NV5100MC
Master Control

MasterDiag User's Guide

General Settings
User Buttons Layout
Bottom Row Layout
Channel Selection List
Logging Settings
NV9000 Settings
Advanced Settings
Button Assignments
NVISION NV5100MC
Miranda

Main Source Button Qty

☐ Enable - Changes will reset all Button entries below

	Function	Bank A Source	Bank B Source
Button 1	Main Source	1	9
Button 2	Main Source	2	
Button 3	Main Source	3	
Button 4	Main Source	4	
Button 5	Main Source	5	
Button 6	Main Source	6	
Button 7	Main Source	7	
Button 8	Main Source	8	
Button 9	Key 1		
Button 10	Logo A		
Button 11	Sqz		
Button 12			

Miranda Technologies Inc.
3499 Douglas B. Floreani
Montreal, Quebec
Canada H4S 2C6

NV5100MC MasterDiag User's Guide

- **Revision**: 3.8
- **Software Version**: 6.3.6.0
- **Part Number**: UG0009-09

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Note Return Material Authorization (RMA) required for all returns.

Change History

The table below lists the changes to the Master Control MasterDiag User's Guide.

- MasterDiag User's Guide Part # UG0009-09
- Software version: 6.3.6.0

Rev	Date	ECO	Description	Approved By
1.0	15 Aug 05	—	Original document	—
2.0	22 Oct 07	—	Revised format, added new features.	D.Cox
3.0	13 Jun 08	14723	Software rewritten. Added features that support MCEs.	D.Cox
3.1	26 Jul 08	14766	Conforms to software version 5.2.0.	D.Cox
3.2	13 Jan 09	15478	Conforms to software version 5.5.0. New features were introduced at version 5.3.0.	D.Cox
3.3	30 Mar 09	15705	Format change.	D.Cox
3.4	28 Apr 09	15757	Conforms to software version 6.1.0.	D.Cox
3.5	31 Aug 09	16036	Conforms to software version 6.2.0.	D.Cox
3.6	11 Jan 10	16257	Conforms to software version 6.3.1. There is no change to the document's contents however.	D.Cox
3.7	28 Jun 10	17086	Conforms to software version 6.3.4. There is no change to the document's contents however.	D.Cox
3.8	17 Feb 11	17447	Conforms to software version 6.3.6. There is no change to the document's contents however.	D.Cox

Important Safeguards and Notices

This section provides important safety guidelines for operators and service personnel. Specific warnings and cautions appear throughout the manual where they apply. Please read and follow this important information, especially those instructions related to the risk of electric shock or injury to persons.

Warning	Any instructions in this manual that require opening the equipment cover or enclosure are for use by qualified service personnel only. To reduce the risk of electric shock, do not perform any service other than that contained in the operating instructions unless you are qualified to do so.

Symbols and Their Meanings

The lightning flash with arrowhead symbol within an equilateral triangle alerts the user to the presence of dangerous voltages within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle alerts the user to the presence of important operating and maintenance/service instructions.

The Ground symbol represents a protective grounding terminal. Such a terminal must be connected to earth ground prior to making any other connections to the equipment.

The fuse symbol indicates that the fuse referenced in the text must be replaced with one having the ratings indicated.

The presence of this symbol in or on Miranda equipment means that it has been designed, tested and certified as complying with applicable Underwriter's Laboratory (USA) regulations and recommendations.

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General Warnings

A warning indicates a possible hazard to personnel which may cause injury or death. Observe the following general warnings when using or working on this equipment:

- Heed all warnings on the unit and in the operating instructions.
- Do not use this equipment in or near water.
- This equipment is grounded through the grounding conductor of the power cord. To avoid electrical shock, plug the power cord into a properly wired receptacle before connecting the equipment inputs or outputs.
- Route power cords and other cables so they are not likely to be damaged.
- Disconnect power before cleaning the equipment. Do not use liquid or aerosol cleaners; use only a damp cloth.
- Dangerous voltages may exist at several points in this equipment. To avoid injury, do not touch exposed connections and components while power is on.
- Do not wear rings or wristwatches when troubleshooting high current circuits such as the power supplies.
- 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.

General Cautions

A caution indicates a possible hazard to equipment that could result in equipment damage. Observe the following cautions when operating or working on this equipment:

- When installing this equipment, do not attach the power cord to building surfaces.
- To prevent damage to equipment when replacing fuses, locate and correct the problem that caused the fuse to blow before re-applying power.
- 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.

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1. Introduction

MasterDiag is the software utility with which you specify the IP address of an MCPM, perform diagnostics on an MCPM, and update software in an MCPM.

At software version 5.1.0.0, MasterDiag introduced support for master control engines (MCEs), which are the "next generation" of MCPMs (master control processor modules). At software version 5.1.0.0, MasterDiag is entirely new software.

New features were incorporated at software version 5.1.0.0. MasterDiag is now at version 6.1.0.0. Chapter 1 presents the following topics:

- Chapter Structure
- The PDF Document
- Terms and Conventions
- Prerequisites
- Master Control System Overview
- MCPM Summary
- MCE Summary
- MasterDiag Summary

Chapter Structure

This user's guide provides operating instructions for the MasterDiag application. It includes the following chapters:

- Chapter 1, Introduction, outlines effective ways to use this guide, provides a list of terms and conventions, and provides a summary of the MCPMs.
- Chapter 2, MasterDiag Basics, provides orientation, editing, and basic operating instructions.
- Chapter 3, Operation, provides operating instructions.
- Chapter 4, Misc., provides miscellaneous information.
- An Index is also provided for your reference.

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 page number 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 and Conventions

The following conventions are used throughout this guide:

- The symbol ▲ denotes either an example or a special message.
- Entries enclosed in single quotes denote the names of control panel buttons or menu items or the names of setup page items.
  - Choose 'Aux' to ...
  - Click or press the 'Keyer 2' button ...

The following terms and abbreviations are used throughout this guide:

- "MCPM" stands for Master Control Processing Module— the "transition processor." "MCE" stands for Master Control Engine. An MCE is a "next generation" 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 the format required by MCPMs and MCEs.

Prerequisites

Before you begin using MasterDiag, please meet the following important prerequisites:

- Communication.

  Your configuration PC's COM port must support communication at 115.2 kbps. You will need a straight-through RS-232 cable long enough to reach from that COM port to the front panel of the MCPM with which you are working.

- MCPMs.

  Be sure your MCPMs are installed properly and operating.

  All MCPMs are pre-configured (with the same default configuration) before shipment. Use MasterConfig to provide further configuration as you require, at any time. Refer to the *NV5100MC/NV5128-MC MasterConfig User's Guide*.

- 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.

Master Control System Overview

Miranda's master control system—a multi-channel switcher—might include one or more NV5100MC frames and one or more NV5128-MC frames. The frames are similar 8RU assemblies with 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 MCEs or MCPMs and optionally a multi-format router. The MCPMs and MCEs are the modules that actually perform the master control switching. Each MCPM and MCE is considered a *channel*.

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 1-1 shows the relationships in a master control system:

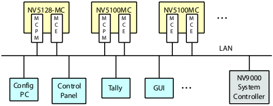


Figure 1-1. Master Control Network

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 at any time—but usually one at a time. Operators can select which channel(s) to control. Channel changes take about a second. We say that the panel *attaches* the newly selected channel, and the channel's own source layout, transition rates, and video effect presets are available for use.

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

Presently, the master control system includes these panels:

- FFCP—Full-function control panel.
- CFCP—Compact full-function control panel.
- PC GUI—Old software control panel.
- SCP—Simple control panel.
- FECP—Full-size enhanced control panel.
- CECP—Compact enhanced control panel.
- CECP M1—Modified compact enhanced control panel.
- CECP GUI—New software control panel.

- Aux/Preview GUI—A configuration option of the CECP GUI.

MCPM Summary

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. Inputs are from the NV5128 motherboard.
MCPM-HD, MCPM-HD2	4-slot modules that process 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. Inputs are from the NV5128 motherboard. 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. Inputs are from the NV5128 motherboard. 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. Inputs are from the NV5128 motherboard. These modules are also named “mixer/keyers” or “branding engines.”
MCPM-MK-HD	2-slot modules that process high definition (HD) video. Provides 3 keyers, 1 logo, and no squeezeback. Inputs (up to 16) are from the module’s backplane, ***not*** the NV5128 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. MCEs are considered “next generation” processors and have new architecture. See MCE Summary, next section.

