

Graphics Solutions for Professionals

Matrox **G450 MMS**

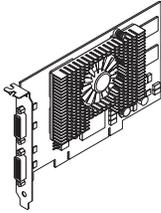
User Guide

10807-301-0225
2011.04.20

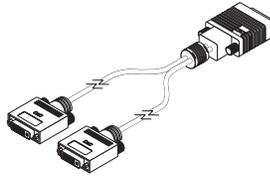
Overview

Thank you for purchasing a G450 MMS (Multi-Monitor Series) graphics card. Your Matrox MMS card is a high-performance graphics card that plugs into an expansion slot inside your personal computer. With this card, you can use 2 or 4 computer monitors or TVs at a time.

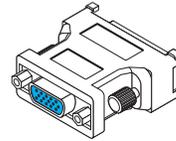
Hardware supplied



G450 MMS card †



Dual-monitor cable †



DVI-to-HD15 adapters ‡

* Pictured is a G450×4 MMS card.

† 2 dual-monitor cables are included with Matrox MMS×4 products.

‡ 2 DVI-to-HD15 adapters are included for each dual-monitor cable.

Software supplied (for Windows 2000/XP and NT 4.0)

- Matrox PowerDesk – to use your Matrox graphics hardware
- Other software – see the CD-ROM *Readme* file

Installation overview



Note: If your Matrox product is already partially or fully installed on your computer, some or all the installation information in this guide may not apply to you. However, this information may be useful if you need to reinstall your Matrox product.

To install your Matrox product:

- 1 Install the Matrox card – see “[Hardware installation](#)”, page 3.
- 2 Install the software – see “[Software installation](#)”, page 8.

Hardware installation

This section describes how to install your Matrox card. For information specific to your computer, like how to remove its cover, see your system manual.



WARNING: To avoid personal injury and to prevent damage to your computer or Matrox hardware, turn off your computer, unplug it, and then wait for it to cool before you install your Matrox product and touch any of the internal parts of your computer.

While your computer is turned off but still plugged in, some electrical current is supplied to the motherboard. This current may prevent newly installed hardware from working properly.

Also, static electricity can severely damage electronic parts. Before touching any electronic parts, drain static electricity from your body (for example, by touching the metal frame of your computer). When handling a card, carefully hold it by its edges and avoid touching its circuitry.

1 Switch to the standard VGA display driver

If you're running Windows 2000/XP on your computer, this step isn't necessary.

If you're using another operating system (for example, Windows NT 4.0), see its documentation for how to switch to VGA mode.

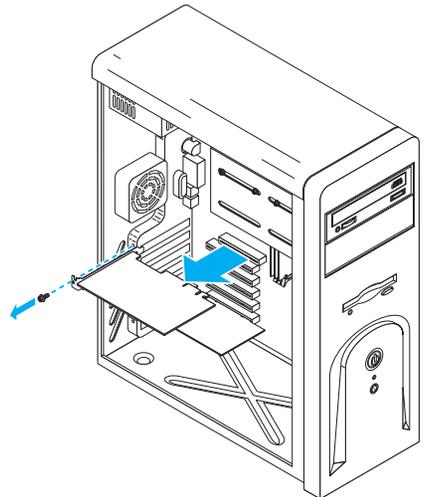
2 Open your computer and remove your existing graphics card*

If a graphics card *isn't* already installed in your computer, skip to [step 3](#).

- a Using **Add/Remove Programs** in the Windows **Control Panel**, remove any currently installed display drivers. Restart your computer for the changes to take effect.

After your computer restarts, you're prompted to install drivers for the new graphics hardware detected. Click **Cancel**.

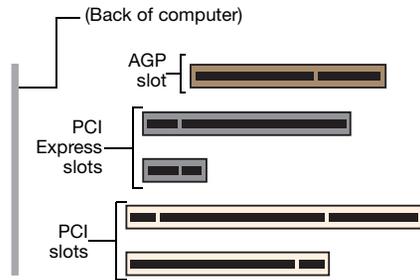
- b Turn off your computer and all peripherals such as your monitor or printer.



- c Open the computer and remove your existing graphics card. (If graphics hardware is built into the motherboard of your computer, you may need to disable it manually. For more information, see your system manual.)

3 Choose a PCI slot

Most computers have different types of expansion slots. Choose a *PCI* (not *PCI Express*) slot for your graphics card. Your card supports both 64-bit and 32-bit PCI slots. Your system manual should identify the location of each type of expansion slot in your computer.)

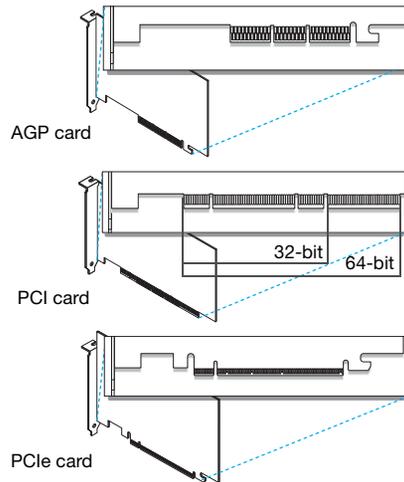


Note: If you're using a PCI graphics card in a PCI 64-bit compatible slot, your choice of PCI slot may affect your card or system performance. For more information, see your computer manual.



WARNING: Inserting your Matrox card into the wrong type of slot could damage your card, your computer, or both.

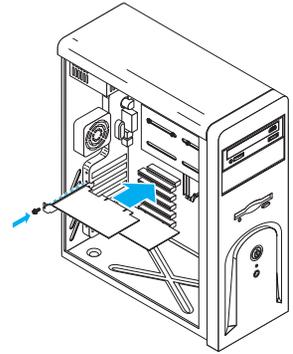
If you're using a 64-bit PCI slot, your card's edge connector should be inserted into only part of the PCI slot (the part closest to the back of the computer).



* With multi-display mode, you may be able to use your existing graphics card. For Windows 2000/XP, see Windows 2000/XP online help under "Multiple Display Support". For Windows NT 4.0, only Matrox graphics card models supported by the Matrox display driver can be used.

4 Insert your Matrox card

- a** Position your Matrox card over the expansion slot you've chosen.
- b** Push the card in firmly and evenly until it's fully seated in the slot.
- c** Secure the bracket of your Matrox card to the computer frame.



Connection setup

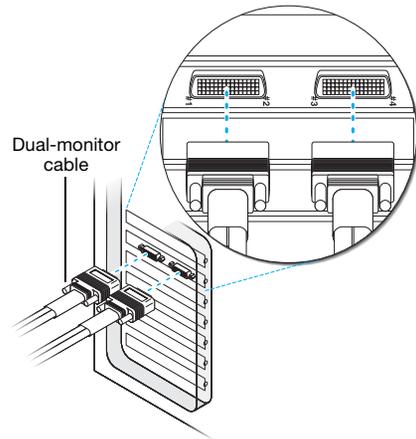
This section describes how to connect computer monitors to your Matrox product.



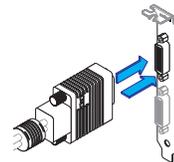
Note: Windows 2000/XP – If you want to use TV output with your Matrox product, you first need to connect at least one (1) computer monitor to be able to install the display driver. After the display driver is installed with TV output support, you can connect your dual-TV-output cables. For more information, see “TV output” in the online version of this guide.

1 Connect your dual-monitor cables

Attach your Matrox dual-monitor cables* to the connectors on the bracket of your Matrox MMS card. Make sure the connectors are firmly in place.



WARNING: To avoid damaging the LFH-60 connector on your dual-monitor cable or on your graphics card, carefully insert the connector on your dual-monitor cable as straight as possible into the connector on your graphics card. Specifically, inserting the connectors into each other at an angle is likely to bend and damage the pins on the connector of the dual-monitor cable.



* Only one dual-monitor cable is included with Matrox MMS×2 cards.

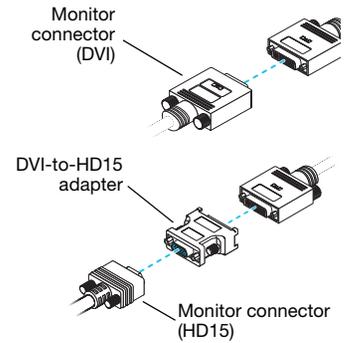
2 Connect your monitors

Connect your preferred monitor to the main DVI connector of your multi-monitor cable.

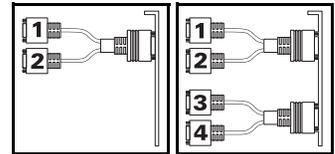
If your monitor has a DVI connector, connect it directly to the main DVI connector of your multi-monitor cable.

If your monitor has an HD-15 connector, use the DVI-to-HD15 adapter included with your product to connect your monitor to the main connector. Make sure the connectors are properly fastened.

Your Matrox card is now installed. Restart your computer and install your Matrox software (see “Software installation”, page 8).

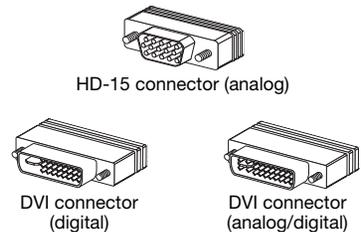


Note: Monitors are numbered consecutively based on which connector each is attached to. Numbering starts with the primary display – the one that first displays information when you restart your computer. If another graphics card is installed in your computer, display numbering may be different.



Note: To connect a *digital* monitor (a monitor that uses digital input, usually a flat panel monitor) to your Matrox product, your monitor must have a DVI connector.

Some monitors with DVI connectors support both digital and analog input. If you're using one of these monitors with your Matrox product, make sure it's configured to use the correct type of input. For more information, see your monitor documentation.



Software installation



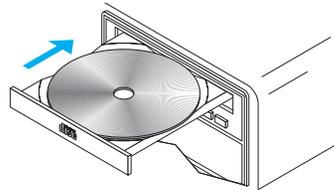
Note: This guide has references that are specific to the Matrox installation CD-ROM. If your Matrox product wasn't packaged by Matrox (for example, if it was included with your computer), your product may not include this CD-ROM.

If you don't have this CD-ROM, certain references in this guide may not reflect the software you have. For more information, see other software documentation provided by your system vendor.

W

This section describes how to install Matrox software for *Windows 2000/XP or NT 4.0*.

You may need administrator rights to install certain software. For more information, see Windows documentation.



