

# Master Control

## MasterDiag User's Guide



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## NV5100MC User's Guide

- **Revision:** 1.0
- **Software Version:** 7.2.0.0
- **Part Number:** UG0062-00
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All of the equipment described in this manual has been designed to conform with the required safety and emissions standards of the European Community. Products tested and verified to meet these standards are marked as required by law with the CE mark. (See [Symbols and Their Meanings](#) on page v.)

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### Note

Return Material Authorization (RMA) required for all returns.

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## Change History

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

- MasterDiag User's Guide Part # UG0062-00
- Software version: 7.2.0.0

Rev	Date	ECO	Description	Approved By
1.0	29 Nov 11	17941	Conforms to software release 7.2.0. This document started as a copy of UG0009.	D.Cox

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## 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.



The presence of this symbol in or on Miranda equipment means that it has been designed, tested and certified as essentially complying with all applicable European Union (CE) regulations and recommendations.

## 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 to an MCPM.

At software revision 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 revision 5.1.0.0, MasterDiag is entirely new software.

New features were incorporated at software revision 5.3.0.0. MasterDiag is now at revision 7.1.0.0.

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](#)

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## 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 presents an 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.

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## 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.

# 1. Introduction

## Terms and Conventions

- 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.

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## 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—a “transition processor.” “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 the format required by MCPMs and MCEs.

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## 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.

If your PC has no COM port, you should obtain a USB-to-COM adapter (and software).

- 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 *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 MCEs or MCPMs in NV5100MC frames and one or more Imagestore 750s. The frames are similar 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, requiring no frame.

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

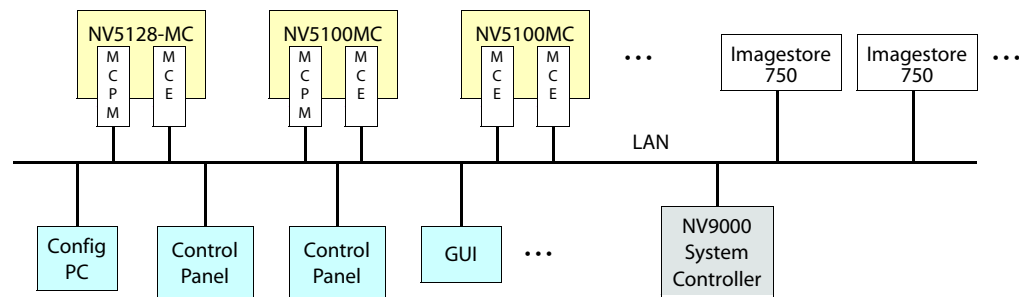


Figure 1-1. NV5100MC Network

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:

- iMC-Panel-GUI—a software control panel.
- iMC-Panel-200—a compact hardware control panel.
- iMC-Panel-300—a full-size hardware control panel.

# 1. Introduction

## MCPM Summary

---

### 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, <b>not</b> 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 <a href="#">MCE Summary</a> , 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:

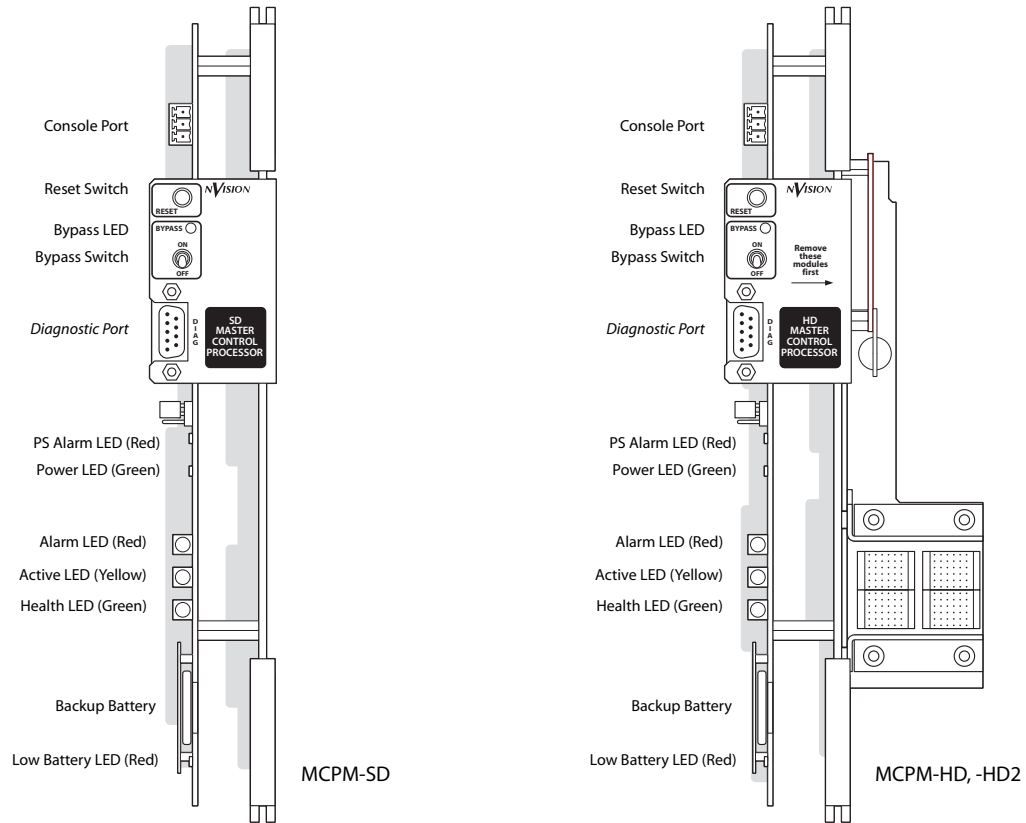


Figure 1-2. Front Views, MCPM-SD, -HD, and -HD2

# 1. Introduction

## MCE Summary

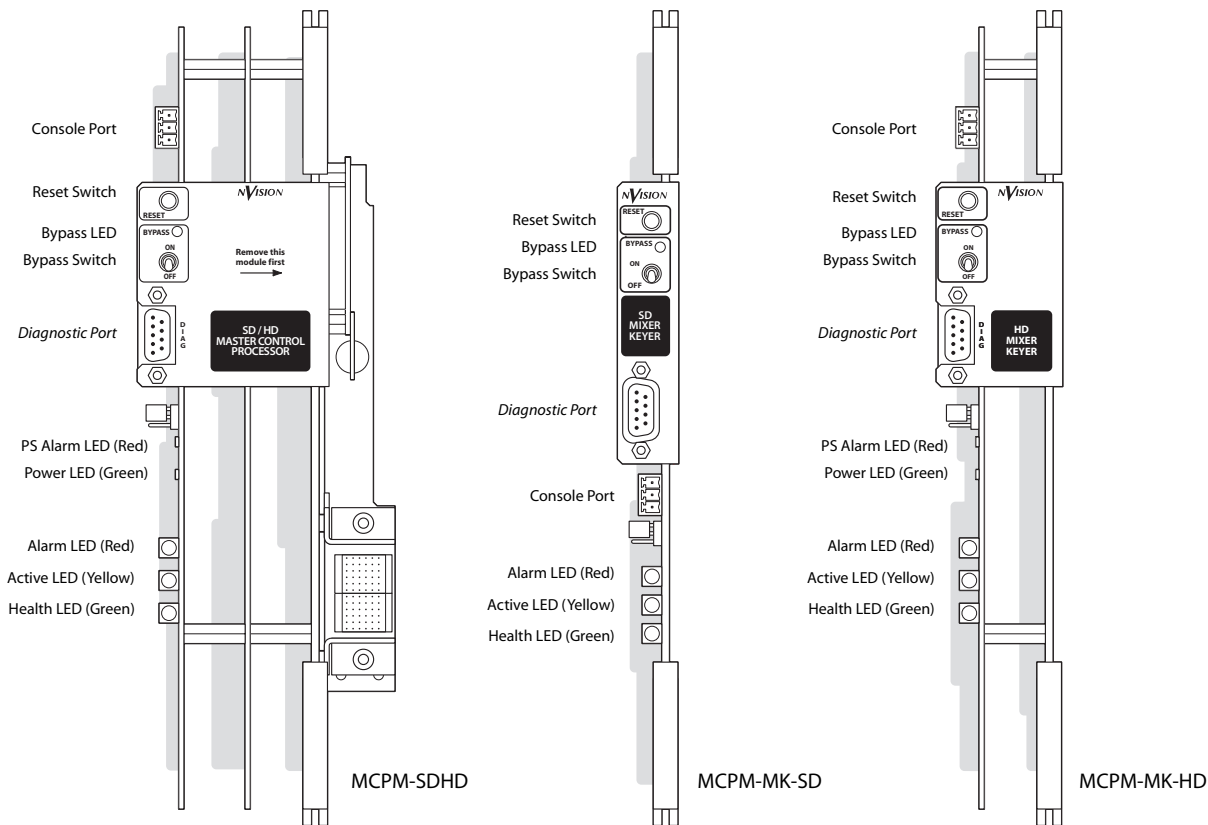


Figure 1-3. Front Views, MCPM--SDHD, -MK-SD, and -MK-HD

## 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 *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 tog-

gle (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:

