Matrox 4Sight-M

Software Manual for Windows XP

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Product Support

Using this manual

This manual has been created to assist you with the operation of your Matrox 4Sight-M unit under one of the versions of the Microsoft Windows XP operating system: Windows XP Embedded or Windows XP Professional.

Important

If you bought a pre-configured version of Matrox 4Sight-M, the hard disk connected to your unit is pre-configured with Windows XP Embedded and MIL-Lite.

The manual is divided into chapters as follows:

- Chapter 1: *Matrox 4Sight-M overview* describes the different versions of the Matrox 4Sight-M units and general conventions of the Matrox 4Sight-M documentation. This chapter also lists the software required to develop your imaging applications on your development computer.

- Chapter 2: *Matrox 4Sight-M under Windows XP Embedded* provides an overview of your Matrox 4Sight-M unit running Windows XP Embedded. It also describes the Windows XP Configuration (XPConfig) utility.

- Chapter 3: *Matrox 4Sight-M under either Windows XP operating systems* provides specific instructions for operating your Matrox 4Sight-M unit under either the Windows XP Embedded or the Windows XP Professional operating system. Guidelines for using your unit remotely, copying files to your unit, and configuring peripheral devices connected to your unit, are found in this chapter.

- Chapter 4: *Creating applications for your Matrox 4Sight-M unit* outlines the procedures involved in creating applications for your unit: copying MIL/MIL-Lite or ActiveMIL/ActiveMIL-Lite run-time files to your unit, installing application development software on your development computer, and creating and transferring applications to your unit. This chapter also discusses how to debug applications created for your Matrox 4Sight-M unit.

- Chapter 5: *Installing Windows XP Professional* describes the procedures involved in installing Microsoft Windows XP Professional onto the hard disk connected to your Matrox 4Sight-M unit. The chapter also lists the drivers necessary to install, to use your unit under Windows XP Professional.

- Chapter 6: *Customizing a Windows XP Embedded configuration for Matrox 4Sight-M units* outlines the procedures involved in installing operating system customization software on your development computer, customizing a Windows XP Embedded configuration, and transferring this configuration to your Matrox 4Sight-M unit.

Chapter 1

Matrox 4Sight-M overview

This chapter describes the different versions of the Matrox 4Sight-M units, lists software required to create applications, outlines documentation conventions, and specifies what to do if you encounter problems.

Matrox 4Sight-M overview

Matrox 4Sight-M is a self-contained platform that integrates image capture, analysis/processing, and display functionality, along with networking, and general purpose I/O capabilities. Specific drivers are required to manage these features.

This manual deals primarily with operating a hard disk-based Matrox 4Sight-M under Microsoft Windows XP Embedded. However, this manual also provides guidelines on how to install Microsoft Windows XP Professional and how to build your own Windows XP Embedded configuration if you did not purchase a pre-configured Matrox 4Sight-M unit.

Matrox 4Sight-M versions

Matrox 4Sight-M units are sold in one of the following versions:

- The integrated-unit version, which includes a Matrox 4Sight-M motherboard, a DIMM memory module, a hard disk, and an optional frame grabber, all of which are encased in a metal chassis.

  The hard disk included with the integrated-unit version can be either pre-configured or not pre-configured with Windows XP Embedded and MIL-Lite.

- The motherboard-only version is sold without the chassis, and is not bundled with a frame grabber, memory module, or hard disk.

If you have purchased a Matrox 4Sight-M version that is not pre-configured with Windows XP Embedded, you can do one of the following:

- Install Windows XP Professional onto the hard disk connected to your unit. For more information on installing the Windows XP Professional operating system on a blank hard disk, see the *Installing Windows XP Professional* chapter.

- Build a custom Windows XP Embedded configuration, and transfer it to the hard disk connected to your Matrox 4Sight-M unit. For more information on building a Windows XP Embedded configuration and transferring it to a blank hard disk, see the *Customizing a Windows XP Embedded configuration for Matrox 4Sight-M units* chapter.

Software overview

Typically, you will develop your imaging application on a development computer. You will then connect to a Matrox 4Sight-M unit (your target computer) to debug and execute the application. To do this, the following tools must be available on the development computer:

- Microsoft Visual Studio development software.
- MIL (Matrox Imaging Library) or MIL-Lite development software.

The target computer (Matrox 4Sight-M) must have:

- Windows 2000, Windows XP, or Windows XP Embedded.
- The files necessary to run a MIL/MIL-Lite application.

MIL and MIL-Lite

You can use your Matrox 4Sight-M unit to execute MIL/MIL-Lite applications.

MIL

MIL is a high-level programming library with an extensive set of optimized functions for image capture, processing, analysis, transfer, compression, display and archiving. Image processing operations include point-to-point, statistical, spatial filtering, morphological, geometric transformations, and FFT operations. Analysis operations support calibration, are performed with sub-pixel accuracy, and include pattern recognition (normalized grayscale correlation and Geometric Model Finder), blob analysis, edge extraction and analysis, measurement, character recognition (template-based and feature-based), and code recognition (1D, 2D, and composite code types).

MIL applications are easily ported to new Matrox hardware platforms and can be designed to take advantage of multi-processing and multi-threading environments.

MIL-Lite

MIL-Lite is a subset of MIL. It includes all the MIL functions for image capture, transfer, and display, but none of MIL's processing and analysis functions.

To develop an application that uses MIL/MIL-Lite functions, MIL/MIL-Lite must be installed on your development computer. To run the developed application on your Matrox 4Sight-M unit, MIL/MIL-Lite run-time files must be present on the unit. For units running Windows XP Professional, the run-time files must be copied to the hard disk from the MIL/MIL-Lite CD.

Installation and licensing requirements for MIL/MIL-Lite are further described in the MIL/MIL-Lite documentation.

ActiveMIL and ActiveMIL-Lite

The MIL/MIL-Lite packages include ActiveMIL/ActiveMIL-Lite. This is a set of ActiveX controls, based on MIL/MIL-Lite, designed for tools such as Microsoft's Visual Basic and Microsoft's Visual C++. ActiveMIL/ActiveMIL-Lite applications built on your development computer can be executed on your Matrox 4Sight-M unit.

Matrox 4Sight-M package

The Matrox 4Sight-M package consists of the following items:

- The integrated-unit or the motherboard-only version of Matrox 4Sight-M.
- The Matrox 4Sight-M Software Package, which consists of the following:
  - The Matrox 4Sight-M System Drivers and Utilities CD.
  - The Matrox 4Sight-M Windows XP Embedded Rescue Utility CD, if you have purchased the integrated-unit version of Matrox 4Sight-M, pre-configured with Windows XP Embedded and MIL-Lite.
- This manual, *Matrox 4Sight-M Software Manual for Windows XP*.
- The *Matrox 4Sight-M Installation and Hardware Reference* manual.

Matrox 4Sight-M hard disk

If purchased, a pre-configured hard disk is included with the Matrox 4Sight-M integrated unit. The hard disk is factory-partitioned as follows:

Disk partitions	File system	Size (Mbytes)	Volume label
C:	FAT32	2 Gbytes	MTX4SM
D:	NTFS	The rest of the disk.	DATA

Matrox 4Sight-M System Drivers and Utilities CD

The Matrox 4Sight-M System Drivers and Utilities CD contains utilities and files used to add functionality to your unit. The CD is organized as follows:

Folder	Description
Bios	Contains the computer BIOS image file, as well as the Matrox 4Sight-M BIOS WinFlash utility used to update it.
BuilderXP	Contains files needed to customize a Windows XP Embedded configuration that will operate with MIL 8.0.
Drivers	Contains the drivers necessary to use your Matrox 4Sight-M unit running Windows XP Embedded or Windows XP Professional, and the peripheral devices attached to it.
Util	Contains the utilities necessary to use your Matrox 4Sight-M unit running Windows XP Embedded (such as XPConfig).

The root folder also contains the following important files:

File name	Description
4SIGHT_M_Hardware_manual.pdf	The *Matrox 4Sight-M Installation and Hardware Reference*.
4SIGHT_M_XP_Software_manual.pdf	The *Matrox 4Sight-M Software Manual for Windows XP* (this manual).
Readme.txt	Readme.txt contains the version numbers of the Matrox 4Sight-M Software Package and MIL.
XPReadme.txt	XPReadme.txt contains important information about your Matrox 4Sight-M unit operating under Windows XP Embedded.
XPWhatsNew.txt	XPWhatsNew.txt contains a list of the new features in this release.

Matrox 4Sight-M Windows XP Embedded Rescue Utility CD

If you have purchased a Matrox 4Sight-M unit, pre-configured with Windows XP Embedded, you will receive a rescue CD, which can be used to restore the contents of the hard disk, in case it becomes corrupted.

The rescue utility, as well as the Windows XP Embedded image file (configuration) used to restore the contents of the hard disk, can be found on the Matrox 4Sight-M Windows XP Embedded Rescue Utility CD.

For more information on restoring the contents of the hard disk, refer to *Appendix A: Restoring the contents of a pre-configured hard disk*.

Matrox 4Sight-M documentation

This section describes the Matrox 4Sight-M documentation conventions and specifies the location of hardware related information.

Menu command conventions

The procedure to select a command from a submenu will be presented in a simplified format. For example, the following procedure:

Select the **Edit** command from the main menu, and then select the **Copy** command from the presented submenu.

will be replaced by:

Select the **Edit Copy** command.

Other documentation conventions

Throughout this manual, every mention of MIL/MIL-Lite or ActiveMIL/ActiveMIL-Lite refers to version 8.0 or higher.

Hardware-related information

Hardware-related information regarding your unit can be found in the *Matrox 4Sight-M Installation and Hardware Reference* manual. This manual has been written to assist you with the setup of your unit and the connection of peripheral and internal devices. The *Matrox 4Sight-M Installation and Hardware Reference* manual also includes the BIOS reference, which mainly describes how to change the settings of the BIOS Setup program.

Problems?

If you experience problems while using this product, refer to the support page on the Matrox Imaging web site: www.matrox.com/imaging/support. This page provides answers to frequently asked questions, as well as offers registered customers additional ways of obtaining support.

If your questions are not addressed and you are registered, you can contact technical support. To do so, you should first complete and submit the online Technical Support Request Form, accessible from the above-mentioned web page. Once the information is submitted, a Matrox support agent will contact you shortly thereafter by email or phone, depending on the problem.

In the unlikely event of a failure, the warranty and Product Assistance Request Form at the back of this manual outlines return conditions and procedures.

Chapter

2

Matrox 4Sight-M under Windows XP Embedded

This chapter presents an overview of your Matrox 4Sight-M unit running Windows XP Embedded and provides an in-depth description of the Windows XP Configuration utility.

Windows XP Embedded

This chapter describes the particularities of your Matrox 4Sight-M unit operating under Microsoft Windows XP Embedded. Windows XP Embedded is a subset of the Windows XP operating system. Selectively chosen Windows XP components are included in the embedded operating system, while other components are excluded. The configuration of Windows XP Embedded shipped with a pre-configured Matrox 4Sight-M is a subset of Windows XP Professional.

The Windows XP Embedded operating system takes advantage of the Write Filter utility which allows you to protect specified data (such as, data in your operating system folder) from being overwritten inadvertently or corrupted during a power failure.

The next chapter, *Matrox 4Sight-M under either Windows XP operating systems*, describes the features of your Matrox 4Sight-M unit that are available under both the Windows XP Embedded and the Windows XP Professional operating systems.

Matrox 4Sight-M feature list under Windows XP Embedded

When you purchase a pre-configured integrated Matrox 4Sight-M unit, the Windows XP Embedded configuration provided by Matrox, includes the following features:

- Auto-logon capabilities.
- A pre-set batch file, *autost.bat*, which launches the following start-up utilities:
  - Windows XP Configuration utility, referred to as XPConfig.
  - SyncServ utility.

- Device Update Agent (DUA) service.
- Default local administrative user accounts.
- User account management.

Note that the MIL/MIL-Lite, ActiveMIL/ActiveMIL-Lite, and GNL (Genesis Native Library run-time files are included in the Windows XP Embedded configuration. The GNL run-time files are necessary to use a Matrox Meteor-II /Digital or a Matrox Meteor-II /Camera Link board connected to your Matrox 4Sight-M unit.

Windows XPConfig

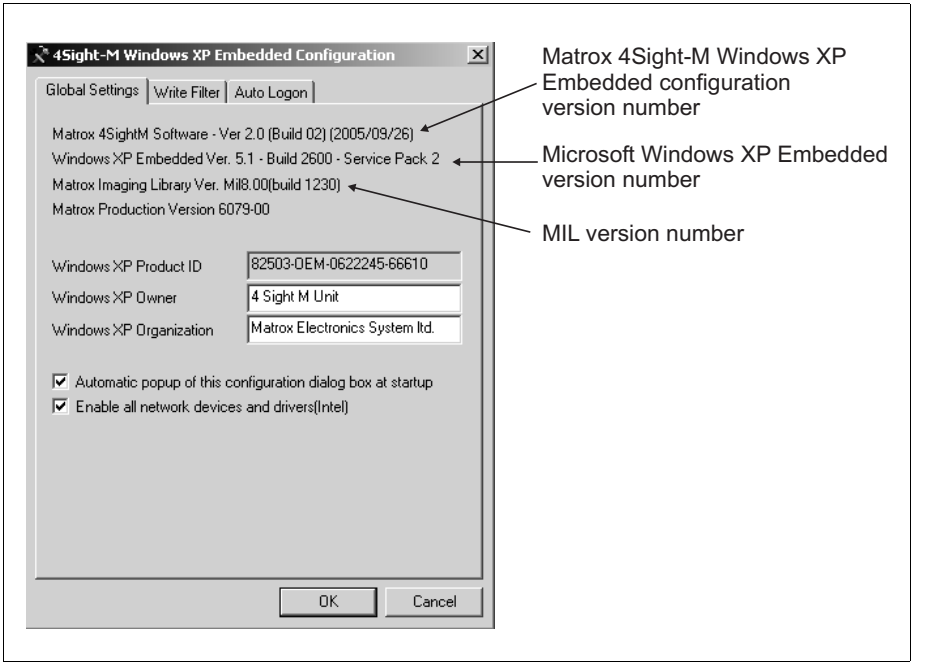
The Windows XP Configuration utility, referred to as XPConfig, allows you to change many Matrox 4Sight-M settings without using the Windows XP Embedded registry editor.

The first time that you turn on a pre-configured Matrox 4Sight-M unit, the XPConfig utility is launched automatically. To execute the XPConfig utility manually:

1. Open the command prompt.
2. In the command prompt window, type **xpconfig**. The **4Sight-M Windows XP Embedded Configuration** dialog box appears.

Global Settings tab

The **Global Settings** tab displays general information about your Matrox 4Sight-M unit.

