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Matrox G200 MMS

User Guide

10686-301-0200
2003.03.19

ENGLISH

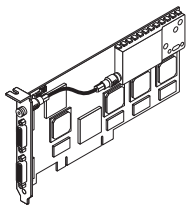
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Overview

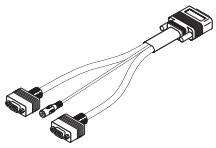
Thank you for purchasing a G200 MMS (Multi-Monitor Series) graphics card. Your Matrox MMS card is a high-performance graphics card that plugs into an expansion slot inside your personal computer. This card lets you use 2 or 4 monitors at a time with Windows 98/Me/2000/XP or NT 4.0.

The Matrox graphics engine gives you superior performance with Windows, digital video, and 3D graphics. To accelerate 3D programs, your Matrox card uses bus mastering and has hardware-accelerated features, including texture mapping, Gouraud shading, and Z-buffering.

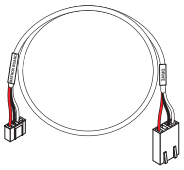
Hardware supplied



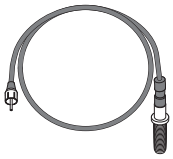
G200 MMS card*



Dual-monitor adapter for analog monitors†‡



Internal audio cable§



Cable extension§

* Pictured is a G200-Quad card with a TV tuner.

† *Two* dual-monitor adapters are included with Matrox MMS-*Quad* products. An adapter with a composite video (RCA) connector is included only with Matrox MMS products that include a TV tuner.

‡ For certain Matrox MMS models, digital dual-monitor adapters are sold separately. For more information, contact the vendor of your Matrox product.

§ Matrox TV tuner required. Only certain Matrox MMS products include a TV tuner.

Software supplied (for Windows 98/Me/2000/XP and NT 4.0)

- **Matrox PowerDesk** – to use your Matrox graphics hardware
- **Matrox Video Tools*** – to use your Matrox video capture hardware
- **Matrox PC-VCR*** – to view and record digital video (This program is part of Matrox Video Tools.)
- **Other software** – see the CD-ROM *Readme* file

* Matrox TV tuner required. Only certain Matrox MMS products include a TV tuner.

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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 4.
2. If your Matrox product includes a TV tuner, connect your video input – see "Connection setup", page 9.
3. Install the software – see "Software installation", page 14.

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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, turn off your computer, unplug it, and then wait for it to cool before you touch any of its internal parts. 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 98/Me/2000/XP on your computer, this step isn't necessary.

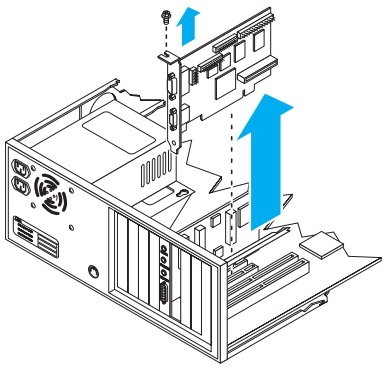
If you're using another operating system (for example, Windows NT 4.0), see its documentation for how to switch to VGA mode.

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

b Open the computer and remove your existing graphics card (if any). (If graphics hardware is built into the motherboard of your computer, this graphics hardware should automatically disable itself after your Matrox card is installed.)



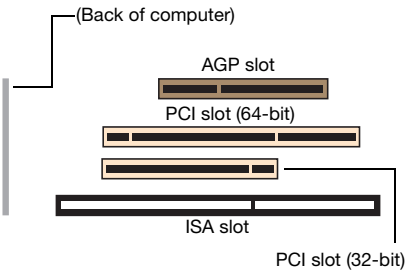
* With multi-display mode, you may be able to use your existing graphics card. For Windows 98/Me/2000/XP, see Windows 98/Me/2000/XP online help under "Multiple Display Support". For Windows NT 4.0, only Matrox graphics card models supported by the Matrox display driver can be used.

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3 Choose a PCI slot

a Most computers have different types of expansion slots. Choose a PCI slot for your graphics card. Your system manual should identify the location of each type of expansion slot in your computer.

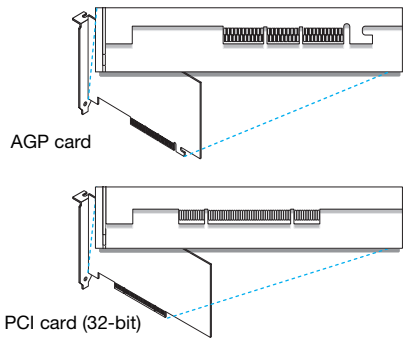
b Remove the cover for the slot you intend to use (if it's not already removed). Save the screw for the mounting bracket. (If another slot is uncovered, you can seal it with the cover you just removed.)



Note: If you're using a PCI graphics card in a PCI-X 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).

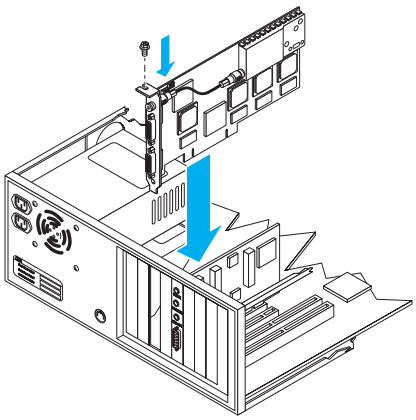


4 Insert your Matrox card

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 Replace the screw to secure the bracket of your Matrox card to the computer frame.



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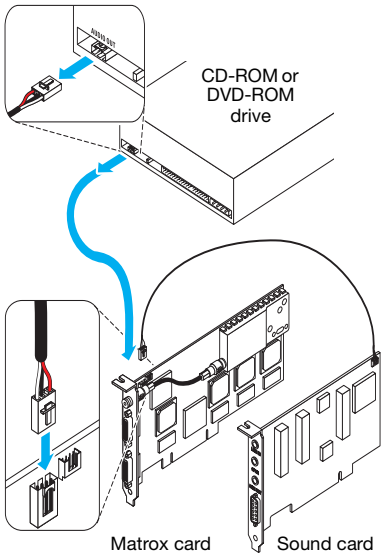
5 *If your Matrox product includes a TV tuner:*

Connect the internal audio cable

To use audio from your Matrox TV tuner, connect the internal audio cable included with your Matrox product.

a Note how your sound card is connected to your CD-ROM or DVD-ROM drive and then disconnect it from your drive.

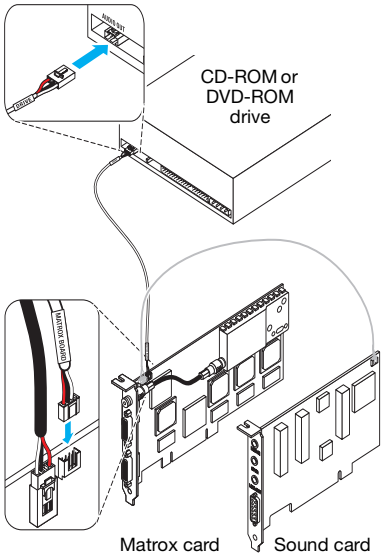
b Plug the end of the cable from your sound card into the **AUDIO OUT** connector on your Matrox card.



c Use the audio cable included with your Matrox product. Plug the end labeled **MATROX BOARD** into the **AUDIO IN** connector on your Matrox card.

d Plug the other end of the Matrox audio cable (labeled **DRIVE**) into the audio out connector on your CD-ROM or DVD-ROM drive.

e Put your computer cover back on.



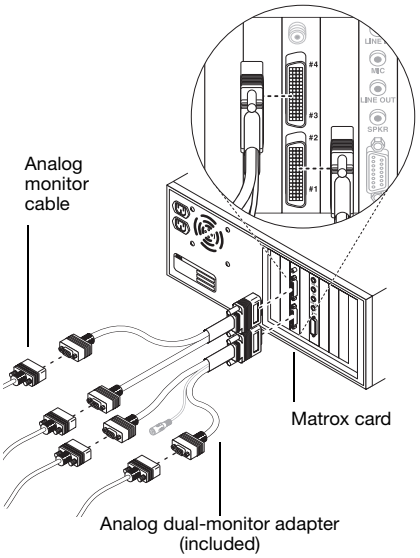
Note: If your sound card has a TV tuner connector or your computer doesn't have a CD-ROM or DVD-ROM drive: use the Matrox audio cable; plug the end labeled **DRIVE** into the **AUDIO OUT** connector on your Matrox card; plug the other end into your sound card using its TV tuner connector (if it exists) or its audio input connector.

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6 Connect your monitors

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

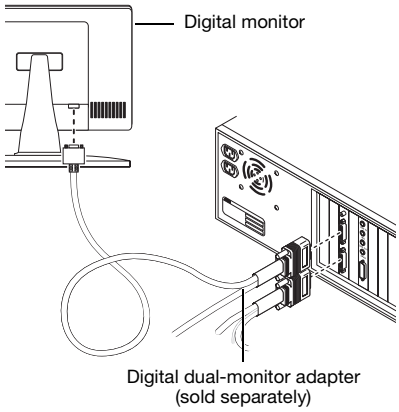
If you have an MMS-Quad card with a TV tuner, connect the dual-monitor adapter with the composite video (RCA) connector to the connector on the bottom part of the bracket (**#1/#2**).



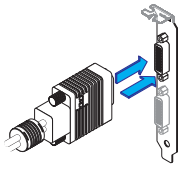
b **Analog monitors** – If you're using analog dual-monitor adapters (included with your Matrox MMS product), plug your monitor cables into them. Make sure the other end of each monitor cable is properly connected to its monitor. See your monitor manuals for more information.