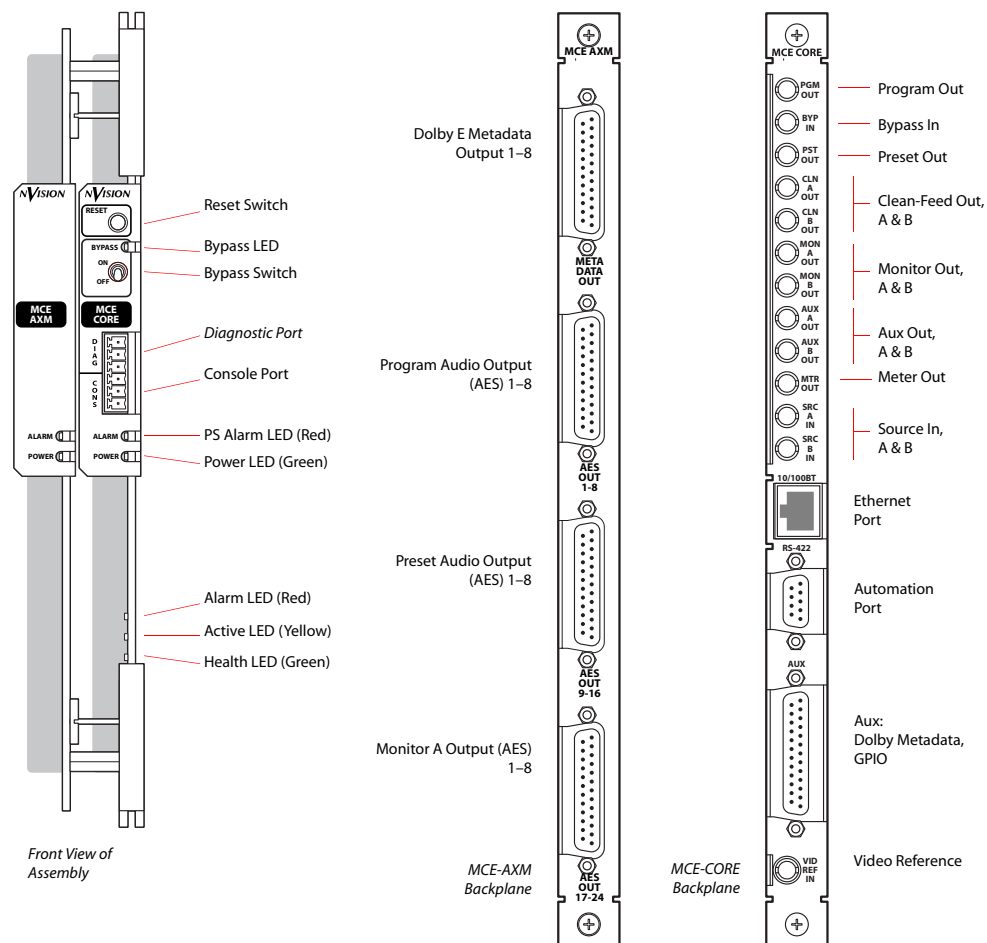


Figure 1-4. MCE (Core and AXM)

# 1. Introduction

## MasterDiag Summary

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## 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 a 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

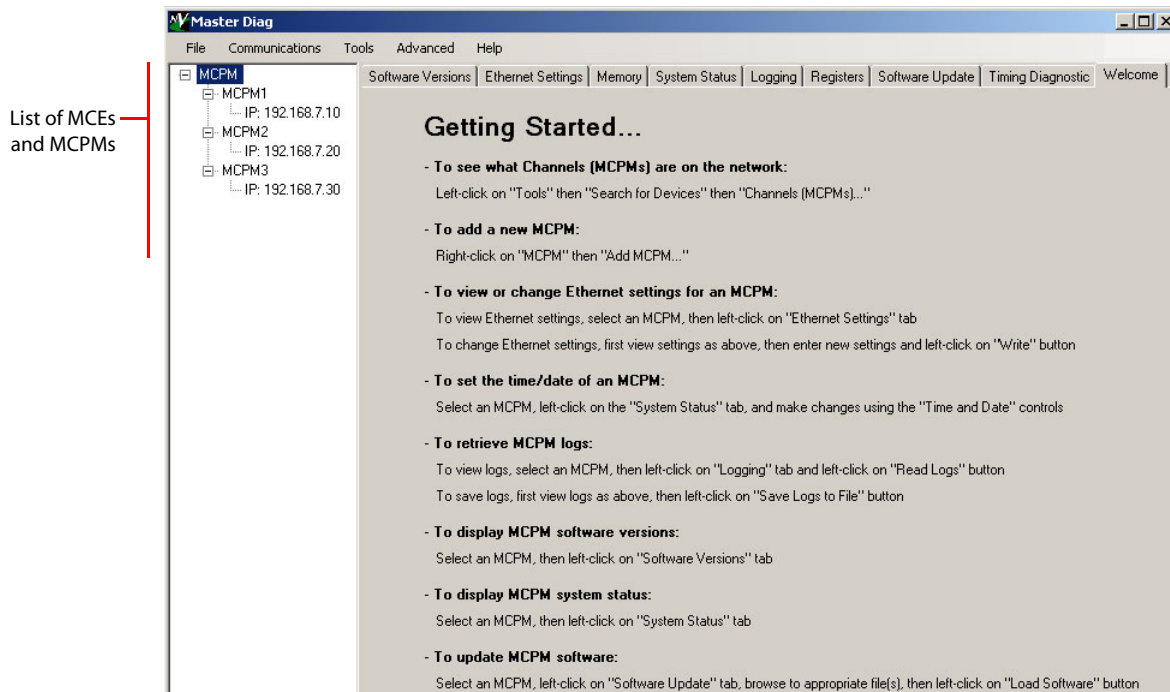
The MasterDiag application is used to assign an IP address to an MCPM, perform diagnostics on an MCPM, and update software to an MCPM.