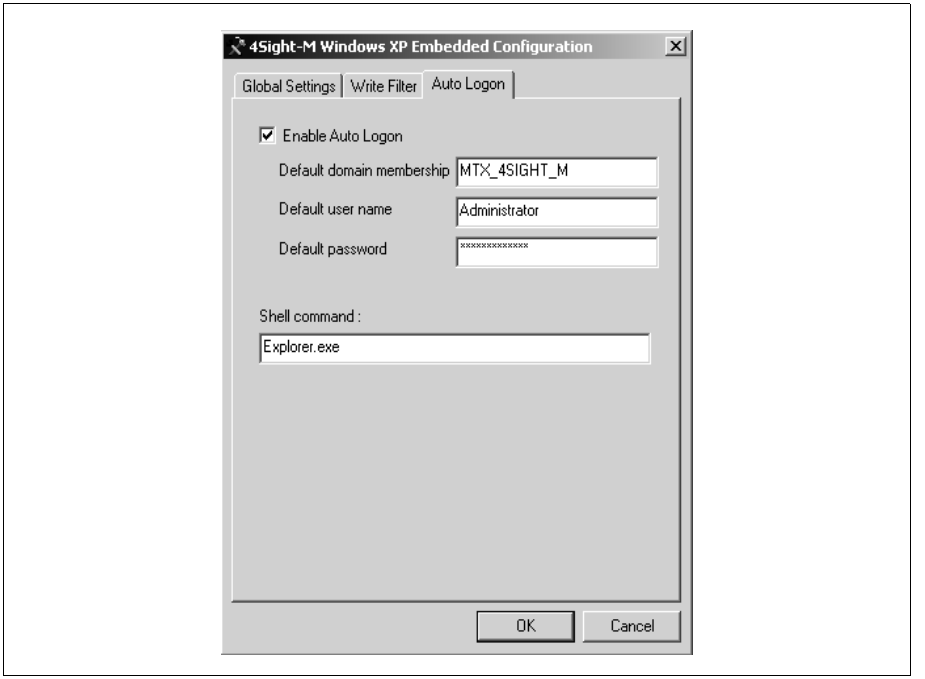


The **Global Settings** tab allows you to change or view the following:

- **Windows XP Product ID.** Specifies the identification number of your version of the Windows XP Embedded operating system.
- **Windows XP Owner.** Specifies the owner name for the unit. Enter your name, or a name to designate ownership.
- **Windows Organization.** Specifies the organization name. Enter the name of your company.
- **Automatic popup of this configuration dialog box at startup.** Specifies that the Matrox XPConfig dialog will appear every time you start Windows XP Embedded.
- **Enable all network devices and drivers (Intel).** Specifies that the network drivers are activated when you boot the unit. When this option is disabled, you will not have access to network resources.

Auto Logon tab

The **Auto Logon** tab contains configuration options that allow your Matrox 4Sight-M unit to logon to a specified user account automatically upon startup.



The **Auto Logon** tab allows you to change or view the following:

- **Enable Auto Logon.** Specifies that every time you turn on your Matrox 4Sight-M unit, the unit will automatically attempt to logon to the account specified in the **Auto Logon Default domain membership** edit field, using the user name and password specified in the **Auto Logon Default user name** and **Auto Logon Default password** edit fields. By disabling this option, you will have to enter a user name and password, each time you start the computer.

  - The first time that you turn on your Matrox 4Sight-M unit, you are automatically logged on to a default account, the user name and password of which are both **Administrator**.

- **Auto Logon Default domain membership.** Specifies the name of the domain to which your Matrox 4Sight-M will be connected to automatically.

- **Auto Logon Default user name.** Specifies your user name.

- **Auto Logon Default password.** Specifies the password for the user name you provided.

  - If, upon starting the computer, it is not possible to logon to the network using the information provided in this property tab, you will be asked to manually enter the appropriate information before gaining network access.

- **Shell command.** Specifies the command to execute upon startup.

Bypassing the auto-logon feature

When the auto-logon feature is enabled, and you want to logon to a different account, press the **Shift** key just before Windows XP Embedded loads your personal settings. This will bypass the auto-logon utility and you will be presented with the **Logon On to Windows** dialog box. You can then enter the appropriate user name, password, and domain name.

Providing administrative capabilities

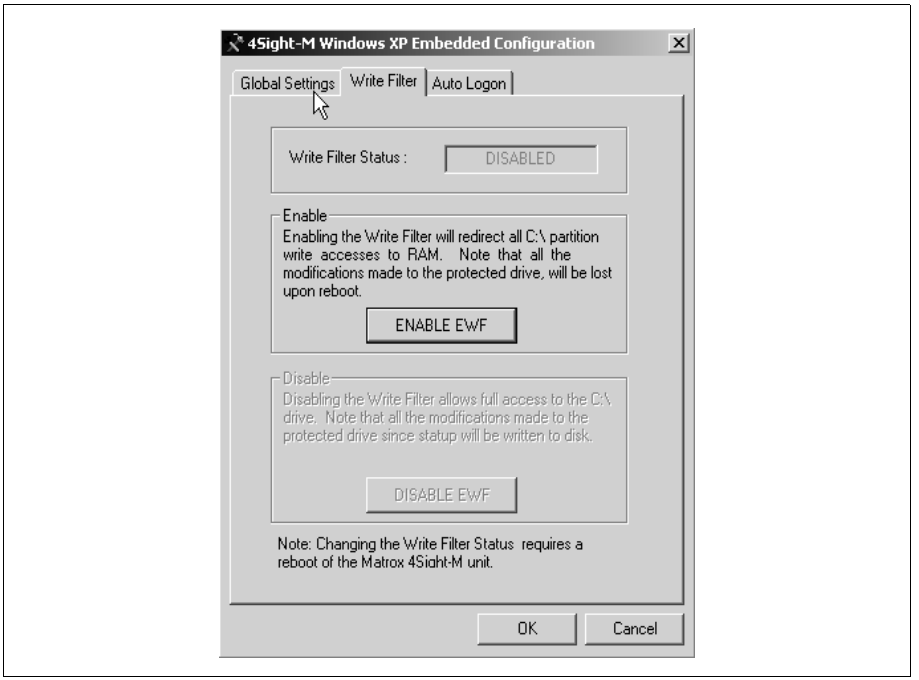
If you have purchased a pre-configured Matrox 4Sight-M unit, the first time that you turn on your Matrox 4Sight-M unit, you are automatically logged on as an administrator. Having administrative privileges allows you to create new user accounts with administrative privileges, to change auto-logon settings, and to change the name of your Matrox 4Sight-M unit on the network.

If you did not purchase a pre-configured unit, the first time that you boot your Matrox 4Sight-M unit with a custom Windows XP Embedded configuration that you have built, you are also logged on as an administrator.

You can change the type of privileges for a specific account though the Control Panel. Consult the Windows XP documentation for more information on adding administrative privileges to a user account and creating new user accounts.

Write Filter tab

The **Write Filter** tab contains configuration options that allow you to enable or disable the Write Filter utility. The Write Filter utility allows you to protect the data stored on your C:\ drive from being overwritten inadvertently or corrupted during a power failure. By default, the Write Filter is disabled.



The **Write Filter** tab allows you to change or view the following:

- **Write Filter Status.** Displays whether the Write Filter utility is enabled or disabled.
- **ENABLE EWF.** Enables the Write Filter utility.

  Note that enabling the Write Filter will cause your Matrox 4Sight-M unit to reboot. When the Write Filter is enabled, you cannot write to your C:\ drive.

- **DISABLE EWF.** Disables the Write Filter utility.

  Note that disabling the Write Filter will cause your Matrox 4Sight-M unit to reboot.

Write Filter

The Write Filter is a utility that allows you to safeguard the data stored on your C:\ drive from being overwritten. When the Write Filter is enabled, all write accesses made to the C:\ drive of your Matrox 4Sight-M unit are redirected to RAM. While your unit is turned on, all the changes that you make to the protected partition will be there. However, since RAM is volatile, once the unit is turned off, all the changes that you have made will be lost. To save data to the C:\ drive, you can do one of the following:

- Disable the Write Filter, and then save the data to the C:\ drive.
- Save the data to the D:\ drive, disable the Write Filter, and then transfer the data from the D:\ drive to the C:\ drive.

Once your data is saved, remember to re-enable the Write Filter.

Software shutdown

With the appropriate applications, you can logoff and shutdown, or shutdown and then reboot the Matrox 4Sight-M unit using the XPConfig /Shutdown or /Reboot command-line options, respectively. For more information on XPConfig command-line options, see *Appendix B: XPConfig command-line options*.

To launch these commands remotely from another computer, you must create an application that uses the TCP/IP protocol to access your unit.

Device Update Agent service

The Device Update Agent (DUA) service is a Microsoft service included in your Matrox 4Sight-M Windows XP Embedded configuration to allow you to automatically update your computer from a remote or local computer.

The DUA service performs administrative tasks, such as copying files, creating registry keys, or executing processes. The DUA service polls a specific remote or local path for a script file. When this script is found, the script immediately runs.

For further information about the DUA service, refer to the Microsoft MSDN Library.

The following table outlines the preset Matrox 4Sight-M DUA service configuration:

Matrox 4Sight-M DUA service configuration	
Polling interval	300 sec
Working directory	*C:/dua/working*
Complete path to the command file	*C:/dua/cmdfiles/cmdfile01*

Chapter

3

Matrox 4Sight-M under either Windows XP operating systems

This chapter discusses using your Matrox 4Sight-M unit operating under either Windows XP Embedded or Windows XP Professional.

Introduction

Information provided in this chapter pertains to units operating under either Windows XP (Embedded or Professional) operating system. This chapter describes features available on your Matrox 4Sight-M unit, as well as how to configure various peripheral devices connected to your unit.

If you did not purchase a Matrox 4Sight-M unit with a pre-configured hard disk, and are supplying your own hard disk, you must first install Windows XP Professional or Windows XP Embedded and all relevant drivers and utilities before you configure and use any peripheral devices. Refer to the *Installing Windows XP Professional* or the *Customizing a Windows XP Embedded configuration for Matrox 4Sight-M units* chapter for details.

If, however, you have purchased a Matrox 4Sight-M integrated-unit, the hard disk included in the unit will be pre-configured with Windows XP Embedded and the drivers for standard peripheral devices. In this case, you can proceed to configure and use your peripheral devices.

In general, you will need to use the Windows XP Control Panel to configure the external devices once they have been connected. To access the Control Panel, use the Windows **Start Control Panel** menu command. Refer to the Windows XP Professional or the Windows XP Embedded help file for more information on using the various Control Panel utilities. In some cases, however, you will have to use the BIOS Setup program to make certain configuration changes.

Installing and copying files to the hard disk

Matrox 4Sight-M is not equipped with a CD or floppy disk drive. Therefore, if you need to copy files from an external source to Matrox 4Sight-M, you can do one of the following:

- Access a shared disk drive on the network.
- Remove the metal chassis from Matrox 4Sight-M, and connect an external IDE device to one of the internal ATA connectors, located on the motherboard.
- Connect a USB CD drive to the Matrox 4Sight-M USB port.

This manual assumes that you have network access, and are able to join a pre-set domain from your Matrox 4Sight-M unit. When this is the case, you can share a folder on the device from which you want to copy files, and access that folder from your unit.

❖ Refer to the Microsoft Windows XP documentation for further information on joining domains.

If this is not the case, and you are required to copy files to your Matrox 4Sight-M unit via an external IDE device. Refer to the *Matrox 4Sight-M Installation and Hardware Reference* manual for details on removing the chassis and connecting an external IDE device to the Matrox 4Sight-M motherboard.

Using your Matrox 4Sight-M unit remotely

To manage your Matrox 4Sight-M from another computer, you can use the Windows XP Remote Desktop feature. To use the Remote Desktop feature, both machines must be connected to the same network or have an Internet connection.

Follow the ensuing steps to use your unit remotely:

1. On your Matrox 4Sight-M unit, open the Control Panel, click on the **System** icon, and select the **Remote** tab.

2. From the **Remote** tab, enable the **Allow users to connect remotely to this computer** option.

   - Note that to allow remote access to your unit, you must leave it turned on and logged on to the network or connected to the Internet.

   - If your unit is using Windows XP Professional (with SP2) or Windows XP Embedded (with SP2), by default, the Windows XP Firewall will prevent you from using remote access. To override this setting, open the Control Panel. Select the **Windows Firewall** icon. The **Windows Firewall** dialog is presented. Select the **Exceptions** tab, and enable the **Remote Desktop** option. Click the **OK** button.

3. On your remote computer, use the Windows **Start Accessories Communications Remote Desktop Connection** menu command to open the Remote Desktop utility. The **Remote Desktop Connection** dialog box is displayed.

4. If you are connecting through a network, type the name of your Matrox 4Sight-M unit in the **Computer** edit field. If you are connecting through the Internet, type the IP address of your unit in the **Computer** edit field. Click on **Connect**. The **Log On to Windows** dialog box is displayed.

5. Type the same user name and password into the fields of the **Log On to Windows** dialog box as you used to logon to your Matrox 4Sight-M unit. Once you are logged on, the desktop displayed on the monitor connected to your remote computer is that of your unit. Any changes made will be saved to the hard disk connected to your Matrox 4Sight-M unit.

   To switch the desktop back to the remote computer desktop, use the Windows **Start Disconnect** menu command.

   Note that if your unit is using Windows XP Embedded and you turn on your unit, you are automatically logged on to a default account (see the *Auto Logon tab* section in chapter 2). If you have not changed the default account, the default user name and password are both **Administrator**.

Using a monitor

To use a monitor or any other supported display device, connected to your Matrox 4Sight-M unit, you need to verify the monitor settings, and, if necessary, select the appropriate refresh rate and the screen resolution. Refer to the *BIOS Reference* appendix in the *Matrox 4Sight-M Installation and Hardware Reference* manual for information on configuring your unit to display to your monitor.

Using a video input device

To grab from a video input device connected to your Matrox 4Sight-M unit, you need to configure the frame grabber in your unit through MIL, specifically using the digitizer functions.

For more information on using MIL or MIL-Lite, refer to the MIL/MIL-Lite documentation.

Using a device that connects to the auxiliary I/O port

To use devices connected to the auxiliary I/O interface, you need to configure the I/O interface through MIL, specifically using the **MsysControl**() function. For more information, refer to the MIL/MIL-Lite documentation.

In addition, if you need to use auxiliary I/O hook functions (event handlers) when developing under MIL, you should assign an interrupt request (IRQ) line to the auxiliary I/O interface. This can be done using the advanced settings of the BIOS Setup program. For more information on navigating within Setup, refer to the *BIOS Reference* appendix in the *Matrox 4Sight-M Installation and Hardware Reference* manual.

Configuring devices that connect to the serial port

The bottom serial interface can be set to operate at either the RS-232 or RS-485 standard. This is done by changing the setting of the **Interface** item in the **Advanced** menu of the BIOS Setup program. For more information on navigating within Setup, refer to the *BIOS Reference* appendix in the *Matrox 4Sight-M Installation and Hardware Reference* manual.