1 Install display driver

Windows detects new hardware when you restart. If Matrox display drivers haven't been previously installed, Windows prompts you to install a display driver. Follow the on-screen instructions. (The Matrox Windows 2000/XP display driver is in the *Win2kXP* folder of your Matrox installation CD-ROM.)

If you want to use TV output, you need to enable the feature when you install the display driver. For more information on TV output, see [“TV output”, page 14](#).

After the required display software is installed, you're prompted to restart your computer for changes to take effect.

2 Install optional software

After your computer has restarted, insert (or reinsert) the Matrox installation CD-ROM in your CD-ROM drive – the setup program automatically starts.* The setup program shows you a list of additional items you can install. For each item you want to install, select a list item, click **Install**, then follow the on-screen instructions.

3 Set up your display software

See [“Display setup”, page 9](#).

* If Windows doesn't automatically start the setup program, you can start it manually from the root folder of the CD-ROM.

Display setup

W Windows 2000/XP or NT 4.0 – Your Matrox display driver includes Matrox PowerDesk software. This software helps you get the most out of your Matrox graphics card. This section has important information on how to configure your display settings using Matrox PowerDesk software.

Accessing PowerDesk property sheets

Many display controls are on Matrox PowerDesk property sheets. You can identify Matrox PowerDesk property sheets by the icon appearing on the tab. To access these property sheets:



- Windows 2000/XP – Right-click your Windows desktop background, then click **Properties** → **Settings** → **Advanced**. If you're using a multi-display desktop, select a display before clicking **Advanced**.
- Windows NT 4.0 – Click **Start** → **Settings** → **Control Panel** → **Matrox Display Properties** (double-click).

Also, to quickly access PowerDesk features, click the Matrox QuickDesk icon () on your Windows taskbar. To see the QuickDesk icon in Windows XP, you may need to click the **Show hidden icons** button () on your Windows taskbar.



Note: Multi-display mode is supported under Windows 2000/XP and NT 4.0. For more information on multi-display mode, see Windows 2000/XP online help under “Multiple Display support”.

Monitor setup

Before changing your display resolution, color palette, or other Matrox PowerDesk settings, make sure correct software monitor settings are selected. If you have a Plug-and-Play (DDC) monitor, correct settings are usually automatically selected. The following explains how to make sure your monitor settings are okay.



WARNING: If incorrect software monitor settings are applied, *some* monitors can be permanently damaged. For more information, see your monitor manual.

Windows 2000/XP – If you have a Plug-and-Play (DDC) monitor, Windows should automatically use correct settings for your monitor. To make sure the correct monitor is selected in Windows:

- 1 Right-click your Windows desktop background, then click **Properties** → **Settings** → **Advanced** → **Monitor**. If you're using a multi-display desktop (see “Multi-display setup”, page 11), select a display before clicking **Advanced**.
- 2 If the monitor name listed doesn't match your monitor, click **Properties** → **Driver** → **Update driver**. Follow the on-screen instructions.
- 3 If you're using a multi-display desktop (see “Multi-display setup”, page 11), repeat steps 1–2 for each display in your Windows desktop.

For more information on Windows monitor settings, see Windows documentation.

If you want to customize your Windows monitor settings:

- 1 Access the PowerDesk **Monitor Settings** property sheet (see “Accessing PowerDesk property sheets”, page 9).
- 2 Depending on what you want to do, click one of the buttons in the **Monitor settings selection method** box, then follow the on-screen instructions.

Windows NT 4.0 –

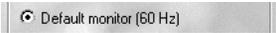
- 1 Access the PowerDesk **Monitor** property sheet (see “Accessing PowerDesk property sheets”, page 9).

- 2 If you have a **Plug-and-Play monitor**:



Make sure the **Plug-and-Play (DDC) monitor** button is selected. If so, the Matrox display driver *automatically* uses correct settings for your monitor. If not, click this button, then click **Apply**.

- 2 If you don't have a **Plug-and-Play monitor**:



See if the **Default monitor (60 Hz)** button is selected. If so, use the Matrox monitor selection method. For more information on Matrox monitor selection, see Matrox PowerDesk online documentation.

- 3 If you're using a multi-display desktop (see “Multi-display setup”, page 11), repeat steps 1–2 for each display in your Windows desktop.

Multi-display setup

To set up multi-display mode:

Windows 2000/XP – If multi-display mode isn't automatically enabled when you restart Windows:

- 1 Right-click your Windows desktop background, then click **Properties** → **Settings**.
- 2 Select the disabled display, enable the **Extend my Windows desktop onto this monitor** check box, then click **Apply**.
- 3 To change resolution and color settings for each display, select a display, then change the **Screen area** and **Colors** settings. When you're done, click **OK**.

Windows NT 4.0 –

- 1 Access the PowerDesk **Settings** property sheet (see “[Accessing PowerDesk property sheets](#)”, page 9).
- 2 Click **Multi-Display Desktop** ().
- 3 Move the **Desktop area** slider to adjust your multi-display desktop, then click **OK** to accept your changes.



Note: In multi-display mode under Windows NT 4.0, the same display settings (resolution and color palette) are used for each display.

Advanced multi-display setup

Windows 2000/XP – Use **Matrox Hybrid Display** to configure advanced display settings. With this software, you can:

- Combine 2 or more individual displays into a single Windows display. (A *Windows display* is a display that Windows recognizes and that can be adjusted with Windows controls.)
- View a *clone* (copy) of a Windows display on one or more other displays.
- Use up to 16 displays at a time by combining or copying displays. To do this, you need more than one supported Matrox graphics card installed in your computer. (Without this software, the maximum number of independent displays you can use at a time with Windows 2000/XP is 10.)
- Rotate one or more displays to support portrait orientation. (A *portrait* orientation is taller than wide.)
- Change the display layout to reflect the physical layout of your monitors.

To set up an advanced multi-display desktop:

- 1 Click the Matrox QuickDesk icon () on your Windows taskbar, then click **Matrox Hybrid Display**. To see the QuickDesk icon in Windows XP, you may need to click the **Show hidden icons** button () on your Windows taskbar.
- 2 Select **Enable an advanced multi-display setup**, then click **Next**.
- 3 Select the maximum number of Windows displays you want to use. (Using only 1 Windows display for all your individual displays is also referred to as an *NT-style* multi-display setup.)
- 4 Select the first **Undefined** display, then click **Display Setup**.
- 5 Make sure each of the following controls are using the setting you want. Adjust them in this order:
 - a **Number of clones**
 - b **Display layout**
 - c **Display rotation**
 - d **Display resolution**
 - e **Color palette**
 - f **Refresh rate**
 - g **Enlarge mouse pointer**
- 6 Click **OK**.
- 7 Repeat steps 4 to 6 until there are no more **Undefined** or available displays. An **Undefined** display won't be used when Windows restarts.
- 8 Click **Next**.
- 9 Click **Finish**. For changes to take effect, your computer must be restarted.

For more information on specific controls, see context-sensitive help.



Note: You can position each Windows display through the Windows controls. To access these controls, right-click your Windows desktop background, then click **Properties** → **Settings**.

More PowerDesk information

For more information on Matrox PowerDesk:

Windows 2000/XP or NT 4.0 – For context-sensitive help where available, click the  icon in the title bar, then click the item you want help on. Right-click a help topic for a pop-up menu that lets you print or copy it. (Some help topics are only available through context-sensitive help.)

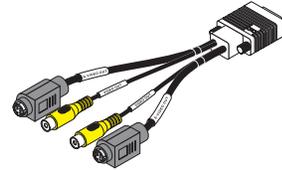
Windows 2000/XP – Access the PowerDesk **Information** property sheet (see “[Accessing PowerDesk property sheets](#)”, page 9), then click **Help** or **View Readme File**.

Windows NT 4.0 –

- Access the Matrox PowerDesk **Information** property sheet (see “[Accessing PowerDesk property sheets](#)”, page 9).
- Click the Matrox QuickDesk icon () on your Windows taskbar, then click **Help** → **PowerDesk Guide** or **Help** → **View Readme File**.

TV output

With your Matrox card, you can use dual-TV-output cables instead of dual-monitor cables. With dual-TV-output cables, you can view or record your displays with TVs or video recorders. While using TV output, all your displays use TV output settings. If you want to use this feature and dual-TV-output cables weren't included with your Matrox product, you can purchase them separately (see <http://shopmatrox.com>).



Dual-TV-output cable

This section describes how to use the *TV output* feature.

-  **Note:** To use TV output, you need to enable the feature when you install the display driver for your Matrox product. If TV output isn't enabled, you need to reinstall the display driver and enable TV output. For more information, see “[Connection setup](#)”, page 6 and “[Software installation](#)”, page 8.
-  **Note:** TV output isn't supported with full-screen DOS display modes (for example, the information you see before Windows starts) or with standard VGA mode (for example, when you restart Windows in “safe mode”). Older programs may use these display modes. While one of these display modes is in use, your TV displays nothing (black).
-  **Note:** Certain software (especially software that depends on hardware-based graphics acceleration) may not work properly while TV output is used.

Connection setup

1 Turn off computer

W Windows 2000/XP –To shut down your computer, click **Start** → **Shut Down** → **Shut down** → **OK**, then turn off your computer.

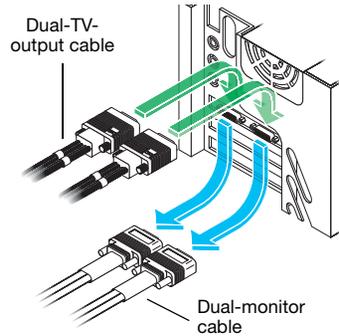


WARNING: Don't change monitor connections while your computer is turned on. While your computer is turned on, it may be using monitor settings that are specific to the current monitor connections.

If a display device (monitor, TV or video recorder) is connected while your computer is using settings intended for another display device, the display of the new device may be garbled or unusable. *Some* devices may be permanently damaged if incorrect settings are used.

2 Replace your dual monitor cables

- a Disconnect any computer monitor connected to your dual-monitor cables.
- b Detach any dual-monitor cable from your Matrox card.
- c Attach your dual-TV-output cables to your Matrox graphics card.*



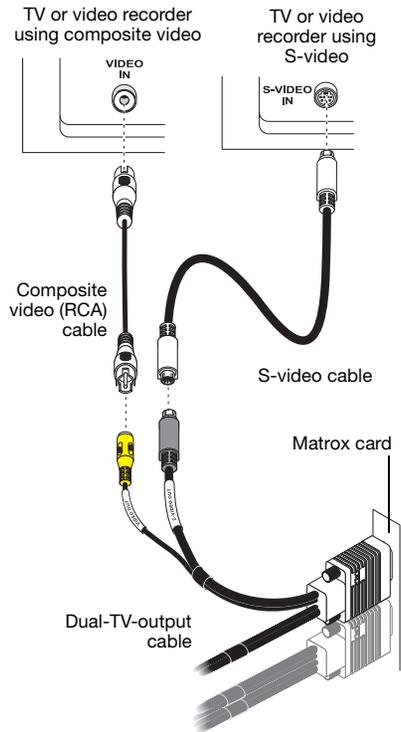
3 Connect video output

To connect to a TV or a video recorder, you'll need a composite video (RCA) or S-video cable.

