SuperMac Color Graphics Card User's Manual

INTRODUCTION

Quick Start Configuration.....3
Image Processing Acceleration and CX Features.....4
GWorld Memory.....5
System Requirements.....5

CHAPTER 1

Installing SuperMac Graphics Cards.....6
Installation for the Power Macintosh Family.....7
Installation for the Macintosh II Family.....7
Opening the Computer 7
Installing the Graphics Card 8
Closing the Macintosh.....9
Installation for the Power Macintosh 7100, Quadra 650, Centris 650, Performa 600, and Macintosh IIvi/vx.....10
Opening the Computer.....10
Installing the Graphics Card.....11
Closing the Computer.....12
Installation for the Quadra 700/900/950.....13
Opening the Quadra.....13
Installing the Graphics Card.....14
Closing the Quadra.....15
Installation for the Power Macintosh 8100 and Quadra 800/840Av.....16
Opening the Computer.....16
Installing the Graphics Card.....17
Closing the Computer.....18
Installation for the Power Macintosh 6100, Centris 610/660Av, and Quadra 610/660Av.....18
Opening the Computer.....18
Installing the Graphics Card.....19
Closing the Computer.....20
Installing GWorld Memory.....21
Installing SIMMs.....22
Removing SIMMs.....23

CHAPTER 2

Configuring the Graphics Card.....24
Placing and Connecting the Display.....24
Configuring the Graphics Card.....25
Configuration Tips.....25
Reconfiguring SuperMac Graphics Cards.....26
Configuring Multiple SuperMac Graphics Cards.....27

CHAPTER 3

Using the Graphics Card.....28
Installing the SuperVideo Software.....28
About the Supervideo Software.....29
Using the Monitors Control Panel.....29
Choosing the Number of Colors.....30
Arranging Two or More Displays.....31
Moving the Menu Bar.....31
Selecting Supervideo Options.....32
Configuring Your Display.....33
Using Virtual Desktop.....34
Using Zoom.....36
Panning Across the Desktop.....37
Using Graphics Acceleration.....37
Using GWorld Memory.....38
Using the Supervideo Control Panel.....38
Using Pixel Depth Pop-Up.....39
Using Cursor Homing.....39
Changing the Hot Keys.....40

CHAPTER 4

Troubleshooting.....41
Problems and Solutions.....41

INDEX

Alphabetical.....44
U.S. Federal Communications Commission Notice.....48
Canadian DOC Notice/Avis DOC.....49
Where to Find More Help.....49

Introduction

Thank you for purchasing a SuperMac™ graphics card for Macintosh® computers. This manual describes how to install your SuperMac graphics card and 5peVi0TM software, and how to use SuperVideo to control the advanced features of your SuperMac graphics card. With SuperVideo you can:

- Zoom in on parts of the desktop quickly. This hardware-based feature updates the screen almost instantly, much faster than the zoom features available in many software applications.
- Activate a Virtual Desktop™ that provides space on your desktop beyond the edges of the screen.
- Move around Virtual Desktops or zoomed desktops quickly with hardware-based panning.
- Instantly move your mouse pointer to the upper left comer of a display.
- Instantly change the number of colors for your display (pixel depth) from any application.

Your SuperMac graphics card may also have image processing acceleration, GX acceleration, or GWorld memory. These features are described later in this introduction.

Quick Start Configuration

Use these basic instructions to set up your SuperMac graphics card and display system, and to configure your SuperMac graphics card to send signals that are compatible with your display.

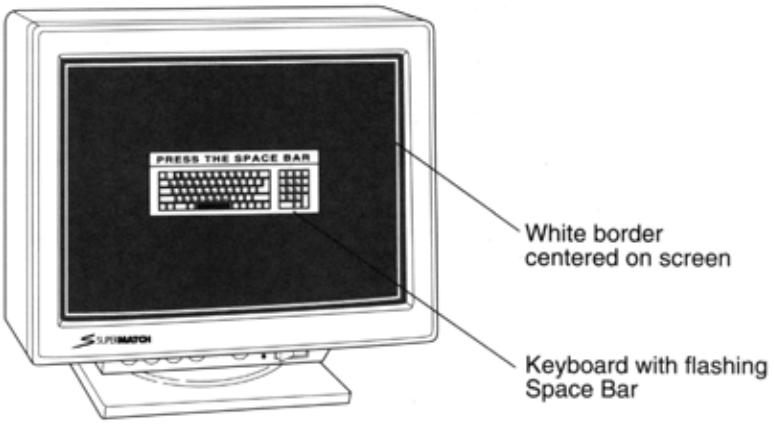
1. Install the graphics card into an available NuB us expansion slot. (Refer to Chapter 1 for more detailed information.)
2. Plug one end of the video cable into the video port of the graphics card. Connect the other end of the cable to the display. Plug an AC power cord into the display and switch the power on. (See “Placing and Connecting the Display” on page 25 for additional information.)

If the image on your display is clear and readable, your display has a Cable Sense feature. Go to Chapter 3 for instructions on how to install and use the SuperVideo software.

3. If your display does not have Cable Sense (if the image on your display appears scrambled) do the following:

- Start up the computer.

- When you see a white keyboard and border clear and centered on the screen, immediately press the Space bar. The computer locks into this configuration setting and restarts.

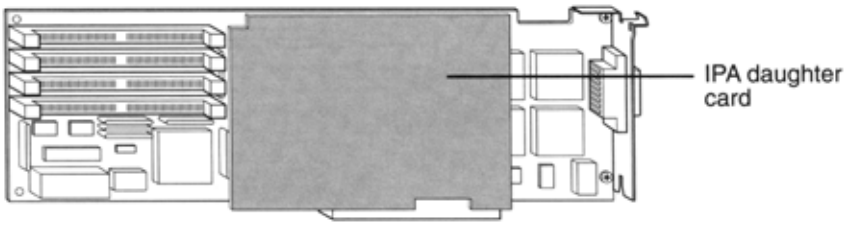


You are now ready to install the SuperVideo software on the startup disk of your Macintosh. See “Installing the SuperVideo Software” on page 29.

If you did not select the correct configuration setting the first time, read “Reconfiguring SuperMac Graphics Cards” on page 27. To configure more than one SuperMac graphics card installed in the same computer, see page 28.

Image Processing Acceleration and GX Features

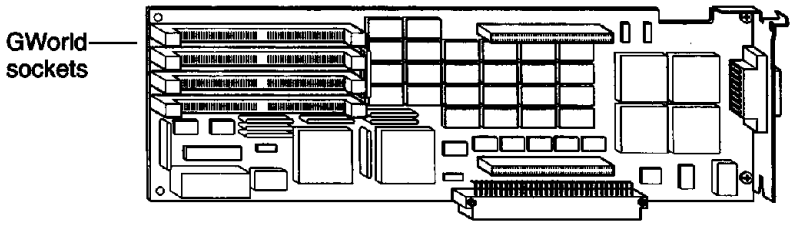
Many of the newer SuperMac graphics cards, such as the Thunder II cards, feature image processing accelerators such as the IPA, Power DSP, or OX daughter cards. These cards include SuperMac Image Processing Accelerator software to speed up key functions in many graphics applications. For example, the performance of some Adobe Photoshop™ operations noticeably improves.



For complete information about Image Processing Accelerator features and OX capabilities, refer to the SuperMac Image Processing Accelerator User's Manual included with these cards.

GWorld Memory

Some SuperMac graphics cards support an on-board GWorld display memory option for fast manipulation of large color images. GWorld memory stores off-screen bitmaps. This accelerates redraw when the bitmaps are brought on-screen. Cards that support this feature have GWorld sockets in the upper left comer, as illustrated in this diagram:



System Requirements

SuperMac graphics cards require the following hardware and software:

- A Macintosh computer with an open NuB us slot
- A hard disk drive
- A color or gray-scale Macintosh-compatible display (the Product Update Notice provided with your graphics card includes a list of compatible displays)
- System 7.0 or later. Contact your authorized Apple reseller if you need to update your System software

Chapter 1

Installing SuperMac Graphics Cards

This chapter explains how to install your SuperMac graphics card into a Macintosh computer equipped with a NuBus expansion slot. As of the publication date of this manual SuperMac graphics cards can be installed in the following models:

- Macintosh II
- Macintosh IIx
- Macintosh IIcx
- Macintosh ilci
- Macintosh IIfx
- Macintosh IIvx
- Macintosh lIvi
- Macintosh IIsi*
- Performa 600
- Centris 6 lO*t
- CentrisTM 650
- Centris 660AV*t
- Quadra™ 6 lO*t
- Quadra 650
- Quadra 660AV*t
- Quadra 700
- Quadra 800
- Quadra 840AV
- Quadra 900
- Quadra 950
- Power Macintosh 6100*†
- Power Macintosh 7100
- Power Macintosh 8100

Models with an asterisk (*) require an appropriate NuBus adapter. Models with a dagger (†) accommodate 7" SuperMac graphics cards only.

Some SuperMac graphics cards do not fit into all Macintosh models. Refer to the Product Update notice provided with your graphics card for inforrnation about compatibility with specific computer models.

PRECAUTIONS:

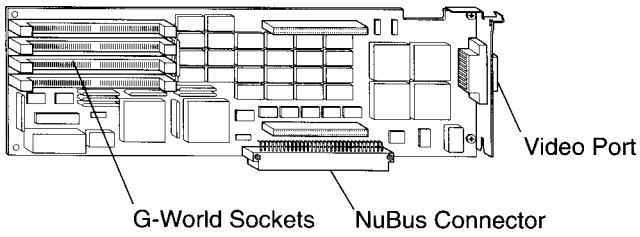
Do not remove your graphics card from the antistatic bag until you are familiar with the following precautions. Improper handling or installation can damage the graphics card and computer.

- Except when installing a card in a Quadra 900 or Quadra 950, always leave the computer plugged in and powered off This properly grounds the system during the installation process.
- Unplug a Quadra 900 or Quadra 950 before installation to avoid electric shock.
- Handle the card only by its edges. Avoid touching the connectors and integrated circuits.
- Each installed expansion card uses power from the computer's power supply. All your installed expansion cards must not exceed the maximum power consumption of your computer. Refer to the Macintosh owner's manual for the maximum power specification.

If you install this graphics card in a Power Macintosh 8100, Quadra 800, 840AV, 900, or 950, you must use one of the Expansion Card Guides included with your computer. These plastic guides attach to the cover and ensure that the cards stay securely seated in the NuBus connectors. If you need help installing these adapters, or if you need to purchase additional adapters, contact an authorized Apple reseller.

Graphics Card Diagram

The installation section of this manual frequently refers to these connectors on the graphics card:



Installation for the Power Macintosh Family

To install a SuperMac graphics card in a Power Macintosh 6100 see page 18. To install the graphics card in a Power Macintosh 7100 see page 7. To install the graphics card in a Power Macintosh 8100 see page 15.