Turning off the Matrox 4Sight-M unit

There are two different approaches to turning off your unit: manually or using a software shutdown. The software shutdown is only available for Matrox 4Sight-M units running Windows XP Embedded, and is described in the *Software shutdown* section of chapter 2.

Logging off and shutting down manually

On the Matrox 4Sight-M unit, you can log off and shutdown Windows XP Embedded as you would normally. Once logged off, and the Windows XP Embedded shutdown procedure is complete, press and hold the power button located on the back panel for at least four seconds. While the button is being pressed, the unit will turn off (power-off). This continuous press-and-hold feature acts as a safety precaution so that your unit is less likely to be turned off by accident or without proper shutdown.

Updating the BIOS using the Matrox 4Sight-M BIOS WinFlash utility

If necessary, you can update the BIOS using the Matrox 4Sight-M BIOS WinFlash utility, included on the Matrox 4Sight-M Windows System Drivers and Utilities CD (or if you have Windows XP Embedded, the utility will already be included on the hard disk).

The Matrox 4Sight-M BIOS WinFlash utility can update or save the system BIOS of Matrox 4Sight-M. This utility can reprogram the BIOS of Matrox 4Sight-M using a BIOS image file, or extract the current BIOS image and write it to a file. In addition, the Matrox 4Sight-M BIOS WinFlash utility can also export the current custom and default BIOS setup values to a file or import the custom and default BIOS setup values from a file.

Refer to *Appendix C: Using the Matrox 4Sight-M BIOS WinFlash utility* for more information.

Chapter

4

Creating applications for your Matrox 4Sight-M unit

This chapter describes the guidelines and procedures used in creating, building, debugging, and transferring an application to a Matrox 4Sight-M unit.

Introduction

This chapter is divided into three sections. The first section deals with the installation of software on your development computer that allows you to create and transfer MIL/MIL-Lite and ActiveMIL/ActiveMIL-Lite applications to your Matrox 4Sight-M unit. It also deals with the installation of software on your Matrox 4Sight-M unit to run the applications. The second section deals with creating MIL/MIL-Lite and ActiveMIL/ActiveMIL-Lite applications, and transferring these applications from the development computer to your unit. The third, and last section, explains how to debug your applications remotely.

Installing software needed to create and run MIL applications

This section discusses the installation of software required to create MIL/MIL-Lite and ActiveMIL/ActiveMIL-Lite applications and run them on your Matrox 4Sight-M unit.

On your development computer

This subsection describes the software that has to be installed on your development computer prior to creating applications.

Installing Microsoft Visual Studio

Prior to installing MIL/MIL-Lite or ActiveMIL/ActiveMIL-Lite on your development computer, you must install the Microsoft Visual Studio development platform. Refer to the documentation accompanying this product for detailed installation procedures.

Installing MIL/MIL-Lite

To develop MIL or MIL-Lite applications, you must install the software on your development computer. Refer to the documentation accompanying MIL and MIL-Lite for a detailed description of the installation procedure.

After installation, refer to the *readme.txt* file in the *\Matrox Imaging\MIL* folder to determine where the MIL files are located, as well as how to compile and run the MIL/MIL-Lite examples.

Installing ActiveMIL/ActiveMIL-Lite

To develop ActiveMIL or ActiveMIL-Lite applications, you must install the software on your development computer. The setup program will install all the MIL/MIL-Lite and ActiveMIL/ActiveMIL-Lite components that are necessary to develop ActiveMIL/ActiveMIL-Lite applications. Refer to the documentation accompanying ActiveMIL and ActiveMIL-Lite for a detailed description of the installation procedure.

After installation, refer to the *ReadMe.html* file in the *\Matrox Imaging\ActiveMIL* folder to determine where the ActiveMIL files are located, as well as how to compile and run the ActiveMIL/ActiveMIL-Lite examples.

On your Matrox 4Sight-M unit

If you bought a pre-configured version of Matrox 4Sight-M, the files necessary to run MIL/MIL-Lite and ActiveMIL/ActiveMIL-Lite applications on your unit are built into the operating system configuration. If you did not buy a pre-configured unit, you will need to do one of the following:

- If you have installed Windows XP Professional, install MIL/MIL-Lite or ActiveMIL/ActiveMIL-Lite, or only the redistribution version of these, on your Matrox 4Sight-M unit.

- If you are building your own Windows XP Embedded configuration, include the necessary MIL/MIL-Lite or ActiveMIL/ActiveMIL-Lite files into the custom configuration.

  For more information about the MIL/MIL-Lite or ActiveMIL/ActiveMIL-Lite installation, refer to the documentation accompanying these products.

❖ Note that you must ensure that the Write Filter is disabled before installing any files on the C:\ drive.

Memory allocation

By default, MIL reserves 16 Mbytes of non-paged (DMA) memory for its grab buffers. The remaining memory is available for use by Windows XP, the graphics controller, and system management mode. For instance, on a unit that has 256 Mbytes, the memory allotted for Windows XP is 256 Mbytes, less the memory reserved for the graphics controller (default is 8 Mbytes), the memory for system management mode (1 Mbyte), and the memory allotted for MIL (default is 16 Mbytes).

To change the amount of non-paged (DMA) memory reserved by MIL, run the MILConfig utility. For more details on this utility, refer to the *Matrox Imaging Library User Guide*.

Under Windows XP Embedded

Note that after installing MIL/MIL-Lite or ActiveMIL/ActiveMIL-Lite under Windows XP Embedded, if you want to upgrade or downgrade the physical amount of RAM in your unit, you must adjust the unit's memory settings using MILConfig. You must adjust the settings before physically adding or removing RAM. To do so:

1. Locate and open MILConfig. Select the **Non-paged Memory** tab. Click on the **Update RAM Size** button. The **Update RAM Size** dialog is presented.

2. Type 128 in the **New RAM Size** field, and then click on the **Update** button. MILConfig will then alert you that the driver has been updated. Click on the **OK** button.

   - You should always enter 128 Mbytes to avoid calculating the exact amount of memory that will be installed in your unit, regardless of the amount of RAM that you will actually have. Note that you are not actually changing the RAM to 128 Mbytes. The XPConfig utility will detect the MILConfig settings, and automatically calculate the correct amount of RAM to be used for non-paged memory once you reboot the unit.

3. Shut down the unit. Add or remove RAM as required.

4. Restart the unit. After restarting the unit, XPConfig will automatically detect and update the amount of RAM, and calculate the actual amount to reserve for the operating system.

Creating and transferring your application

This section deals with creating your application on your development computer and transferring it to your Matrox 4Sight-M unit.

Non-paged (DMA) memory and the MIL Configuration utility[1]

MIL and MIL-Lite allocate space for grab buffers in non-paged (DMA) memory. This type of memory is physically linear (contiguous) and non-paged. An advantage to using non-paged memory is that a bus mastering device can write to it without the help of the CPU. To speed up the execution of applications that use a lot of MIL grab, processing, and non-paged memory buffers, increase the amount of non-paged memory. Non-paged memory that MIL and MIL-Lite reserves can only be used by MIL/MIL-Lite and is not counted as part of total computer memory.

By default, 16 384 Kbytes (16 Mbytes) of the total physical memory is reserved for non-paged memory buffers.

If your application requires it, you can change the amount of non-paged memory to reserve for MIL/MIL-Lite, using the MIL Configuration (MILConfig) utility.

To change the non-paged memory settings:

1. Run the MILConfig utility by typing **milconfig** in a Command window. You will be presented with the **MIL Configuration** dialog box. Select the **Non-paged memory** tab.

   The current amount of non-paged memory, as well as the computer memory size, are displayed under the **Current Settings** section.

2. In the **Non-paged Memory Size** edit field, within the **New Settings** section, type in the new amount of non-paged memory to reserve. Note that you can only enter integers.

3. Click **OK**.

---

1. Since ActiveMIL/ActiveMIL-Lite are installed on top of MIL/MIL-Lite, the information found in this subsection also applies to ActiveMIL/ActiveMIL-Lite.

Windows XP Embedded will reconfigure your memory settings and update the MIL driver. It will also display a message indicating that you must restart the computer for these changes to take effect.

Transferring MIL/MIL-Lite and ActiveMIL/ActiveMIL-Lite applications to Matrox 4Sight-M

To run a MIL/MIL-Lite or an ActiveMIL/ActiveMIL-Lite application on Matrox 4Sight-M, you must copy all of the application's files to the Matrox 4Sight-M unit:

1. On the Matrox 4Sight-M unit, assign and share a target folder.
2. On your development computer, connect and map a logical drive to this shared folder.
3. Switch to the logical drive mapped to the target Matrox 4Sight-M folder.
4. Change the current folder to the subfolder in which you want your application to reside.
5. Copy the MIL/MIL-Lite or ActiveMIL/ActiveMIL-Lite application files from the development computer to the Matrox 4Sight-M unit. Make sure to copy the application's EXE file, applicable DLL files, and DCF files (if used).

❖ Ensure the Write Filter utility on the Matrox 4Sight-M unit is disabled before copying any files to the C:\ drive.

Both MIL-Lite and ActiveMIL-Lite come with a royalty free run-time license. To redistribute an application that uses MIL or ActiveMIL processing features, read the chapter that deals with distribution and licensing in the MIL or ActiveMIL documentation.

MIL/MIL-Lite and ActiveMIL/ActiveMIL-Lite examples

Both the MIL/ActiveMIL and the MIL-Lite/ActiveMIL-Lite CDs contain examples that you can compile and run on your Matrox 4Sight-M unit as you would your own application. These examples demonstrate the capabilities of MIL/MIL-Lite and ActiveMIL/ActiveMIL-Lite.

Remote debugging on Matrox 4Sight-M using Microsoft Visual C++ 6.0

This section describes how to remotely debug your application and how to execute it once it is transferred to your Matrox 4Sight-M unit.

Microsoft Visual C++ 6.0 has the ability to debug applications running on another computer, such as a Matrox 4Sight-M unit. From the development computer, Microsoft Visual C++ 6.0 controls debugging on the target computer using a remote debug monitor application called MSVCMON (*msvcmon.exe*).

The development computer communicates with the target computer (Matrox 4Sight-M unit) through a network communication channel. Note that network components must be installed on both the development computer and the target computer. The network component (driver) is already included in the Windows XP Embedded configuration provided with your pre-configured Matrox 4Sight-M unit.

Copy the required DLLs

MSVCMON refers to certain DLL files while performing tasks. You will have to copy the following files to the *\windows\system32* folder on your Matrox 4Sight-M unit:

File name	Source path on the development computer[1]
MSVCMON.EXE	C:\Program Files\Microsoft Visual Studio\Common\MsDev98\Bin
TLN0T.DLL	C:\Program Files\Microsoft Visual Studio\Common\MsDev98\Bin
DM.DLL	C:\Program Files\Microsoft Visual Studio\Common\MsDev98\Bin
MSDIS110.DLL	C:\Program Files\Microsoft Visual Studio\Common\MsDev98\Bin
msvcp60.DLL	C:\windows\system32
psapi.dll	C:\windows\system32

1. Note that the listed source paths might vary depending on the type of operating system running on your development computer, and the folder where Microsoft Visual C++ has been installed.

Make sure to copy all the files; do not assume that any of them are already on your target computer.

After copying the files, reboot the target computer.

In addition to the above files, your application will require either the C runtime DLLs or the MFC runtime DLLs, depending on the project settings of the Visual C++ integrated development environment. These DLLs are available in two formats:

- The DLLs without debugging information are *Msvcrt.dll*, *Msvcirt.dll*, and *Mfc42.dll*. They are already installed on the Matrox 4Sight-M unit.

- The DLLs with debugging information are *Msvcrtd.dll*, *Msvcirtd.dll*, and *Mfc42d.dll*. It might be necessary to copy these files to your target computer for remote debugging if the application is using them. These files can be found in the *\windows\system32* folder on your development computer.

Debugging

After having copied all relevant files, you can begin debugging remotely from your development computer. The Matrox 4Sight-M unit will use its local DLLs during the remote debugging procedure. Note that even if you are debugging your applications remotely, the MIL run-time license will not let you debug applications that use MIL processing functions. To debug these applications, the hardware key included with the MIL development package must be connected to Matrox 4Sight-M's parallel port.

To begin debugging:

1. Map a virtual drive and copy your application to a folder on this drive, as described in the section *Transferring MIL/MIL-Lite and ActiveMIL/ActiveMIL-Lite applications to Matrox 4Sight-M*. It is easier to debug and run your application from a folder common to both the development and target computers.

2. Move any required third-party DLLs into this folder, and then access these files in place. It is easier to use the shared folder; otherwise, you would have to copy these files manually from the development computer to the target computer.

Working from the development computer

3. On the development computer, load your project into Microsoft Visual C++.

4. Edit and compile your application in the shared folder.

5. Select **Settings** from the **Project** menu. The **Project Settings** dialog box is presented.

6. Select the **Debug** tab.

7. Select **General** from the **Category** drop-down list box.

8. In the **Executable for debug session** edit field, specify the name and path of the executable file so that your development computer can locate it.

   For example, if the *Application.exe* executable file is stored in the *C:\Shared\Project\Debug* shared folder on your Matrox 4Sight-M unit, which is mapped to a virtual drive J:\ on your development computer, enter *J:\Shared\Project\Debug\Application.exe* in the **Executable for debug session** edit field.

9. In the **Remote executable path and file name** edit field, specify the name and path of the executable file so that the target computer can locate it.

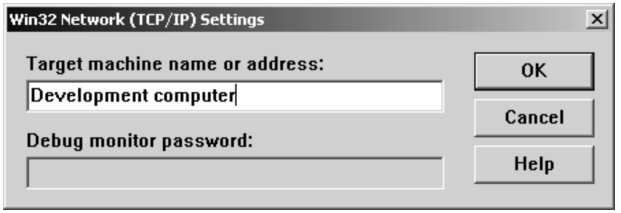
   For the *Application.exe* executable file, mentioned in the previous step, enter *C:\Shared\Project\Debug\Application.exe* in the **Remote executable path and file name** edit field.

Working from the target computer

10. Open a command prompt on the target computer, and type **msvcmon**, to run the remote debug monitor.

11. In the **Visual C++ Debug Monitor** dialog box, click on the **Settings** button. The **Win32 Network (TCP/IP) Settings** dialog box is presented.

12. Enter the development computer's name in the **Target machine name or address** edit field, and click on the **OK** button to return to the **Visual C++ Debug Monitor** dialog.

