number which you can change in this section.
- 5 The [source pool](#) section lists all the sources available. (These are the defined main sources.)
- 6 The [member sources](#) list the sources of a group, by slot. Slots can be empty.
- 7 The [function buttons](#) allow you to manipulate the slots and sources of the selected source group.
- 8 The [bulk add and delete](#) section allows you to add multiple source groups at one time and to delete multiple source groups at one time.

Source Group List

The group list contains the names of the source groups you have already defined. If you have not defined any source groups, the list will be empty. The list is ordered by selection numbers (or "selnos").

- ▲ The button legends for 'Group Select' buttons of a panel are the source group names defined in this list.

Add and Delete Buttons

Adding a Source

Click 'New' if you want to add a single source group. The fields of the source groups window become empty or blank and you may enter data in the fields of the 'Source Group' window. Use the 'Add', 'Replace', 'Delete', and 'Clear All' buttons to manipulate the sources in the 'Member Sources' list.

Deleting a Source

Select a source group and click 'Delete' if you want to delete a single source group. Repeat for other source groups that you want to delete one at time.

Apply Button

Click the 'Apply' button to commit your changes at any time. The 'Apply' button applies the changes you have made to a (single) new source group definition.

(There is no "undo" for this. If you discover you have made a serious error, the only remedy is to discard the configuration without saving it. Click 'Apply' only when you are sure of your changes.)

Group Information

This cluster of text boxes displays information about the group you have selected in the group list.

The term "slots in group" refers to the number of entries in the group. We call the entries *source slots*. A slot can be empty or it can contain the name of a main source. A group can have a maximum of 24 slots because that is the maximum number of source buttons to be found on any control panel.

The slots in a group map 1:1 to the buttons of a master control panel, in order from left to right. If a group has more slots than a particular panel has buttons, the sources in the extra slots are ignored. Empty slots result in disabled (dark) source buttons.

Source Pool

The source pool is a list of the main sources defined in the configuration at hand. The list is the same as the source list of the 'Main Sources' window. The list is ordered by selection numbers (or "selNos").

Member Sources

This list displays the sources belonging to the selected group. The list is an array of slots, any or all of which can be empty or not.

You can manage the member sources using the 'Add', 'Replace', 'Delete', and 'Clear All' buttons.

Function Buttons

The buttons in this section allow you to manipulate the member sources of the selected group. There are 4 buttons:

- Add

The 'Add' button adds sources to *empty* slots.

Select one or more entries in the source pool using click, shift-click, and ctrl-click methods.

Click the 'Add' button. The software will add the sources to the member list starting at the first empty slot if you have no slot selected, or at the first empty slot in or above your selection if you have some slots selected.

If you attempt to add more sources than there are empty slots, the software will present an alert telling you that it cannot add the sources.

- Replace

The 'Replace' button replaces the entries in *selected* slots.

Select one or more entries in the source pool using click, shift-click, and ctrl-click methods.

Select one or more entries in the member sources using click, shift-click, and ctrl-click methods.

Click the 'Replace' button. The software will overwrite your member slot selections with your source pool selections in ascending order. If you have selected more pool sources than you have selected member slots, the software will overwrite the member slots immediately following you member select.

This can be a convenience. If for example, you want to add 12 pool sources to the group, starting at slot 10, it is sufficient merely to select slot 10. The 12 sources will fill slots 10–21.

- Delete

Select one or more slots in the member sources list using click, shift-click, and ctrl-click methods.

Click 'Delete'. The selected slots become empty.

- Clear All

Click 'Clear All' to cause all member slots to become empty.

Bulk Add and Delete

If you are developing an MCE configuration, you can create more than one source group at time using the 'Bulk Add Window' button next to the source group list. You can also delete more than one source group at time using the 'Bulk Delete Window' button next to the source group list.

▲ Bulk additions and bulk deletions are available only for MCEs.

When you click the 'Bulk Add Window' button, an 'Add Source Groups' dialog appears.

When you click the 'Bulk Delete Window' button, a 'Delete Source Groups' dialog appears.

See [Bulk Add](#), following.

See [Bulk Delete](#) on page 93.

Bulk Add

You can add multiple source groups easily.

For example, if you have 80 sources in your source pool and the panels in your system all have 10 source buttons, it is a matter of a few clicks to create 8 source groups of 10 sources each. In this case, the sources in the groups would be consecutive in the order in which the main sources are defined.

When you click the 'Bulk Add Window' button, the 'Add Source Groups' dialog appears:

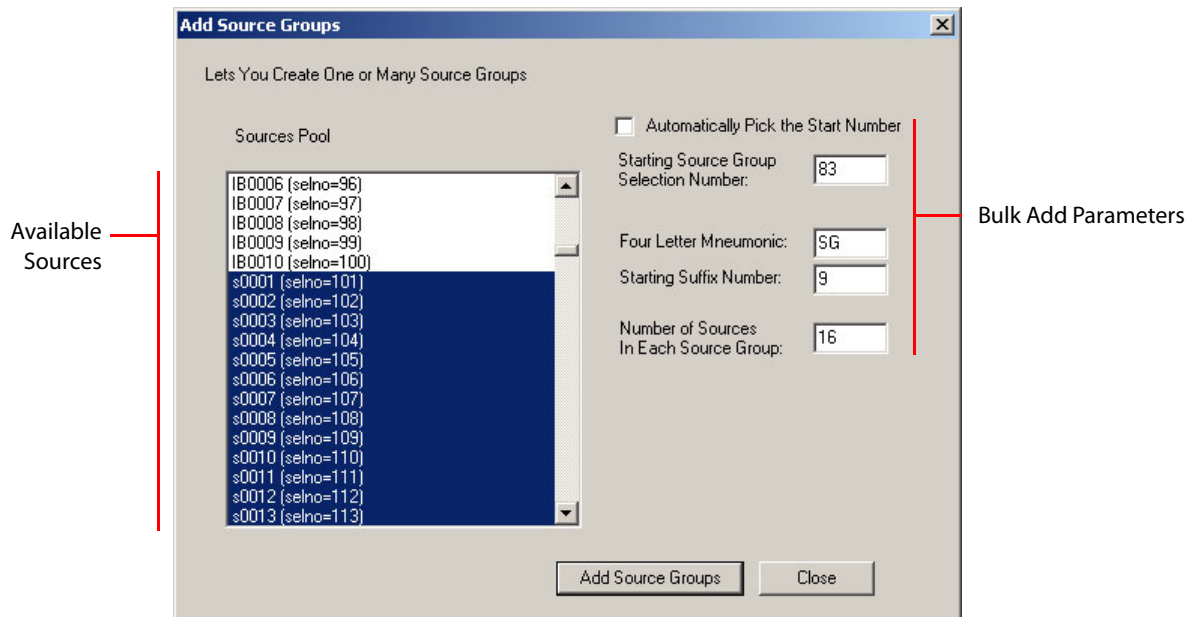


Fig. 4-7: Add Source Groups Dialog

These are the fields of the dialog:

- Source pool

The 'Source Pool' field is the same as the source pool field in the 'Source Groups' window. It lists all the available sources, in the "selno" ordering defined in the 'Main Sources' window.

To create source groups, you must select a number of sources in this list. Your selection does not have to be contiguous. It can be disjoint. Use click, shift-click, and ctrl-click techniques to make your selection.

The number of sources you select is important to the bulk add operation. See [Operation](#), following.

- Automatically pick the start number

Check this box if you want the bulk add operation to assign unused "selnos" to the new source groups. If you do not want automatic numbering, be sure to enter a value in the starting number field.

- Starting source group selection number

If you leave the automatic numbering check box unchecked, enter a valid source group selno in this field.

- **Four-Letter Mnemonic**
Enter up to 4 characters in this field. The name of each group created will have these characters as a base and a 4-digit numerical suffix. (If the 4th character of this string is a space, the bulk add operation will generate source names having a space between the base name and the suffix.)
- **Number of Sources in Each Source Group**
Enter a numerical value in this field. The value must not be more than 24. The number of sources in each group is important to the bulk add operation. See [Operation](#), following.

Operation

The bulk add operation takes the sources you have selected in the source pool and distributes them across one or more groups according to the group size you specified.

The number of source groups to be generated is this:

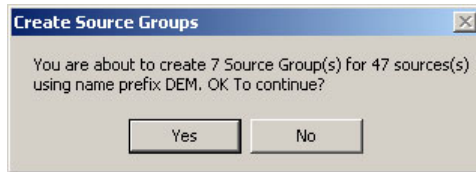
$$N = (P - 1) / S + 1 \quad [\text{integer division}]$$

where P is the number of pool sources you have selected and S is the size of the groups being generated.

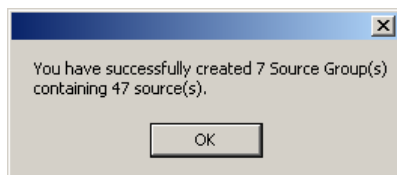
For example, if you choose 34 sources and the size of the groups is 10 slots, then the bulk add operation will create 4 source groups of 10 slots, adding sources from the pool in selno order to each group successively. The last group will be only partially filled.

Click the 'Add Source Groups' button to execute the operation.

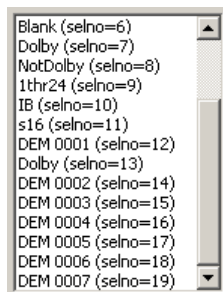
When you click 'Add Source Groups', the software presents this alert:



If you click 'OK', the software presents this completion message:



The result is displayed in the source group list of the 'Source Groups' window:



In this example (adding groups of 7 sources, for 47 sources), the first new group will have the first 7 sources selected. The second new group will have the second 7 sources selected. The third new group will have the third 7 sources selected, and so on. The seventh group will have the last 5 sources selected and its remaining slots will be empty (blank).

Bulk Delete

When you click the 'Bulk Delete Button' in the main sources window, the 'Delete Source Groups' dialog appears:

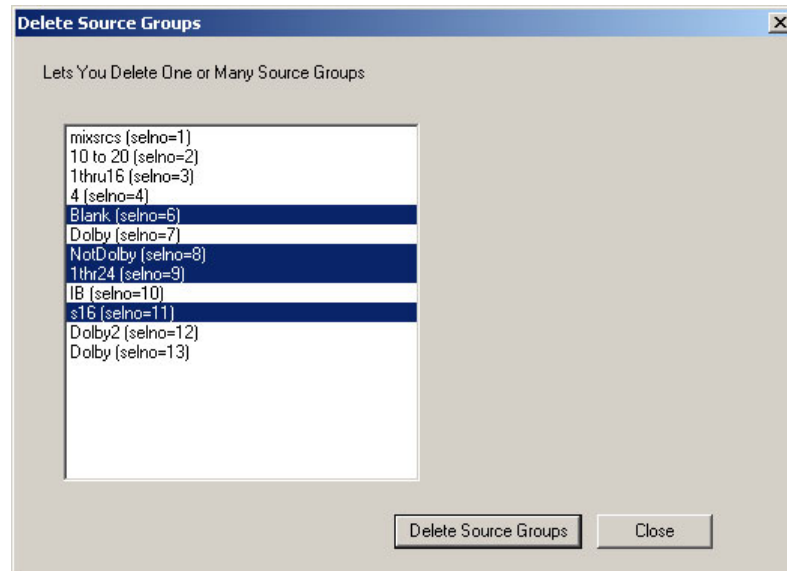
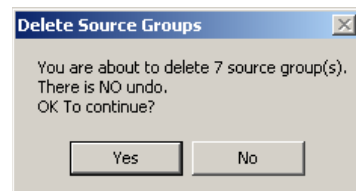
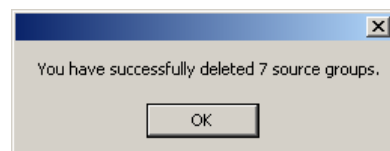


Fig. 4-8: Delete Source Groups Dialog

Highlight the sources that you wish to delete. Then click the 'Delete Source Groups' button. The following alert appears:



Click 'Yes' if you accept the confirmation statement. The operation will respond with a completion message:



Over Sources

The 'Over Sources' page lets you define an MCPM's or MCE's audio over sources. This is a view of the page as it might appear for an MCE:

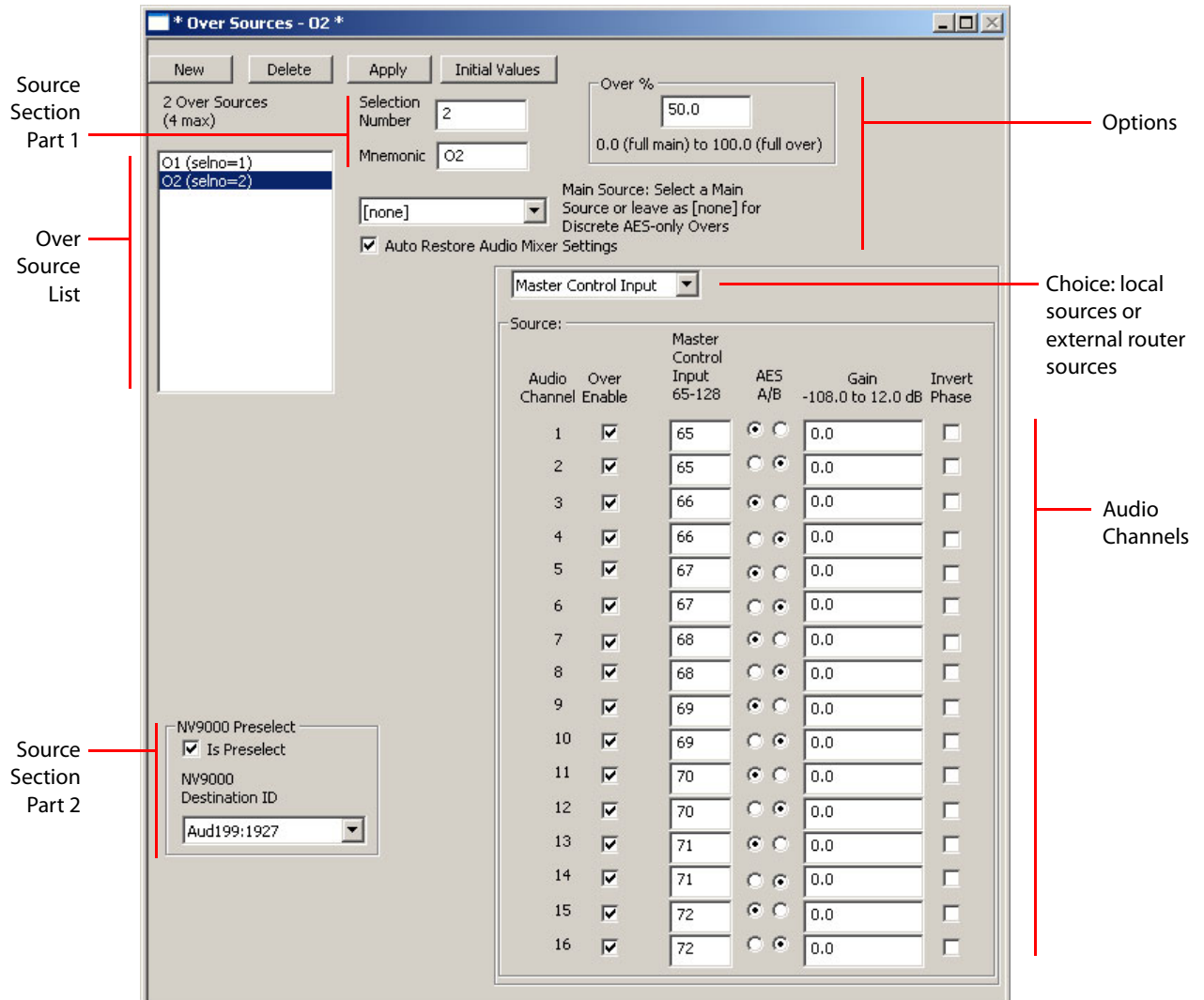


Fig. 4-9: Over Sources Page (Sample, MCE)

The over sources governed by this configuration page can include:

- Local sources (audio connections at the NV5100MC backplane).
- Main sources (for MCE configurations only).
- External sources (devices connected to routers under an NV9000 control system).

▲ Audio overs can be used—and controlled—by Intuition XG keys. See [XStudio Add-On Commands](#) on page 205 or the *Master Control Reference Manual*.

The MCE, unlike other MCPMs, allows you to choose a main sources as an audio over source. The MCE also allows 16 audio channels for each audio over. Other MCPMs allow 8. This is a view of the page as it might appear for an MCPM-SD:

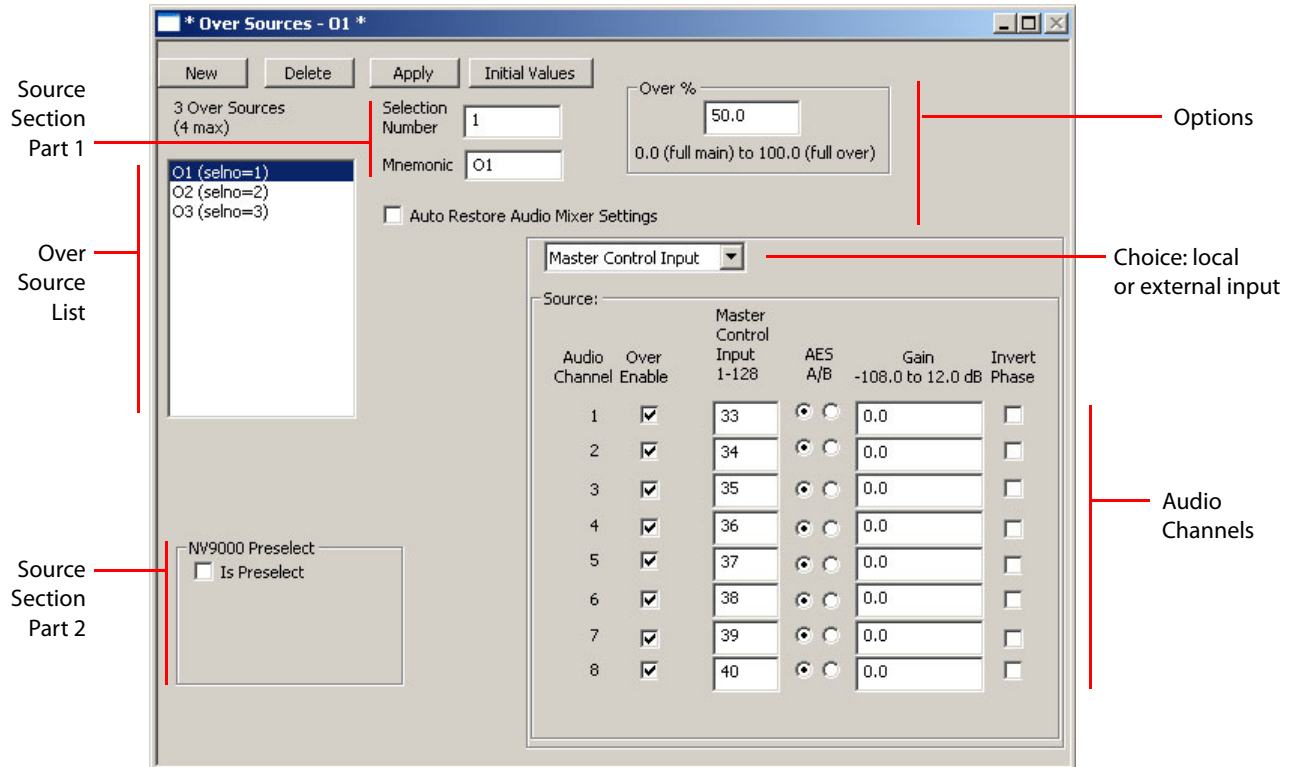


Fig. 4-10: Over Sources Page (Sample, MCPM-SD)

Purpose

This is what the 'Over Sources' page does:

- Names the over sources. (The over names appear on the buttons, and in the menus, of master control panels.)
- Identifies the audio sources and describes the audio processing for an over source.
- Specifies the default over-to-main ratio for each over source.

This page also configures router pre-select sources. A router pre-select source identifies a router *destination* connected to a backplane connector. Master control operators choose the router *source* to route to that destination dynamically. The router source becomes available as an over source. (Router pre-select must be enabled in the 'General Settings' page.)

This page also configures "external router sources"—those connected to one or more routers in an NV9000 router control system. The source's connections are defined in the NV9000 configuration. You, the configurer, determine the set of external router sources during configuration. (External router sources must be enabled in the 'General Settings' page.)

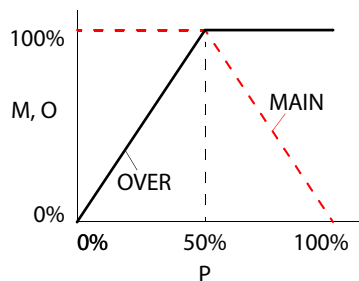
Two audio "over" inserters are available in the MCPM or MCE. The MCPM or MCE mixes "over" audio with main audio (i.e., audio from the selected main source) at a certain ratio. The ratio can be changed by a control panel operator.

Audio overs are mutually exclusive: only one audio over can be on the program bus or on the preset bus. When one is on program, however, the other can be on preset.

Most control panels have 2 audio over button pairs. Some control panels can be set up with one over button (pair) or none. When you configure over sources for your system, you might want to consider the control panels in your system.

Commonly, when an audio over is applied, the main program level is decreased by some amount, allowing the over audio to take precedence. Typical voice-overs are mixed at a ratio of 75–80% over source and 20–25% main source.

An over-to-main ratios (or just “over ratio”) is perceptual and non-linear:



Let P = intended over percent, O = resulting over percent and M = resulting main percent

IF P = 50%

M = O = 100%

OR IF P < 50%

O = P / (1-P) and M = 100%

ELSE P > 50%

M = (1-P) / P and O = 100%

Fig. 4-11: Non-Linear Over-to-Main Ratio

The default main-to-over ratio is 50/50. A 50/50 ratio is really 100% main and 100% over.

▲ The program/preset audio mixer behaves according to a linear model.

Page Organization

The ‘Over Sources’ configuration page has many of the features of the ‘Main Sources’ page.

There are 4 sections:

- 1 The [over source list](#) shows sources that have already been created. They can be edited.
- 2 The [source section](#) is split into two separate subsections. The first specifies the audio source. The second is an “NV9000 Preselect” subsection.
- 3 The [audio channels section](#) lets you specify the audio source and details of each audio channel.
- 4 The [options section](#) allows you (1) to specify the default over ratio and (2) to enable or disable “auto restore” for the over’s audio. Auto-restore must have been enabled in the general settings. Otherwise, the option is not present in the ‘Over Sources’ page.

Over Source List

The over source list includes all the over sources you have defined for the MCPM.

To configure an over source, it must be in the list. You can add entries to the list and remove or copy entries in the list. The mnemonic (name) of a source should be meaningful to panel operators.

The list is ordered by selection number (selno).

- ▲ If you have not checked the over source button mapping option in the 'General Settings' page, the main source selection numbers are also button numbers. The *de facto* mapping places source *n* on button *n* where *n* is 1 or 2 and sources with other selnos are inaccessible. We strongly recommend that you use over source button mapping. See [Button Mapping — Over Source](#) on page 150.

To Create a New Source

Click 'New'. The window shows a set of default parameters. You may edit the parameters now or at any time. Click 'Apply' to commit changes to the over source definition.

To Delete a Source

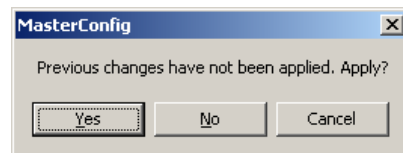
Highlight the source in the list and click 'Delete'.

To Copy a Source

Highlight the source in the list. Give it a new *unused* selection number and click 'Apply'. If you choose an existing selection number, you will overwrite an existing source definition.

To Edit a Source

Highlight the source in the list and modify the parameters you want to change. Click 'Apply' to confirm your changes. If you wish to *cancel* your changes, either click another source or click 'New'. A query appears:



Click 'No' to discard your changes.

Source Section

It is in the source section that you identify the audio source. Part 2 of this section specifies whether the source is a router pre-select source.

Selection Number

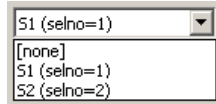
Either use the supplied value or enter a value from 1 to 4. This number defines the source's position in the source list. See [Selection Numbers](#) on page 38.

Mnemonic

Enter the name that you want to appear on a control panel's over source button, up to 8 characters. Use alphanumeric characters, spaces, or underbars. Although you can enter other characters, the panels will not display them.

Source Type Selection

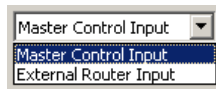
In an MCE configuration (only), directly beneath the mnemonic field is a drop-down list for main sources:



Choose a main source in this field if you want the audio over to obtain its signal from a main source. Otherwise, choose '[none]'.

The 'Over Sources' page does not have this field for other MCPMs.

Further, if the configuration has external over sources enabled (in the [General Settings](#) and [ExtR-trSrc Settings \(for MCEs\)](#) pages), the Over Sources page also has, in the box at the bottom right, a drop-down list for source type:



Here there are 2 choices:

- Master Control Input.
- External Router Input.

Master Control Input

Choose 'Master Control Input' if you want a local over source—one that is connected directly at the NV5100MC backplane.

When you choose 'Master Control Input', you must specify the audio inputs that form the source. This shows over sources for an MCPM-SD:

Audio Channel	Over Enable	Master Control Input 1-128	AES A/B	Gain -108.0 to 12.0 dB	Invert Phase
1	<input checked="" type="checkbox"/>	33	<input checked="" type="radio"/> <input type="radio"/>	0.0	<input type="checkbox"/>
2	<input checked="" type="checkbox"/>	33	<input type="radio"/> <input checked="" type="radio"/>	0.0	<input type="checkbox"/>
3	<input checked="" type="checkbox"/>	34	<input checked="" type="radio"/> <input type="radio"/>	0.0	<input type="checkbox"/>
4	<input checked="" type="checkbox"/>	34	<input type="radio"/> <input checked="" type="radio"/>	0.0	<input type="checkbox"/>
5	<input checked="" type="checkbox"/>	35	<input checked="" type="radio"/> <input type="radio"/>	0.0	<input type="checkbox"/>
6	<input checked="" type="checkbox"/>	35	<input type="radio"/> <input checked="" type="radio"/>	0.0	<input type="checkbox"/>
7	<input checked="" type="checkbox"/>	36	<input checked="" type="radio"/> <input type="radio"/>	0.0	<input type="checkbox"/>
8	<input checked="" type="checkbox"/>	36	<input type="radio"/> <input checked="" type="radio"/>	0.0	<input type="checkbox"/>

External Router Input

Choose 'External Router Input' if you want an external over source — one that is connected to routers in an associated NV9000 router control system. If you choose this option, the source section displays a drop-down list that allow you to select a source defined in the NV9000 configuration.

If you don't have the NV9000 connected during configuration, the drop-down list does not appear. In that case, you must enter the database ID for the source you want.

When you specify an external router input, you must select the channels that are to be enabled for the over source.

Audio Channel	Over Enable	Gain -108.0 to 12.0 dB	Invert Phase
1	<input checked="" type="checkbox"/>	0.0	<input type="checkbox"/>
2	<input checked="" type="checkbox"/>	0.0	<input type="checkbox"/>
3	<input checked="" type="checkbox"/>	0.0	<input type="checkbox"/>
4	<input checked="" type="checkbox"/>	0.0	<input type="checkbox"/>
5	<input checked="" type="checkbox"/>	0.0	<input type="checkbox"/>
6	<input checked="" type="checkbox"/>	0.0	<input type="checkbox"/>
7	<input checked="" type="checkbox"/>	0.0	<input type="checkbox"/>
8	<input checked="" type="checkbox"/>	0.0	<input type="checkbox"/>

(The connector numbers and router destination IDs for over sources are specified in the [ExtRtrSrc Settings \(for MCEs\)](#) page.)

The router source ID is specified (immediately above this section) in the 'Over Sources' page.

Router Pre-Select Subsection

▲ This section is **not** present when the over source is external or when the over source is a main source.

For local sources, the section is present if you have checked 'Enable NV9000 Preselect' in the general settings. These samples illustrate the two choices:

(A)

(B)

(C)

Leave the checkbox unchecked (sample A) if the over source is not a router pre-select source.

If you check the box, you must select an NV9000 destination ID in the drop-down list. This field will **not** be a drop-down list unless your master control system is connected to an NV9000 system. The drop-down list shows all the NV9000 destinations. Sample B shows 4 router destinations. (The numbers following the colons in the entries are the destination IDs in the NV9000 database.)

Sample (C) shows a destination selected. These are two of the many factors to consider when connecting a router destination to the master control frame:

- An NV9000 destination often include signals on several “levels.” For example, a destination might include an HD video signal and 4 AES signals. In that case, 5 cables must connect to the backplane input section, one from an HD router and 4 from an AES router. The main source would be the video connector and the configuration for that main source would specify the 4 AES audio connectors.
- The destination might be SD or HD with embedded audio. In that case, a single video cable would connect to the backplane input section, and the main source would be configured for embedded audio.

Although you can choose this kind of destination, you cannot configure an over source that uses such a connection and the master control system cannot use such a destination for an over source.

Control panel configuration in the *MCS Panel Configuration Editor* is required for router pre-select to work.

Audio Channels Section

- ▲ The audio channels section is absent for over sources on MCEs that derive from main sources.
- ▲ There is a bug that causes the audio channels section to remain displayed sometimes even though you have chosen a main source. If you click ‘Apply’, the page refreshes properly.

The audio channels section supports many audio options. The functions (and check boxes) that appear in the audio channels section vary depending on the MCPM type, the choices you have already made in the ‘Over Sources’ page and the ‘General Settings’ page.

Local over sources must be discrete analog or discrete AES. Their connectors can be BNCs, Phoenix 3-pin (STP), or DB25. The configuration page uses the same method for both analog and AES inputs. (All internal audio processing is AES.)

The audio channels section differs for local sources and external sources.

Automatic Channel Numbering

There is an ‘Initial Values’ button in this configuration page that automatically enables and fills all the audio channels.

There are cases for automatically numbering channels:

- For “master control” (i.e., local) sources.
 - If the channel list is empty, clicking ‘Initial Values’ fills the entire audio channel list with default values, starting at connection number 65 and incrementing by 1, with alternating “A” and “B” channels.
 - If you have specified a connector number for the first channel, clicking ‘Initial Values’ fills the entire audio channel list, starting at the connection number you specified, incrementing by 1, with alternating “A” and “B” channels.
- (Each initialized channel has the default gain and inversion setting.)

- For external router sources.
Clicking 'Initial Values' enables the entire audio channel list. (Each channel has the default gain and inversion setting.)
- ▲ In either case, the operation completely overwrites anything settings you previously assigned to the audio channels.
- ▲ The number of audio channels is limited by the maximum you specify in the [General Settings](#) page.
- ▲ You cannot undo the result of pressing 'Initial Values'. You should save your configuration before you use the 'Initial Values' button.

Audio for Local Sources

When you first create an over source, the default audio channels section appears:

Audio Channel	Over Enable	Master Control Input 1-128	AES A/B	Gain -108.0 to 12.0 dB	Invert Phase
1	<input type="checkbox"/>				
2	<input type="checkbox"/>				
3	<input type="checkbox"/>				
4	<input type="checkbox"/>				
5	<input type="checkbox"/>				
6	<input type="checkbox"/>				
7	<input type="checkbox"/>				
8	<input type="checkbox"/>				

The default has no channels defined. This illustration is the default for an MCPM-SD. An MCE has up to 16 audio channels.

An audio channel is represented by one of the rows in this section. To enable an audio channel to the over source, check the 'Over Enable' box in the row. Leave the box unchecked if you do not want to use the channel.

The number of rows in the section is equal to the maximum number of audio channels you set in the general settings. It is not necessary to use all available channels. Unused channels are forced to silence.

Each enabled audio channel has a connector input field, a gain field and invert checkbox, as shown in the illustration. The 'Master Control Input' column is where you specify the audio connector.

The gain field expresses the *default* gain (audio level). Operators can generally adjust the gain. A gain of 0 dB is unity gain. Unity gain means the digital audio values are multiplied by 1—essentially a no-op.

Check the "invert phase" checkbox if you wanted to invert the audio signal. Internally, audio signals are PCM values. The MCPM multiplies the PCM data by -1 when it inverts the audio.

- ▲ The word “phase” in the column header is meaningless. Please ignore it.

Note

Audio sources should be applied to the MCPM or MCE at the correct level. Excessive use of internal gain can cause problems with overall headroom (clipping) or signal-to-noise ratio.

Audio for External Sources

External over sources reach the MCPM through the master control frame’s A and B ports designated in the [ExtRtrSrc Settings \(for MCEs\)](#) page. The “A” ports include 4 AES connectors and a fifth connector for embedded audio. The “B” ports should be configured identically although the connector numbers differ. Not all audio connectors need be used.

An external over source uses either the “A” ports or “B” ports as required. Therefore you specify no connectors, but only which channels are to be used. (The gain and invert fields provide defaults for internal audio processing. Operators may generally override these values.)

This is an example of an external source that uses discrete AES channels 1 and 2:

Audio Channel	Over Enable	Gain -108.0 to 12.0 dB	Invert Phase
1	<input checked="" type="checkbox"/>	0.0	<input type="checkbox"/>
2	<input checked="" type="checkbox"/>	0.0	<input type="checkbox"/>
3	<input type="checkbox"/>		
4	<input type="checkbox"/>		
5	<input type="checkbox"/>		
6	<input type="checkbox"/>		
7	<input type="checkbox"/>		
8	<input type="checkbox"/>		

The check marks select the audio channels to be used for the specific source.

You should not use audio channels that are not enabled in the [ExtRtrSrc Settings \(for MCEs\)](#) page.

Connector numbers are specified in the [ExtRtrSrc Settings \(for MCEs\)](#) page.

Options Section

The options section includes an ‘Auto Restore Audio Mixer Settings’ checkbox and subsection in which to enter the source’s default over-to-main ratio.

Auto Restore Audio Mixer Settings

This checkbox is present only if you checked ‘Enable AutoRestore of Audio Mixer Settings’ in the general settings.

If you check this box, the over source’s default audio settings are restore to their default values whenever the source is placed on the preset bus during operation.

Otherwise, the source retains its current audio channel settings (which can include changes to gain, inversion, and channel swaps) until further changes are made.

Over-to-Main Ratio

Enter a percentage from 0 to 100%. The number you enter is the *over* part of the ratio.

Because the ratio is non-linear, you might wish to use the graph and algorithm in Figure 4-11 on page 96 to compute a ratio.

The default value is 50% which means 100% main and 100% over.

Completing an Over Source Configuration

Follow these steps to complete an over source configuration:

- 1 Review all changes.
- 2 Click 'Apply' to commit any changes that you have not already applied. This action updates the configuration records with the changed source information.
- 3 Save your configuration before continuing.

It is possible to define identical over sources (same name, same connector, etc.) with different selection numbers. It is easy to do this inadvertently. For instance, if you change the selno of a source, MasterConfig creates a new main source, identical to the old with the new selno. If the new selno was used already for another source, the change overwrites the other source configuration completely and you have two copies of the same source with different selnos.

If you overwrite another source by mistake, there is no remedy except to discard your changes and reopen the file (or to re-enter the data you overwrote).

We recommend that you save your file frequently and review your changes carefully.

- ▲ The selection numbers defined in the over source window are used in the '[Button Mapping—Over Source](#)' page (if you have checked 'Enable Over Source Button Mapping' in the general settings).

Audio Monitors and Meters

The 'Audio Monitor' page lets you control the meter and monitor outputs of an MCPM or MCE.

MCEs and MCPMs are *substantially different* in the way they produce audio monitor and metering output:

- MCPMs have 8 audio channels (4 AES pairs). MCEs have 16 channels.
- Some MCPMs provide analog audio output (represented by the 'DtoA Input Channels' subsection of the 'Audio Monitors' page). MCEs do not have analog audio output.
- MCPMs combine the monitor outputs A and B according to a partitioning scheme. MCEs deliver all 16 channels of monitor A on one connector and all 16 channels of monitor B on another connector.
- MCEs can send preview bus audio to a monitor or meter. MCPMs do not have a preview bus.

Because of this difference, the following two sections discuss MCPMs (here) and MCEs (page 111) separately.

MCPMs

This is a view of the page as it might appear for an MCPM-SD. The red letters in this view correspond to sections of Figure 4-13 (page 105):

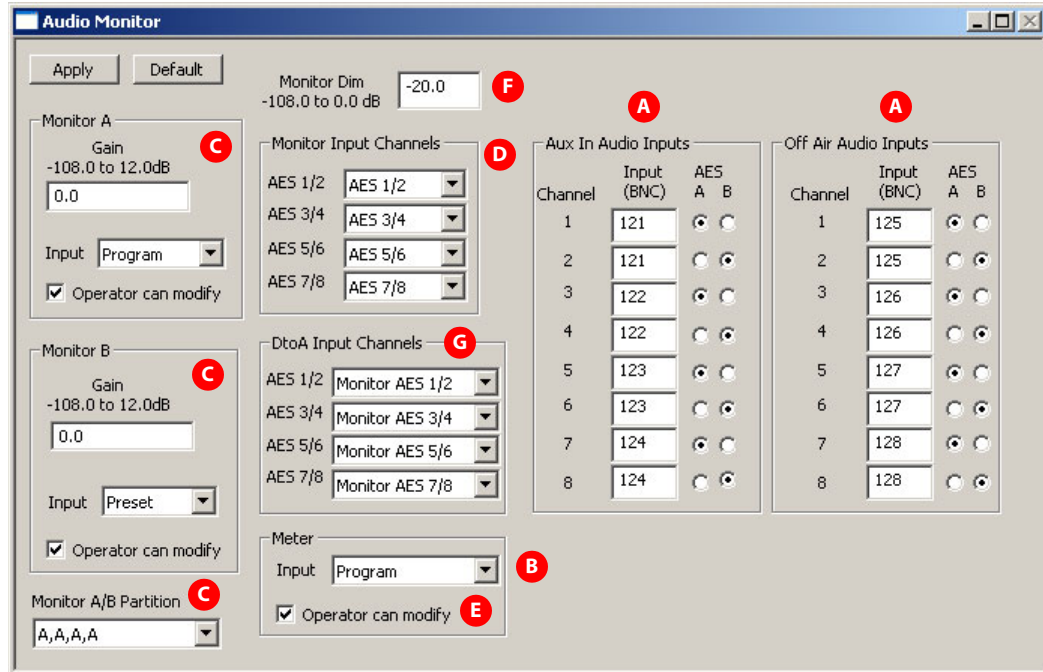


Fig. 4-12: Audio Monitor Page (Sample, MCPM-SD)

The MCPM has several inter-related monitor and meter functions. Two monitor outputs are available (A and B). Meter outputs are available.

All MCPMs except the mixer/keyers have built-in digital-to-analog converters that can be assigned to any of the monitor or meter outputs, eliminating the need for external conversion. (If you are configuring a mixer/keyer, the page has no 'DtoA Input Channels' subsection.)

MCPMs also have two auxiliary audio inputs. One is called "aux in" and the other is called "off-air." There is nothing special about the term "off-air." The off-air and "aux in" inputs are identical. The off-air and aux in inputs do not contribute to program, preset, or preview output in any way.

- ▲ The "aux in" input named here has no relationship to the "aux" buttons of the iMC-Panel-200, iMC-Panel-300, or iMC-Panel-GUI control panels or to the aux outputs of the MCE. Nor does it have any relationship to the "aux connector" at the backplane of many MCPMs or the "NVISION aux bus" at the back of NV5100MC frames.