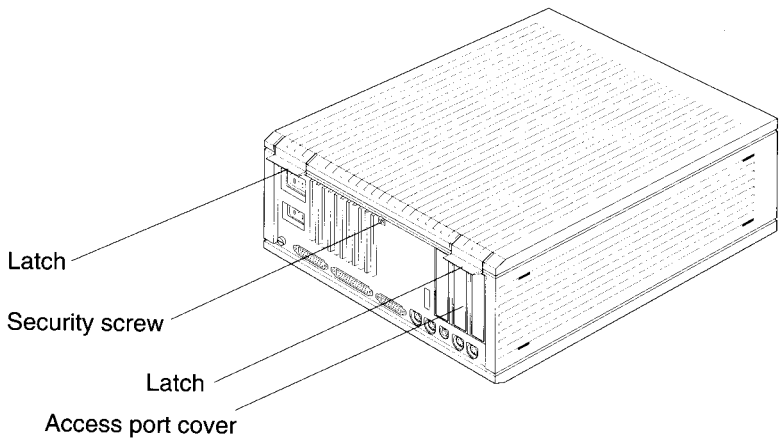
Installation for the Macintosh II Family

Use the following procedure to install a SuperMac graphics card in a Macintosh II, IIx, IIcx, IIci, IIfx or list.

Note: You must purchase a Macintosh IIsi NuB us adapter from your authorized Apple reseller before you can install a SuperMac graphics card in a Macintosh IIsi.

Opening the Computer

The following figure shows the back panel of a three-slot Macintosh. Refer to this figure when you open your Macintosh. Although your Macintosh may look slightly different from the model shown, the steps for opening the case and installing the graphics card are similar for the entire Macintosh II family of computers.



To open the Macintosh case:

1. Remove any disk in the floppy disk drive.

2. Shut down the Macintosh.

3. Turn off the power on all hardware components connected to the Macintosh, including the display and external hard disk drive.
Leave the power cord of the Macintosh plugged into the power source; the power cord grounds the Macintosh and protects it from electrical damage. If the Macintosh is plugged into a power strip, leave the power strip plugged into the power source and turned on during installation.
4. Use a screwdriver to remove the security screw.

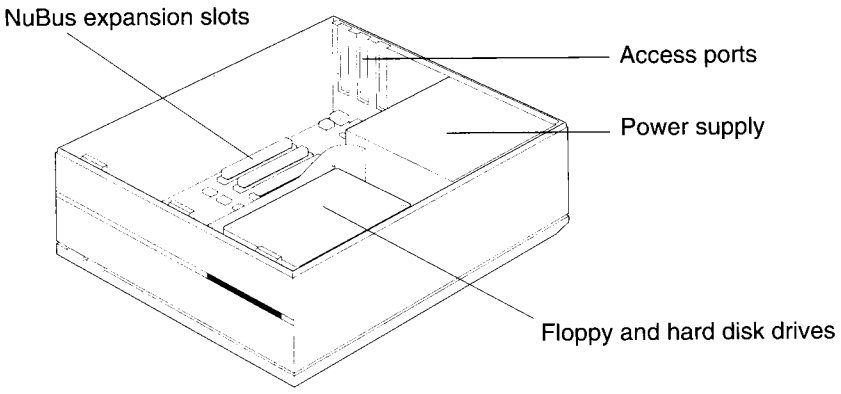
5. Gently lift the two latches on the back of the Macintosh case to release the cover. If you have a Macintosh II, IIx, or IIfx, push in the tabs on the back of the case to release the cover.

6. Lift the cover up and away from the computer.

Installing the Graphics Card

To install the graphics card in your Macintosh:

1. Locate an unoccupied NuB us expansion slot in the Macintosh (sea the following figure). Remove the plastic access port cover and, if necessary, the corresponding metal access port shield. Keep the cover and shield in case you need to remove and store the graphics card later.



2. Touch the computer's power supply to discharge any accumulated static electricity. Even small amounts of static electricity can damage the graphics card or your Macintosh.

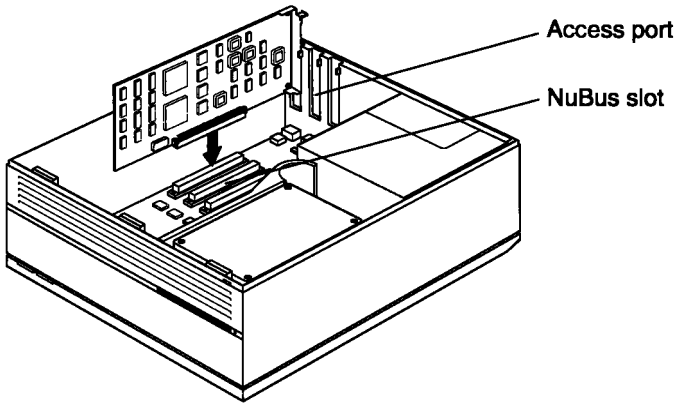
3. Remove the graphics card from the antistatic bag. Orient the card with the NuBus

connector facing down and with the video port pointing toward the access port of the Macintosh.

4. Tilt the card slightly and guide the video port of the graphics card into the access port of the Macintosh.

5. Align the NuBus connector of the graphics card with the NuBus expansion slot.

Some Macintosh models have a guide pin at the top of the expansion port opening and a clip near the bottom of the opening. If your Macintosh has a guide pin, align the hole in the top of the graphics card mounting bracket with the pin. If your Macintosh does not have a guide pin, you can still install the card successfully without it.
Align the slot at the bottom of the graphics card mounting bracket with the clip.



6. With the card perpendicular to the expansion slot, gently press down on the top edge of the graphics card until the NuB us connector firmly seats in the expansion slot.

Do not force the graphics card into place. If the card does not seat properly in the connector, gently lift the card, check for bent pins, and try again.

The video port of the graphics card should be visible through the access port shown in the previous figure.

Closing the Macintosh

1. Align the front of the cover with the front of the case.

2. Lower the back edge of the cover until the latches snap into place.

3. Replace the security screw.

You have now finished installing the SuperMac graphics card in the Macintosh. Go to Chapter 2, Configuring the Graphics Card.

Installation for the Power Macintosh 7100, Quadra 650, Centris 650, Performa 600, and Macintosh IIvi/vx

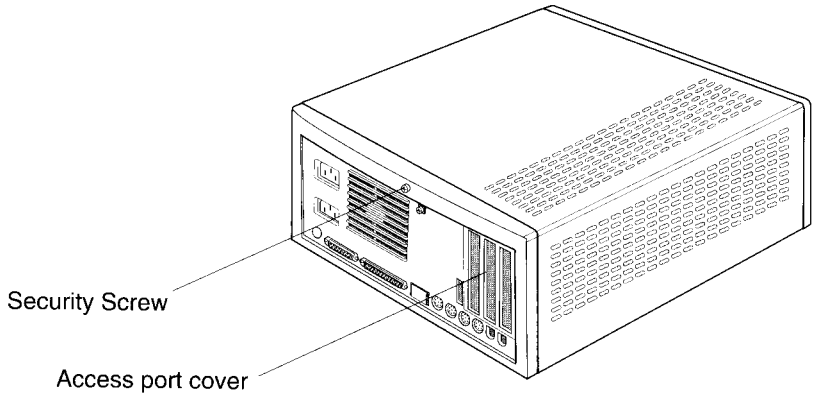
Follow these steps to open the case and install the graphics card.

Opening the Computer

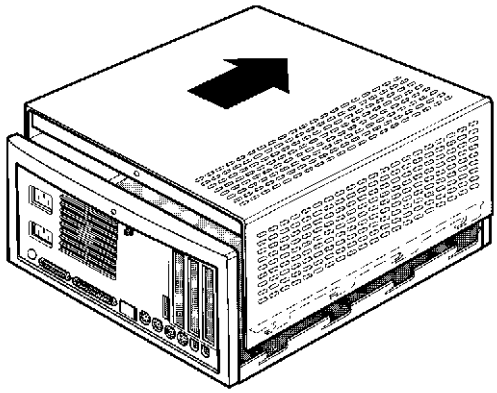
To open the computer case:

1. Remove any disks from the floppy disk drive or the CD-ROM drive.
2. Shut down the computer.
3. Turn off the power on all hardware components connected to the computer. including the display and external hard disk drive.

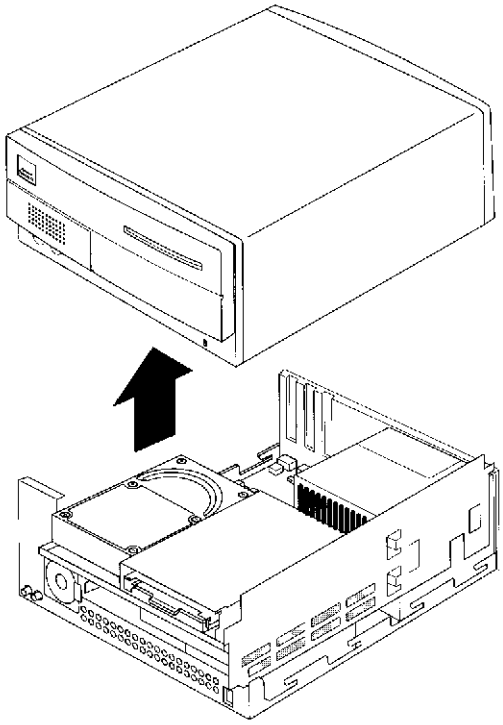
Leave the power cord of the computer plugged into the power source; the power cord grounds the computer and protects it from electrical damage. If the computer is plugged into a power strip, leave the power strip plugged into the power source and turned on during installation.



4. Use a screwdriver to loosen or remove the security screw.
5. Gently slide the cover about an inch from the back panel of the computer to disengage the locking tabs.



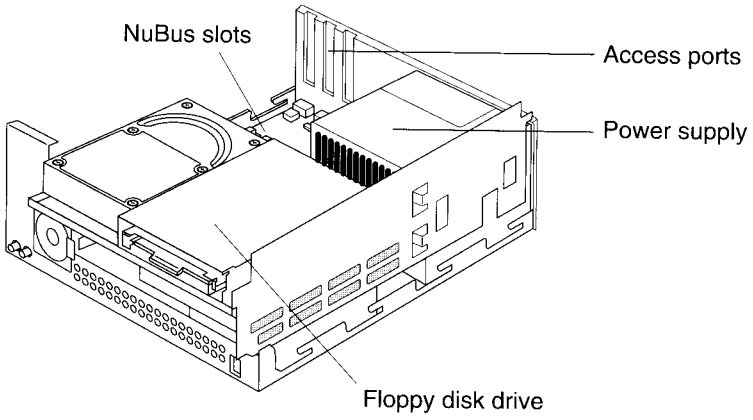
6. Lift the cover up and away from the computer.



Installing the Graphics Card

To install the graphics card:

1. Locate an unoccupied NuBus expansion slot in the computer as shown in the following diagram. Remove the plastic access port cover and, if necessary, the corresponding metal access port shield. Keep the cover and shield in case you ever need to place them back in your Macintosh.



Touch the Macintosh power supply to discharge any accumulated static electricity. Even small amounts of static electricity can damage the graphics card or your computer.