▲ MCEs 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, an 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 list:



## 2. MasterDiag Basics

### MasterDiag Overview

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):

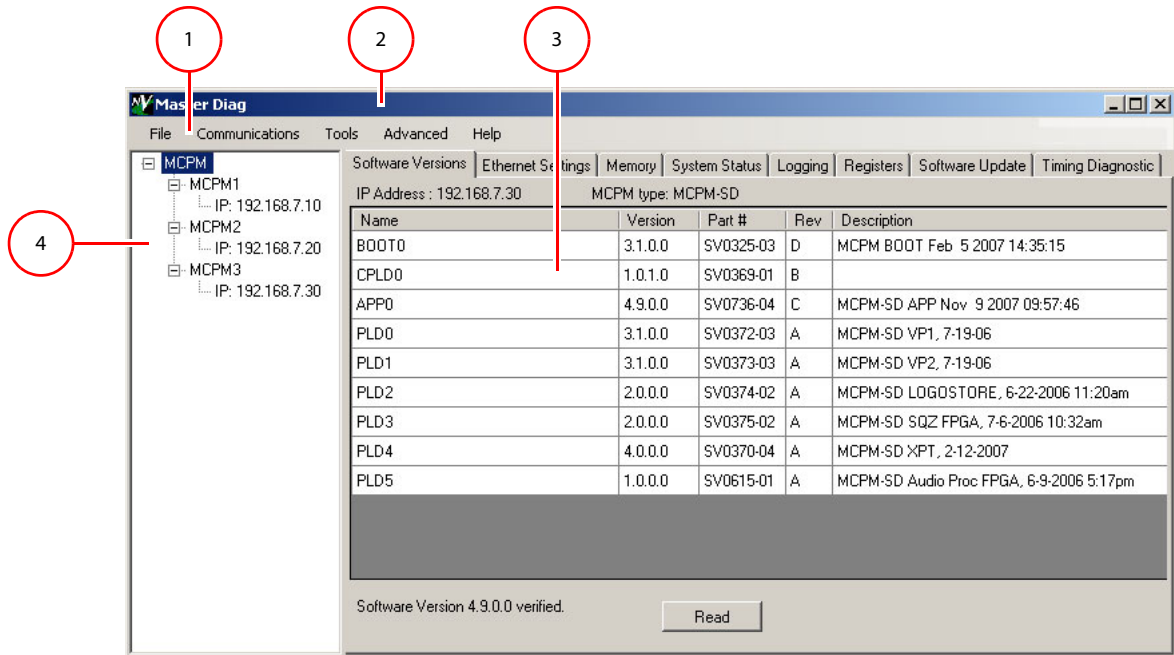


Figure 2-1. MasterDiag Window (Sample)

- 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**

[Software Versions](#)  
[Ethernet Settings](#)  
[Memory](#)  
[System Status](#)  
[Software Update](#)  
[Timing Diagnostic\\*](#)  
[Logging](#)  
[Registers](#)

##### **Serial Mode**

[Software Versions](#)  
[Ethernet Settings](#)  
[Memory](#)  
[System Status](#)  
[Software Update](#)  
[Timing Diagnostic\\*](#)

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:



File Communications Tools Advanced Help

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.)



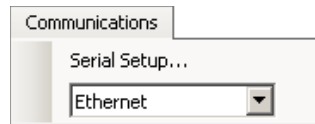
Click ‘Exit’ to quit MasterDiag. You can also press Alt-F4 or click the × in the title bar to quit MasterDiag.

## 2. MasterDiag Basics

Menus

### Communications Menu

This is the ‘Communications’ menu:



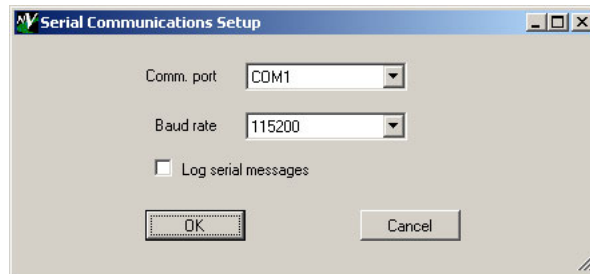
From the drop-down list, choose either ‘Ethernet’ or ‘Serial’. Choosing ‘Ethernet’ puts MasterDiag in Ethernet mode. Choosing ‘Serial’ puts MasterDiag in serial mode.

### 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:



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<sup>1</sup> 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.

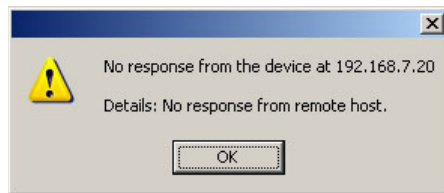
### Ethernet Mode

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.

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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:



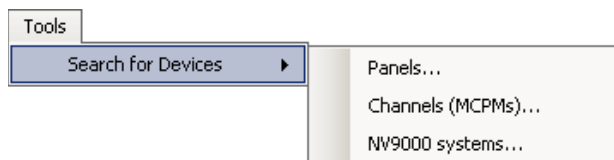
It is permissible to have entries in the list that do not correspond to actual MCPMs, but you will see the alert if you click such an entry.

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

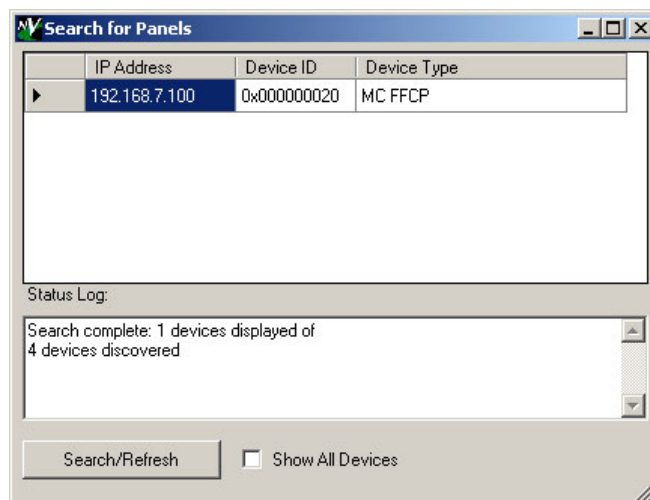
This is the 'Tools' menu:



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:



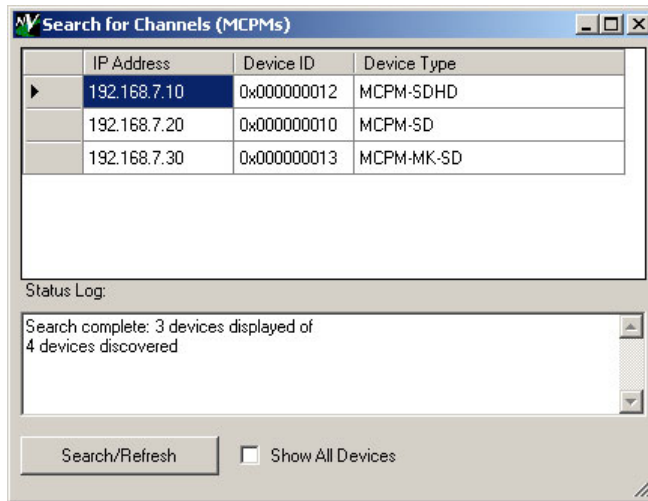
If you check the 'Show All Devices' box, MasterDiag produces a list of all devices on the master control network.

## 2. MasterDiag Basics

### Menus

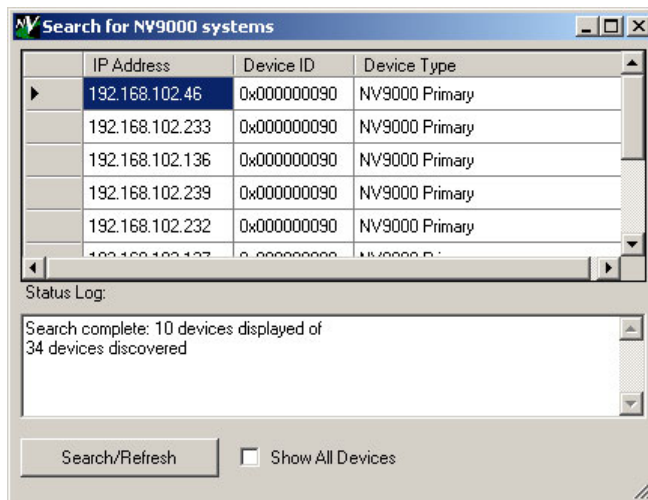
- Channels (MCPMs)

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



- NV9000 systems

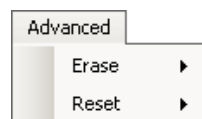
MasterDiag searches the master control network for NV9000 system controllers. It produces a report such as this:



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

## Advanced Menu

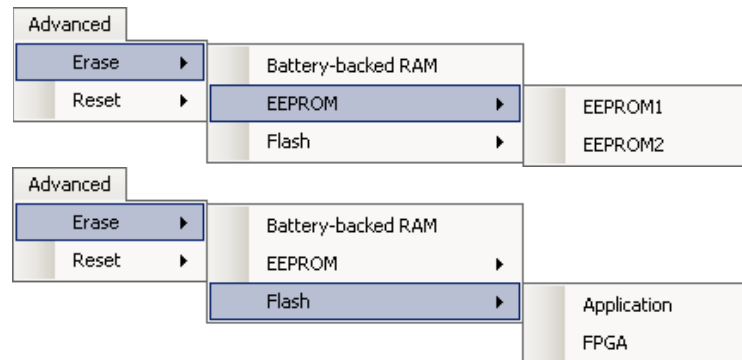
This is the 'Advanced' menu:



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

### Erase

Use the 'Erase' command to erase EEPROM or flash:

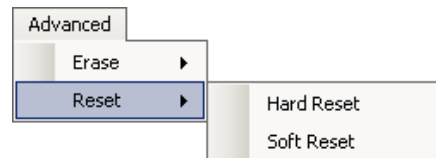


### Warning

Do not erase any memory without consulting a Miranda technician.