Purpose

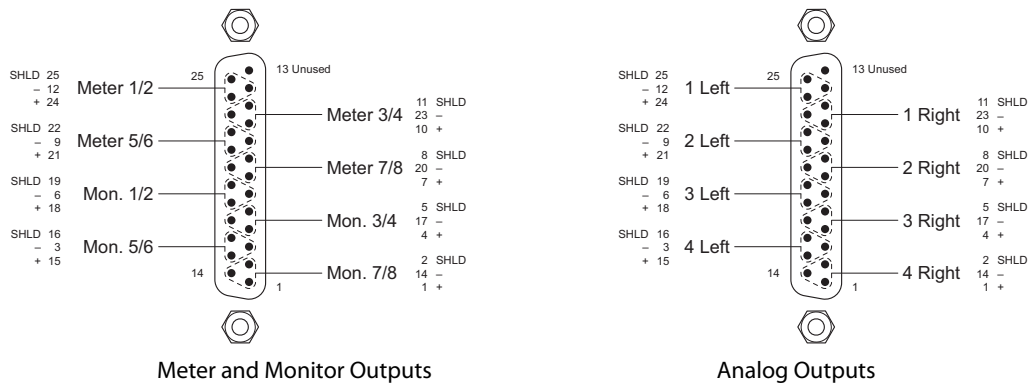
This is what the 'Audio Monitor' configuration page does for MCPMs that are not MCEs:

- Specifies the sources for up to 8 channels for the aux in input and 8 channels for the off-air input.
- Specifies the source (and gain) for monitors A and B.
- Specifies the source for the meter outputs.
- Selects the monitor outputs and their partitioning.

- Selects the D-to-A outputs.
- ▲ This configuration page will not make much sense unless you understand the architecture of the MCPM's audio section. You can read the *Master Control Reference Manual* to find out or read the following very brief discussion.

Meters and Monitors Section

For most MCPMs, the audio meter and monitor section presents signals on DB25 connectors.



Some MCPMs do not provide analog audio outputs. See [MCPM Types](#) on page 11 for more information.

Figure 4-13 shows the organization of the audio metering and monitoring section of the MCPM. The letters in this illustration correspond to the letters marking places in Figure 4-12.

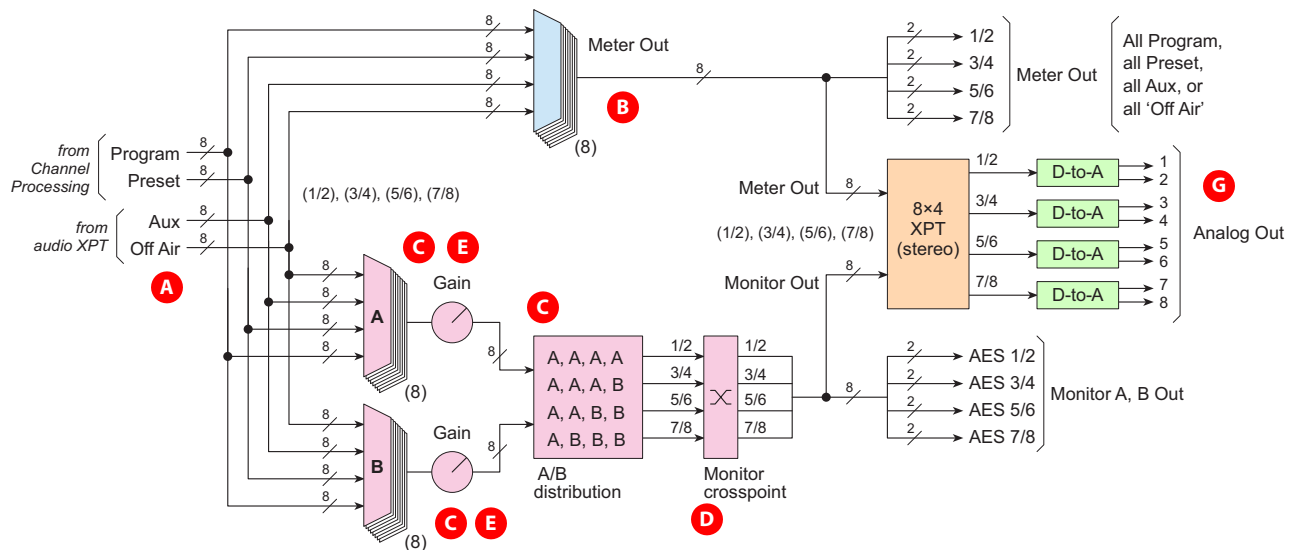


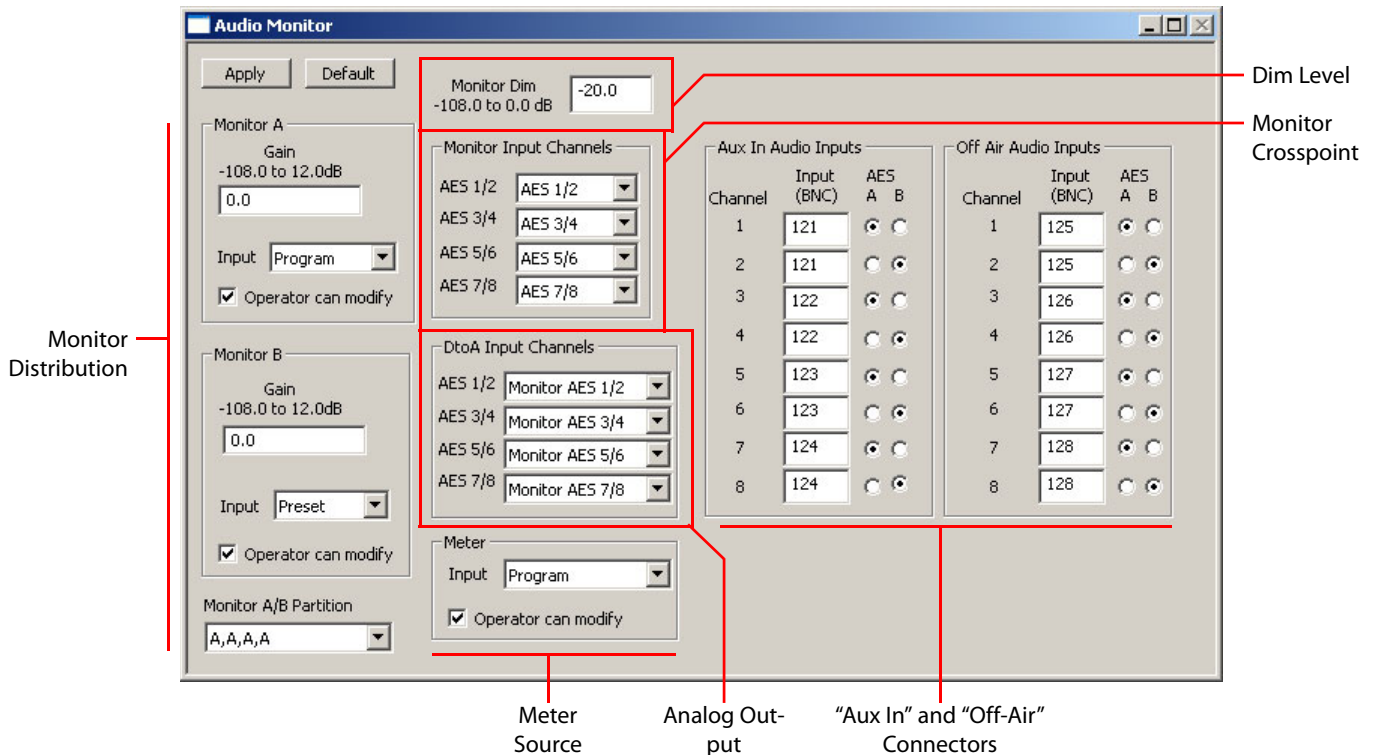
Fig. 4-13: Audio Meters and Monitors (General View)

- A** The meter and monitor section receives program and preset inputs as the output from each of the 8 channel processors. Those outputs have undergone prior disembedding, decoding, and mixing. It also receives 8 aux in and 8 off-air inputs from the audio crosspoint. The section treats each of these sources as 4 AES pairs (1/2, 3/4, 5/6, and 7/8).

- B** The metering multiplexer delivers either program, preset, “aux in,” or “off air,” to the metering output connectors. It does not recombine program, preset, “aux in,” or “off air” in any way. It does not apply any gain to the meter outputs.
- C** The monitor section allows you to combine any *two* of the program, preset, aux, and off-air sources on the monitor outputs. There are two monitor “buses” named A and B (both evident on master control panels). Each bus selects one of the 4 sources. The A and B buses are distributed to the monitor outputs in one of 4 ways, as illustrated by the A/B distribution block in Figure 4-13. Monitor A might, for example, play program audio and monitor B might play aux audio.
- D** An additional crosspoint allows you to interchange the monitor’s 4 channel pairs prior to output. Note that the meter output does not have such a crosspoint.
- E** You can configure monitor and meter outputs so that a panel operator can select any of the 4 sources (program, preset, aux, or off-air) to meter or monitor and adjust the gain of the monitor outputs. If an operator is allowed to change the monitor or meter setup, the values you enter in the fields are the *default* values. (Operators can store changed values as new defaults.)
- F** On a control panel, each monitor, A and B, has an independent “dim” function (either a menu button or a physical button). When an operator presses the monitor’s “dim” button at a control panel, the monitor level decreases by an amount that you specify in the ‘Audio Monitor’ page. The operator cannot change this value.
- G** The analog audio output section (if the MCPM model has one) receives AES signals in pairs from both the meter and monitor outputs. You can assign any of those 8 pairs to each of the four D-to-A pairs. Internal DACs convert those AES signals to analog signals. Thus, any analog audio output pair can reproduce any meter or monitoring pair. (This feature allows you to use analog speakers.)
 - ▲ Please note: the number of monitoring channels available is limited by the “Max # of Audio Channels” setting in the ‘General Settings’ page.

Page Organization

The 'Audio Monitor' page has 6 sections:



- 1 The [monitor distribution](#) section specifies the gain and source of each of the monitors and specifies the partitioning of the monitor buses on the outputs. Additionally you can specify whether the panel operator may change the monitor setup.
 - 2 The [dim level](#) section specifies the attenuation for a panel's dim buttons.
 - 3 The [monitor crosspoint](#) section specify the monitor crosspoint.
 - 4 The [analog output](#) section specifies which meter and monitor outputs are output as analog signals.
 - 5 The [meter source](#) section specifies the source for the meter output.
 - 6 The [aux in and off air inputs](#) section comprise up to 8 discrete channels of one auxiliary input and up to 8 discrete channels of the other auxiliary input.
- ▲ Audio input connectors can be BNC, Phoenix 3-pin, or DB25.

Monitor Distribution

There is a subsection for monitor A and a subsection for monitor B. They have the same features. At the bottom of this section is the A/B partition subsection.

Gain

Enter a value for the default monitor level (gain). The range of values is -108 dB to +12 dB.

Input

In the drop-down list, choose a source for the monitor: program, preset, aux in, or off-air.

- ▲ Bug: the drop-down list includes a “preview” option. This is not a valid choice for MCPMs that are not MCEs.

Operator Can Modify

Check the box if you want the operator to be able to select a source at the panel or to change the monitor level.

Monitor A/B Partition

Choose one of the 4 settings in the drop-down list. The choices are

- A, A, A, A,
- A, A, A, B,
- A, A, B, B,
- A, B, B, B

What this means is that monitor A appears on as many outputs pairs as there are letters in the row. The same is true for monitor B. In row 2, for example, there are 3 A's and 1 B. Monitor A appears on the first 3 outputs and monitor B appears on the last.

Which output pairs are A and which are B depends on the monitor crosspoint. If the crosspoint is diagonal, row 2 will appear at:

- Output 1/2 = A 1/2
- Output 3/4 = A 3/4
- Output 5/6 = A 5/6
- Output 7/8 = B 7/8

If you wanted B 1/2 to appear, you might change the fourth output to 1/2 in the ‘Monitor Input Channels’ section.

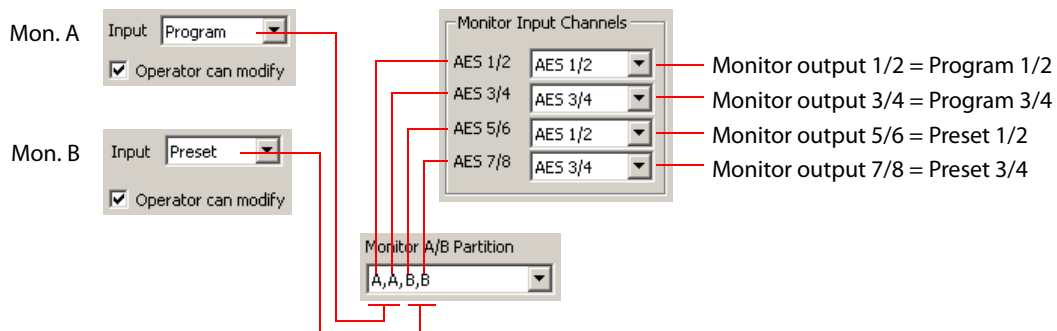
Monitor Crosspoint

This section represents a crosspoint where you can route AES pairs from the monitor buses A and B to the output connectors. Each row in this section represents a monitor output pair. The entry in the drop-down list in a row represents the input pair for the row.

Consider, for example, the monitor partition “A, A, B, B”. The first two outputs (1/2 and 3/4) are committed to monitor A; the last two outputs (5/6 and 7/8) are committed to monitor B.

In the drop-down list for the first output, you can choose any of 4 AES pairs. Because this output is assigned to monitor bus A, if monitor bus A was assigned program output, then you will hear the chosen AES pair from program on the first monitor output. This is true for the other A output too.

The preceding holds true for both of the B outputs. This diagram illustrates the example:



If you check 'Operator can modify' in the monitor section, what the operator chooses for monitor A will be audible on monitor outputs 1/2 and 3/4, and whatever the operator chooses for monitor B outputs will be audible on monitor outputs 5/6 and 7/8.

Dim Level

This section represents the attenuation (in dB) applied to either monitor's audio level when the operator presses a 'Dim' button. The operator can never change this value.

The range of values is -108 dB to +12 dB.

If, for example, the current gain for the monitor is +14 dB, applying a dim value of -20 dB results in a gain of -6 dB.

Analog Output

- ▲ The analog output feature allows you to connect analog speakers directly to your MCPM.
- ▲ If your MCPM has no analog outputs, the 'Audio Monitor' configuration page does not have this section.

Each row in this section represents one analog output pair. The output accepts an AES pair as input (which is why the rows are labelled as AES pairs) and converts the data to an analog signal pair.

You may choose which of 4 meter input pairs or 4 monitor input pairs to assign to each of the analog output pairs.

Meter Source

This section represents meter outputs. As for the monitor outputs, you can choose the source to meter: program, preset, aux, or off air, and you can let the operator choose the source as well.

Unlike monitor outputs, the meter output path is direct. The source goes directly to the output, channel for channel. There are no crosspoints to configure.

Aux In and Off Air Inputs

This section lets you specify the sources for the "aux in" input and the "off-air" input:

Aux In Audio Inputs				Off Air Audio Inputs			
Channel	Input (BNC)	AES A	B	Channel	Input (BNC)	AES A	B
1	121	<input checked="" type="radio"/>	<input type="radio"/>	1	125	<input checked="" type="radio"/>	<input type="radio"/>
2	121	<input type="radio"/>	<input checked="" type="radio"/>	2	125	<input type="radio"/>	<input checked="" type="radio"/>
3	122	<input checked="" type="radio"/>	<input type="radio"/>	3	126	<input checked="" type="radio"/>	<input type="radio"/>
4	122	<input type="radio"/>	<input checked="" type="radio"/>	4	126	<input type="radio"/>	<input checked="" type="radio"/>
5	123	<input checked="" type="radio"/>	<input type="radio"/>	5	127	<input checked="" type="radio"/>	<input type="radio"/>
6	123	<input type="radio"/>	<input checked="" type="radio"/>	6	127	<input type="radio"/>	<input checked="" type="radio"/>
7	124	<input checked="" type="radio"/>	<input type="radio"/>	7	128	<input checked="" type="radio"/>	<input type="radio"/>
8	124	<input type="radio"/>	<input checked="" type="radio"/>	8	128	<input type="radio"/>	<input checked="" type="radio"/>

The section has 8 rows representing up to 8 channels. The section has fewer rows if you chose fewer than 8 audio channels in the 'General Settings' page.

Each input field represents a single audio connection (BNC, Phoenix 3-pin, or part of a DB25) on the master control frame.

The buttons in the 'A' and 'B' columns represent one of the two channels on the connector. Button A is for the lower numbered channel and B is for the higher-numbered channel (as for AES 1 and 2, respectively).

- ▲ When you start a new MCPM configuration, these fields are filled with suggested values. Enter a zero (0) for the channels that you want to disable. You need not use any suggested value.
- ▲ You can use inputs more than once or for more than one purpose.

Completing the Audio Monitor Configuration

Follow these steps to complete audio monitor configuration:

- 1 Review all changes.
- 2 Click 'Apply' to commit any changes that you have not already applied. This action updates the configuration records with the changed information.
Click 'Default' to revert to default values. There is no "cancel" or undo function.

MCEs

This is a view of the page as it might appear for an MCE. The red letters in this view correspond to sections of Figure 4-15 (page 112):

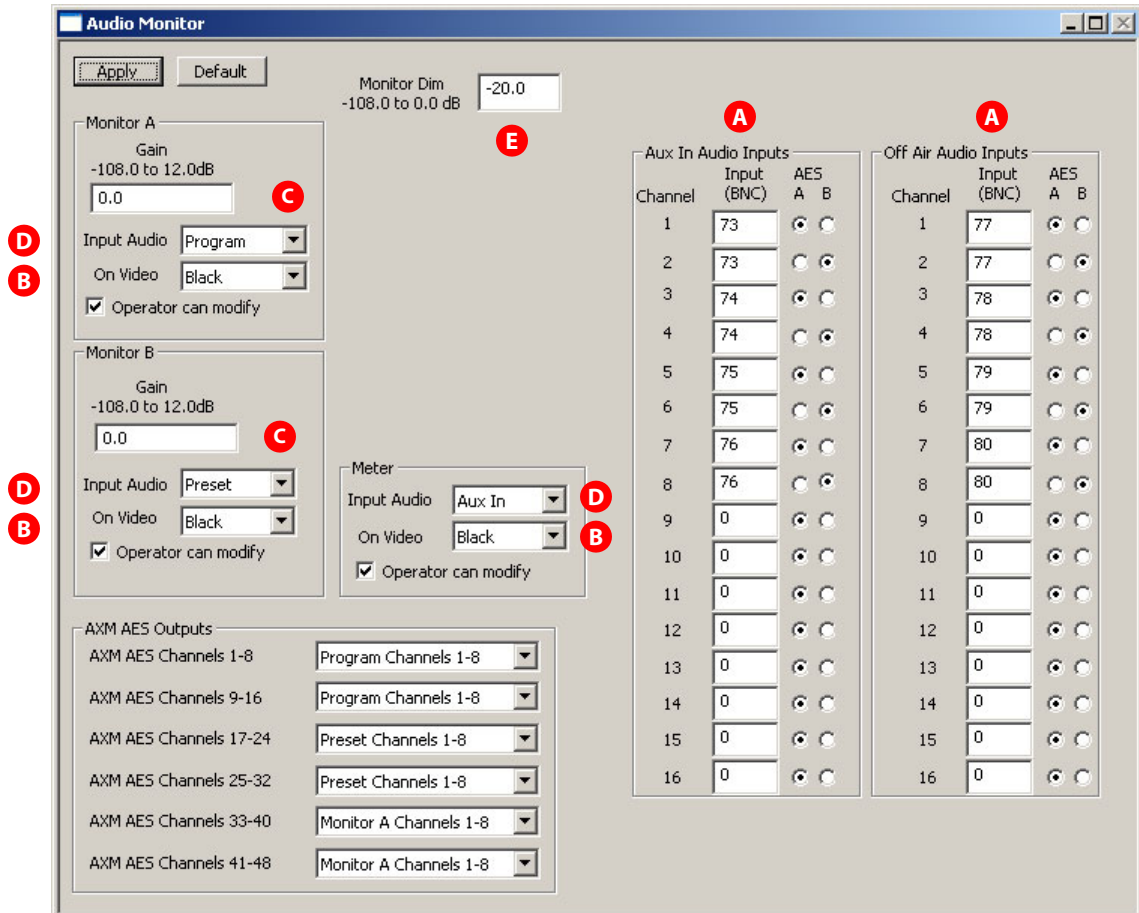


Fig. 4-14: Audio Monitor Page (Sample, MCE)

The MCE has relatively simple monitor and meter functions. Two monitor outputs are available (A and B). Meter outputs are available.

MCEs also have two auxiliary audio inputs. One is called “aux in” and the other is called “off-air.” There is nothing special about the term “off-air.” The off-air and aux in inputs are identical. The off-air and aux in inputs do not contribute to program, preset, or preview output in any way.

- ▲ The “aux in” input named here has no relationship to the “aux” buttons of the iMC-Panel-200, iMC-Panel-300, or iMC-Panel-GUI control panels or to the aux outputs of the MCE. Nor does it have any relationship to the “aux connector” at the backplane of the MCE-CORE or the “NVISION aux bus” at the back of NV5100MC frames.

Purpose

This is what the 'Audio Monitor' configuration page does for MCEs:

- Specifies the sources for up to 16 channels for the aux in input and 16 channels for the off-air input.
- Specifies the source (and gain) for monitors A and B.
- Specifies the source for the meter outputs.

This configuration page will not make much sense unless you understand the architecture of the MCE's audio section. You can read the *Master Control Reference Manual* to find out or read the following very brief discussion.

Meters and Monitors Section

The audio meter and monitor section presents signals on 3 coaxial (1.0/2.3) connectors, labeled 'Mon A Out', 'Mon B Out', and 'Mtr Out'.

Figure 4-15 shows the organization of the audio metering and monitoring section of the MCE. The letters in this illustration correspond to the letters marking places in Figure 4-14.

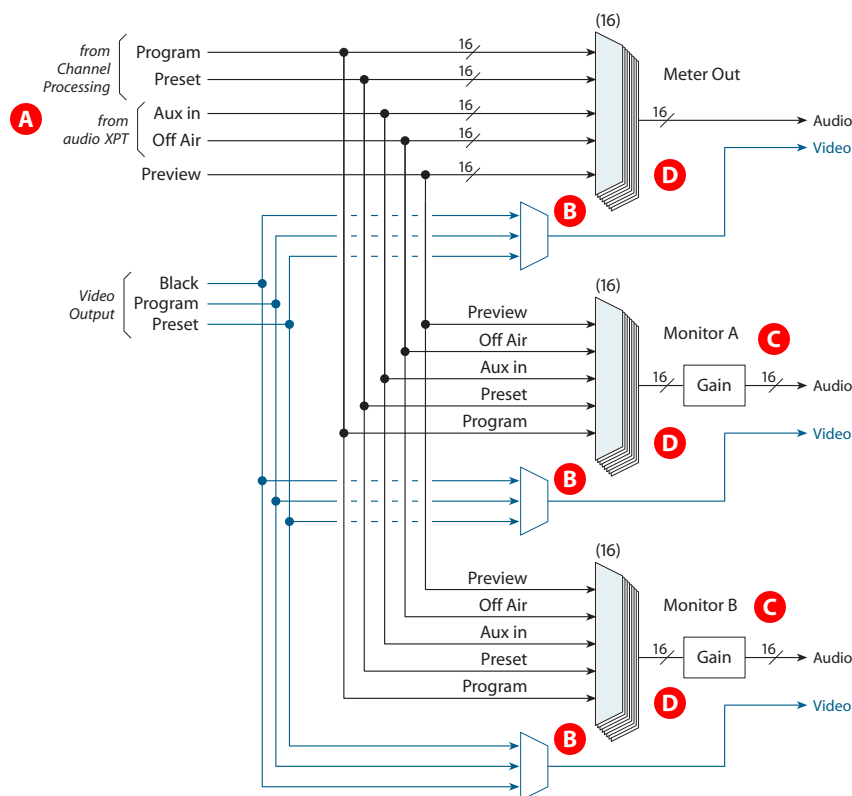


Fig. 4-15: Audio Meters and Monitors (General View)

- A** The meter and monitor section receives program and preset inputs as the output from each of the 16 channel processors. Those outputs have undergone prior disembedding, decoding, and mixing. It also receives 16 'aux in' and 16 'off-air' inputs from the audio crosspoint. The section treats each of these sources as 8 AES pairs.
- B** The audio monitor and meter outputs can also include a video signal: internal black, program output, or preset output. The default is internal black.

- C** There are two monitor “buses” named A and B and one metering bus (all of which are evident on master control panels). Each bus delivers 16 audio channels and one video channel. A panel operator can adjust the gain of the monitor outputs, but not of the metering output.
- D** You can configure monitor and meter outputs so that a panel operator can select any of the 5 sources (program, preset, preview, aux in, or off-air) to meter or monitor. If an operator is allowed to change the monitor or meter setup, the values you enter in the fields are the *default* values. (Operators can store changed values as new defaults.)
- E** On a control panel, each monitor, A and B, has an independent “dim” function (either a menu button or a physical button). When an operator presses the monitor’s “dim” button at a control panel, the monitor level decreases by an amount that you specify in the ‘Audio Monitor’ page. The operator cannot change this value.
 - ▲ Please note: the number of monitoring channels available is limited by the “Max # of Audio Channels” setting in the ‘General Settings’ page.

Page Organization

The ‘Audio Monitor’ page has these sections:

Monitor and Meter Control

Dim Level

AES Output Section

Aux In Audio Connectors

Off-Air Audio Con-

Aux In Audio Inputs				Off Air Audio Inputs			
Channel	Input (BNC)	AES A	B	Channel	Input (BNC)	AES A	B
1	73	<input checked="" type="radio"/>	<input type="radio"/>	1	77	<input checked="" type="radio"/>	<input type="radio"/>
2	73	<input type="radio"/>	<input checked="" type="radio"/>	2	77	<input type="radio"/>	<input checked="" type="radio"/>
3	74	<input checked="" type="radio"/>	<input type="radio"/>	3	78	<input checked="" type="radio"/>	<input type="radio"/>
4	74	<input type="radio"/>	<input checked="" type="radio"/>	4	78	<input type="radio"/>	<input checked="" type="radio"/>
5	75	<input checked="" type="radio"/>	<input type="radio"/>	5	79	<input checked="" type="radio"/>	<input type="radio"/>
6	75	<input type="radio"/>	<input checked="" type="radio"/>	6	79	<input type="radio"/>	<input checked="" type="radio"/>
7	76	<input checked="" type="radio"/>	<input type="radio"/>	7	80	<input checked="" type="radio"/>	<input type="radio"/>
8	76	<input type="radio"/>	<input checked="" type="radio"/>	8	80	<input type="radio"/>	<input checked="" type="radio"/>
9	0	<input checked="" type="radio"/>	<input type="radio"/>	9	0	<input checked="" type="radio"/>	<input type="radio"/>
10	0	<input type="radio"/>	<input checked="" type="radio"/>	10	0	<input type="radio"/>	<input checked="" type="radio"/>
11	0	<input checked="" type="radio"/>	<input type="radio"/>	11	0	<input checked="" type="radio"/>	<input type="radio"/>
12	0	<input type="radio"/>	<input checked="" type="radio"/>	12	0	<input type="radio"/>	<input checked="" type="radio"/>
13	0	<input checked="" type="radio"/>	<input type="radio"/>	13	0	<input checked="" type="radio"/>	<input type="radio"/>
14	0	<input type="radio"/>	<input checked="" type="radio"/>	14	0	<input type="radio"/>	<input checked="" type="radio"/>
15	0	<input checked="" type="radio"/>	<input type="radio"/>	15	0	<input checked="" type="radio"/>	<input type="radio"/>
16	0	<input type="radio"/>	<input checked="" type="radio"/>	16	0	<input type="radio"/>	<input checked="" type="radio"/>

- 1 The [Monitor and Meter Control](#) section specifies the gain and source of the monitor and meter outputs. You can specify a video source to accompany the audio output. You can also specify whether the panel operator may change the monitor or meter setup.
 - 2 The [Dim Level](#) section specifies the attenuation for a panel's dim buttons.
 - 3 The [AES Output Section](#) section specifies the source for the meter output.
 - 4 The [Aux In and Off Air Inputs](#) section comprise up to 16 discrete channels of one auxiliary input and up to 16 discrete channels of the other auxiliary input.
- ▲ Audio input connectors can be BNC, Phoenix 3-pin, or DB25.

Monitor and Meter Control

There is a subsection for monitor A, a subsection for monitor B, and a subsection for meters. The monitors have the same controls. The meters subsection is similar to the monitor subsections, but the meters *do not* have a gain control.

Gain

Enter a value for the default monitor level (gain). The range of values is -108 dB to $+12$ dB.

Input

In the drop-down list, choose a source for the monitor: program, preset, preview, aux in, or off-air.

Operator Can Modify

Check the box if you want the operator to be able to select a source at the panel or to change the monitor level.

On Video

In the drop-down list, choose a video source: (internal) black, program, or preset.

The video source you select is carried in the audio monitor or meter output to be used (or not) as you require.

Dim Level

This section represents the attenuation (in dB) applied to either monitor's audio level when the operator presses a 'Dim' button. The operator cannot change this value.

The range of values is -108 dB to $+12$ dB.

If, for example, the current gain for the monitor is $+14$ dB, applying a dim value of -20 dB results in a gain of -6 dB.

AES Output Section

This section supports 48 AES output channels (24 AES pairs) that appear on three DB25 connectors on the MCE's AXM backplane module. (It lets you configure outputs whether they exist or not.)

Each group of 8 output channels (4 pairs) can be configured to follow audio from any of these 12 sources:

- Program Channels 1–8
- Program Channels 9–16
- Preset Channels 1–8
- Preset Channels 9–16
- Preview Channels 1–8
- Preview Channels 9–16

- Monitor A Channels 1–8
- Monitor B Channels 1–8
- Meter Channels 1–8
- Monitor A Channels 9–16
- Monitor B Channels 9–16
- Meter Channels 9–16

▲ The connector labels on the AXM backplane module do not reflect these choices.

Aux In and Off Air Inputs

This section lets you specify the sources for each of the 16 channels of the aux in input and the off-air input:

Aux In Audio Inputs				Off Air Audio Inputs			
Channel	Input (BNC)	AES		Channel	Input (BNC)	AES	
		A	B			A	B
1	73	<input checked="" type="radio"/>	<input type="radio"/>	1	81	<input checked="" type="radio"/>	<input type="radio"/>
2	73	<input type="radio"/>	<input checked="" type="radio"/>	2	81	<input type="radio"/>	<input checked="" type="radio"/>
3	74	<input checked="" type="radio"/>	<input type="radio"/>	3	82	<input checked="" type="radio"/>	<input type="radio"/>
4	74	<input type="radio"/>	<input checked="" type="radio"/>	4	82	<input type="radio"/>	<input checked="" type="radio"/>
5	75	<input checked="" type="radio"/>	<input type="radio"/>	5	83	<input checked="" type="radio"/>	<input type="radio"/>
6	75	<input type="radio"/>	<input checked="" type="radio"/>	6	83	<input type="radio"/>	<input checked="" type="radio"/>
7	76	<input checked="" type="radio"/>	<input type="radio"/>	7	84	<input checked="" type="radio"/>	<input type="radio"/>
8	76	<input type="radio"/>	<input checked="" type="radio"/>	8	84	<input type="radio"/>	<input checked="" type="radio"/>
9	77	<input checked="" type="radio"/>	<input type="radio"/>	9	85	<input checked="" type="radio"/>	<input type="radio"/>
10	77	<input checked="" type="radio"/>	<input type="radio"/>	10	85	<input checked="" type="radio"/>	<input type="radio"/>
11	78	<input checked="" type="radio"/>	<input type="radio"/>	11	86	<input checked="" type="radio"/>	<input type="radio"/>
12	78	<input checked="" type="radio"/>	<input type="radio"/>	12	86	<input checked="" type="radio"/>	<input type="radio"/>
13	79	<input checked="" type="radio"/>	<input type="radio"/>	13	87	<input checked="" type="radio"/>	<input type="radio"/>
14	79	<input checked="" type="radio"/>	<input type="radio"/>	14	87	<input checked="" type="radio"/>	<input type="radio"/>
15	80	<input checked="" type="radio"/>	<input type="radio"/>	15	88	<input checked="" type="radio"/>	<input type="radio"/>
16	80	<input checked="" type="radio"/>	<input type="radio"/>	16	88	<input checked="" type="radio"/>	<input type="radio"/>

The section has 16 rows representing up to 16 channels. The section has fewer rows if you chose fewer than 16 audio channels in the 'General Settings' page.

Each input field represents a single audio connection (BNC, Phoenix 3-pin, or part of a DB25) on the master control frame.

The buttons in the 'A' and 'B' columns represent one of the two channels on the connector. Button A is for the lower numbered channel and B is for the higher-numbered channel (as for AES 1 and 2, respectively).

- ▲ When you start a new MCE configuration, these fields are filled with typical values. Enter a zero (0) for the channels that you want to disable. You need not use any "typical value."
- ▲ You can use inputs more than once or for more than one purpose.

Completing an Audio Monitor Configuration

Follow these steps to complete audio monitor configuration for any MCPM or MCE:

- 1 Review all changes.
- 2 Click 'Apply' to commit any changes that you have not already applied. This action updates the configuration records with the changed information.
Click 'Default' to revert to default values. There is no "cancel" or undo function.

Keyer Sources

This is the 'Keyer Sources' configuration page as it might appear for an MCE:

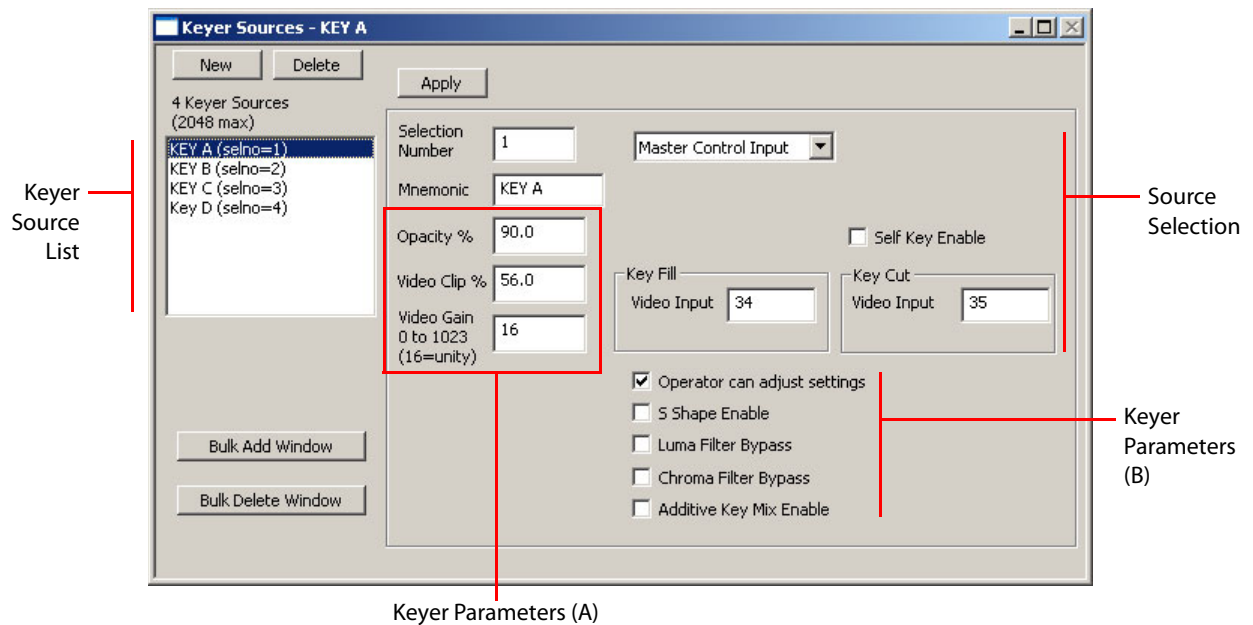


Fig. 4-16: Keyer Sources Page (Sample, MCE)

This is the 'Keyer Sources' configuration page as it might appear for an MCPM-SD:

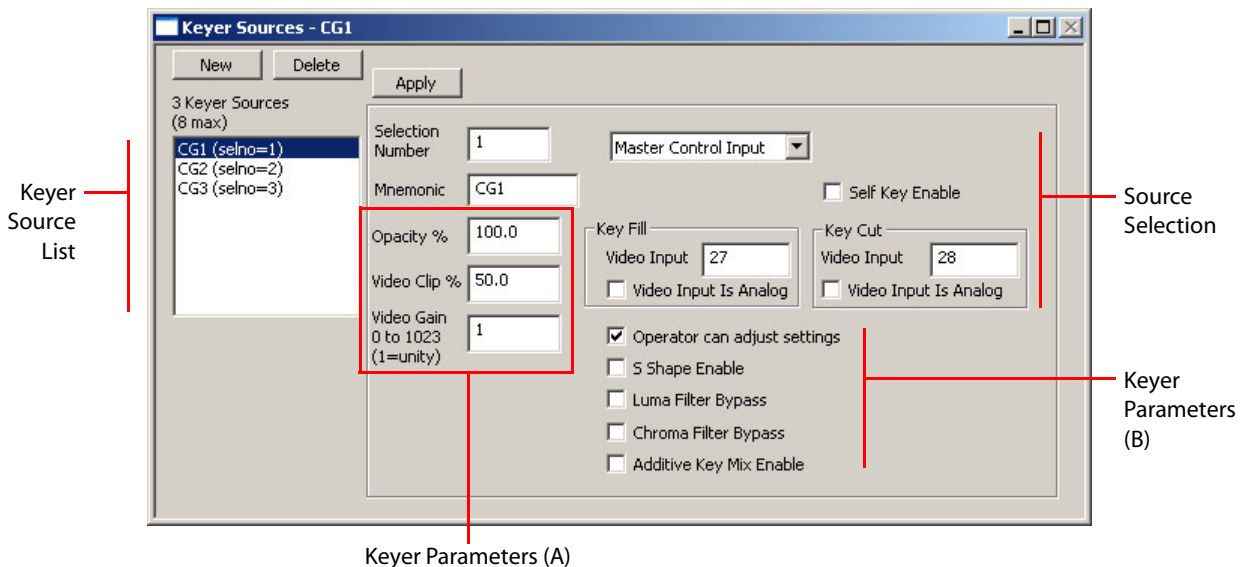


Fig. 4-17: Keyer Sources Page (Sample, MCPM-SD)

The difference between the MCE page and the pages for MCPMs is that for MCEs, the page allows up to 2048 keyer sources and provides a bulk add and a bulk delete button. For MCPMs, the limit is 8 keyer sources.

An MCPM or MCE has, among its video effects, 3 independent (and linear) keyers. A key (the image processed by a keyer) comprises 2 video sources. One source is called the "fill" and the other is called the "key." The luminance of pixels in the 'key' video frame form a mask for the

pixels in the 'fill' video frame. The resultant masked fill pixels are mixed with the pixels of the upstream video on the program or preset bus. The resulting mix might be further modified by other downstream video effects.

- ▲ The key's key signal is labeled "Key Cut" in this configuration window and the key's fill signal is labeled "Key Fill."

Keys can be either opaque or partially transparent.

It is possible to use the luminance values in the 'fill' source as key values. In such cases, the key video source is not required.

The mixing function can be "additive" or "normal."

The 3 keyers of the MCPM or MCE share the set of defined keyer sources defined in this page.

- ▲ In MCEs, one or two of 3 keyers might be assigned to Intuition XG channels.
- ▲ There is a clean-feed tap after each keyer. The tap is selected in the [Misc. Settings](#) page. (MCEs have two clean-feed outputs, A and B. MCPMs have one clean-feed output.)

The keyer sources governed by this configuration page can include:

- Local sources (video connections at the NV5100MC backplane).
- External sources (devices connected to routers under a NV9000 control system).

Purpose

This is what the 'Keyer Sources' page does:

- Names the keyer sources. (The keyer names appear on the buttons, and in the menus, of master control panels.)
- Identifies the video sources and specifies the processing parameters for the keyer.

Page Organization

There are 3 sections:

- 1 The [keyer source list](#) shows sources that have already been created. They can be edited.
- 2 The [source selection](#) section is split into two subsections. The first specifies the "fill" source. The second specifies the "key" source and contains a checkbox that indicates whether the second source is required.
- 3 The [keyer parameters](#) section allows you to specify (1) the appearance of the keyer, (2) the behavior of the keyer, and (3) whether the panel operator can change any of the parameters.

IMPORTANT

The meaning of some of the keyer parameters is not obvious. Refer to the video effects section of the *Master Control Reference Manual* for details

Keyer Source List

The keyer source list includes all the keyer sources you have defined for the MCPM. The sources you define are shared by all 3 keyers.