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

All MCPMs have a reset switch, a bypass toggle (for the emergency bypass relay) and an diagnostic port at their front. The diagnostics port is a DE9, RS-232.

For initial setup, you must connect your PC to the MCPM’s RS-232 diagnostic port.

Figures 1-2 and 1-3 shows the front of the older MCPMs:

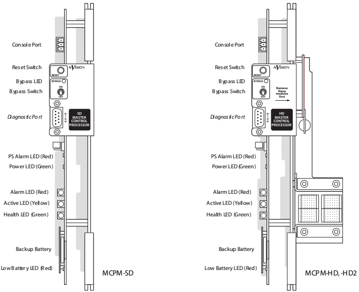

Console Port
Reset Switch
Bypass LED
Bypass Switch
Diagnostic Port
PS Alarm LED (Red)
Power LED (Green)
Alarm LED (Red)
Active LED (Yellow)
Health LED (Green)
Backup Battery
Low Battery LED (Red)
RESET
BYPASS
ON
OFF
NVISION
DIAG
SD MASTER CONTROL PROCESSOR
MCPM-SD
Console Port
Reset Switch
Bypass LED
Bypass Switch
Diagnostic Port
PS Alarm LED (Red)
Power LED (Green)
Alarm LED (Red)
Active LED (Yellow)
Health LED (Green)
Backup Battery
Low Battery LED (Red)
RESET
BYPASS
ON
OFF
NVISION
Remove these modules first
DIAG
HD MASTER CONTROL PROCESSOR
MCPM-HD, -HD2

Figure 1-2. MCPM Front, MCPM-SD, -HD, and -HD2

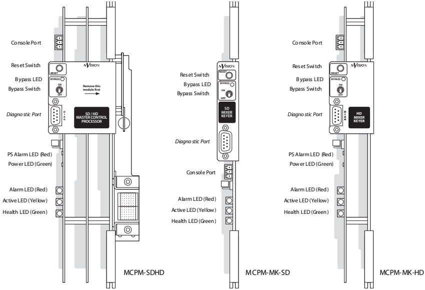

Console Port
Reset Switch
Bypass LED
Bypass Switch
Diagnostic Port
PS Alarm LED (Red)
Power LED (Green)
Alarm LED (Red)
Active LED (Yellow)
Health LED (Green)
RESET
BYPASS
ON
OFF
NVISION
Remove this module first
DIAG
SD / HD MASTER CONTROL PROCESSOR
MCPM-SDHD
Reset Switch
Bypass LED
Bypass Switch
SD MIXER KEYER
Diagnostic Port
Console Port
Alarm LED (Red)
Active LED (Yellow)
Health LED (Green)
MCPM-MK-SD
Console Port
Reset Switch
Bypass LED
Bypass Switch
Diagnostic Port
HD MIXER KEYER
PS Alarm LED (Red)
Power LED (Green)
Alarm LED (Red)
Active LED (Yellow)
Health LED (Green)
MCPM-MK-HD

Figure 1-3. MCPM Front, MCPM–SDHD, -MK-SD, and -MK-HD

MCE Summary

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

▲ Not all features of the MCE product line are available yet. Refer to the *NV5100MC Master Control Reference Manual* for information regarding features that are and are not included.

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 provides functions that allow the use of the “next generation” preview bus. (The preview bus supports video, but not audio, at this time.)
- MCE-AXM. The *audio expansion module* supports Dolby E and additional audio functions. The AXM provides (up to 8) Dolby E decoders for the program and preset buses and audio outputs at its backplane.
- 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. The diagnostics port is a DE9, RS-232.

Notable differences between the MCEs and older MCPMs include:

- MCEs have 16-channel audio. MCPMs have 8-channel audio.
- An MCE's audio monitoring and metering includes all 16 channels. The output is embedded (except for the outputs on the AXM backplane). MCPMs provide up to 8 monitor and metering channels and those are not embedded, but are present on DB25 connectors.
- MCE audio and video connectors are 1.0/2.3 DIN connectors; MCPM audio and video connectors are BNCs.
- MCEs have 2 clean feed outputs and 2 aux outputs.

There are other differences.

Figure 1-4 shows the front of an MCE assembly and its associated backplanes:

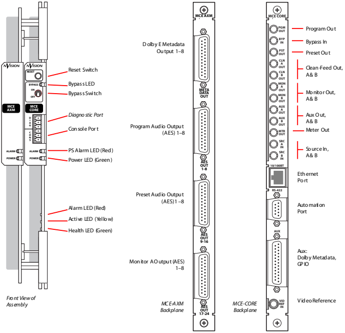

NVISION
NVISION
RESET
BYPASS
ON
OFF
MCE AXM
MCE CORE
DIAG
CONS
ALARM
POWER
ALARM
POWER
Reset Switch
Bypass LED
Bypass Switch
Diagnostic Port
Console Port
PS Alarm LED (Red)
Power LED (Green)
Alarm LED (Red)
Active LED (Yellow)
Health LED (Green)
Front View of Assembly
MCE AXM
Dolby E Metadata Output 1–8
META DATA OUT
Program Audio Output (AES) 1–8
AES OUT 1-8
Preset Audio Output (AES) 1–8
AES OUT 9-16
Monitor A Output (AES) 1–8
AES OUT 17-24
MCE-AXM Backplane
MCE CORE
PGM OUT
BYP IN
PST OUT
CLN A OUT
CLN B OUT
MON A OUT
MON B OUT
AUX A OUT
AUX B OUT
MTR OUT
SRC A IN
SRC B IN
10/100BT
RS-422
AUX
VID REF IN
Program Out
Bypass In
Preset Out
Clean-Feed Out, A & B
Monitor Out, A & B
Aux Out, A & B
Meter Out
Source In, A & B
Ethernet Port
Automation Port
Aux: Dolby Metadata, GPIO
Video Reference
MCE-CORE Backplane

Figure 1-4. MCE (Core and AXM)

MasterDiag Summary

MasterConfig is the software with which to configure an MCPM or MCE. MasterDiag is diagnostic and setup software only. Use MasterDiag to do the following:

- Assign an IP address to the MCPM or MCE. The IP address identifies the MCPM or MCE on the master control network.
- Update software and firmware to the MCPM or MCE. It is probable that you will want to install a software update at some point.
- Perform diagnostic and service functions.

Changes to the MCPM or MCE require a reset:

- After are software update.
- After a new Ethernet settings.

▲ MCPM and MCE data reside in MCPM (or MCE) flash. When the MCPM or MCE is reset, its configuration is copied from flash to RAM.

▲ MCE logos reside in flash. Older MCPMs store logos in RAM, except for logo 1. (Thus, an MCE does not require an upload of logos after a reset.)

2. MasterDiag Basics

Chapter 2 describes the menus and structure of MasterDiag and provides some orientation. It presents the following topics:

- MasterDiag Overview
- Menus
- IP Addresses

MasterDiag Overview

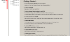
The MasterDiag application is used to assign an IP address to an MCPM, perform diagnostics on an MCPM, and update software in an MCPM.

- MCUs are specific types of MCPMs.

For the most part, customers need MasterDiag only when assigning an IP address to an MCPM or when (occasionally) updating software.

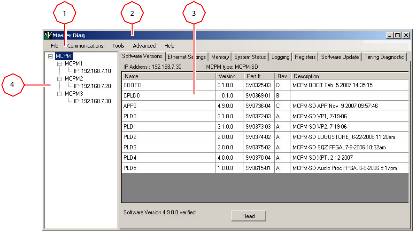
The diagnostic pages that MasterDiag provides are generally for Miranda technicians. Under certain circumstances, a Miranda technician might ask you to run some diagnostics. The sections in this manual describing diagnostic pages might then be helpful.

When you first launch MasterDiag, it displays a welcome page among several other setup pages and the MCPM tree.


Getting Started...

The welcome page gives a synopsis of what you can do and where to start. The welcome page disappears after you click any other setup page.