2. Remove the graphics card from the anti static bag. Orient the card with the NuBus connector facing down and with the video pOrt pointing toward the access port at the back of the computer.

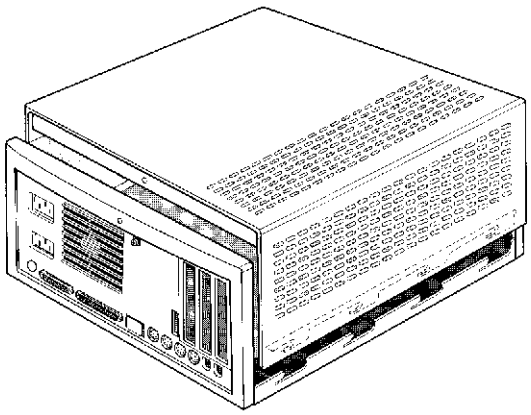
3. Tilt the card slightly and guide the video port of the graphics card into the access port of the computer.

4. Align the NuB us connector of the graphics card with the NuBus expansion slot. Gently press down on the top edge of the graphics card until you firmly seat the NuB us connector in the expansion slot. You should be able to see the video port of the graphics card through the access port.

Do not force the graphics card into place. If the card does not seat properly in the connector, gently lift the card, check for bent pins and try again.

Closing the Computer

1. Lower the cover onto the computer with the locking tabs of the inside rails aligned with the slots on the computer's frame. Refer to the following figure.



2. Gently slide the cover toward the back panel until the cover rests against the back frame.

3. Replace the security screw.

You have completed installation of the SuperMac graphics card. Go to Chapter 2, Configuring the Graphics Card.

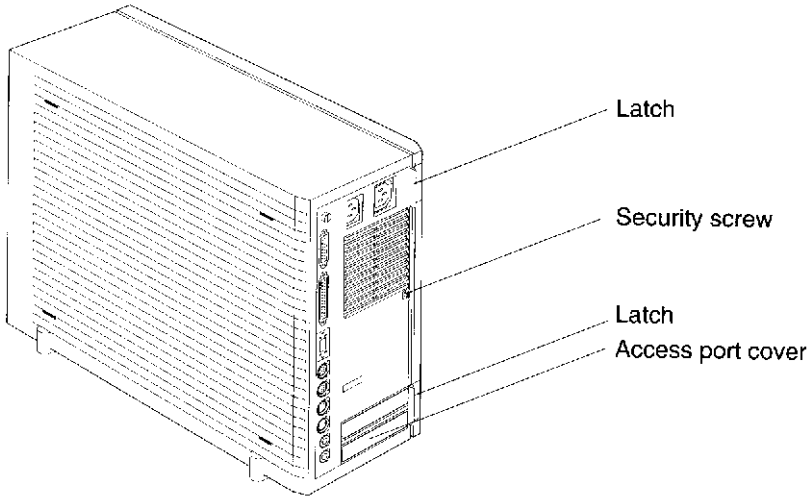
Installation for the Quadra 700/900/950

Use the following procedures to install the SuperMac graphics card in a Macintosh Quadra 700, Quadra 900, or Quadra 950.

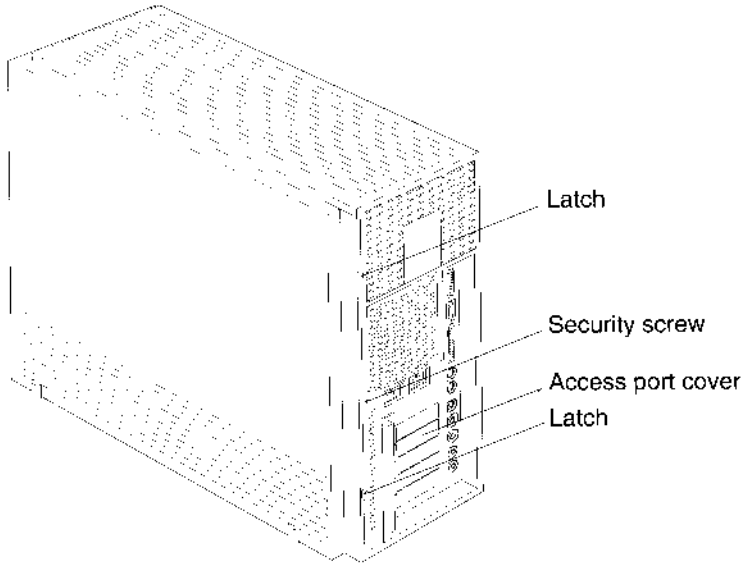
Opening the Quadra

Refer to the following figures while opening your computer.

This figure shows the back panel of a Quadra 700:



This figure shows the back panel of a Quadra 900 or Quadra 950:

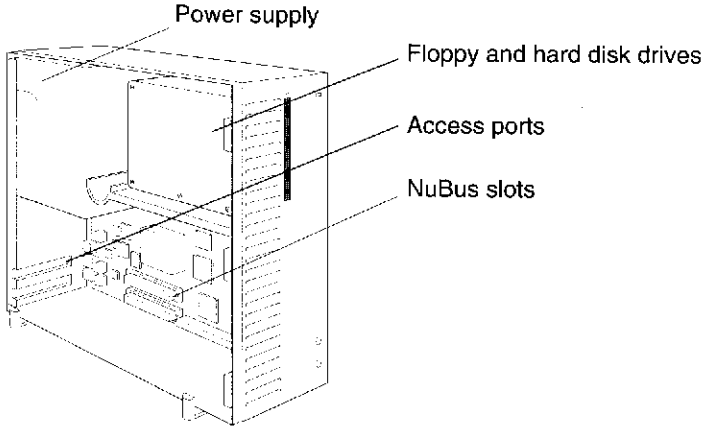


To open the Quadra:

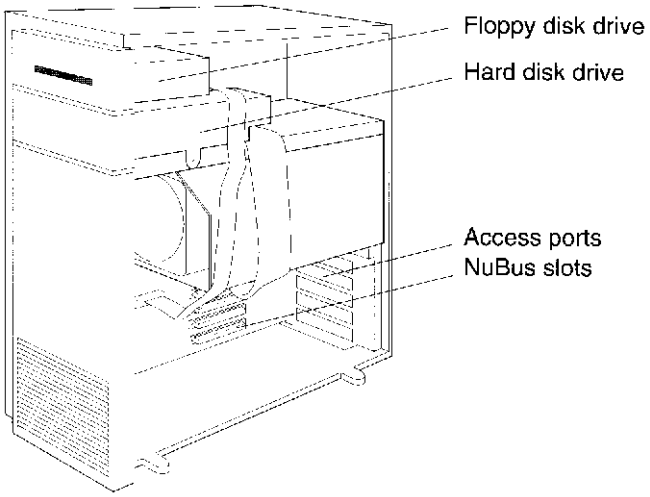
1. If necessary, remove any disk in the floppy disk drive.
2. Shut down the Quadra.
3. Turn off the power on all hardware components connected to the Quadra, including the display and external hard disk drive.
4. Unplug the power cord of the Quadra 900/950 from the power source. Leave the power cord plugged in if you have a Quadra 700.
5. Press the two latches on the back of the Quadra 900/950 to release the side panel. To release the panel on a Quadra 700, pull the two tabs.
6. Remove the side panel from the Quadra.

Installing the Graphics Card

The following figure shows a Quadra 700:



This figure shows a Quadra 900/950:



To install the graphics card in the Quadra:

1. Locate an unoccupied NuBus expansion slot and remove the access port cover corresponding to that slot.

2. Touch the metal part of the power supply case inside the Quadra to discharge any accumulated static electricity. Even small amounts of static electricity can damage the graphics card and your Quadra.

3. Remove the graphics card from the antistatic bag. Orient the card with the NuBus connector facing one of the NuBus expansion slots in the Quadra.

4. Tilt the card slightly and guide the video port of the graphics card into the access port of the Quadra.

For the Quadra 900/950: Avoid dislodging the ribbon cables that connect the floppy disk drive and hard disk drive to the motherboard.

5. Align the NuBus connector of the graphics card with the NuBus expansion slot. While holding the card perpendicular to the slot, gently press the card into the expansion slot until the NuB us connector is firmly seated. The video port of the graphics card should be visible through the access port.

Do not force the graphics card into place. If the card does not seat properly in the connector, gently lift the card, check for bent pins and try again.

Closing the Quadra

1. Align the front edge of the Quadra's side panel with the front edge of the case.

2. Be sure the edge of the graphics card is aligned with the slots in the Quadra Expansion Card Guide, then close the cover. The latches will snap into place.

3. Replace the security screw, then plug in the Quadra 900/950.

You have now finished installing the SuperMac graphics card. Go to Chapter 2, Configuring the Graphics Card.

Installation for the Power Macintosh 8100 and Quadra 800/840AV

Use the following procedures to install the SuperMac graphics card in a Power Macintosh 8100, a Quadra 800, or a Quadra 840AV.

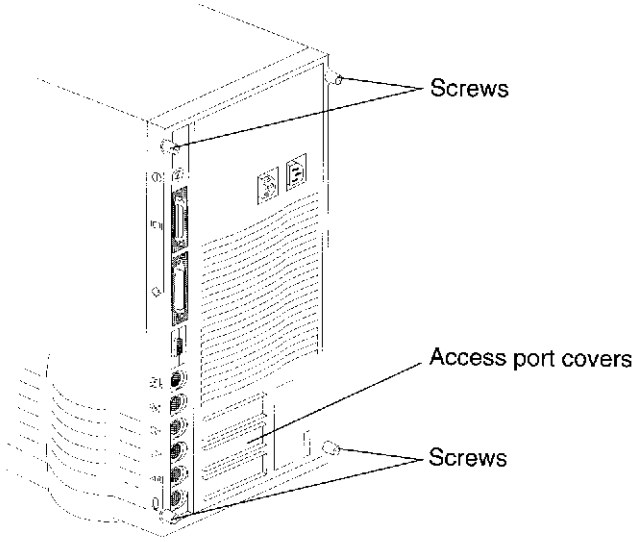
Opening the Computer

To open the computer:

I. If necessary, remove any disk in the floppy disk drive.

2. Shut down the computer.

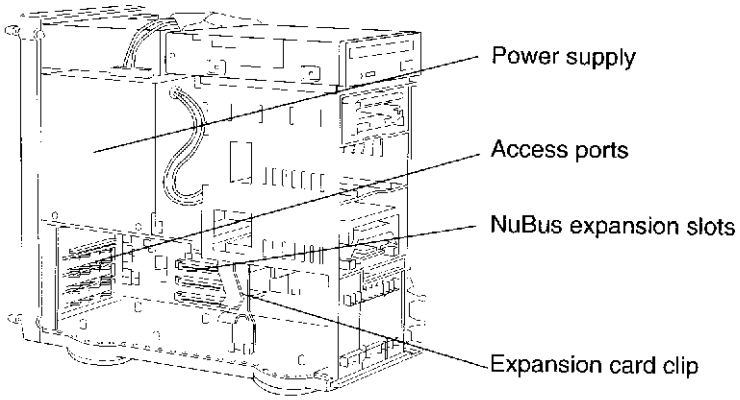
3. Loosen the four large screws at the corners of the back panel, but do not remove either the screws or the back panel.