Digital monitors – If you're using digital dual-monitor adapters (sold separately), plug the ends of your adapters directly to your digital monitors. These long adapters replace the cables that came with your digital monitors.

Make sure all connectors are firmly in place.



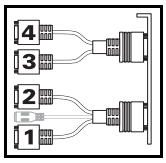
WARNING: To avoid damaging the LFH-60 connector on your dual-monitor cable or on your graphics card, carefully insert the connector on your dual-monitor cable as straight as possible into the connector on your graphics card. Specifically, inserting the connectors into each other at an angle is likely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



* Only one dual-monitor adapter is included with Matrox MMS-***Dual*** cards.

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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.

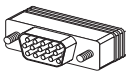


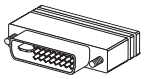
Note: Your dual-monitor adapter can only be used with the type of monitor it's intended for. Analog adapters are included with Matrox MMS products. Digital adapters are sold separately. For more information on digital adapters for your Matrox product, contact your product vendor.

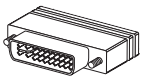
Matrox MMS adapters that support digital monitors use digital (DVI-D) or analog/digital (DVI-I) connectors.

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.


HD-15 connector (analog)


DVI connector (digital)


DVI connector (analog/digital)

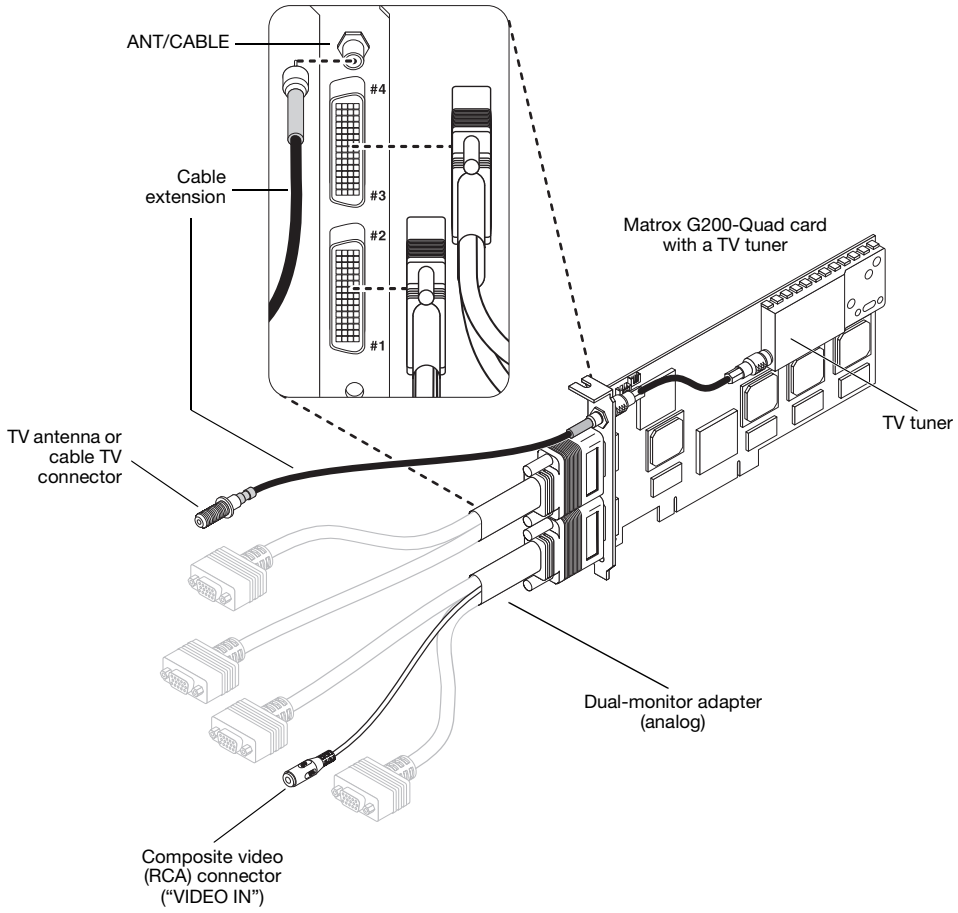
Your Matrox card is now installed. If your Matrox product includes a TV tuner, connect your external devices ***before restarting your computer*** (see "Connection setup", page 9). ***After connecting your external devices,*** restart your computer and install your Matrox software (see "Software installation", page 14).

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Connection setup
(Matrox TV tuner required)

Note: This section is only for Matrox MMS products that include a TV tuner.

Overview



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Quick connection setup

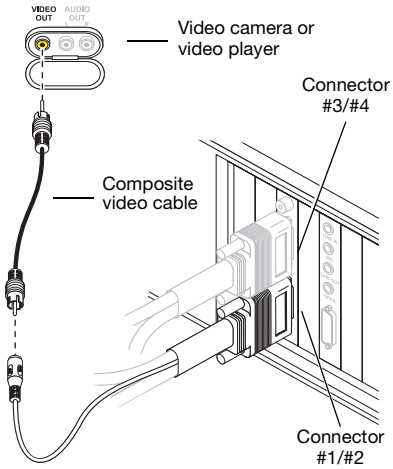
1 Connect video input

To use a video camera or video player* as a video source, you need a composite video (RCA) cable. This type of cable is available at most electronics stores.

a Plug one end of your video cable into the video connector on your dual-monitor adapter.

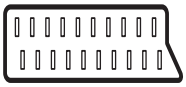
Use the composite video connector on the dual-monitor adapter connected to the **#1/#2** connector on your Matrox graphics card (bottom part of the bracket).

b Plug the other end into the **VIDEO OUT**† connector (usually yellow) on your video camera or video player.



For more information on video input devices, see "Matrox video input", page 12.

Note: If your video camera or video player ***only*** uses a SCART audio/video connector (see picture), you may need to purchase a SCART adapter. For more information, see "SCART information", page 12.



* A *video player* can be any device that generates a video signal (for example, a VCR, videodisc player, or DVD player).

† 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.

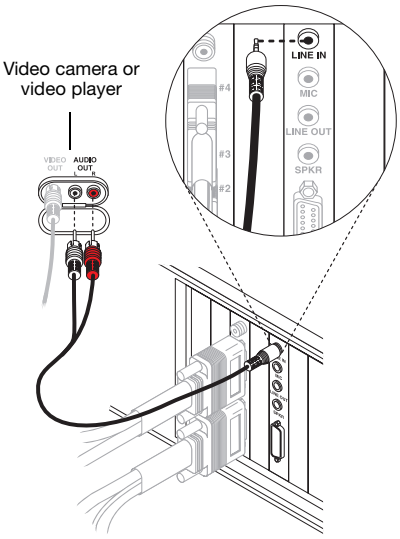
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2 Connect audio input

To connect the audio output of your video camera or video player, you need an audio cable with a stereo jack on one end and two RCA connectors on the other end. This type of cable is available at most electronics stores.

a Plug the stereo-jack end of the audio cable into the **LINE IN** (🎧) connector on your sound card.

b Plug the other end into left (**L**) and right (**R**) **AUDIO OUT** on the video device you connected to in step 1. (On the audio cable, white is for "left" and red is for "right". If your video device has only one audio connector, use the left audio connector on the cable.)

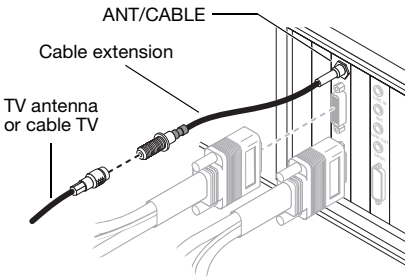


For more information on audio input types, see "Matrox video input", page 12.

3 Connect TV antenna or cable TV

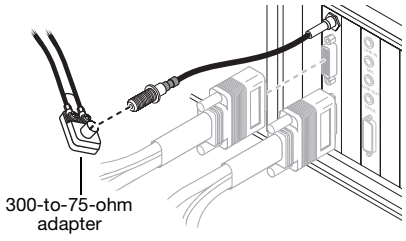
a Plug the smaller end of the cable extension into the **ANT/CABLE** connector on your graphics card.

b Connect your TV antenna or cable TV to the other end of the cable extension.



Note: To make it easier to connect, you may need to ***temporarily*** remove a dual-monitor adapter from your Matrox card.

Note: If the cable from your antenna is flat and ends with twin leads, you need a 300-to-75-ohm adapter to connect to the **ANT/CABLE** connector (see picture). You can find this type of adapter at most electronics stores.



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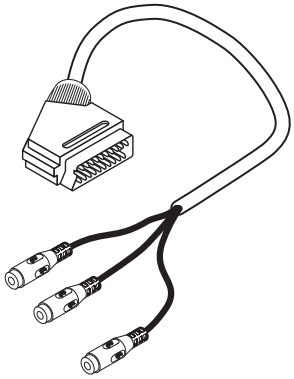
SCART information

Some video devices in Europe only have SCART connectors. This type of connector includes video ***and*** audio, whereas composite connectors include only video.

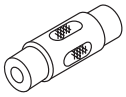
If your video camera or video player ***only*** has a SCART connector, you need a SCART cable adapter to connect to your graphics card. If you don't already have a SCART adapter, you should be able to purchase one from your local electronics store.

To connect your video camera or video player to Matrox ***input***, you need a SCART adapter with ***3 connectors*** – 2 audio and 1 video.

To use a SCART adapter, connect your audio/video cables to the SCART adapter, then connect the adapter to your video camera or video player. Depending on the type of SCART adapter you're using, you may need ***male-to-male*** adapters to attach your audio/video cables to it. For more information on connecting to a video camera or video player, see steps 1 and 2 starting on page 10.