This is the MasterDiag window (with the 'Software Versions' page active):


1
2
3
4
Master Diag
File
Communications
Tools
Advanced
Help
MCPM
MCPM1
IP: 192.168.7.10
MCPM2
IP: 192.168.7.20
MCPM3
IP: 192.168.7.30
Software Versions
Ethernet Settings
Memory
System Status
Logging
Registers
Software Update
Timing Diagnostic
Read

IP Address : 192.168.7.30 MCPM type: MCPM-SD

Name	Version	Part #	Rev	Description
BOOT0	3.1.0.0	SV0325-03	D	MCPM BOOT Feb 5 2007 14:35:15
CPLD0	1.0.1.0	SV0369-01	B	
APP0	4.9.0.0	SV0736-04	C	MCPM-SD APP Nov 9 2007 09:57:46
PLD0	3.1.0.0	SV0372-03	A	MCPM-SD VP1, 7-19-06
PLD1	3.1.0.0	SV0373-03	A	MCPM-SD VP2, 7-19-06
PLD2	2.0.0.0	SV0374-02	A	MCPM-SD LOGOSTORE, 6-22-2006 11:20am
PLD3	2.0.0.0	SV0375-02	A	MCPM-SD SQZ FPGA, 7-6-2006 10:32am
PLD4	4.0.0.0	SV0370-04	A	MCPM-SD XPT, 2-12-2007
PLD5	1.0.0.0	SV0615-01	A	MCPM-SD Audio Proc FPGA, 6-9-2006 5:17pm

Software Version 4.9.0.0 verified.

Figure 2-1. MasterDiag Window (Sample)

1	Menu Bar	2	Title Bar	3	Work Area	4	List Area

Following are descriptions of each main window feature:

1 Menu Bar

The menu bar provides access to setup and diagnostic functions. See Menus on page 11 for details.

2 Title Bar

The title bar identifies the application as MasterDiag. If you have many windows open on your desktop, it can help you locate MasterDiag.

3 Work Area

The work area contains 8 setup pages. However, when MasterDiag is in Serial Mode, only 6 of those pages are visible:

Ethernet Mode	**Serial Mode**
Software Versions	Software Versions
Ethernet Settings	Ethernet Settings
Memory	Memory
System Status	System Status
Software Update	Software Update
Timing Diagnostic*	Timing Diagnostic*
Logging	
Registers	

You can choose serial mode or Ethernet mode from the Communications Menu.

▲ Timing Diagnostics are available for the MCE only.

4 List Area

MasterDiag does not display the list area in serial mode.

The list area displays a list of MCPMs (including MCEs). The list is expandable and collapsible as if it were tree-structured. (The list is sometimes called a *master control tree.*) The list includes IP addresses and names for MCPMs.

- Be aware that the MCPM list contains IP addresses by which MasterDiag *attempts* to communicate with MCPMs. The list can include entries for MCPMs that do not exist or that have been taken out of service.
- When you launch MasterDiag for the first time, the list will be empty unless someone has populated it.

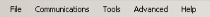
If you highlight an IP address in the list, or the name of an MCPM, it becomes the “current” or “default” address. If the IP address corresponds to an actual MCPM, your commands and the settings you make apply to the device at that specific IP address until you select another address.

You can adjust the width of the list area by dragging its right-hand border. You can add, rename, and delete entries in the list area.

In Ethernet Mode, MasterDiag displays, at the top of each page, the IP address and type of the MCPM you have selected.

Menus

This is the basic Menu Bar:



Each menu is described in the sections following.

- File Menu
- Communications Menu
- Tools Menu
- Advanced Menu
- Help Menu

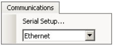
File Menu

The ‘File’ menu has no commands except ‘Exit’: (There are no files to open or save.)

Click ‘Exit’ to quit MasterDiag. You can also press Alt-F4 or click the × in the title bar to quit MasterDiag.

Communications Menu

This is the ‘Communications’ menu:



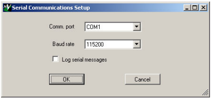
From the drop-down list, choose either ‘Ethernet’ or ‘Serial’. Choosing ‘Ethernet’ puts MasterDiag in Ethernet mode. Choosing ‘Serial’ puts MasterDiag in serial mode.

Serial Mode

When MasterDiag is in serial mode, it communicates with the selected MCPM through your PC’s COM port and the diagnostic port on the front of the MCPM.

In serial mode, MasterDiag hides the list area and also disables certain options.

When you choose serial mode, MasterDiag presents a dialog in which you choose a COM port:



Comm. port: COM1

Baud rate: 115200

☐ Log serial messages

The ‘Comm. Port’ drop-down list includes an entry for each COM port on your configuration PC. You must choose a COM port through which your PC you will communicate with the MCPM. (Many PCs have only one port, in which case the usual choice is COM1.)

There is no choice for Baud rate. The drop-down menu has only one entry: 115,200 Baud.

- ▲ Serial communication requires a serial cable between your PC and the RS-232 port at the front of the MCPM. Serial communication is required, initially, to give the MCPM an IP address. It can also be used if Ethernet is not available.
- ▲ MCEs require a special cable, DE9[1] on one end and a 3-pin Phoenix connector on the other because the diagnostic port comprises 3 terminals of a 6-pin Phoenix connector. NVISION might, in the future, provide the cable, but does not yet.

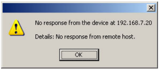
Ethernet Mode

Choose ‘Ethernet’ to switch MasterDiag to “Ethernet” mode. Doing so activates the list area. When MasterDiag is in Ethernet mode, it can communicate over the master control network with any of the MCPMs and MCEs on the network.

---

[1] DE9 connectors are often called DB9s.

You must select the MCPM you want from the list. If the MCPM does not exist, MasterDiag displays an alert:



No response from the device at 192.168.7.20

Details: No response from remote host.

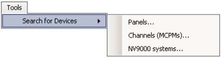
It is permissible to have entries in the list that do not correspond to actual MCPMs, but you will see the alert if you click such an entry.

If an MCPM exists for IP address you select, it becomes current or selected MCPM and its IP address is the *current address*.

You can add and delete entries in the list. See IP Addresses on page 16.

Tools Menu

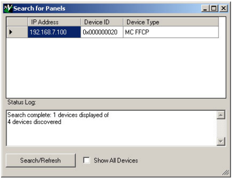
This is the 'Tools' menu:



The Tools menu has one entry—Search for Devices—that presents a submenu with 3 commands.

- Panels

  MasterDiag searches the master control network for hardware control panels (but not software control panels). It produces a report such as this:



IP Address	Device ID	Device Type
192.168.7.100	0x000000020	MC FFCP

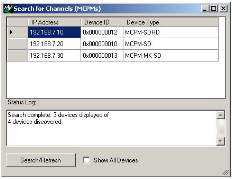
Status Log:

```
Search complete: 1 devices displayed of
4 devices discovered
```

  If you check the 'Show All Devices' box, MasterDiag produces a list of all devices on the master control network.

- Channels (MCPMs)

  MasterDiag searches the master control network for MCPMs. It produces a report such as this:

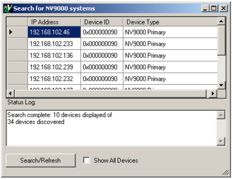

Search for Channels (MCPMs)
Status Log:
Search/Refresh
☐ Show All Devices

IP Address	Device ID	Device Type
192.168.7.10	0x000000012	MCPM-SDHD
192.168.7.20	0x000000010	MCPM-SD
192.168.7.30	0x000000013	MCPM-MK-SD

Search complete: 3 devices displayed of 4 devices discovered

- NV9000 systems

  MasterDiag searches the master control network for NV9000 system controllers. It produces a report such as this:


Search for NV9000 systems
Status Log:
Search/Refresh
☐ Show All Devices

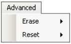
IP Address	Device ID	Device Type
192.168.102.46	0x000000090	NV9000 Primary
192.168.102.233	0x000000090	NV9000 Primary
192.168.102.136	0x000000090	NV9000 Primary
192.168.102.239	0x000000090	NV9000 Primary
192.168.102.232	0x000000090	NV9000 Primary

Search complete: 10 devices displayed of 34 devices discovered

  If there are no NV9000 system controllers present, the list will be empty.