4. Remove the cover by sliding it away from the back panel an inch or two. Then raise the cover straight up and off the computer.

Installing the Graphics Card

The following figure shows a side view of the computer.

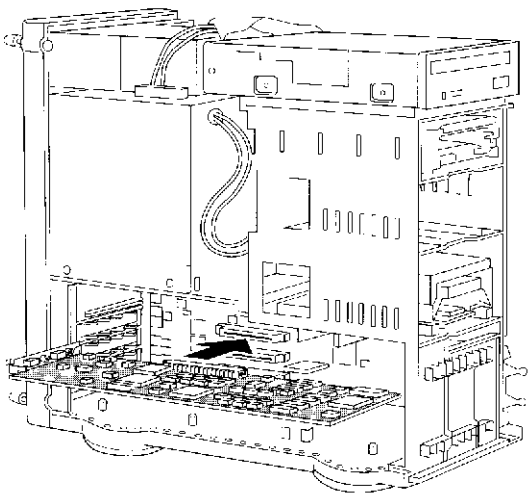


To install the graphics card:
1. Touch the metal part of the power supply inside the computer to discharge any static electricity that might be on your clothes or body.

2. Remove the Expansion Card Guide. Grasp the handles with your thumb and forefinger and squeeze, then pull the Guide straight out.

3. Pull off the access port cover behind the NuBus expansion slot you want to use.

4. Remove the graphics card from its antistatic bag. Hold the card by its top edge to avoid touching the connector on the bottom of the card.
5. Align the connector and the card with the NuBus slot you want to use, as shown in the following diagram.



6. Press the card in firmly until the connector is seated. Do not force the card. If you meet a lot of resistance, pull the card out and try again. To see if the card is properly connected, wiggle it gently. If it resists and stays in place, it is connected correctly.

7. Replace the Expansion Card Guide by first replacing the bottom of the clip, then the top.

Closing the Computer

1. Lower the cover all the way down onto the case. Then push the cover back until it touches the back panel.

2. Tighten the screws on the back panel.

You have now finished installing the SuperMac graphics card.Go to Chapter 2, Configuring the Graphics Card.

Installation for the Power Macintosh 6100, Centris 6101660AV, and Quadra 6101660AV

Your SuperMac color graphics card must have a 7" form factor to fit in the Power Macintosh 6t00, Centris 610, Centris 660AV, Quadra 610, or Quadra 660AV. You must have the appropriate NuB us adapter to install the graphics card into the computer. To purchase a NuBus adapter, contact your Apple reseller.

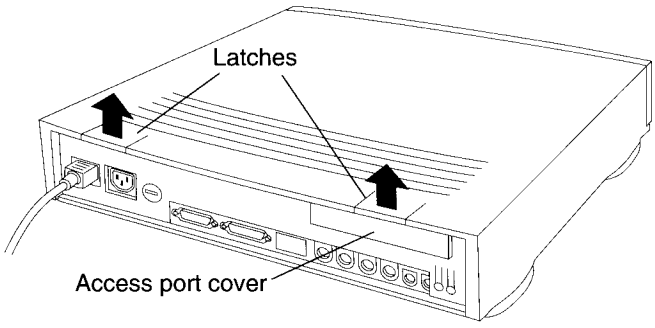
Opening the Computer

To open the computer:

1. If necessary, remove any floppy disks or CD-ROM disks from the internal drives.

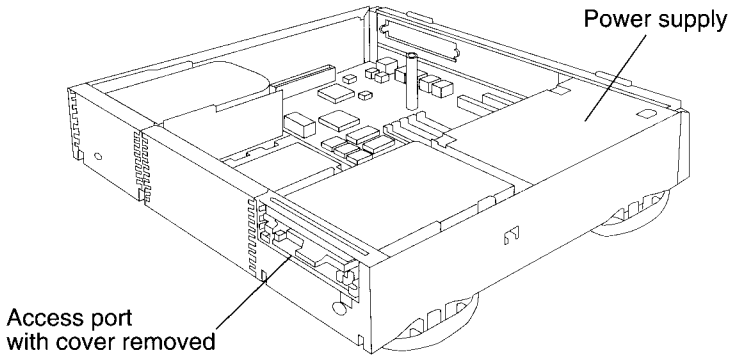
2. Shut down the computer.

3. Pull up on the two latches on the back of the case. The latch positions are shown in the following illustration.



4. Tilt the back of the cover up, slide it toward the front panel, and lift it off.

5. Remove the access port cover from the access port. To do this, press the cover from the inside of the computer.



Installing the Graphics Card

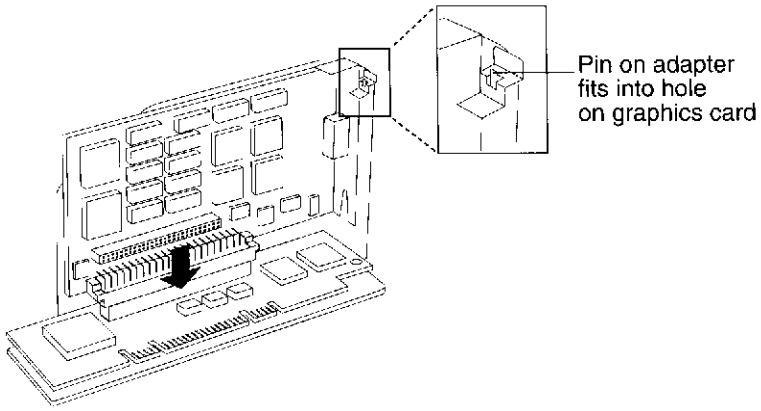
To install the graphics card:

1. Touch the metal part of the power supply in the Macintosh to discharge any accumulated static electricity. Even small amounts of electricity can damage your graphics card or your Macintosh.

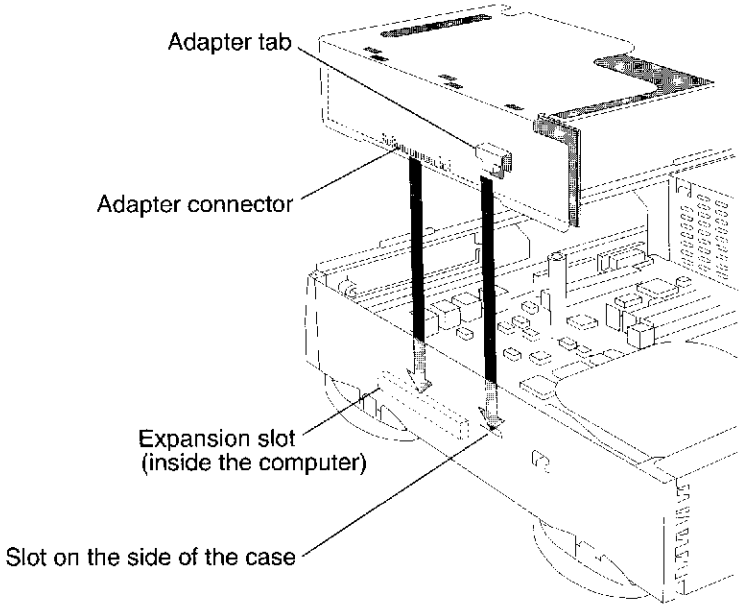
2. Remove the graphics card and NuBus adapter from their anti-static bags. Handle the cards only by their edges; do not touch the connectors or chips.

IMPORTANT: If you purchased a Power DSP Upgrade for your graphics card, attach the DSP daughter card to the graphics card before you proceed. See the SuperMac Power DSP Upgrade Product Update Notice for instructions.

3. Align the NuBus connectors on the card and the adapter. The pin on the adapter bracket should line up with the hole on the metal end of the graphics card. Gently press the NuBus connectors together until the card is securely seated in the adapter.



4. Insert the connector on the adapter into the expansion slot in the computer. Gently press the adapter card assembly down until the connector is fully seated. Make sure the tab on the side of the adapter card assembly slides into the slot on the side of the Macintosh case:



5. Insert the thumbscrews through the expansion slot into the two holes on the adapter. Hold the adapter against the access port as you tighten the thumbscrews.

Closing the Computer

1. Lower the front of the cover and slide it toward the back panel of the computer.

2. Align the ribs on the Macintosh case with the slots in the cover.

3. Press down on the latches to snap them into place.

You have now finished installing the SuperMac graphics card. Go to Chapter 2, Configuring the Graphics Card.

Installing GWorld Memory

You can install up to 8 MB of additional Random Access Memory (RAM) in some SuperMac graphics cards to provide GWorld memory support. GWorld memory accelerates the drawing of bitmap images as you clear them from the screen and display them again.

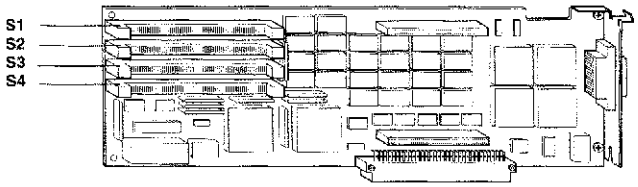
SuperMac graphics cards equipped with GWorld memory sockets accommodate 1, 2, 4, or 8 MB of DRAM. Depending on how much memory you install, you use either 1 MB or 4 MB SIMMs. You cannot mix SIMM types on the same card; all SIMMs must be of identical capacity and speed. In addition, SIMMs must feature 100 nanosecond or faster access time. You can purchase SIMMs for use with SuperMac graphics cards from your authorized SuperMac reseller.

SIMMs used on SuperMac graphics cards are not the same as those used on the Macintosh motherboard. The SIMMs on a Macintosh motherboard issue different signals and will damage SuperMac graphics cards and your computer if installed as GWorld memory. The SIMMs used on SuperMac graphics cards are the same type as those used on the Apple® 8.24 GC graphics card.

The following table shows the SIMM types and appropriate locations for different RAM configurations.

Total Amount of RAM	SIMM Type	Number of SIMMs Needed	GWorld Memory Sockets Used
1 MB	1 MB	1	S1 only
2 MB	1 MB	2	S1 and S3 only
4 MB	1 MB	4	S1, S2, S3, S4
4 MB	4 MB	1	S1 only
8 MB	4 MB	2	S1 and S3 only

To locate the correct sockets, refer to the following figure:



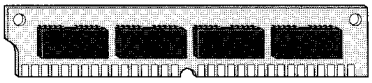
You can damage the SIMMs by installing them in the wrong sockets. Always install multiple SIMMs into the GWorld memory sockets in S4-to-S 1 order.

Installing SIMMs

To install a SIMM on the graphics card:

1. Remove the graphics card from its anti static bag and place it on a static-free flat surface (such as the antistatic bag). Be sure the side of the card with the integrated circuits faces up and the NuBus connector points toward you. To install GWorld memory on a graphics card that is already installed in your Macintosh, remove the graphics card from the Macintosh.