Composite SCART adapter with 3 connectors



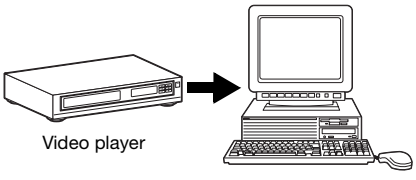
Male-to-male adapter (RCA)

Matrox video input

Note: Unauthorized recording or use of broadcast television programming, video tape, or other copyrighted material may violate copyright laws. Matrox assumes no responsibility for the illegal duplication, use, or other acts which infringe on the rights of copyright owners. Your Matrox product may not let you record from a copy-protected video source.

Video player as input

If you connect the output of your video player to your computer, you can view, record, and edit the video from your video player on your computer. To connect, see steps 1 and 2 starting on page 10. For more information, see your video player manual.

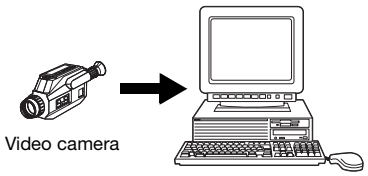


Video player

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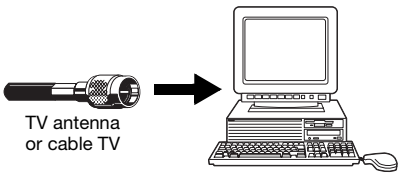
Video camera as input

If you connect a video camera to your computer, you can view, record, and edit live video on your computer. You can also video conference. To connect, see steps 1 and 2 starting on page 10. For more information, see your video camera manual.



TV antenna or cable TV as input

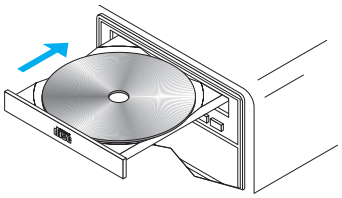
You can connect a TV antenna or cable TV directly to your Matrox product. With this setup, you can use software to watch TV, change channels, and record TV programs like a VCR.* To connect, see step 5, page 6, and step 3, page 11.



* You can also use a VCR as a TV tuner for your computer by connecting your TV antenna or cable TV to your VCR (see your VCR manual), and connecting your VCR to your computer.

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Software installation



This section describes how to install Matrox software for ***Windows 98/Me/2000/XP or NT 4.0***.

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

1 **Restart your computer** **If you're using Windows 98/Me/2000/XP**, it detects new hardware when you restart. If Matrox display drivers haven't been previously installed, Windows reports finding a PCI adapter. Windows prompts you to install a display driver. Follow the on-screen instructions. (The Matrox Windows 98/Me display driver is in the *Win9x* folder of your Matrox installation CD-ROM. The Matrox Windows 2000/XP display driver is in the *Win2kXP* folder.)

2 **Install required software** After your computer has restarted, insert (or reinsert) the Matrox installation CD-ROM in your CD-ROM drive – the setup program automatically starts.* This setup program works with Windows 98/Me/2000/XP and NT 4.0, and detects which operating system you're using. If the required display software isn't already installed, the setup program automatically prompts you to install this software. Follow the on-screen instructions.

After the required display software is installed, you're prompted to restart your computer for changes to take effect. Leave your Matrox CD-ROM in your CD-ROM drive.

3 **Install optional software** After your computer restarts, 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.

4 **Set up your display software** See "Display setup", page 15.

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

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Display setup

Windows 98/Me/2000/XP or NT 4.0 – Your Matrox display driver includes Matrox PowerDesk software. 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 98/Me/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 ystour 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 98/Me/2000/XP and NT 4.0. For more information on multi-display mode, see Windows 98/Me/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.

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Windows 98/Me/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 17), select a display before clicking **Advanced**.
2. If the monitor name listed doesn't match your monitor, click the **Change** button to select a new monitor name. Follow the on-screen instructions.
3. If you're using a multi-display desktop (see "Multi-display setup", page 17), repeat steps 1–2 for each display in your Windows desktop.

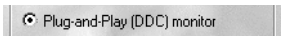
For more information on Windows monitor settings, see Windows documentation.

If you want to customize your Windows monitor settings:

1. Access the PowerDesk **Monitor Settings** property sheet (see "Accessing PowerDesk property sheets", page 15).
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.

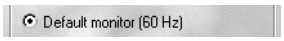
Windows NT 4.0 –

1. Access the PowerDesk **Monitor** property sheet (see "Accessing PowerDesk property sheets", page 15).
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**.

   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 17), repeat steps 1–2 for each display in your Windows desktop.

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Multi-display setup

To set up multi-display mode:

Windows 98/Me/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 15).
2. Click **Multi-Display Desktop** ().
3. Change the setup of your multi-display desktop by moving the **Desktop area** slider, then click **OK**.

> **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:

- Use up to 16 displays at a time if you have multiple Matrox graphics cards. (Without this software, the maximum number of simultaneous displays with Windows 2000/XP is 10.)
- 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.)
- Rotate one or more displays to support portrait orientation. (A *portrait* orientation is taller than wide.)
- View a *clone* (copy) of a Windows display on one or more other displays.
- Change the display layout to reflect the physical layout of your monitors.

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To setup 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. Make sure **Use a new multi-display setup** is selected, then click **Next**.
3. Select the maximum number of Windows displays you want to use, then click **Next**. (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 orientation**
   d. **Display resolution**
   e. **Color palette**
   f. **Refresh rate**
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 **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**.

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More PowerDesk information

For more information on Matrox PowerDesk:

> **Note:** If your Matrox product has digital flat panel support, see the *Readme* file in the *Fpanel* folder of the Matrox CD-ROM.

Window 98/Me/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 98/Me/2000/XP – Access the PowerDesk **Information** property sheet (see "Accessing PowerDesk property sheets", page 15), then click **Help** or **View Readme File**.

Windows NT 4.0 –

- Access the Matrox PowerDesk **Information** property sheet (see "Accessing PowerDesk property sheets", page 15).
- Click the Matrox QuickDesk icon ( ) on your Windows taskbar, then click **Help → PowerDesk Guide** or **Help → View Readme File**.

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Troubleshooting

Basic procedures

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

Restarting in safe mode

What follows is information on how to restart your computer in *safe mode* (or *VGA mode*).

If your primary display is ***usable***:

Windows 98/Me/2000/XP or NT 4.0 –

1. Restart your computer:
   - **Windows 98/Me/2000/XP** – Click **Start** → **Shut Down** → **Restart** → **OK**.
   - **Windows NT 4.0** – Click **Start** → **Shut Down** → **Restart your computer** → **Yes**.
2. **Windows 98/Me/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 "Safe mode" or "VGA mode", then press [Enter].

If your primary display is ***unusable***:

Windows 98/Me –

1. Press [Ctrl]+[Alt]+[Del] twice to restart your computer.
2. ***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 "Safe mode", then press [Enter].

Windows 2000/XP –

1. Restart your computer. For more information, see your system manual.
2. ***Before*** Windows starts, press [F8] for the Windows startup menu to appear.
3. Select "Safe mode", then press [Enter].

Windows NT 4.0 –

1. Press [Ctrl]+[Alt]+[Del] → [Tab] → [Tab] → [Enter] → [↓] (down arrow) → [Enter] to restart your computer.
2. From the startup menu, choose Windows "VGA mode".

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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 4.

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 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.)

Cause The BIOS of your Matrox graphics card may need to be updated or restored.

Solution **For advanced users –** If you have another VGA-compatible graphics card (ISA or PCI), you can try resetting the BIOS of your Matrox graphics card:

1. Turn off your computer and insert the other graphics card into an expansion slot. For more information on expansion slots, see "Choose a PCI slot", page 5.

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2 Plug your monitor into the other graphics card and restart your computer.

> **Note:** Make sure your computer uses the other graphics card to control your primary display. The graphics card that controls your primary display is the one that first displays information when you restart your computer.
>
> Your computer BIOS (Basic Input/Output System) and the slot type (ISA, PCI, or AGP – see "Choose a PCI slot", page 5) of each graphics card help determine which graphics card controls your primary display.
>
> To control which graphics card is used for your primary display, you may be able to change the configuration of your computer BIOS. For information on how to change your computer BIOS settings, see your system manual.

3 Make sure **Matrox System Utilities** are installed on your computer. (These can be installed from your Matrox CD-ROM.)

4 **Windows 98/Me/2000/XP or NT 4.0** – Click **Start** → **Run**, type *c:\matrox\util\pbioswin*, then click **OK**. Follow the on-screen instructions.

DOS – Restart your computer in DOS mode, then type:

cd c:\matrox\util [Enter]
upbiosdos [Enter]

5 Turn off your computer, remove the other graphics card, then plug your monitor into your Matrox graphics card.

6 Restart your computer.

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.

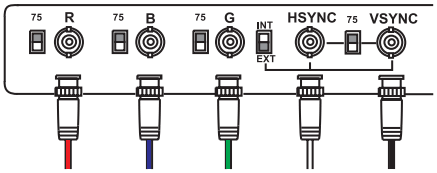
Solution Make sure your monitor is properly connected to the correct connector on your Matrox graphics card (see "Connect your monitors", page 7).

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

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Solution Make sure the connection to the back of the monitor is firmly in place.

If your monitor uses BNC input, make sure the Red (**R**), Green (**G**), Blue (**B**), Horizontal Sync (**HSYNC** – white or gray wire), and Vertical Sync (**VSYNC** – black wire) connections are firmly in place and plugged into the correct input.



Bayonet Nut Connect (BNC)

Cause If your monitor uses BNC input, one or more connection settings may be incorrect.

Solution Set each of your monitor RGB input and sync switches (if available) to 75 ohms, with the sync set to "external". These controls are usually switches on the back of your monitor.

