

Matrox RTMac **for Final Cut Pro** **Mac OS X version**

Installation and User Guide

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Your notes

Introducing Matrox RTMac

Chapter

1

This chapter outlines some of the features of your Matrox RTMac, lists the contents of your kit, and explains the organization of your Matrox RTMac documentation.

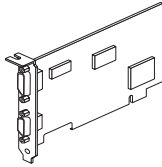
Welcome

Thank you for purchasing Matrox RTMac. When combined with Apple's Final Cut Pro, Matrox RTMac provides professional-quality realtime editing, compositing, and effects.

Matrox RTMac features

- Realtime native DV editing with realtime broadcast-quality effects.
- Simultaneous display of video-in-a-window on your computer monitor and full-resolution display on your NTSC or PAL video monitor.
- Lets you work with up to four layers in real time—two video layers and two graphics layers.
- Realtime processing including:
 - transitions between video and/or graphics layers (includes cross dissolves, wipes, slides, and irises).
 - up to two Motion Effects on video or graphics.
 - opacity control on up to three layers.
- Realtime alpha-keyed titles and graphics.
- Analog video capture and output (composite and S-Video).
- Analog audio capture and output (stereo RCA).
- Video input and output at full resolution and frame rate.
- VGA output for connection to a VGA monitor.
- Support for standard 4:3 editing or 16:9 widescreen editing.

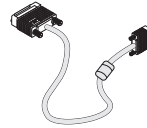
Hardware supplied



RTMac card



Breakout box



RTMac cable

System requirements

Matrox RTMac requires the following **minimum** system configuration:

- Single or multi-processor Power Mac G4 with AGP motherboard.
- 400-MHz PowerPC G4 processor.
- 384 MB RAM.
- One free PCI slot.
- CD-ROM drive for software installation.
- Mac OS X 10.2.6 or later.
- Final Cut Pro 3 or later.
- QuickTime version 6.3 or later.
- Fast EIDE/Ultra ATA or SCSI disk drives—must be able to sustain two 25-megabit/second streams.

The Matrox RTMac software detects the capabilities of your computer, and enables more realtime features on a faster system. To take full advantage of realtime editing on Matrox RTMac, use the following **recommended** system configuration:

- 667-MHz or faster PowerPC G4 processor.
- 512 MB RAM.
- Greater than 1 MB combined L2 and L3 cache (**per processor**).
- 133-MHz or faster system bus.

For information on the realtime capabilities of minimum and recommended systems, see “Realtime editing using Matrox RTMac” on page 21.

Check our web site for more information

For up-to-date information about your Matrox RTMac system, including updated drivers, you can check our web site at www.matrox.com/videoweb/support.

About this manual

This manual explains how to install and use your Matrox RTMac system and included software.

Installation and configuration

Chapters 2 and 3 explain how to install your Matrox RTMac hardware and software, as well as how to configure your system for use with Matrox RTMac.

Using Matrox RTMac with Final Cut Pro

Chapter 4 gives you instructions for getting the most from Final Cut Pro and Matrox RTMac.

Using Matrox RTMac with Adobe After Effects and Discreet combustion

Chapter 5 explains how to configure Adobe After Effects and Discreet combustion for use with Matrox RTMac.

Troubleshooting

Chapter 6 provides some possible answers if you have trouble installing or operating your Matrox RTMac system.

Customer support and other information

Appendix A tells you how to contact us for customer support, and Appendix B provides Matrox worldwide sales contact information. Appendix C provides specifications for your Matrox RTMac system.

Style conventions

The following style conventions are used in this manual:

- The names of files, folders, and manuals appear in *italics*. For example:
 - The data is stored in the *Sample Movie* file.
 - The file is located in the *Clips* folder.
 - Please refer to your *Final Cut Pro User's Manual*.
- Menus and commands that you need to choose are displayed in the form **Menu > Command**. For example, **File > Save** means choose **File** in the menu bar, then choose **Save** in the menu that appears.

Last-minute information

Any important information that wasn't available for inclusion in the manual by publication time is provided to you in the Release Notes packaged with this manual.

Three quick steps to getting started

The following steps summarize the installation procedure for your Matrox RTMac system.



Important Please read the detailed instructions in each chapter before attempting the installation.

- 1** Install your Matrox RTMac card in your computer. See [Chapter 2, “Installing Your RTMac and Connecting Your Devices.”](#)
- 2** Connect your breakout box and other external devices, including your secondary monitor if you’ve chosen to use one. See [Chapter 2, “Installing Your RTMac and Connecting Your Devices.”](#)
- 3** Install QuickTime, Final Cut Pro, and the Matrox RTMac software, then configure your system. See [Chapter 3, “Installing Your Software and Configuring Your System.”](#)

Installing Your RTMac and Connecting Your Devices

Chapter

2

This chapter describes how to install your Matrox RTMac hardware in your computer and connect your external devices.

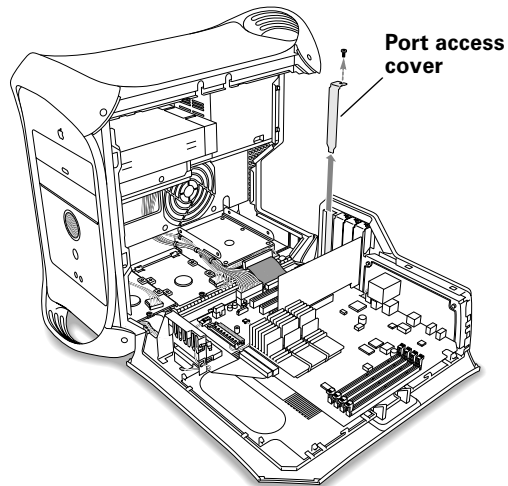
Installing the Matrox RTMac card

Your Power Mac G4 has different types of expansion slots: **AGP** and **PCI**. Matrox RTMac is a PCI card, so you must install it in one of your free PCI slots. For more information on card installation and your computer's expansion slots, see your *Setting Up Your Power Mac G4* guide.

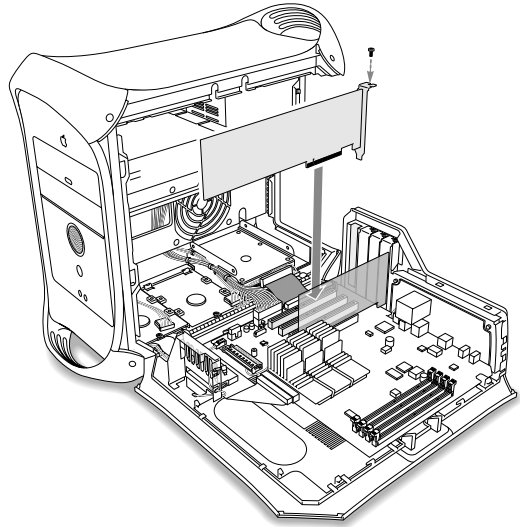


Warning Static electricity can severely damage electronic parts. Before touching any electronic parts, drain the static electricity from your body. You can do this by touching the metal portion of the PCI port access covers on the back of your computer. As well, be sure to hold your RTMac card by the edges, and avoid touching its circuitry and components.

- 1 Make sure your computer has been properly shut down. From the Apple menu, choose **Shut Down** and wait 5 minutes for the computer's internal components to cool down.
- 2 Unplug the power cord.
(You should never open your computer when its power is on.)
- 3 Lift the latch on the right side of the computer and carefully lower the side panel onto a flat surface.
- 4 Remove the screw that holds the port access cover in place and pull out the access cover.