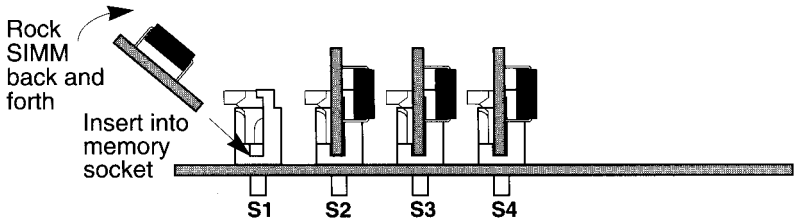
2. Remove the SIMM from its antistatic bag. Notice that the SIMM has a small notch on one side. Hold the SIMM with the notch toward your left and with the connector side facing down toward the graphics card, as shown in the following figure.



3. Determine the appropriate memory socket (54 through S 1) in which to install the SIMM. If you are installing multiple SIMMs, always work from memory socket 54 toward memory socket St.

4. Align the connector side of the SIMM with the appropriate memory socket of the graphics card.

5. Gently press the SIMM into the memory socket. You might need to rock the SIMM slightly back and forth, as shown in the following figure, until it is firmly seated in the socket.



6. Repeat steps 2 through 5 for each SIMM to be installed.

Removing SIMMs

If you need to remove SIMMs from the graphics card, reverse the order in which you installed them in the memory sockets; that is, work from memory socket Si to memory socket S4.

To remove each SIMM:

1. Gently pull outward on the plastic tabs on either side of the SIMM to unlock the SIMM from the socket on the graphics card.

Do not use excessive force when pulling the tabs. The tabs can break if you force them.

2. Using the previous figure as a guide, push the top edge of the SIMM away from the connector and to a 45-degree angle with the graphics card.

3. Gently rock the SIMM back and forth, then lift it out of its memory socket.

4. Store the SIMM in an antistatic bag.

Chapter 2

Configuring the Graphics Card

This chapter explains how to connect a SuperMac graphics card to your display and how to configure the card. It also explains how to connect and configure multiple graphics cards on one Macintosh.

SuperMac graphic cards usually need to be configured only once. If you change your display, move the card to another slot, or clear PRAM, you might need to reconfigure the graphics card.

Placing and Connecting the Display

To connect the graphics card to the display, you need a video cable with appropriate connectors for the graphics card and the display. SuperMac ships a compatible video cable with all displays. If you need a cable for your display, contact your authorized SuperMac reseller.

You must use a shielded video cable to comply with requirements for radio-frequency emissions. All video cables shipped with SuperMac displays are properly shielded.

To set up your display:

1. Find an appropriate location for the display before you connect the AC power cord and the video cable.

   Never place a large-screen display directly on top of the computer without using an appropriate display stand. Large displays can seriously damage a computer if a display stand is not used. SuperMac offers stands suitable for supporting large displays; contact your authorized SuperMac reseller.

2. Plug one end of the video cable into the video port of the graphics card. (The video port is in the access port on the back of the computer.)

3. Tighten the thumbscrews of the video cable to securely attach it to the video port.

4. Connect the other end of the video cable to the display. (Refer to the instructions supplied with the display, if necessary.)

5. Plug an AC power cord into the display and turn on the power.

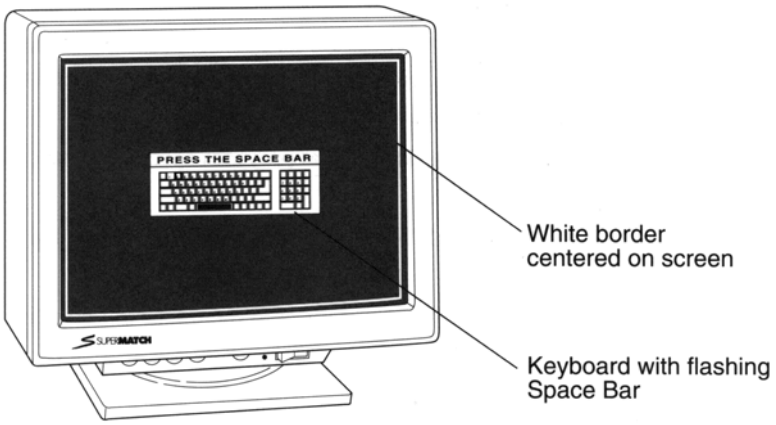
Configuring the Graphics Card

You must configure the graphics card to send a compatible signal to your display. After you do this once, the card automatically uses the correct setting each time you start up the computer.

Many monitor cables support Cable Sense, a mechanism used by the graphics card to identify a monitor's type. If your display cable is equipped with Cable Sense, your SuperMac graphics card automatically finds the correct setting at startup.

If your display cable does not have Cable Sense, follow this procedure to configure your graphics card:
1. Start up the computer. The graphics card begins cycling through the various configuration settings. Each setting appears for about five seconds.

2. When the image on your display screen looks like the one in the following figure, press the Space bar. The computer locks into this configuration setting and restarts.



3. When your computer restarts, the screen image is set to black and white. Use the Monitors control panel to set your display to show colors. (See page 31.)

Configuration Tips

- If you miss the correct configuration setting the first time it is displayed, wait until the keyboard and border image is clear and centered again, then press the Space bar.

- If the Space bar does not cause your computer to restart when you press it, wait until the keyboard and border image is clear and centered again, then press the restart button on your Macintosh (or turn the computer off, then on again).

- Some SuperMac graphics cards show a display resolution setting above the keyboard image to assist you in configuring the graphics card. Be sure the desired display and

resolution appear before you press the Space bar.

- If you select the wrong configuration, you need to reconfigure the card. See the following section, “Reconfiguring SuperMac Graphics Cards.”

- If you use a multimode display, more than one configuration setting can appear clear and readable. Choose any configuration setting that you want to use. Once you configure the card, you can use SuperVideo to change the display mode. (See “Configuring Your Display” on page 35.)

Reconfiguring SuperMac Graphics Cards

You must reconfigure the graphics card in the following situations:

- If the computer's PRAM is cleared or “zapped.” (The configuration information for the graphics cards is stored in PRAM.)

- If you press the Space bar at the wrong time during configuration or if you accidentally hold down the Option key during startup.

- If a different type of compatible display is connected. (The graphics card must be reconfigured for the new display.)

To reconfigure a graphics card:

1. Shut down the computer.

2. Hold down the Option key as you start the Macintosh. Be sure to keep the Option key down until you see the card begin to cycle through the display configuration settings.

3. Press the Space bar when the white border and keyboard image is clear, readable, and centered on the screen.

Configuring Multiple SuperMac Graphics Cards

If you have additional available NuBus expansion slots, you can install multiple SuperMac graphics cards into the same computer. The total power of all installed NuB us cards must not exceed the maximum power consumption for your type of computer. Refer to the owner's manual supplied with your computer for the maximum acceptable power specifications for NuB us cards.

While SuperMac graphics cards do not require any specific slot order for installation, we recommend the following configuration:

- **For the Macintosh II, IIx, IIfx, and Quadra 700**, install the SuperMac graphics

cards starting with the slot closest to the power supply and proceeding slot by slot away from the power supply.

- **For the Macintosh IIcx, IIci, IIvi, IIvx, Performa 600, Centris 650, Quadra 650**, and Quadra 900/950, install the SuperMac graphics cards starting with the farthest from the power supply and proceeding slot by slot toward the power supply.

To configure multiple SuperMac graphics cards installed in a single computer:

I. Install the graphics cards into any of the available NuB us expansion slots.

2. Connect a display to each of the cards.

3. Turn on the power for each display.

4. Start your Macintosh. The first graphics card cycles through the display configuration settings. In a few seconds, the screen clears and the keyboard image appears. If any display cable is equipped with Cable Sense, the associated SuperMac graphics card automatically uses the correct configuration setting.

5. Ensure that the white keyboard and border image appears centered on the display and that it is set to the resolution you want.

6. Immediately press the Space bar. The computer automatically restarts and the configuration sequence skips any previously configured cards. The display attached to the next SuperMac graphics card then cycles through the settings and displays the keyboard image.

7. Immediately press the Space bar. The computer automatically restarts.

8. Repeat steps 5 and 6 for each additional SuperMac graphics card installed in the computer.

When you complete installation and configuration of the graphics cards, use the Monitors control panel to set the relative position for all of the displays.

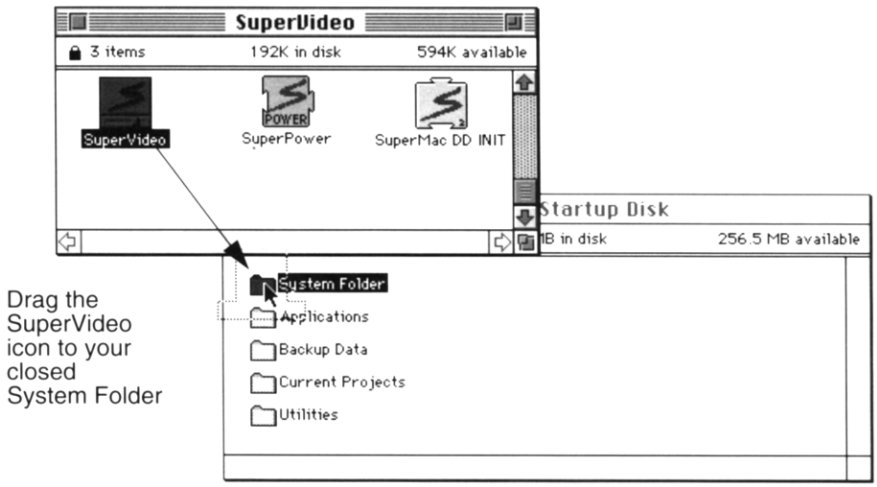
CHAPTER 3

Using the Graphics Card

This chapter explains how to use the SuperVideo software and how to use the Apple Monitors control panel and SuperVideo to control your graphics card and display.

Installing the Supervideo Software

To install the SuperVideo software:
1. Start up your Macintosh.
2. Insert the SuperWdeo Display Utilities floppy disk into the Macintosh floppy disk drive. A window appears that includes the SuperVideo, SuperMac DD INIT, and SuperPower icons.



3. Select the SuperVideo icon and drag it onto the closed System Folder on your hard disk. A dialog box asks if you want to place the file in the Control Panels folder. Click OK.

If you have a Power Macintosh, install the SuperPower file in the same way. (Other Macintosh models do not require this initialization file.)

If you have a Macintosh DuoDock, install the DD INIT file in the same way. (Other Macintosh models do not require this INIT.)

4. Restart your Macintosh.

About the SuperVideo Software

The software controls for your SuperMac graphics card are located in two places:

- The SuperVideo Options dialog box in the Monitors control panel contains options that allow you to configure your SuperMac graphics card. It also contains the software features that work only for the display connected to the SuperMac graphics card. (See “Selecting SuperVideo Options” on page 34.)

- The SuperVideo control panel contains the software features that work with any display connected to your computer. (See “Using the SuperVideo Control Panel” on page 42.)