### Reset

Use the 'Reset' command to reset the MCPM:



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.

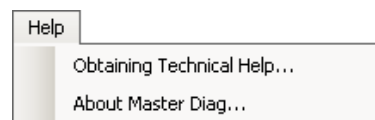
A soft reset reloads just the configuration file. FPGAs are not re-initialized. One benefit of a soft reset is that logos are not erased. (In MCEs, the logo store is non-volatile, so that is not an issue.)

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



### Help Menu

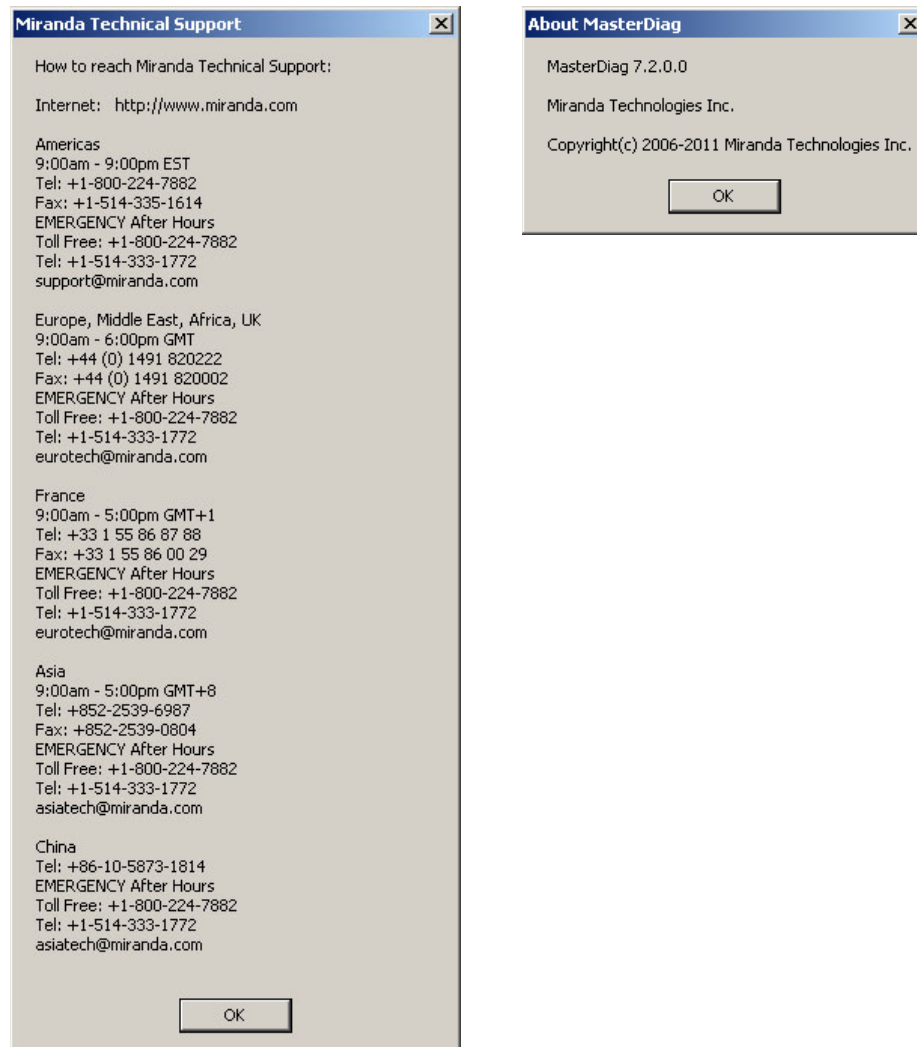
The 'Help' menu has two commands:



## 2. MasterDiag Basics

### IP Addresses

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



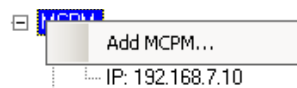
There is no actual help information *per se*.

---

## IP Addresses

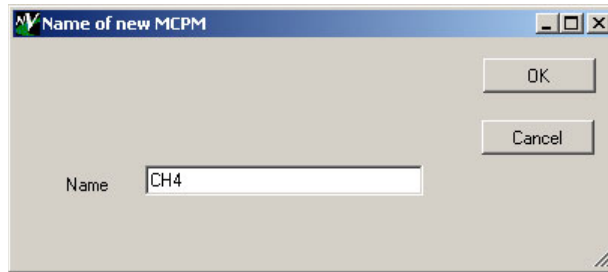
MCPMs are identified by their IP addresses. To add an IP address to the list area, right-click ‘MCPM’ at the ‘root’ of the list.

The ‘Add MCPM’ dialog appears:



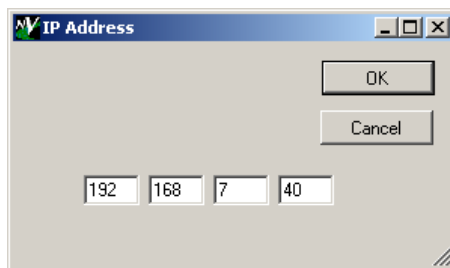


Click 'Add MCPM...' The name dialog appears:



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.

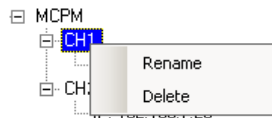
If you click 'OK', the IP address dialog appears:



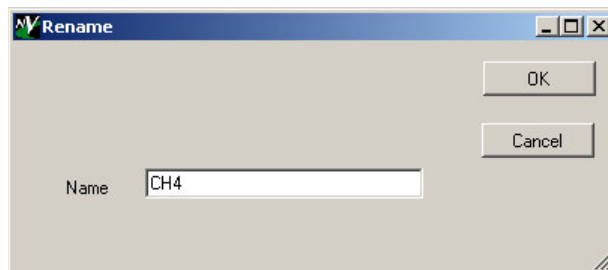
Enter the IP address in the 4 octet fields and click 'OK' or click 'Cancel' if you change your mind.

### Renaming or Deleting

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



If you choose 'Rename', the rename dialog appears:



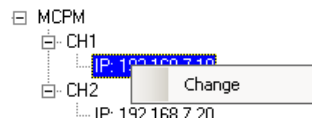
If you choose 'Delete', MasterDiag deletes the entry, with no further dialog, except that if the entry does not correspond to an actual MCPM, you will be notified.