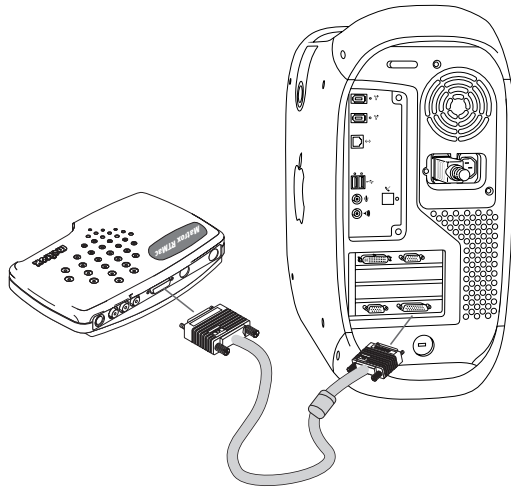
- 5 Position your RTMac card over the PCI slot you've chosen, and properly align the connectors with the slot.
- 6 Push the card in firmly and evenly until it's fully seated in its slot.
- 7 Re-insert the port access screw to secure your card to the computer frame.
- 8 Close the side panel making sure it snaps into place, and reconnect the power cord.



Connecting your Matrox RTMac breakout box

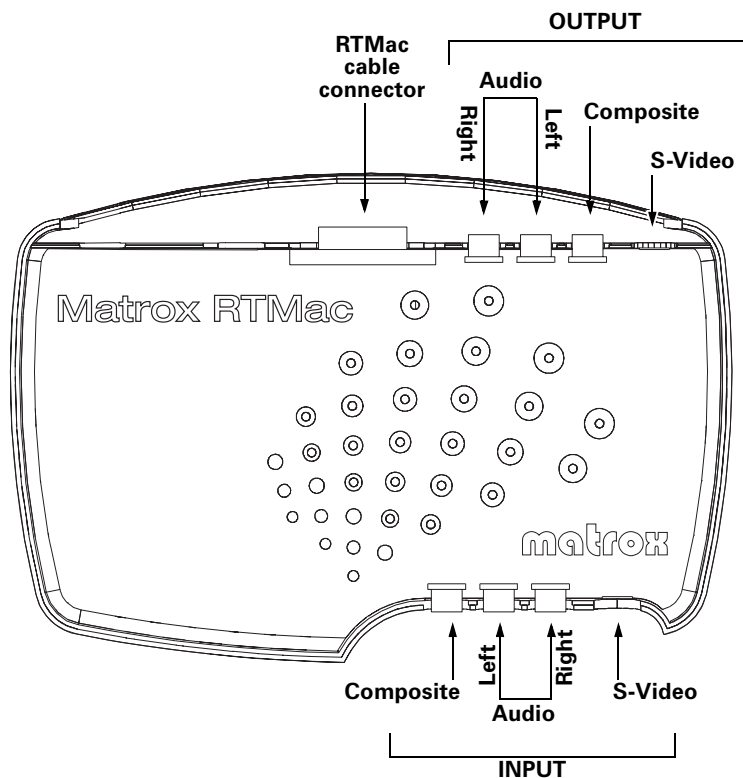
To connect your Matrox RTMac breakout box cable:

- 1 Plug the end labelled **TO RTMAC BOARD** into the socket on your RTMac card labelled **VIDEO**.
- 2 Plug the other end, labelled **RTMAC/BOB/CBL**, into the RTMac breakout box.



Matrox RTMac breakout box overview

Your Matrox RTMac breakout box lets you make analog I/O connections to your external devices more easily. This is useful for changing your connection setup.

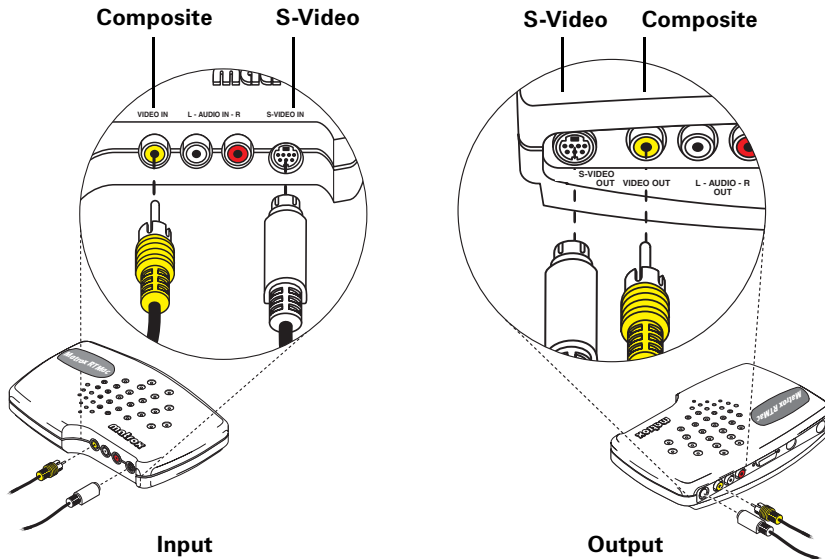


Available S-Video and composite video connections

The Matrox RTMac breakout box has two composite video connectors (one input and one output), and two S-Video connectors (one input and one output). Most video equipment uses composite video, but some devices (for example, S-VHS VCRs) use S-Video, which provides a higher quality video signal.

If you have a video device with S-Video connectors, you should use the Matrox **S-VIDEO IN** and **S-VIDEO OUT** connectors on your breakout box. You can use the Matrox S-Video connectors instead of—or in addition to—the composite video connectors. If you use composite and S-Video connectors, you can connect up to four video devices to the RTMac at the same time (two input and two output).

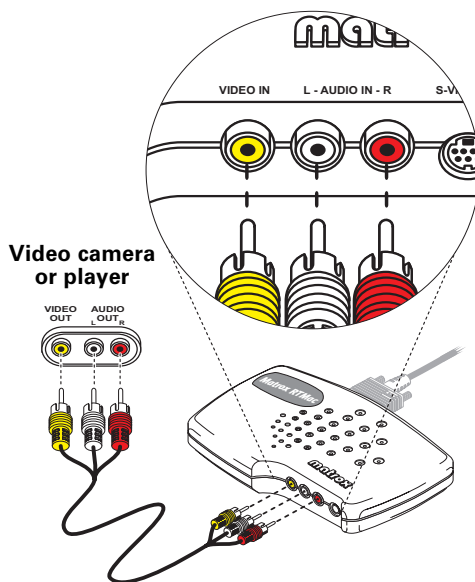
Matrox RTMac video output is *simultaneous* on its composite (**VIDEO OUT**) and S-Video (**S-VIDEO OUT**) lines. Both video input types can be connected at the same time, but only *one* video input signal at a time can be used by RTMac. You need to select either the composite video input or the S-Video input signal in your Final Cut Pro audio/video settings. For more information on how to do this, see [“Specifying your Matrox RTMac analog settings”](#) on page 20.



Composite input/output connections

- 1 To connect your composite video source (for capturing material), use either a composite audio/video (RCA) cable or three separate cables with RCA connectors.

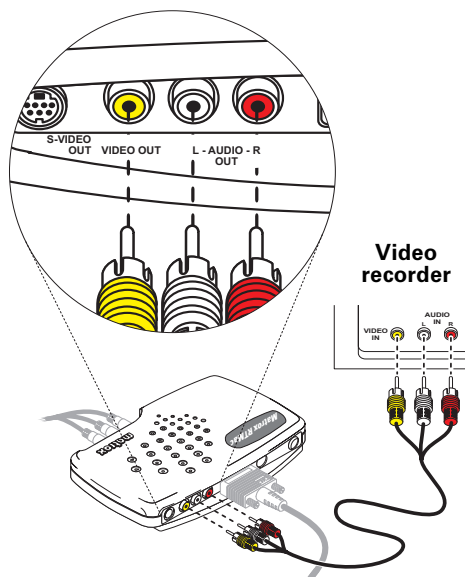
- a Connect the video output from your composite device to the yellow **VIDEO IN** jack on the breakout box.
- b Connect the left audio output channel of your device to the white **L-AUDIO IN** jack on the breakout box.
- c Connect the right audio output channel of your device to the red **AUDIO IN-R** jack on the breakout box.