Advanced Menu

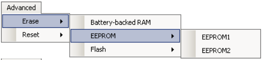
This is the ‘Advanced’ menu:

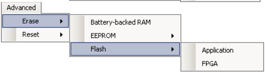

Advanced
Erase
Reset

The ‘Advanced’ menu has two commands — Erase and Reset — that present submenus.

Erase

Use the ‘Erase’ command to erase EEProm or flash:

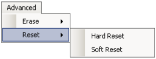

Advanced
Erase
Reset
Battery-backed RAM
EEPROM
Flash
EEPROM1
EEPROM2


Advanced
Erase
Reset
Battery-backed RAM
EEPROM
Flash
Application
FPGA

Warning Do not erase any memory without consulting a Miranda technician.

Reset

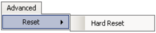
Use the ‘Reset’ command to reset the MCPM:


Advanced
Erase
Reset
Hard Reset
Soft Reset

A hard reset is equivalent to cycling power at the MCPM or pressing its reset switch. The MCPM reloads all FPGAs and copies files from flash memory into RAM.

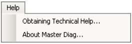
A soft reset reloads just the configuration file. FPGAs are not re-initialized. One benefit of a soft reset is that logos are not erased. (In MCEs, the logo store is non-volatile, so that is not an issue.)

If MasterDiag is in serial mode, the ‘Soft Reset’ command is not available:

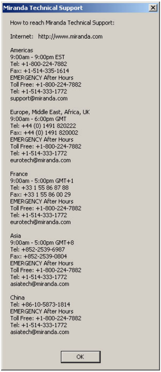

Advanced
Reset
Hard Reset

Help Menu

The ‘Help’ menu has two commands:


Help
Obtaining Technical Help...
About Master Diag...

Click ‘Obtaining Technical Help...’ to see the ‘Technical Support’ window or click ‘About MasterDiag...’ to see MasterDiag’s software revision number:



How to reach Miranda Technical Support:

Internet: http://www.miranda.com

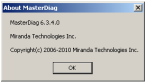
Americas
9:00am - 9:00pm EST
Tel: +1-800-224-7882
Fax: +1-514-335-1614
EMERGENCY After Hours
Toll Free: +1-800-224-7882
Tel: +1-514-333-1772
support@miranda.com

Europe, Middle East, Africa, UK
9:00am - 6:00pm GMT
Tel: +44 (0) 1491 820222
Fax: +44 (0) 1491 820002
EMERGENCY After Hours
Toll Free: +1-800-224-7882
Tel: +1-514-333-1772
eurotech@miranda.com

France
9:00am - 5:00pm GMT+1
Tel: +33 1 55 86 87 88
Fax: +33 1 55 86 00 29
EMERGENCY After Hours
Toll Free: +1-800-224-7882
Tel: +1-514-333-1772
eurotech@miranda.com

Asia
9:00am - 5:00pm GMT+8
Tel: +852-2539-6987
Fax: +852-2539-0804
EMERGENCY After Hours
Toll Free: +1-800-224-7882
Tel: +1-514-333-1772
asiatech@miranda.com

China
Tel: +86-10-5873-1814
EMERGENCY After Hours
Toll Free: +1-800-224-7882
Tel: +1-514-333-1772
asiatech@miranda.com



MasterDiag 6.3.4.0

Miranda Technologies Inc.

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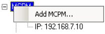
There is no actual help information *per se.*

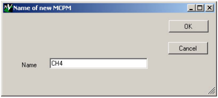
IP Addresses

MCPMs are identified by their IP addresses. To add an IP address to the list area, right-click “MCPM” at the “root” of the list.

The ‘Add MCPM’ dialog appears:



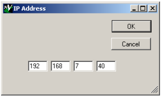
Click ‘Add MCPM...’ The name dialog appears:


Name of new MCPM
OK
Cancel

Name: CH4

In this dialog, you give the MCPM a name for use in the list. The name is arbitrary but it is required. Click ‘Cancel’ if you do not want to continue.

If you click ‘OK’, the IP address dialog appears:

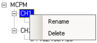

IP Address
OK
Cancel

192 168 7 40

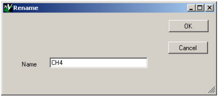
Enter the IP address in the 4 octet fields and click ‘OK’ or click ‘Cancel’ if you change your mind.

Renaming or Deleting

To rename a list entry or delete the entry, right-click the *name* of the entry:


MCPM
CH1
CH2
Rename
Delete

If you choose ‘Rename’, the rename dialog appears:

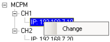

Rename
OK
Cancel

Name: CH4

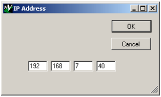
If you choose ‘Delete’, MasterDiag deletes the entry, with no further dialog, except that if the entry does not correspond to an actual MCPM, you will be notified.

Changing an IP Address

To change an IP address in the list, right-click the address: The 'Change' dialog appears:



Click the 'Change' command. The IP address dialog appears:



192 168 7 40

Enter the IP address in the 4 octet fields and click 'OK' or click 'Cancel' if you do not want to change the address.

- ▲ Changing the IP address in the list ***does not*** change the IP address of the actual MCPM or MCE. The IP addresses in the list are what MasterDiag uses to locate MCPMs and MCEs. (The list actually corresponds to a small XML database.) To change the actual IP address, use the Ethernet Settings page. (See page 21.)

You cannot of course read from or write to an MCPM that does not exist. MasterDiag will report an Ethernet error if you attempt it.

In addition, MasterDiag automatically reads the settings from the selected MCPM. Clicking on an MCPM in the list is like clicking the 'Read' button in the 'Software Versions' page, except when the list entry is fictitious and you will see the "No Response" alert. See Software Versions on page 20.

List entry names can have up to 255 characters. The names can be what you like. The names have no significance other than to be helpful. Only the IP addresses are significant.

3. Operation

Chapter 3 provides information about using the setup pages and diagnostic pages in MasterDiag's tabbed work area. It presents the following topics:

- Connection
- Setup and Diagnostic Pages

Connection

Initially, before you can do anything else with an MCPM, you must specify its IP address in the master control network. You must use MasterDiag and the MCPM's diagnostic port to set the IP address initially.

For all MCPMs except an MCE, connect one end of a straight-through RS-232 cable to one of your PC's COM ports. Connect the other end of the cable to the DE9 (a.k.a. DB9) diagnostic port on the front of the MCPM. The MCPM must be installed and powered up.

A special cable is required for MCEs. One end is DE9 (a.k.a. DB9) and connects to your PC's COM port. The other is 3-pin Phoenix connector that plugs into the diagnostic section of the 6-pin Phoenix connector at the front of the MCE. The MCE must be installed and powered up.

You must set up MasterDiag for serial communication with the MCPM. See Serial Mode and Ethernet Mode on page 12 for information.

▲ The PC's COM port must be capable of 115.2 kbps.

After that initial setup, you can use Ethernet for all functions as long as your configuration PC is connected to the master control network. See PC Configuration on page 36.

Setup and Diagnostic Pages

The work area contains 8 pages. However, when MasterDiag is in Serial Mode, only 6 of those pages are visible:

Ethernet Mode	**Serial Mode**
Software Versions	Software Versions
Ethernet Settings	Ethernet Settings
Memory	Memory
System Status	System Status
Software Update	Software Update
Timing Diagnostic*	Timing Diagnostic*
Logging	
Registers	

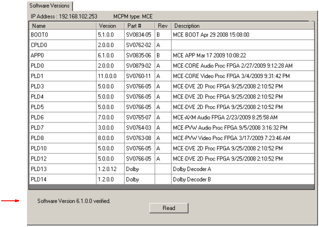
You can choose serial mode or Ethernet Mode from the Communications Menu (page 12)

▲ The Memory and Registers pages are intended primarily for Miranda tech support and not for customers without Miranda guidance.

▲ The timing diagnostics are available for MCEs only.