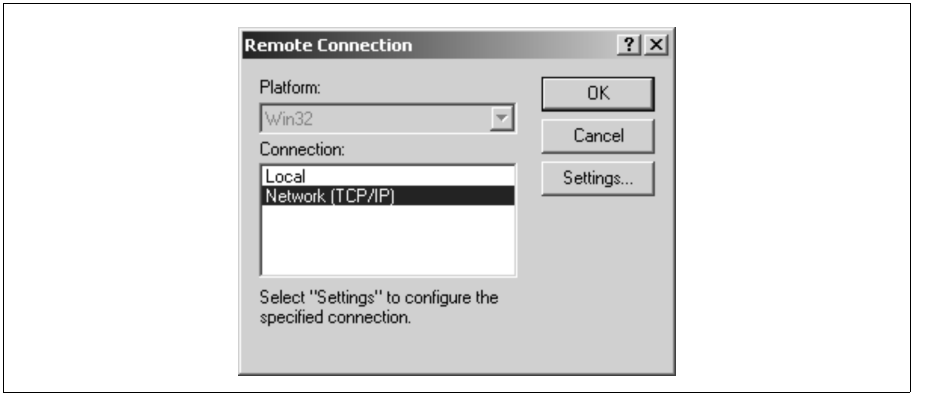


13. In the **Visual C++ Debug Monitor** dialog box, click on the **Connect** button to start the connection.

Working from the development computer

14. On the development computer, select **Debugger Remote Connection** from the **Build** menu. The **Remote Connection** dialog box is presented.

15. Select **Network (TCP/IP)** as the connection method, and then click on the **Settings** button.



16. In the **Target machine name or address** edit field of the presented dialog, enter the target Matrox 4Sight-M unit's computer name.

    - Do not use backslashes in the machine's name.

17. Click on the **OK** button and start debugging as usual.

18. When Visual C++ tries to access the symbolic information of the DLLs that are used by your application, it will ask you to enter the location of the dependent DLLs if they are not on your development computer.[1] The **Find Local Module** dialog box (which appears automatically) allows you enter this information.

    Enter the full path of each DLL requested; this path must include the machine name where the shared folder is located (for example, *4SightM\Shared\DLL)*.

    - Do not use backslashes in the machine's name.

1. If the service pack version included with Matrox 4Sight-M unit is different from the version on the development computer, Microsoft Visual C++ might have difficulty locating the proper DLLs.

To ensure fast remote debugging, close any window opened by the debugger that is not required, to minimize the amount of information that must be sent across the connection. Also, minimize the use of data breakpoints.

Automatically launching applications

If you have purchased a pre-configured Matrox 4Sight-M unit, the *autost.bat* file is included in the configuration. The *autost.bat* file is automatically run when you turn on your computer. As mentioned in the section *Matrox 4Sight-M feature list under Windows XP Embedded* in chapter 2, it executes a series of commands, such as launching the SyncServ utility. By adding commands in the *autost.bat* file, you can also automatically launch *MyApp.exe*; you can furthermore launch any other MIL/MIL-Lite application, a MIL/MIL-Lite example, or your own application.

If you have built your own Windows XP Embedded configuration, you should have included the *autost.bat* file by including the *Mtx4SMXPEmbeddedUtilities.sld* file.

If you have installed Windows XP Professional, you need to copy the *autost.bat* file from the Matrox 4Sight-M System Drivers and Utilities CD to the root folder of the hard disk connected to your Matrox 4Sight-M unit. The *autost.bat* file, specific to the Windows XP Professional operating system, is found in the *\Util\MiscWorkstation* folder of the Matrox 4Sight-M System Drivers and Utilities CD.

Automatically launching applications

To execute your own application (for instance, *MyApp.exe*) every time that you turn on your Matrox 4Sight-M unit, do the following:

1. Locate the command lines listed below in the *autost.bat* file if your unit is running Windows XP Embedded:

```
REM if exist C:\MyFolder\MyApp.exe C:\MyFolder\MyApp.exe
```

If your unit is running Windows XP Professional, locate the following command lines in the *autost.bat* file:

```
REM CMDWND RESTORE
REM "C:\MyFolder\MyApp.exe"
```

2. Remove the **REM** command from both command lines so that these lines are executed when the *autost.bat* file is run and replace *C:\MyFolder\MyApp.exe* with the name and path of your application.

3. Save the file.

Now, every time that you turn on your unit, your application will be launched automatically.

SyncServ utility

It is important that the *autost.bat* file synchronizes the execution of your application with the end of the device driver initialization. If a program tries to use a device whose driver has not been initialized, errors can result. The necessary synchronization can be achieved using the SyncServ utility.

```
SyncServ [ServiceName][/QUIET][/WAIT][/DOT][/TIMEOUT]
```

For example, to synchronize the execution of *mdemo.exe* with the end of the initialization of either Matrox Meteor-II driver, call SyncServ with the wait option as follows:

```
SyncServ CORONA /QUIET /WAIT /DOT /TIMEOUT=%TIMEOUT%
```

Call the SyncServ utility before calling commands needed to run your application. This will ensure that your application starts after the driver is initialized.

Chapter

5

Installing Windows XP Professional

The following chapter describes the procedures involved in installing the Microsoft Windows XP Professional operating system onto a hard disk connected to your Matrox 4Sight-M unit.

Introduction

If you did not purchase a pre-configured Matrox 4Sight-M unit, you can do one of the following:

- Install the Microsoft Windows XP Professional operating system onto the hard disk connected to your Matrox 4Sight-M unit.
- Build a custom Windows XP Embedded configuration and install it onto the hard disk connected to your Matrox 4Sight-M unit.

This chapter describes the procedures involved in installing the Windows XP Professional operating system.

Important

Note that you cannot install Windows XP Professional onto a hard disk that already contains the Windows XP Embedded operating system.

For information on building a custom Windows XP Embedded configuration, see the *Customizing a Windows XP Embedded configuration for Matrox 4Sight-M units* chapter.

Installing Windows XP Professional

Once you have connected a hard disk to your Matrox 4Sight-M unit, you can install the Windows XP Professional operating system onto this disk. To do so, follow the ensuing steps:

1. Connect a CD drive to your Matrox 4Sight-M unit and insert the Windows XP Professional installation CD in the drive. See the *Matrox 4Sight-M Hardware and Installation* manual for instructions on how to install the CD drive.
2. Turn on your Matrox 4Sight-M unit.
3. Hit the **Esc** key during POST to access the boot-device selection utility. The **Boot Menu** is presented.
4. Insert the Microsoft Windows XP Professional CD into the CD drive.

5. Select the CD drive as the boot device for the current installation operation, and press **Enter**.

6. Press any key on the keyboard as soon as you see the following message:

   Press any key to boot from CD.

   The Windows XP Professional Setup program starts.

7. Follow the Setup instructions throughout the rest of the Windows XP Professional installation. The installation of Windows XP Professional will use approximately 1200 Mbytes of disk space on the partition chosen for the installation.

   At one point, the Windows XP Professional Setup program will reboot your unit, and then the installation process will continue. This second part of the installation takes approximately 40 minutes to complete.

8. Install the Microsoft Windows XP Service Pack 1a, or higher.

   For Windows XP to run properly on Matrox 4Sight-M, you need to install Service Pack 1a or higher. Note that you can skip this step if the CD used to install Microsoft Windows XP Professional already includes Service Pack 1a or higher.

   If the CD used to install Microsoft Windows XP Professional does not include Service Pack 1a or higher, you can download the latest Service Pack from the Microsoft web site

9. Install the required drivers and utilities. See the *Installing the required drivers and utilities* that follows.

Installing the required drivers and utilities

To use your Matrox 4Sight-M unit under Microsoft Windows XP Professional, you need to install a set of drivers for Matrox 4Sight-M. To ensure a successful installation, you should follow the steps in the order outlined below:

1. Install the Intel Ethernet driver (10/100Mbit).
2. Install the Intel Graphics driver.
3. Install the Intel ICH4 chipset update.
4. Install the Intel Gigabit Ethernet driver.
5. Install the Audio driver.

❖ Note that before installing the drivers and utilities, you must have a CD drive connected to your Matrox 4Sight-M unit.

Intel Ethernet driver (10/100Mbit) installation

You need to install the Intel Ethernet driver to be able to connect your Matrox 4Sight-M unit to the network using Windows XP Professional network services. To install this driver:

1. Insert the Matrox 4Sight-M System Drivers and Utilities CD into the CD drive connected to your Matrox 4Sight-M unit running Microsoft Windows XP Professional.
2. Use Microsoft Windows Explorer to access the *\Drivers\WinXP\Intel network\Standard* folder, and run *Autorun.exe*. The Intel Ethernet installation utility starts automatically.
3. Follow the Setup instructions throughout the rest of the Intel Ethernet driver installation.

Intel Embedded Graphics driver installation

You need to install the Intel Embedded Graphics display driver so that the graphics controller, installed on your Matrox 4Sight-M unit, functions properly. To install this driver:

1. Insert the Matrox 4Sight-M System Drivers and Utilities CD into the CD drive connected to your Matrox 4Sight-M unit running Microsoft Windows XP Professional.

2. Use Microsoft Windows Explorer to access the *\Drivers\WinXP\Intel Video\Utilities* folder, and run *Setup.exe*. The Intel Video installation utility starts automatically.

3. Follow the Setup instructions throughout the rest of the Intel Video driver installation.

4. Remove the Matrox 4Sight-M System Drivers and Utilities CD and then restart the computer.

Intel ICH4 chipset update

You need to install the Intel ICH4 chipset driver so that the Intel chipset on your Matrox 4Sight-M unit functions properly. To install this driver:

1. Insert the Matrox 4Sight-M System Drivers and Utilities CD into the CD drive connected to your Matrox 4Sight-M unit running Microsoft Windows XP Professional.

2. Use Windows Explorer to access the *\Drivers\WinXP\Intel ICH4 Chipset* folder and run *Setup.exe*. The Intel ICH4 chipset installation utility starts automatically.

3. Follow the Setup instructions throughout the rest of the Intel ICH4 chipset installation.

4. Remove the Matrox 4Sight-M System Drivers and Utilities CD and then restart the computer.

Intel Gigabit Ethernet driver installation

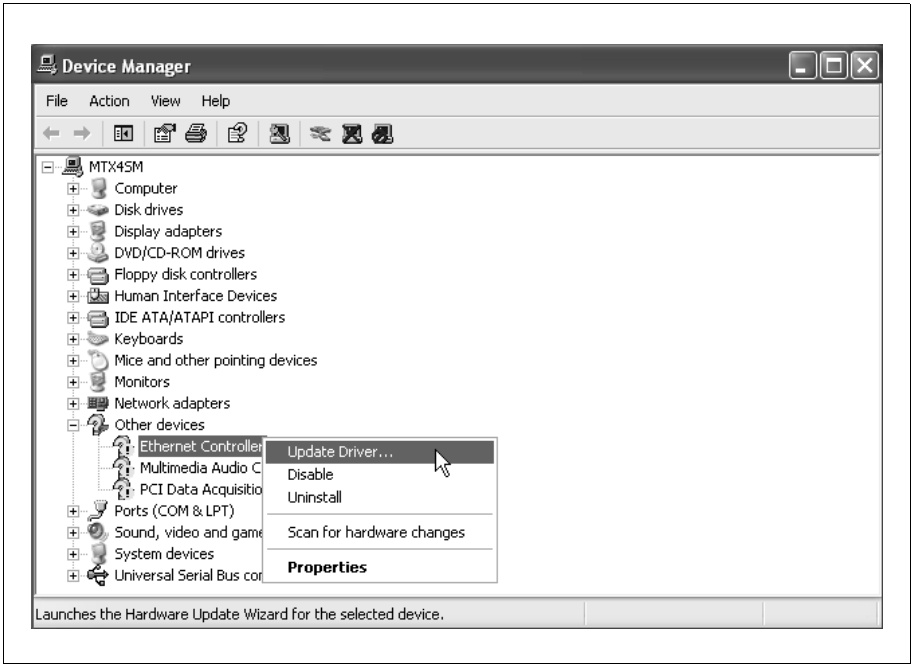
You need to install the Intel Gigabit Ethernet driver so that the Gigabit Ethernet controller installed on your Matrox 4Sight-M unit functions properly. To install this driver:

1. Insert the Matrox 4Sight-M System Drivers and Utilities CD into the CD drive connected to your Matrox 4Sight-M unit running Microsoft Windows XP Professional.

2. Open the Windows Control Panel, and then select the **System** option. The **System Properties** dialog box is presented.

3. From the **Hardware** tab, click on the **Device Manager** button. The **Device Manager** dialog box is presented.

4. In the **Device Manager** dialog box, right-click on **Ethernet Controller**, and select **Update Driver** from the context menu.



The **Hardware Update Wizard** dialog box is presented.

5. In the **Hardware Update Wizard** dialog box, select the **Install the software automatically** option, and then click on the **Next** button.

6. In the next screen, select the **Intel(R) 82541ER-Based Gigabit Ethernet Connection** option, and then click on the **Next** button. An alert message will appear. Click on the **Continue Anyway** button. The installation will be complete.

7. Remove the Matrox 4Sight-M System Drivers and Utilities CD and then restart the computer.

Audio driver installation

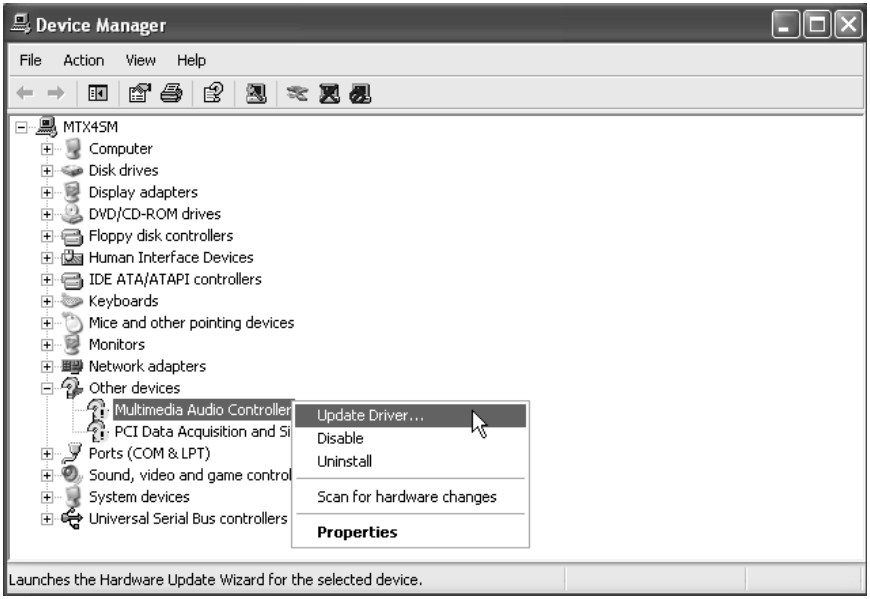
You need to install the AC'97 driver so that the Audio controller installed on your Matrox 4Sight-M unit functions properly. To install this driver:

1. Insert the Matrox 4Sight-M System Drivers and Utilities CD into the CD drive connected to your Matrox 4Sight-M unit running Microsoft Windows XP Professional.

2. Open the Windows Control Panel, and then select the **System** option. The **System Properties** dialog box is presented. Select the **Hardware** tab.