IMPORTANT: SuperVideo is not compatible with A/UX (Apple's implementation of the UNIX operating system).

About SuperPower

SuperPower optimizes SuperMac's hardware acceleration for a Power Macintosh computer.

About the SuperMac DD INIT

The SuperMac DD INIT makes it easier to use your SuperMac graphics card with an Apple DuoDock.

When you remove a PowerBook Duo from a DuoDock and start up the PowerBook Duo, the configuration setting for your SuperMac graphics card is cleared from **P**arameter **RAM (PRAM)**. This normally would require that you reconfigure the card each time you return the PowerBook Duo to the DuoDock. The SuperMac DD INIT automatically saves the setting so you do not have to reconfigure the card.

The SuperMac DD INIT restores your SuperMac graphics card configuration settings each time you start up your DuoDock system. While the DD INIT is in the process of restoring the settings, your system will restart in the middle of the startup sequence (before the Finder appears) this is normal behavior.

Using the Monitors Control Panel

The Monitors control panel is provided by Apple and is installed on your computer automatically when you install Apple's system software. Use the Monitors control panel to:

- Choose the number of colors (or shades of gray) for your display.

- Arrange the relative positions of two or more displays.

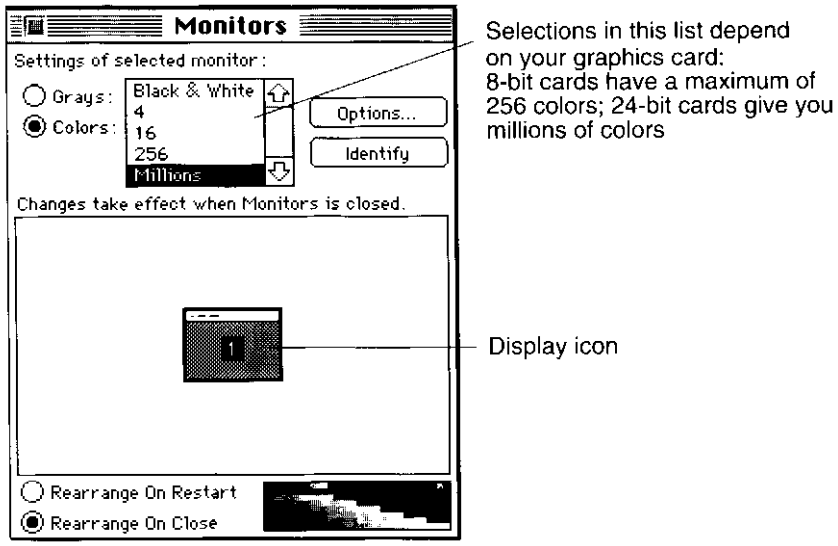
- Move the menu bar to any display.

In addition, you open the SuperVideo Options dialog box through the Monitors control panel.

To open the Monitors control panel:

1. Choose Control Panels from the Apple menu.

2. Double-click the Monitors control panel. The control panel appears.



Older versions of the Monitors control panel will look slightly different.

Note: Some Monitors control panel features described in this section require the latest version of Apple's Monitors control panel (pictured above), plus an Apple extension file called the Display Manager. If you have a Power Macintosh, the latest system software is already installed on your computer.

Choosing the Number of Colors

The number of colors available in the Monitors control panel depends on the type of graphics card you have. To be able to choose millions of colors, you must have a 24-bit graphics card (such as one of the Thunder II, Thunder/24, or Spectrum Power cards). An 8-bit graphics card (such as the Thunder/8) can display up to 256 colors or shades of gray.

To choose the number of colors or shades of gray for your display:

1. Click the icon of the display you want to configure. The color options for that display appear at the top of the window. (If you have only one display connected to your computer, only one icon appears in the control panel.)

2. Click the Colors button or the Grays button.

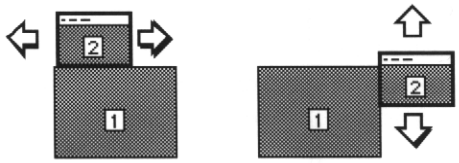
3. Choose the number of colors or grays you want to display.

4. Repeat steps 1-3 for each display connected to your Macintosh.

Arranging Two or More Displays

If you have two or more displays connected to your Macintosh, you can move between them with your mouse pointer. Arrange the monitor icons in the control panel to match the physical positions of the displays in your work area. This allows the pointer to move in a logical way between the displays.

To arrange the positions of two or more displays, drag their icons.

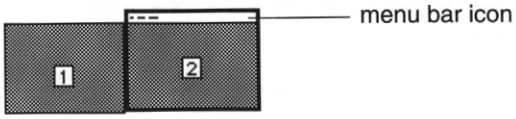


Select Rearrange On Close (in the lower-left corner of the Monitors control panel). When this option is selected, the changes you make in the control panel take effect when you close the Monitors control panel. If Rearrange On Restan is selected, the changes take effect when you restart your computer.

If you have an older version of the Monitors control panel, restart your Macintosh to activate your changes.

Moving the Menu Bar

If you have two or more displays connected to your Macintosh, you can move the menu bar to any display. To move the menu bar, drag it to the new location.



If Select Rearrange On Close is selected in the control panel, the changes you make take effect when you close the Monitors control panel. If Rearrange On Restart is selected, the changes you make take effect when you restart your computer.

If you have an older version of the Monitors control panel, restart your Macintosh to activate your changes.

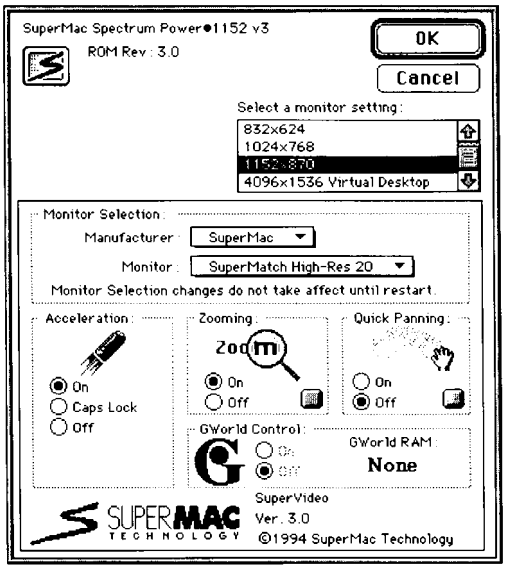
IMPORTANT: Some color applications require that the menu bar appear on a color display.

Selecting Supervideo Options

The SuperVideo Options dialog box in the Monitors control panel allows you to configure your SuperMac graphics card. It also contains the sofiware features that work only for the display connected to the SuperMac graphics card. To open the SuperVideo Options dialog box:

t. Choose Control Panels from the Apple menu and open the Monitors control panel.

2. Double-click the monitor icon for the display that is connected to the SuperMac graphics card (or click the monitor icon, then click the Options button in the control panel). The SuperVideo Options dialog box appears:



Note: The SuperVideo control panel must be closed before you can open the SuperVideo Options dialog box. If the SuperVideo control panel is open when you select Options in the Monitors control panel, a different dialog box appears (see page 46).

The sections that follow describe how to use the dialog box controls. If any controls are dimmed, your SuperMac graphics card does not support them.

Configuring Your Display

The Select a Monitor Setting list and the Monitor Selection panel work together to configure your display. The Monitor Selection panel (two pop-up menus) lists display manufacturers and display types that are compatible with your SuperMac graphics card. A bullet appears in front of the current selection in each pop-up menu.

The Select a Monitor Setting list shows the display modes available for the current Monitor Selection settings. This list also shows the Virtual Desktop options available for the current configuration. (See Using Virtual Desktop" on page 37.)

Changing the Display Configuration

1. Open the SuperVideo Options dialog box.

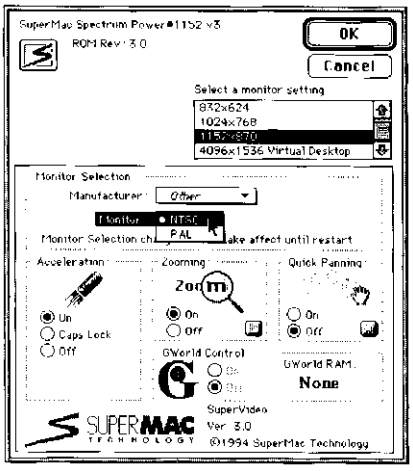
2. Select a manufacturer from the Manufacturer pop-up list.

3. Select a display from the Monitor pop-up list.

4. Click OK.

5. Restart your Macintosh to activate the changes.

If your SuperMac graphics card is connected to a display that supports NTSC (U.S. standard) or PAL (European standard) television modes, select "Other" from the Manufacturer pop-up menu and select "NTSC" or "PAL" from the Monitor pop-up menu.

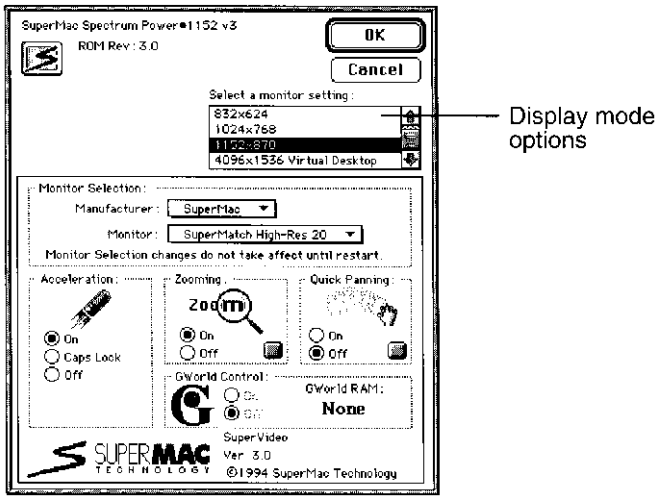


IMPORTANT: If you restart the Macintosh and the image appears blank or scrambled, you have selected an incompatible configuration for your display. If this happens, see “Configuring the Graphics Card” on page 26.

Changing the Display Mode

1. Open the SuperVideo Options dialog box.

2. Select a display mode from the Select a Monitor Setting list.



3. Click OK.

Your changes are applied when you restart your Macintosh.

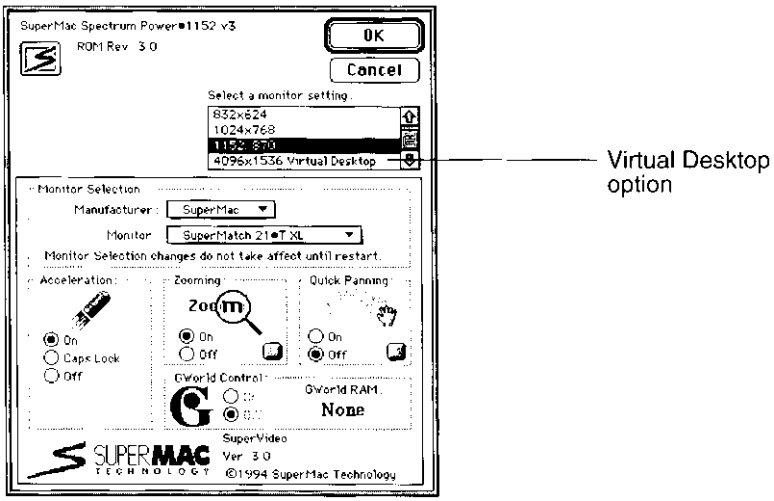
Using Virtual Desktop

Your SuperMac graphics card can create a workspace that is larger than the dimensions of your display. This feature is called the Virtual Desktop. You can use the Virtual Desktop to open multiple applications without overlapping their windows. You can also open documents with page sizes that are larger than the display screen and work with them at actual size without relying on the scroll bars of your application. Your display acts as a “window” into the Virtual Desktop.