## 2. MasterDiag Basics

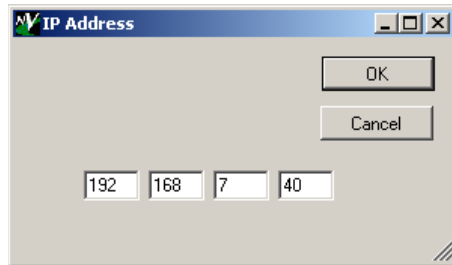
### IP Addresses

#### 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:



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:

<b>Ethernet Mode</b>	<b>Serial Mode</b>
<a href="#">Software Versions</a>	<a href="#">Software Versions</a>
<a href="#">Ethernet Settings</a>	<a href="#">Ethernet Settings</a>
<a href="#">Memory</a>	<a href="#">Memory</a>
<a href="#">System Status</a>	<a href="#">System Status</a>
<a href="#">Software Update</a>	<a href="#">Software Update</a>
<a href="#">Timing Diagnostic*</a>	<a href="#">Timing Diagnostic*</a>
<a href="#">Logging</a>	
<a href="#">Registers</a>	

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

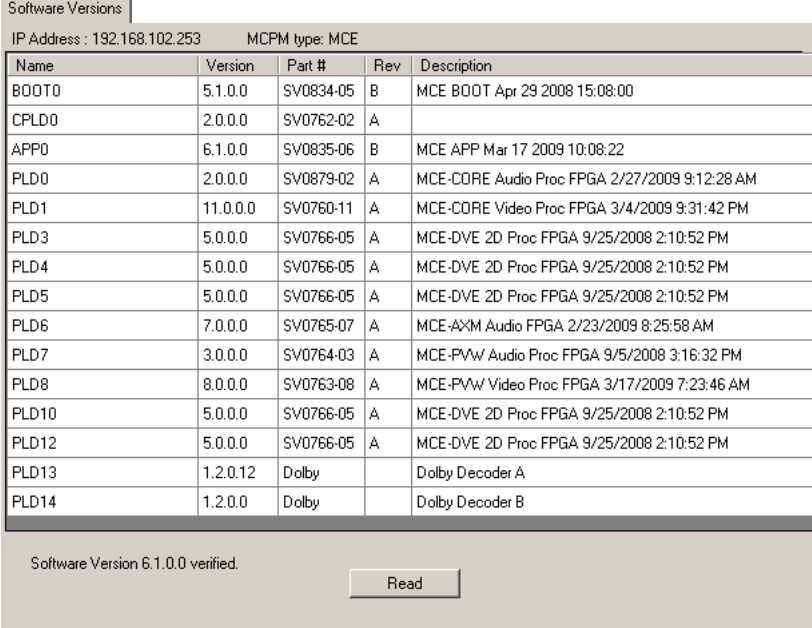
- ▲ The [Memory](#) and [Registers](#) pages are intended primarily for Miranda tech support and not for customers without Miranda guidance.
- ▲ The timing diagnostics are available for MCEs only.

### 3. Operation

#### Setup and Diagnostic Pages

## Software Versions

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



The screenshot shows the 'Software Versions' page with the following table:

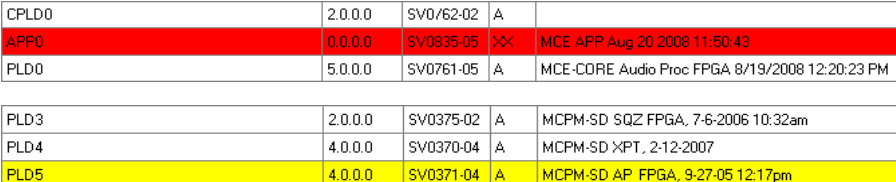
Name	Version	Part #	Rev	Description
BOOT0	5.1.0.0	SV0834-05	B	MCE BOOT Apr 29 2008 15:08:00
CPLD0	2.0.0.0	SV0762-02	A	
APP0	6.1.0.0	SV0835-06	B	MCE APP Mar 17 2009 10:08:22
PLD0	2.0.0.0	SV0879-02	A	MCE-CORE Audio Proc FPGA 2/27/2009 9:12:28 AM
PLD1	11.0.0.0	SV0760-11	A	MCE-CORE Video Proc FPGA 3/4/2009 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

Below the table, a message states: "Software Version 5.1.0.0 verified." with a "Read" button.

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.



The table shows software components with the following rows highlighted:

CPLD0	2.0.0.0	SV0762-02	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.

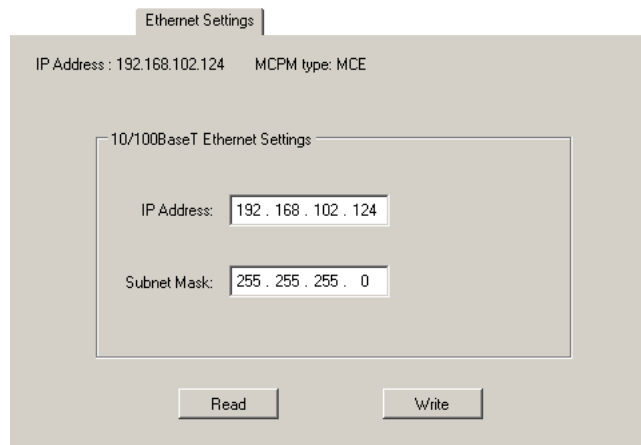
- ▲ Consult Miranda customer service to obtain the software component you want to replace. Be very careful because an improper load can render an MCPM or MCE inoperable.
- ▲ It is important to let the software or firmware update complete before you do anything else. An update can take several minutes 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:



The screenshot shows a web interface for 'Ethernet Settings'. At the top, it displays 'IP Address : 192.168.102.124' and 'MCPM type: MCE'. Below this is a section titled '10/100BaseT Ethernet Settings' which contains two input fields: 'IP Address:' with the value '192 . 168 . 102 . 124' and 'Subnet Mask:' with the value '255 . 255 . 255 . 0'. At the bottom of the form are two buttons labeled 'Read' and 'Write'.

Figure 3-2. Ethernet Settings Page (Sample)

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

## 3. Operation

### Setup and Diagnostic Pages

## Memory

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

Memory

IP Address : 192.168.102.124 MCPM type: MCE

Single Memory Location

Location (in hex)  
50000000

Read Write

Value

Display value in  
 Hex  
 Dec

Range of Memory Locations

Start location (in hex) Number of words (in dec) Read Range Write Range

50000000 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	00000763	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.

Set location to the first address of:

Video 1 FPGA Logo FPGA

Video 2 FPGA XPT FPGA

Video 3 FPGA Audio FPGA

Video 4 FPGA BB RAM

Squeeze A FPGA Squeeze B FPGA

Squeeze C FPGA Squeeze D FPGA

Loader FPGA Config FPGA

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 0x1300 0000 or 0x1300 0004, but you cannot read address 0x1300 0001 or 0x1300 0002.

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 MCE’s subsystems.)

System Status

IP Address : 192.168.102.125    MCPM type: MCE    Device ID (hex): 0x00000017

**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: 2  
 Supports Extended Protocol: Yes

**Time and Date**  
 Monday, April 13, 2009  
 3:28:29 PM  
 Set to Time/Date above  
 Set to Computer Time/Date

**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

**Debug Only**  
 Toggle    Remote Debug Mode: off

**Preset Bus**  
 Main Disembedder: 1  
 Main Dolby Decoder: not assigned  
 Main Audio Force Backup: 0  
 Over Disembedder: 0  
 Over Dolby Decoder: not assigned  
 Over Audio Force Backup: 0

**Listener Status**

#	FD	IP Address	Extended Proto
1	16	192.168.102.149	No
2	17	192.168.102.117	Yes

**Preview Bus**  
 Main Disembedder: 1  
 Main Dolby Decoder: not assigned  
 Main Audio Force Backup: 0  
 Over Disembedder: 0  
 Over Dolby Decoder: not assigned  
 Over Audio Force Backup: 0

Read All

Debug switch

Figure 3-4. System Status Page (Sample, MCE)

(The IP address and name 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 Time and Date section will be empty.)

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

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 and (2) enables an option in the [Timing Diagnostic](#) page.

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.