If your video device (a TV or a video recorder) didn't come with one of these cables, these types of cable are available at most electronics stores. The type of cable you use depends on what your video device supports. Many video devices support composite video connections, and some higher-quality video devices support S-video connections.

For each TV or video recorder, you want to connect to your Matrox product:

- a Attach one end of your composite video or S-video cable to the appropriate connector on your dual-TV-output cable.
- b Attach the other end to the **VIDEO IN**[†] connector on your TV[‡] or video recorder.



(Note: Using the Matrox composite video **and** S-video connectors at the same time is optional.)

* Only one (1) dual-TV-output cable can be connected to Matrox MMS×2 cards.

† The labels on your devices may not be consistent with what's in this guide. Different manufacturers sometimes use different labels for the same type of controls and connectors. For example, the **VIDEO IN** connector on your TV may be labeled **VIDEO 1** (or **VIDEO 2**). To match labels, see the documentation for your video devices.

‡ If your TV only has an antenna or cable TV connector, you can use an *RF modulator* to connect it to your Matrox card. RF modulators are available at most electronics stores.

- c Before viewing or recording video output directly from your computer, make sure your TV or video recorder is set up to use *line* input. For example, if your TV has a **TV/VIDEO** switch, set it to **VIDEO**; or if your video recorder has a **TUNER/LINE** switch, set it to **LINE**.

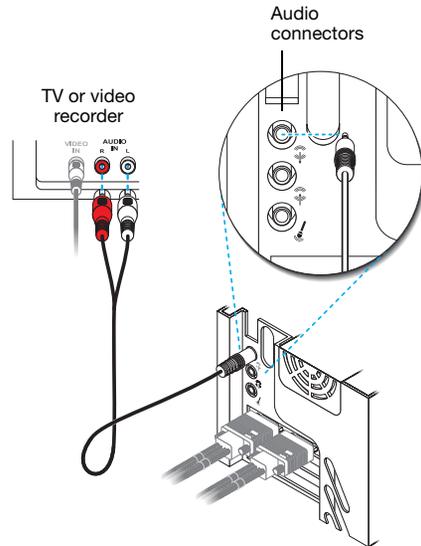
Optionally, if you use the composite video *and* S-video connectors on your Matrox TV adapter, you can directly connect two different video devices at the same time.

To view *and* record output from the same Matrox video connector, you can connect it to a video recorder and connect the video recorder to a TV. For more information, see your video recorder and TV manuals.

4 Connect audio output

Typically, the sound output from a computer comes from speakers connected to your sound card. If you prefer, you can hear or record the sound output from your computer using the same TV or video recorder you connect to your graphics card. To do this, you need an audio cable with a stereo jack on one end and two RCA connectors on the other end. If you don't have this type of cable, you can buy one at most consumer electronics stores.

- a Plug the stereo-jack end of the audio cable into the **LINE OUT** (🔊) connector on your sound card.
- b Plug the other end of the cable into the left (**L**) and right (**R**) **AUDIO IN** connectors of your video device. For more information, see your sound card manual.



* If your computer has no audio **LINE OUT** connector, you can use its **SPKR** (speaker) connector instead. In this case, all your computer sound output goes to the video device you connected to.

Software setup

W If a TV or video recorder is connected to your Matrox product, you can use TV output mode to view or record your display on your TV or video recorder. (To connect video devices to your computer, see [page 14](#).)

TV settings have lower resolutions and refresh rates than typical computer monitor settings. Lower refresh rates may result in more noticeable flicker.

i **Note:** Two TV standards are supported for TV output. The NTSC standard is used in North America and Japan, among other places. The PAL standard is used in most of Western Europe and in China, among other places.

If an incorrect TV standard is selected in Matrox software, the output from your computer may not appear or record properly on your TV or your video recorder. To find out what standard your TV or video recorder supports, see its documentation.

Windows 2000/XP – To adjust TV settings, access the Matrox PowerDesk **DualHead** property sheet (see [“Accessing PowerDesk property sheets”](#), page 9).

Troubleshooting

Basic procedures

This section explains basic procedures that are referred to by some troubleshooting items in this guide.

W Restarting in VGA mode

What follows is information on how to restart your computer in *VGA mode*.

Windows 2000/XP or NT 4.0 –

- 1 Restart your computer:
 - Windows 2000/XP – Click **Start** → **Shut Down** → **Restart** → **OK*** to restart your computer. (* Depending on your version and configuration of Windows, this part of the step may not be necessary.)
 - Windows NT 4.0 – Click **Start** → **Shut Down** → **Restart the computer** → **Yes**.

If your primary monitor is unusable, see your system manual for information on how to restart your computer using a hardware control.

- 2 Windows 2000/XP – *Before* Windows starts, press [F8] for the Windows startup menu to appear. (If [F8] doesn't work, instead try pressing and holding [Ctrl] before Windows starts.)
- 3 Select "VGA mode", then press [Enter].

Main troubleshooting

This section addresses possible problems that could prevent you from using your computer.

Problem Computer doesn't display information or boot after Matrox card is installed

Cause Your Matrox card may not be properly installed.

Solution Make sure your Matrox card is properly installed. Specifically, make sure the card is firmly inserted in its expansion slot and that all connections to it are firmly in place. For more information, see ["Hardware installation", page 3](#).

Cause There may be an unsupported graphics adapter in your computer. (For Matrox *multi-display mode* in Windows NT, all graphics cards in your computer must be Matrox cards supported by the display driver.)

Solution If an unsupported graphics card is plugged into an expansion slot, remove it.

Solution If a graphics adapter is built-in to your computer motherboard, your system may not have automatically disabled it when you inserted your Matrox card. Check your system manual for instructions on how to disable your computer's built-in graphics adapter.

Cause Your computer BIOS (Basic Input/Output System) may not be up to date. For more information on your computer BIOS, see your system manual.

Solution Reinstall your previous graphics card and, if possible, update your computer BIOS. This can usually be done with software from the manufacturer of your computer. Contact your system vendor or manufacturer to get a BIOS update for your computer.

To get the correct BIOS update, you may need to know the serial number your computer displays when it restarts. (This number is usually in the lower-left corner of the display.)

Problem Wrong color balance, screen image off-center, or no picture at all

Cause Your monitor video controls may be improperly set.

Solution Adjust your monitor controls (brightness, contrast, and so on). For more information, see your monitor manual.

Cause Your monitor may not be properly connected.

Solution Make sure your monitor is properly connected to the correct connector on your Matrox graphics card (see [“Connect your dual-monitor cables”](#), page 6).

Solution Make sure the monitor power cable is firmly in place.

Cause If display problems occur after the startup screen of your operating system, your software monitor settings may be incorrect.

Solution Make sure correct software monitor settings are selected.

W If your primary display is still usable, see [“Monitor setup”](#), page 9. Otherwise, see the next troubleshooting item.

Problem **After the startup screen, or after display settings are changed, the screen image is garbled or unusable**
(blank screen, rolling or overlapping screen images)

Cause **Analog monitors only** – The Matrox display driver may be trying to use settings your monitor doesn't support. This can happen if a monitor was never selected in the software and the display resolution was changed to one your monitor doesn't support, or if the monitor connected to your computer was changed without changing it in the software.



WARNING: If incorrect software monitor settings are applied, *some* monitors can be permanently damaged. For more information, see your monitor manual.

Solution
W

Make sure the correct monitor is selected in Windows.

Windows 2000/XP –

- 1 If your primary display is unusable, restart your computer in VGA mode (see “Restarting in VGA mode”, page 18).
- 2 Right-click your Windows desktop background, then click **Properties** → **Settings**.
- 3 Move the **Screen area** (Windows 2000) or **Screen resolution** (Windows XP) slider down to its lowest setting, then click **OK**.
- 4 Restart your computer normally.
- 5 Make sure the correct monitor is selected in Windows (see “Monitor setup”, page 9).
- 6 Make sure you're not using inappropriate monitor setting customizations: Access the PowerDesk **Monitor Settings** property sheet (see “Accessing PowerDesk property sheets”, page 9), then click **Delete all customizations**.
- 7 If necessary, restore your original display settings (see steps 2 and 3).



Note: In multi-display mode, each display has its own monitor settings (refresh rates). Make sure correct software monitor settings are selected for *each* monitor.

Windows NT 4.0 –

- 1 If your primary display is unusable, restart your computer in VGA mode (see “Restarting in VGA mode”, page 18).
- 2 Right-click your Windows desktop background, then click **Properties** → **Settings**. Windows may prompt you that the display settings are incorrect for the current mode; click **OK** to continue.
- 3 Move the **Desktop area** slider down to its lowest setting, then click **OK**.

- 4 Restart your computer normally.
- 5 With the Matrox PowerDesk **Monitor** property sheet, select monitor settings for each display, then adjust your display settings. For more information, see the Matrox PowerDesk online documentation.
- 6 If necessary, restore your original display settings (see steps 2 and 3).

Cause Files on your system may have been deleted or corrupted.

Solution Remove, then restore Matrox software:



Note: Before removing software, make sure you have all the necessary files to reinstall software that may still be needed. Also, make sure the display driver you reinstall supports *all* Matrox products in your computer.

Windows 2000/XP or NT 4.0 –

- 1 If your primary display is currently unusable, restart your computer in safe mode or VGA mode (see “Restarting in VGA mode”, page 18).
- 2 There are two display driver versions available for your Matrox G450 MMS series board. To remove Matrox software:

Windows 2000/XP (PowerDesk 5.x) –

Click **Start** → **Settings*** → **Control Panel** → **Add/Remove Programs** (double-click*) → **Matrox Graphics Software (remove only)** → **Change/Remove** → **Yes**.

(* Depending on your version and configuration of Windows, this part of the step may not be necessary.)

Windows 2000/XP (PowerDesk-SE 2.x) –

a Click **Start** → **Settings*** → **Control Panel** → **Add/Remove Programs** (double-click*) → **Matrox Graphics Software (remove only)** → **Change/Remove** → **Yes**.