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.

If your primary display is still usable, see "Monitor setup", page 15. 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 it being changed 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 Make sure the correct monitor is selected in Windows.

Windows 98/Me/2000/XP –

1. If your primary display is unusable, restart your computer in safe mode (see "Restarting in safe mode", page 20).
2. Right-click the Windows desktop background, then click **Properties → Settings**.
3. Move the **Screen area** (Windows 98/Me/2000) or **Screen Resolution** (Windows XP) slider down to its lowest setting, then click **OK.**

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4 Restart your computer normally.

5 Make sure the correct monitor is selected in Windows (see "Monitor setup", page 15).

6 Make sure you're not using inappropriate monitor setting customizations: Access the PowerDesk **Monitor Settings** property sheet (see "Accessing PowerDesk property sheets", page 15), 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 safe mode", page 20).

2 Right-click the 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 98/Me/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 safe mode", page 20).

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2 To remove Matrox software:

- Windows 98/Me – Click **Start → Settings → Control Panel → Add/Remove Programs** (double-click) → **Matrox Graphics Software (remove only) → Add/Remove → Yes**.
- Windows 2000/XP – Click **Start → Settings*** → **Control Panel → Add/Remove Programs** (double-click*) → **Matrox Parhelia Software → Change/Remove → Yes**. (* Depending on your version and configuration of Windows, this part of the step may not be necessary.
- Windows NT 4.0 – Click **Start → Settings → Control Panel → Add/Remove Programs** (double-click) → **Matrox Graphics Software (remove only) → Change/Remove → Yes**.

3 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 documentation in help files, *Readme* files, and Adobe Acrobat PDF (Portable Document Format) files. This guide is available on the CD-ROM as a PDF file (*Doc\English\Guide\Guide_en.pdf*). To view or print PDF files, use the **Acrobat Reader** program, which you can install from the "Matrox Installation" CD-ROM.



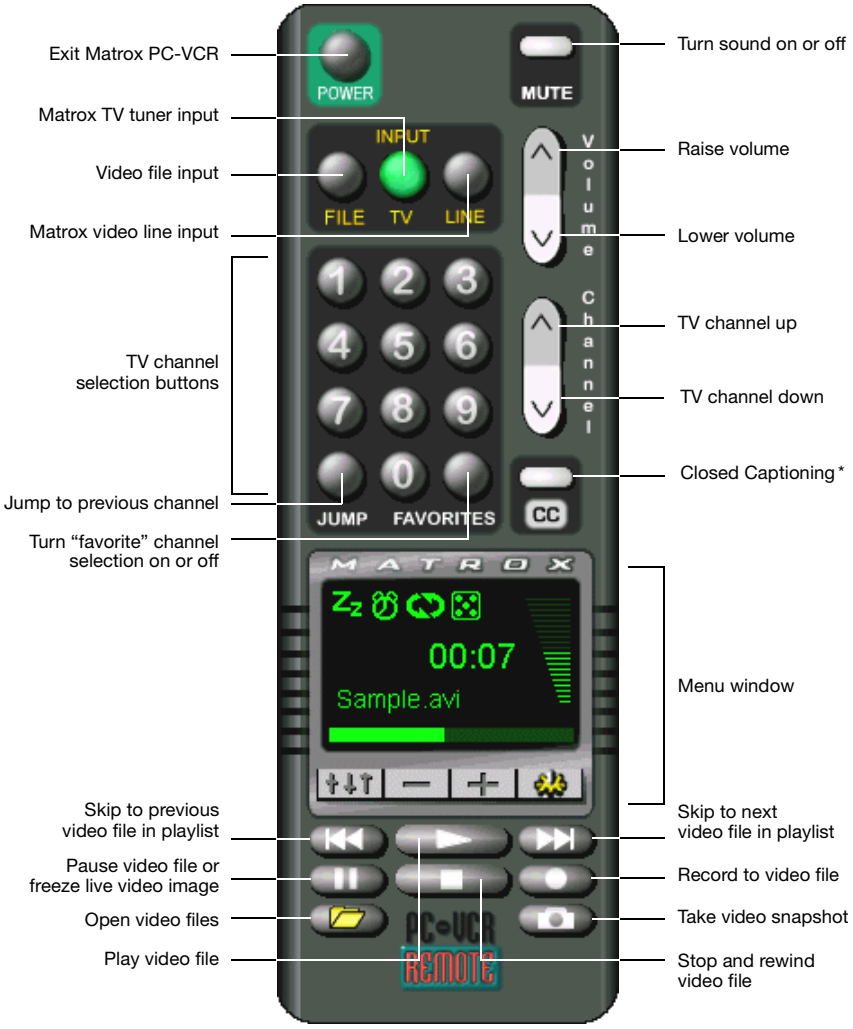
Note: Be sure to check for any last-minute release notes at the end of this manual and in the Matrox CD-ROM *Readme* file. If your Matrox product has digital flat panel support, see the *Readme* file in the *Fpanel* folder of the Matrox CD-ROM. Also, check the Matrox Web site (www.matrox.com/mga) for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

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Matrox PC-VCR program
(Windows NT 4.0 only)

If your Matrox product includes a TV tuner, the Matrox PC-VCR program lets you use your computer like you would a TV or VCR. To start, double-click the **PC-VCR Remote** icon () on the Windows desktop background. The first time you start Matrox PC-VCR, you see the PC-VCR remote and its video window. Use the Matrox PC-VCR remote to control what you see in the video window and what you record to file.

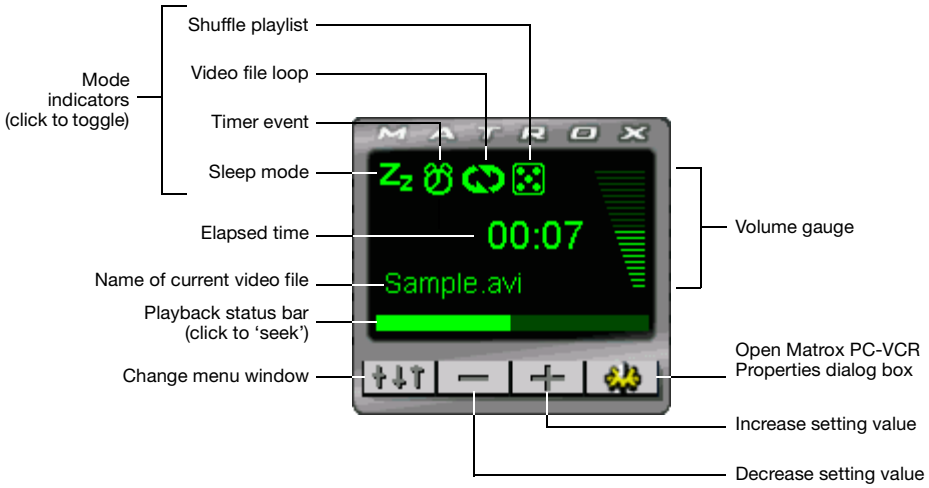
Matrox PC-VCR interface



* North America only

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Matrox PC-VCR menu window (with video file playback)



Input setting



After you've made sure your external video devices are properly connected, click an **INPUT** button on the Matrox PC-VCR remote to select a video source for the video window.* This input setting affects many PC-VCR controls. Select a button based on what kind of input you want to use:

- **FILE** – for video file playback.
- **TV** – to use your Matrox TV tuner.
- **LINE** – to use a device connected to your Matrox **VIDEO IN** connector. This can be a video camera or video player.

Video file input

With Matrox PC-VCR, you can play AVI, MOV, MPG, MPS, and DAT video files, including the video files you record with PC-VCR (AVI files).

To view a video file

1 On the Matrox PC-VCR remote, click the **FILE** button.

2 Click **Open Video Files** ( ), then select a video file in the resulting dialog box.

* Depending on your graphics card and display settings, there are maximum video window resolutions (sizes). We recommend you use a 16-bit color palette setting for your display. For more information, see page 59.

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3 Click **Play** ( ).

TV tuner input

You can view, record, and edit TV programs on your computer, like you would with a VCR. However, instead of using the controls on your VCR, you can use the Matrox PC-VCR software controls.

TV tuner software setup

To make sure Matrox PC-VCR is set up to use your Matrox TV tuner:



1 Click the **TV** input button on the PC-VCR remote.

2 Click the **Properties** ( ) → **TV Setup**.

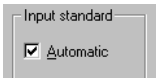
3 Click a **TV input** button to indicate what your Matrox TV tuner is connected to:



- **Air** – for an antenna.
- **Cable** – for cable TV.

4 Click **Advanced**, select the country you're in, then click **OK**.

5 Click the **Video** tab, then make sure the **Automatic** check box (in the **Input standard** group box) is enabled.



6 Click **TV Setup** tab → **Auto Scan** for PC-VCR to automatically search all channels and keep in memory only the ones that can be tuned.

7 Adjust any other settings you want, then click **OK** to save settings and close the dialog box.

TV channel preview

To see the TV channel preview window, right-click the Matrox PC-VCR remote, then click the **TV Preview** menu item. By resizing this window, you can preview up to 30 channels at a time. Use the scroll bar to preview different channels. If PC-VCR **FAVORITES** feature is enabled, only the channels defined as your "favorites" are visible in the preview window.

The video window and the TV channel preview window can't be viewed at the same time. To view a particular channel in the video window and close the preview window, double-click a channel in the preview window.

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Video line input

Note: Your Matrox product doesn't support S-video line input. Because of this, certain Matrox software controls are unavailable.

When the Matrox PC-VCR **LINE** button is selected, the video window displays the signals coming from a device connected to your Matrox **VIDEO IN** connector. This can be a video camera or video player (see "Matrox video input", page 12).