To configure a keyer source, it must be in the list. You can add entries to the list and remove or copy entries in the list. The mnemonic (name) of a source should be meaningful to panel operators.

You can define up to 8 sources. Gaps in the numbering are permissible.

You can assign each of the 3 keyers a default setting that takes effect at system startup. The defaults are specified in the [Video Effect and Over Settings](#) page.

To Create a New Source

Click 'New'. The page shows a set of default parameters. You may edit the parameters now or at any time. Click 'Apply' to commit changes to the keyer source definition.

To Delete a Source

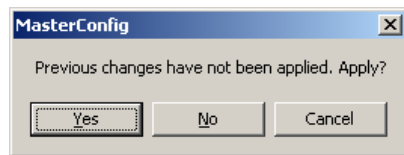
Highlight the source in the list and click 'Delete'.

To Copy a Source

Highlight the source in the list. Give it a new *unused* selection number and click 'Apply'. If you choose an existing selection number, you will overwrite an existing source definition.

To Edit a Source

Highlight the source in the list and modify the parameters you want to change. Click 'Apply' to confirm your changes. If you wish to *cancel* your changes, either click another source or click 'New'. A query appears:



Click 'No' to discard your changes.

Source Selection

It is in the source section that you identify the fill and key sources.

To edit an existing source, highlight it in the keyer sources list. To edit a new source, simply click 'New'.

Selection Number

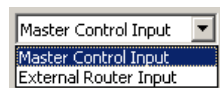
Either use the supplied value or enter a value from 1 to 8. This number defines the source's position in the source list. See [Selection Numbers](#) on page 38.

Mnemonic

Enter the name that you want to appear on a control panel's keyer button, up to 8 characters. Use alphanumeric characters, spaces, or underbars. Although you can enter other characters, the panels might not display them.

Source Type Selection

To the right of the selection number is a drop-down list for source type:



There are 2 choices:

- Master Control Input.
- External Router Input.

Master Control Input

Choose 'Master Control Input' if you want a local keyer source — one that is connected directly at the backplane.

This is the default keyer source type.

- Check the 'Self Key Enable' box if the video fill is to use its own luminance values as key (or cut) values. If you check this box, the 'Key Cut' subsection disappears.
If there is no key signal available for a fill, you should enable self-key mode. The appearance of the keyer in self-key mode depend heavily on the composition of the fill signal.
- Enter the connector number for the fill input. Check the 'Video Input is Analog' box if the input is analog. The MCPM will then apply timing compensation to account for the A/D conversion.
- If you have **not** checked the 'Self Key Enable' box, enter the connector number for the key input. Check the 'Video Input is Analog' box if the input is analog. The MCPM will then apply timing compensation to account for the A/D conversion.
 - ▲ The MCE does not allow analog keyer input. The analog checkboxes are not displayed for MCEs.
 - ▲ The MCPM-MK-HD is unique: Its local inputs, including its *fill* and *key* sources, use the 16 connectors on its own backplane module.

External Router Input

- ▲ External Router Input is not available unless you have (1) enabled external router sources in the [General Settings](#) and (2) enabled external keyer sources in the [ExtRtrSrc Settings \(for MCEs\)](#) page.

Choose 'External Router Input' if you want an external keyer source — one that is connected to routers in an associated NV9000 router control system. If you choose this option, the source section displays a drop-down list that allow you to select a source defined in the NV9000 configuration.

If you don't have the NV9000 system connected during configuration, the drop-down list does not appear. In that case, you must enter the database ID for the source you want directly.

An external key comprises a fill source and a key source just as local keys do (unless of course it is a self-key). The source is identified by a single device having two (virtual) levels for key and fill.

- Check the 'Self Key Enable' box if the video fill is to use its own luminance values as key values. If you can determine that there is no key signal available for a fill, you should enable self-key mode. The appearance of the keyer in self-key mode depend heavily on the composition of the fill signal.

- Check the 'Video Input is Analog' box if the input is analog. The MPCM will then apply timing compensation to account for the A/D conversion.
(The MCE does not allow analog keyer input. The analog checkbox is not displayed for MCEs.)

Keyer Parameters

Opacity

The 'Opacity %' field specifies the *maximum* opacity of the keyer. Every pixel in the keyer has its own (computed) opacity. The MPCM multiplies the pixel opacity by this maximum value.

Enter a value from 1.0 (nearly transparent) to 100.0 (opacity fully dependent on pixel opacity).

- ▲ Pixel opacity depends on the luminance of the 'key' pixel, the video gain and clip values, and whether other parameters such as S-shaping are applied.

Video Clip, Video Gain

To understand clip and gain, refer to the *Master Control Reference Manual*. The clip and gain values are parameters that shape the key function and they are not at all obvious.

Enter a value from 0.0 to 100.0 (percent) in the 'Video Clip' field. Enter a number from 0 to 1023 in the 'Video Gain' field.

- ▲ For MCEs, gain is expressed in integers in the range [0,1023] representing gain values in discrete multiples of 1/16 from 0 to 63 15/16. Unity gain therefore has a value of 16.
- ▲ For other (and older) MCPMs, gain is **not** scaled by 16: a value of 1 means unity gain and the maximum gain is 1023. In these MCPMs, there are no fractional gain values.

Operator Can Adjust Settings

Check the 'Operator Can Adjust Settings' box if you want to allow the panel operator to adjust keyer settings (e.g., clip, gain, or opacity) and possibly save new default values.

If you check this box, the operator can adjust all parameters of this setting, including whether the keyer operates in 'self key' mode, and the values in the keyer setting are its *default values*.

S Shape Enable

Check the 'S Shape Enable' box to activate "S Shaping." Set this parameter according to the keyer source's configuration: if the external key signal is "S" shaped, turn "S Shaping" off.

(S shaping smooths the key function.)

Luma and Chroma Filter Bypass

Check the 'Luma Filter Bypass' box to remove the luminance filter from the key processing chain. Check the 'Chroma Filter Bypass' box to remove the chroma filter from the key processing chain. These filters might prove useful if self-key mode is enabled, or if key signals are noisy.

Additive Key Mix Enable

Check the 'Additive Key Mix Enable' box to activate additive key mode. The mix of video from either the program or preset bus and the key fill changes:

This is normal (or multiplicative) mixing:

$$\text{Pixel}' = \text{Fill} \times \text{Key}' + \text{Pixel} (1 - \text{Key}')$$

This is additive:

$$\text{Pixel}' = \text{Fill} + \text{Pixel} (1 - \text{Key}')$$

(Key' is the computed key value.)

Completing the Keyer Settings Configuration

Follow these steps to a complete keyer setting configuration:

- 1 Review all changes.
- 2 Click 'Apply' to commit any changes that you have not already applied. This action updates the configuration records with the changed information.

Or, cancel your changes either by clicking 'New' or by clicking any other keyer source in the list. MasterConfig will ask whether you want to apply changes. Respond 'No' if you do not.

Tip

Until the keyer can be checked visually, (1) leave the clip at its default value, (2) leave the gain at its default, and (3) leave the S-shaping parameter unchecked.

Logo Images

This is the 'Logo Images' configuration page:

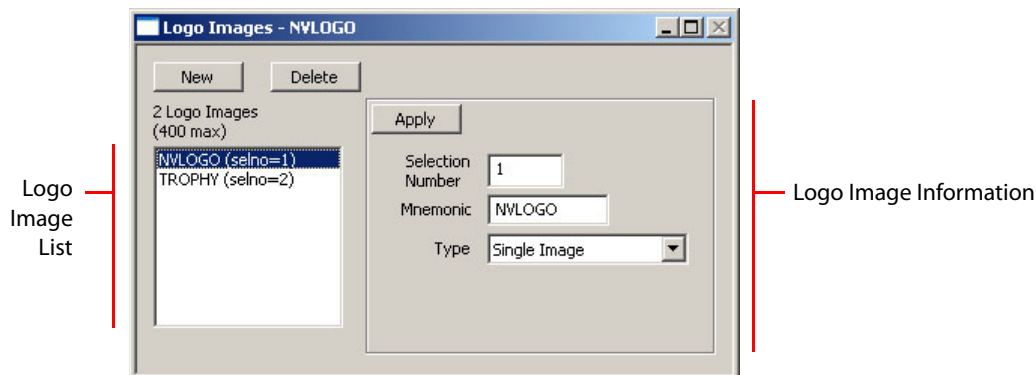


Fig. 4-18: Logo Images Page (Sample)

Logo images are used in the [Logo Keyer Sources](#) configuration page.

The MCPM-MK-SD and MCPM-MK-HD have 1 logo keyer.¹ Other MCPM types have 2 logo keyers. A logo image is a file stored within the MCPM that contains both a "fill" pixel map and a "key" pixel map. The stored logo image can either be a static logo or an animation. The luminance of pixels in the key portion form a mask for the pixels in the fill portion. The resultant masked image pixels are mixed with the pixels of the upstream video on the program or preset bus. The resulting mix might be further modified by downstream video effects.

1. A logo keyer is firmware that mixes a logo with upstream video.

A logo (comprising a logo image and a set of display parameters) can be positioned within the video frame. A logo can be opaque or partially transparent.

Before you can use a logo image in the MCPM, you must convert the logo's original graphic artwork to the format required by MCPMs. Use MasterLogo to convert logo graphics. MasterLogo is actually the tool that loads logos into the MCPM and is activated when MasterConfig writes a configuration to the MCPM.

For MCEs, the logo keyers share a pool of up to 400 defined logo keyer settings. The logo keyer *settings* share a pool of up to 400 logo *images*.

For other MCPMs, the logo keyers share a pool of up to 64 defined logo keyer settings. The logo keyer *settings* share a pool of up to 64 logo *images*.

Purpose

This is what the 'Logo Image' page does:

- Names the logo images. (The logo names **do not** appear on the buttons and in the menus of master control panels. What appears on a logo button is the name of the logo keyer setting.)
- Specifies the type of logo: static or animated.

Page Organization

The 'Logo Images' page has 2 sections:

- 1 The [logo image list](#) shows images that have already been created (in MasterLogo). They can be edited.
- 2 The [logo image information](#) section is simple: it names the image and specifies whether the logo is static or animated.

The [Logo Keyer Sources](#) configuration page specifies additional parameters such as opacity and position in the frame.

Logo Image List

The logo image list includes all the logo images you have defined for the MCPM or MCE. The images you define are shared by all logo inserters.

- ▲ A logo must be in the list before you can associate, *using MasterLogo*, a logo file with the logo list entry.

You can add entries to the list and remove or copy entries in the list. The name of an image need not be meaningful to panel operators. Operators see only the names of logo keyer settings.

You can define up to 64 images for MCPMS and 400 for MCEs. Gaps in the numbering are permissible.

To Create a New Logo Image

Click 'New'. You may edit the list entry now or at any time. Click 'Apply' to commit changes to the logo image definition.

- ▲ This creates a new list entry, not a new logo file.

To Delete a Source

Highlight the image name in the list and click 'Delete'.

To Copy a Source

Highlight the image name in the list. Give it a new *unused* selection number and click 'Apply'. If you choose an existing selection number, you will overwrite an existing image definition.

Logo Image Information

This section names the logo image and specifies whether the logo is static or animated.

To edit existing image information, highlight it in the list. To edit a new image, simply click 'New'.

Selection Number

Either use the supplied value or enter a value from 1 to 64. See [Selection Numbers](#) on page 38.

Mnemonic

Enter the name that you want to appear on a control panel's logo button, up to 8 characters. Use alphanumeric characters, spaces, or underbars. Although you can enter other characters, the panels will not display them.

Type

Choose 'Single Image' or 'Animation' in the drop-down list. (A single image is a static logo.) The logo file you associate (in MasterLogo) with this list entry should match the type you select.

- ▲ An animated logo can (1) run once, (2) loop indefinitely, or (3) loop indefinitely with a pause between each pass of the loop. These characteristics are specified in the [Logo Keyer Sources](#) configuration page.

Completing a Logo Image Configuration

Click 'Apply' to commit changes that you have not already applied. This action updates the configuration records with the changed information.

Or

Cancel your changes either by clicking 'New' or by clicking any other keyer source in the list. MasterConfig will ask whether you want to apply changes. Respond 'No' if you do not.

- ▲ In all MCPMs but the MCE, the first logo is stored in MCPM flash memory. Remaining logos are stored in RAM and must be reloaded after an MCPM reset. The first logo must be static, not animated. (The first logo is the one identified by selno = 1.) The limit is 64 logos. MCEs have no such logo restriction. Presently the limit is 400 logos (whether static or animated). Refer to the *Master Control Reference Manual* for more information. The total amount of storage available for logos is approximately 3 GB. The actual storage available varies according to the particular version of software in the MCE.

Logo Keyer Sources

This is the 'Logo Keyer Sources' configuration page:

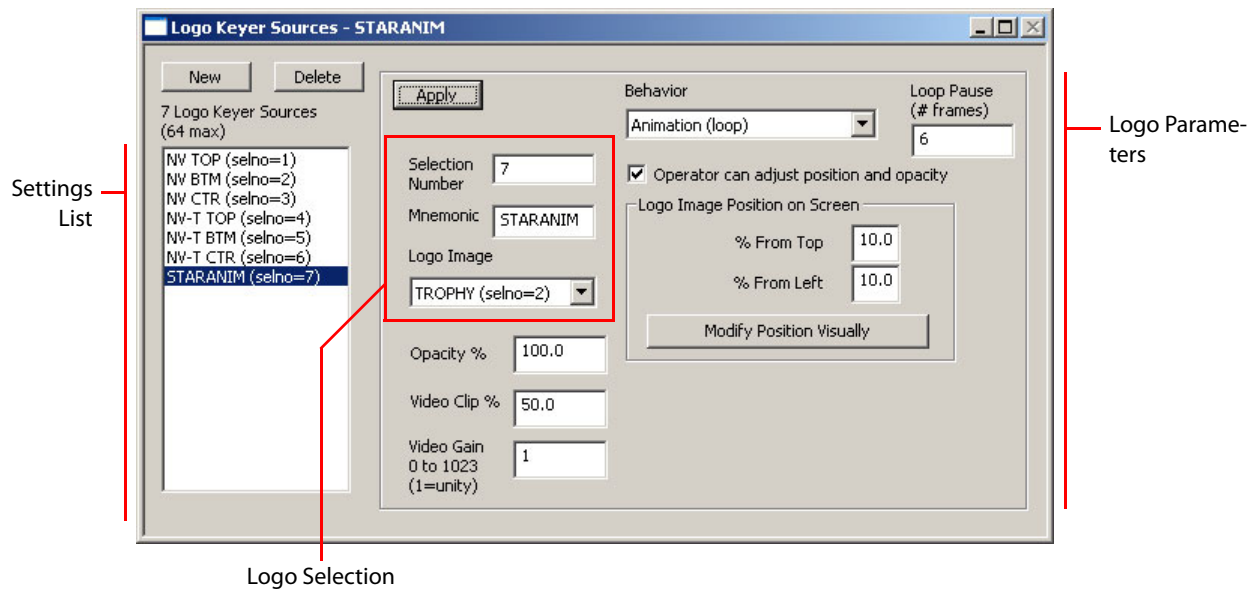


Fig. 4-19: Logo Keyer Sources Page (Sample)

The 'Logo Keyer Sources' page defines logo keyer *settings* by combining parameters such as opacity with logo images. The panel operator may select among the defined logo keyer settings. If you allow it, the operator may also change logo position and opacity.

MCEs allow 400 logo keyer settings. Other MCPMs allow 64.

You can create many logo keyer settings from a single logo image, simply by varying position or any of the other parameters. (After being defined in MasterLogo, a logo's size does not vary.)

- ▲ There is a clean-feed tap after each logo. The tap is selected in the [Misc. Settings](#) page. (MCEs have two clean-feed outputs. MCPMs have one.)

Purpose

This is what the 'Logo Keyer Sources' page does:

- Names the logo keyer settings. (The names appear on the buttons and in the menus of master control panels.)
- Identifies the logo image for the setting and specifies the processing parameters for the logo.

Page Organization

There are 3 sections:

- 1 The [settings list](#) shows settings that have already been created. They can be edited.
- 2 The [logo selection](#) section is simple: it names the setting and selects a logo image to use.

- 3 The [logo parameters](#) section allows you (1) to specify the appearance of the logo keyer and whether the panel operator can change any of the parameters.

IMPORTANT

The meaning of some of the logo parameters is not obvious. Refer to the video effects section of the Master Control Reference Manual for details

Settings List

The settings list includes all the logo keyer settings you have defined for the MCPM. The settings you define are shared by all logo inserters.

To configure a setting, it must be in the list. You can add entries to the list and remove or copy entries in the list. The mnemonic (name) of a source should be meaningful to panel operators.

You can define up to 400 settings for MCEs and 64 settings for all other MCPMs. Gaps in the numbering are permissible.

You can assign each of 1 or 2 logo inserters a default setting that takes effect at system startup. The defaults are specified in the [Video Effect and Over Settings](#) configuration page.

To Create a New Setting

Click 'New'. The page shows a set of default parameters. You may edit the parameters now or at any time. Click 'Apply' to commit changes to the keyer source definition.

To Delete a Setting

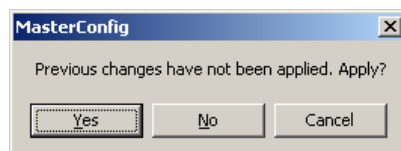
Highlight the setting in the list and click 'Delete'.

To Copy a Setting

Highlight the setting in the list. Give it a new *unused* selection number and click 'Apply'. If you choose an existing selection number, you will overwrite an existing setting.

To Edit a Setting

Highlight the setting in the list and modify the parameters you want to change. Click 'Apply' to confirm your changes. If you wish to *cancel* your changes, either click another source or click 'New'. A query appears:



Click 'No' to discard your changes.

Logo Selection

It is in the logo selection section that you identify the logo image for the setting.

To edit an existing setting, highlight it in the settings list. To edit a new setting, simply click 'New'.

Selection Number

Either use the supplied value or enter a value from 1 to the maximum number allowed. See [Selection Numbers](#) on page 38.

Mnemonic

Enter the name that you want to appear on a control panel's keyer button, up to 8 characters. Use alphanumeric characters, spaces, or underbars. Although you can enter other characters, the panels will not display them.

Logo Image

Select one of the logo image names from the drop-down list in this section.

Logo Parameters

Opacity

The 'Opacity %' field specifies the *maximum* opacity of the logo keyer. Every pixel in the keyer has its own (computed) opacity. The MPCM multiplies the pixel opacity by this maximum value. Enter a value from 1.0 (nearly transparent) to 100.0 (opacity fully dependent on the pixel opacity).

- ▲ A logo's pixel opacity depends on the luminance of the 'key' pixel and the video gain and clip values.

Video Clip, Video Gain

- ▲ The term "video" in these two fields is misapplied. However, the clip and gain for logos work the same way as clip and gain for video keyers.

To understand clip and gain, refer to the *Master Control Reference Manual*. The clip and gain values are parameters that shape the logo key function and they are not at all obvious.

Enter a value from 0.0 to 100.0 (percent) in the 'Video Clip' field. Enter a number from 0 to 1023 in the 'Video Gain' field.

- ▲ For MCEs, gain is expressed in integers in the range [0,1023] representing gain values in discrete multiples of 1/16 from 0 to 63 15/16. Unity gain is therefore expressed by a value of 16.

For other (and older) MCPMs, gain is *not* scaled by 16: a value of 1 means unity gain and the maximum gain is 1023. In these MCPMs, there are no fractional gain values.

Behavior

Choose one of the behaviors in the drop-down list:

- Static
- Animation (once)
- Animation (loop).

When you choose the loop option, an additional field appears in which you can specify the number of frames between passes of the loop:



A value of 0, of course, means no pause.

Operator Can Adjust Settings

Check the 'Operator Can Adjust Settings' box if you want to allow the panel operator to adjust logo key settings and possibly save new default values.

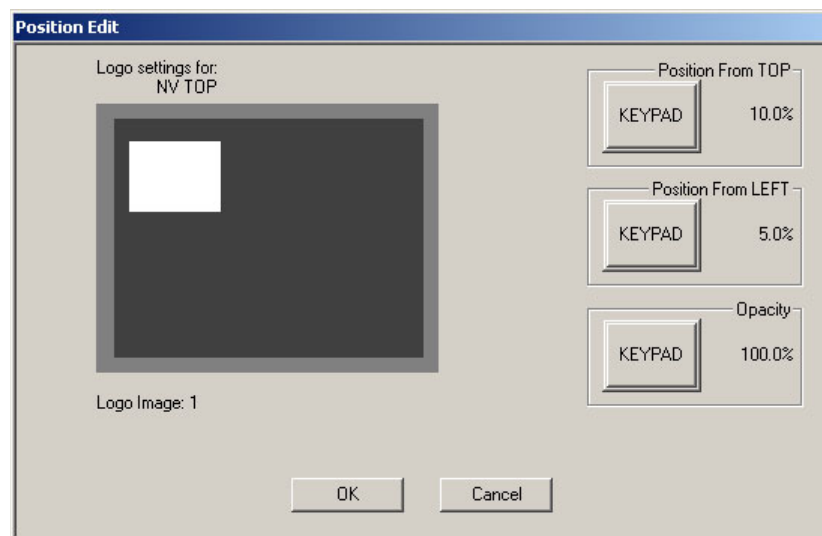
If you check this box, the operator can adjust position and opacity but cannot adjust gain and clip values.

If the operator can adjust the settings, the parameter values you specify form the default values for the keyer setting and the operator can update the default settings at any time.

Logo Image Position on Screen

You can specify the position of the logo by locating its top, left corner as a percentage of the video frame. It is possible to position the logo so that a portion of it is out of the video frame.

If you click the 'Modify Position Visually' button, a configuration subpage appears in which you can see a "proxy" of the logo at it would appear in the video frame.



Here, you can enter numeric values that express the position and opacity of the logo. (Press the keypad buttons to display a keypad on which to enter the numbers.) The white proxy will change position according to your entries.

- ▲ The logo proxy itself does not change size. MasterConfig does not know what the size of the specified logo image is. The only parameters you can control here are position and opacity. Position values can range from 0 to 100% (of the screen). Logos are allowed to exceed the right and bottom edge of the screen.

Completing the Logo Keyer Settings

Follow these steps to complete a logo keyer settings configuration:

- 1 Review all changes.
- 2 Click 'Apply' to commit any changes that you have not already applied. This action updates the configuration records with the changed information.

Or

Cancel your changes either by clicking 'New' or by clicking any other logo keyer setting in the list. MasterConfig will ask whether you want to apply changes. Respond 'No' if you do not.

Tip

Until the logo can be checked visually, (1) leave the clip at its default value, and (2) leave the gain at its default.

Logo Keyer Notes

Please read the following important advice regarding logo keyers:

- [Logo Storage](#)
- [Logos and Automation](#)
- [Alternative Logo Positioning Methods](#)

Logo Storage

MCE

MCEs have approximately 3 gigabytes of storage for logos. At present, the number of logos is limited to 400. At present, there is no information regarding the size of a logo file or the number of frames in an animation in an MCE.

Other MCPMs

The logo store in the MCPM is 128MB for SD and 512MB for HD MCPMs. The maximum number of logos is 64. The maximum number of frames for an animated logo is 256.

The first logo image (selno=1 in the [Logo Images](#) page) must be static, not animated, and must be less than 1.7 MB in size. This logo image is stored in the MCPM's non-volatile memory and will always be available for use. The maximum file size for other logo images is 2.3MB.

All other logos reside in RAM and are lost if the MCPM is reset or loses power. These logos must be sent to the MCPM after it has finished booting before they can be used. MasterLogo (a configuration utility) is used to perform this function.

Logos and Automation

If you have an automation system driving the MCPM, the logos in the preset list can be accessed under the Miranda extended protocol.

If a logo has been saved with the 'Operator Can Adjust Position' option checked, and if the automation system calls for the logo, there is no guarantee that the logo will appear in the "expected" position, with the expected opacity. The operator might have modified its position or opacity.

If you want to permit operators to modify a logo's parameters and also guarantee the logo's characteristics under automation, create a clone of a protected logo keyer source. Then let the operator adjust the clone's settings.

Alternative Logo Positioning Methods

The logo keyer "positioning" method in the 'Logo Keyer Sources' page is a coarse adjustment. Use a preview or preset monitor for precise logo positioning:

- 1 Start with the "coarse" positioning method outlined in the previous section. Save the configuration, and write it to the MCPM.
- 2 On a control panel, call up the logo on the preset or program bus.
- 3 Edit the logo keyer on the panel to make fine position and opacity adjustments, while viewing the changes on your preview (or preset) monitor.
- 4 Method 1:
 - a Write down the numbers for position and opacity.
 - b Return to MasterConfig and, in the 'Logo Keyer Sources' page, enter the adjusted numbers for the desired logo keyer preset.
- 5 Method 2:
 - a Press 'Save as Default' at the panel to store the modified parameters as logo keyer's default *in the MCPM*.
 - b Return to MasterConfig and read the MCPM's configuration (File > Read Config from MCPM).

Squeeze Settings

This is the 'Squeeze Settings' configuration page:

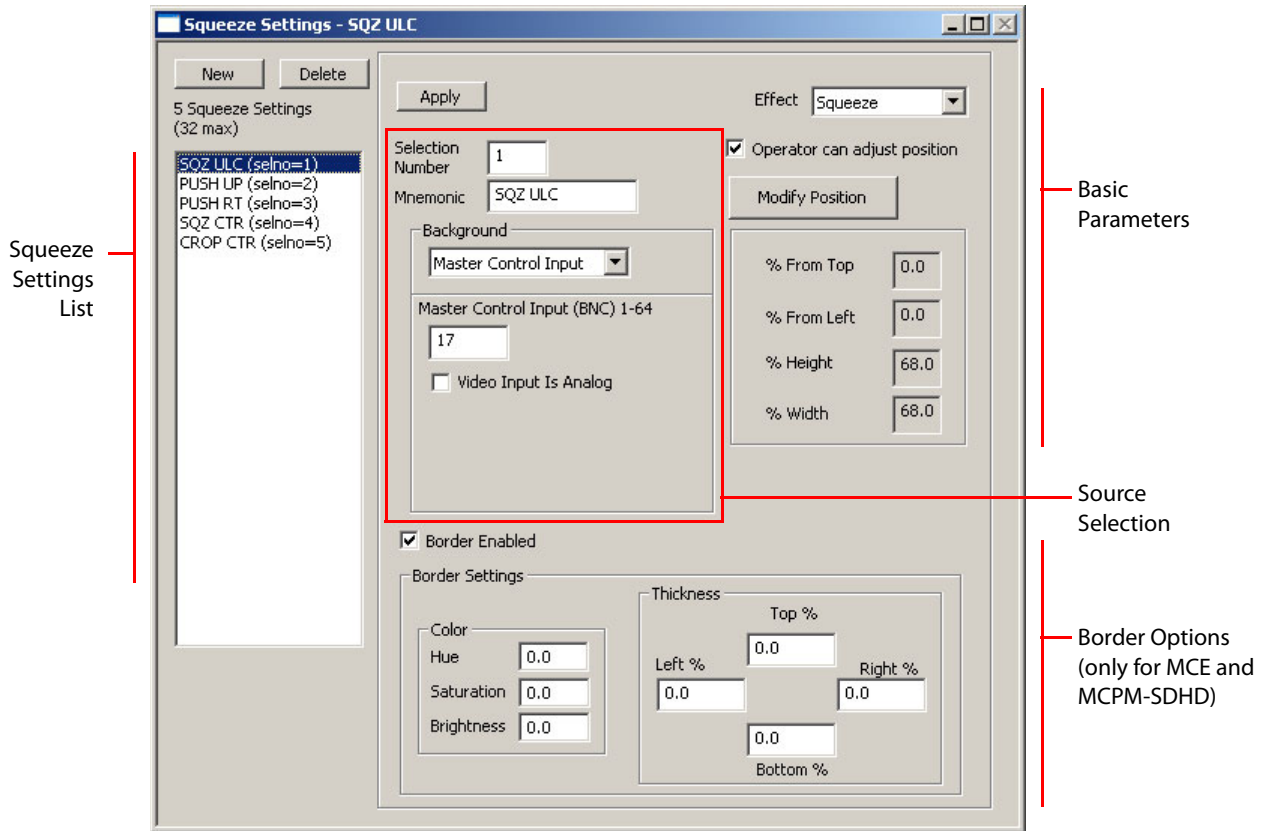


Fig. 4-20: Squeeze Settings Page (Sample)

This configuration page defines (1) the squeeze background and (2) the type and boundary of squeeze image 1. (Squeeze image 1 is what the panel operator chooses as the main source itself.)

Squeezeback is a spatial transformation of video on the preset or program bus. Squeezeback reduces the size of the program image, either scaling or cropping the image to a region of the video frame, and providing a video underlay (which is the "squeeze background").

Squeezeback carries out the scaling or cropping effect gradually over the transition period — on the program bus — unless the transition type is a cut or a PB cut, in which case the squeezeback is (nearly) instantaneous. The preset bus (and preview bus if you are working with an MCE) shows only the final size of the squeezeback transition.

Enhanced squeezeback provides (1) squeezeback image borders and (2) an additional video source that can be scaled (but not cropped) to a second region. The additional video source provides audio that can be mixed with program output as an audio over. The second video source can be hidden (in which case, its audio is presumably all that is desired) or displayed in front of or behind the primary squeezed image. That is, you can control the visual priority of the two squeezed images. The second squeezeback image can be opaque, transparent, or partially transparent.

- ▲ Squeezeback and overs can be used — and controlled — by Intuition XG keys. See [XStudio Add-On Commands](#) on page 205 or the *Master Control Reference Manual*.

The squeezeback effect (when available) occurs in the middle of the video effect order. It squeezes the main source plus active upstream video effects. Effects downstream of the squeezeback generator are not affected by squeezeback.

- ▲ There is a clean-feed tap after the squeezeback generator. The clean-feed tap is selected in the [Misc. Settings](#) page. (MCEs have 2 clean-feed outputs. MCPMs have one.)

MasterConfig allows up to 32 squeeze settings (whether normal or enhanced).

Variations

Different MCPMs have different squeeze features:

- The MCPM-SD, MCPM-HD, and MCPM-H2 provide basic squeezeback functions (only).
- The MCPM-MK-SD and MCPM-MK-HD do not have a squeezeback generator. The 'Squeeze Settings' page is not available for these MCPM types.
- The MCPM-SDHD has an enhanced squeezeback generator.
- The MCE also has an enhanced squeezeback generator but does not support distinct squeeze background inputs. For MCEs, squeeze background inputs must be main sources (or internally generated black/silence).

For the MCPM-SDHD and MCE, MasterConfig provides an additional configuration page ([Squeeze 2 Settings](#)) and additional options under [Video Effect and Over Settings](#).

Purpose

This is what the 'Squeeze Settings' page does:

- Names the squeezeback settings. (The setting names appear on the buttons and in the menus of master control panels.)
- Specifies whether the setting is a scaling or cropping effect.
- Identifies the background video source for the setting and specifies the position and size of the final squeezeback region.
- Specifies the color and border width of the region (for MCPM-SDHD and MCE which have enhanced squeezeback).

Use the [Squeeze 2 Settings](#) configuration page to specify the second image of enhanced squeezeback settings.

Page Organization

There are 4 sections:

- 1 The [squeeze settings list](#) shows settings that have already been created. They can be edited.
- 2 The [source selection](#) section specifies the video source for the squeeze background image.
- 3 The [basic parameters](#) section specifies the type, position, size, and background source of the setting. It also specifies whether the panel operator can change the parameters.
- 4 The [border options](#) section specifies the color and border width of the squeeze region.

Squeeze Settings List

- The settings list includes all the squeeze settings you have defined.
- To configure a setting, it must be in the list. You can add entries to the list and remove or copy entries in the list. The mnemonic (name) of a source should be meaningful to panel operators.
- You can define up to 32 settings. Gaps in the numbering are permissible.
 - ▲ Squeeze 2 settings must be associated with the entries in this list. That is, a squeeze 2 setting is associated with a squeeze 1 setting if their selnos are the same.

You can assign the squeezeback generator a default setting that takes effect at system startup. The defaults are specified in the [Video Effect and Over Settings](#) configuration page.

To Create a New Setting

Click 'New'. The page shows a set of default parameters (that has squeezeback borders disabled). You may edit the parameters now or at any time. Click 'Apply' at any time to commit changes to the squeezeback definition.

To Delete a Setting

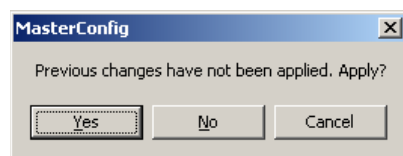
Highlight the setting in the list and click 'Delete'.

To Copy a Setting

Highlight the setting in the list. Give it a new *unused* selection number and click 'Apply'. If you choose an existing selection number, you will overwrite an existing setting.

To Edit a Setting

Highlight the setting in the list and then modify the parameters you want to change. Click 'Apply' to confirm your changes. If you wish to *cancel* your changes, either click another setting in the list or click 'New'. A query appears:



Click 'No' to discard your changes.

Source Selection

To edit an existing setting, highlight it in the settings list. To edit a new setting, simply click 'New'.

Selection Number

Either use the supplied value or enter a value from 1 to 32. See [Selection Numbers](#) on page 38.

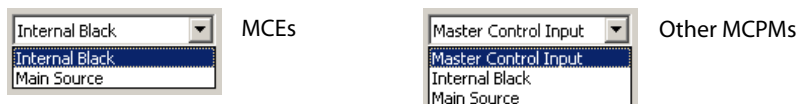
Mnemonic

Enter the name that you want to appear on a control panel's keyer button, up to 8 characters. Use alphanumeric characters, spaces, or underbars. Although you can enter other characters, the panels will not display them.

Background Source

▲ The “background” is the image that fills the space vacated by the squeezed (or cropped) program image(s). The background source appears “behind” the squeeze 1 region.

Directly beneath the mnemonic field is a drop-down list for the background source type:



There are 2 choices for MCEs and 3 choices for other MCPMs:

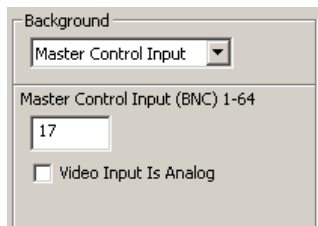
- Master Control Input.
- Internal Black.
- Main Source.

The main sources provide access to external squeeze background sources (i.e., sources coming from an NV9000 router control system).

▲ MCEs do not allow master control inputs for squeeze backgrounds.

Master Control Input

You can choose ‘Master Control Input’ if you are **not** configuring an MCE and want a local squeeze background source — one that is connected directly at the NV5100MC backplane.

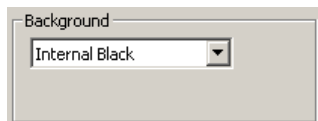


This is the default keyer source type.

Enter the connector number for the squeeze background input. Check the ‘Video Input is Analog’ box if the input is analog. The MCPM will then apply timing compensation to account for the A/D conversion.

Internal Black

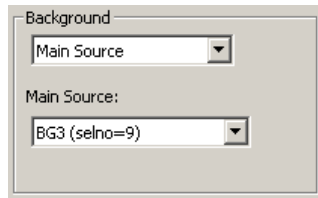
Choose ‘Internal Black’ if you want the squeeze background source to use the internal black generator:



Note that a source that uses internally generated black cannot be selected on the aux bus as a preset or preview squeeze image.

Main Source

Choose 'Main Source' if you want to use a main source as a squeeze background.



Main sources include squeeze background images and squeeze 2 (i.e., image 2 or "P2") images as well as strictly main sources (those sources that can be used on main source buttons as program content).

Main sources can include local sources, external router sources, and router pre-select sources. There is no intrinsic distinction between the different kinds of main sources. It is up to you and the operator (and your facility) to manage your squeeze images.

- ▲ Squeeze 2 images can be accompanied by audio. Squeeze background images cannot.
- ▲ Main sources that are used as squeeze sources and that are external come through the BNCs specified for external squeeze sources, and **not** through the BNCs for external main sources. Although this distinction is "transparent" to the panel operator, it might be of concern when you are configuring the MCPM or MCE.

Basic Parameters

Effect Type

Choose 'Squeeze' or 'Crop' in the drop-down list. 'Squeeze' means the program image is scaled to the squeeze region. 'Crop' means the program image is trimmed, but not scaled, to the squeeze region.

Operator Can Adjust Position

Check the 'Operator Can Adjust Position' box if you want to allow the panel operator to adjust squeeze settings and possibly save new default values.

If you check this box, the operator can adjust position, size, border width, and border color, and other options. If the operator is using an enhanced squeeze effect, the operator can change the opacity of the second squeeze region and its video source.

If the operator can adjust the settings, the parameter values you specify are the *default* values for the squeeze setting. The operator can save new settings as the default.

Position and Size

A 'squeeze' setting is specified by top, left, height, and width values. A 'crop' setting is specified by top, left, right, and bottom values. Squeeze or crop values are expressed as a percentage of the video frame.

If you click the 'Modify Position' button, a secondary configuration page appears in which you (the configurer) can see a "proxy" of the squeezeback at it would appear in the video frame.

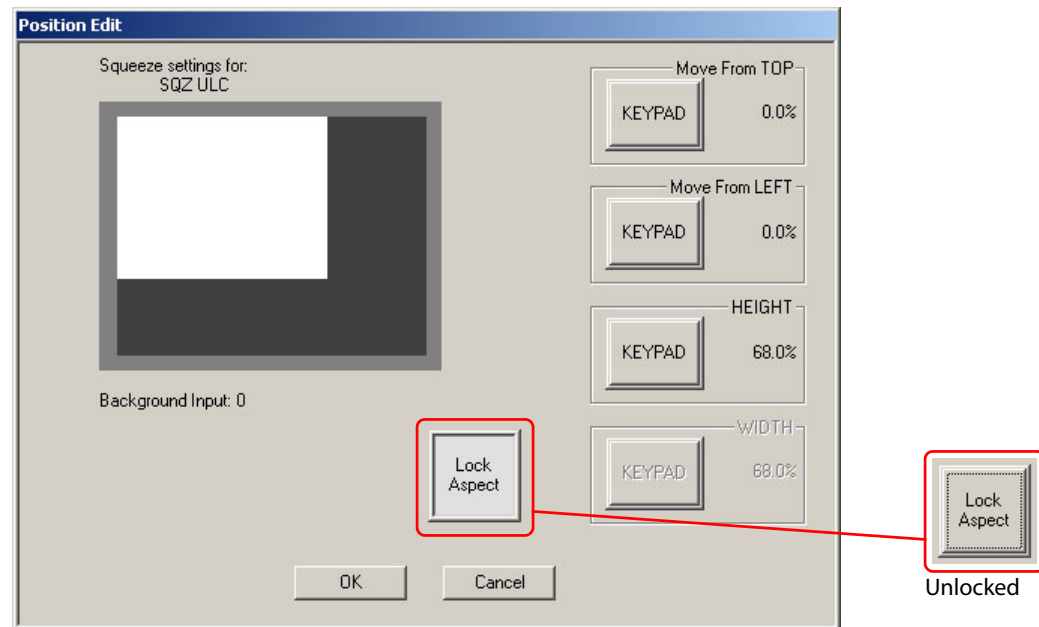


Fig. 4-21: Squeezeback Position Edit (Sample)

Here, you can enter numeric values that express the position and size of the squeezeback region. (Press the keypad buttons to display a keypad on which to enter the numbers.) The white proxy will change position and size according to your entries.

The 'Lock Aspect' button is a toggle: press it to maintain the existing aspect ratio of the squeeze region. The 'Width' field becomes disabled and the size is specified by height only. When the aspect ratio is unlocked, the 'Width' field becomes active.

- ▲ This lock applies only when you are creating the squeeze setting. If you allow operator changes, the operator can lock or unlock the aspect ratio at will.

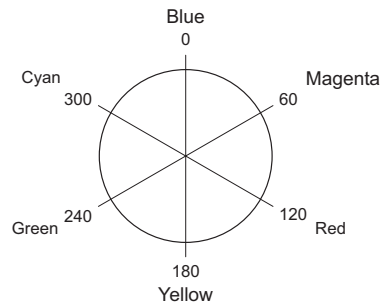
The 'Crop Position Edit' page is similar to the Squeeze Position Edit page, except that (1) you specify four edge positions, and not size, and (2) there is no 'Lock Aspect' button.