3. From the **Hardware** tab, click on the **Device Manager** button. The **Device Manager** dialog box is presented.

4. In the **Device Manager** dialog box, right-click on **Multimedia Audio Controller**, and select **Update Driver** from the context menu.



The **Hardware Update Wizard** dialog box is presented.

5. In the **Hardware Update Wizard** dialog box, select the **Install the software automatically** option, and then click on the **Next** button.

6. An alert message will appear. Click on the **Continue Anyway** button. The installation will be complete.

7. Remove the Matrox 4Sight-M System Drivers and Utilities CD and then restart the computer.

Chapter

6

Customizing a Windows XP Embedded configuration for Matrox 4Sight-M units

This chapter outlines the procedures involved in customizing and building a Windows XP Embedded configuration.

Introduction

This chapter outlines the steps involved in customizing and building a Windows XP Embedded configuration for your Matrox 4Sight-M unit, using Microsoft Windows XP Embedded development tools and the Windows XP Embedded Repositories database. The Repositories database contain database files that are necessary to build a customized Windows XP Embedded configuration.

Important

Your development computer must have a sufficient amount of RAM to build a Windows XP Embedded configuration. Microsoft recommends at least 256 Mbytes of RAM.

A customized Windows XP Embedded configuration consists of the following elements:

Platform element	Details
Core Windows XP Embedded operating system components	These are components that are required for any Windows XP Embedded configuration.
Matrox 4Sight-M specific components	These are components specific to Windows XP Embedded configurations for your Matrox 4Sight-M unit.

Both of these elements are included in the *4SightM.slx* file, which is an excellent starting point for the creation of a custom Windows XP Embedded operating system.

If you are not familiar with using Microsoft Windows XP Embedded development tools and the Repositories database, refer to the software's on-line documentation and help.

Installing Microsoft Windows XP Embedded development tools and the Repositories database

Prior to creating a customized Windows XP Embedded configuration, you need to install the Microsoft Windows XP Embedded development tools and the Windows XP Embedded Repositories database (SQL server).

You will need to install the development tools on the development computer(s). The development tools include: Target Designer and the Component Database Manager. Target Designer allows you to author configurations and build embedded operating system run-time images. The Component Database Manager allows you to import the database files (components) into the Repositories database.

You can install the Repositories database on a dedicated computer or on a development computer. This computer is referred to as the Repositories computer.

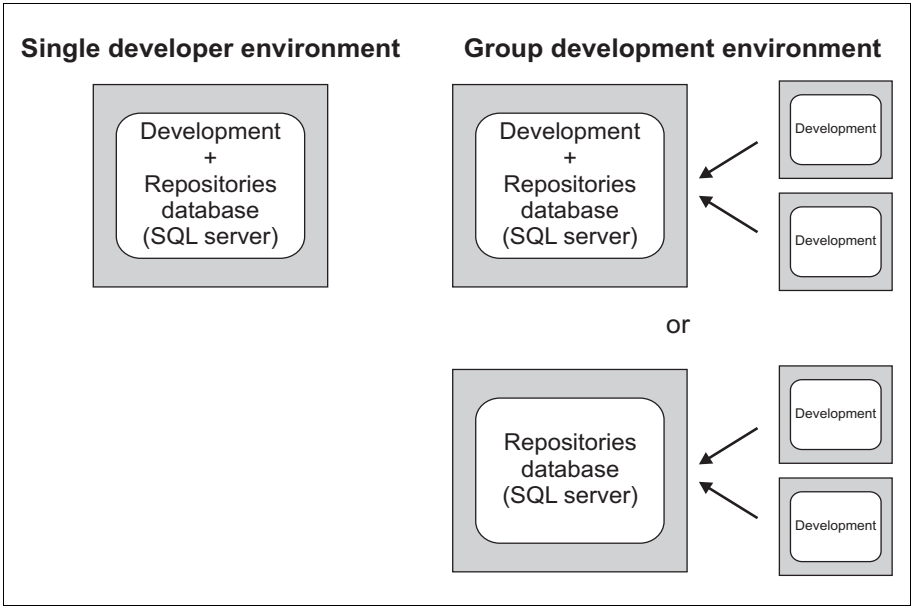
Configuring a single or group development environment

There are two methods of setting up your customized Windows XP Embedded configuration: single development environment or group development environment.

In a single development environment, Windows XP Embedded configurations can be developed from one computer; in a group development environment, different Windows XP Embedded configurations can be developed from different computers.

In a single development environment, the development tools and the Repositories database are installed on the same computer.

In a group development environment, the development tools are installed on each development computer, and the Repositories database can be installed on a dedicated computer or on one of the computers that is also being used for development.



In a group development environment, you must also install additional software on the Repositories computer. This software is referred to as the database engine and it allows other computers (with the development tools) to have access to the Repositories database.

Installing the development tools

You must first install the development tools on the development computer(s). You do not need to install the development tools on the Repositories computer unless you also want to use that computer for development.

❖ Note that you must have a development environment such as MSDEV or SQL Server 2000 installed on the development computer in order to install the Microsoft Component Database Manager.

The procedures for installing the development tools on the development computer are the following:

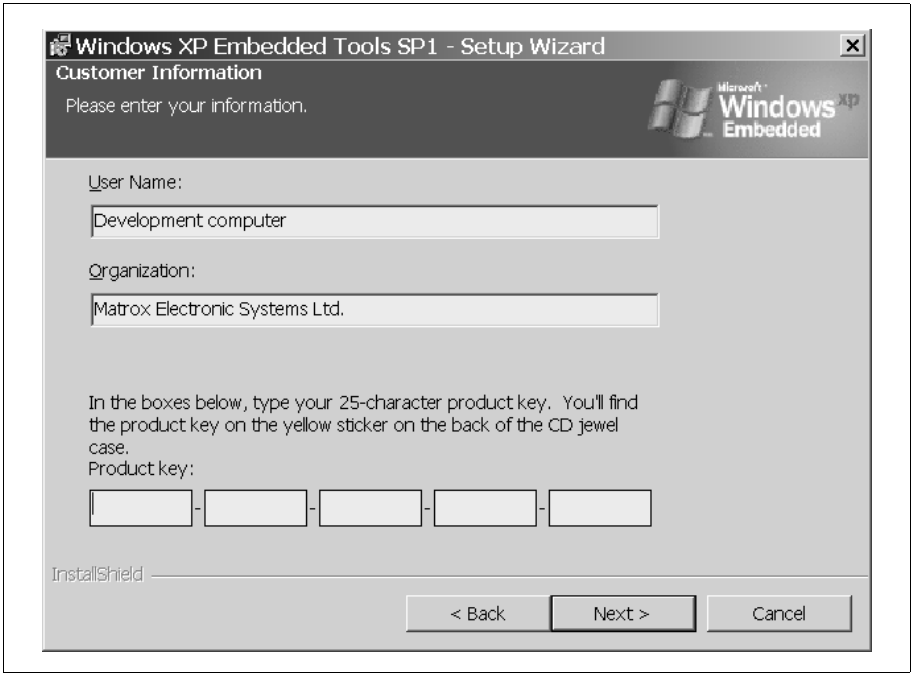
1. Insert the Microsoft Windows XP Embedded CD into the CD drive of your development computer. The **Welcome to Windows XP Embedded** dialog box is presented.

2. Click on the **Tools Setup** item. Note that if your development computer is not operating under Microsoft Windows 2000 (with service pack 3 or higher) or Windows XP, you will not be able to continue with the installation procedure.

   The **Windows XP Embedded Tools - Setup Wizard** dialog box is presented.

3. Click on the **Next** button to proceed with the setup. You are presented with a **Licence Agreement** frame.

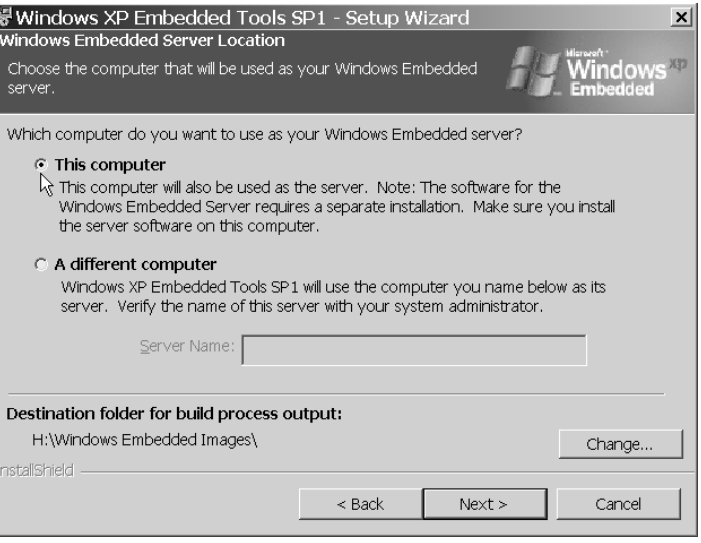
4. Read the **License Agreement**, select the **I accept the terms in the license agreement** option, and click on the **Next** button. The **Customer Information** frame is presented.



5. Enter your personal information, that is, your name, the name of your organization, and the product key. Once all the information is entered, click on the **Next** button. The **Setup Type** frame is presented.

6. Select the **Setup Type** option. If you are not an advanced Windows XP user, it is recommended that you use the **Typical** installation option.

Click on the **Next** button. The **Windows Embedded Server Location** frame is presented.



7. Perform one of the following:

   - If you are setting up a computer to contain both the development tools and the Repositories database, select the **This computer** option. This is the most commonly chosen option because typically you are installing a single development environment.

     At the same time, you can change the folder where all Windows XP Embedded configurations that you build will be stored. To do so, click on the **Change** button.

     To begin the installation, click on the **Next** button, and then on the **Install** button. When the installation is complete, click on the **Finish** button to exit the Setup Wizard. The **Welcome to Windows XP Embedded** dialog box remains opened on your desktop.

     At this point, the required development tools are installed.

   - If you are setting up a computer to contain only the development tools, select the **A different computer** option, and type the name of the computer with the Repositories database in the **Server Name** field. When the installation is complete, click on the **Finish** button to exit the Setup Wizard. The **Welcome to Windows XP Embedded** dialog box remains opened on your desktop.

Installing the database engine

If you are setting up a group development environment, you will need to set up the database engine on the Repositories computer. The database engine allows other computers (with the development tools) to have access the Repositories database.

To install the database engine on the Repositories computer:

1. Run the *setup.exe* file found on the Microsoft Windows XP Embedded CD. The **Welcome to Windows XP Embedded** dialog box is presented.

1. On the Repositories computer, select the **Database Engine Setup** item in the **Welcome to Windows XP Embedded** dialog box. The **SQL Server Desktop Engine** dialog box is presented. When the **SQL Server Desktop Engine** disappears, the Microsoft SQL Server Desktop Engine is installed.

Important

2. Reboot your computer once the installation of the Microsoft SQL Server Desktop Engine is complete. For the installation to complete properly, you must reboot your computer, although the Setup Wizard does not inform you to do so.

Installing the Repositories database

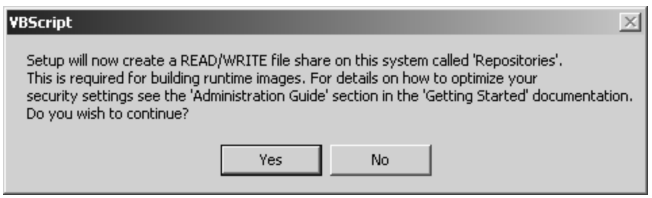
If you have not already done so, you now need to install the Microsoft Windows Embedded Repositories database on the required computer (Repositories computer). To do so:

1. Run the *setup.exe* file found on the Microsoft Windows XP Embedded CD. The **Welcome to Windows XP Embedded** dialog box is presented.

2. Select the **Database Setup** item in the **Welcome to Windows XP Embedded** dialog box. A **VBScript** dialog box is presented. Click on the **Yes** button to attempt to change the security settings.

3. Follow the instructions of the Setup Wizard, accepting the license agreement and entering the user name, organization, product key, and setup type as described in steps 4 through 6 of the *Installing the development tools* subsection.

4. Click on the **Install** button. The **VBScript** dialog box is presented. Click on the **Yes** button to continue with the installation of the Repositories database.



- Note that the installation of the Repositories database and the importing of the core database files is lengthy, and sometimes requires 15 to 30 minutes, depending on the computer.

The Repositories database is now installed.

Preparing the development environment

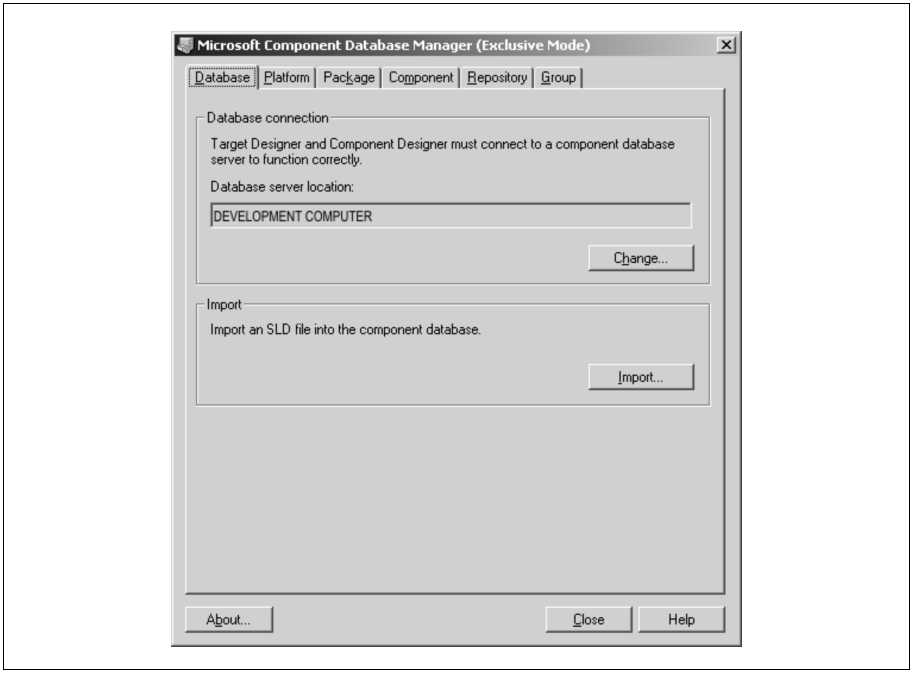
Once the installation of the Repositories database is complete, you should consult the *XPReadme.txt* file, found on the Matrox 4Sight-M System Drivers and Utilities CD, for a list of any Quick Fix Engineering (QFE) updates that must be installed on the development or Repositories computer(s). These must be installed to develop a proper Windows XP Embedded configuration.

Once the QFE updates are installed, you can add components to the Repositories database from a development computer. To do so:

1. Into the CD drive of a development computer with the Microsoft Component Database Manager, insert the Matrox 4Sight-M System Drivers and Utilities CD.