The Select a Monitor Setting list in the SuperVideo Options dialog box shows the Virtual Desktop sizes available for your SuperMac graphics card, display type, and current configuration.

To activate Virtual Desktop:

1. Open the SuperVideo Options dialog box.

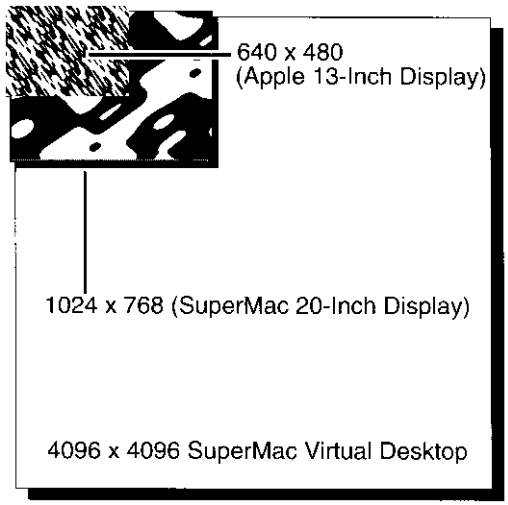


2. Select a Virtual Desktop option in the Select a Monitor Setting list.

3. Click OK.

Your changes are applied when you restart your Macintosh.

SuperVideo automatically activates Panning when you use a Virtual Desktop. (See “Panning Across the Desktop” on page 40.)The smallest desktop size, 640 x 480 pixels, corresponds to the display area of most t3 displays. Some SuperMac graphics cards can support Virtual Desktops as large as 4096 x 4096 pixels.



IMPORTANT: Your SuperMac graphics card uses its video memory for the current Virtual Desktop and for displaying color. When you select a large Virtual Desktop and restart your computer, SuperVideo automatically reduces the number of colons you can show on the screen. When you select the largest Virtual Desktops SuperVideo changes your display colors to Black and White.

Using Zoom

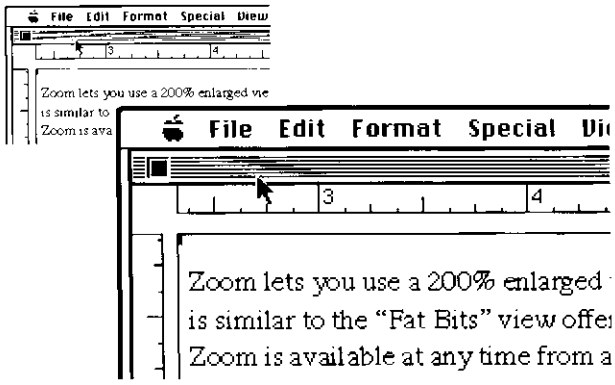
Zoom provides an instant 200% enlarged view of the screen. If you activate this option, you can zoom at any time, from any application. To activate Zoom:

1. Open the SuperVideo Options dialog box.

2. Click the “On” button in the Zooming panel.

3. Click OK.

To use Zoom, press Control-Up Arrow. The screen zooms in around the cursor.
To zoom out, press Control-Down Arrow.



Note: The keys that activate and deactivate Zoom can be changed. See “Changing the Hot Keys” on page 43 for information on how to do this.

When Zoom is active, all applications function normally. SuperVideo automatically activates Panning when you use Zoom (see “Panning Across the Desktop” on page 40).

Zoom is particularly useful when you work with graphics applications. It updates the screen much faster than software-based close-up views and only requires one keystroke to acn.vate- you do not have to select special tools or menu commands.

Panning Across the Desktop

Panning activates automatically when you use Virtual Desktop or Zoom. To pan, move the pointer towards the edge of the screen. When the pointer reaches the edge of the screen, the image on the screen moves to follow the pointer.

Quick Panning

Your SuperMac graphics card provides an additional panning option called Quick Panning. To activate Quick Panning:

1. Open the SuperVideo Options dialog box.

2. Click the “On” button in the Quick Panning panel.

3. Click OK.

To use Quick Panning, hold down Control-Space Bar as you move the mouse. The pointer remains in one location while the desktop image moves around it.

If you click an icon and hold down Control-Space Bar, the selected icon remains with the pointer as the rest of the desktop moves behind it.

Note: The keys that activate Quick Panning can be changed. See “Changing the Hot Keys” on page 43 for information on how to do this.

Using Graphics Acceleration

SuperMac graphics cards provide an accelerated 8-bit mode (256 colors), an accelerated 24-bit mode (16.7 million colors), or both. Refer to the Product Update Notice for your graphics card for information on its acceleration capabilities.

To activate graphics acceleration:

1. Open the SuperVideo Options dialog box.

2. Choose one of the Acceleration panel options:
   - “On” enables graphics acceleration.
   - “Caps Lock” lets you use the Caps Lock key to toggle graphics acceleration on and off.
   - “Off” disables graphics acceleration.
3. Click OK.

When the Caps Lock option is selected, leave the Caps Lock key up to turn acceleration on, or leave it down to turn acceleration off. Use this option to compare the performance of your graphics card with and without acceleration. For example, with the Caps Lock feature activated, drag a window around on the Macintosh desktop. Compare how fast and smooth the

window movement is with the Caps Lock key up (acceleration on) and with the Caps Lock key down (acceleration off).

Using GWorld Memory

Some SuperMac graphics cards support GWorld display memory for fast manipulation of large color images. GWorld memory stores bitmaps and accelerates redraw when the bitmaps are brought back to the screen.

To use GWorld memory:

1. Open the SuperVideo Options dialog box.

2. If the GWorld Control panel shows that you have GWorld RAM installed, click the “On” button to turn the memory on.

3. Click OK.

4. Restart your computer to activate GWorld memory.

For more information about GWorld display memory, see the Introduction at the front of this manual.

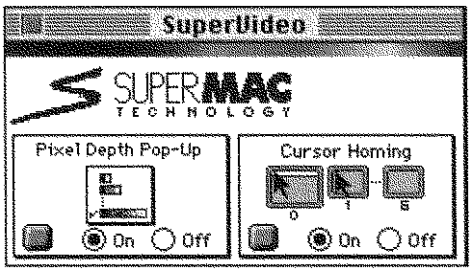
Using the SuperVideo Control Panel

The SuperVideo control panel contains the software features that work with any display connected to your computer.

To open the SuperVideo control panel:

1. Choose Control Panels from the Apple menu.
2. Double-click the SuperVideo control panel icon.

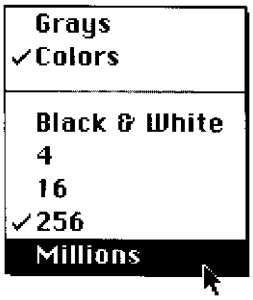
The SuperVideo control panel appears. Its features are described in the following sections.



Using Pixel Depth Pop-Up

The Pixel Depth Pop-Up feature allows you to set the number of colors for any display from any location on the desktop.

- To activate Pixel Depth Pop-Up, click the “On” button in the SuperVideo control panel.
- To use Pixel Depth Pop-Up, hold down the Control and Shift keys, then click the mouse button. A pop-up menu appears. This menu lists the color options for the display on which the pointer is located. Select one of the options.



Note: The keys that activate Pixel Depth Pop-Up can be changed. See “Changing the Hot Keys” on page 43 for information on how to do this.

Using Cursor Homing

When you use a large-screen display, a multi-display Macintosh system or a Virtual Desktop, you might lose track of the pointer. Cursor Homing helps you find the pointer by instantly moving it to the upper-left corner of any display you specify.

- To activate Cursor Homing, click the “On” button in the SuperVideo control panel.
- To use Cursor Homing, simultaneously press Control and a number key that corresponds to one of your displays. For example, to move the pointer to the upper-left comer of screen 1, press Control-i.
- Press Control-0 to move the pointer to the upper-left corner of the display that contains the menu bar.

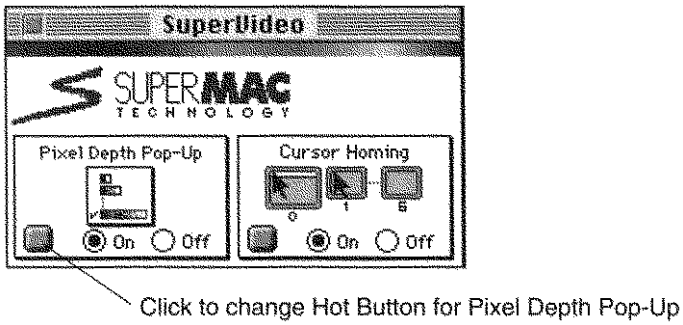
Note: The keys that activate Cursor Homing can be changed. See “Changing the Hot Keys” on page 43 for information on how to do this.

Changing the Hot keys

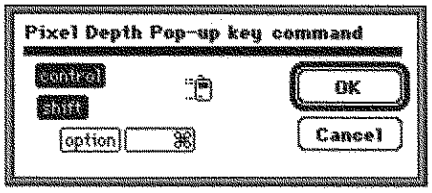
You activate Zoom, Quick Panning, Pixel Depth Pop-Up, and Cursor Homing with keystroke combinations called Hot Keys. Each Hot Key combination consists of a modifier key (either Control, Option, or Shift) and a second key. If another application uses the same key combination as a SuperVideo feature, you can assign a different modifier key to the SuperVideo Hot Key.

To change a SuperVideo Hot Key:

1. Locate the On/Off control for the SuperVideo feature in the SuperVideo Options dialog box, or in the SuperVideo control panel.
2. Click the small gray button that appears next to the controls for the feature.



3. A Hot Key Definition dialog box appears.



4. Select one or more of the modifier keys shown in the dialog box.

The modifier key (or keys) you choose in this dialog box work with the main command key (or mouse click) to activate the SuperVideo feature. You cannot change the main command key for a SuperVideo feature.

For example, the default Hot Key for Pixel Depth Pop-Up is Control-Shift mouse click. You can change the Hot Key for this command to Control-mouse click, Shift-mouse click, Option-mouse click, and so on.

You can select one or more of the modifier keys. You must select at least one modifier key.

5 Click OK to save the new Hot Key definition.

Chapter 4

Problems and Solutions

This section discusses some problems you might encounter while using your SuperMac graphics card, and gives suggestions for solving them. If you are unable to solve a problem yourself, contact your Authorized SuperMac Reseller or call SuperMac Technical Support at (800) 541-7680 or (408) 541-5500 for assistance.