Border Options

- ▲ Squeezeback borders are available only for MCEs and MCPM-SDHDs.

If you are configuring an MCE or MCPM-SDHD, check the 'Border Enabled' box if you want the squeeze region to have a border. Color and thickness subsections appear under the 'Border Enabled' checkbox. The four border widths — all independent — are expressed as a percentage of the video frame — from 0% (not visible) to 5% (moderately thick) in 0.1% increments. (If the operator is viewing a squeeze window proxy on a panel LCD, the borders are always red. If the operator is viewing a squeeze effect on a preview monitor, the borders are of course, true color.)

Border colors are expressed as HSB (hue, saturation, brightness) values. Express hue as a decimal number from 0.0 to 359.9 (degrees). The angles are positions on a “color wheel”:



Saturation is generally the amount of “color” in the color. Express “saturation” from 0 to 100% where 0% means completely absence of color and 100% means maximum color.

In master control, brightness values adjust the amount of black in a color. A value of 0% represents a color that is completely black and a value of 100% represents a color that has no black.

The concepts of saturation and brightness are not completely independent. It is a combination of the “saturation” and “brightness” values that yield various gray levels, tints, and shades of color. See [Color Values](#) on page 202.

Completing a Squeeze Setting

Follow these steps to complete a squeeze setting configuration:

- 1 Review all changes.
- 2 Click ‘Apply’ to commit any changes that you have not already applied. This action updates the configuration records with the changed information.

Or

Cancel your changes either by clicking ‘New’ or by clicking any other squeeze setting in the list. MasterConfig will ask whether you want to apply changes. Respond ‘No’ if you do not.

- ▲ Squeeze 2 settings (for enhanced squeezeback) must be associated with the squeeze settings defined in this configuration page. See [Squeeze 2 Settings](#), following.

Please note the following points regarding squeezeback:

- The same background video input may be used in more than one squeeze setting. It is also possible to use a different background video input for every setting.
- You cannot place the squeezeback region so that it goes outside the video frame.

For a *scaled* region, the sum of the left and width values must be no more than 100%; the sum of the top and height values must be no more than 100%. The minimum height or width is 30%.

For a *cropped* region, each of the ‘crop from left’, ‘crop from right’, ‘crop from top’, and ‘crop from bottom’ values may range from 0 to 100%. Thus, the minimum height or width is 0%.

- ▲ The borders (if any) may exceed the video frame.

Squeezeback Notes

Please read the following important notes regarding squeezeback effects:

Squeezeback and Automation

If you have an automation system driving the MCPM, the squeezeback effects in the preset list can be accessed under the Miranda extended protocol.

- If a squeezeback effect has been saved with the 'Operator Can Adjust Position' option *enabled*, and if the automation system calls for the effect, there is no guarantee that the effect will appear in the "expected" position. The operator might have modified its position.
- If you want to permit operators to change a squeezeback effect's parameters and also guarantee the effect's characteristics under automation, create a *clone* of a protected effect. Then let the operator adjust the clone's settings.

Alternative Squeezeback Positioning Methods

The squeezeback "positioning" method in the 'Position Edit' page is a coarse adjustment. Use a preview monitor for precise squeezeback positioning:

- 1 Start with the "coarse" positioning method outlined in the previous section. Save the configuration, and write it to the MCPM.
- 2 On a control panel, place the squeezeback effect on the preset or program bus.
- 3 Use the 'Edit/Modify' function on the panel to make fine adjustments, while viewing the changes on your monitor.
- 4 Method 1:
 - a Write down the numbers for position, size, crop, etc., as appropriate.
 - b Return to MasterConfig, and in the squeezeback 'Position Edit' page, enter the adjusted numbers for the desired squeezeback effect.
- 5 Method 2:
 - a Press 'Save as Default' to store the modified squeezeback effect as the preset's new default value *in the MCPM*.
 - b Return to MasterConfig, and read the MCPM's configuration (File > Read Config from MCPM).

Note

The MCPM (or MCE) applies an edge crop, as part of the squeeze, to conceal any edge artifacts that might occur as the image is squeezed. This crop is not the same as a squeezeback crop effect. This additional crop is applied inside the MCPM's squeezeback region. See [Video Effect and Over Settings](#) on page 157.

Squeeze 2 Settings

This is the 'Squeeze 2 Settings' configuration page:

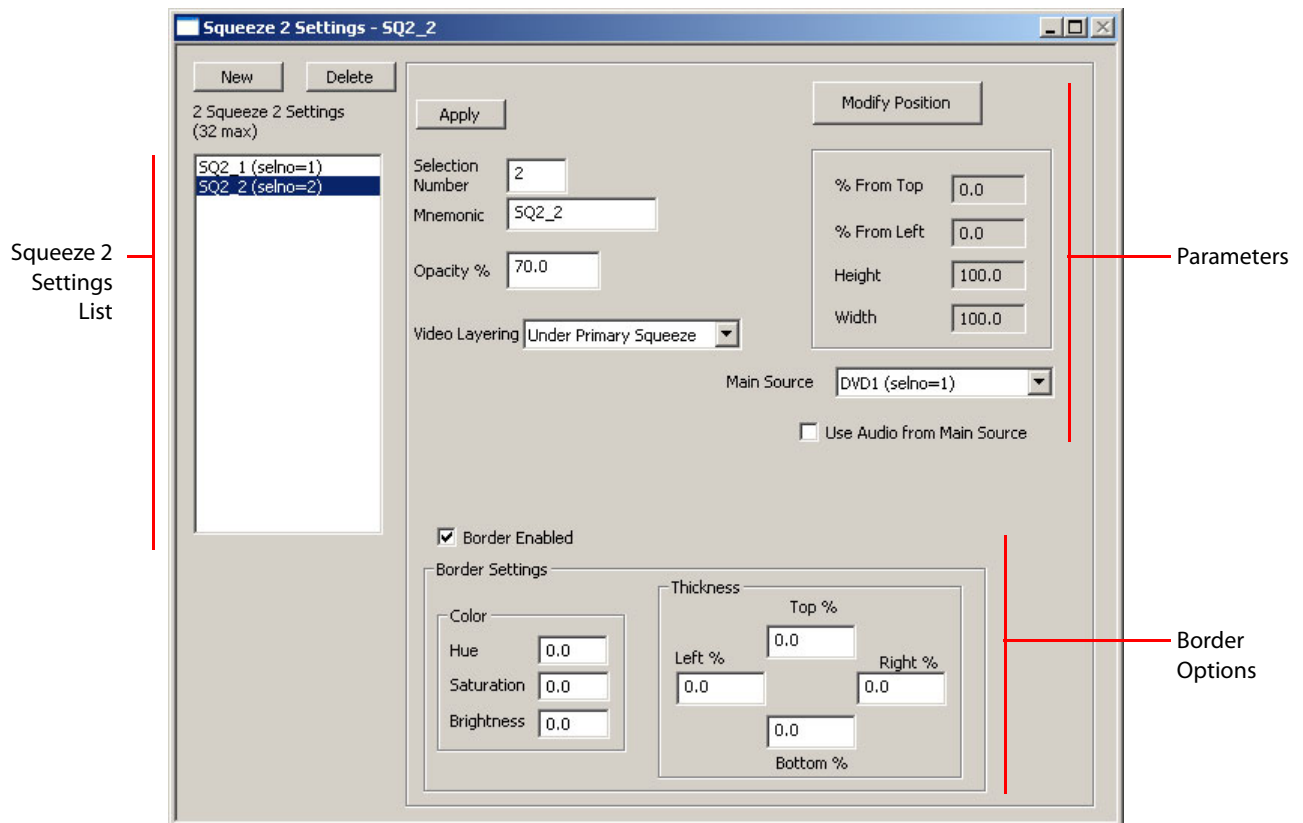


Fig. 4-22: Squeeze 2 Settings Page (Sample)

This configuration page defines (1) the type and boundary of squeeze image 2 and (2) the visual relationship of the 2 squeeze images and the squeeze background.

- ▲ Squeeze 2 settings apply only to the MCPM-SDHD and the MCE. If you are not configuring an MCPM-SDHD or an MCE, the squeeze 2 settings are not available. (The configuration page is absent.)

The 'Squeeze 2 Settings' page configures squeezeback enhancements. Enhanced squeezeback adds a second video image (which is a main source) possibly with audio. Image 2, as it is called, can be transparent or partially transparent, and can be (1) invisible, (2) in front of the primary image, or (3) behind the primary image (i.e., image 1 or squeeze 1). That is, you can control the visual priority of the two squeezed images. The primary image is what the panel operator chose as the main source.

Image 2 can be opaque, transparent, or partially transparent. It **cannot** be a crop effect.

Image 2 comes from one of the main sources. An operator (if allowed to change the setting) can select any main source. The main source's audio — discrete, embedded, Dolby, etc. — can be part of the squeezeback effect. The audio for the effect is handled as an audio over. Squeezeback audio must be enabled or disabled on this page and also on the [Video Effect and Over Settings](#) page.

A squeeze 2 setting must be associated with a basic squeeze setting for it to be usable. When a squeeze 2 setting has the same selno as a basic squeeze setting, they are associated. If you create a squeeze 2 setting with a selno that does not match a squeeze 1 selno, you will see a warning message.

- ▲ Whether an operator can adjust the squeeze 2 parameters is determined by the associated squeeze 1 setting—its “operator can adjust settings” option.

Purpose

This is what the ‘Squeeze 2 Settings’ page does:

- Names the squeezeback 2 settings. (Panel operators do **not** see these names.)
- Identifies the video source (one of the main sources, previously defined) for the second image.
- Specifies the opacity and layering of the squeeze 2 image.
- Provides an audio option and specifies the audio mix.
- Specifies the position and size of the final image 2 region.
- Specifies the color and border width of the region.

Page Organization

There are 3 sections:

- 1 The [squeeze 2 settings list](#) shows settings that have already been created. They can be edited.
- 2 The [squeezeback 2 parameters](#) section specifies the layering, opacity, position, size, and main source of the squeeze 2 image. It also enables or disables the squeezeback audio for the image.
- 3 The [border options](#) section specifies the color and border width of the squeeze region.

Squeeze 2 Settings List

The settings list includes all the squeeze 2 settings you have defined.

To configure a setting, it must be in the list. You can add entries to the list and remove or copy entries in the list. The name of a squeeze 2 setting need not be meaningful to panel operators.

You can define up to 32 settings. Gaps in the numbering are permissible.

- ▲ To be useful, a squeeze 2 setting *must be* associated with a basic squeeze setting. A squeeze 2 setting and a basic squeeze setting are associated when they have the same selno.

You can assign the squeezeback generator a default setting that takes effect at system startup. The defaults are specified in the [Video Effect and Over Settings](#) configuration page.

To Create a New Setting

Click ‘New’. The page shows a set of default parameters (with borders disabled). You may edit the parameters now or at any time. Click ‘Apply’ at any time to commit changes to the squeeze 2 definition.

To Delete a Setting

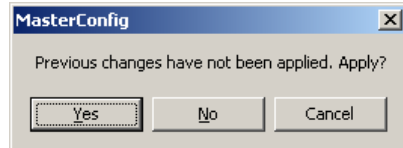
Highlight the setting in the list and click ‘Delete’.

To Copy a Setting

Highlight the setting in the list. Give it a new *unused* selection number and click 'Apply'. If you choose an existing selection number, you will overwrite an existing setting.

To Edit a Setting

Highlight the setting in the list and modify the parameters you want to change. Click 'Apply' to confirm your changes. If you wish to *cancel* your changes, either click another setting in the list or click 'New'. A query appears:



Click 'No' to discard your changes.

Setting Selection

To edit an existing setting, highlight it in the settings list. To edit a new setting, simply click 'New'.

Selection Number

Either use the supplied value or enter a value from 1 to 32. See [Selection Numbers](#) on page 38.

Mnemonic

Give a name to the setting, up to 8 characters. Squeeze 2 setting names do **not** appear on panel buttons. The names of the associated squeeze settings do appear on buttons.

Squeezeback 2 Parameters

Opacity

The 'Opacity %' field specifies the opacity of image 2. The MPCM multiplies every pixel value in every frame of image 2 by this value.

Enter a value from 0.0 (fully transparent, or invisible) to 100.0 (fully opaque).

Video Layering

Image 2 can be controlled with respect to image 1 and to the background video chosen in the basic squeeze settings. Choose one of the 3 options in the drop-down list:

- Not visible. (This allows the audio, if any, and not the video.)
- Under primary squeeze. (Image 1 has visual priority.)
- Over primary squeeze. (Image 2 has visual priority.)

(The "primary squeeze" is image 1, that is, what the operator chose as the main source.)

Modify Position and Size

A squeeze 2 setting is specified by top, left, height, and width values. These values are expressed as percentages of the video frame. The position and size values listed are for display only. You cannot modify the position and size in these boxes. To change the position and size, click the

'Modify Position' button. A second configuration page appears in which you can see a "proxy" of the squeezeback at it would appear in the video frame.

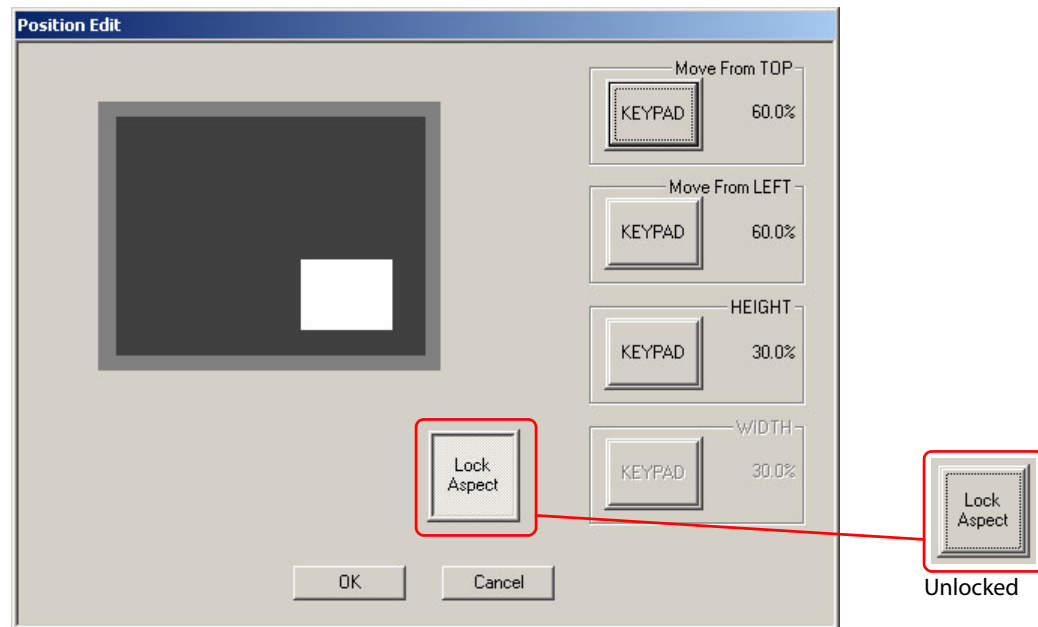


Fig. 4-23: Squeeze 2 Position Edit (Sample)

Here, you can enter numeric values that express the position and size of the squeezeback region. (Press the keypad buttons to display a keypad on which to enter the numbers.) The white proxy will change position according to your entries.

The 'Lock Aspect' button is a toggle: press it to maintain the existing aspect ratio of the squeeze region. The 'Width' field becomes disabled and the size is specified by height only. When the aspect ratio is unlocked, the 'Width' field becomes active.

Main Source

Choose a squeeze 2 image from the drop-down list of the main sources.

▲ Image 2 can appear in front of or behind image 1, or it can be invisible.

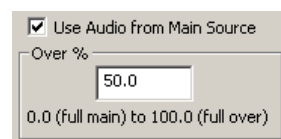
Main sources include squeeze 1 and squeeze 2 images as well as strictly main sources (those sources that can be used on main source buttons as program content).

Main sources can include local sources, external router sources, and router pre-select sources.

There is no intrinsic distinction between the different kinds of main sources. It is up to you, the panel operators (and your facility) to manage your squeeze images.

Use Audio from Main Source

Check the 'Use Audio from Main Source' box if you want to use the audio from the main source in the squeeze effect. When you check the box, an 'Over %' field appears:



Specify the over-to-main ratio in this field. Note that the ratio is non-linear. A ratio of 50% means that audio is a mix of 100% main and 100% over.

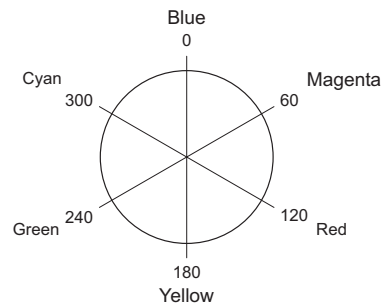
- ▲ The squeezeback audio is handled as an audio over. The operator must select the squeezeback audio on an over button for it to be heard.
- ▲ You must enable squeeze 2 audio in the 'Squeeze Image 2' section of the [Video Effect and Over Settings](#) configuration page described on page 157.

Border Options

- ▲ Squeezeback borders are available only for MCEs and MCPM-SDHDs.

If you are configuring an MCE or MCPM-SDHD, check the 'Border Enabled' box if you want the squeeze 2 region to have a border. Color and thickness subsections appear under the 'Border Enabled' checkbox. The four border widths—all independent—are expressed as a percentage of the video frame—from 0% (not visible) to 5% (moderately thick) in 0.1% increments. (If the operator is viewing a squeeze window proxy on a panel LCD, the borders are always red. If the operator is viewing a squeeze effect on a preview monitor, the borders are of course, true color.)

Border colors are expressed as HSB (hue, saturation, brightness) values. Express hue as a decimal number from 0.0 to 359.9 (degrees). The angles are positions on a "color wheel":



Saturation is generally the amount of "color" in the color. Express "saturation" from 0 to 100% where 0% means completely absence of color and 100% means maximum color.

In master control, brightness values adjust the amount of black in a color. A value of 0% represents a color that is completely black and a value of 100% represents a color that has no black.

The concepts of saturation and brightness are not completely independent. It is a combination of the "saturation" and "brightness" values that yield various gray levels, tints, and shades of color. See [Color Values](#) on page 202.

Completing a Squeeze 2 Setting

Follow these steps to a complete a squeeze 2 setting configuration:

- 1 Review all changes.
- 2 Click 'Apply' to commit any changes that you have not already applied. This action updates the configuration records with the changed information.

Or

Cancel your changes either by clicking 'New' or by clicking any other squeeze setting in the list. MasterConfig will ask whether you want to apply changes. Respond 'No' if you do not.

- ▲ A squeeze 2 setting (for enhanced squeezeback) must eventually be associated with a basic squeeze setting if the squeezeback enhancements are to be effective.

Please note the following points regarding squeezeback:

- The same main source may be used in more than one squeeze 2 setting.
- The same (special) audio over is used for all enhanced squeezeback audio.
- You cannot place the squeezeback region so that it goes outside the video frame. The minimum height or width is 30%. The borders (if any) may exceed the video frame.

Squeezeback 2 Notes

Although you, the configurer, define enhanced squeeze settings and basic squeeze settings separately, the settings are merged at a control panel. The operator controls both squeezeback images under one menu. The operator does not necessarily know which squeezeback effects are dual-image and which are not.

The operator's squeezeback menus for MCPM-SDHDs and MCEs are different from the squeezeback menus of other MCPMs.

Squeezeback and Automation

If you have an automation system driving the MCPM, the squeezeback effects in the preset list can be accessed under the Miranda extended protocol.

- If a squeezeback effect has been saved with the 'Operator Can Adjust Position' option *enabled*, and if the automation system calls for the effect, there is no guarantee that the effect will appear in the "expected" position. The operator might have modified its position.
- If you want to permit operators to change a squeezeback effect's parameters and also guarantee the effect's characteristics under automation, create a *clone* of a protected effect. Then let the operator adjust the clone's settings.

Alternative Squeezeback Positioning Methods

The squeezeback "positioning" method in the 'Position Edit' page is a coarse adjustment. Use a preview monitor for precise squeezeback positioning:

- 1 Start with the "coarse" positioning method outlined in the previous section. Save the configuration, and write it to the MCPM.
- 2 On a control panel, place the squeezeback effect on the preset or program bus.
- 3 Use the 'Edit/Modify' function on the panel to make fine position adjustments, border width and color adjustments, opacity adjustments, etc., while viewing the changes on your monitor.
- 4 Method 1:
 - a Write down the numbers for position, size, opacity, etc., as appropriate.
 - b Return to MasterConfig, and in the squeezeback 'Position Edit' page, enter the adjusted numbers for the desired squeezeback effect.
- 5 Method 2:
 - a Press Save as Default' to store the modified squeezeback effect as the setting's new default *in the MCPM*.
 - b Return to MasterConfig, and read the MCPM's configuration (File > Read Config from MCPM).

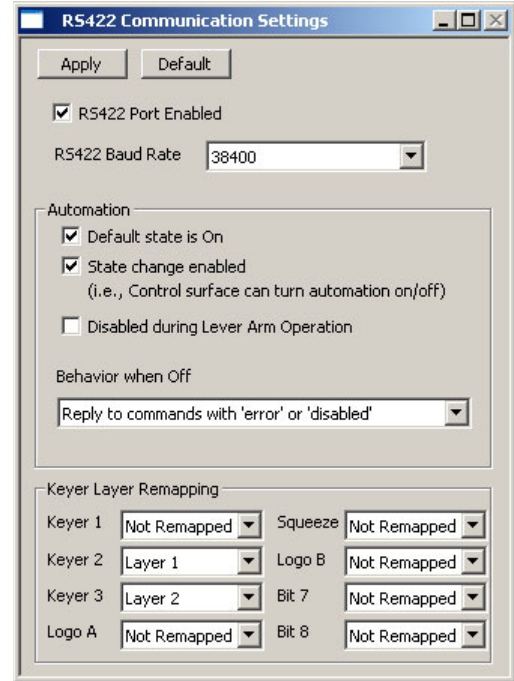
RS-422 Communication Settings

This is the 'RS422 Communication Settings' configuration page:

Port Disabled



Port Enabled



XG Layer Mapping Bits

Fig. 4-24: RS-422 Communication Settings Page (Sample)

Use the 'RS422 Communications Settings' page to define important automation parameters. (What you enter in this page depends, of course, on your automation system.)

Purpose

This is what the 'RS422 Communication Settings' page does:

- Enables the MCPM's automation port (RS-422, DE9).
- Specifies the port's Baud rate.
- Presents options regarding when and whether automation is on or off.
- Specifies the behavior of the MCPM when automation is turned off.
- Optionally, maps XG layers to selected video effect bits.

Parameters

RS422 Port Enabled

Check the 'RS422 Port Enabled' box if you want to enable automation for the MCPM. Specifically, this option enables RS422 communication. When you check this box, other automation options appear in the page. Otherwise, the page is largely blank.

RS422 Baud Rate

When RS422 communication is enabled, you must choose a Baud rate from the drop-down list. There are 5 choices:

9600 19,200 38,400 57,600 115,200

The default rate is 38,400 Baud.

Automation

There are 3 checkbox options:

- Default state is on.
 - Check this box if you want the reset state of the MCPM to have automation on. Uncheck the box if you want the reset state to have automation turned off.
- State change enabled.

Check this box if you want the panel operator to be able to turn automation on and off. (This option presumes that the panel has an 'Automation Off' button.)

If you do not check this box, automation remains in its reset (or default) state.
- Disabled during lever arm operation.

A transition lever arm (TLA, or T-bar) is an option that lets operators perform manual transitions. If your system includes control panels with attached transition lever arms, you might want your MCPM to disable automation while a manual transition is in progress.

Manual transitions are of indefinite duration.

Behavior when Off

"Automation off" means that the MCPM does not execute automation commands. It does not mean that the automation system is turned off. The automation may continue to issue commands. The MCPM can have one of 3 behaviors when automation is "off." Choose a behavior from the drop-down list:

- Do not reply to commands.

The MCPM neither executes nor acknowledges commands.
- Reply to commands normally but do not execute.

Although the MCPM does not execute commands, it does send a normal reply.
- Reply to commands with 'error' or 'disabled'. *This is the default behavior.*

In this mode, the MCPM does not execute the command and sends an error response so that the automation system can take action.

Keyer Layer Remapping

The remapping options allow the automation protocol to control XG layers.

- ▲ N.B. There are 4 Intuition XG layers.
- ▲ These options are for "experts"—those who are familiar with the master control automation protocol and with other system matters.

There are 4 commands in the automation protocol affected by the remapping (and which motivated the remapping):

Name	Code	Description
Key mod	0x0A	Assign a specific effect to a selected effect processor and optionally assigns characteristics to the effect.
Key enable	0x0B	Enable the selected effect processors.
Video effect select	0xA1	Similar to 'key mod' but has a 16-bit operand and no options.
Video effect take	0xA2	Same as 'key enable' but has a 16-bit operand.

In these commands, the first argument is a bit mask in which different effect processors are selected. Presently only the first 6 bits are in use:

Bit	Default Effect	Bit	Default Effect
1	Keyer 1	5	Squeezeback
2	Keyer 2	6	Logo B
3	Keyer 3	7	(unused)
4	Logo A	8	(unused)

(Bits 9–16 in the 16-bit commands are also unused.)

The RS-422 configuration page allows you to assign any of these bits to Intuition XG layers. The mapping presently allows you to select layers 1–8, but only layers 1–4 are available. Layers 5–8 are for future expansion.

- ▲ Example: assign bit 4 (representing, by default, logo A) to XG layer 4. Whenever the MCE receives a 'key mod' command (for instance) with bit 4 set, it will modify XG layer 4 instead of logo A.

If, before, a command was

`<keymod> <logo A> <logo 6>`

the same exact command would now mean

`<keymod> <XG layer 4> <XG recall ID 6>`.

XG layer mapping applies only to MCEs that are integrated with Intuition XG and that are subject to automation.

Bit remapping is for experts only. You can cause serious problems if you get it wrong. The problems can be corrected—you will not actually damage anything. Using the protocol bits is elementary, but the side effects in your system can be unpredictable. Note also that when you do a mapping, automation loses the video effect that was reassigned. You must remap only those effects you can afford to sacrifice.

Completing the RS-422 Configuration

Follow these steps to complete the RS-422 port configuration:

- 1 Review all changes.
- 2 Click 'Apply' to commit any changes that you have not already applied. This action updates the configuration records with the changed information.

Or

Click 'Default' to discard your changes and revert to default values.

Button Mapping — Main Source

The 'Button Mapping — Main Source' configuration page is available only if you checked 'Enable Main Source Button Mapping' in the [General Settings](#) page:

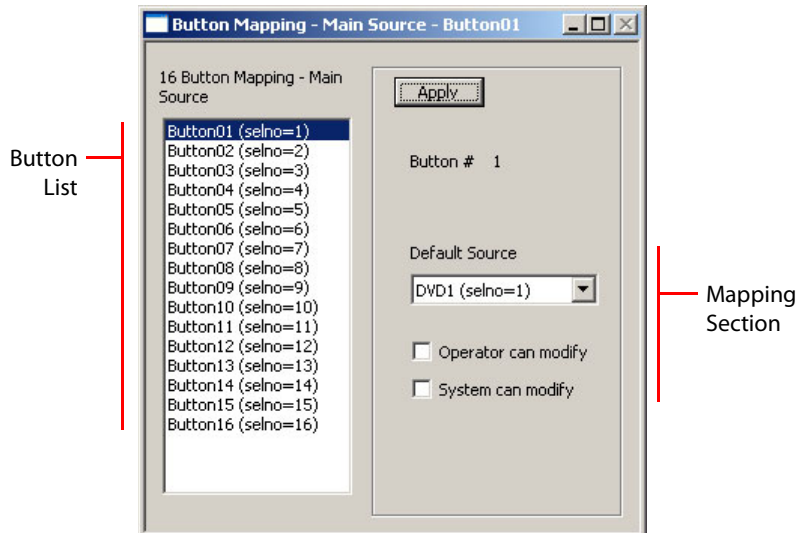


Fig. 4-25: Button Mapping — Main Source Page (Sample)

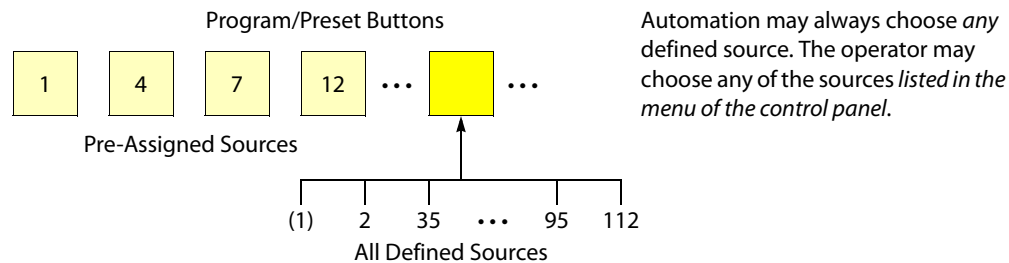
- ▲ If you choose not to use main source mapping, you will get the default: source n on button n where $1 \leq n \leq 16$. If source n is not defined, button n will be unassigned (blank). A source whose selno is greater than 16 will not be usable.
- ▲ For panels controlling MCEs for which source groups are enabled, button mapping for main sources is disabled. Source groups take the place of button mapping.

An MCPM supports up to 128 main sources.¹ A control panel has 16 (pairs of) main source buttons² that correspond to the layers. (Generally, the operator can use one main source at a time, although one can be selected on preset and another can be selected on program.)

Button mapping allows access to all defined main sources. This button mapping page allows you to specify how the main sources buttons on a panel behave. The behavior is actually internal to the MCPM; the panel buttons reflect that behavior.

1. Some MCPMs support only 64 main sources. The MCPM-MK-HD supports 16 main sources and those are from its own backplane module.
2. Not all master control panels have 16 physical main source buttons. Those that do not have exactly 16 "virtual main source buttons."

The 'Operator can modify' option lets the operator choose the source to be selected by a button press. Thus, the operator has access to all the sources that you have defined, either on the bus or in a button map menu.



- ▲ If a source is already on the bus, it does not appear as an operator's choice in a menu list. Automation can select it however.

Checking 'System can modify' lets automation choose the source.

You can configure any or all of the main source buttons as modifiable. (The operator must know which buttons are operator-modifiable. Automation does not need to "know" which buttons are system-modifiable.)

- ▲ Reminder: main sources include squeeze 1 (background) and squeeze 2 (image 2) images as well as strictly main sources (those sources that can be used on main source buttons as program content).

Main sources can include local sources, external router sources, and router pre-select sources.

There is no intrinsic distinction between the different kinds of main sources. It is up to you and the operator (and your facility) to manage your main sources.

Purpose

This is what the 'Button Mapping—Main Source' page does:

- Specifies whether the main source button is "modifiable" — whether its main source can be changed during operation.
- Identifies the default main source for modifiable buttons.
- Identifies the fixed main source for non-modifiable buttons.

Page Organization

The 'Button Mapping—Main Source' configuration page has 2 sections:

- 1 The [button list](#) represents the 16 main source buttons of a control panel.
- 2 The [mapping section](#) allows you to specify (1) whether a button is modifiable and (2) the default (or fixed) main source assigned to the button.

Button List

The button list is not modifiable. To select a button, highlight it in the list.

Mapping Section

Default Source

Choose a main source from the drop-down list. That is the default source for that button.

- ▲ A different kind of default main source — with a different meaning — can be named on the [Misc. Settings](#) page.

Check Boxes

There are two check boxes in this section:

- Check the 'Operator can modify' box if you want the panel operator to be able to select the main source controlled by the button.
- Check the 'System can modify' box if you want automation to be able to select the main source controlled by the button. If your system has no automation, this option is irrelevant. If you check *neither* box, the button is "fixed" and the main source you chose in the drop-down list is a *fixed* main source.

If you check *either* box, the button is "modifiable" and the main source you chose in the drop-down list is the *default* main source — the main source assigned when the MCPM resets.

- ▲ If automation selects a main source **not** mapped to one of the 16 main source buttons and one of the buttons has 'system can modify' enabled, the main source selected by automation will be assigned to that button.
- ▲ If you are using automation, we recommend making at least one, preferably four, main source buttons system-modifiable. The system chooses the least recently used modifiable button. Having four dynamic buttons facilitate automated video/audio breakaway on the preset and program buses.

Completing the Button Mapping Configuration

Click 'Apply' when you have finished specifying the button mapping. There is no "cancel" function.

Button Mapping—Over Source

The 'Button Mapping—Over Source' configuration page is available only if you checked 'Enable Over Source Button Mapping' in the [General Settings](#) page:

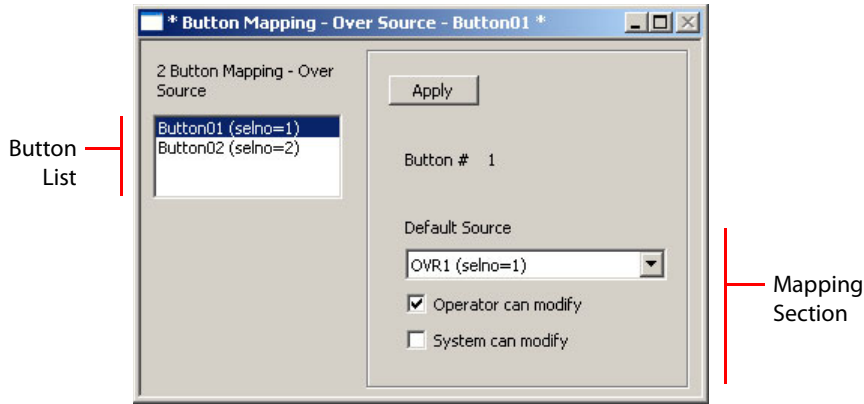


Fig. 4-26: Button Mapping—Over Source Page (Sample)

- ▲ If you choose not to use over source mapping, you'll get the default: over 1 on button 1 and over2 on button 2. If source n is not defined, button n will be unassigned (blank). A source whose selno is greater than 2 will not be usable.

An MCPM or MCE has 2 audio over "layers" and a control panel has 2 (pairs of) audio over buttons that correspond to the layers. (The operator can use one audio over at a time, although one can be on preset and the other can be on program.)

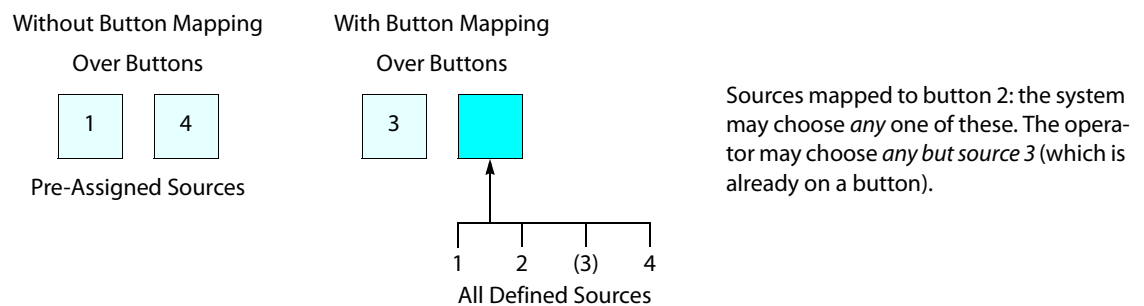
- ▲ Some panels can be configured with only one over button; others might have none.

An MCPM or MCE supports up to 4 over sources. Button mapping allows you to access all defined over sources on 2 or fewer buttons. Some panels might be configured with just one audio over button or none at all.

- ▲ An additional over source 'Squeeze Image 2 Over Source' is defined if squeeze audio is enabled (in the [Video Effect and Over Settings](#) page).

This button mapping page allows you to specify how the audio layers (and the audio over buttons on a panel) behave.

The 'Operator can modify' option lets the operator choose the source to be selected by a button press. Thus, the operator has access to all the sources that you have defined, either on the bus or in a button map menu:



- ▲ If a source is on the bus, it does not appear as an operator's choice in a menu list. Automation can select it however.

Checking 'System can modify' lets automation choose the source.

- ▲ Reminder: over sources can include local sources, external router sources, and router pre-select sources. There is no intrinsic distinction between the different kinds of over sources. It is up to you, the operators (and your facility) to manage your over sources.
- ▲ The pre-defined audio overs (one for Intuition XG audio, and one for squeeze image 2 audio) are also mapped to over buttons.

Purpose

This is what the 'Button Mapping — Over Source' page does:

- Specifies whether the button is "modifiable"—whether its over source can be changed during operation.
- Identifies the default over source for modifiable buttons.
- Identifies the fixed over source for non-modifiable buttons.

Page Organization

The 'Button Mapping — Over Source' configuration page has 2 sections:

- 1 The [button list](#) represents the two audio over buttons of a control panel.
- 2 The [mapping section](#) allows you to specify (1) whether a button is modifiable and (2) the default or fixed source assigned to the button.

Button List

The button list is not modifiable. To select a button, highlight it in the list.

Mapping Section

Default Source

Choose an over source from the drop-down list. That is the default source for that button.

- ▲ If audio for enhanced squeezeback (MCPM-SDHD only) is enabled, an additional over source is available. It is called "Squeeze Image 2 Over Source."

Check Boxes

There are two check boxes in this section:

- Check the 'Operator can modify' box if you want the panel operator to be able to select the over source controlled by the button.
- Check the 'System can modify' box if you want automation to be able to select the over source controlled by the button. If your system has no automation, this option is irrelevant. If you check *neither* box, the button is "fixed" and the over source you chose in the drop-down list is a *fixed* over source.

If you check *either* box, the button is "modifiable" and the over source you chose in the drop-down list is the *default* over source—the over source assigned when the MCPM resets.

- ▲ If automation selects an over **not** mapped to one of the two over buttons and one of the buttons has 'system can modify' enabled, the over selected by automation will be assigned to that button. (Remember that an over button corresponds to one of the MCPM's over layers.)
- ▲ If you are using automation, we recommend at least one system-modifiable over button.

Completing the Button Mapping Configuration

Click 'Apply' when you have finished specifying the button mapping. There is no "cancel" function.

Misc. Settings

This is the 'Misc Settings' configuration page for an MCPM:

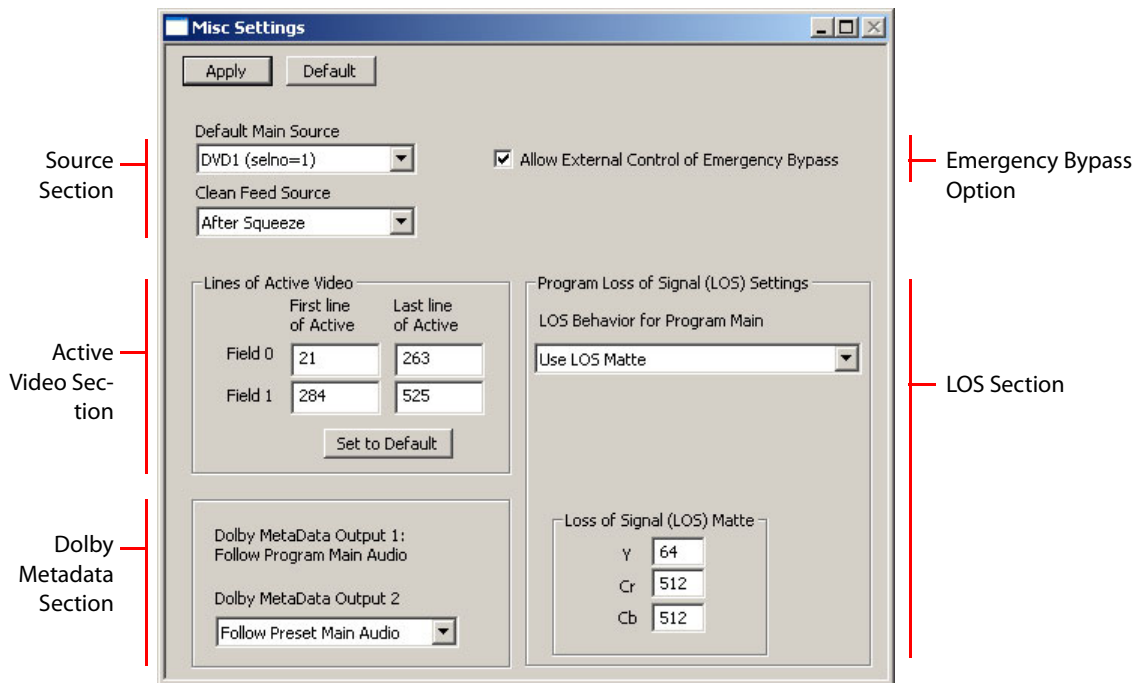


Fig. 4-27: Misc Settings Page (Sample, MCPM-SD)

The 'Misc Settings' page lets you define the default main source (at power-up), the point from which the clean feed output originates, the active video area, loss of signal (LOS) options, and Dolby metadata options.