Software Versions

The ‘Software Versions’ page displays a table of the software and firmware components of the current MCPM:



IP Address : 192.168.102.253 MCPM type: MCE

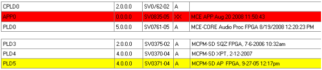
Name	Version	Part #	Rev	Description
BOOT0	5.1.0.0	SV0834-05	B	MCE BOOT Apr 29 2008 15:08:00
CPLD0	2.0.0.0	SV0762-02	A	
APP0	6.1.0.0	SV0835-06	B	MCE APP Mar 17 2009 10:08:22
PLD0	2.0.0.0	SV0879-02	A	MCE-CORE Audio Proc FPGA 2/27/2009 9:12:28 AM
PLD1	11.0.0.0	SV0760-11	A	MCE-CORE Video Proc FPGA 3/4/2009 9:31:42 PM
PLD3	5.0.0.0	SV0766-05	A	MCE-DVE 2D Proc FPGA 9/25/2008 2:10:52 PM
PLD4	5.0.0.0	SV0766-05	A	MCE-DVE 2D Proc FPGA 9/25/2008 2:10:52 PM
PLD5	5.0.0.0	SV0766-05	A	MCE-DVE 2D Proc FPGA 9/25/2008 2:10:52 PM
PLD6	7.0.0.0	SV0765-07	A	MCE-AXM Audio FPGA 2/23/2009 8:25:58 AM
PLD7	3.0.0.0	SV0764-03	A	MCE-PVW Audio Proc FPGA 9/5/2008 3:16:32 PM
PLD8	8.0.0.0	SV0763-08	A	MCE-PVW Video Proc FPGA 3/17/2009 7:23:46 AM
PLD10	5.0.0.0	SV0766-05	A	MCE-DVE 2D Proc FPGA 9/25/2008 2:10:52 PM
PLD12	5.0.0.0	SV0766-05	A	MCE-DVE 2D Proc FPGA 9/25/2008 2:10:52 PM
PLD13	1.2.0.12	Dolby		Dolby Decoder A
PLD14	1.2.0.0	Dolby		Dolby Decoder B

Software Version 6.1.0.0 verified.

Figure 3-1. Software Versions Page (Sample)

When you select an MCPM or MCE, MasterDiag automatically reads the versions and identity of all software components.

If the MCPM (or MCE) is properly set up, the page should report “Software version *x.x.x.x* confirmed.” Otherwise, one or more lines in the table will appear red or yellow.



CPLD0	2.0.0.0	SV0/62-02	A	
APP0	0.0.0.0	SV0835-05	XX	MCE APP Aug 20 2008 11:50:43
PLD0	5.0.0.0	SV0761-05	A	MCE-CORE Audio Proc FPGA 8/19/2008 12:20:23 PM

PLD3	2.0.0.0	SV0375-02	A	MCPM-SD SQZ FPGA, 7-6-2006 10:32am
PLD4	4.0.0.0	SV0370-04	A	MCPM-SD XPT, 2-12-2007
PLD5	4.0.0.0	SV0371-04	A	MCPM-SD AP FPGA, 9-27-05 12:17pm

The page reports “Invalid software version found” for items highlighted in red and “Items do not match software release” for items highlighted in yellow.

The list of software components varies among the MCPMs. Figure 3-1 shows the components of an MCE.

If you are working with a malfunctioning MCPM or MCE, the software versions list might be empty, or you might get an error message (such as an Ethernet socket error). In such cases, you might be able to restore the MCPM or MCE by loading new firmware.

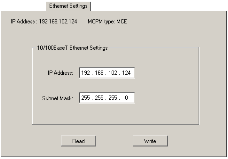
- Consult Miranda customer service to obtain the software component you want to replace. Be very careful because an improper load can render an MCPM or MCE inoperable.
- It is important to let the software or firmware update complete before you do anything else. An update can take several minutes and might seem as if it has stalled. Wait until MasterDiag

reports “Software update was successful.” After a successful update, MasterDiag will also prompt you to reset the MCPM.

You can force MasterDiag to re-read the setup data by clicking the ‘Read’ button.

Ethernet Settings

The ‘Ethernet Settings’ page allows you to change the IP address (and subnet mask) of the current MCPM:



IP Address : 192.168.102.124 MCPM type: MCE

10/100BaseT Ethernet Settings

IP Address: 192 . 168 . 102 . 124

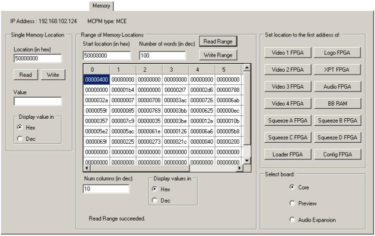
Subnet Mask: 255 . 255 . 255 . 0

Figure 3-2. Ethernet Settings Page (Sample)

In most cases, if not all, the subnet mask should be 255.255.255.0.

Memory

Use the 'Memory' page to examine — or change — memory locations in the MCPM:



IP Address : 192.168.102.124 MCPM type: MCE

Single Memory Location

Location (in hex): 50000000

Value:

Display value in: ● Hex ○ Dec

Range of Memory Locations

Start location (in hex): 50000000

Number of words (in dec): 100

0	1	2	3	4	5
00000400	00000000	00000000	00000000	00000000	00000000
00000000	000001b4	00000000	000002f7	000002d6	00000788
0000032a	00000007	00000708	000003ac	00000726	000006ab
0000059f	00000085	00000769	000003bb	00000625	000000ec
00000357	000007c9	00000035	000003be	0000012e	0000010b
000005e2	000005ac	0000061e	00000126	000006a6	000005b8
0000069f	00000225	00000273	0000021c	00000040	00000200
00000000	00000000	00000000	00000000	00000000	00000000
00000000	00000000	00000000	00000000	00000000	00000000

Num columns (in dec): 10

Display values in: ● Hex ○ Dec

Read Range succeeded.

Select board: ● Core ○ Preview ○ Audio Expansion

Figure 3-3. Memory Page (Sample)

(The IP address and name of the current MCPM is displayed at the top of the 'Memory' page.)

You can read or write a single memory address or a range of addresses. You can specify whether to read the values in hexadecimal (hex) notation or decimal. (Addresses, however, are always hex.)

You can specify one of several pre-defined addresses, as for example, the (1st address of) Logo FPGA). If you are communicating with an MCE, you can also choose, in the lower right portion of the page, the particular MCE card you want to examine.

The values are displayed as 32-bit words. A 32-bit word is actually 4 addresses. You cannot read or write an address that is not a multiple of 4. For example, you can read address 0x13000000 or 0x13000004, but you cannot read address 0x1300 0001 or 0x13000002.

You can *change* memory values one address at a time — in the 'Single Memory Value' field. Click 'Write' to make the change.

To change any number of memory values at one time, edit the values in the displayed value list and click 'Write Range'.

Warning This page is not really for customer use. Do not change memory locations unless you are under the guidance of a qualified Miranda technician.

Enter a number in the 'Num Columns (in dec)' field to control the number of columns of values displayed in the value list.

- The contents of memory can change rapidly. If you execute consecutive reads, you might see different values.
- BB RAM means "battery-backed RAM." Not all MCPMs have backup batteries.

System Status

This is the "System Status" page. (Note that "system status" means status of the MCPM's or MCU's subsystems.)

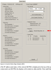


Figure 4-4 System Status Page (Sample MCU)

(The IP address and status of the current MCPM is displayed at the top of the page. If you are not connected to an MCPM, the display will contain no data and the Timer and Date section will be empty.)

There are two page formats, one specifically for MCUs and another for all other MCPMs. Shown above is the format for MCUs.

The "Toggle" button in the "Debug Only" section switches "remote debug mode" on and off. Remote debug mode (1) allows you to set and clear memory locations and registers more easily and (2) enables an option in the Timing Diagnostics page.

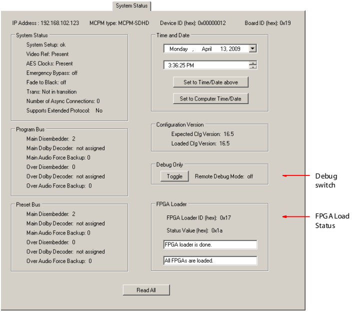
In remote debug mode, the MCU remains on the network and continues to pass video; but it will not switch audio or video crosspoints or allow changes to video effects or audio store. Remote debug mode prevents the software from making further changes to the FPGA registers. That is why it is safe to use the Memory and Registers pages to make changes.