(* Depending on your version and configuration of Windows, this part of the step may not be necessary.)

b Click **No** if you're asked to restart your computer.

c Click **Matrox PowerDesk-SE** → **Change/Remove** → **Yes**.

Windows NT 4.0 (PowerDesk 5.x) –

Click **Settings** → **Control Panel** → **Add/Remove Programs** (double-click) →

Install/Uninstall → **Matrox Graphics Software (remove only)** → **Add/Remove** → **Yes**.

- 3 Restart your computer.

- 4 After removing Matrox software, install the latest display driver for your Matrox graphics card. You may also need to reinstall other Matrox software.



Note: Windows 2000/XP – You may need administrator rights to remove certain software. For more information, see Windows documentation.

More information

We provide additional information in help files.



Note: Be sure to check for any last-minute release notes at the end of this manual and in the Matrox CD-ROM *Readme* file. Also, check the Matrox Web site (www.matrox.com/graphics) for the latest Matrox software, technical support, and product information.

Extra troubleshooting

Graphics

The following troubleshooting items address problems related to graphics cards.

Problem **Can't use Windows, Windows reports a configuration error, and/or can't install or uninstall display driver**



Note: Windows 2000/XP or NT 4.0 – You may need administrator rights to install certain software. For more information, see Windows documentation.

Cause The problem may be specific to the motherboard in your computer.

Solution There may be a software update available for your motherboard. To find out what motherboard model your computer is using, see your system manual. For more information, contact the maker of your motherboard or computer. Many motherboard or computer manufacturers have software updates available on their Web site.

Cause Files on your system may have been deleted or corrupted.

Solution Remove, then restore Matrox software. For more information, [see page 21](#).

Problem **Monitor settings aren't automatically detected**



WARNING: If incorrect software monitor settings are used, your display may become unusable and *some* monitors can be permanently damaged. For more information, see your monitor manual.



Note: To check if your monitor settings are properly selected:

1 **Windows 2000/XP** – Right-click your Windows desktop background, then click **Properties** → **Settings** → **Advanced** → **Monitor**. If you're using multi-display mode, select a display before clicking **Advanced**.

Windows NT 4.0 – Access the Matrox PowerDesk **Monitor** property sheet (see “[Accessing PowerDesk property sheets](#)”, page 9). If you're using multi-display mode, select a display number.

2 If you see the name of your monitor or “Plug-and-Play”, your monitor settings are properly selected.

If you see the wrong monitor name or **Default monitor**, your monitor settings aren't properly selected.

Cause Your monitor may not be Plug-and-Play. Most new monitors are Plug-and-Play but many older ones aren't. Software can't automatically detect settings for monitors that aren't Plug-and-Play.

Solution Manually select your monitor settings in the software. For Windows 2000/XP or NT 4.0, see “[Monitor setup](#)”, page 9.

Cause If a monitor was changed or added while Windows was running, the new monitor may not be detected by the software.

Solution Restart your computer. If your monitor is a Plug-and-Play (DDC) monitor, it should be automatically detected by the software.

Problem **Built-in network card doesn't work after multi-monitor graphics card is installed**

Cause The installation of a multi-monitor graphics card may have caused your computer to reallocate system resources.

Solution Try reinstalling your network drivers.

Solution Try moving your Matrox multi-monitor graphics card to another PCI slot in your computer.

Cause You may have Service Pack 2 for Windows XP installed on a PCIe system.

Solution You may need Hotfix [KB890463](#) for Windows XP. For more information or to obtain this Hotfix, contact the Microsoft support center.

Problem 3D and video programs don't work

Cause Your computer or program may not work well with bus mastering.

Solution Disable bus mastering:
W (If you want to continue using bus mastering, see the other solutions.)

Windows 2000/XP –

- 1 Access the Matrox PowerDesk **Options** property sheet (see “[Accessing PowerDesk property sheets](#)”, page 9).
- 2 Clear the **Use bus mastering** check box.
- 3 Click **OK** → **OK** → **Yes** to accept the changes.

Windows NT 4.0 –

- 1 Click **Start** → **Settings** → **Control Panel** → **Matrox Display Properties** → **Performance**.
- 2 Clear the **Use bus mastering** check box.
- 3 Click **OK** → **Yes** to accept the changes and restart your computer.

Cause Your Matrox card may be in a “slave” expansion slot on a computer that makes a distinction between bus mastering and slave slots.

Solution Change slots – Shut down your computer, disconnect it from the power supply, remove your Matrox card and then insert it into a different PCI expansion slot. For instructions on how to safely install your Matrox card, see “[Hardware installation](#)”, page 3.

Cause Your computer may not have given an IRQ (interrupt request) to your Matrox graphics card or may have given one used by another device in your computer. This may be because your computer’s “Plug-and-Play” feature is turned off.

W Windows 2000/XP – To check the display adapter’s IRQ:

- 1 Click **Start** → **Settings*** → **Control Panel** → **Performance and Maintenance*** → **System** (double-click*) → **Hardware** → **Device Manager**. (* Depending on your version and configuration of Windows, this part of the step may not be necessary.)
- 2 Click the plus sign to the left of the **Display adapters**. An “**X**” through an icon means the hardware has been disabled. A circled exclamation point through the icon means the hardware has a problem.

- 3 Double-click the name of your Matrox display adapter to open a properties dialog box. The type of problem is displayed in the **General** tab → **Device status** area. Check also the **Resources** tab → **Resource settings** list for an **Interrupt Request**.



Resource settings:	
Resource type	Setting
Interrupt Request	11
Memory Range	FFBEC000 - FFBEFFFF
Memory Range	FF000000 - FF7FFFFF

Solution Change settings in your computer BIOS setup utility.

If your computer has the options of enabling Plug-and-Play detection, or assigning an IRQ to a VGA adapter, make sure they're enabled. If your computer doesn't have these options, you may be able to manually assign an IRQ to your graphics card using the BIOS setup utility.

For more information on the BIOS setup utility of your computer, see your system manual or contact your system manufacturer.

Cause Your computer's other BIOS settings may be incorrect.

Solution Reset your computer BIOS settings to the factory defaults using your computer's built-in BIOS setup utility. The factory defaults are usually the "safest" settings. Check your system manual for more information.

Problem **W** **After game for Windows 2000/XP starts, monitor doesn't display properly** (blank screen, rolling or overlapping screen images)

Cause If your game uses a low-resolution (640 × 480 and below), full-screen display mode, your monitor may not support the refresh rate the Matrox driver is using.

Solution If the game is still running in full-screen mode and your monitor is unusable, exit the game. To do this, press [Alt]+[Tab] *once*, right-click the name of the game on the Windows taskbar, then click **Close**.

Make sure the correct monitor is selected in Windows (see "Monitor setup", page 9).

Solution PowerDesk 5.x – Make sure your Matrox monitor settings are correct:

- 1 If the game is still running in full-screen mode and your monitor is unusable, exit the game. To do this, press [Alt]+[Tab] *once*, right-click the name of the game on the Windows taskbar, then click **Close**.
- 2 Access the Matrox PowerDesk **Monitor Settings** property sheet (see "Accessing PowerDesk property sheets", page 9).
- 3 Click **Select customizations from the Matrox list**.

- 4 From the Matrox monitor list, select the monitor model you're using. If your monitor model doesn't appear in the list, select a monitor that runs at 60 Hz at 640 × 480 (for example, **Standard Monitor Types** → **Vesa 1024X768 @60Hz** → **Next**). Follow the on-screen instructions to complete the selection.

Problem **W** **Using multiple displays under Windows 2000/XP or NT 4.0, program doesn't work with main graphics card**

Cause Your main graphics card may not be controlling your primary display. The graphics card that controls your primary display is the one that first displays information when you restart your computer.

A program that doesn't recognize multiple displays may not work with a graphics card unless it's controlling your primary display.

Your computer BIOS (Basic Input/Output System) and the slot type (AGP, PCI, or PCIe – see “Choose a PCI slot”, page 4) of each graphics card help determine which graphics card controls your primary display.

Solution If you're having problems with a program that can be moved on your Windows desktop, run this program on your primary display. Make sure the program window doesn't overlap any other display. If the program doesn't work with the graphics card controlling your primary display, or you want your main graphics card to control your primary display, see the other solutions.

Solution Change the configuration of your computer BIOS so that the slot type of your main graphics card has priority for becoming the primary display. For information on how to change your computer BIOS settings, see your system manual.

If your computer BIOS doesn't let you select which slot type has priority for becoming the primary display, a BIOS update may be available to let you do this. (The BIOS of most computers can be updated with software.) For a possible BIOS update for your computer, contact your system vendor.

Solution If there's a graphics controller built into the motherboard of your computer, by changing your computer BIOS settings, you may be able to change which device controls your primary display. For more information, see your system manual.

Solution If you don't need to use the graphics card that's controlling your primary display, remove it from your computer. If your primary display is controlled by the motherboard of your computer, see your system manual for information on how to disable this graphics controller.

Cause The program you're using may not work properly with systems using more than one display at a time.

Solution An update may be available for the program you're using. This update may fix problems this program has with multi-display systems. For more information, contact the software distributor for the program you're using.

Solution **W** **Windows 2000/XP – For advanced users –** To use a program that doesn't support multi-display systems, you can disable all displays other than your primary display:

- 1 Restart your computer in "VGA" mode (see "Restarting in VGA mode", page 18).
- 2 Click **Start** → **Settings*** → **Control Panel** → **Performance and Maintenance*** → **System** (double-click*) → **Hardware** → **Device Manager**. (* Depending on your version and configuration of Windows, this part of the step may not be necessary.)
- 3 Click the plus sign to the left of the **Display adapters**.
- 4 For each display adapter, *except* for the one controlling your primary display, right-click the name of a display adapter, then click **Disable** → **Yes**.



Note: Your primary display can't be disabled.

- 5 Restart your computer for changes to take effect.



Note: To restore display adapters, repeat steps 2–5, but click **Enable** in step 4.

Problem **W** **Not all graphics cards in the computer are fully supported**
(Software doesn't work with a certain graphics card, or another graphics card doesn't work at all)

Cause If you have different models of graphics cards in your computer, your Matrox display driver may not support all the graphics cards in your computer.

Under Windows 2000/XP, a display driver may support one or more graphics cards. If a display driver doesn't support a certain card, a different display driver must be used for that card. Software that depends on a certain display driver may not work with a graphics card that's not using the same display driver.