You can record from your video camera or video player to a digital video file. You can then play back this video file with Matrox PC-VCR, or edit it with another program.

Before you record to a video file

- Make sure the video camera or video player is properly connected to your Matrox **VIDEO IN** connector. For more information on how to connect video devices, see "Connection setup", page 9.
- Make sure your Windows sound card settings are correct. For more information, see "Sound", page 54.
- Make sure your Matrox PC-VCR property settings are correct. Click the **Properties** button () on the PC-VCR remote to access its setting controls:

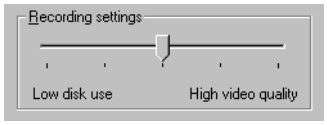


  - On the **Video** property sheet, select the TV standard your video camera or video player uses (NTSC in North America; PAL in most of Europe; or SECAM in France). For Matrox PC-VCR to automatically detect the TV standard, enable the **Automatic** check box. If this check box is enabled, there may be a delay of a few seconds when you change the **INPUT** setting.
  - On the **Recording** property sheet, select the path where you want to save your video file and select your video capture options for Matrox PC-VCR. Move the **Recording settings** slider to increase or decrease the frame size and rate of recordings. The higher the frame size, the higher the video quality, but also the more disk space you'll need.

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Look at the **Max recording time** box to see the maximum amount of time you can record to a video file. This time is based on the currently selected capture settings and the amount of free space on the disk where your video file will be recorded.

Recording settings



The maximum frame size and rates you can select with the **Recording settings** slider are based on the currently selected capture settings and the disk where the video file will be created. Higher-quality capture settings generally require a disk that can store information faster. Matrox PC-VCR determines how fast your disk can store information by checking the results saved by the **Matrox HD Benchmark** program.

Note: Your Matrox product doesn't support hardware-accelerated MJPEG encoding and decoding. Because of this, certain Matrox software controls are unavailable.

For more information on Matrox PC-VCR property settings, click "?" on the title bar of the dialog box, then click a dialog box item.

Recording to a video file

1 Click the **LINE** button on the Matrox PC-VCR remote. You should see video in the PC-VCR video window; if not, see "Before you record to a video file", page 29.

2 Click **Record** ( ).

If you click **Record** once, Matrox PC-VCR will record to video file until you click **Stop** ( ) or run out of disk space. If you click **Record** again, PC-VCR will record for 2 minutes; click again and PC-VCR will record for 4 minutes; and so on.

Mini remote


Mini remote toolbar (FILE input)

If you don't want to use the full-sized Matrox PC-VCR remote, you can use the "mini remote". The mini remote is a toolbar added to the PC-VCR video window. The mini remote replaces the "full remote". To use the mini remote, right-click the PC-VCR remote, then click **Use Mini Remote** on the resulting pop-up menu.

Pause your mouse pointer over each mini remote button to see a pop-up tooltip identifying it. There are different buttons on the mini remote depending on the type of input selected.

To return to using the full remote again, right-click the Matrox PC-VCR video window, then click **Use Full Remote** on the resulting pop-up menu.

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More features

To access more features, click the **Properties** button ( ) on the Matrox PC-VCR remote. You can also right-click PC-VCR or its video window to quickly access some features. Here's a partial list of what else you can do with Matrox PC-VCR:

Full-screen video window Double-click the Matrox PC-VCR video window to make its video image fill your entire computer display.* Double-click again to restore the video window to its original size.

TV program timer ( ) You can program Matrox PC-VCR like you would a VCR. You can schedule weekly, daily, or one-time-only TV program events which do one of three things:

- Make the Matrox PC-VCR video window appear.
- Save Closed Captioning text to a file (North America only).
- Record video and audio input to a file.

Closed Captioning ( ) Save Closed Captioning text to a file. If the current Matrox PC-VCR video input signal supports the Closed Captioning service used in North America, click the **Closed Captioning** button to show or hide text information encoded in the video signal. (This feature doesn't work with the Teletext service used in Europe.)



Keyword detection Create lists of words that Matrox PC-VCR automatically searches for in the Closed Captioning information of a video signal. Depending on how you set it up, PC-VCR will make the video window appear, save Closed Captioning text to a file, or record the video and audio input to a file when it finds a keyword. (This feature doesn't work with the Teletext service used in Europe.)

Sleep mode ( ) Have Matrox PC-VCR close automatically after a certain amount of time.

Shuffle playlist ( ) Shuffle the video files in the current playlist into random order. (To use this feature, enable **Use Playlist** first.)

Loop video files ( ) Play video files continuously.

* If your display area setting is too large, **TV** and **LINE** input and playback from AVI files may appear blocky when viewed full-screen because of the way the video is encoded.

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Video snapshots

Click the **Video Snapshot** button () on the Matrox PC-VCR remote to save a digital still image ("frame capture") of the current PC-VCR video window. Video snapshots can be saved as bitmap (**.bmp*) or JPEG (**.jpg*) files. You can adjust the quality, and as a result the file size of JPEG video snapshots.

Video window cropping

If the Matrox PC-VCR **LINE** or **TV** button is selected, hold down the [Shift] key, then click the video window display area. This opens a dialog box that lets you trim the edges of the video window display. This is useful for hiding information along the edges of a video image or if you just want to see part of your video window display. You can also hold down the [Ctrl] key, then drag in the video window to crop. To restore cropping settings, right-click the video window, then click the **Reset Cropping** menu item.



> **Note:** In a video window with no cropping, the edges of video images may appear distorted. You normally don't see this distortion on a TV because most TVs crop the edges of video images. Professional video equipment doesn't produce this distortion but consumer-quality video equipment may. You can use the cropping feature of Matrox PC-VCR to hide this distortion.

Hot keys

Assign keyboard shortcuts to many Matrox PC-VCR controls.

Audio

With a sound card installed in your computer, you can adjust your computer sound output with Matrox PC-VCR.

TV tuner

With the TV tuner built into your graphics card, you can:

- Simultaneously preview up to 30 channels in a single window.
- Change channels with PC-VCR controls.
- Schedule TV program timer events for different channels.
- Password-protect certain TV channels ("parental lock").
- Auto Scan for tunable TV channels.
- Define certain channels as your favorites and quickly skip to those channels with the PC-VCR channel up and down buttons.

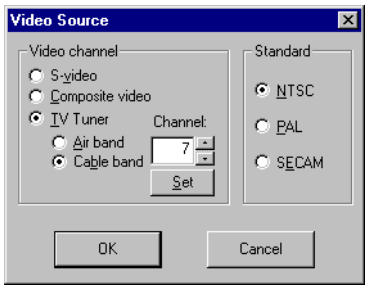
To turn some features on or off, click the Matrox PC-VCR mode indicators (, , , , ). For more information on Matrox PC-VCR features and controls, see its context-sensitive help. Click "" on the title bar of a dialog box, then click a dialog box item.

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Matrox VidCap driver

If your Matrox product includes a TV tuner, video capture programs (***other than*** Matrox PC-VCR) use the Matrox **VidCap** driver interface. For example, you use the Matrox VidCap driver to adjust capture settings in a video conferencing program. This section describes VidCap source and format setting controls.

Video source settings



Video channel – Click a button in this group box to select a source:

> Note: Your Matrox product doesn't support S-video line input. Because of this, certain Matrox software controls are unavailable.

Composite video – to capture video from a video camera or video player connected to your Matrox **VIDEO IN** connector.

TV tuner – to capture video from your Matrox TV tuner.

Depending on what's connected to your Matrox **ANT/CABLE** connector, click one of these buttons:

- **Air band** – for a TV antenna.
- **Cable band** – for cable TV.

With the **Channel** box, select the channel you want to use. Click **Set** to apply your selection.

For more information, see "Hardware installation", page 4.

Standard – Click a button in this group box to identify the TV standard used by your video source:

NTSC – for most North American video devices.

PAL – for most European video devices.

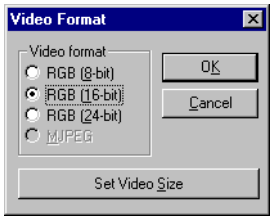
SECAM – for video devices using the TV video standard from France.

The VidCap driver automatically assigns the correct standard used by your current video source. VidCap won't let you select a TV standard it doesn't detect.

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Video format settings

RGB – Select a video file format. The bit values represent how many bits of information are used for color palette information; the larger the bit value, the more colors can be used, but the larger the file size.



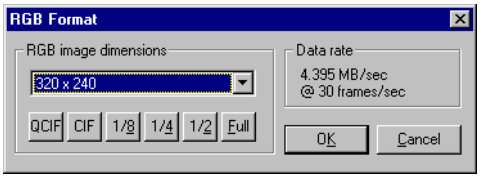
8-bit – 256 shades of gray

16-bit – 65,536 colors

24-bit – 16,777,216 colors

Note: Your Matrox product doesn't support hardware-accelerated MJPEG encoding and decoding. Because of this, certain Matrox software controls are unavailable.

Set Video Size – Click this button to adjust the video image size (resolution) settings for the currently selected format. The data rate estimate ***doesn't*** take audio into account.



Overlay and preview modes

The video capture program you're using may give you a choice of *overlay* or *preview* modes. Overlay and preview settings affect how video is viewed or captured:

- With overlay mode, everything ***on*** the video window is captured. For example, any part of a dialog box overlapping the video window appears in the captured video.
- With preview mode, you may get a lower frame rate (possibly resulting in jerky video) and you may not be able to view or capture video if there isn't enough graphics memory available. The amount of graphics memory available depends on how much memory is on your graphics card, the size of the video window, and the resolution and color palette settings of your display.

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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 24.