- ▲ If you turn on remote debug mode while a system is on-air, it will freeze in its current state and not allow further changes to the video (such as source changes).

The ‘Listener Status’ section lists the control panels, GUIs, and tally processors that have access to the MCE. A maximum of 4 such devices is permitted. The values of the “FD” field appear in the log files of the MCE if you ever need to know more detail about when a device accessed the MCE.

Click the ‘Read All’ button to refresh the status data if necessary.

Following is the page format for all other MCPMs:



IP Address : 192.168.102.123
MCPM type: MCPM-SDHD
Device ID (hex): 0x00000012
Board ID (hex): 0x19

System Status
System Setup: ok
Video Ref: Present
AES Clocks: Present
Emergency Bypass: off
Fade to Black: off
Trans: Not in transition
Number of Async Connections: 0
Supports Extended Protocol: No

Monday , April 13, 2009
3:36:25 PM

Program Bus
Main Disembedder: 2
Main Dolby Decoder: not assigned
Main Audio Force Backup: 0
Over Disembedder: 0
Over Dolby Decoder: not assigned
Over Audio Force Backup: 0

Configuration Version
Expected Cfg Version: 16.5
Loaded Cfg Version: 16.5

Remote Debug Mode: off

Preset Bus
Main Disembedder: 2
Main Dolby Decoder: not assigned
Main Audio Force Backup: 0
Over Disembedder: 0
Over Dolby Decoder: not assigned
Over Audio Force Backup: 0

FPGA Loader ID (hex): 0x17
Status Value (hex): 0x1a
FPGA loader is done.
All FPGAs are loaded.

Figure 3-5. System Status Page (Sample, MCPM-SDHD)

The meaning of the various data are either self-explanatory or of no interest except to Miranda technicians. If you need an explanation of any of the terms, refer to the *NV5100MC Master Control Reference Manual*.

The time and date fields allow you to reset the real-time clock of your MCPM. To change the time, click on the hour, minute, second, or AM/PM field. Then click the associated up or down arrows to change the value.

MasterDiag presents a calendar with which you may select a date. (The date registered in your PC is highlighted.) Click ‘Set to Time/Date Above’ to confirm your entry or click ‘Set to Computer Time/Date’ to use your PC’s time and date.

The ‘Toggle’ button in the ‘Debug Only’ section switches “remote debug mode” on and off. Remote debug mode (1) allows you to set and clear memory locations and registers more safely. In remote debug mode, the MCE remains on the network and continues to pass video, but it will not switch audio or video crosspoints or allow changes to video effects or audio overs. Remote debug mode prevents the software from making further changes to the FPGA registers. That is why it is safe to use the Memory and Registers pages to make changes.

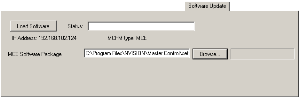
The 'FPGA Loader' section essentially tells you whether the MCPM "booted up" properly. If you see a failure message here, it is probable that your MCPM is malfunctioning (slightly).

▲ If your MCPM is seriously malfunctioning, it is not likely that you will be able to communicate with it using MasterDiag.

Software Update

Use the 'Software Update' page to update software or firmware to an MCPM or MCE.

The 'Software Update' page is different in Ethernet mode and serial mode. This is the page as displayed (in Ethernet mode) for an MCE:



Software Update
Load Software
Status:
Browse...

IP Address: 192.168.102.124

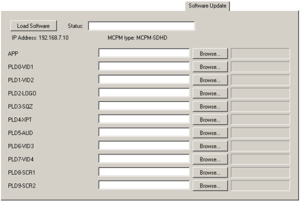
MCPM type: MCE

MCE Software Package: C:\Program Files\NVISION\Master Control\set

Figure 3-6. MCE Window (Sample)

The firmware file for MCEs is named "MCESoftwarePackage.nvz." There is only this one file which applies to any and all MCEs.

This is the page for other MCPMs, in this case an MCPM-SDHD, as displayed in Ethernet mode:



Software Update
Load Software
Status:
APP
PLD0-VID1
PLD1-VID2
PLD2-LOGO
PLD3-SQZ
PLD4-XPT
PLD5-AUD
PLD6-VID3
PLD7-VID4
PLD8-SCR1
PLD9-SCR2
Browse...

IP Address: 192.168.7.10

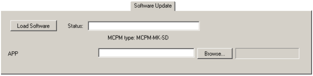
MCPM type: MCPM-SDHD

Figure 3-7. Software Update (Sample, Ethernet Mode, MCPM-SDHD)

(The IP address of the MCPM or MCE affected is displayed at the top of the page.)

Updating in Serial Mode

This is the 'Software Update' page (for MCEs) as displayed when MasterDiag is in serial mode:



MCPM type: MCPM-MK-SD

Figure 3-8. Software Update (Sample, Serial Mode)

In serial mode, MasterDiag disregards the master control network and updates software serially. Only the application in the MCPM can be updated. PLDs cannot be updated in serial mode.

Warning Update firmware carefully. You can seriously damage your MCPM if your update fails or if you load the wrong firmware.

Consult an Miranda technician to obtain the correct file(s) for your MCPM. After you have obtained file(s) to load, save them in your file system. Return to the 'Software Update' page and click the 'Browse' button for the function(s) you want to update (e.g., PLD2-Logo) and then browse to locate the firmware file. Note that the number of PLDs varies, depending on the MCPM currently selected.

The browse function makes an attempt to help you choose the correct PLD or application file. For instance, if you want to update the audio PLD, the browse function looks for "audio FPGA files" whose file names are appropriate for the current MCPM type. It is possible, however, to override the file types and select any file to load. Use caution: updating the wrong file can result in an MCPM that does not function.

After you have chosen a file to load, click the 'Load Software' button to execute the transfer. A progress bar indicates the progress of the transfer. In Ethernet mode, applications can take several minutes to transfer and each PLD firmware file takes 15–30 seconds to transfer. Updates in serial mode take much longer. At the end of the transfer, MasterDiag will issue a message regarding the success or failure of your transfer and ask you whether you want to restart the MCPM.

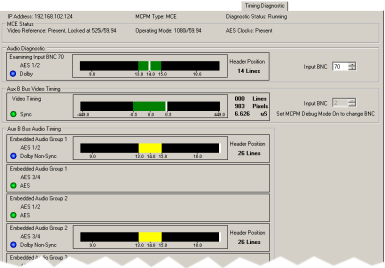
Generally, if you are updating any firmware, you will be updating all firmware. If that is your situation, do not restart the MCPM from MasterDiag. We recommend that, after you update all the firmware you want to update, you reopen and resave the MCPM's current configuration file and write the configuration file to the MCPM. Restart the MCPM only after transferring all firmware *and* the configuration file. That way, you will keep everything in sync.

Important There is a long period (several minutes) between the time the progress indicator finishes and the completion message appears. MasterDiag will seem as it has stalled. Please be patient and wait for the completion message before proceeding. The completion message is "Software update was successful."

You can update firmware while the MCPM is in service. It is only after a reset that the new firmware takes effect. You might wish to wait until you take the MCPM out of service before restarting.

Timing Diagnostic

This is the ‘Timing Diagnostic’ page:



IP Address: 192.168.102.124 MCPM Type: MCE Diagnostic Status: Running

MCE Status

Video Reference: Present, Locked at 525i/59.94 Operating Mode: 1080i/59.94 AES Clocks: Present

Examining Input BNC 70 AES 1/2 Dolby — Header Position 14 Lines — Input BNC 70

Video Timing Sync — 000 Lines 983 Pixels 6.626 uS — Input BNC 2 — Set MCPM Debug Mode On to change BNC

Embedded Audio Group 1 AES 1/2 Dolby Non-Sync — Header Position 26 Lines

Embedded Audio Group 1 AES 3/4 AES

Embedded Audio Group 2 AES 1/2 AES

Embedded Audio Group 2 AES 3/4 Dolby Non-Sync — Header Position 26 Lines

Embedded Audio Group 3

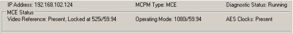
Figure 3-9. Timing Diagnostic (Sample A)

The ‘Timing Diagnostic’ page applies only to MCEs and appears empty when you have selected another MCPM type.