Under Windows NT 4.0, only one display driver at a time may be used. To use more than one graphics card, the display driver must support all the graphics cards installed. If an unsupported graphics card is installed in your computer, that card either isn't used or your computer restarts in VGA mode (single-display, 640 × 480 resolution, 16 colors).

Solution Install the latest unified display driver for your Matrox graphics cards. (A *unified* display driver supports more than one model of graphics card.) This driver is available on the Matrox Technical Support Web site (www.matrox.com/graphics/support). Make sure that the display driver supports *all* Matrox products in your computer. Install the display driver by running the setup program included with it.

Note: If your Matrox product was provided by the manufacturer of your computer, check the Web site of that manufacturer for the latest display driver. A display driver provided by the manufacturer of your computer is more likely to be tested with your computer model.

Note: A unified Matrox display driver may not be available for all the models of Matrox graphics cards installed in your computer (especially for older models). Under Windows 2000/XP, you can use more than one display driver in this case.

Solution If a graphics card isn't supported, you may need to remove it. If there's a graphics processor built into the motherboard of your computer that's not supported by your software, see your system manual for information on how to disable this graphics processor.

Cause **Windows 2000/XP** – If the Windows method for display driver installation was used (instead of running the setup program included with your Matrox display driver), the driver may not be installed for all the graphics cards it supports.

Solution Run the setup program included with the Matrox display driver. The setup program automatically installs the display driver for each Matrox graphics card it supports.

Problem **In multi-display mode, displays aren't numbered consecutively**

Cause If you have more than one graphics card in your computer, the display numbering may not be consecutive for the displays of a multiple-display card. Display numbering depends on the types of expansion slots used in your computer (AGP and PCI) and the BIOS settings of your computer.



Solution **Windows 2000/XP** – Move the displays in Windows.

- 1 Right-click your Windows desktop background, then click **Properties** → **Settings**.

- 2 Select a display and move it according to the physical position of the monitor it's associated with.



Note: In multi-display mode for Windows NT 4.0, you have limited control over the arrangement of your displays. For more information, see Matrox PowerDesk documentation.

Problem **Screen image defects appear, program doesn't run properly, or Windows doesn't work properly**

(example: mouse pointer not drawn properly)

Cause Some programs may not work properly with some Matrox acceleration.

Solution Disable specific types of software acceleration:

Windows 2000/XP (PowerDesk 5.x) –

- 1 Access the Matrox PowerDesk **Options** property sheet (see “[Accessing PowerDesk property sheets](#)”, page 9).
- 2 Clear one or more check boxes, starting with **Use device bitmaps caching**. For more information, see context-sensitive help.
- 3 Click **OK** → **Close** to accept the changes. (Depending on the feature you disabled, you may have to restart your computer for the changes to take effect.)

Windows NT 4.0 –

- 1 Access the Matrox PowerDesk **Performance** property sheet (see “[Accessing PowerDesk property sheets](#)”, page 9).
- 2 Clear one or more check boxes. For more information, see context-sensitive help.
- 3 Click **OK** → **Yes** to accept the changes. (Depending on the feature you disabled, you may have to restart your computer for the changes to take effect.)

Solution Disable Windows effects:

Windows 2000 –

- 1 Right-click your Windows desktop background, then click **Properties** → **Effects**.
- 2 Disable one or more features under **Visual effects**.

Windows XP –

- 1 Right-click your Windows desktop background, then click **Properties** → **Appearance** → **Effects**.
- 2 Disable one or more features.

Solution If possible, update your Matrox display driver. Matrox makes new display drivers available on the Matrox Technical Support Web site (www.matrox.com/graphics/support).



Note: If your Matrox product was provided by the manufacturer of your computer, check the Web site of that manufacturer for the latest display driver. A display driver provided by the manufacturer of your computer is more likely to be tested with your computer model.

Solution Windows 2000/XP – Disable Matrox hardware acceleration:

- 1 Right-click your Windows desktop background, then click **Properties** → **Settings** → **Advanced** → **Troubleshooting** (or **Troubleshoot**).
- 2 Move the **Hardware acceleration** slider to **None**.
- 3 Click **OK** → **OK** to accept the changes.



Note: If you identify a program that doesn't work well with Matrox acceleration, please contact Matrox technical support (see page 43) and describe the problem. This information may help us come up with a fix or work-around in a future driver release.

Problem Program window or dialog box doesn't appear on screen

Cause Another window or dialog box may be covering the window or dialog box you want to see.

Solution Move, close, or minimize any window or dialog box that may be covering the window or dialog box you want to see.

Cause **W** If you're using multi-display mode, the program window or dialog box may be in a display or on a monitor that's unusable. (For example, your monitor may not be properly connected or configured.)

Solution Make sure all the displays and monitors you want to use are usable. For more information, see other troubleshooting items in this guide.

Cause The software may be using a display you didn't intend to use or the software may be configured to use more displays than the actual number of monitors you have.

Solution Disable the display:



Windows 2000/XP –

- 1 Right-click your Windows desktop background, then click **Properties** → **Settings**.
- 2 Select the display you want to disable, then clear the **Extend my Windows desktop onto this monitor** check box.

Windows NT 4.0 –

- 1 Access the Matrox PowerDesk **Settings** property sheet (see “[Accessing PowerDesk property sheets](#)”, page 9).
- 2 Move the **Desktop area** slider until the number of displays used matches the number of monitors connected, then click **OK** to accept your changes. (The display you disable must be the last one, if it’s not, to change your display configuration, see [page 29](#).)

Cause
W The program window or dialog box may be somewhere off-screen.

Solution If the program window you want to see is named on the Windows taskbar, right-click on it and select **Maximize**. (If you click **Restore** the program window goes back to its previous position. To fix this problem, see the other solutions.)

Solution Manually move the program window or dialog box:

- 1 Press [Alt]+[Space].
- 2 If you see a pop-up menu, click **Move**. If you don’t see a pop-up menu, press [M] (for **Move**).
- 3 Press on one of the arrow keys once and move your mouse pointer to where you want the window or dialog box to appear, then click. The program window or dialog box should appear where you clicked.

Solution Windows 2000/XP (PowerDesk 5.x) – Use the **Move All Windows to Primary Display** feature to move the program window or dialog box. Simply press the keyboard shortcut assigned to this feature.

To assign a keyboard shortcut to this feature:

- 1 Click the Matrox QuickDesk icon () on your Windows taskbar, then click **Hot Keys**.
- 2 Create a keyboard shortcut for the **Move All Windows to Primary Display** feature.

Solution Windows 2000/XP or NT 4.0 –

- 1 Windows 2000/XP (PowerDesk 5.x) – Click the Matrox QuickDesk icon () on your Windows taskbar, then click **Multi-Display Controls**.

Windows 2000/XP (PowerDesk-SE 2.x) – Click the Matrox PowerDesk icon () on your Windows taskbar, then click **Desktop Management**.

Windows NT 4.0 – Access the Matrox PowerDesk **PowerDesk** property sheet (see “[Accessing PowerDesk property sheets](#)”, page 9).

- 2 Enable one or more of the following features:

Windows 2000/XP (PowerDesk 5.x) –

- **Open program windows in display**
- **Use CenterPOPUP**

Windows 2000/XP (PowerDesk 2.x) –

- **Open program windows**
- **Center dialog boxes and message boxes**

Windows NT 4.0 –

- **Open program windows in display**
- **Center dialog boxes**

3 Choose where you want the program window or dialog box to appear.

For more information, see Matrox PowerDesk context-sensitive help.

Problem Display on digital monitor appears blurry or uses only a portion of the screen

Cause You may be using a lower display resolution than what your digital monitor supports. If your monitor supports display scaling, the image on your screen may appear blurry. If display scaling isn't supported, the display may use only a portion of your screen.

Solution Select the highest display resolution available. This generally results in better image quality.

Problem Can't select one or more display resolutions supported by your monitor

Cause **W** Windows 2000/XP – Windows may be disabling display resolutions that it can't detect as supported by your monitor.

Solution Install the latest monitor software from your monitor manufacturer.

Solution Change Windows monitor settings:

- 1** Right-click your Windows desktop background, then click **Properties** → **Settings**.
- 2** If you're using a multi-display desktop, select a display.
- 3** Click **Advanced** → **Monitor**, disable **Hide modes that this monitor cannot display**, then click **OK** → **OK**.

Video

The following troubleshooting items address problems related to video files.

Problem Video file playback is jerky (skipping frames)



Note: Jerky video file playback may be the result of slow playback or recording. Slow recording causes frames to be dropped (frames aren't recorded). If jerky video is caused by frames that were dropped during recording, the problem can only be fixed by recapturing the video under better conditions.

Cause Your hard disk may be too slow.

Solution Try *defragmenting* your hard disk.



Windows 2000/XP – To defragment a hard disk, click **Start** → **Programs** (or **All Programs**) → **Accessories** → **System Tools** → **Disk Defragmenter**.

Solution If possible, try using a faster disk.



Tip: If your computer has more than one hard disk, you may get better results if you play back or capture video files with a disk *other than* the one where the Windows swap file is stored. The Windows swap file is usually stored on drive “C”.

Solution Make sure the drive you're using (a hard disk or DVD drive) is using DMA (if your drive supports DMA transfers). To use DMA:



WARNING: Not all drives support DMA well. For more information, see the documentation that came with your hard disk.

Windows 2000/XP –

- 1 Click **Start** → **Settings*** → **Control Panel** → **Performance and Maintenance*** → **System** (double-click*) → **Hardware** → **Device Manager**. (* Depending on your version and configuration of Windows, this part of the step may not be necessary.)
- 2 Double-click the **IDE ATA/ATAPI controllers** list item to expand it, then double-click the name of the appropriate controller.
- 3 Change each **Transfer Mode** setting to “**DMA if available**”.
- 4 Click **OK** to accept the changes.

Windows NT 4.0 – Install a DMA driver. For most computers, a DMA driver is available for Windows NT 4.0 (for example, the “PIIX Bus Master IDE” driver supports many computers). For more information on how to get this driver, contact your system vendor.

Cause Too many programs may be running (using up computer resources).

Solution Close other programs, including memory-resident programs like **System Agent**.

Cause Your display settings may be too high. As a result, video file playback may not be fully supported by your Matrox hardware.

Solution Try lowering your display settings. We recommend a 1024 × 768 or lower display resolution with a 16-bit color palette.