This is the 'Misc Settings' configuration page for an MCE:

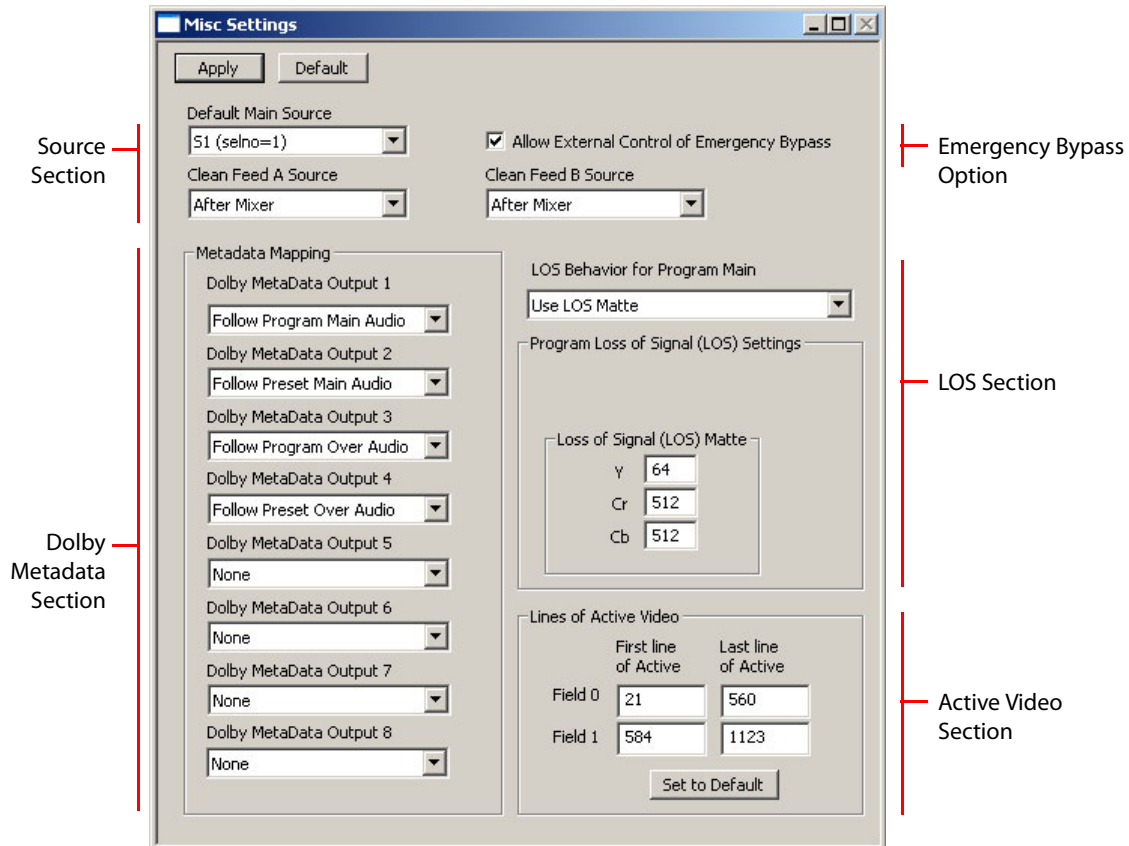


Fig. 4-28: Misc Settings Page (Sample, MCE)

It has additional sections:

- Two clean feed taps.
- Source specification for each of the 8 Dolby metadata outputs. (These fields are not present when the MCE does not have an AXM card.)

Purpose

This is what the 'Misc Settings' page does:

- Identifies the (single) default main source.
- Selects the clean-feed tap(s).
- Enables or disables external control of the emergency bypass state.
- Specifies the first and last lines of active video.
- Selects the behavior of the program main source under LOS.
- Selects the behavior of Dolby metadata outputs.
- Specifies the LOS matte color.

Page Organization

The 'Misc Settings' configuration page has 5 sections:

- 1 The [source section](#) specifies the default main source and the clean-feed taps.
- 2 The [active video](#) section specifies the first and last lines of active video.
- 3 The [metadata](#) section specifies the behavior of Dolby metadata output 2 (for MCPMs) and all metadata outputs for MCEs.
- 4 The [emergency bypass](#) option whether external control of the emergency bypass relay is allowed.
- 5 The [LOS](#) section specifies the MCPM's behavior under LOS and the color to use for the LOS matte.

Source Section

Default Main Source

The default main source is the main source selected immediately after the MCPM resets. Choose any of the entries from the drop-down list. The entries in the list are the sources defined in the 'Main Sources' configuration page. If you want black/silence to be the default, define at least one main source as black/silence. You can choose the entry '[none]'.

- ▲ MasterConfig asks you to specify a default source at some point before saving or sending your configuration file.
- ▲ This default is **not** the same as the several default sources applied to modifiable main source buttons.
- ▲ Main sources can include squeezeback sources. Main sources can include local sources, external router sources, and router pre-select sources.

Clean Feed Source

An MCPM provides a clean-feed output. MCEs provide two clean-feed outputs, A and B. To configure a clean-feed output, choose one of the sources ("taps") in the drop-down list. The clean-feed "tap" can be any of 7 points in the chain of video effects:

- After the preset/program mixer (i.e., before any effect).
 - After keyer 1.
 - After logo A. *
 - After squeezeback. *
 - After keyer 2.
 - After keyer 3.
 - After logo B (i.e., after all effects).
- ▲ The MCPM-MK-SD and MCPM-MK-HD do not have a logo A inserter or squeezeback generator. MasterConfig does not list those taps for these MCPMs.
 - ▲ The "squeeze cut" tap that appears in the drop-down list for MCPM-SD and -HD does not actually exist. Please ignore this choice.

Active Video

Use the 'Active Video' section if you need to change the first and last lines of active video.

For interlaced formats, there are 2 data entry fields for each of the 2 video fields. For progressive formats, there are 2 data entry fields for the single video frame.

You can press the 'Set to Default' button to revert to default values for the video standard you chose when you created the configuration.

Use this diagram for reference:

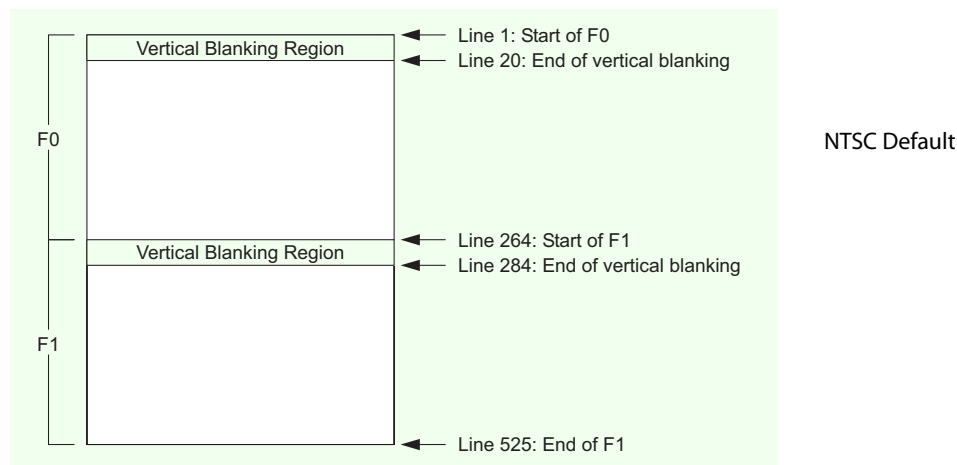


Fig. 4-29: Active Video

These are general rules:

- The first line of field 1 must be greater than the last line of field 0.
- Field 0 starts at line 1.
- The last line of field 1 should be the last line defined in the television standard, e.g., 525 for NTSC or 625 for PAL.

Metadata

MCPM

You can select the source of Dolby metadata output 2. Choose one of the sources in the drop-down list. The options include:

- Follow the audio from the preset main source.
- Follow the audio source presented on monitor A.
- ▲ The MCPM-MK-SD and MCPM-MK-HD do not have Dolby decoders. For these MCPMs, the Dolby metadata section of the page is absent.
- ▲ Dolby metadata output 1 is not modifiable. It follows the audio from the program main source.

MCE

The MCE presents all 8 Dolby metadata outputs on the top DB25 connector of its AXM back-plane module. (If the MCE does not have an AXM card, the metadata section is empty.)

Each of the 8 metadata outputs can be configured. The drop-down menu for each output presents the following 12 choices:

- Follow program main audio
- Follow preset main audio
- Follow preview main audio
- Follow monitor A main audio
- Follow monitor B main audio
- Follow meter main audio
- Follow program over audio
- Follow preset over audio
- Follow preview over audio
- Follow monitor A over audio
- Follow monitor B over audio
- Follow meter over audio

Emergency Bypass

Check the checkbox in this section if you want to allow external control of the MCPM's emergency bypass relay (or emergency bypass state).

External control means that an emergency bypass control function can be assigned to a GPI input.

An Miranda emergency bypass control panel (EBCP) can be connected to the MCPM's GPI input. Refer to the *Master Control Reference Manual* for information.

LOS

You can specify the behavior of the MCPM when loss of signal (LOS) occurs:

- Use the LOS matte in place of the program main source.
- Use internally generated black (in place of the program main source).

You can also specify the color of the LOS matte, as a Y, Cr, Cb value. The range for Y is 64–940. The range for Cr and Cb is 64–960. See [Color Values](#) on page 202 (Appendix A) for more information.

▲ LOS is not to be confused with a non-sync condition.

Completing the 'Misc Settings' Configuration

- 1 Review all changes.
- 2 Click 'Apply' to commit any changes that you have not already applied. This action updates the configuration records with the changed information.

Or

Click 'Default' to discard your changes and revert to default values.

Video Effect and Over Settings

This is a representative 'Video Effect and Over Settings' configuration page:

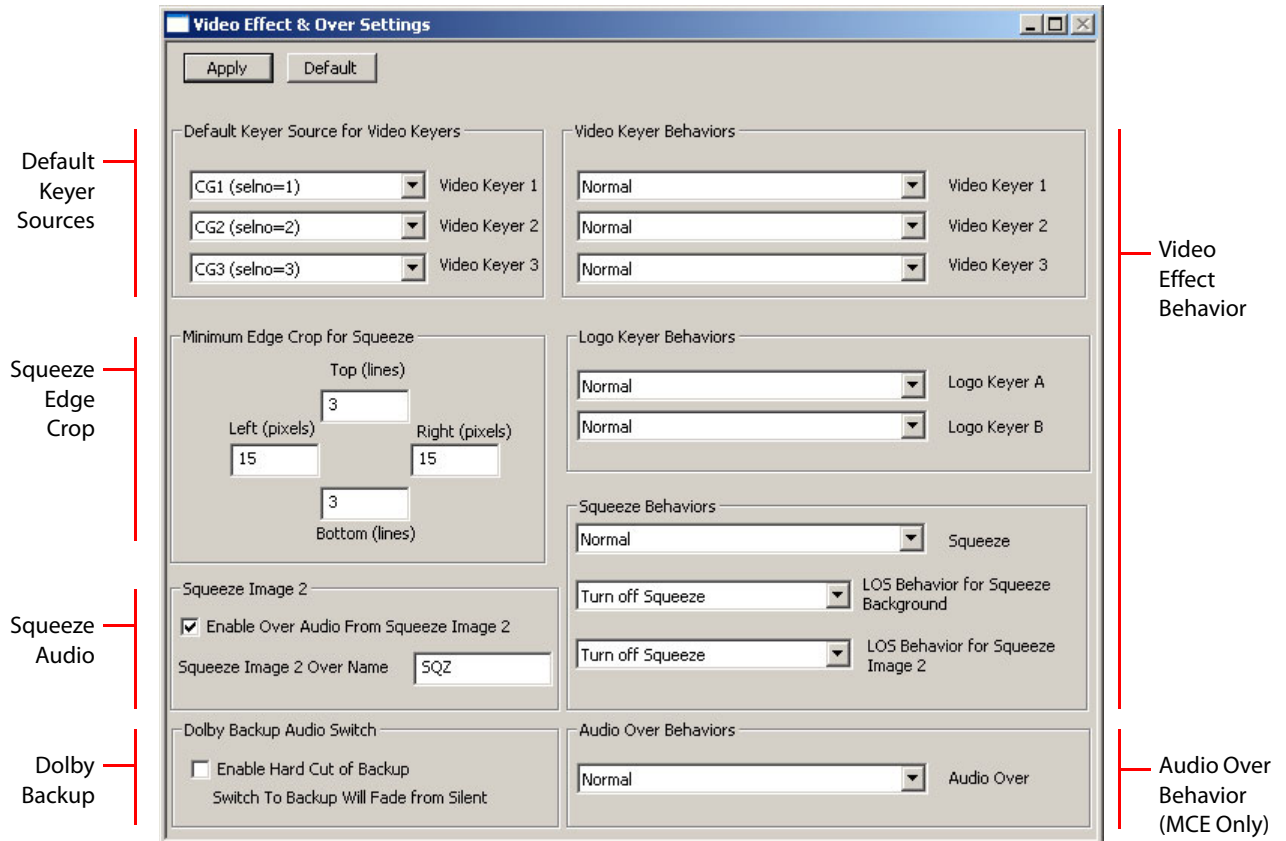


Fig. 4-30: Video Effect and Over Settings Page (Sample)

The 'Video Effect Settings' page lets you specify default keyer sources and logo, keyer, squeezeback, and audio over behavior.

- ▲ The MCPM-MK-SD and MCPM-MK-HD do not have a logo A inserter or squeezeback generator. The 'Video Effect Settings' page does not display options for logo A or squeezeback if you are editing an MCPM-MK-SD or MCPM-MK-HD configuration. It also calls Logo B simply "Logo."
- ▲ Only the MCPM-SDHD and MCE have enhanced squeezeback. Image 2 options are absent from this page unless you are configuring an MCPM-SDHD or an MCE.

Purpose

This is what the 'Video Effect Settings' page does:

- Specifies the default keyer settings for each of the 3 keyers. The default settings are the settings selected when the MCPM resets.
- Specifies the transition behavior of the keyers, logos, and squeezeback.
- Specifies the LOS behavior for squeezeback and enhanced squeezeback.
- Specifies the minimum "edge crop" for squeezeback.

- Specifies the change-over rate for Dolby backup.
- Enables over audio for enhanced squeezeback.

Page Organization

The 'Video Effect Settings' configuration page has 4 sections:

- 1 The [default keyer sources](#) section specifies the default keyer settings for each of the 3 keyers.
- 2 The [squeezeback edge crop](#) section specifies the first and last lines of active video.
- 3 The [squeeze image 2](#) section enables or disables over audio for enhanced squeezeback.
- 4 The [dolby backup](#) section selects either a fade or cut transition to Dolby backup.
- 5 The [video effect behavior](#) section specifies transition behavior for the keyers, logos, and squeezeback. It also specifies the behavior of squeezeback when LOS occurs.
- 6 The [video effect behavior](#) section specifies transition behavior for the keyers, logos, and squeezeback. It also specifies the behavior of squeezeback when LOS occurs.

Default Keyer Sources

This section allows you to specify a default keyer setting for each of the MCPM's 3 keyers. Choose one of the defined keyer settings in the drop-down list. You may also choose 'None'. You can choose the same default for all 3 keyers.

- ▲ *Keyer settings* are chosen in this page section, not *keyer sources*.

Squeezeback Edge Crop

Squeezeback edge crop exists to prevent edge effects while a squeezeback transition is in progress. Edge crop is not the same as a squeezeback crop effect.

You can adjust the four edge crop values in this section.

(These settings compensate for blanking irregularities or for sources that do not adhere to NTSC or PAL specifications.)

We recommend applying an edge crop using the default settings shown in Figure 4-31. If you make changes, use a waveform monitor to verify that the signal meets your required specification before placing the system in service.

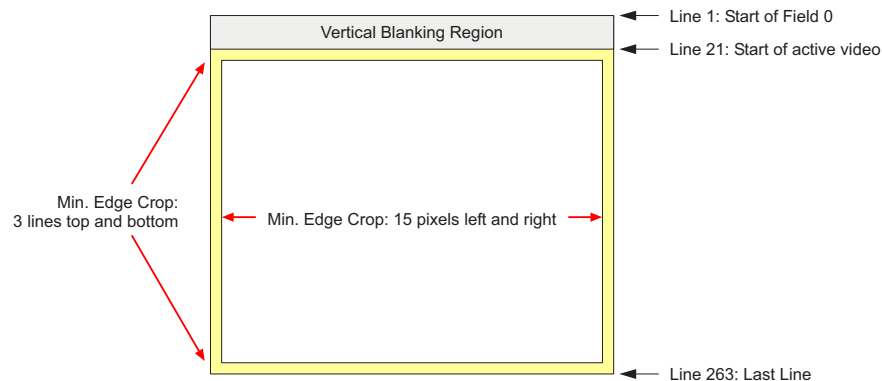


Figure 4-31. Crop Settings (NTSC Field 0 Shown)

- ▲ The edge crop affects where squeeze borders (for MCEs and MCPM-SDHDs) appear.

Squeeze Image 2

Enhanced squeezeback allows audio for image 2. The audio is treated as a special audio over.

In addition to enabling (or disabling) audio for certain enhanced squeezeback effects, you must enable it globally by checking the 'Enable Over Audio from Squeeze Image 2' box in this section.

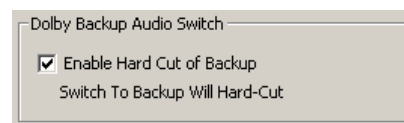
Also enter a name for the audio over in the 'Squeeze Image 2 Over Name'. This name appears on the over button when the operator selects the audio over for squeezeback.

▲ This section is absent unless you are working on a configuration for MCPM-SDHD or an MCE.

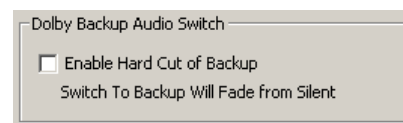
Dolby Backup

Whenever the MCE or MCPM switches to backup audio for Dolby sources, it can perform either a 4-frame fade or a hard cut.

Check the checkbox for a hard cut; leave it unchecked for a quick fade:



Hard Cut



Fade

If the MCE switches to backup audio and "hard cut" is enabled, there is **no** loss of audio.

Video Effect Behavior

This section has 2 or 3 subsections, one for video keys, one for logo keys, and — if the MCPM has a squeezeback generator — one for squeezeback.

▲ Note that some control panels might be configured without certain video effects.

Choose one of 3 transition behaviors in the drop-down lists for each effect.

- Normal.

The video effect transitions normally to program. In flip-only mode, the effect remains on the preset bus until the panel operator clears the effect from the preset bus. If the MCPM is in flip-flop mode, the content of the program bus transfers to the preset bus.

- Disabled.

The video effect is disabled. Video effect buttons are dim. The operator cannot change this. Only loading another configuration can change this.

- Clear Preset after Program Transitions to On.

The video effect transitions normally to program. In flip-only mode, the effect is removed from the preset bus at the completion of the transition.

If the MCPM is in flip-flop mode, the content of the program bus transfers to the preset bus, overriding this option.

You can also specify how squeezeback will behave under LOS conditions. There are 2 options for the squeeze background:

- Turn off squeeze.
- Use internal black.

and 3 options for image 2:

- Turn off squeeze.
- Use internal black.
- Turn off squeeze image 2 only.

Choose the options from the drop-down lists.

▲ The image 2 options are absent unless you are working with an MCPM-SDHD or MCE.

Audio Over Behavior

This section controls the behavior of audio overs. *It exists for MCEs only.*

There are 2 choices:

- Normal.

The audio over transitions normally to program. In flip-only mode, the over remains on the preset bus until the panel operator clears the over from the preset bus. If the MCE is in flip-flop mode, the content of the program bus transfers to the preset bus.

- Clear Preset after Program Transitions to On.

The audio over transitions normally to program. In flip-only mode, the over is removed from the preset bus at the completion of the transition.

If the MCE is in flip-flop mode, the content of the program bus transfers to the preset bus, overriding this option.

Completing the 'Video Effect Settings' Configuration

- 1 Review all changes.
- 2 Click 'Apply' to commit any changes that you have not already applied. This action updates the configuration records with the changed information.

Or

Click 'Default' to discard your changes and revert to default values.

Transition and Fade to Black Settings

This is the 'Transition and Fade to Black Settings' configuration page:

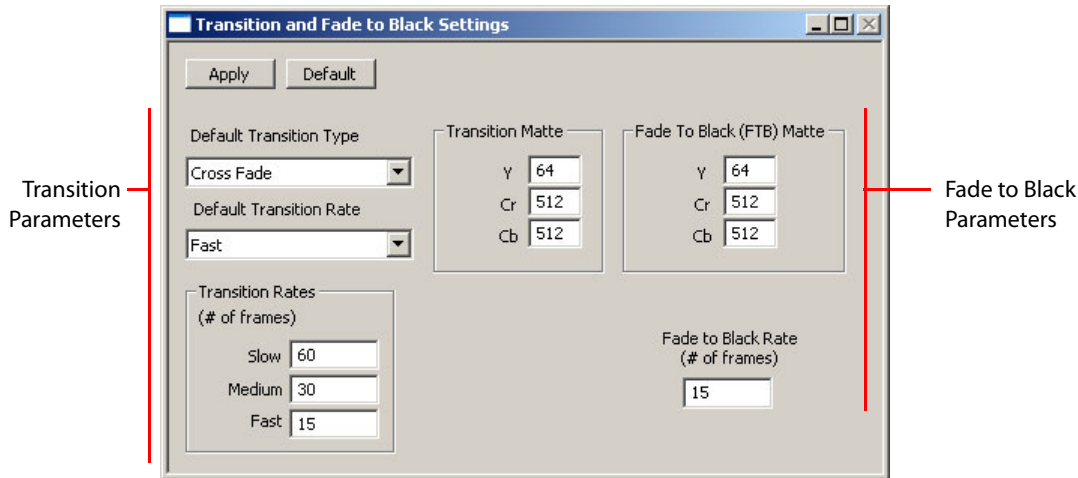


Fig. 4-32: Transition and Fade to Black Settings Page (Sample)

This configuration page lets you set the default states (i.e., the values when the MCPM resets) for transitions and fades to black (FTB).

▲ "Fade to black" really means fade to matte and silence.

Purpose

This is what the 'Transition and Fade to Black Settings' page does:

- Specifies the default transition type.
- Specifies the default transition rate (slow, medium, fast).
- Specifies the number of frames for slow, medium, and fast transitions.
- Specifies the transition matte color.
- Specifies the FTB matte color.
- Specifies the number of frames for a fade to black.

Page Organization

The 'Transition and Fade to Black Settings' configuration page has 2 sections:

- 1 [Transition Parameters](#).
- 2 [Fade-to-Black Parameters](#).

Transition Parameters

Although these parameters are set within the MCPM, they are not noticeable except at a control panel.

Default Transition Type

Choose one of the 9 transition types in the drop-down list. Your choice will be the default transition type when the MCPM resets.

The choices include 5 “normal” transition types and 4 “preset black” transition types. Refer to the *Master Control Reference Manual* for more information.

Default Transition Rate

Choose one of the 3 transition rates (slow, medium, fast) in the drop-down list. Your choice will be the default transition rate when the MCPM resets.

The named rates are affected by the 3 durations specified in the ‘Transition Rates’ subsection.

Transition Rates

Specify in this section the duration of the 3 transition rates. The values are specified in number of frames. Larger values yield slower transitions. The range of values is 3 to 300 frames.

Transition Matte

Specify the transition matte in this section. The transition matte occurs in transitions that fade (such as V-fade and fade/cut). The color is specified as Y, Cr, Cb.

The range for Y is 64–940. The range for Cr and Cb is 64–960. See [Color Values](#) on page 202 (Appendix A) for more information.

Fade-to-Black Parameters

Fade to Black (FTB) Matte

Specify the FTB matte in this section. The FTB matte occurs when a panel operator presses a FTB button. (A control panel might not have an FTB button.)

The color is specified as Y, Cr, Cb. The range for Y is 64–940. The range for Cr and Cb is 64–960. See [Color Values](#) on page 202 (Appendix A) for more information.

Fade to Black Rate

Specify the duration of the FTB as a number of frames. A larger values yields a slower fade. The range of values is 3 to 300 frames.

Completing the Configuration

- 1 Review all changes.
 - 2 Click ‘Apply’ to commit any changes that you have not already applied. This action updates the configuration records with the changed information.
- Or
- Click ‘Default’ to discard your changes and revert to default values.

GPI Inputs

This is the 'GPI Inputs' configuration page:

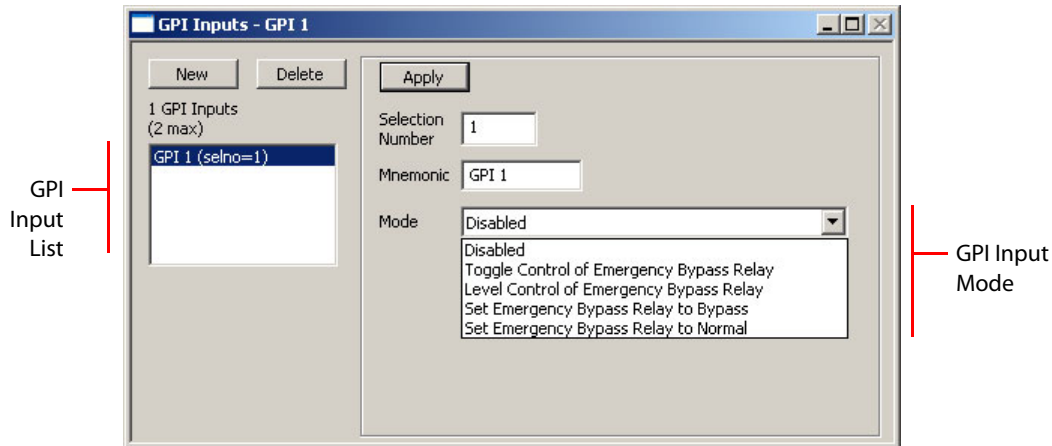


Fig. 4-33: GPI Inputs Page (Sample)

The MCPM has two configurable GPI inputs. The inputs are level-sensitive and optically isolated circuits. The inputs' terminals are present on the MCPM's aux connector. Refer to the *Master Control Reference Manual* for connection details.

You can use either of the inputs to control emergency bypass relay — here abbreviated EBR. The two states of the EBR are “bypass” and “normal.” (See the *Master Control Reference Manual* for information regarding bypass and the EBR.)

- ▲ Several hardware error conditions can set the EBR to “bypass.” Under those conditions, the MCPM will ignore any GPI input configured to control the EBR. The GPI input will not be able to set the EBR to normal. When the emergency bypass switch on the front of the MCPM is set to “bypass,” the MCPM will also ignore any GPI input configured to control the EBR.
- ▲ When the MCPM is reset or power-cycled, the GPIs also reset. During reset, the MCPM remains in bypass mode until it determines that it is “healthy.”

The 'GPI Inputs' page lets you select a GPI input and specify one of 5 behaviors for the input:

Purpose

This is what the 'GPI Inputs' page does:

- Names the input. (The name is largely irrelevant.)
- Selects a GPI behavior.

Page Organization

The 'GPI Inputs' configuration page has 2 sections:

- 1 [GPI Input List](#).
- 2 [GPI Input Mode](#).

GPI Input List

You can configure one or both GPI inputs.

The GPI input list includes any GPI input configurations you have defined for the MCPM. You can add entries to the list and remove or copy entries in the list. The mnemonic (name) of a configuration is used in no other place.

The list is ordered by selection number (selno) but it has only two entries. The selno identifies the GPI input.

To Create a New GPI Input Configuration

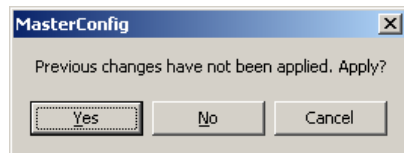
Click 'New'. The window shows a default setting. You may edit the setting now or at any time. Click 'Apply' to commit changes to the setting.

To Delete a Configuration

Highlight the configuration in the list and click 'Delete'.

To Edit a Configuration

Highlight the configuration in the list and modify the setting or its name. Click 'Apply' to confirm your changes. If you wish to *cancel* your changes, either click another configuration or click 'New'. A query appears:



Click 'No' to discard your changes.

GPI Input Mode

Aside from the configuration name, the only option is the GPI's mode of behavior. Choose one of the five modes in the drop-down list:

- Toggle control of emergency bypass relay.
When the GPI input has transitioned from off to on, the MCPM toggles the state of the emergency bypass relay. Otherwise the MCPM does nothing.
- Level control of emergency bypass relay.
While the GPI input is on, the MCPM sets the EBR to "bypass." While the GPI input is off, the MCPM sets the EBR to "normal."

Note

When a GPI input is configured in this mode, the other GPI input cannot be configured to control the EBR. The other GPI input must be configured as 'disabled'.

- Set the EBR to "bypass."
Note that this behavior is used in conjunction with the emergency bypass control panel (EBCP).

- Set the EBR to “normal.”
Note that this behavior is used in conjunction with the emergency bypass control panel (EBCP).
- Disabled. The MCPM ignores the GPI input.

Completing the Configuration

- 1 Review all changes.
 - 2 Click 'Apply' to commit changes that you have not already applied. This action updates the configuration records with the changed information.
- Or
- Click 'Delete' to delete the configuration.
- Or
- Click 'New' to discard changes. Answer 'No' when asked whether you want to save changes.

GPI Outputs

This is the 'GPI Outputs' configuration page:

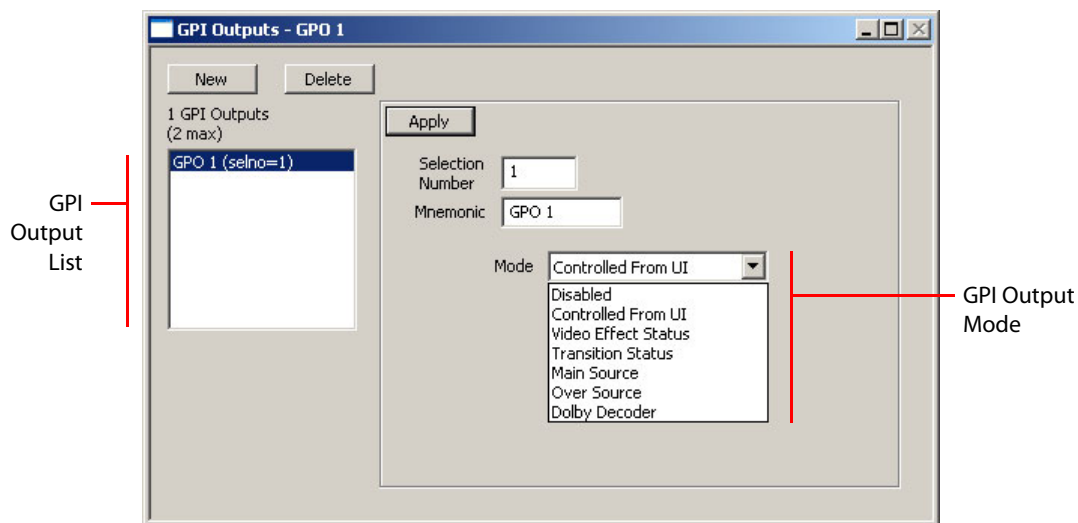


Fig. 4-34: GPI Outputs Page (Sample)

The MCPM has two configurable GPI outputs. The GPI outputs are SPDT relays (24VDC, 100mA). The outputs' terminals are present on the MCPM's aux connector. Refer to the *Master Control Reference Manual* for connection details.

The 'GPI Outputs' page lets you configure the MCPM's two GPI output ports.

Purpose

This is what the 'GPI Outputs' page does:

- Names the output. (The name is largely irrelevant.)
- Selects a GPI behavior.

Page Organization

The 'GPI Outputs' configuration page has 2 sections:

- 1 [GPI Output List](#).
- 2 [GPI Output Mode](#).

GPI Output List

You can configure one or both GPI outputs.

The GPI output list includes any GPI output configurations you have defined for the MCPM. You can add entries to the list and remove or copy entries in the list. The mnemonic (name) of a configuration is used in no other place.

The list is ordered by selection number (selno) but it has only two entries. The selno identifies the GPI output.

To Create a New GPI Output Configuration

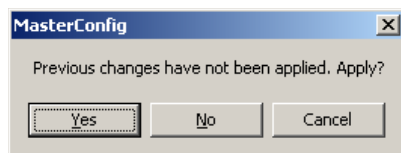
Click 'New'. The window shows a default setting. You may edit the setting now or at any time. Click 'Apply' to commit changes to the setting.

To Delete a Configuration

Highlight the configuration in the list and click 'Delete'.

To Edit a Configuration

Highlight the configuration in the list and modify the setting or its name. Click 'Apply' to confirm your changes. If you wish to *cancel* your changes, either click another configuration or click 'New'. A query appears:



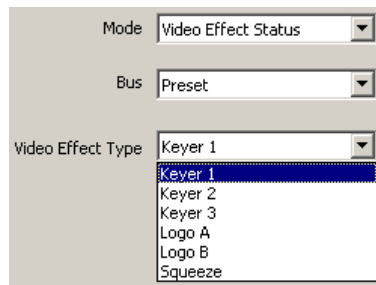
Click 'No' to discard your changes.

GPI Output Mode

Aside from the configuration name, the only option is the GPI's mode of behavior. Choose one of the 7 modes in the drop-down list:

- 1 Disabled. The GPI output is "off." (That is, its COM and NO terminals are disconnected.)
- 2 Controlled from UI. Enables manual control from a control panel.
Use the *MCS Panel Configuration Editor* to assign a GPI output to a configurable panel button.
- 3 Video Effect Status.

The GPI output relay is active while a specified video effect is present on the preset bus or on the program bus. When you choose this mode, two new options appear:



Using the 'Bus' pull-down list, choose whether the preset bus or program bus will trigger the GPI output.

Using the 'Video Effect Type' pull-down list, select the type of effect that, when called up on the selected bus, triggers the GPI output. In general, the choices are Keyer 1, Keyer 2, Keyer 3, Logo A, Logo B or Squeeze, however, for some MCPMs, the list has fewer choices.

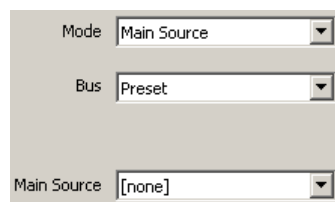
- ▲ Example: If you select 'Program' and 'Squeeze', the GPI output will be active when any squeezeback effect is on to the Program bus.

4 Transition Status.

The GPI output relay is active for the duration of any transition.

5 Main Source.

The GPI output relay is active while a specific main source is selected on either the preset or the program bus.

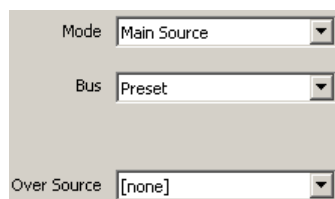


Using the 'Bus' pull-down list, choose whether the preset bus or program bus will trigger the GPI output.

Using the 'Main Source' pull-down list, select the main source that you want to trigger the GPI. The list of choices is defined by the entries in the 'Main Sources' configuration page.

6 Over Source.

The GPI output relay is active while a specific audio over source is selected on either the preset or the program bus.

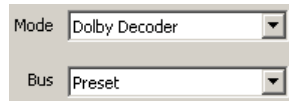


Using the 'Bus' pull-down list, choose whether the preset bus or program bus will trigger the GPI output.

Using the 'Over Source' pull-down list, select the over source that you want to trigger the GPI. The list of choices is defined by the entries in the 'Over Sources' configuration page.

7 Dolby Decoder.

The GPI output relay is active while the Dolby decoder is in use by any main source selected on either the preset bus or program bus.



Mode:

Bus:

Using the 'Bus' pull-down list, choose whether the preset bus or program bus will trigger the GPI output.

- ▲ This option is absent for the MCPM-MK-SD and MCPM-MK-HD which do not have Dolby decoders. In other cases, your MCPM might or might not have a Dolby decoder. It is a purchase option.

Completing the Configuration

- 1 Review all changes.
- 2 Click 'Apply' to commit changes that you have not already applied. This action updates the configuration records with the changed information.
Or
Click 'Delete' to delete the configuration.
Or
Click 'New' to discard changes. Answer 'No' when asked whether you want to save changes.

Wing Outputs

This is the 'Wing Outputs' configuration page:

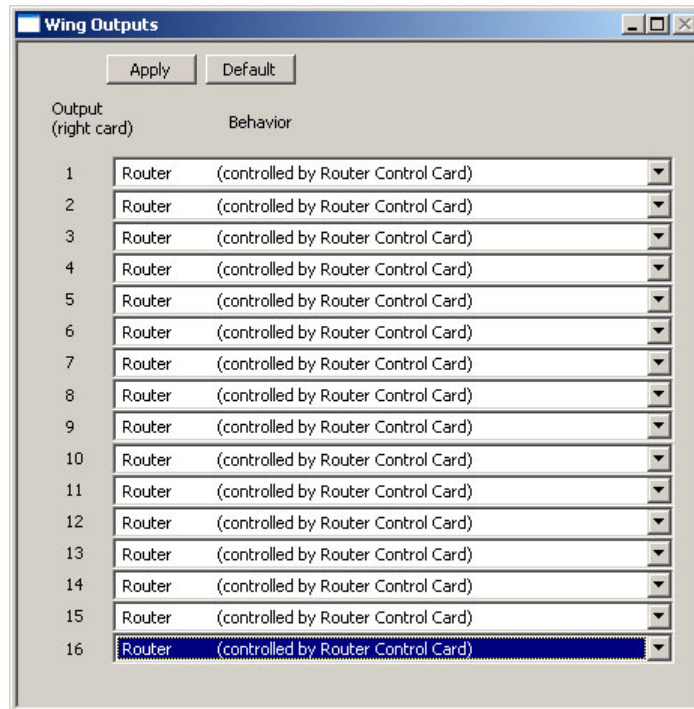


Fig. 4-35: Wing Outputs Page (Sample)

The 'Wing Outputs' page is available for the MCPM-HD2 and -SDHD. It is not available for other MCPMs.

The MCPM-HD2 has two wing slots; it is the right slot (viewed from the front) to which this page applies. The MCPM-SDHD has a single wing slot (also at the right).

The MCPM-HD also has two wing slots; neither of those slots are configurable. The page is not available for the -HD.

- ▲ The slots accept EM0465 SWB router output cards. The SWB output cards provide outputs for a multi-format router present in the same frame.

This configuration page allows the MCPM to control certain router outputs.

Purpose

This is what the 'Wing Outputs' page does:

- Presents a list of SWB router outputs.
- Allows you to select a behavior for each output.

Options

The options for the router outputs differ for the MCPM-HD2 and the MCPM-SDHD. These 3 options apply for both:

- Controlled by the router control card (one of the control cards in the frame).
- Follow (emit) program main video.
- Follow (emit) preset main video.

There are 2 **additional** options for the MCPM-SDHD:

- Follow (emit) program main audio (when it is embedded).
- Follow (emit) preset main audio (when it is embedded).

These options can be of some help when the frame includes a multi-format router in addition to its master control components.

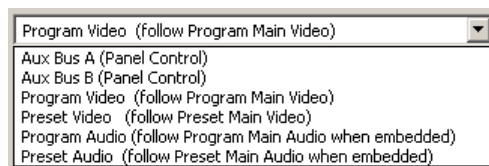
Aux Outputs

The 'Aux Outputs' page is available for MCEs:



“Aux” is an abbreviation for “auxiliary.”