Solution W **Windows 98/Me – For advanced users –** Manually remove any old or new display drivers, then reinstall the latest display driver for your Matrox graphics card:

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.

1. Restart your computer in safe mode (see "Restarting in safe mode", page 20).
2. Click **Start → Settings → Control Panel → System** (double click) **→ Device Manager.**
3. Click the plus sign next to **Other devices** (if it appears) and **Display adapters**. Delete all listed display adapters (click each, then click **Remove**), then click **OK**.
4. In the following folders, remove all files or folders related to "PowerDesk" (*pd**.*), "Matrox", or "MGA". (For more information on some files, right-click on them in Windows Explorer, then click **Properties → Version**. The following paths assume default installations and may be different on your computer.)
   - *C:\Windows\Start Menu\Programs\StartUp*

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- *C:\Windows\Startmenu\Programs*
- *C:\Windows\System*
- *C:\Program Files*



Note: Recent versions of Matrox PowerDesk for Windows 98/Me (5.*x* and later) install files only to your Windows *System* folder.

5 Click **Start → Run**, type *regedit*, then click **OK**.

6 Under **HKEY_LOCAL_MACHINE → SOFTWARE**, remove all items starting with "Matrox" or "MGA".



Note: Recent versions of Matrox PowerDesk for Windows 98/Me (5.*x* and later) store registry settings under **HKEY_CURRENT_USER → SOFTWARE**. ***Your*** settings under **HKEY_CURRENT_USER** are only accessible if you're logged into Windows with your user name.

7 Restart your computer, then install the latest display drivers for your Matrox graphics card. You may also need to reinstall other Matrox software.

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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 98/Me/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 15). 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, **Unknown monitor** (Windows 98/Me), or **Default monitor** (Windows 98/Me/2000/XP or NT 4.0), 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 98/Me/2000/**XP** or NT 4.0, see "Monitor setup", page 15.

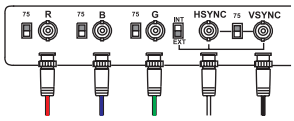
Cause If a monitor was changed or added while Windows was running, the new monitor may not be detected by the software.

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

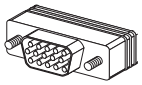
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Cause You may be using BNC connectors with a Plug-and-Play monitor. The Plug-and-Play feature of a monitor can't be used with BNC connectors.

Solution If there's an HD-15 connector at the back of your monitor, use this connector instead of the BNC connectors.



BNC (Bayonet Nut Connect) connectors


HD-15 connector

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.

Problem Setup program reports an IRQ problem (3D and video programs don't work)

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

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

Windows 98/Me/2000/XP –

1. Access the Matrox PowerDesk **Options** property sheet (see "Accessing PowerDesk property sheets", page 15).
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.

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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 4.

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.

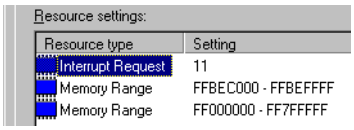
Windows 98/Me/2000/XP – To check the display adapter's IRQ:

1. **Windows 98/Me** – Click **Start** → **Settings** → **Control Panel** → **System** (double-click) → **Device Manager**.

   Windows 2000/XP – 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**.



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.

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Cause

Windows 98/Me – Other devices in your computer may have IRQs unnecessarily allocated to them. Each time cards are moved to different expansion slots in your computer, new IRQs may be allocated without old ones being deallocated.

Solution

For advanced users – Remove and restore device drivers.

> **Note:** Before removing software, make sure you have all the necessary files to reinstall software that may still be needed.

1. Restart your computer in safe mode (see "Restarting in safe mode", page 20).
2. Right-click the **My Computer** icon on the Windows desktop background, then click **Properties → Device Manager**.
3. Under **Display adapters**, **Network adapters**, or **SCSI controllers**, remove any redundant or unused device drivers. To remove a driver, select its name, then click **Remove**. (If you're not sure whether a driver is redundant or unused, you can remove it. When Windows restarts, Windows automatically restores needed drivers or prompts you to reinstall them.)
4. Restart your computer normally.

Cause

Your computer's other BIOS settings may be incorrect.

Solution

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

Problem After game for Windows 98/Me/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

Windows 98/Me/2000/XP –

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. Make sure the correct monitor is selected in Windows (see "Monitor setup", page 15).

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Solution Make sure your Matrox monitor settings are correct-

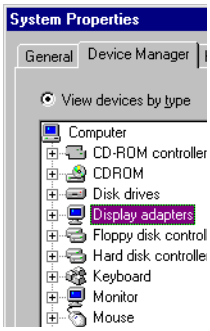
1. If the game is still running in full-screen mode and your monitor is unusable, exit the game. To do this, press [Alt]+[Tab] ***once***, right-click the name of the game on the Windows taskbar, then click **Close**.
2. Access the Matrox PowerDesk **Monitor Settings** property sheet (see "Accessing PowerDesk property sheets", page 15).
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 After restarting computer, Windows 98/Me warns that the graphics card isn't configured correctly

Cause You may have a conflict because of previously installed display drivers.

Solution Delete all existing display drivers and reinstall Matrox display drivers:

1. If Windows prompts you to start the **Add New Hardware Wizard**, click **Cancel**. (If you start the Wizard, it will ***not*** detect your graphics card.)
2. Right-click the **My Computer** icon on the Windows desktop background.
3. Click **Properties → Device Manager**.
4. Click the plus sign next to **Other devices** (if it appears) and **Display adapters**.
5. Delete ***all*** listed display adapters (click each, then click **Remove**), then click **OK**.
6. Restart your computer and reinstall the Matrox display drivers (see page 14).



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Problem W — Using multiple displays under Windows 98/Me/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.

Programs that don'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 (ISA, PCI or AGP – see "Choose a PCI slot", page 5) 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.

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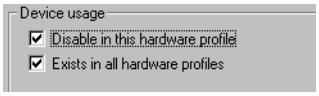
Solution

Windows 98/Me/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. **Windows 2000/XP –** Restart your computer in safe mode (see "Restarting in safe mode", page 20).
2. **Windows 98/Me –** Click **Start → Settings → Control Panel → System** (double-click) → **Device Manager.**

   Windows 2000/XP – 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:

   Windows 98/Me – Double-click the name of a display adapter to open a properties dialog box. Enable the **Disable in this hardware profile** check box, then click **OK**.

   Windows 2000/XP – Right-click the name of a display adapter, then click **Disable → Yes**.

> **Note:** Your primary display can't be disabled.

5. **Windows 98/Me –** Click **Close → Yes**.
6. Restart your computer for changes to take effect.

> **Note:** To restore display adapters, repeat steps 2–6, but do the following in step 4:
>
> - **Windows 98/Me –** Clear the **Disable in this hardware profile** check box.
> - **Windows 2000/XP –** Click **Enable**.

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.

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Under Windows 98/Me/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 Web site (www.matrox.com/mga). 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 98/Me/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 98/Me/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 W 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.



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Solution **Windows 98/Me/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 or 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 98/Me/2000/XP –

1. Access the Matrox PowerDesk **Options** property sheet (see "Accessing PowerDesk property sheets", page 15).
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 15).
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 **Windows 98/Me/2000** – Disable Windows effects:

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**.

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2 Disable one or more features.

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

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 Disable Matrox hardware acceleration:

Windows 98/Me –

1 Click **Start** → **Settings** → **Control Panel** → **System** (double-click) → **Performance** → **Graphics**.

2 Move the **Hardware acceleration** slider to **None**.

3 Click **OK** → **Close** → **Yes** to accept the changes and restart your computer.

Windows 2000/XP –

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

2 Move the **Hardware acceleration** slider to **None**.

3 Click **OK** → **OK** to accept the changes.

Cause **Windows 98/Me –** There may be a conflict between resources in your system.

Solution

1 Click **Start** → **Settings** → **Control Panel** → **System** (double-click) → **Device Manager**.

2 Click the plus sign next to **Other devices** (if it appears) and **Display adapters**.

3 Delete any display adapter ***other than*** the one for your Matrox graphics card.

4 Restart your computer.

Note: If you identify a program that doesn't work well with Matrox acceleration, please contact Matrox technical support (see page 65) 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.

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Cause

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.

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 98/Me/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 15).
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 44.)

Note: If the monitor you disabled in the software is your primary display, you need to configure your computer so that your primary display is on the monitor that's connected. See "Using multiple displays…", page 42, solutions 2, 3, and 4.

Cause

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.

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Solution **Windows 98/Me/2000/XP –** 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 –** Click the Matrox QuickDesk icon ( ) on your Windows taskbar, then click **Multi-Display Controls**.

   Windows NT 4.0 – Access the Matrox PowerDesk **PowerDesk** property sheet (see "Accessing PowerDesk property sheets", page 15).
2. Enable one or more of the following features:
   - **Open program windows in display**
   - **Use CenterPOPUP** (Windows 2000/XP)
   - **Center dialog boxes** (Windows NT 4.0)
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.

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Video

The following troubleshooting items address problems related to digital video. Some of these items only apply if your Matrox product includes a TV tuner.

Note: For a list of notes, problems, and limitations, click **Start → Programs → Matrox Video Tools → Read Me**.

Problem Can't use a video program (video capture, playback, editing, or conferencing programs)

Cause Another program may be using your Matrox video input hardware. Only one program at a time can use Matrox video input hardware.

Solution Close any other program that may use video editing hardware, then restart the program you're using.

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

Solution Remove, then restore Matrox video software:

Windows 98/Me/2000/XP or NT 4.0 –

1 To remove Matrox video software:

Note: Before removing software, make sure you have all the necessary files to reinstall software that may still be needed.