W To access display settings:

- **Windows 2000/XP** – Right-click your Windows desktop background, then click **Properties** → **Settings**.
- **Windows NT 4.0** – Access the Matrox PowerDesk **Settings** property sheet (see “[Accessing PowerDesk property sheets](#)”, page 9).

Cause Your Matrox graphics card may be sharing an IRQ (interrupt request) with another PCI card in your computer (for example, a network card).

Solution Try moving the other PCI card to another PCI slot in your computer. For more information, see the documentation for this card or see your system manual.

Solution Try moving your Matrox graphics card to another PCI slot in your computer.

Problem **Mouse pointer flickers or disappears when it’s over a video window**

Cause You may be using a customized mouse pointer. Windows draws customized mouse pointers in a way that may cause them to flicker or disappear while they’re over a video window.

Solution **Windows 2000/XP or NT 4.0** – Use default Windows mouse pointers:

W

- 1** Click **Start** → **Settings*** → **Control Panel** → **Printers and Other Hardware*** → **Mouse** (double-click*). (* Depending on your version and configuration of Windows, this part of the step may not be necessary.)
- 2** Click the **Pointers** tab.
- 3** In the **Scheme** box, select (or reselect) “**(None)**”, then click **OK**.

Problem Can't view video

Cause Your display settings may be too high.

Solution Try lowering your display settings (resolution, color palette, and/or refresh rate). For information on changing display settings, see “Display setup”, page 9.

Sound

The following troubleshooting items address problems related to sound cards.

Problem Sound doesn't record, video files play back with no sound, or sound output is distorted or too loud

Cause If the sound problem is with a particular device (for example, TV or speaker), the volume control on the device itself may need adjusting.

Solution Adjust the volume control on the device itself.

Cause Audio cables may be loose or incorrectly wired.

Solution Make sure your sound card cables are properly connected.

Cause Your sound card's Windows software settings may be incorrect. Specifically, input or output may be disabled, or volume levels may be too low or too high.

Solution **W** Windows 2000/XP or NT 4.0 – Make sure your sound card's Windows software settings are correct:

- 1 Double-click the speaker icon ( or ) on the Windows taskbar.

If you *don't* see the speaker icon:

Windows 2000 or NT 4.0 –

- a Click **Start** → **Settings** → **Control Panel**.
- b Double-click the **Multimedia** or **Sounds and Multimedia** icon.
- c Enable the “**Show volume control on the taskbar**” check box.
- d Click **OK**.
- e Double-click the speaker icon on the taskbar.

Windows XP –

- a Click **Start** → **Settings*** → **Control Panel** → **Sound, Speech, and Audio Devices*** → **Sounds and Audio Devices**. (* Depending on your configuration of Windows, this part of the step may not be necessary.)
 - b Enable the “**Place volume icon in the taskbar**” check box.
 - c Click **OK**.
 - d Double-click the speaker icon on the taskbar.
- 2 Click **Options** → **Properties**.
 - 3 Click the **Recording** button, enable all check boxes in the list box, then click **OK**.
 - 4 For the **Line In** and/or **Microphone** controls, make sure the **Volume** slider levels are okay (if you’re not sure, try half level), and the appropriate **Select** check box is enabled.
 - 5 Click **Options** → **Properties**.
 - 6 Click the **Playback** button, enable all check boxes in the list box, then click **OK**.
 - 7 For the **Master**, **Line**, and/or **Wave** controls, make sure the **Volume** sliders are at one-quarter to one-half levels (if you’re not sure, try half level), and the **Mute** check boxes are cleared.
 - 8 Close the dialog box.



Note: Depending on your sound driver, certain labels may be different. For example, **Line In** may be labeled **Line**.

Cause The problem may be specific to the sound card you have.

Solution For more information, see your sound card manual.

Display information

- Your Matrox graphics card is 100% VGA compatible and supports all VESA standards: VBE 2.0 (Super VGA modes), DPMS (energy saving), and DDC-2B (Plug-and-Play monitor).
- The display resolutions available depend on your Matrox graphics card, display driver, and software monitor settings. Different software monitor settings have different resolutions available to them. With your software monitor settings, some of the resolutions listed in this section may not be available, *or* resolutions not listed in this section may be available. For more information on software monitor settings with Windows 2000/XP or NT 4.0, see “[Monitor setup](#)”, page 9.
- Many Plug-and-Play monitors don’t automatically report if they’re capable of 1152 × 864, or 1600 × 1200 and higher display resolutions. To use these resolutions, or higher refresh rates than those reported by the monitor, you can use the Matrox monitor selection method. To use Matrox monitor settings with Windows 2000/XP or NT 4.0, see “[Monitor setup](#)”, page 9.
- Your Matrox graphics card supports display resolutions up to 2048 × 1536 (traditional) and up to 1920 × 1200 (widescreen).
- At the highest display resolution (2048 × 1536), your Matrox graphics card supports a vertical refresh rate of up to 85 Hz.
- In multi-display mode, each monitor has its own monitor settings (refresh rates). Make sure correct software monitor settings are selected for *each* monitor.
- You may experience problems viewing certain types of video (for example, DVD video). If you experience this problem, try lowering your display settings (resolution, color palette, and/or refresh rate). For information on changing display settings, see “[Display setup](#)”, page 9.

Supported VESA modes

In the table below, VESA modes supported by your Matrox graphics card are indicated by a VESA mode number. Many Super VGA DOS programs use VESA modes.

Display resolution	16 colors	256 colors	32 K colors	64 K colors	16 M colors
640 × 400	—	100	—	—	—
640 × 480	(VGA)	101	110	111	112
800 × 600	102	103	113	114	115
1024 × 768	—	105	116	117	118
1280 × 1024	—	107	119	11A	11B

Digital flat panel information

Matrox G450 MMS products that support digital monitors are fully DVI 1.0 compliant. The following maximum simultaneous display settings are supported with digital flat panels:

- 112 MHz pixel clock
- 1280 × 1024*† display resolution (SXGA)
- 60 Hz vertical refresh rate (with standard VESA monitor timings)
- millions of simultaneous display colors

* With digital (flat panel) monitors that don't support display scaling, if you use a display resolution lower than the maximum display resolution, the display may only use a portion of the screen (the rest of the screen will be black).

† DOS display modes may not be supported with some 1280 × 1024 digital flat panel monitors that don't support display scaling. For a possible work-around or fix for this problem, contact Matrox.

Hardware information

Features

	G450×2 MMS	G450×4 MMS
Graphics chip model	Matrox G450 (256-bit DualBus)	
PCI bridge controller	Hint HB4 or PLX HB4	
RAMDAC	360 MHz (internal)	
Memory type	DDR (Double Data Rate) SDRAM	
Card type	PCI (32-bit, 33 MHz)	
# of displays supported (# of graphics chips)	2	4
Memory	2 × MB	4 × MB
# of dual-monitor cables (Part #: DL-CAB-DVI-I)	1	2
# of DVI-to-HD15 adapters (Part #: DVI-I-VGA)	2	4
Digital monitor support	DVI	DVI

Technical features

- Supports PCI bus version 2.1 and 2.2 at clock speeds up to 33 MHz

Video specifications

- Separate sync monitors only
- The video follows the PS/2 standard, with no sync on RGB, and no blanking pedestal. Black or blank – 0.0 V; White – 0.700 V.

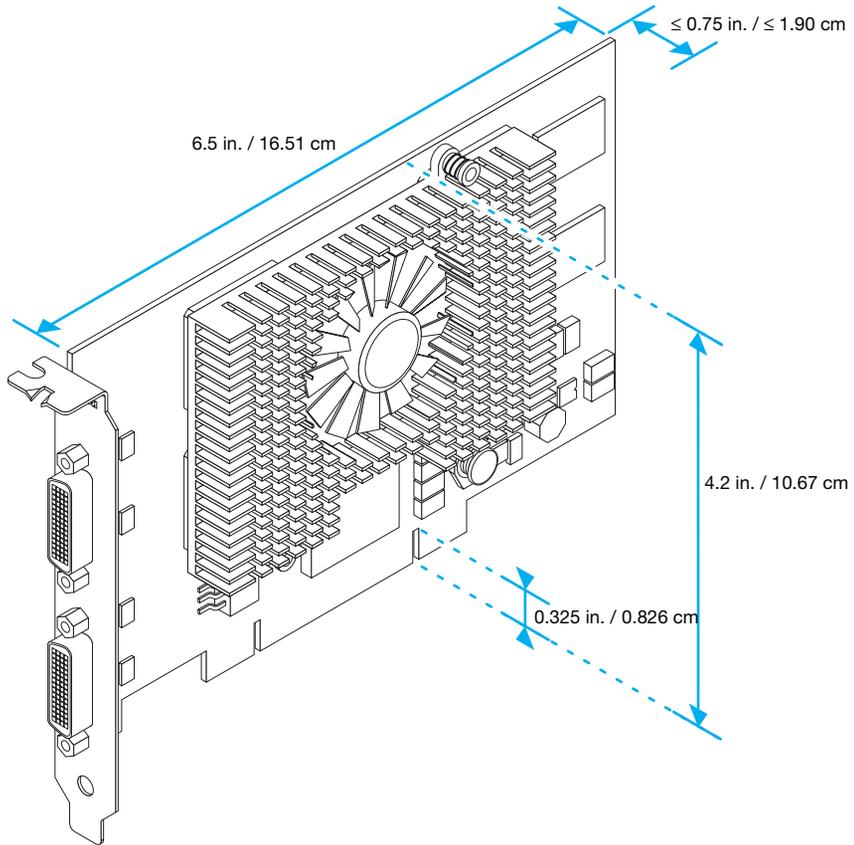
Environmental specifications

- Minimum/maximum ambient operating temperatures: 0 to 55 °C
- Minimum/maximum storage temperature: -40 to 75 °C
- Maximum altitude for operation: 3,000 meters
- Maximum altitude for transport: 12,000 meters
- Operating humidity: 20 to 80% relative humidity (non-condensing)
- Storage humidity: 5 to 95% relative humidity (non-condensing)

Digital flat panel information

- TMDS (Transition Minimized Differential Signaling) encoding based on the Silicon Image PanelLink standard
- DDWG (Digital Display Working Group) compliant DVI connector
- EDID (Extended Display Identification Data) 1.2 and 2.0 support

Maximum card dimensions*



* Pictured is a G450x4 MMS card.



Customer support

Matrox Web

Our Web site has product literature, press releases, technical material, a sales office list, trade show information, and other relevant material. Visit the Matrox Graphics Web site at www.matrox.com/graphics.

Technical support

Matrox values your business and offers professional support for your Matrox product.