The page has many sections and subsections and has a complicated appearance, but the sections are themselves fairly simple.

MCE Status

At the top of the page is the ‘MCE status’ section:



IP Address: 192.168.102.124 MCPM Type: MCE Diagnostic Status: Running

Video Reference: Present, Locked at 525i/59.94 Operating Mode: 1080i/59.94 AES Clocks: Present

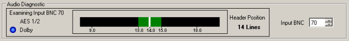
The top line tells you the identity of the MCE.

The enclosed section tells you the video reference type (if any) in use and the video format (operating mode) of the MCE, and whether external AES clocks are present.

- AES clocks can come from an external AES reference connected to the EM0374 control card in the master control frame. If the frame has no external AES reference or has an EM0414 clock generator card, the AES reference is generated internally.
- In MCEs at software release 6.1.0 and later, AES clocks are derived from the video reference.

Audio Diagnostic

The ‘Audio Diagnostic’ section gives you information regarding the audio on a specific I/O connector at the rear of the NV5100MC or NV5128-MC frame:

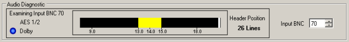


Audio Diagnostic
Examining Input BNC 70
AES 1/2
Dolby
Header Position
14 Lines
Input BNC 70

You can select the connector in the ‘Input BNC’ box.

▲ The connector might not be a BNC.

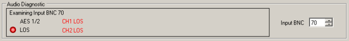
The enclosed region presents a synchronization graph. The white band is the sync point. If it within the colored region, the signal is in sync and the colored region is green. If the white band is not in the colored region (or not visible at all) the audio signal is not in sync and the band is yellow:



Audio Diagnostic
Examining Input BNC 70
AES 1/2
Dolby
Header Position
26 Lines
Input BNC 70

The ‘Header Position’ field tells you the NTSC or PAL line where the Dolby header was detected.

The color of the circle at the left is a visual aid: blue circles represent Dolby E signals. Otherwise, green circles represent signals that are in sync (video or audio). Red circles represent signals that are LOS:

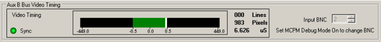


Audio Diagnostic
Examining Input BNC 70
AES 1/2
LOS
CH1 LOS
CH2 LOS
Input BNC 70

Yellow circles represent AES signals that are non-sync.

Aux Bus B Video Timing

The two ‘Audio Bus B’ sections represent whatever is selected on aux bus B. This section presents the video timing:



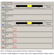
Aux B Bus Video Timing
Video Timing
Sync
000 Lines
983 Pixels
6.626 uS
Input BNC 2
Set MCPM Debug Mode On to change BNC

You can change the connector in the ‘Input BNC’ box if you enable “remote debug mode” in the System Status page. (Otherwise, you cannot.) To change the input number, use the up/down controls of the box or type a connector number in the box. In *normal* operating mode, the diagnostic page follows the source selection of the MCE’s aux bus B.

The graphic in this section shows the position of the video reference point. If it is in the colored region, the colored region is green (and the video is in sync). Otherwise the colored region is yellow, the circle is yellow, and the video is not in sync. The numeric values (lines, pixels, µS) give the reference point precisely.

Aux Bus B Audio Timing

The two 'Audio Bus B Audio Timing' sections represent the audio portion of whatever is selected on aux bus B.



Up to 16 channels are presented. Each box represents 2 channels.

As in the 'Audio Diagnostic' section, blue circles represent Dolby E audio. Green circles represent non-Dolby signals that are in sync. Red circles represent signals that are LOS.

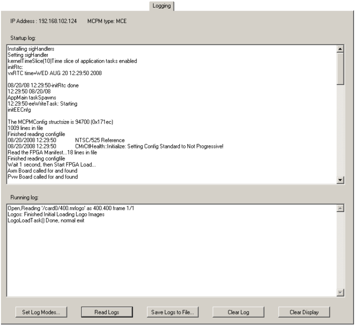
Graphs are presented for Dolby signals. The white band is the sync point. If it is within the colored region, the signal is in sync and the colored region is green. If the white band is not in the colored region (or not visible at all) the audio signal is not in sync and the band is yellow.

The 'Header Position' field tells you the NTSC or PAL line where the Dolby header was detected.

- The range of the Header Position is line [illegible] (for NTSC) and line [illegible] (for PAL).
-

Logging

This is the 'Logging' page. It is not available when MasterDiag is in serial mode.



IP Address : 192.168.102.124 MCPM type: MCE

Startup log:

```
Installing sigHandlers
Setting sigHandler
kernelTimeSlice(10)Time slice of application tasks enabled
initRtc:
vxRTC time=WED AUG 20 12:29:50 2008

08/20/08 12:29:50-initRtc done
12:29:50 08/20/08
AppMain taskSpawns
12:29:50-eeWriteTask: Starting
initEECnfg

The MCPMConfig structsize is 94700 (0x171ec)
1009 lines in file
Finished reading configfile
08/20/2008 12:29:50        NTSC/525 Reference
08/20/2008 12:29:50        CMrCtlHealth::Initialize: Setting Config Standard to Not Progressive!
Read the FPGA Manifest...18 lines in file
Finished reading configfile
Wait 1 second, then Start FPGA Load...
Axm Board called for and found
Pvw Board called for and found
```

Running log:

```
Open,Reading '/card0/400.mrlogo' as 400.400 frame 1/1
Logos: Finished Initial Loading Logo Images
LogoLoadTask() Done, normal exit
```

Figure 3-10. Logging Page (Sample)

This page displays the log information from the current MCPM. There are two panes in this page:

- Startup Log. The startup log records events that occurred during startup.
- Running Log. The running log records events that occurred after startup. It is the running log that can be cleared. The startup log cannot be cleared.

  ▲ The 'Running Log' pane does not start filling immediately. Running log events appear in the 'Startup Log' pane until there is no more room in the pane.

The log records "system" events (those occurring in the MCPM) and "serial control" events according to several logging levels. Serial control events are those initiated by automation commands. These two event categories are recorded in a single log.

Click the 'Set Log Modes' button to set the logging level for system events and for serial control events. (See Set Log Modes, following.)

Click the 'Read Logs' button to display the logs in the 'Logs' page.

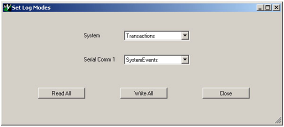
Click the 'Save Logs to File...' button to save the logs in a file on your PC.

Click the 'Clear Log' button to empty the running log.

Click the ‘Clear Display’ button to remove log data from the ‘Log’ page. This command does not empty the log.

Set Log Modes

Click the ‘Set Log Modes’ button to set the logging level for system events and for serial control events. The ‘Set Log Modes’ dialog initially does not show the logging levels. Click the ‘Read All’ button to obtain the current logging levels in the current MCPM:



System Transactions
Serial Comm 1 SystemEvents

Figure 3-11. Set Log Modes Dialog

There are 7 logging levels:

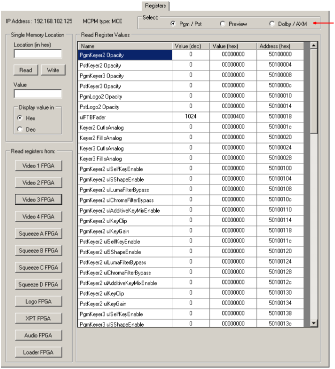
None	Log no events.
Errors	Log only errors.
Warnings	Log warnings and errors.
System events	Log warnings, errors, and system-level events, such as a panel going off-line.
Transactions	Log warnings, errors, system events, and all messages between system components.
All events	Log all events.
Debug	Log all events and provide debugging information.

Both categories — “system” events and “serial comm” events — are recorded in the same log, in order of occurrence.

If you change either of the logging levels, click ‘Write All’ to send the change to the MCPM. Click ‘Close’ to return to the ‘Logging’ page.