Note If your video device has only one audio connector, use the left audio connector on the cable.

- 2 To connect your composite video recorder, use another composite (RCA) audio/video cable or three more separate cables with RCA connectors.

- a Connect the yellow **VIDEO OUT** jack on the breakout box to the video input on your video recorder.
- b Connect the white **L-AUDIO OUT** jack on the breakout box to the left audio input of your video recorder.
- c Connect the red **AUDIO OUT-R** jack on the breakout box to the right audio input of your video recorder.



- 3 To display the output from Matrox RTMac on your NTSC or PAL video monitor, you can connect your video monitor to the breakout box or your recorder. For an illustration of typical composite connections you can use, see [“Composite connections using separate source and record devices”](#) on page 12.



Note You can use a TV in place of an NTSC or PAL video monitor. If your TV has a TV/VIDEO input switch, set it to VIDEO.

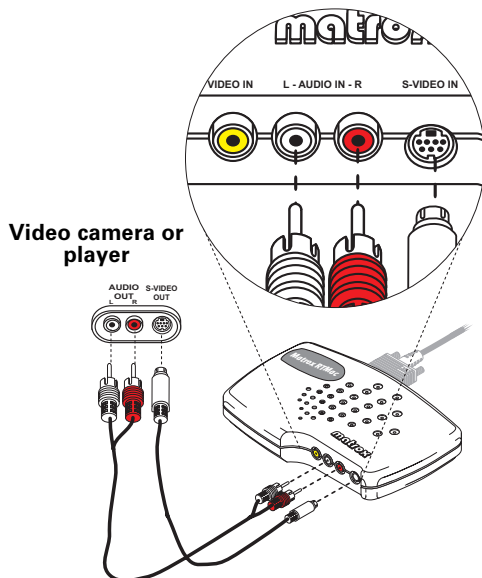
S-Video input/output connections

- 1 To connect your S-Video source (for capturing material), use an S-Video cable, as well as two cables with RCA connectors for audio.

- a Connect the video output from your S-Video device to the **S-VIDEO IN** jack on the breakout box.

- b Connect the left audio output channel of your device to the white **L-AUDIO IN** jack on the breakout box.

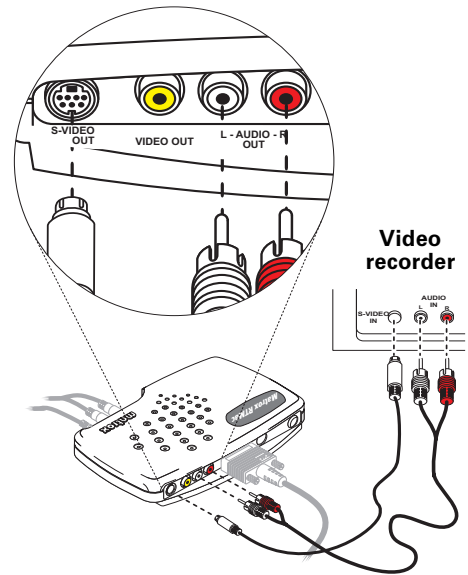
- c Connect the right audio output channel of your device to the red **AUDIO IN-R** jack on the breakout box.



Note If your video device has only one audio connector, use the left audio connector on the cable.

- 2 To connect your S-Video recorder, use another S-Video cable and two more cables with RCA connectors for audio.
 - a Connect the **S-VIDEO OUT** jack on the breakout box to the video input on your video recorder.
 - b Connect the white **L-AUDIO OUT** jack on the breakout box to the left audio input of your video recorder.

- c Connect the red **AUDIO OUT-R** jack on the breakout box to the right audio input of your video recorder.
- 3 To display the output from Matrox RTMac on your NTSC or PAL video monitor¹, you can connect your video monitor to the breakout box or your recorder.



FireWire connections

You can connect a FireWire device, such as a DV camcorder or VCR, to the FireWire port on your Power Mac G4 as explained in your *Setting Up Your Power Mac G4* guide.

- i Important** When using Final Cut Pro with a FireWire setup, make sure your DV device is connected to the FireWire port on your Power Mac G4 before starting a capture or print to video. If your DV device isn't connected when Final Cut Pro attempts to capture DV clips or record to DV tape, your system will become unstable. You'll then need to quit and restart Final Cut Pro.

Connecting a secondary computer monitor

If you want to use a secondary VGA monitor with your system, such as to provide a second desktop display for dual-monitor editing, you can connect this monitor to your Matrox RTMac card. Your primary monitor is connected to the AGP graphics card that came with your Power Mac G4. Your secondary monitor connects to the standard 15-pin VGA connector on your RTMac card.

- 1 Plug the monitor cable into the smaller RTMac socket, which is labelled with a square monitor icon.
- 2 Plug the other end into your other monitor.

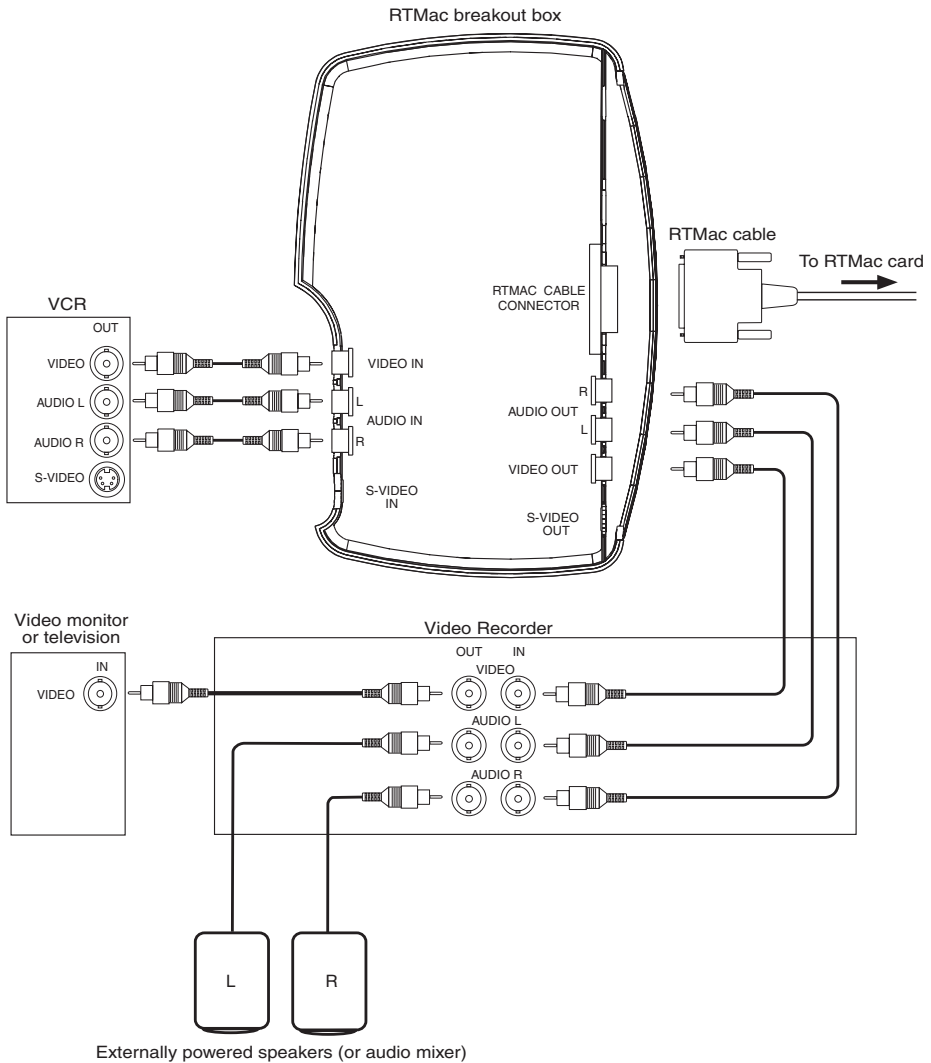
For information on properly configuring your secondary monitor for use with RTMac, see [“Configuring a secondary monitor”](#) on page 14.