Problem: The screen image flickers and is unreadable or scrambled. However, every few seconds, the screen becomes clear and an image of a keyboard is displayed.

Solution: Either the graphics card was never configured for the display, the graphics card was improperly configured for the display, or the information about the display (in the computer's PRAM) has been corrupted. Press the Space bar when the keyboard image appears clear and centered. (See “Configuring the Graphics Card” on page 26).

Problem: After installing the graphics card and trying the installation procedure, nothing appears on the display.

Solution: Try these:

- Verify that the display is plugged in and turned on.
- Verify that the video cable is firmly seated both at the card end and at the display end. If your display has individual connectors for RGB (Red, Green, and Blue) video, be sure the cable connectors are properly matched to those of the display.
- Verify that the Contrast and Brightness controls on your display are set high enough.
- Open the cover of your Macintosh according to the instructions in Chapter 1 and verify that the graphics card is firmly seated in the computer's expansion slot.

If everything seems to be in order and the screen still does not show an image, the cable could be defective or the computer's expansion slot could be damaged. If another video cable is available, try switching cables. If this does not solve the problem, remove the card and inspect the connectors. If any pins on the connector are damaged, contact your Authorized SuperMac Reseller.

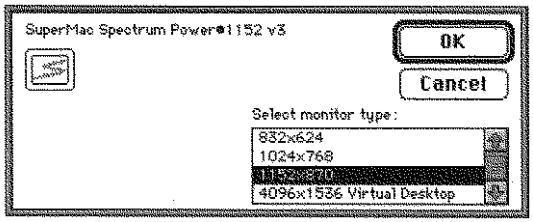
Problem: I changed the display configuration and restarted the Macintosh and now the screen image is scrambled.

Solution: You have selected an incompatible timing for your display. Turn off the Macintosh and hold down the Option key on your keyboard as you restart the Macintosh. When a clear keyboard image appears on the screen, press the Space bar on your keyboard. See “Configuring the Graphics Card” on page 26.

Problem: The SuperVideo control panel icon does not appear in the Control Panels folder.

Solution: The SuperVideo software is not installed in the System Folder of your startup disk. Install the software as described in “Installing the SuperVideo Software” on page 29.

Problem: I cannot open the SuperVideo Options panel. When I click the Options button in the Monitors control panel, a dialog box similar to this appears:



Solution: Try these:

• The SuperVideo control panel is open. Close it and try to open the SuperVideo Options dialog box again.

• The display icon you selected in the Monitors control panel is not the display connected to the SuperMac graphics card. Click OK to close the Options panel, select the icon for the display that is connected to the SuperMac graphics card (ROM version 3.0 or later), then click Options.

• Make sure that the SuperVideo control panel (version 3.0 or later) is in the Control Panels folder in the System folder.

Problem: The Graphics Accelerator has no noticeable effect.

Solution: Try these:

• Use the Monitors control panel to choose Millions of colors as described in “Using the Monitors Control Panel” on page 3t.

• Use the Pixel Depth PopUp feature to choose Millions of colors as described in “Using Pixel Depth Pop-Up” on page 42

• Use the SuperVideo Options dialog box to turn acceleration on as described in “Using Graphics Acceleration” on page 41.

• If you have a Power Macintosh, install the SuperPower file as described in “Installing the SuperVideo Software” on page 29,

Problem: The system does not respond when you press the Space bar during the display configuration.

Solution: Some hard disk partitioning software prevents the system from recognizing the Space bar during the display configuration cycle. To configure your display, wait for the correct setting to reappear, then press the Reset button on your Macintosh. The display image will be clear and readable after the system restarts.

In addition, the problem could be caused by damaged boot blocks on your hard disk.

Problem: An alert appears which says “Sorry, the Control Panel had trouble communicating with your video card” when you attempt to launch the SuperVideo control panel on a DuoDock Macintosh.

Solution: You need to have the SuperMac DD INIT installed in your System Folder. Drag the icon of the INIT to the closed System Folder.

Problem: You encounter conflicts when using a Radius Rocket accelerator card and a SuperMac graphics card in a Macintosh IIci.

Solution: These two cards conflict when you install either of them in NuBus Slot E. Install the cards in other slots to prevent the conflicts.

A

A/UX compatibility 29
Acceleration
 CMYK to RGB redraw 4
 GX acceleration 4
 software controls 28

C

Centris 610/660AV
 installing a graphics card 19
 opening the case 18
 replacing the cover 20
Centris 650
 installing a graphics card 11
 opening the case 10
 replacing the cover 12
Changing the display mode 34
CMYK to RGB redraw acceleration 4
Colors
 choosing the number 30
 choosing the pixel depth 39
Configuring the graphics card
 multiple cards 27
 single card 24
 space bar doesn't work 25
 tips 25
 using SuperVideo 32
Control panel
 Monitors 31
 SuperVideo 38
Cursor homing 39

D

Display
 arranging two or more 31
 configuring 25
 configuring multiple 27
 configuring with SuperVideo 33
 placing and connecting 24
Display mode, changing 33
DuoDock INIT 28

E

Expansion Card Guide
 purchasing 6
 removing 17

F

Finding the pointer (cursor) 39

G

Graphics acceleration
 CMYK to RGB redraw 4
 Image Processing Acceleration 4
 problems and solutions 41
 software controls 28
Graphics card
 configuring 24
 configuring multiple cards 27
 configuring with SuperVideo 32
 reconfiguring 26
GWorld memory
 description 5
 installing 21
 SIMM installation 22
 SIMM removal 23
 SIMM specifications 21
 socket designations 21
 software control 40
GX acceleration 4
GX cards 4

H

Homing the pointer (cursor) 39
Hot keys 40

I

Image Processing Acceleration 4
Installing graphics cards 1-20
 precautions 6
Installing SuperVideo software 28
IPA cards 4

K

Key commands for software controls 40

M

Macintosh
 compatible models 6
Macintosh Centris see “Centris” Macintosh II, IIx, IIcx, IIci, IIfx
 installing a graphics card 7
 opening the case 7
 replacing the cover 9

Macintosh IIvi/IIvx
installing a graphics card 8
opening the case 7
replacing the cover 9
Macintosh Quadra see “Quadra”
Manufacturer pop-up list 33
Menu bar
moving to another display 31
Monitor pop-up list 33
Monitor Selection panel 33
Monitors control panel
arranging multiple displays 31
choosing the number of colors 30
moving the menu bar 33
opening 29

N

NTSC mode 33
NuBus adapter
illustration 19
Macintosh model list 6

P

PAL mode 33
Panning 39
Performa 600
installing a graphics card 11
opening the case 10
replacing the cover 12
Pixel Depth pop-up menu 39
Power DSP 4
Power Macintosh
installing SuperPower software 28
SuperPower software description 29
Power Macintosh 6100 installing a graphics card 19
opening the case 18
replacing the cover 20
Power Macintosh 7100
installing a graphics card 10
opening the case 7
replacing the cover 12
Power Macintosh 8100 installing a graphics card 17
opening the case 16
replacing the cover 18
PowerBook DuoDock
DD INIT description 29

INIT installation 28
PRAM erased 27
Precautions during installation 6

Q

Quadra 6l0/660AV
installing a graphics card 19
opening the case 18
replacing the cover 20
Quadra 650
installing a graphics card 11
opening the case 10
replacing the cover 12
Quadra 700
installing a graphics card 14
opening the case 13
replacing the cover 15
Quadra 800/840AV
installing a graphics card 17
opening the case 16
replacing the cover 18
Quadra 900/950
installing a graphics card 14
opening the case 13
replacing the cover 15
Quadra Expansion Card Guide purchasing 6
Quick panning 39

R

Radius Rocket 43
Reconfiguring a graphics card 26
Resolution see “Display mode” 33

S

Select a Monitor Setting list 33
SuperMac DD INIT
description 29
installing 28
SuperPower software
description 29
installing 28
SuperVideo
choosing a monitor 33
configuring the display 33
control panel 38
control panel/dialog box conflict 32, 42

SuperVideo (cont.)
description 29
installing 28
key commands 40
NTSC and PAL selections 33
opening the Options dialog box 33

T

Technical Support 48, 49
Television mode 33
Thunder II 4

V

Virtual Desktop 34

Z

Zapped PRAM 26
Zoom 36

U.S. Federal Communications Commission Notice

This device complies with Part 15 of the FCC Rules, Operation is subject to the following two condition: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits of 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 does cause 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:

1. Reorient or relocate the receiving antenna.
2. Increase the separation between the equipment and receiver.
3. the equipment into an outlet on a circuit different from than which the receiver is connected.
4. Consult the dealer or an experienced radio/TV technician for help.

IMPORTANT: The use of a non-shielded interface cable with this equipment is prohibited.

CAUTION: Changes or modifications not expressly approved by the manufacturer responsible for compliance could void the user's authority to operate

the equipment.

Canadian DOC Notice/Avis DOC

NOTICE: This digital apparatus does not exceed the Class B limits for radio noise from apparatuses as set out in the Radio Interference Regulations of the Canadian Department of Communications.

AVIS: Le present appareil numerique n'emet pas de bruits radioelectriques depassant les limites applicables aux appareils numeriques de Classe B prescrites dans le reglement sur le brouillage radioe'lectrique.

Where to Find More Help

If you are unable to solve a problem yourself, contact your Authorized SuperMac Reseller, or call SuperMac Technical Support at (800) 541-7680. SuperMac Technical Support is available Monday through Wednesday, and Friday from 6:00 AM to 5:00 PM (Pacific time); and on Thursday from 6:00 AM to 4:00 PM. You can also FAX your questions or comments to SuperMac Technical Support 24 hours a day at (408) 541-5008.

SuperMac also maintains a bulletin board with the latest information about SuperMac products and software updates. You are invited to post questions about SuperMac software and hardware products, and to share tips and shortcuts you've found while working with our products. The bulletin board supports 300/1200/2400/9600 bps and 14.4 kbps, and is on-line 24 hours a day at (408) 541-6190. Your modem should be set to 8 data bits, no parity, 1 stop bit and full duplex (8-N-1-FULL).

SuperMac also maintains bulletin boards and forums on AppleLink, CompuServe, and America Online. To reach the SuperMac bulletin board on AppleLink, open the Third Parties (P-Z) folder inside the Third Parties folder. To reach the SuperMac bulletin board on America Online, choose Keyword from the Go To menu and type in the keyword SuperMac. To reach the bulletin board on CompuServe, choose Go from the Services menu and type in MacBVen. This takes you to the Macintosh B-Vendor Forum. Go to section 16 for SuperMac information.

You can also reach SuperMac on the following electronic information services:

AppleLink®: SMT.TECH
CompuServe®: 76004,2330
America Online'1: SuperMac
Internet: SuperMac@ aol.com
76004.2330@compuserve.com

SuperMac Technology, Inc.
215 Moffett Park Drive
Sunnyvale, CA 94089-1374 USA