The MCE has two aux output connectors on its core backplane. They are labeled A and B. This configuration page directs video or audio to the choice you make in the drop-down lists for Aux A output and Aux B output:



These are the choices:

- Aux Bus A (Panel Control)
The aux output (whichever one you choose) carries the main source chosen on the control panel's aux bus when the panel operator presses the “Aux A Bus” delegate button.
- Aux Bus B (Panel Control)
The aux output (whichever one you choose) carries the main source chosen on the control panel's aux bus when the panel operator presses the “Aux B Bus” delegate button.
- Program Video (follow Program Main Video)
The aux output (whichever one you choose) carries the video and audio of the main source chosen on the control panel's program bus.
Under breakaway, the aux audio output still comes from the **video** source.

- Preset Video (follow Preset Main Video)
The aux output (whichever one you choose) carries the video and audio of the main source chosen on the control panel's preset bus.
Under breakaway, the aux audio output still comes from the **video** source.
- Program Audio (follow Program Main Audio when Embedded)
The aux output (whichever one you choose) carries the video and audio of the main source(s) chosen on the control panel's program bus.
Under breakaway, the aux audio output comes from the **audio** source.
 - ▲ This option does not appear unless you have checked 'Enable Main Disembedders' in the general settings.
- Preset Audio (follow Preset Main Audio when Embedded)
The aux output (whichever one you choose) carries the video and audio of the main source(s) chosen on the control panel's preset bus.
Under breakaway, the aux audio output comes from the **audio** source.
 - ▲ This option does not appear unless you have checked 'Enable Main Disembedders' in the general settings.

The aux outputs cannot replicate program audio or preset audio unless it is embedded. The aux outputs pass through whatever audio is embedded — all 16 channels, Dolby-encoded or not.

Aux Bus

The iMC-Panel-200 and iMC-Panel-300 (control panels) provide what is labeled an "Aux Bus" as well as a "Preview Bus." The aux and preview buses work in conjunction with an MCE. They are inoperative for other MCPMs.

The aux bus include a set of main source buttons and 6 "aux delegate" buttons. The delegate buttons select different functions for the aux bus. These are the delegate functions:

Aux A Bus	Preset Squeeze Background	Preview Squeeze Background
Aux B Bus	Preset Squeeze Image 2	Preview Squeeze Image 2

When a panel operator presses "Aux A Bus," the main source selected on the aux bus is sent to whichever aux output corresponds to the aux A bus. If neither aux output was configured for aux bus A, the aux output is unaffected.

The same is true for the "Aux B Bus" panel button.

The other 4 delegate types — conveniences for the panel operator, and not relevant to Master-Config — are discussed in the operator's guides, and in the *MCS Panel Configuration Editor User's Guide*.

ExtRtrSrc Settings (for MCEs)

The 'ExtRtrSrc Settings' page becomes available if you check the 'Enable External Router Source' checkbox in the 'General Settings' page. There are two forms of the 'ExtRtrSrc Settings' page, one for MCEs and one for other MCPMs. This section describes the page for MCEs.

This is a representative sample of the 'ExtRtrSrc Settings' page. This particular illustration shows connections for the program and preset bus:

The screenshot shows the 'ExtRtrSrc Settings' window with the following sections and options:

- Identifies the NV9000:** NV9000 IP Address (192 . 168 . 102 . 230)
- Naming option:** Use NV9000 Mnemonics (unchecked)
- Bus switch:** Pgm/Pst (selected), Pvw, Aux (unchecked)
- Main source options:**
 - Enable Mains (checked)
 - Use All-Level Take (unchecked)
 - Use Video In For Embedded Audio (unchecked)
 - Enable Mono AES (unchecked)
- Key source option:** Enable Keys (checked)
- Squeeze source option:** Enable SqzVideo (checked)
- Over source options:**
 - Enable Audio Overs (checked)
 - Use All-Level Take (unchecked)

The connection tables are as follows:

NV9000 Dest ID	Input (BNC)	NV9000 Dest Levels ID
MCMMainA:2439	Main Video A: 1	SDVideo
	Main Audio A 1-2: 65	AES 1/2
	Main Audio A 3-4: 66	AES 3/4
	Main Audio A 5-6: 67	AES 5/6
	Main Audio A 7-8: 68	AES 7/8
MCMMainEA:2441	Emb Audio Video A: 2	Level Same As Video
MCMMainB:2440	Main Video B: 3	
	Main Audio B 1-2: 69	
	Main Audio B 3-4: 70	
	Main Audio B 5-6: 71	
	Main Audio B 7-8: 72	
MCMMainEB:2442	Emb Audio Video B: 4	
D001:2239	Key 1 Fill: 33	SDVideo
	Key 1 Cut: 34	SDVideo
D002:2240	Key 2 Fill: 35	
	Key 2 Cut: 36	
D003:2241	Key 3 Fill: 37	
	Key 3 Cut: 38	
HD_IN1:2462	Sqz Bkgnd: 39	
HD_IN2:2463	Image 2 Video: 40	
MCOverA:2443	Over Audio A 1-2: 81	
	Over Audio A 3-4: 82	
	Over Audio A 5-6: 83	
	Over Audio A 7-8: 84	
	Over Audio A Emb: 23	
MCOverB:2444	Over Audio B 1-2: 86	
	Over Audio B 3-4: 87	
	Over Audio B 5-6: 88	
	Over Audio B 7-8: 89	
	Over Audio B Emb: 24	

The 'ExtRtrSrc Settings' page defines the connections between router destinations and the inputs at the backplane.

Refer to the NV9000 documentation for information regard routers, levels, sources, destinations, and other concepts.

Purpose

This is what the 'ExtRtrSrc Settings' page does:

- Identifies the NV9000 router control system from which to obtain external source signals.
- Specifies the router connections for main sources, key sources, squeeze image sources, and over sources.
- Configures options for the router connections.

Page Organization

The 'ExtRtrSrc Settings' configuration page has 6 sections:

- 1 [NV9000 IP Address.](#)
- 2 [Naming Option.](#)
- 3 [Bus Switch.](#)
- 4 [Main Source Connections.](#)
- 5 [Key Source Connections.](#)
- 6 [Squeezeback Source Connections.](#)
- 7 [Audio Over Source Connections.](#)

NV9000 IP Address

This address is the same as the address specified in the general settings page. If it is not, specify the IP address of either the primary NV9000 system controller or the virtual IP address of the NV9000 system. The virtual IP address is defined in NV9000-SE Utilities. You need not specify the secondary controller (if you have one).

If there is a secondary (backup) system controller, the NV9000 fails over to the backup controller without any effect on the master control system.

Naming Option

The 'Use NV9000 Mnemonics' checkbox option changes the way source names are presented on control panels.

When you check the box, the panels display the mnemonics defined for the sources in the *NV9000 configuration*.

When you uncheck the box, the panels display the mnemonics defined in the *MCE configuration*.

Bus Switch

One of the two "radio buttons" here selects the external router sources page for the program and preset buses. The other selects the external router sources page for the preview and aux buses.

Only one page is visible at a time. Be careful not to overlook the other page.

Note that some configuration options made in the program/preview page carry over into the preview/aux page.

The following sections discuss the program/preset and preview/aux pages in some detail.

Connectors

A port connector is a BNC, a Phoenix 3-pin quick-release connector, or a 3-wire shielded twisted pair (STP) group on a DB25. They are numbered in the range 1 to 128. See the *Master Control Reference Manual* for connector details.

The entries you make in the ExtRtrSrc Settings' page must match the actual connections you make if you expect your system to function properly.

Program/Preset Page

The program/preset page is visible when you select the 'Pgm/Pst' radio button:



The external connections for the program and preset buses apply to main sources, key sources, squeezeback sources, and over sources. There are two connection sets, A and B, for main sources, and similarly for over sources. There are 3 sets (fill and key) for keys. There is one set (background and image 2) for squeezeback.

Each section of the page has a corresponding checkbox with which to enable the section. If you check the box, the section becomes enabled — and visible. If you do not check the box, the section remains invisible. (Checking the boxes on this page enables the section(s) in the preview/aux page too.)

Main Source Connections

The main source section defines the connections of external main sources to the program and preset buses. (A similar section, in the preview/aux page, describes the main source connections to the preview bus.)

External main sources reach the frame through two sets of ports, designated A and B. The designations are not important and serve only to distinguish one set from the other. There are 2 sets because there are 2 buses, preset and program.

You must configure both sets in the same way, but using different connector numbers and destination IDs. Leaving one set unconfigured will result in errors.

There are 3 main source options:

- Use all-level takes
Any external main source will use all levels of the NV9000 destination selected for the main sources. When you check this option, fields in this section relating to levels are hidden.
- Use video input for embedded audio
Embedded audio is obtained from the principle video source. The fields that allow an additional source are hidden.
- Enable mono AES
Embedded audio is obtained from the principle video source. The fields that allow an additional source are hidden.

Of these, the first 2 options combine, resulting in four ways to configure main sources. (The third option, mono AES, is a separate function, although you cannot use it if you check 'Use All-Level Takes'. "All-level" implies that the audio sources are embedded in the video source and therefore cannot be discrete sources.)

Case 1 — Neither Option Checked

The main source uses specific levels. A separate destination can be used for embedded audio:

NV9000 Dest ID		Input (BNC)	NV9000 Dest Levels ID
MCMainA:2439	Main Video A	1	SDVideo
	Main Audio A 1-2	65	AES 1/2
	Main Audio A 3-4	66	AES 3/4
	Main Audio A 5-6	67	AES 5/6
	Main Audio A 7-8	68	AES 7/8
MCMainEA:2441	Emb Audio Video A	2	Level Same As Video
MCMainB:2440	Main Video B	3	
	Main Audio B 1-2	69	
	Main Audio B 3-4	70	
	Main Audio B 5-6	71	
	Main Audio B 7-8	72	
MCMainEB:2442	Emb Audio Video B	4	

Enable Mains
 Use All-Level Take
 Use Video In For Embedded Audio

The *first* router destination (under the heading 'NV9000 Dest ID' and next to 'Main Video A') provides video and audio on one or more NV9000 levels. You can specify up to 5 distinct levels and those correspond to the five drop-down menus under the heading 'NV9000 Dest Levels ID'. You specify the connector numbers for the individual levels in the middle column. You do not have to use all the fields. If the NV9000 destination has fewer than 5 levels, assign the unused connectors a value of 0 and leave the level field blank.

The *second* router destination (next to 'Emb Audio Video A') is required if any external audio source is embedded. (Breakaway is possible for that source.)

The *third* and *fourth* router destinations are like the first and second, but for channel B.

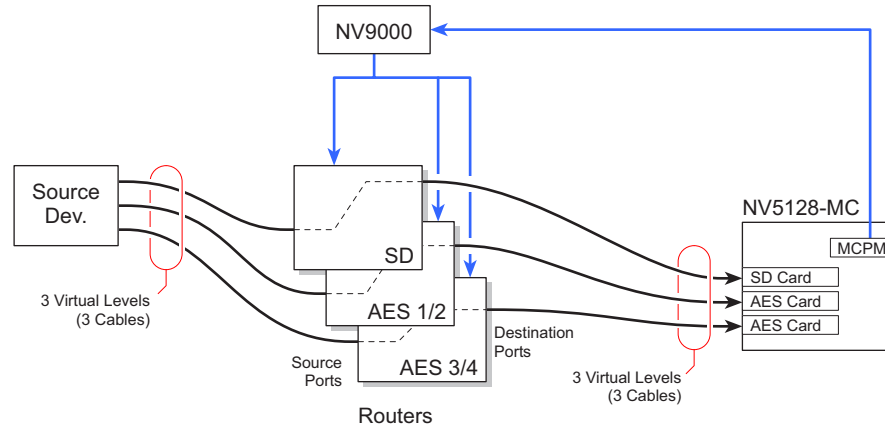
Follow these steps for port set A:

- 1 Select the router destination in the drop-down list for 'Main Video A'. The destination field is a drop-down list only if you have an NV9000 system connected (and identified). If the NV9000 is not connected, you'll have to enter device IDs by typing.
- 2 Enter the BNC number for the video connector. The cable from this connector will go to the video router supporting the destination you selected.
- 3 Choose (or enter numerically) the virtual level for the video connection.
- 4 For each audio connection, enter the number of the audio connector. The cable from this connector will go to the audio router supporting the destination you selected.
- 5 For each audio connection, choose (or enter numerically) the virtual level for the audio connection.
- 6 Optionally, select a router destination in the drop-down list for 'Emb Audio Video A' and enter the BNC number used to connect to this destination.
- 7 Leave 0 or blank all fields for which there is no connection.

Make similar settings for port set B, but using a different router destination and different inputs. Port set B must be configured identically to port set A except for the different destinations and connector numbers.

- ▲ The video level specified here also applies to external squeezeback sources if you have enabled them.

This example shows hypothetical connections for one main source:



If (1) any of your external main source's audio is embedded and (2) the master control system will require audio breakaway from any of those sources, you will need to connect a second router destination and a second video input (in addition to the first).

This is an example showing connections that allow external embedded audio for breakaway:

NV9000 Dest ID	Input	NV9000 Dest Levels ID
Vid001:1665	17	SDVideo
	0	
	0	
	0	
	0	
Vid002:1666	18	Level Same As Video
Vid003:1667	19	
	0	
	0	
	0	
Vid004:1668	20	

Case 2 — All-Level

The main source uses the video level specified under 'NV9000 Dest Levels ID' and all audio levels of the separate NV9000 destination supplying embedded audio:

NV9000 Dest ID		Input (BNC)	NV9000 Dest Levels ID
MCMMainA:2439	Main Video A	1	SDVideo
MCMMainEA:2441	Emb Audio Video A	2	Level Same As Video
MCMMainB:2440	Main Video B	3	
MCMMainEB:2442	Emb Audio Video B	4	

Enable Mains
 Use All-Level Take
 Use Video In For Embedded Audio

The *first* router destination (next to 'Main Video A') provides video. You must specify a connector number for the video.

The *second* router destination (next to 'Emb Audio Video A') is required. You must specify a connector number for the embedded audio. The connector must **not** be the same connector as for 'Main Video A'.

The *third* and *fourth* router destinations are like the first and second, but for port set B.

Follow these steps for port set A:

- 1 Select the router destination in the drop-down list.
- 2 Enter the BNC number for the video connector. The cable from this connector will go to the video router supporting the destination you selected.
- 3 Specify the NV9000 level for the video connection.
- 4 Optionally, select a router destination in the drop-down list for 'Emb Audio Video A' and enter the BNC number used to connect to this destination.

Make similar settings for port set B, but using a different router destination and different inputs. Port set B must be configured identically to port set A except for the different destinations and connector numbers.

- ▲ The video level specified here also applies to external squeezeback sources if you have enabled them.

Case 3 — Video In

The main source uses specific levels. Embedded audio comes from 'Main Video A' and 'Main Video B'. Additional audio sources can be specified:

NV9000 Dest ID		Input (BNC)	NV9000 Dest Levels ID
MCMainA:2439	Main Video A	1	SDVideo
	Main Audio A 1-2	65	AES 1/2
	Main Audio A 3-4	66	AES 3/4
	Main Audio A 5-6	67	AES 5/6
	Main Audio A 7-8	68	AES 7/8
MCMainB:2440	Main Video B	3	
	Main Audio B 1-2	69	
	Main Audio B 3-4	70	
	Main Audio B 5-6	71	
	Main Audio B 7-8	72	

Enable Mains
 Use All-Level Take
 Use Video In For Embedded Audio

Breakaway for the embedded audio channels is not possible, but it is possible for any of the discrete channels.

The *first* router destination (under the heading 'NV9000 Dest ID' and next to 'Main Video A') provides video and some combination of embedded audio and discrete audio on one or more NV9000 levels. You can specify up to 5 discrete levels and those correspond to the five drop-down menus under the heading 'NV9000 Dest Levels ID'.

You specify the connector numbers for the individual levels in the middle column. You do not have to use all the fields. If the NV9000 destination has fewer than 5 discrete levels, assign the unused connectors a value of 0 and leave the level field blank.

The *second* router destination is like the first, but for channel B.

Follow these steps for port set A:

- 1 Select the router destination in the drop-down list.
 - 2 Enter the BNC number for the video connector. The cable from this connector will go to the video router supporting the destination you selected.
 - 3 Specify the virtual level for the video connection.
 - 4 For each audio connection, enter the number of the audio connector. The cable from this connector will go to the audio router supporting the destination you selected.
 - 5 For each audio connection, choose (or enter numerically) the virtual level for the audio connection.
 - 6 Leave 0 or blank all fields for which there is no connection.
- ▲ Make similar settings for port set B, but using a different router destination and different inputs. Port set B must be configured identically to port set A except for the different destinations and connector numbers.

Example: The video level specified here also applies to external squeezeback sources if you have enabled them.

Case 4—Both Options Checked

The main source uses *all levels* of the NV9000 destination specified. Embedded audio comes from the main video. **No** additional audio sources can be specified:

The screenshot shows a configuration window with the following elements:

- Header:** NV9000 Dest ID, Input (BNC), NV9000 Dest Levels ID
- Main Video A:**
 - NV9000 Dest ID: MCMainA:2439
 - Input (BNC): 1
 - NV9000 Dest Levels ID: SDVideo
- Main Video B:**
 - NV9000 Dest ID: MCMainB:2440
 - Input (BNC): 3
 - NV9000 Dest Levels ID: (empty)
- Checkboxes (right side):**
 - Enable Mains
 - Use All-Level Take
 - Use Video In For Embedded Audio

The *first* router destination (next to 'Main Video A') provides video and embedded audio.

▲ The video level specified here applies to external squeezeback sources if you have enabled them. It does **not** apply to the main sources here.

The *second* router destination is like the first, but for channel B.

Follow these steps for port set A:

- 1 Select the router destination in the drop-down list.
- 2 Enter the BNC number for the video connector. The cable from this connector will go to the video router supporting the destination you selected.
- 3 Specify the virtual level for the video connection.

Make similar settings for port set B, but using a different router destination and different inputs. Port set B must be configured identically to port set A except for the different destinations and port numbers.

Mono AES

The 'Enable Mono AES' check box allows you to specify separate levels for the AES channels that use discrete connectors (for external main sources).

▲ This check box is not available for the 'Preview, Aux' configuration page.

If you leave the check box unchecked, each backplane connector (for main source audio) corresponds to a single NV9000 "virtual level."

NV9000 Dest ID		Input (BNC)	NV9000 Dest Levels ID
MCMainA:2439	Main Video A	10	HD
	Main Audio A 1-2	121	AES 1/2
	Main Audio A 3-4	122	AES 3/4
	Main Audio A 5-6	123	AES 5/6
	Main Audio A 7-8	124	AES 7/8
MCMainB:2440	Main Video B	11	
	Main Audio B 1-2	125	
	Main Audio B 3-4	126	
	Main Audio B 5-6	127	
	Main Audio B 7-8	128	

If you check the check box, each backplane connector (for main source audio) corresponds to two NV9000 virtual levels, making 8 fields for 8 audio channels. You can specify the NV9000 virtual level for each individual channel.

NV9000 Dest ID		Input (BNC)	NV9000 Dest Levels ID	
MCMainA:2439	Main Video A	10	HD	
	Main Audio A 1-2	121	1 AES 1	2 AES 2
	Main Audio A 3-4	122	3 AES 3	4 AES 4
	Main Audio A 5-6	123	5 AES 5	6 AES 6
	Main Audio A 7-8	124	7 AES 7	8 AES 8
MCMainB:2440	Main Video B	11		
	Main Audio B 1-2	125		
	Main Audio B 3-4	126		
	Main Audio B 5-6	127		
	Main Audio B 7-8	128		

It should be noted that discrete audio connectors provide connections for the first 8 audio channels. If a video signal is to be associated with 16 audio channels, the association must be carried out another way. (Let the video signal be a local main source, for instance.)

Key Source Connections

The key source section describes router connections for external key sources:

Enable Keys

All Keys Fill	SDVideo	
All Keys Cut	SDVideo	
D001:2239	Key 1 Fill	33
	Key 1 Cut	34
D002:2240	Key 2 Fill	35
	Key 2 Cut	36
D003:2241	Key 3 Fill	37
	Key 3 Cut	38

External key sources reach the frame through 3 port sets, designated 1, 2, and 3. The designations are not important and serve only to distinguish one port from the other. There are 3 ports because there are 3 keyers in the MCPM.

Each port comprises 2 video input connectors (BNC). One input is for video fill; the other is for the key. If your external key is a self-key, you do not need to use the key input.

The router destinations (defined in the NV9000 configuration for the purpose of supplying a master control system) provides the video on 1 or 2 virtual levels. If *all* your external keys are self-keys, you do not need to specify a level for key input.

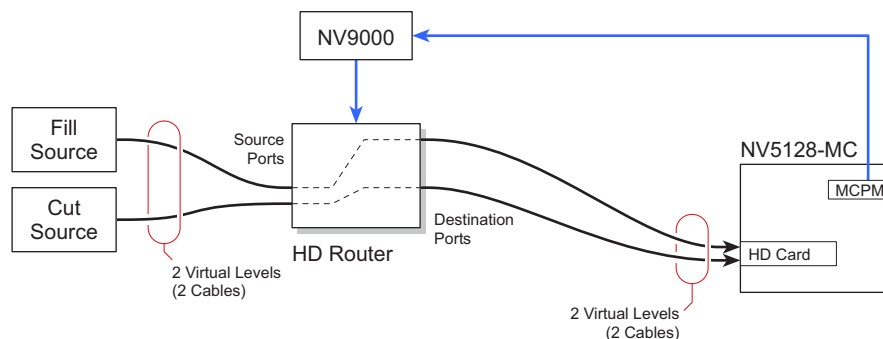
Leave unused boxes blank (or 0).

The entries you make in this configuration page must match the actual connections you make.

Follow these steps for each key source port:

- 1 Select the router destination in the drop-down list. The destination field is a drop-down list only if you have an NV9000 system connected (and identified). If the NV9000 is not connected, you'll have to enter device IDs by typing.
- 2 Enter the BNC number for the video connector(s). The cable from this connector will go to the video router supporting the destination you selected.
- 3 Choose (or enter numerically) the virtual level for the video connection.
- 4 Leave 0 or blank all fields for which there is no connection.

This example shows hypothetical connections for one key source:



Squeezeback Source Connections

External squeeze image sources are referenced, during configuration and operation, through the 'Main Sources' list. However, they reach MCPM physically through the connection defined in this section of the 'ExtRtrSrc Settings' page:

<input checked="" type="checkbox"/> Enable SqzVideo	HD_IN1:2462	Sqz Bkgnd	39
	HD_IN2:2463	Image 2 Video	40

External squeeze sources reach the frame through 2 ports. One port is for background images; the other is for squeeze2 images under enhanced squeezeback.

- ▲ Enhanced squeezeback is available only in the MCPM-SDHD and MCE.
- ▲ The NV9000 levels for external squeezeback sources are specified in the main sources section.

Leave unused boxes with a value of 0.

The entries you make in this configuration page must match the actual connections you make.

Follow these steps for each squeeze source:

- 1 Select the router destination in the drop-down list.
- 2 Enter the BNC number for the video connector. The cable from this connector will go to the video router supporting the destination you selected.

Audio Over Source Connections

The over source section defines router connections of external over sources to the program and preset buses. (A similar section, in the preview/aux page, describes the over source connections to the preview bus.)

Like external main sources, external over sources reach the frame through two sets of ports, designated A and B. The designations are not important and serve only to distinguish one set from the other. There are 2 sets because there are 2 buses, preset and program.

You must configure both sets alike. Leaving one unconfigured will result in errors.

There is one over source option: 'Use all-level take' where any external over source will use all levels of the NV9000 destination selected for the over sources. When you check this option, fields in this section relating to levels are hidden.

This option results in 2 ways to configure over sources.

Case 1—Specific Levels

The over source uses specific levels. Embedded audio comes from 'Over Audio A Emb' and 'Over Audio B Emb'. Additional audio sources can be specified:

Enable Audio Overs
 Use All-Level Take

MCOverA:2443	Over Audio A 1-2	81
	Over Audio A 3-4	82
	Over Audio A 5-6	83
	Over Audio A 7-8	84
	Over Audio A Emb	23
MCOverB:2444	Over Audio B 1-2	86
	Over Audio B 3-4	87
	Over Audio B 5-6	88
	Over Audio B 7-8	89
	Over Audio B Emb	24

Like external main sources, external over sources reach the frame through two ports, designated A and B. The designations are not important and serve only to distinguish one port from the other. There are 2 ports because there are 2 buses, preset and program.

Each port comprises 5 input connectors and a router destination. A connector is a BNC, a Phoenix 3-pin quick-release connector, or a 3-pin shielded twisted pair (STP) group on a DB25. The first 4 connectors are for discrete audio; the fifth connector supports embedded audio (and it is actually a video connection).

The router destination (defined in the NV9000 configuration for the purpose of supplying a master control system) provides audio on one or more virtual levels.

If your external over sources have fewer than 4 levels, leave the extra boxes blank (0).

The entries you make in this configuration page must match the actual connections you make.

Follow these steps for port set A:

- 1 Select the router destination in the drop-down list. The destination field is a drop-down list only if you have an NV9000 system connected (and identified). If the NV9000 is not connected, you will have to enter device IDs by typing.

- 2 If the audio is embedded . . .

In the box labeled 'Over Audio A', enter the number of the video connector in which the audio is embedded. The cable from this connector will come from the video router supporting the destination you selected.

If there are additional discrete audio sources, for each audio connection, enter the number of the audio connector. The cable from this connector will go to the audio router supporting the destination you selected.

- 3 Otherwise . . .

For each audio connection, enter the number of the audio connector. The cable from this connector will go to the audio router supporting the destination you selected.

- 4 Leave 0 all fields for which there is no connection.

Make similar settings for port set B, but using a different router destination and different inputs. Port set B must be configured identically to port set A except for the different port numbers.

Case 2₁—All Levels

The over source uses all levels of the NV9000 destinations specified. Embedded audio comes from 'Over Audio A Emb' and 'Over Audio B Emb'. **No** additional audio sources can be specified:

The screenshot shows the 'ExtRtrSrc Settings' interface for MCEs. On the left, there are two checked checkboxes: 'Enable Audio Overs' and 'Use All-Level Take'. The main area is divided into two sections. The top section is for 'Over Audio A Emb', with a drop-down menu set to 'MCOverA:2443' and a text box containing the number '23'. The bottom section is for 'Over Audio B Emb', with a drop-down menu set to 'MCOverB:2444' and a text box containing the number '24'.

In this case, each port set has just one connector — for embedded audio (and it is actually a video connection).

Follow these steps for port set A:

- 1 Select the router destination in the drop-down list.
- 2 In the box labeled 'Over Audio A Emb', enter the number of the video connector in which the audio is embedded. The cable from this connector will come from the video router supporting the destination you selected.

Make a similar setting for port set B, but using a different router destination and a different input.

Preview/Aux Page

The preview/aux page is visible when you select the 'Pvw, Aux' radio button:

The screenshot shows two radio buttons. The first is labeled 'Pgm/Pst' and is unselected. The second is labeled 'Pvw, Aux' and is selected, indicated by a filled circle next to it.

The preview/aux page is largely dependent on the external router sources enabled in the program/preset page. What you enable in the program/preset page is also enabled in the preview/aux page. The main source options and over source options are the same also. (There are no controls affecting those options in the preview/aux page because the controls exist in the program/preset page.)

The preview/aux page does have an independent aux bus section, however. This illustration shows all the sections of the preview/aux page:

The screenshot shows the 'ExtRtrSrc Settings' window with the following configuration details:

- Buttons:** Apply, Default
- NV9000 Dest ID:** MCT_MN_A:2445
- Input (BNC):**

Main Video A	5
Main Audio A 1-2	91
Main Audio A 3-4	92
Main Audio A 5-6	93
Main Audio A 7-8	94
Emb Audio Video A	6
- NV9000 IP Address:** 192 . 168 . 102 . 230
- Text:** This IP Address comes from the Primary IP Address on the General Settings window. It is Virtual when using redundant controllers.
- Bus switch:** Pgm/Pst Pww, Aux
- Router Destination IDs:**
 - D004:2242
 - D005:2243
 - D006:2244
 - HD_IN3:2464
 - HD_IN4:2465
 - MCT_AO_A:2451
 - Vid001:1665
 - Vid002:1666
- Frame Inputs:**

Key 1 Fill	41
Key 1 Cut	42
Key 2 Fill	43
Key 2 Cut	44
Key 3 Fill	45
Key 3 Cut	46
Sqz Bkgnd	47
Image 2 Video	48
Over Audio A 1-2	95
Over Audio A 3-4	96
Over Audio A 5-6	97
Over Audio A 7-8	98
Over Audio A Emb	99
Aux Bus A Video	12
Aux Bus B Video	13
- Aux bus options:**
 - Enable Aux Bus
 - Use All-Level Take

The external connections for the preview bus apply to main sources, key sources, squeezeback sources, and over sources, as they do for the program and preset buses. Here, unlike the program/preset page, there is only one connection set (A) for main sources, and similarly, only one connection set (A) for over sources. As in the program/preset page, there are 3 connection sets for keys and one connection set for squeezeback.

Key Source Connections

The key source section describes router connections for external key sources:

D004:2242	Key 1 Fill	41
	Key 1 Cut	42
D005:2243	Key 2 Fill	43
	Key 2 Cut	44
D006:2244	Key 3 Fill	45
	Key 3 Cut	46

External key sources reach the preview bus through 3 port sets, designated 1, 2, and 3. The designations are not important and serve only to distinguish one port from the other. There are 3 ports because there are 3 keys in the MCPM.

Each port comprises 2 video input connectors (BNC). One input is for video fill; the other is for the key. If your external key is a self-key, you do not need to use the key input.

The router destinations (defined in the NV9000 configuration for the purpose of supplying a master control system) provides the video on 1 or 2 virtual levels. If *all* your external keys are self-keys, you do not need to specify a level for key input. The virtual levels are specified in the program/preset page.

The entries you make in this configuration page must match the actual connections you make.

Follow these steps for each key source port:

- 1 Select the router destination in the drop-down list.
- 2 Enter the BNC number for the video connector(s). The cable from this connector will go to the video router supporting the destination you selected.
- 3 Choose (or enter numerically) the virtual level for the video connection.
- 4 Leave 0 or blank all fields for which there is no connection.

Squeezeback Source Connections

External squeeze image sources are referenced, during configuration and operation, through the 'Main Sources' list. However, they reach MCPM physically through the connection defined in this section of the 'ExtRtrSrc Settings' page:

HD_IN3:2464	Sqz Bkgnd	47
HD_IN4:2465	Image 2 Video	48

External squeeze sources reach the preview bus through 2 ports. One port is for background images; the other is for squeeze2 images under enhanced squeezeback.

- ▲ Enhanced squeezeback is available only in the MCPM-SDHD and MCE.
- ▲ The external squeezeback sources use the NV9000 level specified in the main sources section.

The entries you make in this configuration page must match the actual connections you make.

Follow these steps for each squeeze source:

- 1 Select the router destination in the drop-down list.
- 2 Enter the BNC number for the video connector. The cable from this connector will go to the video router supporting the destination you selected.
- 3 Leave 0 or blank all fields for which there is no connection.

Audio Over Source Connections

The over source section defines router connections of external over sources to the preview bus. External over sources reach the preview bus through a single sets of ports, designated A. The designation is not important.

There is one over source option: 'Use all-level take' where any external over source will use all levels of the NV9000 destination selected for the over sources. When you check this option, fields in this section relating to levels are hidden.

This option results in 2 ways to configure over sources.

Case 1—Specific Levels

The over source uses specific levels. Embedded audio comes from 'Over Audio A Emb'. Additional audio sources can be specified:

MCT_AO_A:2451	Over Audio A 1-2	95
	Over Audio A 3-4	96
	Over Audio A 5-6	97
	Over Audio A 7-8	98
	Over Audio A Emb	22

External over sources reach the frame through a single port set, designated A. The designation is not important.

The port comprises 5 input connectors and a router destination. The first 4 connectors are for discrete audio; the fifth connector supports embedded audio (and it is actually a video connection).

The router destination (defined in the NV9000 configuration for the purpose of supplying a master control system) provides audio on one or more virtual levels.

If your external over source has fewer than 4 levels, leave the extra boxes blank (0).

The entries you make in this configuration page must match the actual connections you make.

Follow these steps:

- 1 Select the router destination in the drop-down list. The destination field is a drop-down list only if you have an NV9000 system connected (and identified). If the NV9000 is not connected, you will have to enter device IDs by typing.
- 2 If the audio is embedded . . .

In the box labeled 'Over Audio A Emb', enter the number of the video connector in which the audio is embedded. The cable from this connector will come from the video router supporting the destination you selected.

If there are additional discrete audio sources, for each audio connection, enter the number of the audio connector. The cable from this connector will go to the audio router supporting the destination you selected.

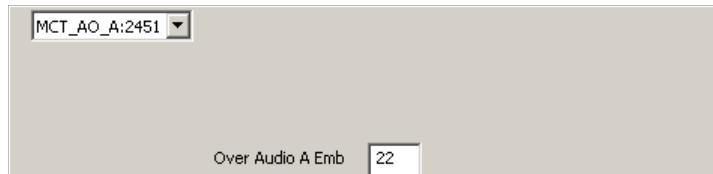
3 Otherwise . . .

For each audio connection, enter the number of the audio connector. The cable from this connector will go to the audio router supporting the destination you selected.

4 Leave 0 all fields for which there is no connection.

Case 2.1—All Levels

The over source uses all levels of the NV9000 destination specified. Embedded audio comes from 'Over Audio A Emb'. **No** additional audio sources can be specified:



The screenshot shows a configuration window with a drop-down menu at the top containing the text 'MCT_AO_A:2451'. Below this, the text 'Over Audio A Emb' is displayed next to a text input field containing the number '22'.

In this case, the port set has just one connector — for embedded audio (and it is actually a video connection).

Follow these steps for port set A:

- 1 Select the router destination in the drop-down list.
- 2 In the box labeled 'Over Audio A Emb', enter the number of the video connector in which the audio is embedded. The cable from this connector will come from the video router supporting the destination you selected.

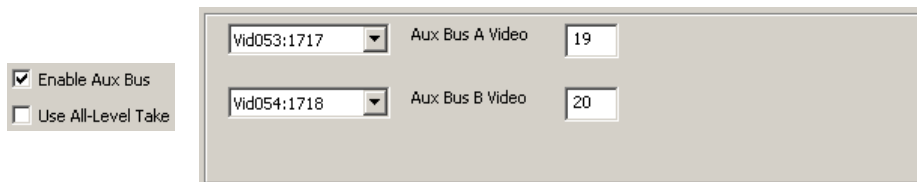
Aux Bus Connections

The aux bus source section defines router connections of external main sources to the aux buses. The MCE has two aux buses, A and B. External main sources reach the aux buses through two ports, similarly designated A and B.

- ▲ Note that master control panels such as the iMC-Panel-300 that have aux buttons can be configured so that the aux buttons correspond to either of the MCE's aux buses (and for other purposes as well).

There is one aux bus source option: 'Use all-level take' where any external main source will use all levels of the NV9000 destination selected for the aux bus source.

This option results in 2 ways to configure aux bus sources. takes occur (1) on all levels or (2) just the video level specified in the main sources section:



The screenshot shows a configuration panel with two rows. The first row has a drop-down menu with 'Vid053:1717', the label 'Aux Bus A Video', and a text input field with '19'. The second row has a drop-down menu with 'Vid054:1718', the label 'Aux Bus B Video', and a text input field with '20'. To the left of the panel are two checkboxes: 'Enable Aux Bus' (checked) and 'Use All-Level Take' (unchecked).

There is no change to the configuration page when you check or uncheck this option.

ExtRtrSrc Settings (for MCPMs)

The 'ExtRtrSrc Settings' page becomes available if you check the 'Enable External Router Source' checkbox in the 'General Settings' page. There are two forms of the 'ExtRtrSrc Settings' page, one for MCEs and one for other MCPMs. This section describes the page for MCPMs.

This is a representative sample of the 'ExtRtrSrc Settings' page for an MCPM-SDHD. There are slight variations for other MCPMs:

The screenshot shows the 'ExtRtrSrc Settings' window with the following configuration details:

- Identifies the NV9000:** NV9000 IP Address: 192 . 168 . 102 . 230. Note: This IP Address comes from the Primary IP Address on the General Settings window. It is Virtual when using redundant controllers.
- Main Source Enable:** Enable Mains
- Mono Option:** Enable Mono AES
- Key Source Enable:** Enable Keys
- Squeeze Source Enable:** Enable SqzVideo
- Over Source Enable:** Enable Audio Overs

NV9000 Dest ID	Input (BNC)	NV9000 Dest Levels ID
MCMMainA:2439	Main Video A: 1	SDVideo
	Main Audio A 1-2: 65	AES 1/2
	Main Audio A 3-4: 66	AES 3/4
	Main Audio A 5-6: 67	AES 5/6
	Main Audio A 7-8: 68	AES 7/8
MCMMainEA:2441	Emb Audio Video A: 2	Level Same As Video
MCMMainB:2440	Main Video B: 3	
	Main Audio B 1-2: 69	
	Main Audio B 3-4: 70	
	Main Audio B 5-6: 71	
	Main Audio B 7-8: 72	
MCMMainEB:2442	Emb Audio Video B: 4	
	All Keys Fill: 33	SDVideo
	All Keys Cut: 34	SDVideo
D001:2239	Key 1 Fill: 33	
	Key 1 Cut: 34	
D002:2240	Key 2 Fill: 35	
	Key 2 Cut: 36	
D002:2240	Key 3 Fill: 37	
	Key 3 Cut: 38	
HD_IN1:2462	Sqz Bkgnd: 39	
HD_IN2:2463	Image 2 Video: 40	
MCOverA:2443	Over Audio A 1-2: 81	
	Over Audio A 3-4: 82	
	Over Audio A 5-6: 83	
	Over Audio A 7-8: 84	
	Over Audio A Emb: 23	
MCOverB:2444	Over Audio B 1-2: 86	
	Over Audio B 3-4: 87	
	Over Audio B 5-6: 88	
	Over Audio B 7-8: 89	
	Over Audio B Emb: 24	

Router Destination IDs Frame Inputs

The 'ExtRtrSrc Settings' page defines the connections between router destinations and the inputs at the backplane.

Refer to the NV9000 documentation for information regard routers, levels, sources, destinations, and other concepts.

Purpose

This is what the 'ExtRtrSrc Settings' page does:

- Identifies the NV9000 router control system from which to obtain external source signals.
- Specifies the router connections for main sources, key sources, squeeze image sources, and over sources.

Page Organization

The 'ExtRtrSrc Settings' configuration page has 6 sections:

- 1 [NV9000 IP Address.](#)
- 2 [Main Source Connections.](#)
- 3 [Key Source Connections.](#)
- 4 [Squeezeback Source Connections.](#)
- 5 [Audio Over Source Connections.](#)

NV9000 IP Address

This address is the same as the address specified in the general settings page. If it is not, specify the IP address of either the primary NV9000 system controller or the virtual IP address of the NV9000 system. The virtual IP address is defined in NV9000-SE Utilities. You need not specify the secondary controller (if you have one).

If there is a secondary (backup) system controller, the NV9000 fails over to the backup controller without any effect on the master control system.

Connectors

A port connector is a BNC, a Phoenix 3-pin quick-release connector, or a 3-wire shielded twisted pair (STP) group on a DB25. They are numbered in the range 1 to 128. See the *Master Control Reference Manual* for connector details.

The entries you make in the ExtRtrSrc Settings' page must match the actual connections you make if you expect your system to function properly.

Main Source Connections

The main source section defines the connections of external main sources to the frame:

Enable Mains

NV9000 Dest ID	Input (BNC)	NV9000 Dest Levels ID
MCMainA:2439	Main Video A	SDVideo
	Main Audio A 1-2	AES 1/2
	Main Audio A 3-4	AES 3/4
	Main Audio A 5-6	AES 5/6
	Main Audio A 7-8	AES 7/8
MCMainEA:2441	Emb Audio Video A	Level Same As Video
MCMainB:2440	Main Video B	
	Main Audio B 1-2	
	Main Audio B 3-4	
	Main Audio B 5-6	
	Main Audio B 7-8	
MCMainEB:2442	Emb Audio Video B	

External main sources (that are not chosen during operation as squeeze sources) reach the frame through two port sets, designated A and B. The designations are not important and serve only to distinguish one set from the other. There are 2 port sets because there are 2 buses, preset and program.