- Windows 98/Me – Click **Start → Settings → Control Panel → Add/Remove Programs** (double-click) → **Matrox Video Tools → Add/Remove → Yes**.
- Windows 2000/XP or NT 4.0 – Click **Start → Settings*** → **Control Panel → Add/Remove Programs** (double-click*) → **Matrox Video Tools → Change/Remove → Yes**. (* Depending on your version and configuration of Windows, this part of the step may not be necessary.)

2 To reinstall, insert the Matrox installation CD-ROM in your CD-ROM drive – the setup program automatically starts. (If Windows doesn't automatically start the setup program, you can start it manually from the root folder of the CD-ROM.)

Solution Uninstall then reinstall the program you're having problems with. For more information, see its documentation.

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Problem Can't record video from a video player

Cause The video source may be copy protected. Your Matrox product may not let you make copies of copy-protected video. (Some video sources let you make a copy of a video, but you may not be able to make a copy of that copy.)

Solution To get copies of a copy-protected video, contact the vendor of the video.

Problem No picture in video window

Cause One or more of your cable connections may be loose or incorrect.

Solution Make sure all your computer connections are firmly plugged in.

Solution Make sure connections are correct (see "Connection setup", page 9).

Solution Make sure the software settings for the video program you're using are correct. For more information, see the documentation of the video program you're using.

- **Windows 98/Me/2000/XP** – If you're using Matrox PC-VCR, see its online help.
- **Windows NT 4.0** – If you're using Matrox PC-VCR, see "Matrox PC-VCR program", page 26.

Cause Matrox PC-VCR video tuning settings may be set too low.

Solution **Windows NT 4.0** – Reset the video tuning settings to default values: On the Matrox PC-VCR remote, click **Properties** () → **Video** → **Default Tuning** → **OK**.

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 98/Me/2000/XP – To defragment a hard disk, click **Start** → **Programs** → **Accessories** → **System Tools** → **Disk Defragmenter**.

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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 W 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 98/Me –

1. Click **Start** → **Settings** → **Control Panel** → **System** (double-click) → **Device Manager**.
2. Double-click the **Disk drives** list item to expand it, then double-click the name of the hard disk you're using.
3. Click **Settings**, then enable the **DMA** check box.
4. device manageres to take effect.

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.

Solution W If possible, recapture the video file using settings that require less disk use. For more information, see the documentation of the video capture program you're using.

- **Windows 98/Me/2000/XP –** If you're using Matrox PC-VCR, see its online help.
- **Windows NT 4.0 –** If you're using Matrox PC-VCR, see "Before you record to a video file", page 29.

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Cause If you're using the Matrox PC-VCR program for video file playback, tooltips may be interfering with its video window display.

Solution If possible, disable tooltips for any program you're using while playing or recording digital video. Matrox PC-VCR has such an option.

Solution While playing or recording digital video, avoid pausing your mouse pointer over controls that have tooltips.

Solution For other programs, avoid pausing your mouse pointer over controls.

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

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

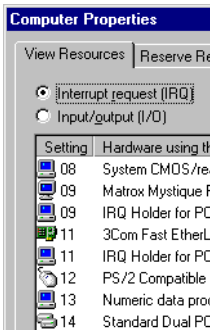
Cause Your display settings may be too high. As a result, video file playback may not be fully supported by Matrox hardware.

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 98/Me/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 15).

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



W **Windows 98/Me** – To see if your graphics card is sharing an IRQ:

1. Click **Start → Settings → Control Panel → System** (double-click) **→ Device Manager**.
2. Look in the list box to see if your Matrox graphics card is assigned the same IRQ number as another PCI card in your computer.

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.

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Problem Poor video capture quality

Cause The settings a video file was created with may not be optimal.

Solution If possible, recreate the video file with more optimal settings. For more information, see the documentation of the video capture program you're using.

- **Windows 98/Me/2000/XP –** If you're using Matrox PC-VCR, see its online help.
- **Windows NT 4.0 –** If you're using Matrox PC-VCR, see "Before you record to a video file", page 29.

Cause There may be too many video devices between your video source and destination, or one or more of the video devices may be degrading the quality of the video signal. Demodulators, long cables, cable extensions, and improper connections can all affect video signal quality.

Solution Try changing one or more video devices.

Solution If possible, try using fewer connections. For example, don't use cable extensions.

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 Use default Windows mouse pointers:

Windows 98/Me/2000/XP or NT 4.0 –

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 Software reports that it doesn't detect the TV tuner or there's no video when 'TV Tuner' input is selected

Cause The video signal coming from your antenna or cable TV may have problems. To test it, temporarily connect it directly to a TV. (If it works okay with your TV, it should work for your Matrox TV tuner.)

Solution Make sure your antenna or cable TV connection to your TV tuner is okay. See "Connect TV antenna or cable TV", page 11.

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Solution If you're using an antenna, try adjusting it, checking all the connections to it, or using a different antenna.

Solution If you're using cable TV, contact your cable company.

Cause Software settings may be incorrect.

Solution W To configure and test software settings, click **Start → Programs → Matrox Video Tools → Matrox Quick Connect**.

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 15.

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 (see step 5, page 6, and step 2, page 11).

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 98/Me/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.

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

Windows 98/Me/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** (double-click*). (* 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.

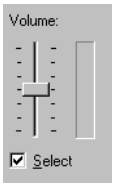
c Click **OK**.

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.

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Display information

Graphics

Notes

- 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 98/Me/2000/XP or NT 4.0, see "Monitor setup", page 15.
- 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 98/Me/2000/XP or NT 4.0, see "Monitor setup", page 15.
- The maximum refresh rates listed in this section have been rounded and are based on a monitor with a maximum horizontal refresh rate of 130 kHz. Depending on your monitor, refresh rate capabilities may vary. For information on the capabilities of your monitor, see your monitor documentation.
- If you're using BNC connectors with a Plug-and-Play monitor, the Plug-and-Play feature of your monitor can't be used. To use the Plug-and-Play feature of your monitor, instead of the BNC connectors, use the 15-pin connector at the back of your monitor.
- 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 15.

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Maximum display resolutions (for each display)

Aspect ratio	Color palette	Maximum display resolution*
4:3/5:4 (traditional)	256 colors (8-bit)	1800 × 1440
	64 K colors (16-bit)	1800 × 1440
	16 M colors (24-bit)	1600 × 1200
	16 M colors (32-bit)	1280 × 1024
16:9/16:10 (wide)	256 colors (8-bit)	1920 × 1200
	64 K colors (16-bit)	1920 × 1200
	16 M colors (24-bit)	1920 × 1080
	16 M colors (32-bit)	1600 × 1024

* With digital flat panel monitors, the maximum display resolution is 1280 × 1024.

Refresh rates

Aspect ratio	Display resolution*	Horizontal refresh rate (kHz)	Vertical refresh rate (Hz)
4:3/5:4 (traditional)	640 × 480	31–102	60–200
	800 × 600	38–114	60–200
	1024 × 768	48–113	60–140
	1152 × 864	54–110	60–120
	1280 × 1024	64–107	60–100
	1600 × 1200	75–113	60–90
	1800 × 1440	89–104	60–70
16:9/16:10 (wide)	856 × 480	30–108	60–200
	1280 × 720	44–76	60–100
	1600 × 1024	64–108	60–100
	1920 × 1080	70–94	60–80
	1920 × 1200	75–95	60–76

* Maximum refresh rates are attainable when using 8- or 16-bit color palettes.
Maximums may not be attainable at the highest display resolutions *with* a 24- or 32-bit color palette.

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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 (certain MMS models only)

Matrox G200 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 flat panel monitors that don't support display scaling, if you use a display resolution lower than the maximum display resolution, the display is centered in the screen with a black border around its edges.

† 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.

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Video (Matrox TV tuner required)

General display information

- "PAL" is the TV standard for the UK and other parts of Europe. PAL resolutions are the same as SECAM (standard for France).
- "NTSC" is the TV standard for North America.

Maximum video window resolutions for live video

There are maximum display settings (resolution and color palette) for viewing full-screen live video (**TV** or **LINE** input):

- With a 16-bit color palette, the maximum full-screen resolution is 1600 × 1200.
- With a 32-bit color palette, the maximum full-screen resolution is 1024 × 768.

These resolutions are supported using a vertical refresh rate of 85 Hz or lower.

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Hardware information

Features

	G200-Dual (analog)	G200-Dual (analog/digital)	G200-Quad (analog)	G200-Quad (analog/digital)	G200-Quad with TV tuner (analog)	G200-Quad with TV tuner (analog/digital)
Graphics chip model	MGA-G200 (128-bit DualBus)					
RAMDAC	250 MHz (internal)					
Memory type	SGRAM					
Card type	PCI (32-bit, 33 MHz)					
# of displays supported (# of graphics chips)	2		4			
Memory	2 × 8 MB		4 × 8 MB			
Digital monitor support (digital adapter sold separately)	—	✓	—	✓	—	✓
TV tuner	—	—	—	—	✓	✓
Video input (Composite video; NTSC, PAL, and SECAM)	—	—	—	—	✓	✓
Support for Rainbow Runner G-Series (sold separately)	✓	✓	✓	✓	—	—
Model #	G2+/DUALP	G2+/DUALP-PL	G2+/QUADP	G2+/QUADP-PL	G2+/QUADP/TVN* G2+/QUADP/TVEU†	G2+/QUADP-PL/TVN* G2+/QUADP-PL/TVEU†

* For North America
† For Western Europe

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Technical features

- Supports PCI bus version 2.1 at clock speeds up to 33 MHz
- Intel 21152 PCI bridge controller

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.
- There are five connections to a monitor that uses BNC (Bayonet Nut Connect) connectors – R, G, B, HSYNC (white or gray wire), and VSYNC (black wire).