¹ You can use a TV in place of an NTSC or PAL video monitor. If your TV has a TV/VIDEO input switch, set it to VIDEO.

Typical RTMac connections

The following illustration shows typical audio and video connections for capturing and recording to tape. In this illustration, we've connected a video monitor (NTSC or PAL) to view the signal that is being captured or recorded, and we're monitoring audio from the video recorder to externally powered speakers.

Composite connections using separate source and record devices



Installing Your Software and Configuring Your System

This chapter explains how to install your software and configure various settings on your computer for use with Matrox RTMac.

Installation overview

Once you've installed your Matrox RTMac card and have properly connected your devices, you can proceed with your software installation and system configuration.

- 1 Install QuickTime and Final Cut Pro 3.
- 2 Install the Matrox RTMac software.
- 3 Configure your secondary monitor, if applicable.
- 4 Define your Matrox RTMac preferences.

Installing QuickTime and Final Cut Pro

- 1 Install Final Cut Pro 3 from your Final Cut Pro installation CD.
- 2 Install QuickTime 6.3 or later, available from the Apple web site (www.apple.com/quicktime).
- 3 When prompted, restart your computer.

Installing the Matrox RTMac software

- 1 Insert the Matrox RTMac installation CD.
- 2 Double-click **Matrox RTMac Installer** to launch the install program, then follow the onscreen instructions.



Important In order to install the Matrox RTMac software, the Matrox RTMac installer must delete your Final Cut Pro preferences file, and you will lose your custom settings. A new default preferences file will be created automatically when you first launch Final Cut Pro following the RTMac installation. You can then reconfigure your preferences as described in your *Final Cut Pro User's Manual*. If you want to note your Final Cut Pro custom settings before the preference file is deleted, close the installer to cancel the Matrox RTMac installation.

- 3 When prompted, restart your computer.



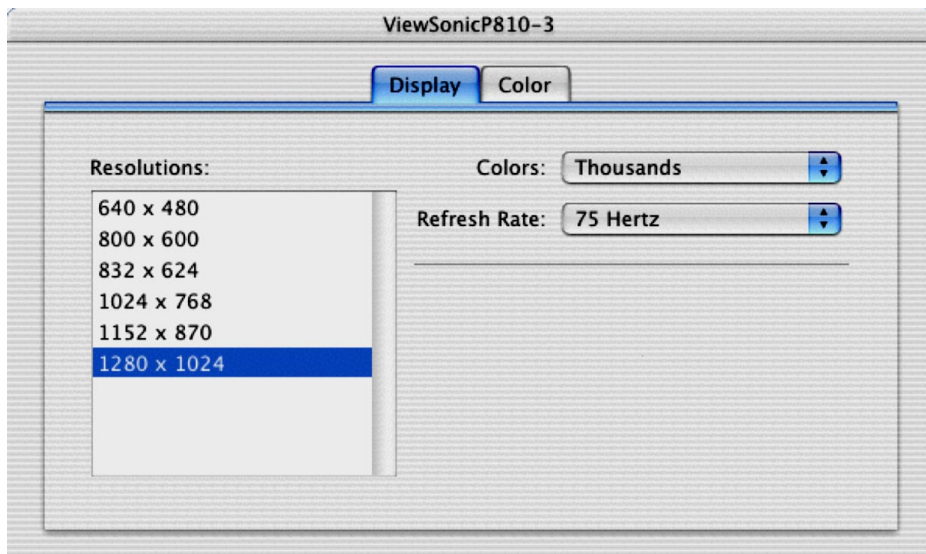
Note Be sure to check our web site (www.matrox.com/video) for the most recent RTMac software.

Configuring a secondary monitor

If you've connected a secondary monitor, you must configure it properly for use with Matrox RTMac. Your **primary** monitor is the monitor connected to the AGP graphics card that came with your Power Mac G4. Your **secondary** monitor is the monitor you've connected to your RTMac card.

Setting color depth and resolution

From the Apple menu, choose **System Preferences**, click **Display**, then click on the display preferences dialog box that appears on your **secondary** monitor.



- **Colors** For use with RTMac and Final Cut Pro, you can select a color depth of either **Thousands** or **Millions** depending on your resolution choice.
- **Resolutions** Sets the resolution for your secondary monitor. The maximum resolution for use with Matrox RTMac and Final Cut Pro depends on the color depth you select.
 - When color depth is set to **Thousands**, the maximum resolution you can select for your secondary monitor is **1280 × 1024**.
 - When color depth is set to **Millions**, the maximum resolution you can select for your secondary monitor is **1024 × 768**.
- **Refresh Rate** Sets the refresh rate for your secondary monitor. For best performance, the maximum refresh rate you should select for your secondary monitor is **75 Hertz**.

If you select a resolution and refresh rate that exceed these limits, you may encounter performance problems when using Final Cut Pro. As well, you cannot select a resolution greater than 1280×1024 , even if your monitor supports this.

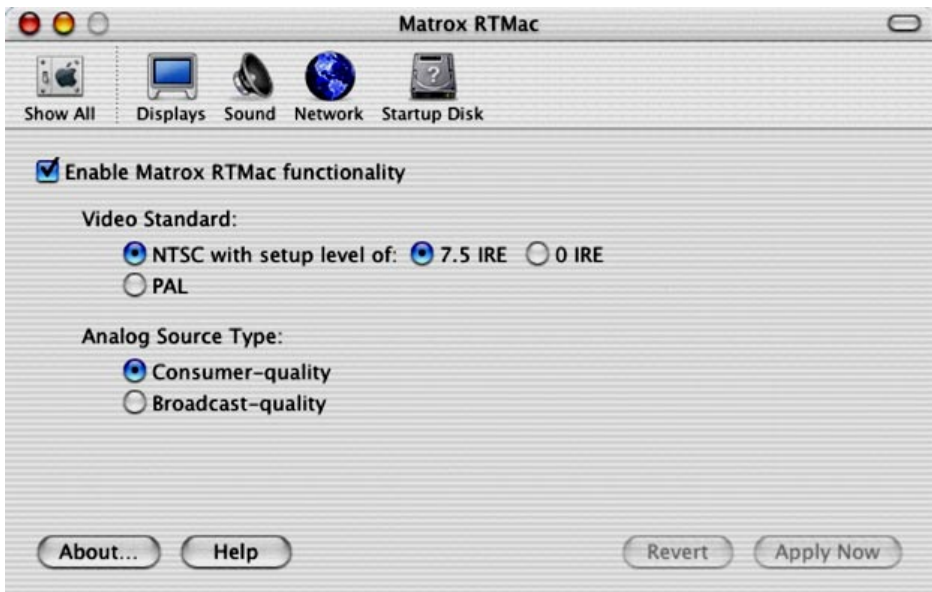
Defining your Matrox RTMac preferences

The Matrox RTMac preference pane lets you enable or disable RTMac functionality, select the video standard you want to use with your RTMac system (NTSC or PAL), and select your analog source type.



Important Before making any changes to your RTMac preferences, you must close Final Cut Pro and all other applications using RTMac, including applications using RTMac as a sound input or output device.