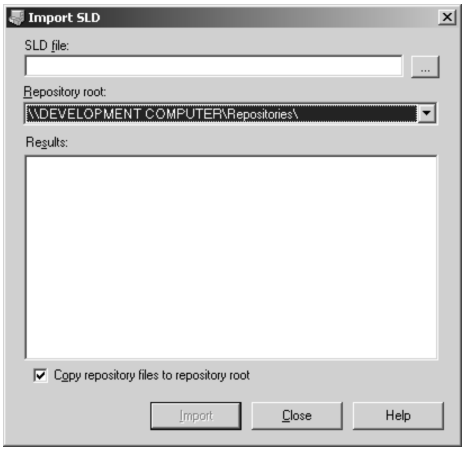
2. Copy the *BuilderXP* folder from the Matrox 4Sight-M System Drivers and Utilities CD to the root folder of the C:\ drive.

3. To import the Matrox 4Sight-M specific component to the Repositories database, click on the **Start** button, select **Programs** followed by **Microsoft Windows Embedded Studio**, and, finally, **Component Database Manager**.
   The **Microsoft Component Database Manager** dialog box opens.



4. The **Microsoft Component Database Manage**r dialog box allows you to change the database connection and to import machine-specific components to the Repositories database. The name of the Repositories computer is automatically entered in the **Database server location** field if it is the same computer as the Repositories database.

If you installed the database on another computer, specify the database server location. From the **Database** tab of the **Microsoft Component Database Manager** dialog box, click on the **Change** button, and then type the name and location of the Repositories computer. Click on the **Import** button to import the Matrox 4Sight-M specific components. The **Import SLD** dialog box is presented.



5. Assure that the **Copy repository files to repository root** option is enabled, and click on the **Browse** button, located next to the **SLD file** edit field. The **Open** dialog box is presented.

6. Go to the *\BuilderXP* folder that you copied to the C:\ drive. Select the *\SLD* subfolder, and import each of the files found in that folder one by one. To import a file, select the file and click on the **Open** button in the **Open** dialog box. Then, in the **Import SLD** dialog box presented, click on the **Import** button. You should import all of the following files:

File	Description
Mtx4SM AC97 Audio Controller.sld	Provides an audio controller driver.
Mtx4SM XPEmbedded Utilities.sld	Provides the utilities necessary to operate your Matrox 4Sight-M unit.
Mtx4SM-Intel Chipset Utility.sld	Provides the Intel Chipset Software Installation Utility.
Mtx4SM-Intel Embedded Graphics.sld	Provides a graphics controller driver.

File	Description
Mtx4SM-Intel Gigabit 82541ER.sld	Provides a Gigabit Ethernet network driver.
Mtx4SM-Intel Pro100VE.sld	Provides a Fast Ethernet network driver.
Mtx4SM-Rainbow SuperPro USB.sld	Provides the driver for the hardware key.
XPConfig.sld	Provides the XPConfig utility.
Matrox 4Sight-M Bios WinFlash.sld	Provides software to update the BIOS under Windows XP Embedded.
Matrox ActiveMil-Full 8.00.sld	Provides run-time files necessary to execute ActiveMIL applications that use processing functions.
Matrox ActiveMil-Lite 8.00.sld	Provides run-time files necessary to execute ActiveMIL/ActiveMIL-Lite applications that do not use processing functions.
Matrox GNL 3.25.sld	Provides the Genesis Native Library, which is required to operate a Matrox Meteor-II /Digital or Matrox Meteor-II /Camera Link board connected to your Matrox 4Sight-M unit.
Matrox Intellicam 8.00.sld	Provides fast camera interfacing and interactive access to all the grab features and functionalities of Matrox frame grabbers.
Matrox Meteor II - MIL8.00.sld	Provides the Matrox Meteor-II driver.
Matrox Meteor II CL - MIL8.00.sld	Provides the Matrox Meteor-II /Camera Link driver.
Matrox Meteor II Dig - MIL8.00.sld	Provides the Matrox Meteor-II /Digital driver.
Matrox MIL-Full 8.00.sld	Provides run-time files necessary to execute MIL applications that use processing functions.
Matrox MIL-Lite 8.00.sld	Provides run-time files necessary to execute MIL/MIL-Lite applications that do not use processing functions.
Matrox Morphis - MIL8.00.sld	Provides the Matrox Morphis driver.
Matrox Sentinel 8.00.sld	Provides the Sentinel driver, responsible for the MIL license.
Microsoft_MFC71.sld	Provides the Microsoft MFC 7.1 DLL files.

- Note that some files take longer to import than others.

Important

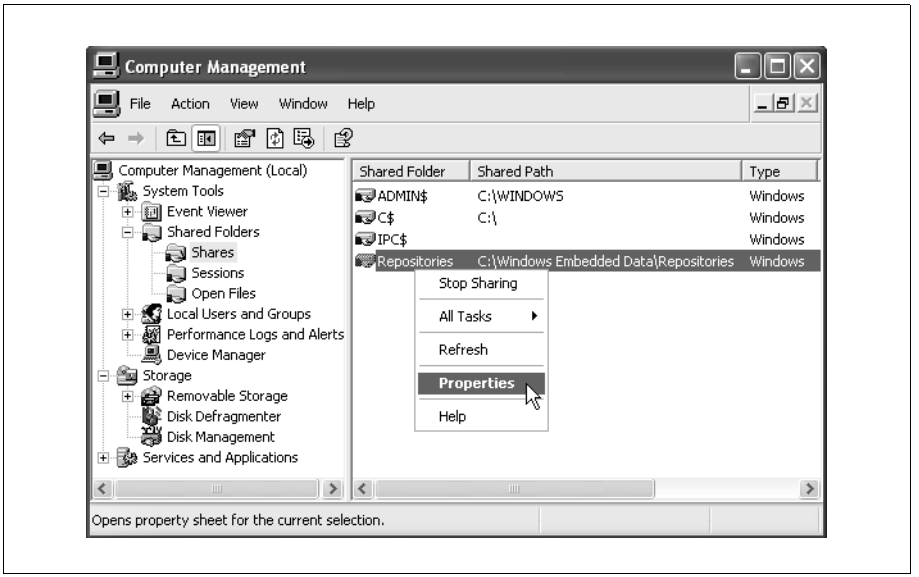
You will also need to import the SLD files for any Quick Fix Engineering (QFE) updates that you have installed, after having installed the Windows XP Embedded development tools and before building any Windows XP Embedded configurations. The location of the QFE updates varies depending on where you installed them.

7. Once you have finished importing all of the files in the *\SLD* folder and the QFE updates, you are finished preparing to build the Windows XP Embedded configuration, and you can close all the open windows.

Sharing repositories

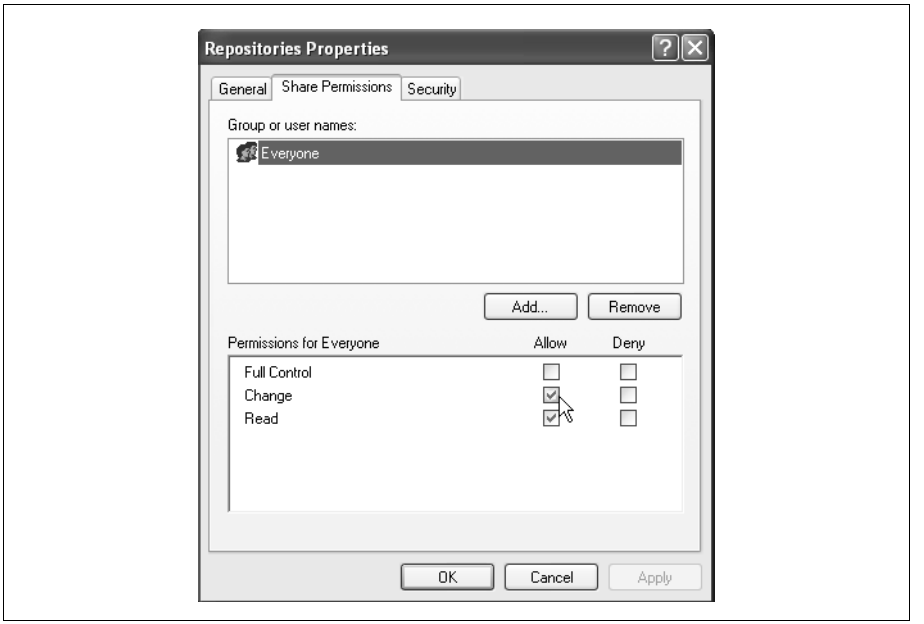
You can share your repositories on the Repositories computer, for instance, for development purposes. You must ensure that you set the correct share permissions. To do so:

1. Open the Windows **Control Panel**, select the **Administrative Tools** option, and then select the **Computer Management** option. The **Computer Management** dialog box is presented.



2. From the navigation pane in the **Computer Management** dialog box, select **Shared Folders**, and then select the **Shares** folder. In the right pane, right-click on **Repositories**. The **Repositories Properties** dialog box is presented.

3. On the **Share Permissions** tab, select the **Change** option for the **Everyone** group, or add a specific user name by clicking on **Add**.



This will allow other users including yourself to make changes to and read your repositories.

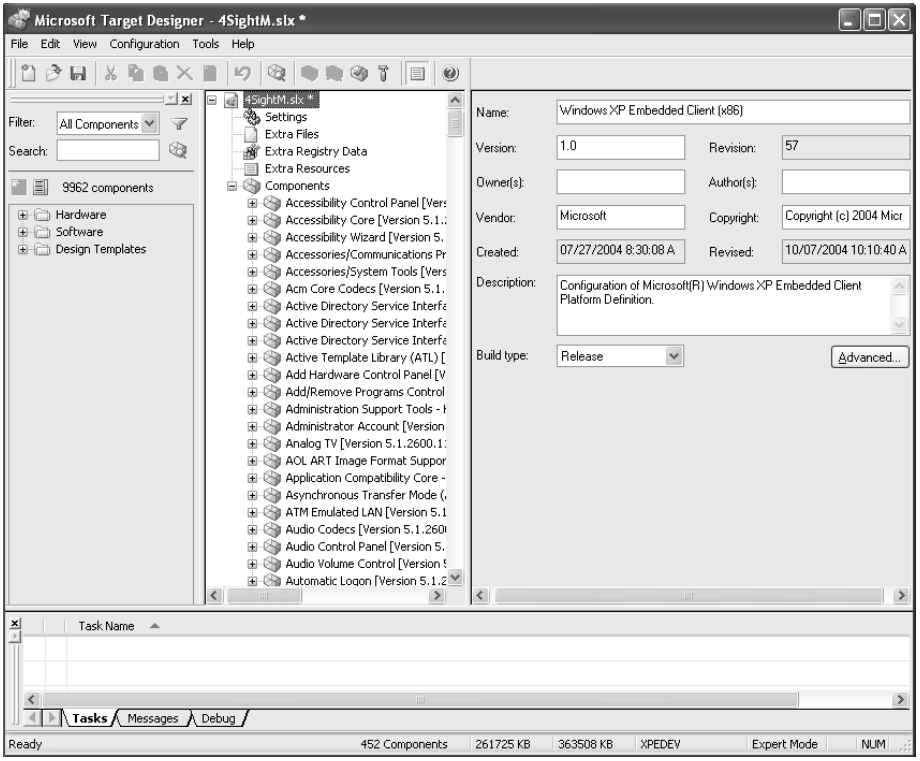
Building the Windows XP Embedded configuration

This section describes the process of building a custom Windows XP Embedded configuration on the development computer. To build the configuration, follow the ensuing steps:

1. Click on the **Start** button, select **Programs**, followed by **Microsoft Windows Embedded Studio**, and finally select **Target Designer**. Target Designer might take a few moments to open.

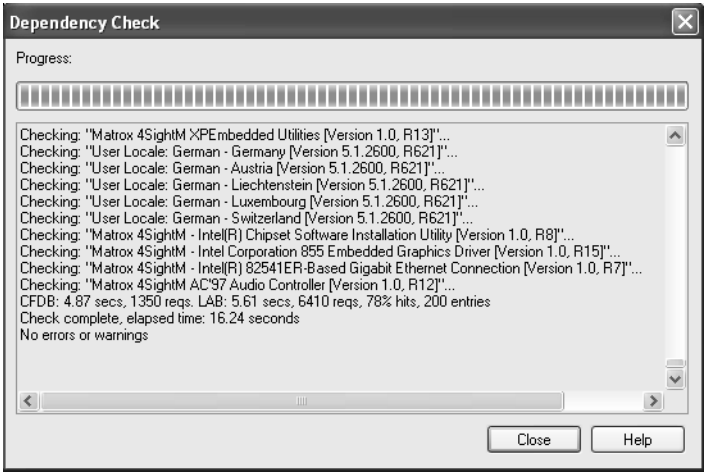
2. Once Target Designer is open, use the **File Open** command to load the Matrox 4Sight-M specific components. In the **Open** dialog box, select the *\BuilderXP* folder that you copied to the C:\ drive, choose the *\SLX* subfolder, and finally open the *4SightM.slx* file.

   The *4SightM.slx* file contains all the components of a Windows XP Embedded configuration found on pre-configured Matrox 4Sight-M units.



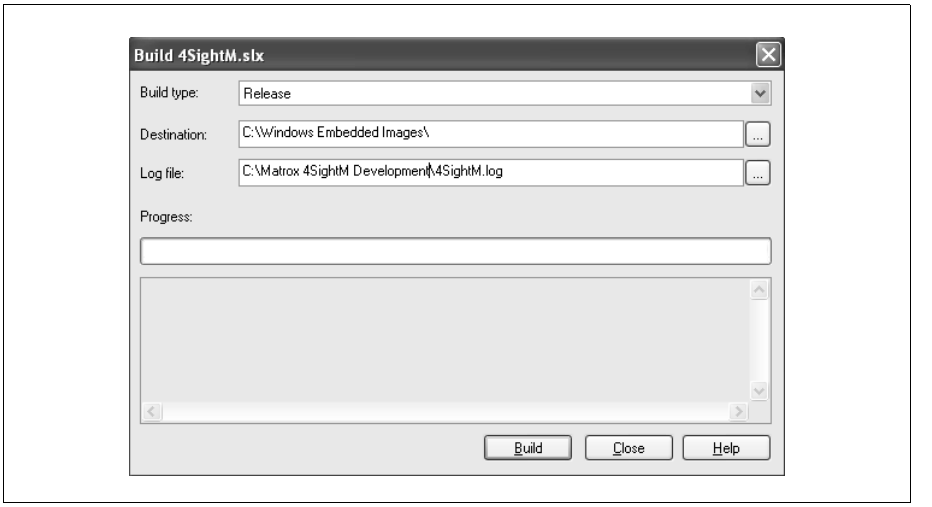
3. Select the **Tools Options** command. The **Options** dialog box is presented. Click on the **Dependency Check** tab, and ensure the **Auto-resolve dependencies** option is not selected.