If your product was purchased through a Matrox dealer, contact your dealer for product support. This is the quickest and most effective method of technical assistance. Your dealer is familiar with your complete system.

If your product was purchased through Matrox, contact your Matrox representative or visit our technical support Web site at www.matrox.com/graphics/support.

Information we need

Please give a complete description of the problem, and include:

- Matrox card serial number, model number, revision number, BIOS number, driver type and version, and memory address at which the Matrox card is installed.
- Computer brand and model name.
- Monitor brand and model name.
- Operating system, version, and service pack.
- Brand and model of any other cards and devices installed on your system.

Program specific problems

If a problem appears with a specific program, please give us the following information:

- Display settings (color palette, display resolution, and so on) applied when the problem occurs.
- If possible, take note of the file and segment address that caused the problem.
- Detailed steps known to cause the bug, so we can reproduce it.

Driver and software download

A more recent display driver may support more features and may offer increased capabilities (such as higher display resolutions). Matrox makes the latest display drivers, software, and system utilities available on the Matrox Technical Support Web site (www.matrox.com/graphics/en/support/drivers).

View your warranty information

Matrox makes warranty information available on the Matrox site (www.matrox.com/graphics/en/about/warranty).

Register your Matrox product

Please register online (www.matrox.com/graphics/en/registration) to be eligible for customer support, new product announcements, and information on special offers and upcoming events.

Where to get information

For display information:

- Windows 2000/XP or NT 4.0 – Access the **Information** property sheet (see “Accessing PowerDesk property sheets”, page 9).

For system information:

- Windows 2000 – Right-click the **My Computer** icon on your Windows desktop background, then click **Properties**.
- Windows 2000/XP – Click **Start** → **Programs** (or **All Programs**) → **Accessories** → **System Tools** → **System Information**.
- Windows XP – Click **Start** → **Settings*** → **Control Panel** → **Performance and Maintenance*** → **System** (double-click*). (* Depending on your configuration of Windows, this part of the step may not be necessary.)
- Windows NT 4.0 – Click **Start** → **Administrative Tools (Common)** → **Windows NT Diagnostics**.

Software license agreement

Single User Products This Matrox software (the “Software”) is copyrighted by Matrox Graphics Inc. All rights are reserved. The purchaser is granted a license to use the software only, subject to the following restrictions and limitations:

1. The license is for the original purchaser only, and is not transferable without written permission of Matrox.
2. The original purchaser may use the Software on a single computer owned or leased by the original purchaser. You may not use the Software on more than a single computer, even if you own or lease more than one computer, without written consent of Matrox.
3. The original purchaser may make back-up copies of the Software for his or her own use only, subject to the use limitations of this license.
4. The original purchaser may not engage in, nor permit third parties to engage in, any of the following:
 - Providing or disclosing the Software to third parties.
 - Providing use of the Software in a computer service business, network, time-sharing, multiple CPU or multi-user arrangement to users who are not individually licensed by Matrox.
 - Making alterations or copies of any kind in the Software (except as specifically permitted above).
 - Attempting to unassemble, de-compile or reverse engineer the Software in any way.
 - Granting sublicenses, leases, or other rights in the Software to others.
 - Making copies, or verbal or media translations, of the user’s guide.
 - Making telecommunication data transmissions of the Software.

Matrox reserves the right to terminate this license if there is a violation of its term or default by the Original Purchaser. Upon termination, for any reason, all copies of the Software must be immediately returned to Matrox, and the Original Purchaser shall be liable to Matrox for any and all damages suffered as a result of the violation or default.

Limited warranty Matrox warrants to you, for a period of 90 days normal use from your date of purchase, that:

5. The CD/disks on which the software is furnished and the documentation are not defective.
6. The Software is properly recorded upon the CD/disks included.
7. The documentation is substantially complete and contains all the information Matrox deems necessary to use the software.
8. The Software functions substantially as described in the documentation.

Matrox’s entire liability and your exclusive remedy shall be the replacement of any CD/Disks or documentation not meeting these warranties, which is returned to Matrox or an authorized dealer, together with a copy of your paid receipt. The above is the only warranty of any kind, either express or implied, including, but not limited to the implied warranties of merchantability and fitness for a particular use that is made by Matrox on this Licensed Software. In no event shall Matrox be liable to you or to any third party for consequential, special, indirect or incidental damages which you may incur as a result of using the licensed software, including, but not limited to, loss of data, or information of any kind which you may experience.

Index

B

BIOS 19, 26, 27

C

CD-ROM, Matrox 8

Connector

Digital 7

LHF-60 6

Customer support 43–44, ??–44

D

DDC 9, 10, 24

Disk speed 34

Display

DOS modes 14

Information 38

Primary 27

E

Expansion slots 4, 18, 25

G

Graphics

Troubleshooting 23–33

H

Hardware

Acceleration 30

Information 2, 40–42

Installation 3–4

I

Installation

Hardware 3–4

Overview 2

Software 8

IRQ 25

M

Monitor

Digital 39

Settings 9, 19–20

Setup 9–10

Multi-display

Mode 9, 11, 20, 29, 38

Setup 11

O

Online documentation 9

P

PCI 4, 25, 40

Plug-and-Play 9, 10, 24

PowerDesk 9, 13

Property sheets 9

R

Registration 44

S

Software

Download 44

Installation 8

Setup 9

Sound

Troubleshooting 36–37

Sound output 16

T

Technical support 43

Troubleshooting 18–22, 23–37

Extra 23–37

Graphics 23–33

Sound 36–37

Video 34–35

TV output

Connection setup 14–16

Software setup 17

U

Unified display driver 29

V

VESA 27, 38

Modes (table) 38

VGA 3, 38

Video

Troubleshooting 34–35

W

Warning 3, 4, 6, 9, 14, 20, 23, 34

Warranty 44

Web, Matrox 43

Thank you for choosing Matrox

Please register online (<http://www.matrox.com/graphics/en/registration>) to be eligible for customer support, new product announcements, and information on special offers and upcoming events.

USA

FCC Compliance Statement

Remark for the Matrox hardware products supported by this guide This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

WARNING Changes or modifications to this unit not expressly approved by the party responsible for the compliance could void the user's authority to operate this equipment. The use of shielded cables for connection of the monitor to the card is required to meet FCC requirements.

CANADA

(English) Industry Canada Compliance Statement

Remark for the Matrox hardware products supported by this guide These digital apparatus does not exceed the Class A limits for radio noise emission from digital devices set out in the Radio Interference Regulation of Industry Canada.

(Français) Conformité avec les exigences du ministère de l'Industrie Canada

Remarque sur les produits matériels Matrox couverts par ce guide Ce présent appareil numérique n'émet aucun bruit radioélectrique dépassant les limites applicables aux appareils numériques de Classe A prescrites dans le Règlement sur le brouillage radioélectrique édicté par Industrie Canada.

JAPAN

VCCI Compliance Statement

Remark for the Matrox hardware products supported by this guide This is a Class A product based on the standard of the Voluntary Control Council for Interference by Information Technology Equipment (VCCI). If this equipment is used in a domestic environment, radio disturbance may occur, in which case, the user may be required to take corrective actions.

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づくクラスA情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

EUROPE

(English) European user's information - Declaration of Conformity

Remark for the Matrox hardware products supported by this guide These devices comply with EC Directive 89/336/EEC for a Class A digital device. They have been tested and found to comply with EN55022/CISPR22 and EN55024/CISPR24. In a domestic environment these products may cause radio interference in which case the user may be required to take adequate measures. To meet EC requirements, shielded cables must be used to connect the monitor and other peripherals to the card. These products have been tested in a typical class A compliant host system. It is assumed that these products will also achieve compliance in any class A compliant system.



(Français) Informations aux utilisateurs Européens - Déclaration de conformité

Remarque sur les produits matériels Matrox couverts par ce guide Ces unités sont conformes à la directive communautaire 89/336/EEC pour les unités numériques de classe A. Les tests effectués ont prouvé qu'elles sont conformes aux normes EN55022/CISPR22 et EN55024/CISPR24. Le fonctionnement de ces produits dans un environnement résidentiel peut causer des interférences radio, dans ce cas l'utilisateur peut être amené à prendre les mesures appropriées. Pour respecter les impératifs communautaires, les câbles de connexion entre le moniteur ou

autres périphériques et la carte doivent être blindés. Ces produits ont été testés dans un système hôte typique compatible classe A. On suppose qu'ils présenteront la même compatibilité dans tout système compatible classe A.

(Deutsch) Information für europäische Anwender – Konformitätserklärung

Anmerkung für die Matrox Hardware-Produktunterstützung durch dieses Handbuch Diese Geräte entsprechen EC Direktive 89/336/EEC für ein digitales Gerät Klasse A. Sie wurden getestet und entsprechen demnach EN55022/CISPR22 und EN55024/CISPR24. In einer Wohnumgebung können diese Produkte Funkinterferenzen erzeugen, und der Benutzer kann genötigt sein, entsprechende Maßnahmen zu ergreifen. Um EG-Anforderungen zu entsprechen, müssen zum Anschließen des Monitors und anderer Peripheriegeräte an die Karte abgeschirmte Kabel verwendet werden. Diese Produkt wurden in einem typischen, der Klasse A entsprechenden, Host-System getestet. Es wird davon ausgegangen, daß diese Produkte auch in jedem Klasse A entsprechenden System entsprechend funktionieren.

(Italiano) Informazioni per gli utenti europei – Dichiarazione di conformità

Nota per i prodotti hardware Matrox supportati da questa guida Questi dispositivi sono conformi alla direttiva CEE 89/336/EEC relativamente ai dispositivi digitali di Classe A. Sono stati provati e sono risultati conformi alle norme EN55022/CISPR22 e EN55024/CISPR24. In un ambiente domestico, questi prodotti possono causare radiointerferenze, nel qual caso all'utente potrebbe venire richiesto di prendere le misure adeguate. Per soddisfare i requisiti CEE, il monitor e le altre periferiche vanno collegati alla scheda grafica con cavi schermati. Questi prodotti sono stati provati in un tipico sistema host conforme alla classe A. Inoltre, si dà per scontato che questi prodotti acquisiranno la conformità in qualsiasi sistema conforme alla classe A.