From the Apple menu, choose **System Preferences**, then click **Matrox RTMac**.



- **Enable Matrox RTMac functionality** Enables RTMac realtime functionality, and is selected by default. If, however, you want to use Final Cut Pro's realtime software effects, you must clear this option to disable RTMac realtime functionality.
- **Video Standard** Specifies the video standard for your RTMac system (NTSC or PAL). Only clips that match your selected video standard will play back in real time. If you're using an NTSC system, you must select one of the following NTSC setup levels for your analog video. This affects both the analog video input and output.
 - **7.5 IRE** Applies the standard NTSC setup level of 7.5 IRE.

- **0 IRE** Applies a setup level of 0 IRE. You should select this option **only** when working with a commercial DV device that uses the Japanese analog NTSC setup of 0 IRE. For example, if the video appears too bright when you play back DV clips on your NTSC monitor, you can change the setup to 0 IRE to output your DV clips at the correct brightness.



Note If your device has a different NTSC setup level for input and output, you can switch the setup level as needed before capturing or recording to tape. If you're not sure which setup level your DV device uses for input and output, check with your device's manufacturer.

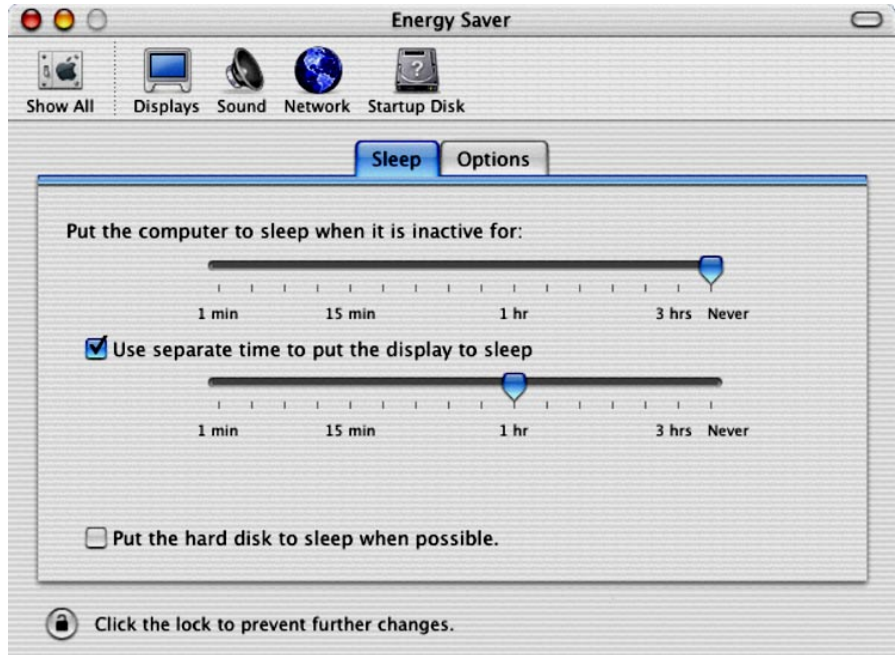
- **Analog Source Type** Specifies the type of equipment you have.
 - **Consumer-quality** Select this if you have a consumer-grade source device that doesn't have a time base corrector¹ (TBC). RTMac will filter the video input signal to increase tolerance for sync pulse instability.
 - **Broadcast-quality** Select this if your source device meets broadcast-quality standards, such as a device with a built-in time base corrector. This allows RTMac to digitize the input signal as-is.

¹ A **time base corrector** (TBC) is an electronic device that, when connected to the output of a VTR, corrects the stability and timing of the VTR's playback video. This is achieved by stripping the unstable horizontal and vertical sync pulses from the video signal, and replacing them with new, clean sync pulses.

Disabling Energy Saver mode

To ensure that your RTMac system works correctly, your computer and hard disk's energy saver features ("sleep" modes) must be turned off. To disable these features:

- 1 From the Apple menu, choose **System Preferences**, then click **Energy Saver**.



- 2 On the **Sleep** tab, set the computer sleep slider to **Never**.
- 3 Make sure that **Put the hard disk to sleep when possible** is cleared. (You can, however, set a time to put the display to sleep.)
- 4 Close the dialog box to apply your settings.

Disabling background applications and defragmenting your hard drives

Applications that run in the background use system resources and can affect performance when editing using Final Cut Pro with Matrox RTMac, such as causing dropped frames during playback. As well, an overly fragmented hard drive can similarly affect performance. To avoid potential problems with system performance, we suggest you do some or all of the following:

- 1 Disable AppleTalk. From the Apple menu, choose **System Preferences**, then click **Network**. On the **AppleTalk** tab, clear **Make AppleTalk Active** if this option is selected.
- 2 Disable sharing. From the Apple menu, choose **System Preferences**, then click **Sharing**. On the **Services** tab, clear sharing options that aren't needed while you're editing.
- 3 Disable the network time server feature. From the Apple menu, choose **System Preferences**, then click **Date & Time**. On the **Network Time** tab, clear **Use a network time server** if this option is selected.
- 4 Defragment your hard drives.

Using Matrox RTMac with Final Cut Pro

Chapter

4

This chapter explains how to take advantage of Matrox RTMac's realtime features using Final Cut Pro.

Defining your Matrox RTMac audio/video settings

Before you can begin working with Final Cut Pro, you must first specify your audio/video settings. The Matrox RTMac software installs presets configured for use with RTMac.



Important If you uninstall the Matrox RTMac software, Matrox RTMac preset names will still appear in the **Easy Setup** and **Audio/Video Settings** dialog boxes, but the presets will be unusable. To remove the Matrox preset names, you must delete your Final Cut Pro preferences file.

Easy Setup

Final Cut Pro provides an Easy Setup feature that allows you to define your audio/video settings based on pre-defined configurations. Choose **Final Cut Pro > Easy Setup**.



From the **Setup For** pop-up menu, select the appropriate preset from the available RTMac settings, such as **Matrox RTMac NTSC FireWire**.

Matrox RTMac complements Power Mac G4 FireWire support by providing analog capture and output capabilities. When working with native DV footage and FireWire-compatible devices, you can capture your DV footage as you normally would using Final Cut Pro. You connect your DV device to your Power Mac G4 FireWire port and capture as explained in your *Final Cut Pro User's Manual*.



Important When using Final Cut Pro with a FireWire setup, make sure your DV device is connected to the FireWire port on your Power Mac G4 before starting a capture or print to video. If your DV device isn't connected when Final Cut Pro attempts to capture DV clips or record to DV tape, your system may become unstable. You'll then need to quit and restart Final Cut Pro.

Specifying your Matrox RTMac analog settings

If you're working with an analog source device, select the Matrox RTMac analog Easy Setup that matches your source device connection (composite or S-Video). You can also specify your analog setup by choosing **Final Cut Pro > Audio/Video Settings** and clicking the **Summary** tab.



From the **Capture Preset** pop-up menu, select the appropriate Matrox RTMac composite capture or S-Video capture preset.

When capturing or importing analog media files using Matrox RTMac, you must turn off audio sync compensation. Otherwise, you may encounter audio lag. Choose **Final Cut Pro > Preferences**, click the **General** tab and turn off **Sync Adjust Movies Over**, as shown below.

☐ Sync Adjust Movies Over: 5 minutes



Note For more information on Final Cut Pro audio/video settings, see your *Final Cut Pro User's Manual*.

Analog capture with device control

Final Cut Pro supports different deck control protocols. For more information on analog capture with device control, see your *Final Cut Pro User's Manual*.

Editing in 16:9

To capture and edit in 16:9 widescreen format, you must select **Anamorphic 16:9** in both your capture presets and sequence settings. As well, your NTSC or PAL monitor must support 16:9 in order to see the correct aspect ratio.