### 3. Operation

#### Setup and Diagnostic Pages

- ▲ 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:

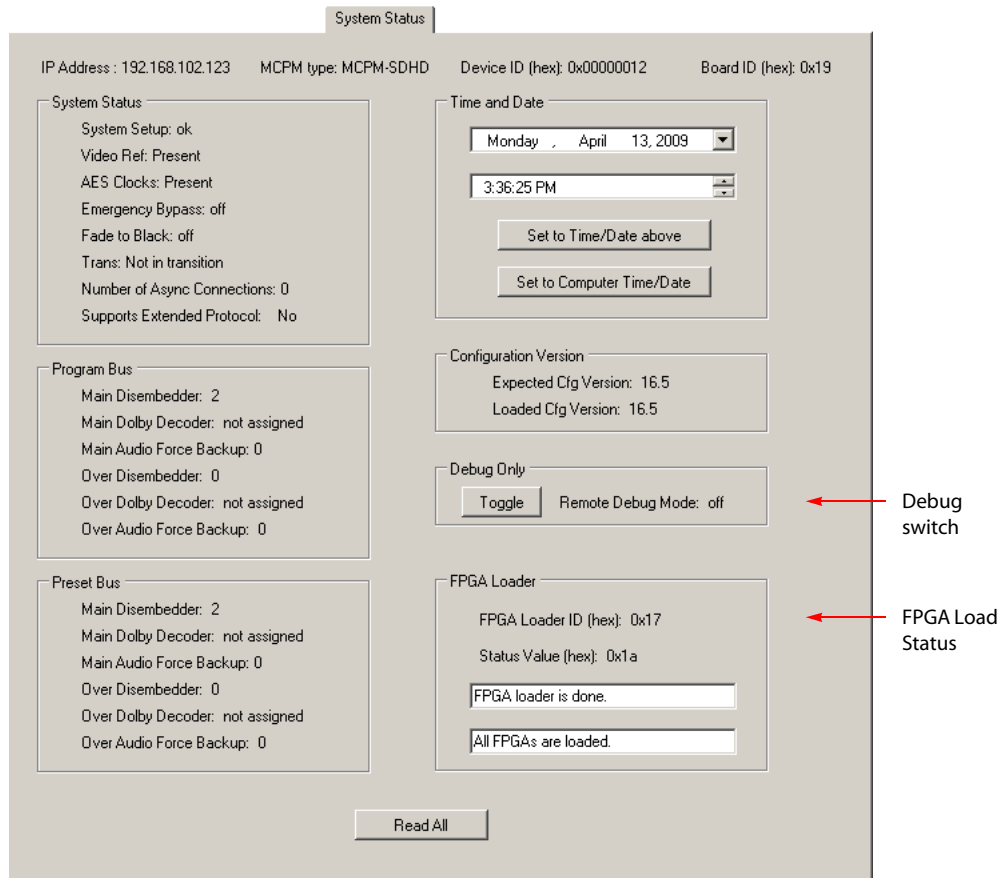


Figure 3-5. System Status Page (Sample, MCPM-SDHD)

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 *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:

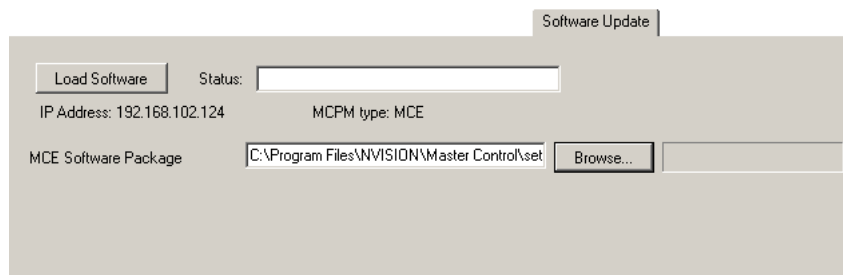


Figure 3-6. MCE Window (Sample)

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:

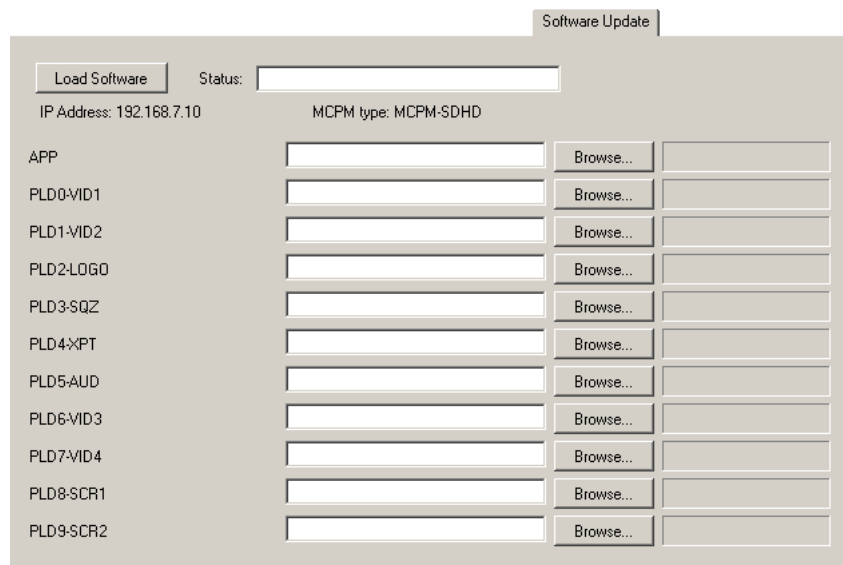


Figure 3-7. Software Update (Sample, Ethernet Mode, MCPM-SDHD)

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

## 3. Operation

### Setup and Diagnostic Pages

#### Updating in Serial Mode

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




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:

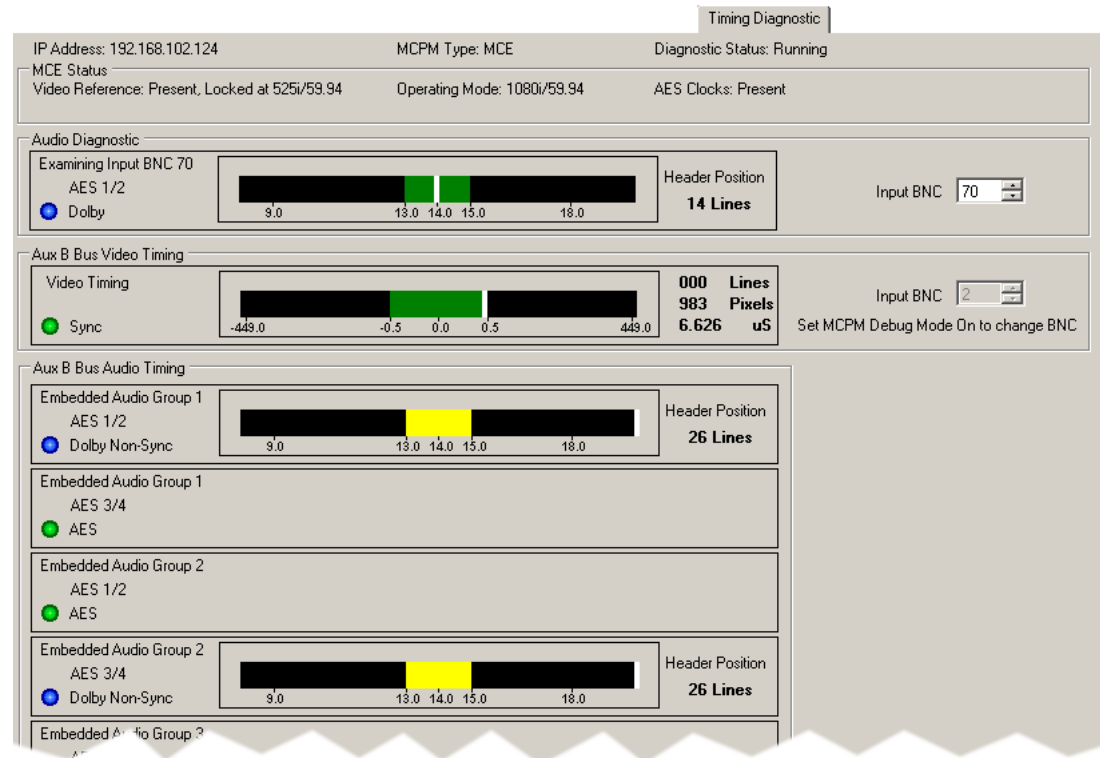


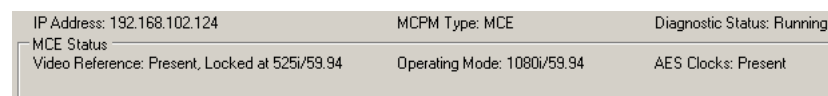
Figure 3-9. Timing Diagnostic (Sample A)

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:



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.