4. Use the **Configuration Check Dependencies** command to verify that all the components required to build a configuration have been properly included. The length of this process varies depending on the speed of your computer. When checking is completed, you should make sure that there are no errors or warnings reported.



Important Dependency checking is very resource consuming; your CPU will be utilized to the maximum.

5. To build the Windows XP Embedded configuration, use the **Configuration Build Target Image** command. The **Build 4SightM.slx** dialog box opens.



6. Select the type of build required, **Release** or **Debug**, from the **Build type** drop-down box. Use the browse buttons, located next to the **Destination** and **Log file** edit fields, to change where the built configuration and the log file will be stored.

   For more information on debugging your custom configuration, refer to Microsoft Windows XP Embedded documentation.

7. Click on the **Build** button to build your custom Windows XP Embedded configuration. The building process can take anywhere from 10 to 15 minutes. At the end of the build, assure that there are no warnings or error messages reported, and close all the open windows.

Transferring a Windows XP Embedded configuration to your Matrox 4Sight-M unit

After building a custom Windows XP Embedded configuration, you will typically want to transfer it to a 3.5-inch hard disk connected to your Matrox 4Sight-M unit. The procedure for the transfer is the following:

1. Connect a 2.5-inch hard disk, which has already been configured with a Microsoft Windows XP operating system, to the primary ATA 44-pin connector.

   Note that the hard disk distributed with an integrated Matrox 4Sight-M unit is a 2.5 inch hard disk. If you have purchased a Matrox 4Sight-M unit whose hard disk is not pre-configured with Microsoft Windows XP Embedded, install Microsoft Windows XP Professional onto the hard disk. For more information, see the *Installing Windows XP Professional* chapter.

   For more information on connecting a hard disk to your Matrox 4Sight-M unit, refer to the *Matrox 4Sight-M Installation and Hardware Reference* manual.

2. Connect the non-formatted 3.5-inch hard disk, onto which you want to transfer the custom Windows XP Embedded configuration, to the secondary ATA 40-pin connector.

3. Turn on your unit, booting from the configured hard disk connected to the primary ATA 44-pin connector.

4. Open the Windows **Control Panel**, select **Administrative Tools**, and then select **Computer Management**. In the console tree of the **Computer Management** dialog box, double click on the **Storage** item, and then select the **Disk Management** item.

5. Partition the blank hard disk. To do so, right click on the icon representing the blank disk, which is found in the right corner of the **Computer Management** dialog box. The **New Partition Wizard** is presented, allowing you to partition and format your hard disk properly. Create a single primary and active partition on the hard disk (the number of partitions you create is up to you).

6. Once the new disk is partitioned, use the network to access the configuration that you built on the development computer. Copy the entire folder containing the configuration, from your development computer to the active primary partition of the newly formatted hard disk on your Matrox 4Sight-M unit.

7. Enter the BIOS Setup utility, and using the **Boot** menu, disable the hard disk connected to primary ATA 44-pin connector. For more information, refer to the the BIOS appendix of the *Matrox 4Sight-M Installation and Hardware Reference* manual.

   Now, your 3.5-inch hard disk is completely configured with your Windows XP Embedded configuration. See the *Matrox 4Sight-M under Windows XP Embedded* and the *Matrox 4Sight-M under either Windows XP operating systems* chapters for more information on using your Matrox 4Sight-M unit running Windows XP Embedded.

Appendices

Appendix A: Restoring the contents of a pre-configured hard disk

This appendix describes how to restore the contents of a pre-configured hard disk that has become corrupted.

Introduction

If you have purchased a Matrox 4Sight-M unit with a pre-configured hard disk, your Matrox 4Sight-M package will include the Matrox 4Sight-M Windows XP Embedded Rescue Utility CD.

This CD contains the Windows XP Embedded rescue utility, which restores the original files and setup configuration of a pre-configured hard disk supplied by Matrox, if it becomes corrupted.

Warning

Files that are saved on the hard disk after the factory configuration cannot be restored.

Using the Matrox 4Sight-M rescue utility

To restore the contents of your hard disk using the Matrox 4Sight-M rescue utility, follow the ensuing steps:

1. Remove the chassis and connect a bootable CD drive to the motherboard; alternatively, you can connect a USB CD drive (without having to remove the chassis). For details, refer to the *Matrox 4Sight-M Installation and Hardware Reference* manual.

2. Turn-on your unit.

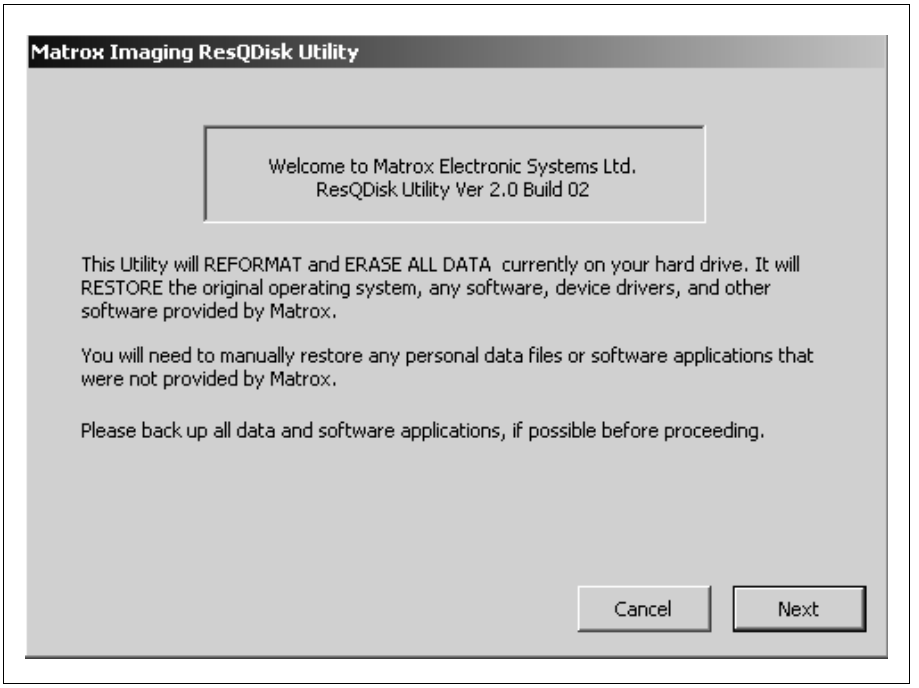
3. Press **Esc** during POST to access the boot-device selection utility included in the Matrox 4Sight-M BIOS. For details on this utility, refer to Appendix B of the *Matrox 4Sight-M Installation and Hardware Reference* manual.

4. Insert the Matrox 4Sight-M Windows XP Embedded Rescue Utility CD into the CD drive.

5. Using the Up or Down key to move the highlighting bar, select the CD Drive option, and press **Enter**.

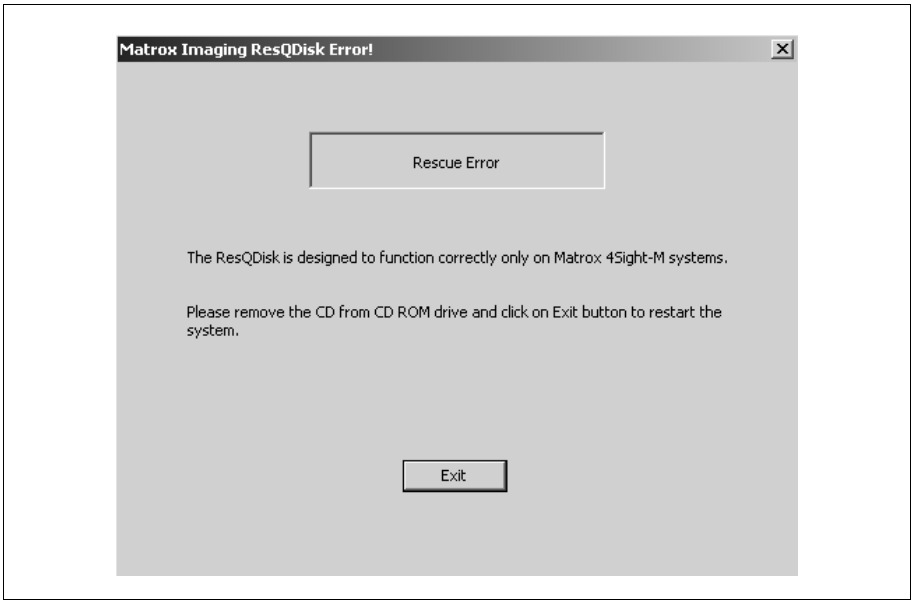
   Upon booting, the rescue utility is launched automatically.

6. Once the rescue utility has started, you will see the following prompt displayed on your screen:

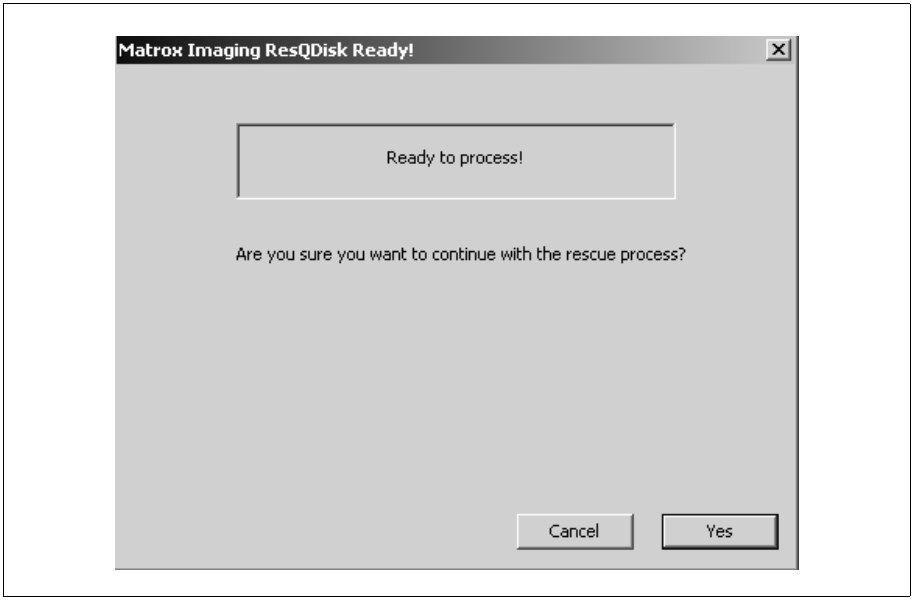


The rescue utility will indicate the version of the Windows XP Embedded rescue utility software, as well as the name of the operating system to be restored on the hard disk. Before restoring the contents of the hard disk, the utility will also indicate if partitioning is necessary.

❖ If your unit is not a Matrox 4Sight-M unit, the following prompt will appear:



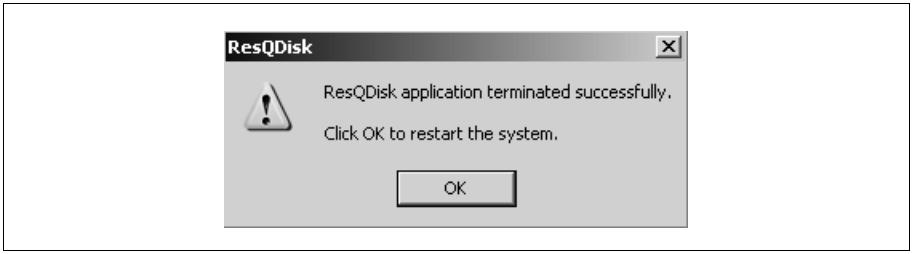
7. Before restoration begins, there is a prompt for confirmation:



Click on **Cancel** if you want to cancel this procedure. The rescue operation will be cancelled and your unit will reboot.

Click on **Yes** to proceed with the restoration of your hard disk. The rescue utility will perform a byte per byte restoration of your hard disk.

8. Once the restoration is complete, the following message appears:



To complete the restoration, remove the Rescue Utility CD from the CD drive, click on **OK**, and your Matrox 4Sight-M unit will be rebooted with the restored operating system.

❖ Note that after first rebooting the unit, the First Boot Agent (FBA) will start to configure the run-time image. This process can take anywhere from 10 to 20 minutes.

Appendix B: XPConfig command-line options

This appendix describes the XPConfig command-line options and how to use them.

Command-line options

Aside from allowing you to change Matrox 4Sight-M settings, the Windows XP Configuration utility (XPConfig) also has a number of command-line options. These allow you to perform several tasks from the Windows XP Embedded command prompt.

The command-line prototype for XPConfig is:

```
xpconfig [/shutdown][/reboot][/dmacheck][/mem][/autopopup]
```

Calling XPConfig with a specific option

The procedure to call XPConfig with a specific command-line option is as follows:

1. Close the **4Sight-M Windows XP Embedded Configuration** dialog box if it is open.

2. Open a Command window. To open a Command window, use the **Windows Start Programs Command Prompt** command.

3. Type **xpconfig /***option*, where */option* represents the option that you want to select. For example, to reboot your Matrox 4Sight-M unit, type **xpconfig /reboot** at the command prompt.

/shutdown

When you call XPConfig with the **/shutdown** option, the Matrox 4Sight-M unit unconditionally shuts down, without displaying the standard XPConfig dialog box. When Windows XP Embedded completes the shutdown procedure, the unit will display a message, confirming that it is now safe to turn off the unit using the power button. All other command-line options are ignored when this option is used. This option is useful for remote shutdown of your Matrox 4Sight-M unit, if you have created the appropriate applications to do so.

/reboot

When you call XPConfig with the **/reboot** option, Windows XP Embedded starts a shutdown procedure and, after the shutdown, automatically reboots the Matrox 4Sight-M unit, without displaying the standard XPConfig dialog box. All other command-line options are ignored when this option is used. This option is useful to reboot remotely, if you have created the appropriate applications to do so.

/dmacheck

When you call XPConfig with the **/dmacheck** option, XPConfig determines the amount of memory installed in the Matrox 4Sight-M unit. In addition, it validates and corrects other memory-related parameters. Note that the standard XPConfig dialog box is not displayed when this option is used. The memory-related parameters are considered valid when the total amount of physical memory minus the graphics controller memory, minus the memory for system management mode, minus the total amount of non-paged (DMA) memory reserved by MIL, minus the total amount of memory available to Windows XP Embedded equals 0. That is:

```
TotalMem - GraphicMem - SMRam - DMAMem - AvailMem = 0
```

If this equation is unbalanced, XPConfig will adjust the operating system memory parameter accordingly. For these adjustments to take effect, the computer must reboot. This command is useful for adjusting the amount of memory available to the operating system if physical memory (RAM) is added or removed while non-paged memory is reserved by MIL.