Realtime editing using Matrox RTMac

Realtime means that you can play back and record your effects onto analog tape without having to render them. This gives you creative freedom to experiment with different effects and change your mind as often as you want. You'll instantly see the changes you make on your NTSC or PAL video monitor and your computer monitor.



Note The realtime features available on your Matrox RTMac system depend on the capabilities of your Power Mac G4. For details on minimum and recommended system requirements for realtime editing with RTMac, see "[System requirements](#)" on page 2.

Matrox RTMac lets you work with a maximum of four layers in real time in a given project. On a **recommended** system, you can use two video layers and two graphics layers. On a **minimum** system, you can use two video layers and one graphics layer, or one video layer and two graphics layers.

If you've surpassed the realtime editing capabilities of Matrox RTMac, the rendering status bar in the Final Cut Pro Timeline will change from **green** to **red**. In this case, you'll need to render the effects that caused the bar to turn red. To do this, highlight the clips and render them using one of the methods described in your *Final Cut Pro User's Manual*.

A **yellow** indicator in the rendering status bar indicates proxy realtime material. When you play back this material, Final Cut Pro will show a realtime *approximation* of the final effect. To see the final output, highlight the clips and choose **Sequence > Render Selection** to render the material. For more information on instances that require rendering, see "[When you'll need to render your effects](#)" on page 23.

Some of the realtime effects Matrox RTMac gives you, and combinations you can use, include:

- **Video Transitions** Realtime Video Transitions are shown in **boldface** in the **Effects** menu and the **Effects** tab of the Browser. These transitions include cross dissolve, irises, slides, and certain wipes.
- **Motion Effects** The number of simultaneous Motion Effects you can use in real time depends on the capabilities of your system.
 - On a **recommended** system, you can use **one** Video Transition and **two** Motion Effects (without Motion Blur or drop shadow) at the same time without having to render. Only one of the Motion Effects can have rotation applied.
 - On a **minimum** system, you can use **one** Video Transition and **one** Motion Effect (without Motion Blur or drop shadow) at the same time without having to render.
- **Opacity** You can change opacity settings on up to three layers on a **recommended** system, or up to two layers on a **minimum** system, without having to render. The number of layers on which you can control opacity depends on the number of simultaneous effects you've applied, as well as whether you've included graphics with alpha-channel information. However, you can always control opacity on at least **one** layer.
- **Alpha Key** You can alpha key up to two text or graphics layers in real time, provided you don't exceed the maximum number of layers that will play back in real time on your system (minimum or recommended). All of the graphics file formats supported by Final Cut Pro can be imported for realtime text or graphics, such as an uncompressed PICT or TIFF file. For more information on file formats supported by Final Cut Pro, see your *Final Cut Pro User's Manual*.



Important If you want to use Final Cut Pro's realtime software effects, you must disable Matrox RTMac functionality as explained in [“Defining your Matrox RTMac preferences”](#) on page 15.

A note about scrubbing on the Timeline

In most cases, you can scrub smoothly on the Timeline. However, scrubbing can become slow in the following cases:

- In sections containing proxy realtime effects (that is, where the rendering status bar is yellow).
- If the **Viewer** or **Canvas** window is set to a mode other than **Image**, such as **Image + Wireframe**. For smooth scrubbing, set the **Viewer** or **Canvas** window to **Image** mode.
- If you resize your **Viewer** or **Canvas** window so that the entire image doesn't fit in the window, and scroll bars appear. For smooth scrubbing, resize the window so that the entire image fits and the scroll bars disappear, or set the image size to **Fit to Window**.

Allocating memory for graphics

Graphics are stored in RAM memory. The number of graphics you can work with in real time depends on the amount of RT Still Cache RAM you've allocated in your Final Cut Pro preferences. Increasing the amount of RAM lets you work with more graphics in your project.

When you'll need to render your effects

In many cases, your Matrox RTMac effects will play back in real time. You will, however, need to render your effects when you do any of the following.

On a recommended system only

- Use more than two video layers and two graphics layers.



Note If you place a clip with transparency (such as an alpha-keyed clip or a clip with a Motion Effect) on the lowest video layer in a segment on the Timeline, the clip will automatically be combined with a black video clip, which will count as an additional video layer.

- Use more than one Video Transition and two Motion Effects simultaneously.
- Use two Motion Effects with drop shadow applied to either one. Only **one** of the Motion Effects can have rotation.

On a minimum system only

- Use more than two video layers and one graphics layer, or one video layer and two graphics layers.



Note If you place a clip with transparency (such as an alpha-keyed clip or a clip with a Motion Effect) on the lowest video layer in a segment on the Timeline, the clip will automatically be combined with a black video clip, which will count as an additional video layer.

- Use more than one Video Transition and one Motion Effect simultaneously.

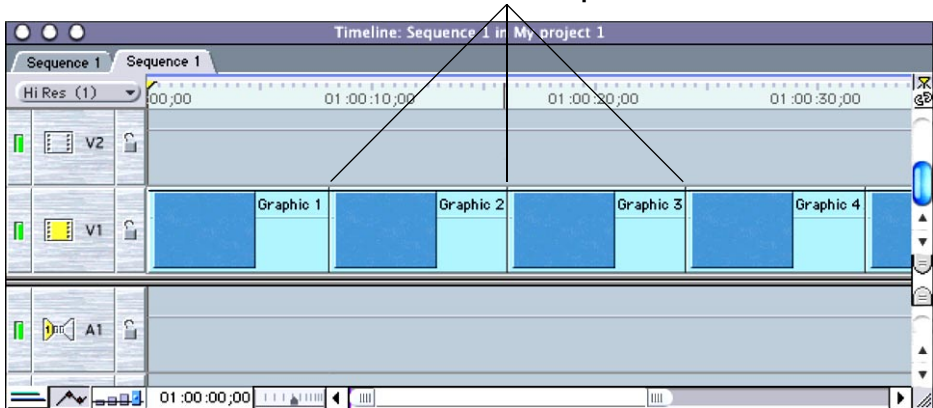
On all systems

- Use any Motion Effect with Motion Blur applied.
- Use any Motion Effect and a wipe or iris transition simultaneously.
- Use a Motion Effect with drop shadow applied and a slide transition simultaneously.
- Include a still or graphics file that is larger than 720 × 480 (NTSC) or 720 × 576 (PAL), or include a graphics file in Adobe Photoshop format that contains more than one layer.
- Create a transition for which one of the sources has a Motion Effect, opacity, or alpha key applied.
- Set your audio playback quality to **High**, depending on the capabilities of your system (even if you've disabled RTMac functionality). To avoid having to render, make sure you use only audio clips sampled at 48 kHz. If you're capturing audio, make sure your

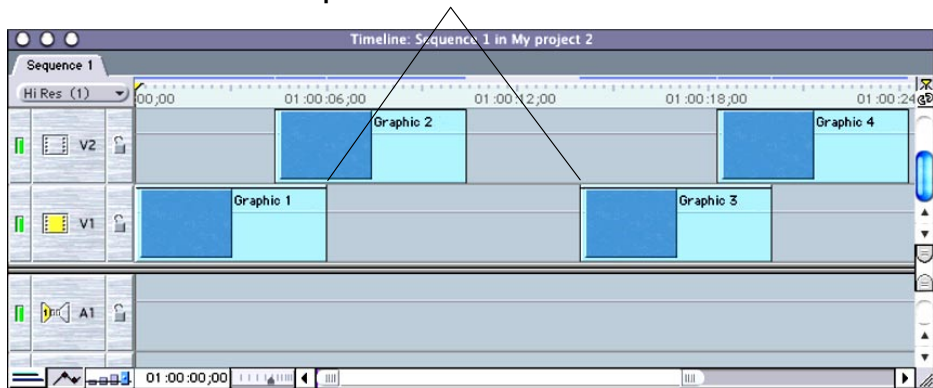
source device's audio sampling rate is set to 48 kHz. Check the documentation of your source device for instructions on changing your audio sampling rate.