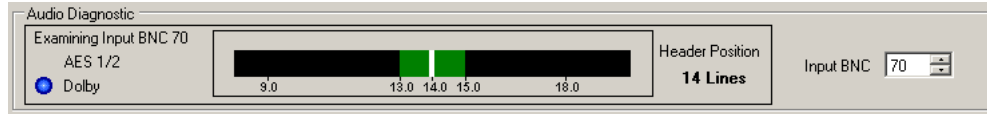
- ▲ AES clocks can come from an external AES reference connected to the EM0374 control card in the master control frame. If the frame has no external AES reference or has an EM0414 clock generator card, the AES reference is generated internally.
- ▲ In MCEs at software release 6.1.0 and later, AES clocks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

### 3. Operation

#### Setup and Diagnostic Pages

#### Audio Diagnostic

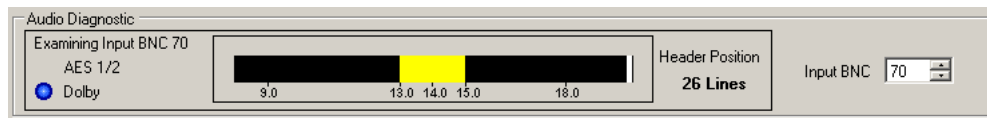
The ‘Audio Diagnostic’ section gives you information regarding the audio on a specific I/O connector at the rear of the NV5100MC or NV5128-MC frame:



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

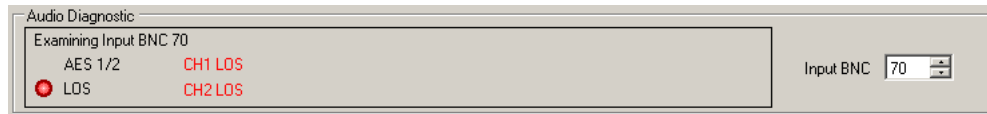
▲ The connector might not be a BNC.

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:



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

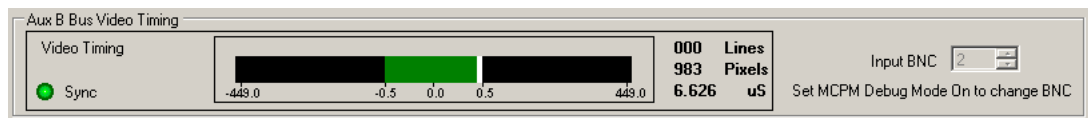
The color of the circle at the left is a visual aid: blue circles represent Dolby E signals. Otherwise, green circles represent signals that are in sync (video or audio). Red circles represent signals that are LOS:



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:

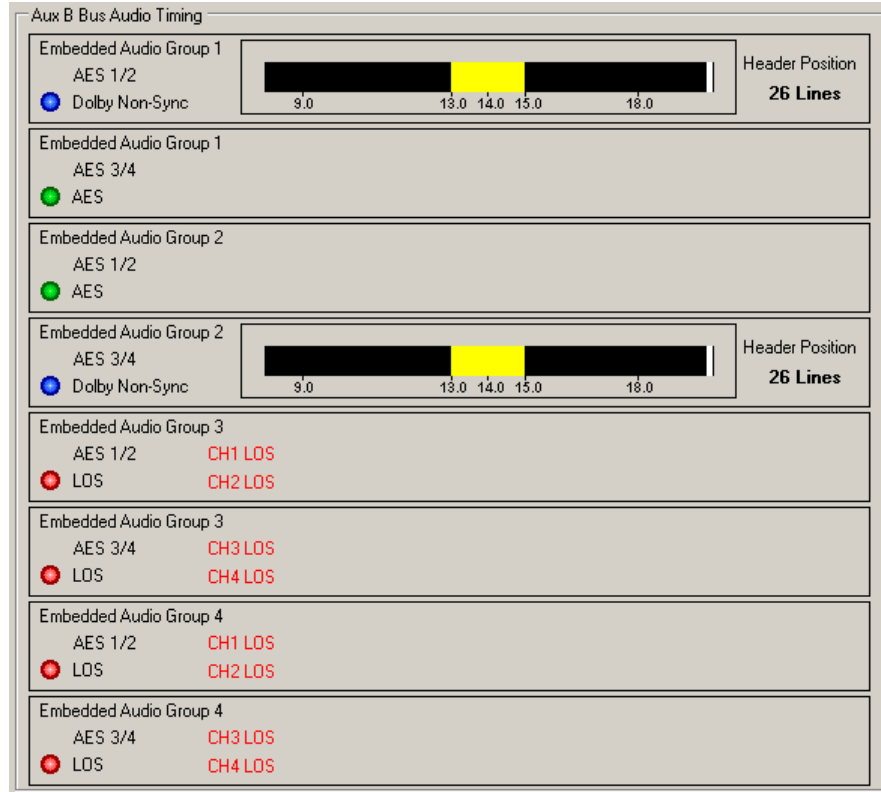


You can change the connector in the ‘Input BNC’ box if you enable “remote debug mode” in the [System Status](#) page. (Otherwise, you cannot.) To change the input number, use the up/down controls of the box or type a connector number in the box. In *normal* operating mode, the diagnostic page follows 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,  $\mu$ S) give the reference point precisely.

### Aux Bus B Audio Timing

The two 'Audio Bus B Audio Timing' section 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 0–524 (for NTSC) and line 0–624 (for PAL).

## 3. Operation

### Setup and Diagnostic Pages

## Logging

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

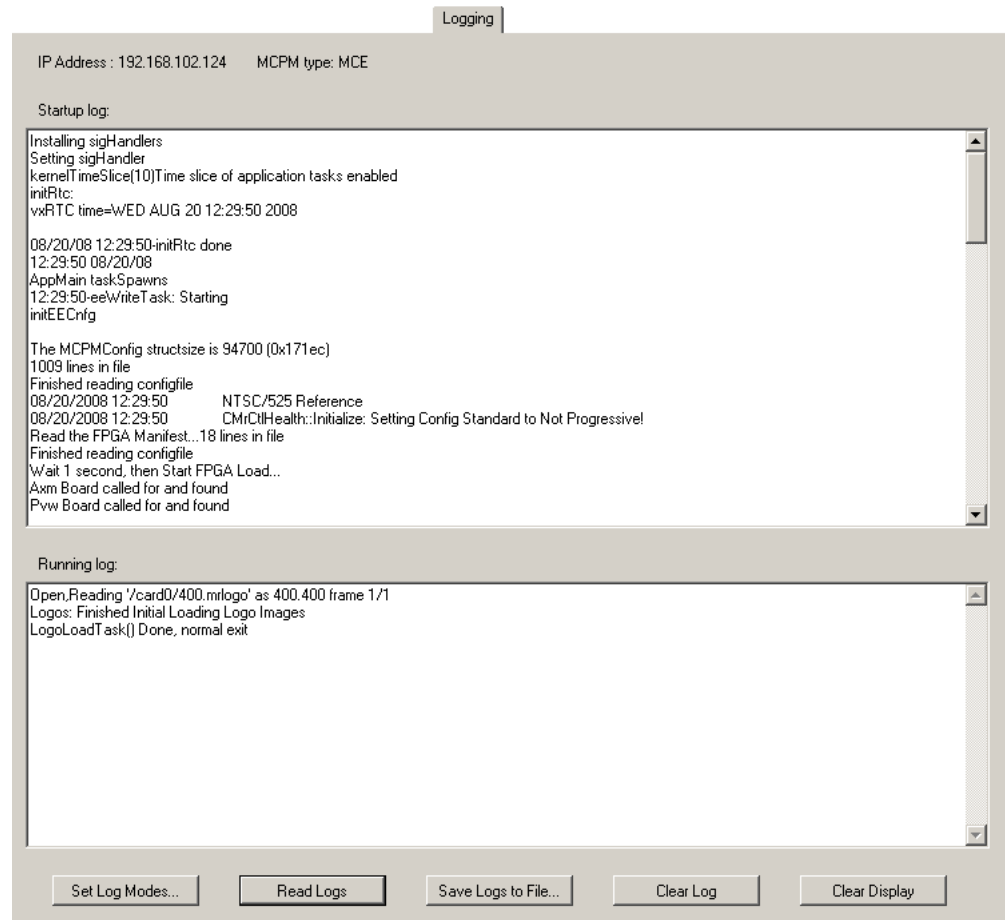


Figure 3-10. Logging Page (Sample)