You must configure both sets alike. Leaving one unconfigured will result in errors.

Each port set comprises 6 input connectors and two router destinations. The *second* router destination in a set is required only when at least one external source's audio is embedded and breakaway is possible for that source. Otherwise, you can ignore the second destination and the 6th connector.

The *first* router destination (defined in the NV9000 configuration) provides video and audio on one or more NV9000 levels. There are potentially 5 levels and those correspond to the five input boxes.

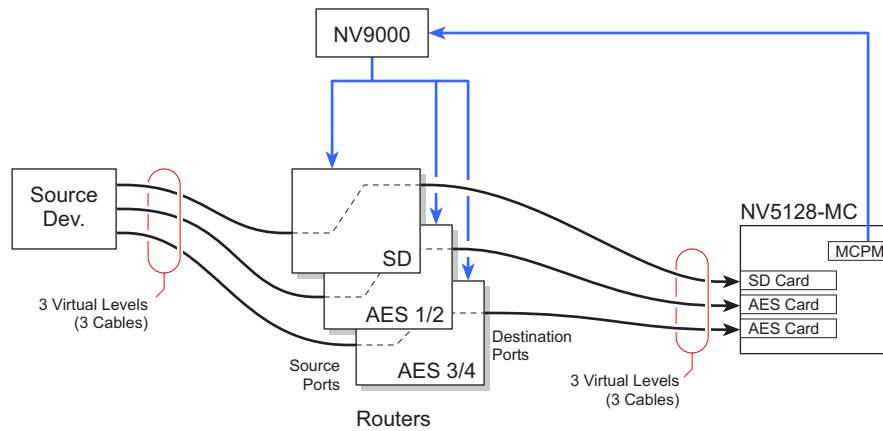
If your external main sources have fewer than 5 levels, leave the extra boxes blank (or 0).

The entries you make in this configuration page must match the actual connections you make if you expect your system to function properly.

Follow these steps for port A:

- 1 Select the router destination in the drop-down list. The destination field is a drop-down list only if you have an NV9000 system connected (and identified). If the NV9000 is not connected, you'll have to enter device IDs from memory.
- 2 Enter the BNC number for the video connector. The cable from this connector will go to the video router supporting the destination you selected.
- 3 Choose (or enter numerically) the virtual level for the video connection.
- 4 For each audio connection, enter the number of the audio connector. The cable from this connector will go to the audio router supporting the destination you selected.
- 5 For each audio connection, choose (or enter numerically) the virtual level for the audio connection.
- 6 Leave 0 or blank all fields for which there is no connection.

Make similar settings for port B, but using a different router destination and different inputs.
This example shows hypothetical connections for one main source port:



If (1) any of your external main source's audio is embedded and (2) the master control system will require audio breakaway from any of those sources, you will need to connect a second router destination and a second video input (in addition to the first).

This is an example showing connections that allow external embedded audio for breakaway:

NV9000 Dest ID	Input	NV9000 Dest Levels ID
Vid001:1665	17	SDVideo
	0	
	0	
	0	
	0	
Vid002:1666	18	Level Same As Video
Vid003:1667	19	
	0	
	0	
	0	
Vid004:1668	20	

Mono AES

The 'Enable Mono AES' check box allows you to specify separate levels for the AES channels that use discrete connectors (for external main sources).

▲ This check box is not available for the 'Preview, Aux' configuration page.

If you leave the check box unchecked, each backplane connector (for main source audio) corresponds to a single NV9000 "virtual level."

NV9000 Dest ID		Input (BNC)	NV9000 Dest Levels ID
MCMainA:2439	Main Video A	10	HD
	Main Audio A 1-2	121	AES 1/2
	Main Audio A 3-4	122	AES 3/4
	Main Audio A 5-6	123	AES 5/6
	Main Audio A 7-8	124	AES 7/8
MCMainB:2440	Main Video B	11	
	Main Audio B 1-2	125	
	Main Audio B 3-4	126	
	Main Audio B 5-6	127	
	Main Audio B 7-8	128	

If you check the check box, each backplane connector (for main source audio) corresponds to two NV9000 virtual levels, making 8 fields for 8 audio channels. You can specify the NV9000 virtual level for each individual channel.

NV9000 Dest ID		Input (BNC)	NV9000 Dest Levels ID	
MCMainA:2439	Main Video A	10	HD	
	Main Audio A 1-2	121	1 AES 1	2 AES 2
	Main Audio A 3-4	122	3 AES 3	4 AES 4
	Main Audio A 5-6	123	5 AES 5	6 AES 6
	Main Audio A 7-8	124	7 AES 7	8 AES 8
MCMainB:2440	Main Video B	11		
	Main Audio B 1-2	125		
	Main Audio B 3-4	126		
	Main Audio B 5-6	127		
	Main Audio B 7-8	128		

It should be noted that discrete audio connectors provide connections for the first 8 audio channels. If a video signal is to be associated with 16 audio channels, the association must be carried out another way. (Let the video signal be a local main source, for instance.)

Key Source Connections

The main source section describes the connections of external key sources to the frame:

Enable Keys

All Keys Fill	SDVideo	
All Keys Cut	SDVideo	
D001:2239	Key 1 Fill	33
	Key 1 Cut	34
D002:2240	Key 2 Fill	35
	Key 2 Cut	36
D002:2240	Key 3 Fill	37
	Key 3 Cut	38

External key sources reach the frame through 3 ports, designated 1, 2, and 3. The designations are not important and serve only to distinguish one port from the other. There are 3 ports because there are 3 keyers in the MCPM.

Each port comprises 2 video input connectors (BNC). One input is for video fill; the other is for the key. If *all* your external keys are self-keys, you do not need to use the key input.

The router destinations (defined in the NV9000 configuration for the purpose of supplying a master control system) provides the video on 1 or 2 virtual levels.

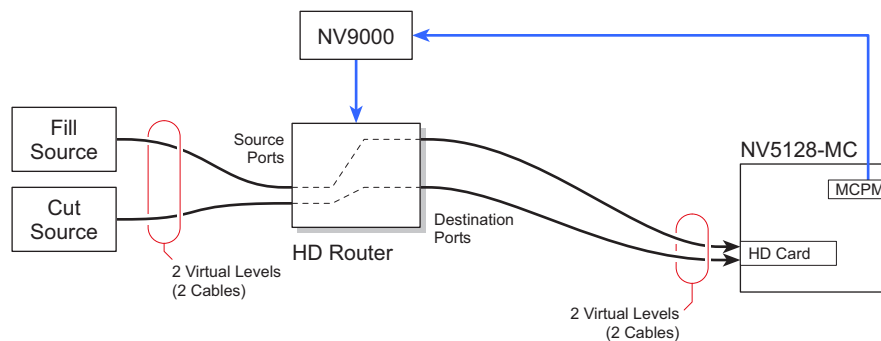
Leave unused boxes blank (or 0).

The entries you make in this configuration page must match the actual connections you make.

Follow these steps for each key source port:

- 1 Select the router destination in the drop-down list. The destination field is a drop-down list only if you have an NV9000 system connected (and identified). If the NV9000 is not connected, you'll have to enter device IDs from memory.
- 2 Enter the BNC number for the video connector(s). The cable from this connector will go to the video router supporting the destination you selected.
- 3 Choose (or enter numerically) the virtual level for the video connection.
- 4 Leave 0 or blank all fields for which there is no connection.

This example shows hypothetical connections for one key source port:



Squeezeback Source Connections

External squeeze image sources are referenced, during configuration and operation, through the 'Main Sources' list. However, physically they reach MCPM through the connection defined in this section of the 'ExtRtrSrc Settings' page:

Enable SqzVideo

HD_IN1:2462	Sqz Bkgnd	39
HD_IN2:2463	Image 2 Video	40

External squeeze sources reach the frame through 2 ports. One port is for background images; the other is for squeeze2 images under enhanced squeezeback.

- ▲ Enhanced squeezeback is available only in the MCPM-SDHD (and MCE). For other MCPMs, the image 2 fields are absent.

Leave unused boxes with a value of 0.

The entries you make in this configuration page must match the actual connections you make.

Follow these steps for each squeeze source:

- 1 Select the router destination in the drop-down list. The destination field is a drop-down list only if you have an NV9000 system connected (and identified). If the NV9000 is not connected, you'll have to enter device IDs from memory.
- 2 Enter the BNC number for the video connector. The cable from this connector will go to the video router supporting the destination you selected.

Audio Over Source Connections

The over source section describes router connections for external over sources:

Enable Audio Overs

MCOverA:2443	Over Audio A 1-2	81
	Over Audio A 3-4	82
	Over Audio A 5-6	83
	Over Audio A 7-8	84
	Over Audio A Emb	23
MCOverB:2444	Over Audio B 1-2	86
	Over Audio B 3-4	87
	Over Audio B 5-6	88
	Over Audio B 7-8	89
	Over Audio B Emb	24

Like external main sources, external over sources reach the frame through two ports, designated A and B. The designations are not important and serve only to distinguish one port from the other. There are 2 ports because there are 2 buses, preset and program.

Each port comprises 5 input connectors and a router destination. The first 4 connectors are for discrete audio; the fifth connector supports embedded audio (and it is actually a video connector).

The router destination (defined in the NV9000 configuration for the purpose of supplying a master control system) provides audio on one or more virtual levels.

If your external over sources have fewer than 4 levels, leave the extra boxes blank (0).

The entries you make in this configuration page must match the actual connections you make.

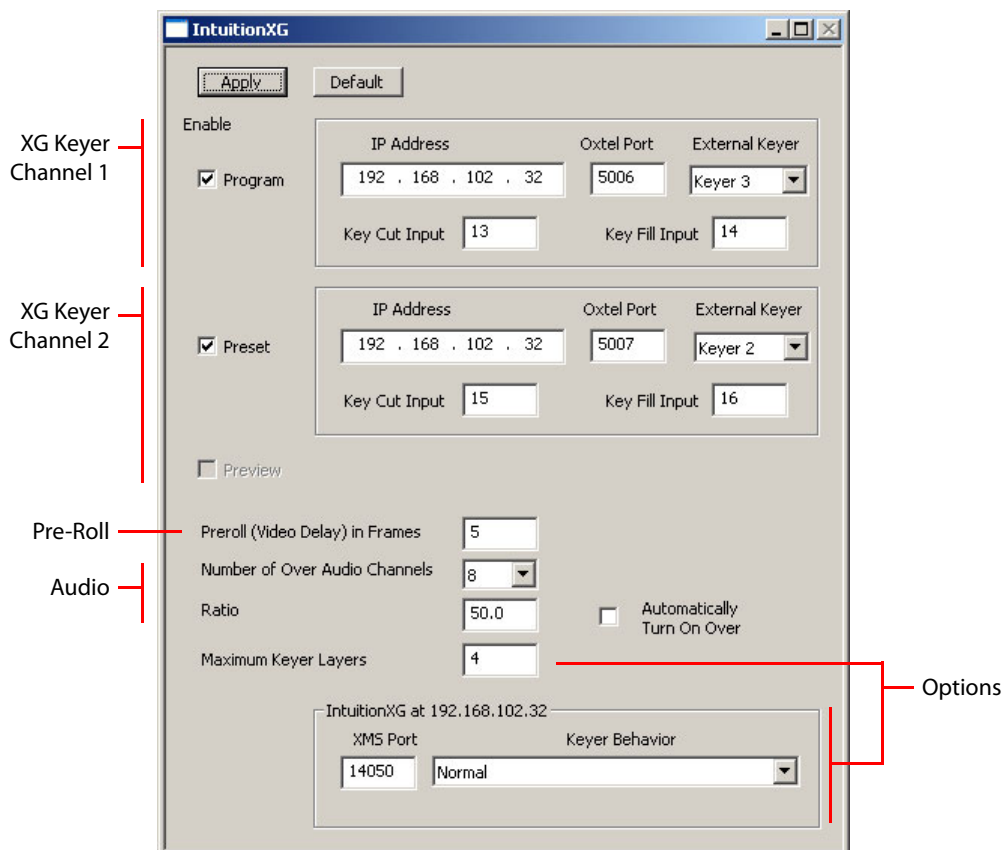
Follow these steps for port A:

- 1 Select the router destination in the drop-down list. The destination field is a drop-down list only if you have an NV9000 system connected (and identified). If the NV9000 is not connected, you'll have to enter device IDs from memory.
- 2 If the audio is embedded
Enter the number of the video connector in which the audio is embedded. The cable from this connector will come from the video router supporting the destination you selected.
- 3 Otherwise...
For each audio connection, enter the number of the audio connector. The cable from this connector will go to the audio router supporting the destination you selected.
- 4 Leave 0 all fields for which there is no connection.

Make similar settings for port B, but using a different router destination and different inputs.

Intuition XG

The 'Intuition XG' page is available for MCEs only:



This configuration page defines the *connections* between the Intuition XG graphics processor and the MCE.

Please refer to Miranda's Intuition XG and XMedia documentation if you need detailed information about these products. The *Master Control Reference Manual* provides some information.

Eighteen functions were added (at 6.3.0) to Miranda's Xstudio software that allow Xstudio to use and control an MCE's squeezeback effects and audio overs. See [XStudio Add-On Commands](#) on page 205. Also please refer to the *Master Control Reference Manual* for details.

Purpose

This is what the 'Intuition XG' page does:

- Specifies the IP address(es), on the master control network of the Intuition XG processor(s).
- Specifies the keyers to use for the Intuition XG keyer layers.
- Specifies the parameters for Intuition XG audio.
- Specifies the input ports used by the fill and key signals from the Intuition processor(s).
- Specifies the pre-roll delay (in frames).
- Specifies the number of XG layers and the keyer's behavior with respect to transitions.

Page Organization

The 'Intuition XG' configuration page has 4 sections:

- 1 [XG Keyer Channel 1](#).
- 2 [XG Keyer Channel 2](#).
- 3 [Pre-Roll](#).
- 4 [Audio](#).
- 5 [Options](#).

XG Keyer Channel 1

If the MCE is connected to a Intuition XG processor, check the 'Program' checkbox and fill the other fields that appear when the 'Program' box is checked:

IP address	Specify the IP address of the Intuition XG processor, on the master control network.
'Key Cut' input, 'Key Fill' input	Specify the BNC input numbers (on an SWB input backplane module) that supply keyer layer 1. The allowable range is 1–64. 'Key Fill' means the "fill" signal and 'Key Cut' means the "key" signal.
Oxtel port	This should always be 5006 (or as defined in the Intuition XG processor).
External keyer	Choose one of the available keyers to execute the effect.

Do not check the 'Program', 'Preset', or 'Preview' checkboxes if the MCE is not connected to a Intuition XG processor.

If you are using only one Intuition XG channel, you can use any keyer in the 'External Keyer' field. If you are using two Intuition XG channels, you must use keyer 3 for the 'Program' channel.

Note that keyer 1 is pre-squeeze and keyers 2 and 3 are post-squeeze.

XG Keyer Channel 2

You can use *either* the preset bus or the preview bus for channel 2. Check the 'Preset' box or the 'Preview' checkbox to make the choice. The options that appear are the same in either case.

If the MCE is connected to a Intuition XG processor, *and there is a second keyer layer*, check the 'Preset' checkbox and fill the other fields that appear when the 'Preset' box is checked:

- | | |
|--------------------------------------|--|
| IP address | Specify the IP address of the Intuition XG processor used for XG keyer layer 2, on the master control network. Typically, this is the same processor as for XG keyer layer 1. |
| 'Key Cut' input,
'Key Fill' input | Specify the BNC input numbers (on an SWB input backplane module) that supply keyer layer 2. The allowable range is 1–64.
'Key Fill' means the "fill" signal and 'Key Cut' means the "key" signal. |
| Oxtel port | This should always be 5007 (or as defined in the Intuition XG processor). |
| External keyer | Choose one of the available keyers to execute the effect. Note that keyer 1 is pre-squeeze and keyers 2 and 3 are post-squeeze. |

▲ Do **not** check 'Preset' or 'Preview' unless you have also checked 'Program'. You can do so, but the results will be erroneous. (You cannot check both of these.)

If you are using two Intuition XG channels, you must use keyer 2 for the 'Preset' channel (and keyer 3 for the 'Program' channel).

If you do not have a second Intuition XG channel (i.e., XG key layer 2), do not check 'Preset' or 'Preview'. The resulting page would appear like this:

The screenshot shows the 'IntuitionXG' software window. At the top, there are 'Apply' and 'Default' buttons. Below them, the 'Enable' section contains three checkboxes: 'Program' (checked), 'Preset' (unchecked), and 'Preview' (unchecked). To the right of these checkboxes is a configuration area with the following fields: 'IP Address' (192 . 168 . 102 . 32), 'Oxtel Port' (5006), 'External Keyer' (Keyer 3), 'Key Cut Input' (13), and 'Key Fill Input' (14). Below the 'Enable' section, there are several other settings: 'Preroll (Video Delay) in Frames' (5), 'Number of Over Audio Channels' (8), 'Ratio' (50.0), and 'Maximum Keyer Layers' (4). There is also an unchecked checkbox for 'Automatically Turn On Over'. At the bottom, a status bar shows 'IntuitionXG at 192.168.102.32' and a sub-section with 'XMS Port' (14050) and 'Keyer Behavior' (Normal).

Pre-Roll

Specify a delay value (in frames) that suits your particular system. The default value is 6 frames.

- ▲ Use 6 frames if your MCE processes interlaced video. Use 12 frames if it processes a progressive video format.
- ▲ The Intuition XG does not use tapes. "Pre-roll" is a fictitious term meaning "delay." Pre-roll must be enabled in the general settings.

Audio

The Intuition XG video signals can include embedded audio (up to 16 channels). The MCE processes this audio as an audio over. These are the audio options:

- Number of audio channels.
Select a number from 2 to 16.
- Ratio.
This is the default over-to-main ratio of the XG layers. Note that the over-to-main ratio is non-linear. Panel operators can adjust the over level and the over-to-main ratio.
- Automatically turn on over.
Check this box if you want the XG over (the dedicated audio over available for Intuition XG audio) to turn on automatically when a panel operator presses an 'XG layer' button.
 - ▲ When this option is enabled, the XG over actually *follows* the state of keyers assigned to the Intuition XG channels. When the keyer is on, the XG over is on; when the keyer is off, the XG over is off. The state of a keyer changes when (1) an operator presses an 'XG layer' button or when (2) an operator presses an 'XG keyer control' button.
Certain operations can override this rule. For instance, if the operator selects the XG over independently, pressing an 'XG Layer' button does not affect the XG over nor does pressing an 'XG Keyer Control' button.
 - ▲ The XG audio is embedded on the *fill* input of an Intuition XG channel.

Options

Keyer Behavior

Always specify 14050 as the XMS port. This is a port defined in the Intuition XG processor.

If you are using two separate processors (i.e., program and preset or preview are at different IP addresses) there will be two regions in which to enter the XMS port and the behavior.

Choose one of the 2 transition behaviors in the drop-down list.

- Normal.
The keyer layer transitions normally to program. In flip-only mode, the effect remains on the preset bus until the panel operator clears the effect from the preset bus. If the MCE is in flip-flop mode, the content of the program bus transfers to the preset bus.
- Clear Preset after Program Transitions to On.
The video effect transitions normally to program. In flip-only mode, the effect is removed from the preset bus at the completion of the transition.

If the MCPM is in flip-flop mode, the content of the program bus transfers to the preset bus, overriding this option.

Maximum Keyer Layers

The Intuition XG processor has either 1 or 2 channels. Each channel handles up to 4 *layers*. You can specify the maximum number of layers in this field. Your system will perform better when this value is low.

Appendix A provides several useful reference sections.

Topics

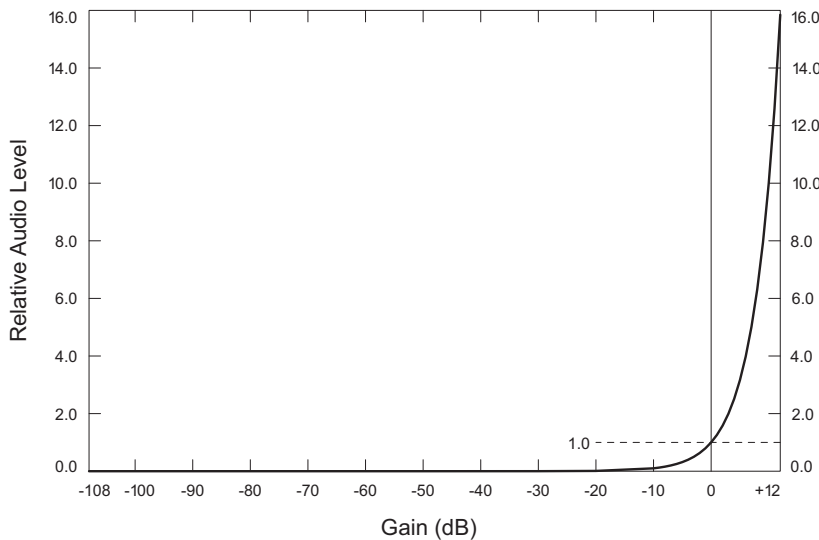
<i>Audio Gain</i>	201
<i>Color Values</i>	202
<i>XStudio Add-On Commands</i>	205
<i>NV9000 Integration</i>	207
<i>Testing Configurations against Installed MCEs</i>	207

Audio Gain

Audio gain is expressed in decibels, in the range -108 dB to +12 dB. Internal audio is AES PCM (pulse code modulation) data, that is to say, a series of digital values. When the MCPM applies audio gain, it scales the incoming audio values by

$$10^{\text{gain}/10}$$

as shown in this table:



Technically, every 3.0103 dB ($10 \log_{10} 2$) doubles the audio level. However, MasterConfig uses shorthand notation: a gain value of 3 represents 3.0103 dB and a gain value of 12 correspondingly represents 12.0412 dB.

Therefore, if you enter a gain value of +6, you will have quadrupled the audio level. If you enter a value of -3, you will have cut the audio level in half.

Human sound perception is logarithmic.

Gain below -20dB is virtually inaudible.

Unity gain (0dB) is scaling by 1 and therefore a no-op.

Color Values

Y, Cr, Cb

The MCPM has several internal matte generators. Matte generators are used for the following purposes:

- Fade to Black signal.
- Loss of Signal (LOS) indication.
- Transition processing.

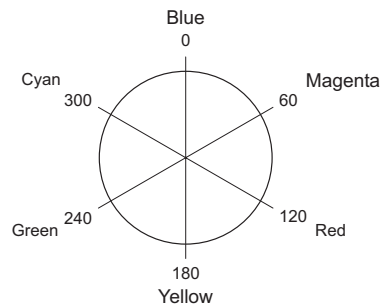
All use Y, Cr, and Cb values to define the matte color. In MasterConfig, you must specify Y in the range 64 to 940. You must specify Cr and Cb in the range 64 to 960.

The table shows the relationship between the 6 main (fully saturated) colors plus white and black, and their Y, Cr, Cb equivalents:

HSB Color Points

Angle	0	60	120	180	240	300	—	—
Hue	Blue	Magenta	Red	Yellow	Green	Cyan	White	Black
Y	164	426	326	840	578	678	940	64
Cr	439	887	960	585	137	64	512	512
Cb	960	809	361	64	215	663	512	512

The angles are positions on a “color wheel”:



Other systems have pure red at 0°.

Mapping RGB to Y, Cr, Cb

Theoretically

Y (luminance) is in the range [0, 1]

Cr, Cb (chrominance) are in the range [-0.5, +0.5]

Master control uses 10-bit Y, Cr, and Cb values.

The standard-definition¹ analog mapping is this:

$$Y = K_R \times R + (1 - K_R - K_B) \times G + K_B \times B \quad \text{where}$$

$$Pb = \frac{1}{2} \times \frac{B - Y}{1 - K_B} \quad K_R = 0.299$$

$$Pr = \frac{1}{2} \times \frac{R - Y}{1 - K_R} \quad K_B = 0.114$$

Numerically, this analog formula is:

$$Y = 0.299 * R + 0.587 * G + 0.114 * B$$

$$Pb = 0.168736 * R - 0.331264 * G + 0.5 * B$$

$$Pr = 0.5 * R - 0.418688 * G - 0.081312 * B$$

where Y is in the range [0, 1] and Pr and Pb are in the range [-0.5, +0.5].

Digitally, and accounting for headroom and toeroom, the transform is this:

$$Y = 64 + (262.952 * R + 516.228 * G + 100.256 * B) / 256$$

$$Cb = 512 + (-151.780 * R - 297.976 * G + 449.756 * B) / 256$$

$$Cr = 512 + (449.756 * R - 376.616 * G - 73.140 * B) / 256$$

when R , G , and B are 8-bit values, in the range [0, 255]. With rounding, the resulting Y values are in the range [64–940] and the resulting Cr , and Cb values are in the range [64–960].

ITU-R BT.709 (HD) uses the same formula with different constants:

$$K_R = 0.2126$$

$$K_B = 0.0722$$

SMPTE 240M (1125-line HD) uses the same formula with another set of constants:

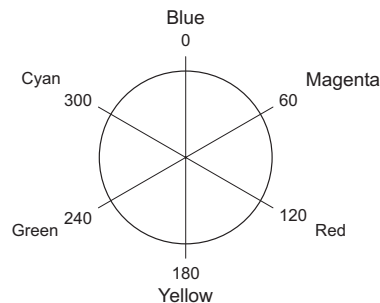
$$K_R = 0.212$$

$$K_B = 0.087$$

HSB

Squeezeback border colors are expressed as HSB² (hue, saturation, brightness) values.

To express a color as an HSB value, first define the hue as an integer from 0.0 to 359.9 (degrees). Here also, the angles are positions on a “color wheel”:



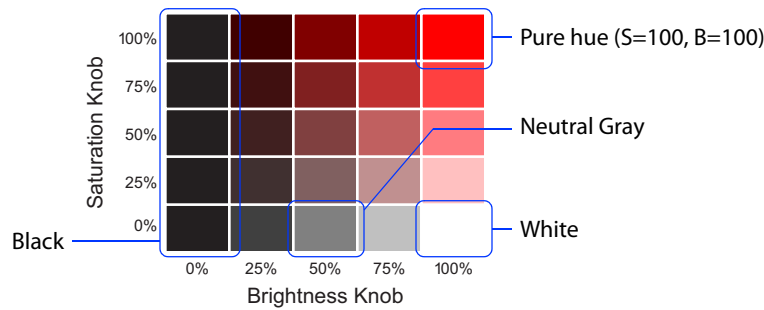
Other systems have pure red at 0°.

1. (ITU-R BT.601, formerly CCIR 601)
2. The master control model used is HSV, a cylindrical model. Brightness and saturation are not completely independent.

Saturation is the amount of “color” in the color. Express saturation from 0 to 100%. When “brightness” is 100%, a saturation value of 0% means white and a saturation value of 100% means pure color (hue).

Brightness—in the HSV model—is the degree of “black” in the color. Express brightness from 0 to 100%. A value of 0% represents black. When the saturation value = 100%, a brightness value of 100% represents pure color (hue).

It is a combination of the “saturation” and “brightness” knobs on the control panel that give various gray levels, tints, and shades of color. This chart shows several saturation and brightness values for the hue “red”:



Mapping HSV to RGB

Given an HSV color (h,s,v) with h in the range [0–360°], and s and v in the range [0, 1], you can calculate an (r,g,b) value.

$$\begin{aligned}
 h' &= \lfloor h/60 \rfloor \bmod 6 \\
 f &= h/60 - h' \\
 p &= v \times (1 - s) \\
 q &= v \times (1 - f \times s) \\
 t &= v \times (1 - (1 - f) \times s)
 \end{aligned}$$

Then,

$$(r, g, b) = \begin{cases} (t, p, v), & \text{if } h' = 0 \\ (v, p, q), & \text{if } h' = 1 \\ (v, t, p), & \text{if } h' = 2 \\ (q, v, p), & \text{if } h' = 3 \\ (p, v, t), & \text{if } h' = 4 \\ (p, q, v), & \text{if } h' = 5 \end{cases}$$

These choices have *blue* at 0°

These (r,g,b) values are normalized to the real range [0, 1]. Multiply the (r,g,b) values by 256 to get 8-bit R, G, B values.

There is an inverse mapping, of course, but it is not discussed here.

XStudio Add-On Commands

The following lists summarizes the commands added to *Xstudio*.

Squeezeback

- 1 Squeeze move (sqz number, duration).

Executes the selected squeeze (1–32) for a specified duration.

The range of values for duration is 1–300. When the value is 1, the squeeze uses the default transition rate, that is, slow, medium, or fast (or cut). When the value is 2 through 300, the value represents a number of frames. *This is true for any of these commands that specify a duration.*

- 2 Squeeze move cut (squeeze number).

Executes the selected squeeze (1–32). Being a cut, there is no duration.

- 3 Squeeze move default transrate (squeeze number).

Executes the selected squeeze (1–32) using the default transition rate (slow, medium, fast, or cut).

- 4 Squeeze move reverse (duration).

Reverse-executes the squeeze (1–32) previously selected at the specified duration.

- 5 Squeeze move reverse cut ().

Reverse-executes the squeeze (1–32) previously selected. Being a cut, there is no duration.

- 6 Squeeze move reverse default transrate ().

Reverse-executes the squeeze (1–32) previously selected at the default transition rate (slow, medium, fast, or cut).

- 7 Squeeze override P2 position/size (top, left, height, width, opacity).

The commands sets up the parameters for the “run P2” commands that follow. “P2” identifies the secondary squeeze image.

The parameters ‘top’ and ‘left’ represent the *position* of the top, left corner of the *secondary* squeeze image. These values are in the range 0–1000, in units of 0.1 percent.

The parameters ‘height’ and ‘width’ represent the *reduction* of the secondary squeeze image. These values are in the range 300–1000, in units of 0.1 percent. (Squeeze images cannot be reduced to less than 30% of their original size nor increased beyond 100%.)

The ‘opacity’ parameter must be in the range 0–1000, again, in units of 0.1 percent.

- 8 Squeeze override position/size (top, left, height, width).

The commands sets up the parameters for the “run” commands that follow.

These parameters affect the *primary* squeeze image.

The parameters ‘top’ and ‘left’ represent the *position* of the top, left corner of the *primary* squeeze image. These values are in the range 0–1000, in units of 0.1 percent.

The parameters ‘height’ and ‘width’ represent the *reduction* of the *primary* squeeze image. These values are in the range 300–1000, in units of 0.1 percent. (Squeeze images cannot be reduced to less than 30% of their original size nor increased beyond 100%.)

- 9 Squeeze override run (squeeze number, duration).
Executes the selected squeeze (1–32) as a *single-squeeze* for the specified duration and applies the previously specified overrides.
- 10 Squeeze override run cut (squeeze number).
Executes the selected squeeze (1–32) as a *single-squeeze*. Being a cut, there is no duration. Uses the specified overrides.
- 11 Squeeze override run with P2 (squeeze number, duration).
Executes the selected *dual-squeeze* (1–32) for a specified duration. Uses the specified overrides.
- 12 Squeeze override run with P2 cut (squeeze number).
Executes the selected *dual-squeeze* (1–32). Being a cut, there is no duration. Uses the specified overrides.

Audio Over

- 13 Voice over fade on (over number).
Ramps up an audio over using rate and ratio specified below.
The over selected must be in the range 1–4 or 17 or 18.
The range 1–4 represents normal audio overs. The value 17 identifies the audio over associated with a secondary squeeze image (sometimes called the “P2 over”). The value 18 identifies the audio over used by XG keys.
- 14 Voice over fade off ().
Ramps down current audio over using the rate and ratio specified in the following commands.
- 15 Voice over fade on XG over ().
This command executes a fade on using over number 18. The effect of the command is the same as if you had used the ‘fade on’ command with an argument value of 18.
- 16 Voice over fade rate (duration).
Sets up the fade rate for an audio over.
- 17 Voice over ratio (ratio).
Sets up the over ratio for an audio over. The value must be in the range 0–1000 (units of 0.1 percent). The default ratio is 50%.
- 18 XPT take (main src).
Selects a main source. The main source must be in the range 1–128. The command does **not** execute the transition.

Although the command parameters are given in parentheses here, they actually appear in a drop-down dialog in *Xstudio*. If a command has no parameters, there is no drop-down dialog. See the *Master Control Reference Manual* for more information.

NV9000 Integration

If your master control system is used with an NV9000 Router Control System, connected routers may be used as pre-selectors “ahead of” master control inputs.

The benefits of integrating master control and a NV9000 server include:

- Potentially thousand of inputs.
- Router source names appear on buttons.
- The control panel can control the upstream router. Router information is displayed on the control panel.
- The ability to execute router salvos (with or without channel changes) from the control panel.

Generally, the following steps are required to link the NV5100MC frame and the NV9000:

- Establish a network connection between the NV9000 and the NV5100MC. Use the Master Control network port of the NV9000.
- Make the required configuration changes to the NV9000 database to support master control.
- In the *MCS Panel Configuration Editor*, configure IP addresses for the NV9000 primary server and, if it is present, the redundant server.

In general, refer to the *NV9000-SE Utilities User's Guide* for information about the NV9000 router control system.

The following MasterConfig configuration pages include NV9000 configuration settings:

- General Settings.
- Main Sources.
- Over Sources.

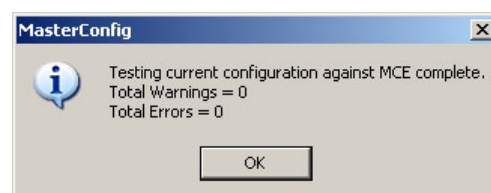
If you have a NV9000 router connected to your master control system, IP addresses for the NV9000 servers will have been entered during installation of the Master Control software. If you did not specify these IP addresses during installation, and you want to do so, you must uninstall and reinstall the Master Control software, specifying these addresses during the install process. It is not difficult and does not take a long time.

A reinstall does *not* overwrite or delete existing configuration files.

Testing Configurations against Installed MCEs

You can click 'Test Config with MCPM' in the file menu to test you present configuration against the features of an installed MCE. The command applies only the MCEs.

The test issues zero or more warnings or errors messages followed by a summary report:



The configuration you are testing matches the installed MCE if the number of warnings and errors is 0. These are the warnings (and one error message) that you might see:

- 1 If your configuration specifies 'Has PVW Board' in the general settings and the installed MCE has no preview board, the test issues a warning: "Preview board is not available."
- 2 If your configuration specifies 'Has AXM Board' in the general settings and the installed MCE has no preview board, the test issues a warning: "AXM board is not available."
- 3 If your configuration specifies 'Enable Main Squeeze' in the general settings and the installed MCE does not have the two DVEs required, the test issues a warning: "Pgm/pst main squeeze has insufficient hardware available."

Note that "main squeeze" refers to the squeeze background image. DVEs "D" (J24) and "C" (J30) on the *core* board are required.

▲ Refer to the *Master Control Reference Manual* for the location of DVEs A–D.

- 4 If your configuration specifies 'Enable P2 Squeeze' in the general settings and the installed MCE does not have the DVE required, the test issues a warning: "Pgm/pst squeeze 2 has insufficient hardware available."
Note that "P2 squeeze" refers to squeeze image 2. DVE "B" (J29) on the *core* board is required.
- 5 If your configuration specifies both 'Enable Main Squeeze' and 'Has PVW Board' in the general settings and the installed MCE does not have the DVE required, the test issues a warning: "Squeeze on Pvw bus has insufficient hardware available."
Note that "main squeeze" refers to the squeeze background image. DVE "D" (J24) of the preview board is required.
- 6 If your configuration specifies both 'Enable P2 Squeeze' and 'Has PVW Board' in the general settings and the installed MCE does not have the DVE required, the test issues a warning: "Squeeze 2 on Pvw bus has insufficient hardware available."
Note that "P2 squeeze" refers to squeeze image 2. DVE "B" (J29) on the preview board is required.
- 7 If your configuration specifies 'Enable Machine Control' in the general settings and the installed MCE does not support machine control, the test issues a warning: "Machine control and/or preroll are not supported on this MCE."

Machine control is available in software release 6.2 or later.

- 8 If your configuration specifies either 'Use All-Level Takes' or 'Use Video In for Embedded Audio' (or both) in the 'ExtRtrSrc Settings' page and the installed MCE does not support those features, the test issues a warning: "MCE app does not support all-level take or mapping video input to embedded audio video."

The features are available in software release 6.3.3 or later.

- 9 If your configuration specifies 'MCE is 16 Channel-Capable' in the general settings and the installed MCE does not support 16 channels, the test issues an **error** message: "The configuration is using more audio channels than are supported. This configuration will not load."

Sixteen channel audio is available in software release 6.0 or later.

- 10 If your configuration specifies 'Dual Dolby Decoders' in the general settings and the installed MCE does not support dual Dolby decoders, the test issues a warning: "MCE application version or configuration does not support dual Dolby decoders."

Dual Dolby decoders are available in software release 6.3.3 or later.

- 11 If your configuration specifies 'Has Dolby E Decoders' in the general settings and the installed MCE does too few Dolby decoders (on the AXM board), the test issues a warning: "MCE hardware does not have enough Dolby decoders to support the configuration."

This test is performed in software release 6.3.3 or later.

The test does not report which ones are missing.

If the configuration does not specify dual Dolby decoders, the MCE requires decoders A, B, C, and D for Dolby on the program and preset buses. Decoders E and F are required for Dolby on the preview bus.

Dolby of any kind implies that an AXM board is installed. The configuration must have 'Has AXM Board' checked in the general settings.

Dolby on the preview bus implies that a preview board is installed. The configuration must have 'Has PVW Board' checked in the general settings.

- 12 If your configuration specifies 'Enable Hard Cut of Backup' in the 'Video Effect & Over Settings' page and the installed MCE does not support hard cuts for Dolby backup audio, the test issues a warning: "MCE application version does not support hard cuts to Dolby backup."

Hard cuts for Dolby backup audio are available in software release 6.3.3 or later.

Note that these tests are run automatically for any MCE configuration when you write the configuration to the MCE.

Reference

Testing Configurations against Installed MCEs

G

Glossary

3Gig	A term adopted by Miranda to refer to video rates of 2.966 Gb/s and 2.970 Gb/s. For NVISION series routers, a 3Gig signal also accepts HD and SD rates. It reclocks at 270 Mb/s, 1.483 Gb/s, 1.485 Gb/s, 2.996 Gb/s, and 2.970 Gb/s. Reclocking is bypassed at other rates.
Clean Feed	A video output that can select program content from a tap at one of several points in the MCPM's video effect layering. The clean feed signal is directed to a clean feed output at the rear of the MCPM.
Control panel	An inclusive term meaning a hardware control panel or a software control panel (GUI).
DARS	Digital Audio Reference Signal.
GUI	Graphical User Interface. The term usually refers to the iMC-Panel-GUI.
Imagestore 750	The Imagestore 750 is a 1RU transition processor, also called a "channel branding processor." It has several purchase options, including a master control option that allows it to function in the context of the iMC master control system.
iMC-Panel-300	A hardware control panel.
iMC-Panel-200	A compact hardware control panel.
iMC-Panel-100	A 3RU rack-mountable control panel with separate display.
iMC-Panel-GUI	A software control panel that emulates the iMC-Panel-200.
Intuition XG	Intuition XG is a combination of a video, audio, and graphics processor and Xmedia software.
IP address	A 32-bit number that identifies a device on a network. The address is usually expressed as 4 octets, in decimal notation, joined by periods (e.g., 192.168.7.20).
Keyer	A video image ("fill") generally coupled with another video image ("key") to be overlaid, possibly with transparency, on the program output. The key image is a mask that hides or reveals pixels in the fill according to the brightness of the pixel in the key. Some keyers do not have separate key images. These keyers self-key, that is, the image is masked according to the luminance values in the fill image itself.
Layer	One of the 7 video output components (main source, 2 logos, 3 keyers, and squeezeback). They are called layers because of their visual priority. Functions to the right, on the control panel, have priority. ▲ Some MCPMs can be configured with fewer than the maximum number of video effects. Some MCPMs do not support all effects.
Logo	In the context of master control, a logo is a graphics file (static or animated) to be overlaid as a video effect on a main source. The file — internal to the MCPM — either contains a distinct key layer or can "self-key" from its own luminance data. Logo files acceptable to an MCPM are

	converted from files in common graphic formats (TIF, GIF, JPEG, TGA, BMP, PNG). Animation source files must be 32-bit Targa (TGA) files.
MCPM	<i>Master Control Processing Module</i> . A transition processor. There are several MCPM models.
MCE	<i>Master Control Engine</i> . An advanced transition processor.
Squeezeback	A process in which the program video is either (1) reduced in size or (2) cropped and possibly repositioned so that an additional video image (the “background”) can be displayed in the program output. Squeezeback is subject to transition type and transition rate. ▲ The MCPM-MK-SD and MCPM-MK-SD have no squeezeback generator.
Transition	The process by which the MCPM moves the content of the preset bus (source and layers) to the program bus. Transitions are governed by transition type and transition rate.
Vertigo XG	A single- or dual-channel HD/SD graphics processor.
XG Dashboard	Configuration tool for Intuition XG.
XMedia	A collection of configuration and creative software used with Intuition XG.
Xbuilder	“Template population” and “promo timeline control” software for Intuition XG.
XPlay	A “media event sequencer” used to configure the Intuition XG and to manage clips. Xplay must be running on the Intuition XG processor for correct operation under master control.
Xstudio	“Template creation” software for Intuition XG.