Registers

Use the ‘Registers’ page to examine or change various registers in the MCPM or MCE:



IP Address : 192.168.102.125

MCPM type: MCE

Select: ● Pgm / Pst ○ Preview ○ Dolby / AXM

Display value in: ● Hex ○ Dec

Name	Value (dec)	Value (hex)	Address (hex)
PgmKeyer2 Opacity	0	00000000	50100000
PstKeyer2 Opacity	0	00000000	50100004
PgmKeyer3 Opacity	0	00000000	50100008
PstKeyer3 Opacity	0	00000000	5010000c
PgmLogo2 Opacity	0	00000000	50100010
PstLogo2 Opacity	0	00000000	50100014
ulFTBFader	1024	00000400	50100018
Keyer2 CutIsAnalog	0	00000000	5010001c
Keyer2 FillIsAnalog	0	00000000	50100020
Keyer3 CutIsAnalog	0	00000000	50100024
Keyer3 FillIsAnalog	0	00000000	50100028
PgmKeyer2 ulSelfKeyEnable	0	00000000	50100100
PgmKeyer2 ulSShapeEnable	0	00000000	50100104
PgmKeyer2 ulLumaFilterBypass	0	00000000	50100108
PgmKeyer2 ulChromaFilterBypass	0	00000000	5010010c
PgmKeyer2 ulAdditiveKeyMixEnable	0	00000000	50100110
PgmKeyer2 ulKeyClip	0	00000000	50100114
PgmKeyer2 ulKeyGain	0	00000000	50100118
PstKeyer2 ulSelfKeyEnable	0	00000000	5010011c
PstKeyer2 ulSShapeEnable	0	00000000	50100120
PstKeyer2 ulLumaFilterBypass	0	00000000	50100124
PstKeyer2 ulChromaFilterBypass	0	00000000	50100128
PstKeyer2 ulAdditiveKeyMixEnable	0	00000000	5010012c
PstKeyer2 ulKeyClip	0	00000000	50100130
PstKeyer2 ulKeyGain	0	00000000	50100134
PgmKeyer3 ulSelfKeyEnable	0	00000000	50100138
PgmKeyer3 ulSShapeEnable	0	00000000	5010013c

MCE card selection

Figure 3-12. Registers Page (Sample)

This page is available only when MasterDiag is in Ethernet mode. The IP address and name of the current MCPM (or MCE) is displayed at the top of the page.

If you are working with an MCE, the page has a section, at the top, in which you can select the MCE card you want to examine. When you choose a different card, the list of buttons in the lower left portion of the page change accordingly.

Registers are special-purpose memory locations. You can read or write a single memory address or read a set of registers. The register sets are identified as ‘Logo FPGA’, ‘XPT FPGA’, and so on.

If you click on an entry in the register list (on the right), the entry appears in the ‘Single Memory Value’ field (on the left) where you can change it.

The values are displayed as 32-bit words. A 32-bit word is actually 4 addresses. You cannot read or write an address that is not a multiple of 4. For example, you can read address 0x13000000 or 0x13000004, but you cannot read address 0x1300 0001 or 0x13000002.

You can specify whether to read a register (memory location) in hexadecimal (hex) notation or decimal. (Addresses are always hex.)

You can *change* register values only one address at a time.

Note This page is not really for customer use. Do not change register values unless you are under the guidance of a qualified Miranda technician. And do so very carefully.

▲ The contents of MCPM or MCE registers can change rapidly. If you execute consecutive reads, you might see different values.

4. Misc.

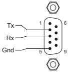
Chapter 4 provides miscellaneous information about MasterDiag. It presents the following topics:

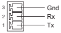
- Diagnostic/Setup Connectors
- PC Configuration
- Installation

Diagnostic/Setup Connectors

MCPM

At the front of all MCPMs (except MCEs) is a DE9 (a.k.a. DB9) diagnostic port, used for initial setup in MasterDiag:





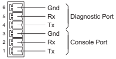
The protocol is RS-232. (Use a straight-through cable with the DE9 connector.)

In addition to the 9-pin diagnostic port is the Phoenix 3-pin "console" port, either above or below the DE9 connector. Note that GND is at the top and Tx is at the bottom of the Phoenix connector. (The pins are not labelled on the PCB.)

On the DE9, pins 1, 4, and 6 are tied together and pin 9 is not connected.

MCE

At the front of each MCE (-CORE card) is a 6-pin Phoenix connector that supports both the diagnostic and console ports:



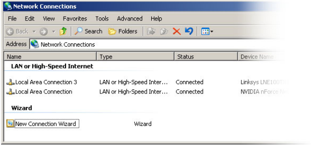
The diagnostic protocol is RS-232. (So is the console protocol, but the console is not used with MasterDiag.)

PC Configuration

You (or your system administrator) must connect the PC on which your software runs to the master control network. To do that, you must assign the PC an IP address (and mask) on the NIC that connects the PC to the master control network. (The PC must also be connected to the Ethernet switch of the network.)

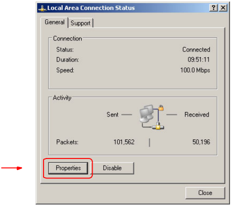
Follow these steps to set the IP address of your PC:

1 Launch 'Settings> Network Configuration' from you PC's Start menu. The following window appears:


Network Connections
File
Edit
View
Favorites
Tools
Advanced
Help
Back
Search
Folders
Address
Network Connections

Name	Type	Status	Device Name
LAN or High-Speed Internet			
Local Area Connection 3	LAN or High-Speed Inter...	Connected	Linksys LNE100
Local Area Connection	LAN or High-Speed Inter...	Connected	NVIDIA nForce
Wizard			
New Connection Wizard	Wizard		

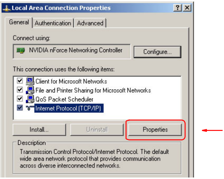
2 Double-click the appropriate 'Local Area Connection' for your master control network. Then, choose the General tab and click 'Properties'.


Local Area Connection Status
General
Support
Connection
Activity
Properties
Disable
Close

Status: Connected
Duration: 09:51:11
Speed: 100.0 Mbps

	Sent	Received
Packets:	101,562	50,196

3 Select Internet Protocol (TCP/IP). Click ‘Properties’ again here:



Local Area Connection Properties

Connect using:

NVIDIA nForce Networking Controller

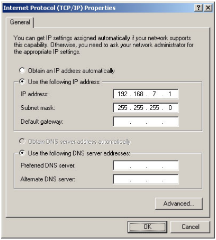
This connection uses the following items:

- ☑ Client for Microsoft Networks
- ☑ File and Printer Sharing for Microsoft Networks
- ☑ QoS Packet Scheduler
- ☑ Internet Protocol (TCP/IP)

Description

Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.

4 Select ‘Use the following IP address’ and enter an IP address for the PC. Use the default subnet mask.



Internet Protocol (TCP/IP) Properties

You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.

○ Obtain an IP address automatically
● Use the following IP address:

IP address: 192 . 168 . 7 . 1
Subnet mask: 255 . 255 . 255 . 0
Default gateway: . . .

○ Obtain DNS server address automatically
● Use the following DNS server addresses:

Preferred DNS server: . . .
Alternate DNS server: . . .

The IP address must be unique on the network. (The subnet mask must be 255.255.255.0.)

5 Click OK and it is done. Close all the Network Connections windows.

Installation

The assumption in this guide is that your software was already installed. If you need to install the software, the process is simple:

1. Obtain the master control software installation CD. (The part number for this is SB0221-*xx*.) Insert the disk in your CD drive. After a few seconds, the auto-run application will launch. Use its buttons to select and operate the installer.

   (You may also browse the CD directory and double-click InstallConfig.msi, which will then start and wait for your input.)

2. When the installer is running, follow the instructions given, clicking 'Next' as you proceed to move from step to step. The entire installation process takes less than a minute.

   If you have any existing Miranda master control software, you must remove it before you can install new master control software.

3. Create a desktop shortcut (if you wish) for MasterDiag. The default pathname for MasterDiag is
   `C:\Program Files\NVision\Master Control\bin\MasterDiag.exe`

   The default path in the Windows Start menu is:
   `Programs > NVision > Master Control > MasterDiag - Diagnostics for MCPM`

Documentation, including this manual, is available on either CD.

To launch MasterDiag, (1) choose the application from the Windows Start menu, (2) double-click the application in its folder, or (3) double-click its desktop shortcut.

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