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:

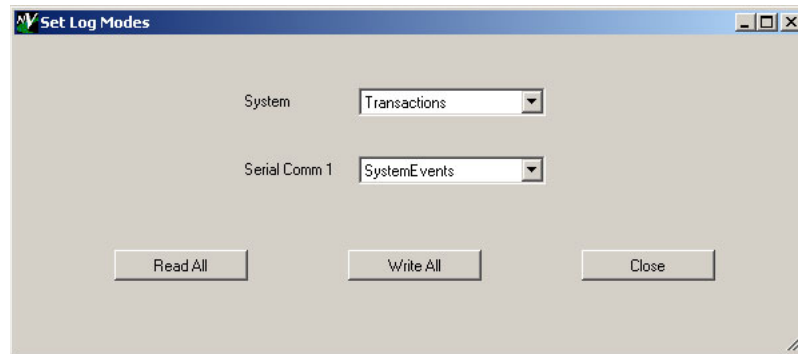


Figure 3-11. Set Log Modes Dialog

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.

## 3. Operation

### Setup and Diagnostic Pages

## Registers

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

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 CuttsAnalog	0	00000000	5010001c
Keyer2 FillsAnalog	0	00000000	50100020
Keyer3 CuttsAnalog	0	00000000	50100024
Keyer3 FillsAnalog	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

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 0x1300 0000 or 0x1300 0004, but you cannot read address 0x1300 0001 or 0x1300 0002.



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.

# 3. Operation

Setup and Diagnostic Pages

## 4. Misc.

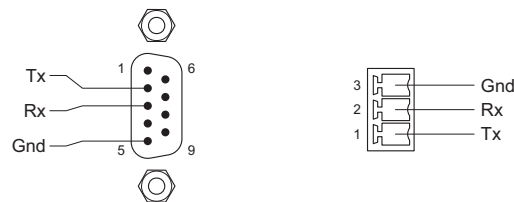
Chapter 4 provides miscellaneous information about MasterDiag. It presents the following topics:

- [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:



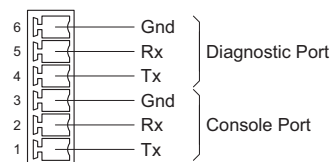
The protocol is RS-232. (Use a straight-through cable with the DE9 connector.)

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.)

## 4. Misc.

### PC Configuration

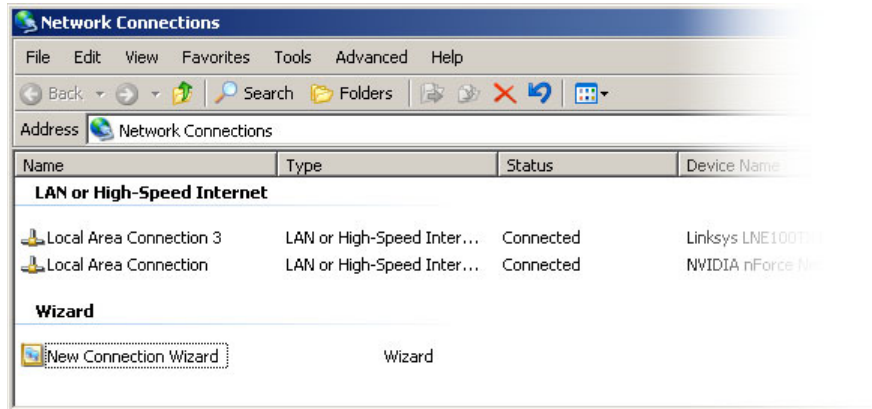
---

## PC Configuration

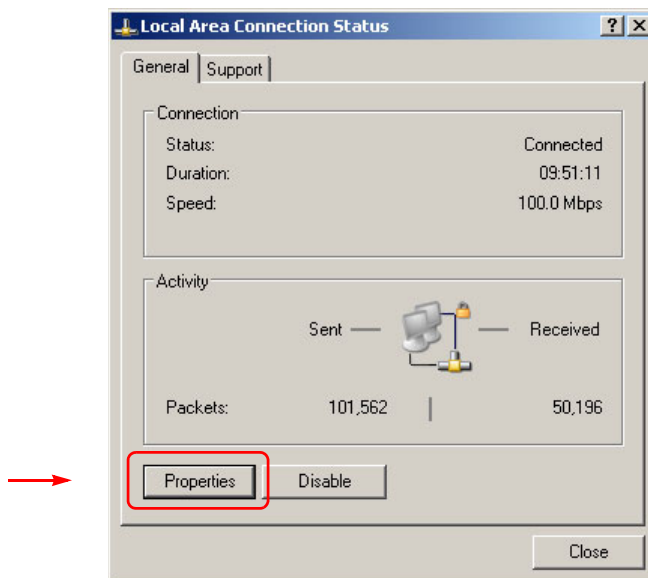
You (or your system administrator) must connect the PC on which your software runs to the master control network. To do that, you must assign the PC an IP address (and mask) on the NIC that connects the PC to the master control network. (The PC must also be connected to the Ethernet switch of the network.)

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

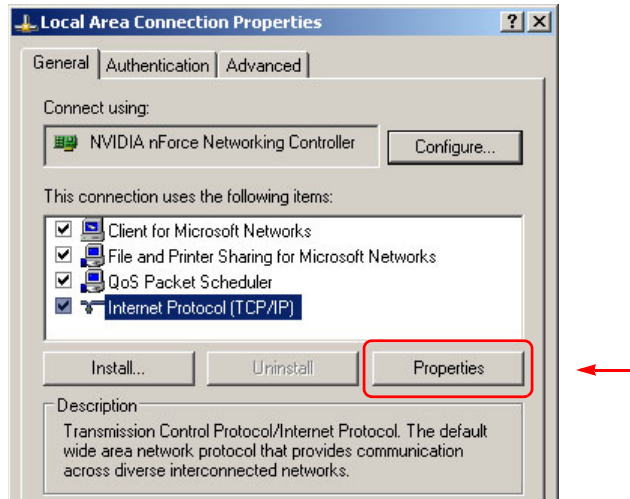
- 1 Launch 'Settings>Network Configuration' from you PC's Start menu. The following window appears:



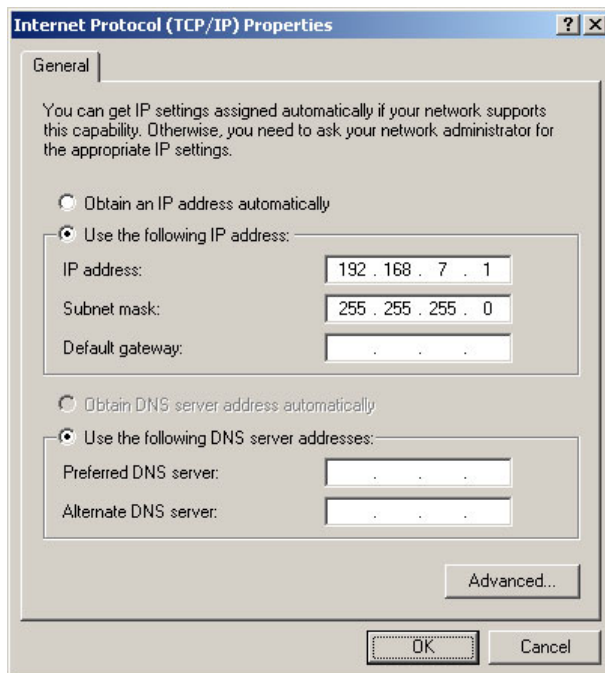
- 2 Double-click the appropriate 'Local Area Connection' for your master control network. Then, choose the General tab and click 'Properties'.



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



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



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.

## 4. Misc.

### Installation

---

## 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 7.1.0.0 software installation CD. (The part number for this is SB0243-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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