Environmental specifications

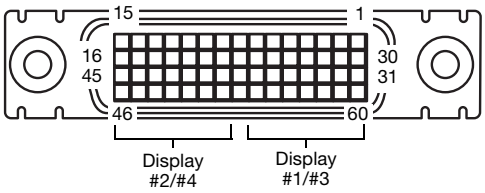
- Minimum/maximum ambient operating temperatures: 0 to 55° C
- Minimum/maximum storage temperature: -40 to 75° C
- Maximum altitude for operation: 3,000 meters
- Maximum altitude for transport: 12,000 meters
- Operating humidity: 20 to 80% relative humidity (non-condensing)
- Storage humidity: 5 to 95% relative humidity (non-condensing)
- Estimated mean time before failure (MTBF): 129,259 hours (14.7 years) – this is for the G200 MMS model with the lowest estimated MTBF and assumes normal working conditions.

Digital flat panel information (certain MMS models only)

- Silicon Image 164 transmitter
- TMDS (Transition Minimized Differential Signaling) encoding based on the Silicon Image PanelLink standard
- DDWG (Digital Display Working Group) compliant DVI-D connector
- EDID (Extended Display Identification Data) 1.2 and 2.0 support

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Graphics card connector pinouts

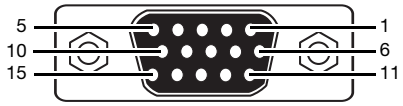


	Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
Display #1/#3	1	Ground	24	Not connected	31	TMDS data1+†	54	Ground
	2	Analog red output	25	Not connected	32	TMDS data1–†	55	VSYNC
	3	Analog blue output	26	Not connected	33	TMDS clock data+†	56	HSYNC
	4	Ground	27	TMDS data2–†	34	TMDS clock data–†	57	Ground
	5	5V Power	28	TMDS data2+†	35	Not connected	58	Not connected
	6	SCL (DDC)	29	TMDS data0–†	36	Hot plug detection†	59	Analog green output
	7	SDA (DDC)	30	TMDS data0+†	37	Not connected	60	Ground
Composite video in	8	Ground*	23	Not connected	38	Not connected	53	Video*
Display #2/#4	9	SDA (DDC)	16	TMDS data0+†	39	Not connected	46	Ground
	10	SCL (DDC)	17	TMDS data0–†	40	Hot plug detection†	47	Analog green output
	11	5V Power	18	TMDS data2+†	41	Not connected	48	Not connected
	12	Ground	19	TMDS data2–†	42	TMDS clock data–†	49	Ground†
	13	Analog blue output	20	Not connected	43	TMDS clock data+†	50	HSYNC
	14	Analog red output	21	Not connected	44	TMDS data1–†	51	VSYNC
	15	Ground	22	Not connected	45	TMDS data1+†	52	Ground

* Only for Matrox cards with video input support
† Only for Matrox cards supporting digital monitors

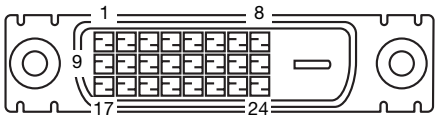
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Adapter pinouts for analog monitors



Pin	Signal	Pin	Signal	Pin	Signal
1	Analog red output	6	Ground	11	Not connected
2	Analog green output	7	Ground	12	SDA (DDC)
3	Analog blue output	8	Ground	13	TTL horizontal sync
4	Not connected	9	+5 V (DDC)	14	TTL vertical sync
5	Ground	10	Ground	15	SCL (DDC)

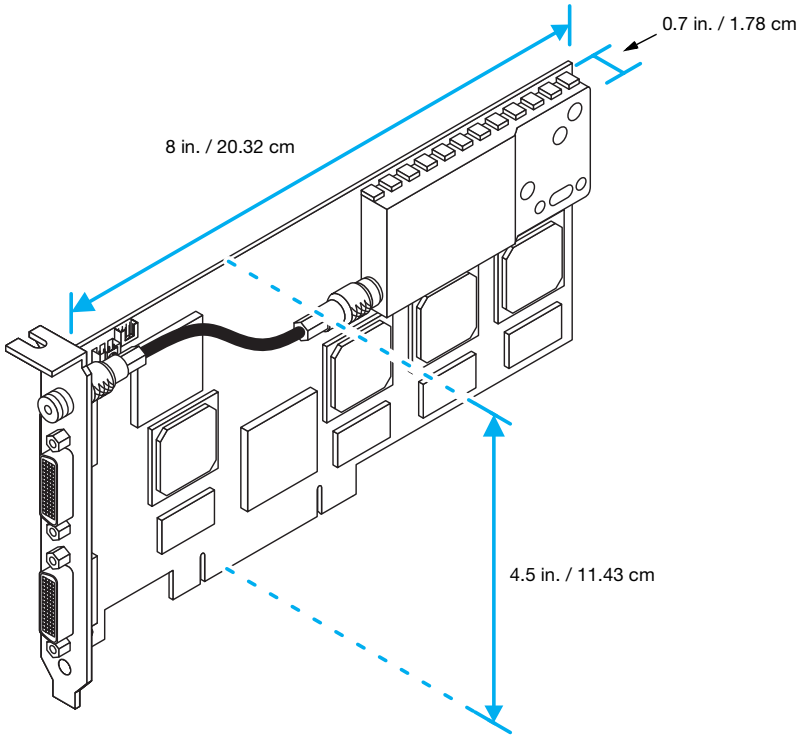
Adapter pinouts for digital monitors (DVI-D connector)



Pin	Signal	Pin	Signal	Pin	Signal
1	TMDS data 2–	9	TMDS data 1–	17	TMDS data 0–
2	TMDS data 2+	10	TMDS data 1+	18	TMDS data 0+
3	TMDS data 2/4 shield	11	TMDS data 1/3 shield	19	TMDS data 0/5 shield
4	TMDS data 4–	12	TMDS data 3–	20	TMDS data 5–
5	TMDS data 4+	13	TMDS data 3+	21	TMDS data 5+
6	DDV clock	14	+5 V power	22	TMDS clock shield
7	DDC data	15	Ground (for +5 V)	23	TMDS clock+
8	Not connected	16	Hot plug detection	24	TMDS clock–

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Maximum card dimensions (G200 MMS with a TV tuner)



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Customer support

Matrox Web and FTP sites

Matrox is on the Internet with a World Wide Web (WWW) and File Transfer Protocol (FTP) site. Our Web site has product literature, press releases, technical material, a sales office list, trade show information, and other relevant material. Our FTP site contains current drivers for Matrox products. You can download drivers using the Internet FTP site. You can access our FTP server independently, or from the Matrox Web site.

Our address for Matrox Graphics Inc. is:

WWW; www.matrox.com/mga

FTP; ftp.matrox.com/pub/mga/

Send questions or comments regarding the site to:

e-mail; webmaster@matrox.com

If you have a problem

If you have a problem, we recommend that you follow the procedure below for the quickest results.

1. **Contact your dealer** – This is usually the quickest and most effective method of technical assistance. Your dealer is local and may be familiar with your complete system. In the case of hardware warranty assistance, the product must be returned to the dealer, who will return it to Matrox.
2. If your Matrox product was provided by your computer manufacturer, contact this manufacturer. For contact information, see your computer documentation or contact the vendor.
3. **Direct Matrox Technical Assistance** – If you still can't resolve a problem (and your Matrox product wasn't provided by your computer manufacturer), you can get direct technical assistance four ways:
   - Call Technical Support (Canada) at **514-685-0270**. For residents of Quebec only, call **514-822-6330**. Make sure you have a registered client ID number before calling technical support. You can obtain your client ID number by registering your Matrox product at www.matrox.com/mga/registration/home.cfm.
   - Visit our technical support Web site at www.matrox.com/mga/support/tech_support/home.cfm.

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- Visit our technical support forum at www.matrox.com/mga/support/forum/agree.cfm.
- See our FAQs (Frequently Asked Questions) at http://forum.matrox.com/cgi-bin/mgaforum/Ultimate.cgi#faq.
- Write a letter to Graphics Customer Support at our Corporate Headquarters. The address is:
  Matrox Graphics Inc., 1055 St. Regis Blvd., Dorval, QC, Canada, H9P 2T4.

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 name, system BIOS manufacturer and version number or date, bus type, model, processor speed, and amount of memory.
- Monitor brand and model name.
- Operating system and version – if you're using a memory manager, its brand and version. Also, list any memory-resident programs in use.
- If you're using a network card, its brand and version.
- 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.
- Program name and version. Name any add-on packages you're using.
- 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.

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Where to get information

For display information:

- **Windows 98/Me/2000/XP or NT 4.0** – Access the **Information** property sheet (see "Accessing PowerDesk property sheets", page 15).

For system information:

- **Windows 98/Me/2000** – Right-click the **My Computer** icon on your Windows desktop background, then click **Properties**.
- **Windows 98/Me/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**.

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   - **g.** improper site preparation or maintenance;
   - **h.** software;
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4. Customer shall be responsible for all applicable taxes, duties and customs fees on any replacement unit, as well as all transport, insurance, storage and other charges incurred on all returned products.

D. Obtaining Service

1. Verify that your Matrox product was installed and configured according to the information in its accompanying documentation.
2. Read the "Troubleshooting" information included with the Matrox product to see if you can solve the problem yourself.
3. If you are still experiencing difficulties, please contact your dealer where you purchased your Matrox product.
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USA

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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

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

Remarque sur les produits matériels Matrox couverts par ce guide Ce present 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

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(Français) Informations aux utilisateurs Européens – Énoncé de conformité

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(Deutsch) Information für europäische Anwender – Konformitätserklärung

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