- Place graphics clips on one layer with less than eight frames between the **start** of each clip, or place graphics on two layers with less than eight frames between the **end** of one clip and the **start** of the next. To avoid rendering, place your graphics using the guidelines shown in the following examples.

At least eight frames between the start of each clip



At least eight frames between the end of one clip and the start of the next



Note Non-realtime segments in the Timeline (that is, segments that require rendering) are identified by a red rendering status bar.

Preparing your project for printing to video

Analog output

To record your project onto analog tape, connect your VCR inputs to the composite or S-Video outputs and RCA audio outputs on your Matrox RTMac breakout box, then choose **File > Print to Video**. If you want to add color bars, select In and Out points for your Timeline, or make other adjustments, choose **File > Print to Video** and make your selections. You can then press “Record” on your VCR and click **OK** in the **Print to Video** window to play back your Timeline.

FireWire output



Important To record your project to a DV device, you must set the Final Cut Pro external video settings to Apple FireWire. Choose **Final Cut Pro > Audio/Video Settings**, click the **External Video** tab, and select **Apple FireWire NTSC (720 × 420)** or **Apple FireWire PAL (720 × 576)** from the **View During Recording Using** pop-up menu. As well, make sure your DV camcorder or deck is connected to the FireWire port on your Power Mac G4.

FireWire output requires that all effects on the Timeline be rendered before printing to video. You can render your effects manually by choosing **Sequence > Render All**; otherwise they will automatically be rendered when you choose **File > Print to Video**. Once your effects are rendered, the rendering status bar will turn blue-gray. You can then make your Print to Video selections (such as to add color bars), and record your project to your DV device.

Your notes

Using Matrox RTMac with Adobe After Effects and Discreet combustion

This chapter explains how to configure Adobe After Effects and Discreet combustion for use with Matrox RTMac.

Overview

Matrox RTMac lets you display your work in Adobe After Effects (version 5.5 or later) or Discreet combustion (version 2.1 or later) on your NTSC or PAL video monitor. This lets you see the exact color temperature, safe-title area, and any interlaced artifacts as you work.



Note The speed at which RTMac outputs your After Effects or combustion material is system-dependent and can vary. The display on your NTSC or PAL monitor will **not** be at full frame rate, even on a faster system.

When you install the Matrox RTMac software, the RTMac software for Adobe After Effects and Discreet combustion is also installed. In order to use RTMac with these applications, you must first configure them as explained in the following sections.

Configuring Adobe After Effects for use with Matrox RTMac

- 1 In After Effects, choose **After Effects > Preferences > Video Preview**.
- 2 From the **Output Device** pop-up menu, select **Matrox RTMac Video Out Component**.
- 3 Next to **Show Output**, select **During RAM Previews** and **For All Window Updates**.
- 4 Select **Including Renders**.

Configuring Discreet combustion for use with Matrox RTMac

- 1 In combustion, choose **Combustion > Preferences**.
- 2 Under **Host**, click **Framebuffer**, and set **Framebuffer Type** to **Matrox RTMac**.
- 3 Select **Use with RAM player** and **Update dynamically**.

Your notes

Matrox RTMac Troubleshooting

Chapter

6

This chapter provides some possible answers if you have trouble installing your hardware or operating your Matrox RTMac system.

Up-to-date information

The following pages provide solutions to the most common problems that we've found. These solutions are also available in the RTMac Support section of our web site at www.matrox.com/video/videoweb/support. As new information becomes available, we'll add it there first, so it's always a good idea to check the site on a regular basis.

Multiple solutions

Some of the problems identified here may have more than one possible cause, and there are frequently several possible solutions.



Warning Never open your computer system when its power is on!

Installation/configuration

The RTMac card does not fit

Possible cause **New or unused slots** If you're installing your Matrox RTMac card in a new or previously unused slot, there may be considerable resistance as the card slides into the slot. This is normal.

Solution **Install carefully** Make sure that the card is perfectly aligned with the slot and push it in firmly but gently until it's correctly seated.

Secondary monitor connected to RTMac card displays black screen

Possible cause **Monitor does not support DDC** DDC is a system that detects the type of monitor connected to a video or graphics card. Some older monitors do not support this system, in which case the RTMac driver will display a default set of resolutions and refresh rates. It's possible that your monitor doesn't support some of these resolutions. If you choose an unsupported resolution, your monitor will not sync and you'll probably see a black screen.

Solution **Check display settings** From the Apple menu, choose **System Preferences**, click **Displays**, then select **Show displays in menu bar**. This will place icons for all connected monitors in the menu bar on your main monitor. You can then try different resolution and refresh rates for your secondary monitor until you find one that is supported.



Note If your monitor is connected with a BNC cable, it will not support DDC. As well, DDC might not work properly if you're using an adapter on your monitor cable.

Operation

There are no "Easy Setups" for Matrox RTMac in Final Cut Pro

Possible cause **Matrox RTMac software not installed** Check your system. If the Matrox RTMac software isn't installed, the Matrox RTMac "Easy Setups" won't be installed.

Solution **Install Matrox RTMac software** Run the Matrox RTMac installer on your Matrox RTMac CD to install the RTMac software.

Effects don't play back in real time, or entire rendering status bar is red

Possible cause 1 Matrox RTMac software not installed Check your system. If the Matrox RTMac software isn't installed or didn't load on startup, your effects won't play back in real time.

Solution Install Matrox RTMac software Run the Matrox RTMac installer on your Matrox RTMac CD to install the Matrox RTMac software.

Possible cause 2 Wrong video standard selected in Matrox RTMac preference pane If the video standard you selected in the Matrox RTMac preference pane doesn't match your source material, your effects won't play back in real time.

Solution Select the correct video standard Close Final Cut Pro. From the Apple menu, choose **System Preferences**, click **Matrox RTMac**, and select the video standard (NTSC or PAL) that matches your source material.

Possible cause 3 Matrox RTMac functionality disabled Clearing **Enable Matrox RTMac functionality** in the Matrox RTMac preference pane disables RTMac functionality.

Solution Enable RTMac functionality Close Final Cut Pro. From the Apple menu, choose **System Preferences**, click **Matrox RTMac**, and select **Enable Matrox RTMac functionality**.

Possible cause 4 Incorrect External Video setting In order to use realtime effects, External Video must be set to **Matrox RTMac**. This outputs video to the breakout box.

Solution Change External Video setting Choose **Final Cut Pro > Audio/Video Settings** and click the **Summary** tab. From the **External Video** menu, select **Matrox RTMac**.

Video appears too bright on playback (NTSC only)

Possible cause Wrong NTSC setup level If you're using a DV device that uses the Japanese analog NTSC setup of 0 IRE but you've selected the standard NTSC setup level of 7.5 IRE, video might appear too bright when you play back DV clips on your NTSC monitor.

Solution Change NTSC setup level Close Final Cut Pro. From the Apple menu, choose **System Preferences**, and click **Matrox RTMac**. Under **Video Standard**, select **0 IRE** next to **NTSC with setup level of**.

You receive a message that your Matrox RTMac could not be started

Possible cause 1 Your card isn't installed properly If your Matrox RTMac card isn't properly seated in its slot, your Power Mac G4 won't detect it on startup and will display a message saying that Matrox RTMac could not be started because of an error.

Solution Ensure that your RTMac card is installed properly Shut down your computer and check to see if the RTMac card is fully seated in its slot.