/mem

When you call XPConfig with the **/mem** option, XPConfig performs the same operations as **/dmacheck**. However, before validating and correcting memory-related parameters, it reports these parameters by displaying a message box. This message box lists the following information:

- CPU type.
- CPU clock speed.
- FSB clock speed (front side bus).
- Physical memory clock speed.
- Total physical memory in the system.
- Memory reserved for MIL DMA buffers.
- Memory available for Windows XP (TotalMem-DMAMem).

/autopopup

When you call XPConfig with the **/autopopup** option, XPConfig checks the registry to determine if the automatic popup feature is enabled. If so, it displays the **4Sight-M Windows XP Embedded Configuration** dialog box; otherwise, it does nothing. This option is used at bootup time to determine if the **4Sight-M Windows XP Embedded Configuration** dialog box should be displayed. You can enable or disable the automatic popup feature by choosing the appropriate settings on the *Global Settings tab* of the **4Sight-M Windows XP Embedded Configuration** dialog box.

Appendix C: Using the Matrox 4Sight-M BIOS WinFlash utility

This appendix describes how to use the Matrox 4Sight-M BIOS WinFlash utility to update or save the BIOS of your unit.

Introduction to the Matrox 4Sight-M BIOS WinFlash utility

The Matrox 4Sight-M BIOS WinFlash utility allows you to update or save the system BIOS of Matrox 4Sight-M. This utility can reprogram the BIOS of Matrox 4Sight-M using a BIOS image file, or extract the current BIOS image and write it to a file. In addition, the Matrox 4Sight-M BIOS WinFlash utility can also export the current custom and default BIOS setup values to a file or import the custom and default BIOS setup values from a file.

The Matrox 4Sight-M BIOS WinFlash utility runs under both Windows XP Professional and Windows XP Embedded operating systems.

There are three required components to execute the Matrox 4Sight-M BIOS WinFlash utility:

- The Matrox 4Sight-M driver (*Mtx4SM.sys*).
- The Matrox 4Sight-M library (*Mtx4SM.dll*).
- The Matrox 4Sight-M BIOS WinFlash utility (*Mtx4SMWinFlash.exe*).

The Matrox 4Sight-M BIOS WinFlash installer (*setup.exe*), located on the Matrox 4Sight-M System Drivers and Utilities CD, installs these components automatically.

Warning

You must close all applications before running the Matrox 4Sight-M BIOS WinFlash utility.

Warning

Do not shut down Matrox 4Sight-M while the Matrox 4Sight-M BIOS WinFlash utility is running.

Basic concepts

There are a few main concepts to retain before using the Matrox 4Sight-M BIOS WinFlash utility. They are characterized as follows:

- **Custom BIOS setup values**. Settings used by the BIOS that override the default values. The BIOS retrieves custom setup values from CMOS.

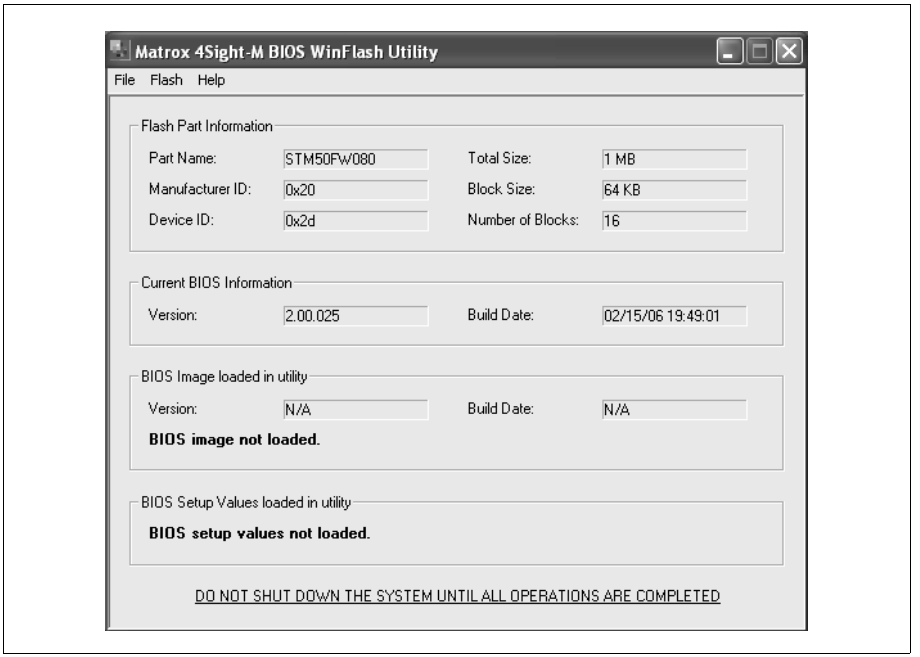
- **Default BIOS setup values**. Settings used, by default, by the BIOS unless they have been overridden by a custom BIOS setup values. The BIOS retrieves default setup values from its BIOS image in flash memory.

Graphical User Interface (GUI) mode

This section lists menu items of the graphical user interface of the Matrox 4Sight-M BIOS WinFlash utility.

❖ Note that you must not shut down Matrox 4Sight-M while the Matrox 4Sight-M BIOS WinFlash utility is running.

The following information is displayed when the utility starts in GUI mode:



- **Flash Part Information**. Details of the flash memory chip installed on Matrox 4Sight-M.

- **Current BIOS Information**. Version and build date of the BIOS currently running.

- **BIOS Image loaded in utility.** Version and build date of the BIOS image currently loaded in the utility. A status message is also displayed indicating the state of this BIOS image.

  - **BIOS image not loaded**. Indicates that a BIOS image is not loaded in the utility.

  - **BIOS image loaded from file**. Indicates that the BIOS image loaded in the utility is loaded from file.

  - **BIOS image loaded from flash**. Indicates that the BIOS image loaded in the utility is loaded from flash memory.

- **BIOS Setup Values loaded in utility**. A status message indicating the state of the BIOS setup values currently loaded in the utility:

  - **Default values loaded from BIOS image file**. Indicates that the BIOS setup values loaded in the utility are the default values of the BIOS image loaded from file.

  - **Custom/default values loaded from CMOS/flash memory**. Indicates that the BIOS setup values loaded in the utility are the custom and default values loaded from CMOS and flash memory.

  - **Custom/default values loaded from BIOS setup values file**. Indicates that the BIOS setup values loaded in the utility are the custom and default values loaded from a BIOS setup values file.

Menu commands

The interface has the following menu items:

- **File** menu.

  - **Load BIOS Image File**. Loads a BIOS image file (**.rom*) in the utility. This command also loads the default BIOS setup values, from the BIOS image file. Note that all custom BIOS setup values are cleared.

  - **Save BIOS Image File**. Saves the BIOS image currently loaded in the utility to a file (**.rom*). It also saves the default BIOS setup values to the file.

  - **Import BIOS Setup Values**. Imports into the utility the default and custom BIOS setup values from a file (**.txt*). Refer to the section *BIOS setup values import/export commands* for further details.

  - **Export BIOS Setup Values**. Exports the default and custom BIOS setup values loaded in the utility to a file (**.txt*). Refer to the section *BIOS setup values import/export commands* for further details.

- **Flash** menu.

  - **Read Flash**. Reads the BIOS image and the default BIOS setup values from flash memory and loads them in the utility. This command also reads the custom BIOS setup values from the CMOS.

- **Write Flash**. Writes the BIOS image and the default BIOS setup values currently loaded in the utility to flash memory. This commands also writes the custom BIOS setup values currently loaded in the utility to the CMOS.

- **Help** menu.

  - **About**. Displays the utility copyright information.

  - **User Guide**. Displays the readme file for the Matrox 4Sight-M BIOS WinFlash utility.

Examples

For example, to load a BIOS image file and write it to flash memory, select the **File Load BIOS Image File** command and then the **Flash Write Flash** command. To read the BIOS image from flash memory and save it to a file, select the **Flash Read Flash** command, then **File Save BIOS Image File** command.

Command line options for the Matrox 4Sight-M BIOS WinFlash utility

You can also run the Matrox 4Sight-M BIOS WinFlash utility from the command prompt by typing the name of the utility and its arguments in a command prompt window. The command line prototype for the utility is:

```
Mtx4SMWinFlash.exe [/Q] [COMMANDS] [/B]
```

The following describes the available command line switches:

Command line switch	Description
/Q	Quiet operation. The GUI will not pop-up if an error occurs during command line processing.
/B	Reboot. The system will reboot after successfully processing the other command line arguments.

The following is a list of possible commands. Note that the file names in italics should be replaced with the name of the actual file with the same extension:

Commands	Description
/L*filename.rom*	Load the BIOS image file and the default BIOS setup values.
/S*filename.rom*	Save the BIOS image and the default BIOS setup values to a file.

Commands	Description
/importcmos.txt	Import the custom and default BIOS setup values from a file.
/Eexport.txt	Export the custom and default BIOS setup values to a file.
/W	Write the BIOS image and the default BIOS setup values to flash memory and overwrite the current custom BIOS setup values in CMOS.
/R	Read the BIOS image and the default BIOS setup values from flash memory and the current custom BIOS setup values from CMOS.

The command line arguments are executed in the order that they appear on the command line. Therefore, if the quiet switch (/Q) is used, it must be listed first in the argument list, and if the reboot switch (/B) is used, it must be listed last in the argument list.

❖ When entering the name of a file, do not use quotes, even for long file names. Simply enter the path and name of the file as is; spaces in the name are permitted.

When starting the utility in command line mode, the utility will immediately return control to the command prompt before completing the tasks. A new command line console window will open and display the progress (even in quiet mode).

To wait for the utility to complete its tasks, you must run the utility from a batch file, or start it using the command prompt **start /wait** command.

Warning

Do not shut down Matrox 4Sight-M while the Matrox 4Sight-M BIOS WinFlash utility is running.

The utility returns the following error codes (ERRORLEVEL) when run in command line mode:

Error level value	Description
0	Success.
1	Error.

Examples

The following are four examples that illustrate some command line options when using Matrox 4Sight-M BIOS WinFlash utility.

- The following command will load the BIOS image from the file *C:\ToFLash\MF200005.rom* and write it to flash memory:

```
Mtx4SMWinFlash.exe /LC:\ToFLash\MF200005.rom /W
```

- The following command will read the BIOS image from flash memory and save it to the file *D:\My Documents\Personal Folder\Backup.rom*:

```
Mtx4SMWinFLash.exe /R /SD:\My Documents\Personal Folder\Backup.rom
```

- The following command will produce the same result as the first example, but the utility will return control to the command prompt only when all operations are completed.

```
start /wait Mtx4SMWinFlash.exe /LC:\ToFLash\MF200005.rom /W
```

- The following lines in a batch file will load the BIOS image from the file *MF200005.rom* and write it to flash memory. If an error occurs, ERROR will be displayed, otherwise SUCCESS will be displayed.

```
Mtx4SMWinFlash.exe /Q /LMF200005.rom /W

    IF ERRORLEVEL 1 GOTO ERROR
    echo SUCCESS
    GOTO END

    :ERROR
    echo ERROR
    GOTO END

    :END
```

BIOS setup values import/export commands

You can use the import/export commands to manipulate the custom and default BIOS setup values. In addition, these commands can import or export values from or to different BIOS versions. For example, before updating your BIOS version, they allow you to save your custom BIOS setup values, and then reload them after updating to the new BIOS version.

❖ The import/export commands are not supported in BIOS versions prior to 2.00.005.

If an error occurs when importing data, a log file with a name ending in ".IMPORT_ERROR.txt" will be created automatically in the current folder. The BIOS setup values file must then be edited to remove the problematic data, and the import command must be used again.

The BIOS setup values file is a text file that can be edited with any text editor. The BIOS setup values file contains a header and several data blocks.

The following is an example of a block of data in a BIOS setup values file:

```
Main                                <-- Menu title
   Boot Options                     <-- Submenu title
      SETUP prompt:                 <-- Item name
         ( PICK_FIELD )             <-- Item type
         ( minimum 0  maximum 1 )   <-- Minimum and maximum values
         ( default 0  current 0 )   <-- Default and current values
            [0]  Disabled           <-- List of options corresponding to values
            [1]  Enabled
```

❖ Note that in the BIOS setup values file, the term "current" is equivalent to the term "custom".

The syntax of the data blocks is critical and the indentation of the different lines must be respected. There must be a blank line after every block of data.

❖ The only values that can be modified in a data block are the default and custom BIOS setup values for the block.

Steps to import/export the BIOS setup values

The following steps outline how to import/export the BIOS setup values:

1. Load a BIOS image file.

2. Export the BIOS setup values to a file.

3. Edit the file to adjust the default and custom values to the required values. You should edit the resulting exported file to avoid syntax problems.

   The BIOS setup values file does not have to contain every BIOS setup setting. Instead, the BIOS setup values file only needs to contain the data blocks that are to be updated.

4. Import the BIOS setup values from the file.

5. Write the BIOS image and default BIOS setup values to flash memory and the custom setup values to CMOS.

   The following BIOS setup values cannot be modified using this utility:

```
Main
   System Time:
   System Date:
   Primary Master
      Type:
   Primary Slave
      Type:
   Secondary Master
      Type:
   Secondary Slave
      Type:
```

❖ Note that the boot order cannot be modified using this utility.

Example

The following is an example which illustrates how to change the custom and default BIOS setup values of the **Main Boot Options SETUP prompt** command:

1. Load a BIOS image file into the utility using the **File Load BIOS Image File** command or the command prompt.

2. Export the BIOS setup values to a file using the **File Export BIOS Setup Values** command or the command prompt.

3. Open the file with a text editor.

   - In the text editor, do not modify the file header.

   - Keep only the data blocks to customize, and delete the remaining data blocks. In this case, keep only the following data block:

```
Main
     Boot Options
        SETUP prompt:
           ( PICK_FIELD )
           ( minimum 0  maximum 1 )
           ( default 0  current 0 )
              [0]  Disabled
              [1]  Enabled
```

   - Customize the default and custom values of the required data blocks. In this case, set both the default value and the custom value to **Enable** as follows.

```
 Main
    Boot Options
       SETUP prompt:
          ( PICK_FIELD )
          ( minimum 0  maximum 1 )
          ( default 1  current 1 )
             [0]  Disabled
             [1]  Enabled
```

4. Save and close the file.

5. Import the BIOS setup values from the file into the utility using the **File Import BIOS Setup Values** command or the command prompt.

6. Write the BIOS image and BIOS setup values to flash memory/CMOS using the **Flash Write Flash** command or the command prompt.

   For further information on the BIOS, refer to corresponding appendix in the *Matrox 4Sight-M Installation and Hardware Reference* manual.

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Product Support

Product Assistance Request Form

Name:	
Company:	
Address:	
Phone:	Fax:
E-mail:	
Hardware Specific Information	
Computer:	CPU:
System memory:	PCI Chipset:
System BIOS rev:	
Video card used:	Resolution:
Network Card:	Network Software:
Other cards in system:	
Software Specific Information	
Operating system:	Rev:
Matrox SW used:	Rev:
Compiler:	Rev:
Describe the problem:	