Index

Symbols

* (asterisks) 38

0–9

3Gig
 defined 211

A

A, audio channel 77, 110, 115
A, monitor 104, 106, 112–113
Abbreviations 2
About MasterConfig (command) 35, 37
Acrobat usage 1
 bookmarks 1
 hyperlinks 1
 navigating and searching 1
Actions (menu) 27, 31, 37
Active video
 field 0 155
 field 1 155
 first and last lines 155
Add MCPM 43
Add source groups (dialog) 91
Additive keyer mix 117, 120–121
Additive keyer mix enable (checkbox) 120
Address, IP 24, 26, 30, 32, 43–44, 207
AES
 audio 60, 76, 100
 inputs 9, 14–16
 outputs 12, 14–16
AES output 7
Africa, contact 227
agreement, license iii
Allow external control of emergency bypass
 (checkbox) 156
Americas, contact 227
Analog
 audio 60, 74, 76, 100
 audio inputs 9
 audio output 106
 audio outputs 10, 14–17, 105
 video inputs 69, 71

Analog audio output 7
Animation 10, 121–123, 126
App notes
 AN0004 Routing and Master Control 41, 47
Appendices
 A, references 201
Application note 41, 47
Application shortcut 24
Applications
 MasterConfig 2, 22–23, 49
 MasterDiag 2, 32, 43
 MasterLogo 2, 30, 122, 124
 MCS panel configuration editor 73, 100, 166
Apply (button) ... 35, 37–38, 54, 62, 86, 97, 103, 110, 115,
 121, 123, 128, 136, 142, 146, 149, 152, 156,
 160, 162, 165, 168
Apply all outstanding changes (command) 31, 37
Applying parameter changes 38
Arrange icons (command) 33
Asia, contact 227
Aspect ratio
 squeeze 2 141
 squeezeback 135
Asterisks 38
Audio
 AES 60, 76, 100
 analog 60, 74, 76, 100
 analog inputs 9
 analog outputs 16–17, 105–106
 aux inputs 104–106, 109, 111–112, 115
 backup, Dolby E 73, 79–80
 channels 9, 46, 53–54, 60, 70–71, 74, 76, 78, 80,
 100–101, 104–105, 109, 112, 115
 channels, maximum 53, 106, 113
 channels, section 60, 96, 100
 connectors 9
 discrete 77
 disembedders 54
 Dolby E 54, 60, 71–72, 74, 76–78, 80, 155, 168
 embedded 9, 14–16, 39, 54, 60, 70–74, 76–77
 gain 76, 101, 104, 107, 112, 114
 input 14, 16
 internal to MCPM 105, 112
 inverted 76, 101
 level 106, 113
 meter outputs 104, 111
 metering 10–11, 14–17, 103, 105–106, 112–113
 monitor outputs 104, 111
 monitor/meter configuration, completion .. 110, 115

- monitoring 10, 14–17, 105–106, 112–113
 - monitors 22
 - mono 14–17
 - off-air inputs 104–106, 109, 111–112, 115
 - output, analog 10
 - over, buttons 150
 - over, inserters 95
 - overs 9–10, 14–16, 22, 53, 94, 143, 150, 159
 - over-to-main ratio 95–96, 102
 - preset 106
 - program 106
 - sources 10, 39, 59–60, 95–96
 - squeezeback 15, 138–139, 141–142, 159
 - stereo 14–17
 - transitions 11
 - Audio follows video (paradigm) 9
 - Audio metering 18
 - Audio monitor (page) 103–104, 107, 112–113
 - Audio over for Intuition XG 151, 197, 199
 - Auto restore 54, 60, 86, 96, 102
 - audio mixer settings (checkbox) 54, 86, 96, 102
 - Automatic for all (option) 35
 - Automatic for MainSrcs (option) 35
 - Automation 6, 9–10, 14–17, 22, 40, 129, 145, 148–149
 - and logos 128
 - and squeezeback 137, 143
 - baud rate 144–145
 - behavior when off 145
 - parameters 144
 - port 144
 - RS-422 parameters 144
 - Aux
 - audio inputs 104–106, 109, 111–112, 115
 - bus 171
 - connectors 10, 12, 14–17, 20–21
 - delegate 171
 - outputs 170
- ## B
- B, audio channel 77, 110, 115
 - B, monitor 104, 106, 112–113
 - Background source, squeezeback 131
 - Backplanes 14–15, 17
 - Backup audio for Dolby E 73, 79–80
 - Backup sources, Dolby E 54
 - Backup, main, enabled 54
 - Basics, editing 37
 - Baud rate, automation 144–145
 - Behavior
 - keyer, default 157
 - video effect 157
 - Black/silence 11
 - generator, internal 14–16, 156
 - BMP 212
 - BNC connectors 74, 100, 110, 115
 - Bold-face or capital letters, usage 2
 - Bookmarks, Acrobat 1
 - Border
 - color, squeezeback 131, 136, 139, 142
 - width, squeezeback 131, 135, 139, 142
 - Border enabled (checkbox) 135, 142
 - Branding engines 7
 - Brightness 136, 142, 203
 - Bulk add 62, 90
 - Bulk add new sources (button) 62, 90
 - Bulk delete 62
 - Bus
 - aux 171
 - monitor 106, 113
 - preset 9, 96, 130, 167–168, 198
 - preview 18, 130, 171
 - program 96, 197
 - Button
 - bulk add new sources 62, 90
 - Int XG 8
 - mapping 40, 52–53, 61, 86, 97, 147, 150
 - reset 11
 - XG keyer control 8
 - XG layer 8, 199
 - Button mapping
 - completion 149, 152
 - Button mapping - main source (page) 52, 61, 147
 - Button mapping - over source (page) 53, 97, 103, 150
 - Buttons
 - apply 35, 37–38, 54, 62, 86, 97, 103, 110, 115, 121, 123, 128, 136, 142, 146, 149, 152, 156, 160, 162, 165, 168
 - control panel 2
 - default 54, 110, 115, 146, 156, 160, 162
 - delete 37, 61, 97, 118, 122, 125, 132, 139, 164–166, 168
 - go to backup 80
 - go to main 80
 - GUI 2
 - lock aspect 135, 141
 - main source 147
 - modify position 135
 - modify position visually 127
 - new 37–38, 61–62, 97, 121–123, 125, 132, 136, 139, 142, 164–166, 168
 - over source 40
 - system-modifiable 40
 - user-modifiable 40
 - Bypass
 - chroma filter 120
 - emergency 10–11, 19, 22, 153, 156
 - inputs 21
 - LED 11, 20
 - luma filter 120
 - mode 8

relay, emergency 12, 14–17, 19–20, 163
switch11, 20
Bypass, emergency 18

C

Cancelling changes 97, 118
Cascade (command) 33
cautions v
CE ii
change history ii
Changes, applying 38
Changes, cancelling 97, 118
Changing channels6, 207
Channels5–6
 audio 9, 46, 53, 60, 70–71, 74, 76, 78, 80, 96,
 100–101, 104–105, 109, 112, 115
 audio, maximum 53
 changing6, 207
Chapter structure 1
Chapters
 1, Preface 1
 2, Introduction 5
 3, Using MasterConfig 23
 4, Operation 49
Check for errors (dialog) 31
Checking errors 31
China, contact227
Chroma filter bypass 120
Chroma filter bypass (checkbox) 120
Clean feed 117, 131, 153–154, 211
 output 11–12, 18
Clear preset after program transitions to on
 (option) 159–160, 199
Clear preset after transition (mode) 9
Clip
 keyer, video 120–121
 logo keyer 126, 128
Clipping 76, 102
Close (command) 28
Coax connectors 112
Color values, Y, Cr, Cb202
Color, squeezeback borders 136, 139, 142
Comm messages, logging 32
Commands
 about MasterConfig35, 37
 apply all outstanding changes31, 37
 arrange icons 33
 cascade 33
 close28
 error check config 31
 Ethernet to MCPM32, 44
 exit 30
 master control tree 32
 more windows... 34

new27, 37, 45
obtaining technical support36
open27, 37, 46
options 34, 38
read config from MCPM ... 28, 45, 129, 137, 143, 207
save 28, 37, 45–46
save as 28, 45
status bar32
tile33
toolbar32
write config to MCPM 30, 45–46
Communications (menu)27, 31, 43
Completing
 audio monitor/meter configuration110, 115
 button mapping149, 152
 GPI input configuration 165
 GPI output configuration 168
 keyer source configuration 121
 logo image configuration 123
 logo keyer configuration 128
 main source configuration86
 misc. settings 156
 over source configuration 103
 RS-422 configuration 146
 squeeze 2 configuration 142
 squeeze configuration 136
 trans and FTB configuration 162
 video effect settings 160
Configuration
 existing files 45–46
 files 22–23, 27–28, 30–31, 37–38, 45–46
 new files 45
 pages25–26, 33–34, 37, 46, 49, 52–54, 56, 58, 60,
 74, 77, 87–88, 94, 96, 100, 103, 107, 113, 116,
 118, 121–122, 124–125, 129–132, 138–139,
 ..147–148, 150–154, 157–158, 161, 163, 165–168
 PC 22, 24
 port, MCPM11
 settings, NV9000 207
Configuration pages37
Connectors
 audio9
 aux 10, 12, 14–17, 20–21
 BNC74, 100, 110, 115
 coax 112
 control12
 DB25 74, 100, 105, 110, 115
 Ethernet 14–17
 meter/monitor12
 Phoenix74, 100, 110, 115
 RS-422 14–17
 video reference12
Contact Miranda 227
Contextual help messages79
Control connectors12

-
- Control panels 3, 5, 21, 211
 - and channels 6
 - buttons 2
 - overview 6
 - Control port or GPIO pair (machine control field) 85
 - Controlled by the router control card (option) 170
 - Controlled from UI (option) 21, 166
 - Controller, device (DC21) 3, 8, 56, 60, 85
 - Conventions 2
 - Conversion, logo graphics 122
 - Copying a list entry 97, 118, 123, 125, 132, 140
 - corporate office, contact 227
 - Creating a new configuration file 45
 - Crop effect, squeezeback 134
 - Cross fade 11
 - Ctrl track (time code mode) 85
 - Cue button (option) 56
 - customer support 227
 - Cut 11
 - Cut, hot 11
 - Cut/fade 11
- D**
- DAC
 - see digital-to-analog converters
 - DARS
 - digital audio reference signal
 - Dashboard 2, 8, 212
 - DB25 connectors 74, 100, 105, 110, 115
 - DC21 device controller 3, 8, 56, 60, 85
 - Declaration of Conformance ii
 - Decoders, Dolby E 14, 16–17, 54, 71–72, 74, 78, 155, 168
 - Default
 - keyer behavior 157
 - keyer settings 157–158
 - keyer sources 157
 - main source 22, 148–149, 153–154
 - over source 22, 151
 - pathname 24
 - transition rate 162
 - transition type 161
 - video effects 22
 - Default (button) 54, 110, 115, 146, 156, 160, 162
 - Default state is on (checkbox) 145
 - Default transition rate (machine control field) 85
 - Default transition type (machine control field) 85
 - Delegate, aux 171
 - Delete (button) 37, 61, 97, 118, 122, 125, 132, 139, 164–166, 168
 - Destination, router 41, 73, 99
 - Device controller (DC21) 3, 8, 56, 60, 85
 - Diagnostic port, MCPM 11
 - Dialogs
 - add source groups 91
 - Digital audio reference signal 211
 - Digital-to-analog converters 104
 - Dim function 106, 109, 113–114
 - Disabled (option) 159
 - Disabled during lever arm operation (checkbox) 145
 - Disabled, GPI input 165
 - Disabled, GPI output 21, 166
 - Discrete audio 77
 - Disembedders 54
 - DNF Controls 3
 - Do not reply to commands (option) 145
 - document
 - notice of use ii
 - part number ii
 - revision ii
 - Documentation
 - abbreviations 2
 - conventions 2
 - symbols 2
 - terms 2
 - Dolby E 9, 14, 16–17, 60, 70, 74, 76–77, 80
 - backup audio 73, 79–80
 - backup sources 54
 - decoder (option) 168
 - decoders 54, 71–72, 74, 78, 155, 168
 - metadata 152–153, 155
 - metadata, outputs 14–17
 - modules 9
 - Dolby E is embedded (checkbox) 78
 - Downstream effects 9
 - D-to-A outputs 105
 - DVE cards 55
- E**
- EBCP (emergency bypass control panel) 8, 156, 164–165
 - EBR
 - see Emergency Bypass
 - Edge crop, squeezeback 157–158
 - Edit name and IP address 43
 - Edit/modify function 137, 143
 - Editing a stored configuration 46
 - Editing basics 37
 - Effects
 - downstream 9
 - upstream 9
 - video 9–10, 22, 116, 131
 - Effects, video 10
 - EM0465 (SWB router output card) 169
 - e-mail address 227
 - Embedded audio 9, 14–16, 39, 54, 60, 70–74, 76–77
 - Emergency bypass 8, 10–11, 18–19, 22, 153, 156
 - inputs 12, 14–17, 19–21
 - LED 11, 20
 - mode 20

relay	12, 14–17, 19–20, 163
switch	11, 20
Emergency bypass control panel (EBCP)	8, 156, 164–165
Enable auto restore of audio mixer settings (checkbox)	54, 102
Enable external router source (checkbox)	52
Enable main backup (checkbox)	54
Enable main disembedders (checkbox)	54
Enable main source button mapping (checkbox)	52, 86, 147
Enable NV9000 pre-select (checkbox)	52
Enable NV9000 preselect (checkbox)	73, 99
Enable over source button mapping (checkbox)	53, 103, 150
Enable preroll (checkbox)	56
Engine, master control see MCE	
Enhanced squeezeback	10, 15, 138, 142–143, 151, 157–158
parameters	140
Error check config (command)	31
Ethernet	5
connectors	14–17
Ethernet to MCPM (command)	32, 43–44
Europe, contact	227
Examples, symbol for	2
Existing configuration files	45–46
Exit (command)	30
Ext rtr src settings (page)	52
Extended protocol, NVISION	128, 137, 143
Extension, configuration files	27
External router sources	42, 52

F

Fade to black/silence (FTB)	11, 161
Fade/cut	11
Fade/fade	11
Fast transition	11
fax number	227
FCC statement	ii
Feed, clean	117, 131, 153–154, 211
File (menu)	27, 45–46
File extension	27
Files configuration	22–23, 27–28, 30–31, 37–38, 45–46
XML	23
Filter bypass	120
Find, Acrobat	2
First Page, Acrobat	2
Flip-flop mode	159–160, 200
Flip-only mode	159–160, 199
Follow preset main audio (option)	170
Follow preset main video (option)	170

Follow program main audio (option)	170
Follow program main video (option)	170
Frame master control	22
NV5100MC	5, 46, 52, 169
NV5128-MC	16, 40, 46, 52, 169
Frame, master control	3
France, contact	227
From Dolby (checkbox)	78
FTB (fade to black/silence)	11, 161
matte	11, 161–162
rate	162
transitions	11

G

Gain audio	76, 101, 104, 107, 112, 114
keyer, video	120–121
logo keyer	126, 128
unity	76, 101
General settings (page)	49, 51, 54, 56, 74, 79, 96–97, 100, 102, 106, 113, 147, 150, 207
General-purpose interface see GPI	
GIF	212
Go to backup (button)	80
Go to main (button)	80
Go to Next View, Acrobat	1
Go to Previous View, Acrobat	1
GPI	10, 20, 22, 39, 163
general purpose interface input	20, 39, 156
input configuration, completion	165
input, disabled	165
inputs	12, 14–17, 20, 163, 165
output	21, 39
output configuration, completion	168
output ports	165
output, and main source	21
output, and transition status	21
output, and video effect type	21
output, disabled	21, 166
outputs	12, 14–17
GPI inputs (page)	163, 166
GPI outputs (page)	165
GPIO	11, 18
GPOs	8
Graphical user interface (GUI)	5–6
Groups, source	87
GUI	2
GUI (graphical user interface)	211
GUI (software control panel)	5
GUI buttons	2

H

Hardware symbolsiv

Has backup audio (checkbox)73, 79

Has main Dolby E decoders (checkbox)54, 77

Hazardous substanceiii

HD

- input 15
- router cards (SWB) 9

HD video 7

Headroom 76, 102

Help (menu)27, 35

Help, contextual 79

Hot cuts 11

Hours of operation227

How to

- complete audio monitor/meter
 - configuration 110, 115
- complete button mapping 149, 152
- complete GPI input configuration 165
- complete GPI output configuration 168
- complete keyer source configuration 121
- complete logo image configuration 123
- complete logo keyer configuration 128
- complete main source configuration 86
- complete misc. settings 156
- complete over source configuration 103
- complete RS-422 configuration 146
- complete squeeze 2 configuration 142
- complete squeeze configuration 136
- complete trans and FTB configuration 162
- complete video effect settings 160
- configure general settings 51
- create a new configuration file 45
- edit a stored configuration 46
- modify an active configuration 45
- perform initial source configuration ... 60, 69, 96–97
- use 'button mapping - main source' page 147
- use 'button mapping - over source' page 150
- use audio monitor page 103
- use general settings page 51
- use GPI inputs page 163
- use GPI outputs page 165
- use keyer sources page 116
- use logo images page 121
- use logo keyer sources page 124
- use machine control section 56
- use main sources page 58
- use MasterConfig 23
- use misc. settings page 152–153
- use over sources page 94
- use RS-422 communication settings page 144
- use source groups page 87
- use squeeze 2 settings page 138

- use squeeze settings page 130
- use the parameter windows 49
- use this guide 1
- use trans and FTB settings page 161
- use video effect settings page 157
- use wing outputs page 169

HSB 136, 142, 203–204

Hue 136, 142, 203

Hyperlinks, Acrobat 1

I

Image 2 options 160

Image ordering, squeezeback 140

Images, logo 121, 125–126

Imagestore 750 211

iMC-Panel-200 (compact control panel) 2, 6, 171, 211

iMC-Panel-300 (full-size control panel) 2, 6, 171, 211

iMC-Panel-GUI (software control panel) 2, 5–6, 211

Initial source configuration 60, 69, 96–97

Inputs

- AES 9, 14–16
- analog audio 9
- analog video 69, 71
- audio 14, 16
- aux audio 104–106, 109, 111–112, 115
- emergency bypass 12, 14–17, 19–21
- GPI 12, 14–17, 20, 39, 163, 165
- HD 15
- off-air 104–106, 109, 111–112, 115
- SD 14–15
- SWB 15
- time-code 14–17
- video 14, 16

Int XG (button) 8

Integration, NV9000 207

Interlaced formats 155

Internal black/silence generator 14–16, 156

Internally generated silence 70

Intuition XG 2–4, 8, 10, 18, 22, 47, 56, 117, 151,
..... 196–197, 199, 211–212

Inverted audio 76, 101

IP Address 32

IP address 24, 26, 30, 43–44, 56, 197–198, 207, 211

Is analog (checkbox) 69, 71

ITU-R BT.709 203

J

JPEG 212

K

Keyer	211
behavior	157
clip, video	120–121
gain, video	120–121
opacity	117, 120
parameters	120, 126, 133
settings, default	157–158
source configuration, completion	121
source list	117, 122
sources	117, 122, 124, 131, 139
sources, default	157
Keyer layer remapping	145
Keyer sources (page)	116, 122
Keyers	7, 9–10, 14, 16, 157

L

Last Page, Acrobat	2
Layer	211
Layer, XG	197–198
LED	
emergency bypass	11, 20
status	11
Level control of emergency bypass relay (option)	164
Level, audio	106, 113
Levels, router	73, 100
license	iii
Linear keyers	7, 9–10, 14, 16
List	
keyer source	122
keyer sources	117
logo keyer source	124, 131, 139
main source	60
over source	96, 148, 151
List entries	37–38, 96–97, 118, 122–123, 125, 132, 139–140, 164, 166
List-based parameters	37
Lock aspect (button)	135, 141
Log comm messages (checkbox)	32
Logo	211
behavior	157
clip	126, 128
gain	126, 128
graphics conversion	122
image configuration, completion	123
images	121, 125–126
keyer configuration, completion	128
keyer notes	128
keyer source list	124, 131, 139
opacity	122, 124, 126, 128
position	122, 127–128
positioning methods	129
precise positioning	129
storage considerations	123, 128
type	123
Logo images (page)	121–122
Logo keyer sources (page)	122, 124, 129
Logos	7, 10, 14, 16–17, 154, 157
and automation	128
static	123, 126
LOS (loss of signal)	152–153, 156–157
and squeezeback	160
matte	153–154, 156, 202
LTC (as time code mode)	85
Luma filter bypass	120
Luma filter bypass (checkbox)	120
Luminance	10, 116–117, 119, 121

M

Machine control	3, 8, 18, 21–22, 47, 55, 57, 59–60, 84
Machine control section	60
Main backup, enabled	54
Main source	
bulk add	62
bulk delete	62
Main source (option)	167
Main source buttons	147
Main sources	9, 14–16, 35, 40–41, 52, 54, 58, 60, 153–154, 207
as squeeze 2 images	86, 138, 141, 143
as squeeze background images	86
configuration, completion	86
list	60
Main sources (page)	52–54, 56, 58–60, 74, 79, 100, 167, 207
Main window, MasterConfig	25
Manual transitions	11, 145
Mapping	145
HSV to RGB	204
RGB to Y, Cr, Cb	202
sources to buttons	22, 40, 52–53, 61, 86, 97, 147, 150
Marked point	56
Master control	
network	52, 207
overview	5
processing module	2
tree	24, 26, 32, 43–44
tree (command)	32
Master control engine	
see MCE	
Master control frame	3, 22
Master control processing module	
see MCPM	
MasterConfig	
application	2, 22–23, 49
editing basics	37

-
- main window 25
 - operational overview 44
 - overview 22
 - starting 24
 - usage 23
 - MasterDiag (application) 2, 32, 43
 - MasterLogo (application) 2, 30, 122, 124
 - Matte
 - FTB 11, 161–162
 - LOS 153–154, 156, 202
 - transition 161, 202
 - Y, Cr, Cb values 202
 - Max # of audio channels 53, 106, 113
 - MCE 2, 7–8, 84, 160, 170–171, 212
 - summary 18
 - MCE-AXM 18, 55
 - MCE-CORE 18
 - MCE-DVE 18
 - MCE-PVW 18, 55
 - MCPM 7
 - type 7
 - MCPM (master control processing module) 2, 5, 9, 11, 212
 - adding to master control tree 43
 - audio section 105, 112
 - configuration/diagnostic port 11
 - feature list 22
 - name 52
 - names 43
 - overview 9
 - reading configuration data 28, 207
 - reset 11, 154, 161
 - type 24, 27, 33, 46, 50, 52, 74
 - video reference 12
 - writing configuration data 30
 - writing to 30
 - MCPM configuration (dialog) 43
 - MCPM IP Address (dialog) 43
 - MCPM-HD 7, 11, 15, 17, 20–21, 50, 169
 - MCPM-HD2 7, 11, 15, 21–22, 50, 169–170
 - MCPM-MK-HD 7, 11, 17, 20, 50, 54, 69–70, 77, 119,
 - 121, 131, 154–155, 157, 168
 - MCPM-MK-SD 7, 11, 16–17, 20–21, 50, 54, 70, 77, 121,
 - 131, 154–155, 157, 168
 - MCPM-SD 7, 11, 14, 16–17, 20, 50
 - MCPM-SDHD .. 7, 10–11, 15–16, 20–22, 50, 131, 138, 143,
 - 151, 157, 159–160, 169–170
 - MCS panel configuration editor (application) 73, 100, 166
 - Medium transition 11
 - Menu
 - actions 27, 31, 37
 - bar 26
 - communications 27, 31
 - file 27, 45–46
 - help 27, 35
 - tools 27, 34, 38
 - view 27, 32
 - window 27, 33
 - Menu bar 27
 - Menus 27
 - Metadata, Dolby 14–17, 152–153, 155
 - Meter outputs 10–11, 14–18, 104–106, 111–113
 - Meter/monitor connectors 12
 - Meters, audio 103
 - MFR (multi-format router) 16, 21, 41
 - Middle East, contact 227
 - Miranda, contact 227
 - Misc settings (page) 117, 124, 131, 152–154
 - Misc settings, completion 156
 - Mix
 - keyer, additive 121
 - keyer, normal 121
 - Mixed audio configurations 79
 - Mixer/keyers 7, 11, 16–17, 20, 70, 77
 - Mode
 - bypass 8
 - clear preset after transition 9
 - emergency bypass 20
 - flip-flop 159–160, 200
 - flip-only 159–160, 199
 - Modify position (button) 135
 - Modify position visually (button) 127
 - Modifying a stored configuration 44, 46
 - Modifying an active configuration 44–45
 - Modules, Dolby E 9
 - Monitors, audio 22
 - A, B 104, 106, 112–113
 - A/B partition 108
 - buses 106, 113
 - output 10, 14–17, 104–106, 111–113
 - Mono audio 14–17
 - More windows... (command) 34
 - Multi-format router (MFR) 5, 16, 21, 41, 170
 - Mutually exclusive button sets 9, 96
- ## N
- Name of MCPM 52
 - Names
 - GPI inputs 163
 - GPI outputs 165
 - keyer settings 117
 - logo images 122
 - logo keyer settings 124
 - main sources 59
 - MCPM 43
 - over sources 88, 95, 103
 - squeeze 2 settings 139
 - squeezeback settings 131
 - Network, master control 52, 207

New (button)	37–38, 61–62, 97, 121–123, 125, 132, 136, 139, 142, 164–166, 168
New (command)	27, 37, 45
New configuration files	45
New configurations	44–45, 49–50
Next Page, Acrobat	2
Normal (option)	159–160, 199
Normal keyer mix	121
Not automatic (option)	34
Note, application	41, 47
notice, use	ii
Numbering	39, 110, 115
Numbers, selection	38, 61, 97, 103, 118, 123, 126, 132, 139–140, 164, 166
NV5100MC	
frame	46, 52, 169
port numbering	69
NV5100MC, frame	5
NV5128-MC	
frame	16, 40, 46, 52, 169
port numbering	69
NV9000	
configuration settings	207
integration	207
router control system	3, 5–6, 41, 52, 73, 99, 207
router control system, overview	6
router pre-select	52
NVISION	
extended protocol	128, 137, 143
O	
Obtaining technical support (command)	36
Odetics	8
Off-air audio inputs	104–106, 109, 111–112, 115
office hours	227
On video	114
Opacity	120, 129
keyer	117, 120
logo	122, 124, 126, 128
squeeze 2	139–140
Open (command)	27, 37, 46
Operation	44
Operational overview	44
Operator can adjust position (checkbox)	128, 134, 137, 143
Operator can adjust settings (checkbox)	120, 127
Operator can modify (checkbox)	108, 114, 148–151
Options	
automatic for all	35
automatic for main sources	35
not automatic	34
Options (command)	34, 38
Options section	60

Output	
AES	7, 12, 14–16
analog audio	7, 10, 14–17, 105–106
aux	170
clean feed	18
clean-feed	11–12
Dolby metadata	14–17
GPI	12, 14–17, 21, 39, 165–166
meter	10–11, 14–18, 104–106, 112–113
monitor	10, 14–17, 104–106, 112–113
preview	13, 104
program	53
relay	165
router	7, 9, 15–16, 21
Over	
buttons, audio	150
inserters, audio	95
Over for Intuition XG	151, 197, 199
Over source (option)	167
Over source buttons	40
Over sources	40–41, 53, 94–95, 151, 207
configuration, completion	103
list	96, 148, 151
page	94, 148, 151
Over sources (page)	96, 100, 168
Overs, audio	9–10, 14–16, 22, 53, 94, 143, 150, 159
Over-to-main ratio	95–96, 102, 142
Overview	
control panels	6
master control	5
MasterConfig	22
MCPMs	9
NV9000 router control system	6
operations	44
Oxtel	3

P

Page	
audio monitor	103–104, 107, 112–113
button mapping - main source	52, 61, 147
button mapping - over source	53, 97, 103, 150
ext rtr src settings	52
general settings	49, 51, 54, 56, 74, 79, 96–97, 100, 102, 106, 113, 147, 150, 207
GPI inputs	163, 166
GPI outputs	165
keyer sources	116, 122
logo images	121–122
logo keyer sources	122, 124, 129
main sources	52–54, 56, 58–60, 74, 79, 100, 167, 207
misc settings	117, 124, 131, 152–153
misc. settings	154
over sources	94, 96, 100, 148, 151, 168
position edit	137, 143

- RS-422 communication settings 144
 - source groups 53, 87–88
 - squeeze 2 settings 138
 - squeeze settings 130–131, 138
 - transition and fade to black settings 161
 - transition and FTB settings 161
 - video effect settings 138, 142, 157–158
 - video effects setting 118, 132, 139
 - video effects settings 125, 157
 - wing outputs 169
 - Pages, configuration 25–26, 33–34, 37, 46, 49, 52–54,
 - 56, 58, 60, 74, 77, 87–88, 94, 96, 100, 103,
 - 107, 113, 116, 118, 121–122, 124–125,
 - 129–132, 138–139, 147–148, 150–154,
 - 157, 161, 163, 165–168
 - Panel editor, MCS 73, 100
 - Panels, control 3, 5–6, 21, 211
 - Parameters
 - automation 144
 - enhanced squeezeback 140
 - keyer 120, 126, 133
 - RS-422 144
 - squeeze 2 140
 - part number, document ii
 - Partition, monitors A and B 108
 - Pathname, default 24
 - PC, configuration 22, 24
 - PDF documents
 - navigating and searching 1
 - PDF file, usage 1
 - Phoenix connectors 74, 100, 110, 115
 - phone numbers 227
 - PNG 212
 - Port numbering 69
 - Port, automation 144
 - Position
 - logo 122, 127–128
 - squeeze 2 139–140
 - squeezeback 134
 - Position edit (page) 137, 143
 - Precise logo positioning 129
 - Precise squeezeback positioning 137, 143
 - Pre-roll 11, 18, 21–22, 47, 56–57, 59–60, 83, 196–197, 199
 - Pre-roll point 56
 - Pre-select, router ... 5, 22, 41, 52, 59, 95–96, 99–100, 207
 - Preset audio 106
 - Preset bus 9, 96, 130, 167–168, 198
 - Preset squeeze background 171
 - Preset squeeze image 2 171
 - Preview bus 18, 130, 171
 - Preview cards 18–19
 - Preview output 13, 104
 - Preview squeeze background 171
 - Preview squeeze image 2 171
 - Previous Page, Acrobat 2
 - Processing module, master control 2
 - Processor, tally 3
 - Program audio 106
 - Program bus 9, 96, 167–168, 197
 - Program output 53
 - Progressive formats 155
 - Protocol, extended, NVISION 128, 137, 143
- ## R
- Rate
 - FTB 162
 - transition 9, 11, 161–162
 - Ratio
 - aspect, squeeze 2 141
 - aspect, squeezeback 135
 - over to main audio 142
 - over-to-main 95–96, 102, 199
 - Read config from MCPM (command) 28, 45, 129,
 - 137, 143, 207
 - Read configuration from MCPM (dialog) 28, 45
 - Reading configuration data from MCPM ... 129, 137, 143
 - Reference, video 12, 52
 - Relay
 - emergency bypass 12, 14–17, 19–20, 163
 - GPI output 165
 - SPDT 21
 - Remapping 145
 - Reply to commands normally but do not execute
 - (option) 145
 - Reply to commands with ‘error’ or ‘disabled’
 - (option) 145
 - Reset
 - button 11
 - MCPM 11, 154, 161
 - Restoring audio settings 54, 60, 86, 96, 102
 - restrictions iii
 - revision, document ii
 - RGB 202, 204
 - RoHS iii
 - Router
 - control cards 15
 - control system, NV9000 ... 3, 5–6, 41, 52, 73, 99, 207
 - destination 41, 73, 99
 - levels 73, 100
 - multi-format 5, 41
 - output card 21
 - output card, SWB 169
 - output cards 7, 9, 15–16, 21
 - pre-select 5, 22, 41, 52, 59, 95–96, 99–100, 207
 - preselect sources 41
 - salvos 207
 - source names 207
 - sources 41–42, 52, 207

RS-422
 configuration, completion 146
 connectors 14–17
 parameters 144
 RS-422 communication settings (page) 144
 RS-422 port enabled (checkbox) 144

S

S shape enable (checkbox) 120
 S shaping 120
 safeguards iii
 safety notices iii
 Salvos 207
 Saturation 136, 142, 203
 Save (command) 28, 37, 45–46
 Save as (command) 28, 45
 Save as default 129, 137, 143
 SD
 input 14–15
 SD video 7
 Search, Acrobat 2
 Section
 audio channels 60, 100
 machine control 60
 source 60, 96, 117, 122, 124, 131, 139
 Selection numbers 38, 61, 97, 103, 118, 123, 126,
 132, 139–140, 164, 166
 Self key enable (checkbox) 119
 selno
 see Selection numbers
 Set the emergency bypass relay to bypass (option) .. 164
 Set the emergency bypass relay to normal (option) .. 165
 Set to default (button) 155
 Shortcut, application 24
 Signal-to-noise ratio 76, 102
 Silence 161
 Silence, fade to 11
 Silence, internally generated 70
 Single image logo 123
 Size
 squeeze 2 139–140
 squeezeback 134
 Slots, wing 9, 15–16, 21
 Slow transition 11
 SMPTE 240M 203
 Software control panel
 see GUI
 software license iii
 Sony 8
 Source configuration, initial 60, 69, 96–97
 Source groups 87
 bulk add 90
 and button mapping menus 147
 Source groups (page) 53, 87–88
 Source has Dolby E audio (checkbox) 78–79
 Source section 60, 96, 117, 122, 124, 131, 139
 Source, external 52
 Sources
 audio 10, 39, 59–60, 95
 default 22
 Dolby E backup 54
 external 42
 main 9, 14–16, 35, 40–41, 52, 54, 58, 60, 96,
 153–154, 207
 over 40–41, 53, 94–95, 151, 207
 router 41, 207
 router pre-select 41
 video 59–60, 116–117, 122, 124, 131, 139
 Source-to-button mapping 22, 40, 52–53, 61, 86,
 97, 147, 150
 SPDT relays 21, 165
 Special messages
 symbol for 2
 Squeeze
 background images, and main sources 86
 configuration, completion 136
 Squeeze 2
 aspect ratio 141
 configuration, completion 142
 images, and main sources 86, 138, 143
 images. and main sources 141
 opacity 139–140
 over-to-main ratio 142
 parameters 140
 position 139–140
 size 139–140
 transparency 140
 Squeeze 2 settings (page) 138
 Squeeze image 2
 over name 159
 over source 151
 Squeeze settings (page) 130–131
 Squeezeback 7, 10, 14–17, 130, 154, 157, 212
 and automation 137, 143
 and LOS 160
 aspect ratio 135
 audio 15, 138–139, 141–142, 159
 audio overs 143
 background source 131
 behavior 157
 border color 131, 136, 139, 142
 border width 131, 135, 139, 142
 crop effect 134
 edge crop 157–158
 enhanced 10, 15, 138, 142–143, 151, 157–158
 image ordering 140
 position 134
 positioning methods 137, 143
 precise positioning 137, 143
 size 134

squeeze effect 134
 transparency 138
 type 134
 Start menu 24
 Starting MasterConfig 24
 State change enabled (checkbox) 145
 Static logos 123, 126
 Status bar 26
 Status bar (command) 32
 Status LEDs 11
 Stereo audio 14–17
 Summary, MCE 18
 support, contact 227
 SWB
 input 15
 router output card 21, 169
 Switch
 emergency bypass 11, 20
 Symbols 2
 example 2
 special message 2
 symbols, meaning iv
 System can modify (checkbox) 148–149, 151
 System pre-roll 56–57
 System-modifiable buttons 40

T

Tally processor 3
 Targa 212
 T-bar (see Transition Lever Arm)
 technical support 227
 TGA 212
 TIF 212
 Tile (command) 33
 Time-code inputs 14–17
 Time-code mode (machine control option) 85
 Title bar 25, 38
 TLA (transition lever arm) 11, 145
 Toggle control of emergency bypass relay (option) .. 164
 Tool bar 25, 37
 Tool bar (command) 32
 Tools (menu) 27, 34, 38
 Touchscreen, PC 6
 trademarks iii
 Trans and FTB configuration, completion 162
 Transition 212
 and fade to black settings (page) 161
 audio 11
 behavior 159, 199
 clear preset after 9
 fast 11
 manual 11
 matte 161, 202

 medium 11
 processor, see MCPM
 rate 9, 11, 161–162
 rate, default 162
 slow 11
 type 9, 11, 161
 type, default 161
 video 11
 Transition and FTB settings (page) 161
 Transition lever arm (TLA) 11, 145
 Transition status (option) 167
 Transitions
 FTB 11
 manual 145
 Transparency 140
 Tree, master control 24, 26, 32, 43–44
 Type
 logo 123
 MCPM 7, 24, 27, 33, 46, 50, 52, 74
 squeezeback 134
 transition 9, 11, 161
 Type/Protocol (machine control field) 84

U

Unapplied changes, and asterisks 38
 United Kingdom, contact 227
 Unity gain 76, 101
 Upstream effects 9
 Usage, MasterConfig 23
 Use audio from main source (checkbox) 141
 User's guide, chapter structure 1
 User-modifiable buttons 40
 Using
 'button mapping - main source' page 147
 'button mapping - over source' page 150
 audio monitor page 103
 general settings page 51
 GPI inputs page 163
 GPI outputs page 165
 keyer sources page 116
 logo images page 121
 logo keyer sources page 124
 machine control section 56
 main sources page 58
 misc. settings page 152–153
 over sources page 94
 RS-422 communication settings page 144
 source groups page 87
 squeeze 2 settings page 138
 squeeze settings page 130–131
 trans and FTB settings page 161
 video effect settings page 157
 wing outputs page 169

V

VDCP	8
VDCP elapsed time	85
V-fade	11
Video	
analog inputs	69, 71
effect, behavior	157
effect, settings	157
effect, settings completion	160
effect, behavior	157
effect, settings	157
effects	9–10, 22, 116, 131
effects, default	22
HD	7
HD input	15
inputs	14, 16
reference	52
reference connectors	12
reference, MCPM	12
SD	7
SD input	14–15
sources	59–60, 96, 116–117, 122, 124, 131, 139
standard	27, 50, 52
SWB input	15
transitions	11
Video effect settings (page)	118, 125, 132, 138–139, 142, 157–158
Video effect status (option)	166
Video in audio monitor/meter output	114
Video input is analog (checkbox)	119–120, 133
View (menu)	27, 32
VITC	85

W-X-Y-Z

warnings, hardware	iv
warranty	iii
web site	227
Width, squeezeback borders	135, 139, 142
Window (menu)	27, 33
Window, main	25
Wing outputs (page)	169
Wing slots	9, 15–16, 21
Workspace	26
Write config to MCPM (command)	30, 45–46
Write configuration to MCPM (dialog)	30, 44–46
Writing to an MCPM	30
Xbuilder	2, 8, 212
X-fade	11
XG Keyer Control (button)	8
XG layer	197–198
XG layer (button)	8, 199
XMedia	2, 8, 212
XML files	23
XPlay	8, 212
Xplay	2
Xstudio	2, 8, 212
Y, Cr, Cb	156, 162, 202
Zero (0) in a parameter entry box	39



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