Possible cause 2 "Multiple reset" error If you rapidly press the reset button on your Power Mac G4 more than once, your RTMac card may not initialize properly. This causes your system to assume that the RTMac card isn't installed properly.

Solution Shut down your computer and restart From the Apple menu, choose **Shut Down** and restart your computer.

Scrubbing on the Timeline becomes slow

Possible cause 1 Scrubbing proxy realtime effects Scrubbing can become slow when you're scrubbing over proxy realtime effects (that is, when the rendering status bar is yellow). This is normal.

Solution Render proxy realtime effects Highlight the effects and choose **Sequence > Render Selection**.

Possible cause 2 Unsupported Viewer or Canvas window settings If the **Viewer** or **Canvas** window is set to a mode other than **Image**, such as **Image + Wireframe**, scrubbing can become slow. Scrubbing can also become slow if you resize your image so that it doesn't fit in the **Viewer** or **Canvas** window, and scroll bars appear.

Solution Change Viewer or Canvas window settings Set the **Viewer** or **Canvas** window to **Image** mode. If needed, resize the window so that the entire image fits and the scroll bars disappear, or set the image size to **Fit to window**.

Playback appears jerky (dropping frames)

Possible cause **“High Quality Playback (slower)” option selected in render quality settings** If you’ve selected **High Quality Playback (slower)** in your render quality settings, each frame will be rendered as it’s played back, instead of playing back in real time. This causes playback to appear jerky, with dropped frames.

Solution **Check render quality settings** Choose **Sequence > Render Quality > Edit Render Qualities**. In the **Render Quality Editor**, clear the **High Quality Playback (slower)** option on all available render quality setting tabs.

Loss of frame accuracy when capturing from an analog source with device control

Possible cause **Analog source not genlocked to Matrox RTMac analog output** If your analog deck isn’t genlocked to RTMac’s analog output, capture can be off by a few frames.

Solution **Genlock analog source to RTMac output** Connect the **REF IN** of your analog source device to the **VIDEO OUT** or **S-VIDEO OUT** of the RTMac breakout box. This will ensure capture accuracy to a single frame.

Audio input levels too high when using an XLR source device

Possible cause **Wrong XLR-to-RCA converters** Because the RTMac breakout box has line-level (RCA) audio inputs, connecting an XLR device to the inputs without the correct XLR-to-RCA converters results in input levels that are too high (“hot”).

Solution **Use correct XLR-to-RCA converters** Use XLR-to-RCA converters that attenuate the audio signal.

Your notes

Matrox RTMac Customer Support

Appendix

A

If you have a problem that you’re unable to solve by referring to your RTMac documentation, please contact your Matrox RTMac representative. He or she should be able to help you quickly correct any installation or system configuration problem. If your representative is unable to solve your problem, contact Matrox for further assistance.

Register your Matrox RTMac

Only customers who’ve registered their RTMac are eligible to receive customer support. You can easily register on our web site at www.matrox.com/video in the Support section.

Registering your RTMac also entitles you to free software upgrades, special promotional offers, and access to the Matrox RTMac User Forum, our dynamic web forum for users who want to share their experiences and learn more about Matrox RTMac.

In addition to registering your RTMac, our web site offers you up-to-the-minute information about Matrox products, free software updates, and access to our support databases. Be sure to place our site in your favorites or bookmarks: www.matrox.com/video.

Contacting us

Matrox is proud to offer worldwide technical support. Please use the contact information for your area. The following numbers are subject to change. For up-to-date contact information, always check our web site at www.matrox.com/video.

United States & Canada

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Fax 1 514 685-2853
Email rtnacsupport@matrox.com

Europe, Middle East, & Africa

Telephone

Calls from the U.K. 01753 665678
Calls from France 01 45 60 88 66
Calls from Germany089 62 17 05 70
Calls from the rest of Europe, Middle East, & Africa+44 1753 665678

Fax

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From the rest of Europe, Middle East, & Africa..... +44 1753 665599

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All other countries

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Appendix B Matrox Around the World

B

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The information on this page is
subject to change.

For up-to-date contact information,
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Fax: (86-10) 6253 6251
Email: myang@matrox.com

Matrox RTMac Specifications

Appendix

C

Video

Inputs	Composite video (CVBS), RCA jack S-Video (Y/C), mini-DIN NTSC, PAL
Outputs	Composite video (CVBS), RCA jack S-Video (Y/C), mini-DIN NTSC, PAL
Video formats	ITU-R 601 (YUV 4:2:2 internal data paths) NTSC: 720×480 at 29.97 frames/sec. PAL: 720×576 at 25 frames/sec. 4:3 and 16:9 aspect ratios
Video overlay	Programmable NTSC and PAL video-in-a-window support on console at 30/25 images/sec.
Video codec	Multi-format codec supports single-stream capture and dual-stream play-back of mini DV, DV, and DVCAM (NTSC 4:1:1 and PAL 4:2:0).

Audio

Genlock to video	Audio clock locked to video clock for perfect sync
Analog audio input/output	Unbalanced stereo I/O (1 pair RCA in, 1 pair RCA out)
Sampling method	16 bit, 48 kHz, 64× oversampling

VGA display

Output	Standard 15-pin VGA connector.
--------	--------------------------------

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*
Storage humidity	5 to 95% relative humidity*

* non-condensing

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Compliance Statements

USA

FCC Compliance Statement

Remark for the Matrox hardware products supported by this guide These devices have been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment causes harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: • Reorient or relocate the receiving antenna • Increase the separation between the equipment and receiver • Connect the equipment into an outlet on a circuit different from that to which the receiver is connected • Consult the dealer or an experienced radio/TV technician for help.

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.

Declaration of conformity of a Class B digital device according to the FCC rules

We, the Responsible Party Matrox, 1075 Broken Sound Parkway, Boca Raton, FL 33487 • Telephone: (561) 989-9626 • Attention: Conformity Group Matrox

Declaration The Matrox hardware products supported by this guide comply with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) these devices may not cause harmful interference, and (2) these devices must accept any interference received, including interference that may cause undesired operation. Any question regarding this declaration should be forwarded to the above coordinates.

Canada

(English) Industry Canada Compliance Statement

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

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

Remarque sur les produits matériels Matrox couverts par ce guide Ces appareils numériques n'émettent aucun bruit radioélectrique dépassant les limites applicables aux appareils numériques de Classe B prescrites dans le Règlement sur le brouillage radioélectrique édicté par Industrie Canada.

Japan

VCCI Compliance Statement

Remark for the Matrox hardware products supported by this guide These are Class B products based on the standard of the Voluntary Control Council for Interference from Information Technology Equipment (VCCI). If these are used near a radio or television receiver in a domestic environment, they may cause radio interference. Install and use the equipment according to instructions in the manual.

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づくクラスB情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。
取扱説明書に従って正しい取り扱いをして下さい。

Europe

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

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

(Français) Informations aux utilisateurs Européens - Déclaration de conformité

Remarque sur les produits matériels Matrox couverts par ce guide Ces unités sont conformes à la directive communautaire 89/336/EEC pour les unités numériques de classe B. Les tests effectués ont prouvé qu'elles sont conformes aux normes EN55022/CISPR22 et EN55024/CISPR24. Le fonctionnement de ces produits dans un environnement résidentiel peut causer des interférences radio, dans ce cas l'utilisateur peut être amené à prendre les mesures appropriées. Pour respecter les impératifs communautaires, les câbles de connexion entre le moniteur ou autres périphériques et la carte doivent être blindés. Ces produits ont été testés dans un système hôte typique compatible classe B. On suppose qu'ils présenteront la même compatibilité dans tout système compatible classe B.

(Deutsch) Information für europäische Anwender - Konformitätserklärung

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

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

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

(Español) Información para usuarios europeos - Declaración de conformidad

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





www.matrox.com/video