(Español) Información para usuarios europeos – Declaración de conformidad

Observación referente a los productos de hardware de Matrox apoyados por este manual Estos dispositivos cumplen con la directiva de la CE 89/336/EEC para dispositivos digitales de Clase A. Dichos dispositivos han sido sometidos a prueba y se ha comprobado que cumplen con las normas EN55022/CISPR22 y EN55024/CISPR24. En entornos residenciales, estos productos pueden causar interferencias en las comunicaciones por radio; en tal caso el usuario deberá adoptar las medidas adecuadas. Para satisfacer las disposiciones de la CE, deberán utilizarse cables apantallados para conectar el monitor y demás periféricos a la tarjeta. Estos productos han sido sometidos a prueba en un típico sistema anfitrión que responde a los requisitos de la clase A. Se supone que estos productos cumplirán también con las normas en cualquier sistema que responda a los requisitos de la clase A.

ROVI CORPORATION

(English) This item incorporates copy protection technology that is protected by U.S. patent(s) and other intellectual property rights of Rovi Corporation. Reverse engineering and disassembly are prohibited.

(Français) Ce produit intègre une technologie de protection des droits d'auteur qui est protégée par un ou plusieurs brevets américains et par d'autres droits de propriété intellectuelle de Rovi Corporation. L'ingénierie inverse et le désassemblage sont interdits.

(Deutsch) Dieses Produkt enthält Kopierschutztechnologien, die durch US-Patent(e) und andere Rechte am geistigen Eigentum der Rovi Corporation geschützt ist. Reverse Engineering und Demontage sind verboten.

(Italiano) Questo prodotto incorpora la tecnologia di protezione di copia protetta da uno o più brevetti USA e da altri diritti di proprietà intellettuale di Rovi Corporation. È vietato decodificare o disassemblare il prodotto.

(Español) Este producto incorpora tecnología de protección de copia que está protegida por patente(s) de EE. UU. y por otros derechos de propiedad intelectual de Rovi Corporation. La ingeniería inversa y el desmontaje están prohibidos.

EUROPE

(English) European user's information – Directive on Waste Electrical and Electronic Equipment (WEEE)

Please refer to the Matrox Web site (www.matrox.com/environment/en/weee) for recycling information.



(Français) Informations aux utilisateurs Européens – Règlementation des déchets d'équipements électriques et électroniques (DEEE)

Se référer au site Web de Matrox (www.matrox.com/environment/en/weee) pour l'information concernant le recyclage.

(Deutsch) Information für europäische Anwender – Europäische Regelungen zu Elektro- und Elektronikgeräten (WEEE)

Bitte wenden Sie sich an der Matrox-Website (www.matrox.com/environment/en/weee) für Recycling-Informationen.

(Italiano) Informazioni per gli utenti europei – Direttiva sui rifiuti di apparecchiature elettriche ed elettroniche (RAEE)

Si prega di riferirsi al sito Web Matrox (www.matrox.com/environment/en/weee) per le informazioni di riciclaggio.

FRANCE

Avertissement sur l'épilepsie

À lire avant toute utilisation d'un jeu vidéo par vous-même ou votre enfant Certaines personnes sont susceptibles de faire des crises d'épilepsie ou d'avoir des pertes de conscience à la vue de certains types de lumières clignotantes ou d'éléments fréquents dans notre environnement quotidien. Ces personnes s'exposent à des crises lorsqu'elles regardent certaines images télévisées ou qu'elles jouent à certains jeux vidéo. Ces phénomènes peuvent apparaître alors même que le sujet n'a pas d'antécédent médical ou n'a jamais été confronté à une crise d'épilepsie.

Si vous-même ou un membre de votre famille avez déjà présenté des symptômes liés à l'épilepsie (crise ou perte de conscience) en présence de stimulations lumineuses, veuillez consulter votre médecin avant toute utilisation.

Nous conseillons aux parents d'être attentifs à leurs enfants lorsqu'ils jouent avec des jeux vidéo. Si vous-même ou votre enfant présentez un des symptômes suivants: vertige, trouble de la vision, contraction des yeux ou des muscles, perte de conscience, trouble de l'orientation, mouvement involontaire ou convulsion, veuillez immédiatement cesser de jouer et consultez un médecin.

Précautions à prendre dans tous les cas pour l'utilisation d'un jeu vidéo Ne vous tenez pas trop près de l'écran.

- Jouez à bonne distance de l'écran de TV et aussi loin que le permet le cordon de raccordement.
- Utilisez de préférence les jeux de vidéo sur un écran de petite taille.
- Évitez de jouer si vous êtes fatigué ou si vous manquez de sommeil.
- Assurez-vous que vous jouez dans une pièce bien éclairée.
- En cours d'utilisation, faites des pauses de dix à quinze minutes toutes les heures.

Trademarks • Marques déposées • Warenzeichen • Marchi registrati • Marcas registradas

Matrox Electronic Systems Ltd. /

Matrox Graphics Inc.	Matrox [®] , DualHead [®] , Marvel [™] , Mystique [™] , Parhelia [™] , MGA [™] , Rainbow Runner [®] , Veos [™]
Adobe Systems Inc.	Acrobat [®] , Reader [®]
Apple Computer, Inc.	Apple [®] , Mac [®] , Mac OS [®]
Belden Inc.	Belden [®]
Dolby Laboratories, Inc.	Dolby [®] , Dolby Digital [®]
Intel Corporation	Intel [®] , Pentium [®]
International Business Machines Corporation	IBM [®] , VGA [®]
Rovi Corporation	Macrovision [®]
Microsoft Corporation	Aero [™] , Direct3D [®] , DirectDraw [®] , DirectShow [™] , DirectX [™] , Microsoft [®] , MS-DOS [®] , PowerPoint [®] , Windows [®] , Windows NT [®] , Windows Server [®] , Windows Vista [™]
Silicon Graphics, Inc.	OpenGL [®]
Silicon Image, Inc.	PanelLink [™]
U.S. Environmental Protection Agency	Energy Star [™]
Video Electronics Standards Association	DisplayPort [™]

• (English) Registered trademarks are registered in the United States, Canada, and/or other countries. All other nationally and internationally recognized trademarks and tradenames are hereby acknowledged. • (Français) Les marques déposées sont déposées aux États-Unis, au Canada et/ou dans d'autres pays. Toutes les autres marques et tous les autres noms déposés reconnus nationalement ou internationalement sont également reconnus par les présentes. • (Deutsch) Die eingetragenen Warenzeichen sind in den USA, Kanada und/oder anderen Ländern registriert. Alle sonstigen national und international bekannten Warenzeichen und Produktnamen werden hiermit anerkannt. • (Italiano) I marchi registrati sono registrati negli Stati Uniti, in Canada e/o in altri paesi. Tutti gli altri marchi registrati e nomi commerciali riconosciuti a livello nazionale e internazionale sono ugualmente riconosciuti qui. • (Español) Las marcas registradas están registradas en los EE.UU., Canadá u otros países. Por medio del presente se reconocen todas las demás marcas y nombres comerciales reconocidos a nivel nacional e internacional.

(English) Disclaimer

THE INFORMATION IN THIS GUIDE IS SUBJECT TO CHANGE AT ANY TIME AND WITHOUT NOTICE.

Matrox Graphics Inc. reserves the right to make changes in specifications at any time and without notice. The information provided by this document is believed to be accurate and reliable. However, no responsibility is assumed by Matrox Graphics Inc. for its use; nor for any infringements of patents or other rights of third parties resulting from its use. No license is granted under any patents or patent rights of Matrox Graphics Inc.

(Français) Responsabilité

LES INFORMATIONS CONTENUES DANS CE MANUEL PEUVENT ÊTRE MODIFIÉES À TOUT MOMENT SANS PRÉAVIS.

Matrox Graphics Inc. se réserve le droit de modifier les spécifications à tout moment sans préavis. Les informations contenues dans ce manuel sont reconnues comme étant précises et fiables. Cependant, Matrox Graphics Inc. n'assume aucune responsabilité concernant leur utilisation, ni leur contrefaçon ou les autres droits des tiers résultant de leur utilisation. Aucune licence n'est accordée sur aucun brevet ou droit d'exploiter un brevet de Matrox Graphics Inc.

(Deutsch) Haftungsablehnungserklärung

DIE IN DIESEM HANDBUCH ENTHALTENEN ANGABEN UND DATEN KÖNNEN OHNE VORHERIGE ANKÜNDIGUNG GEÄNDERT WERDEN.

Die Matrox Graphics Inc. behält sich das Recht vor, jederzeit und ohne Ankündigung technische Daten zu ändern. Es wird keine Garantie für die Richtigkeit des Inhalts dieses Handbuchs übernommen. Weiterhin übernimmt die Matrox Graphics Inc. keinerlei Verantwortung für die Benutzung dieses Handbuchs, weder für Verstöße gegen Patentrechte noch für andere Rechte Dritter, die aus seinem Gebrauch resultieren mögen. Es werden keinerlei Lizenzrechte gewährt für sämtliche Patente oder Patentrechte der Matrox Graphics Inc.

(Italiano) Discrezionalità

LE INFORMAZIONI CONTENUTE NEL PRESENTE DOCUMENTO SONO SOGGETTE A MODIFICHE SENZA PREAVVISO.

Matrox Graphics Inc. si riserva il diritto di apportare variazioni di qualunque tipo alle specifiche tecniche in qualunque momento e senza alcun preavviso. Le informazioni contenute in questa documentazione sono ritenute corrette e attendibili. In ogni caso, non è imputabile a Matrox Graphics Inc. nessuna responsabilità per il loro utilizzo, come nessuna violazione a brevetti o diritti di altri produttori derivante dal loro utilizzo.

(Español) Renuncia

LA INFORMACION QUE CONTIENE EL PRESENTE MANUAL ESTA SUJETA A CAMBIOS SIN PREVIO AVISO EN CUALQUIER MOMENTO.

Matrox Graphics Inc. se reserva el derecho de realizar modificaciones en cualquier momento y sin previo aviso. La información facilitada en este documento se considera que es exacta y fiable. Sin embargo, Matrox Graphics Inc. no asume ninguna responsabilidad por su uso; ni por cualquier infracción de patentes u otros derechos de terceras partes derivados de su uso. No se concede ninguna licencia bajo cualesquiera patentes o derechos de patentes de Matrox Graphics Inc.

Matrox Graphics Inc.

1055 Saint Regis Boulevard
Dorval, Quebec, Canada H9P 2T4

North America: 1-800-361-1408

International: (514) 822-6000

Email: graphics@matrox.com

Web site: www.matrox.com/graphics

Technical support:

www.matrox.com/graphics/support

To locate the sales office nearest you, visit

www.matrox.com/graphics/contact

matrox[®]
Graphics for Professionals