MACINTOSH DISPLAY CARD 8•24 GC

The Macintosh Display Card 8•24 GC is a high-performance NuBus video card with graphics acceleration capability. It can be used in any Macintosh computer with a NuBus expansion slot and with any Apple monitor. The number of colors you can get on a computer with the Macintosh Display Card 8•24 GC depends on the monitor you're using. The card can support up to 24-bit color (16 million colors) on certain Apple monitors, up to 16-bit color (65 thousand colors) on other Apple monitors, and up to 8-bit color (256 grays or colors) on all Apple monitors -- in effect displaying all on-screen images with photographic quality.

The graphics acceleration capability of the card is provided by a graphics coprocessor that operates automatically once you install the 8•24 GC file in your startup System Folder. The 8•24 GC file is provided on the 8•24 GC disk.

Some graphics-intensive applications may perform better if additional memory is added to the card before you install it in your computer. For more information about the upgrade procedure and which applications are likely to benefit, contact your authorized Apple dealer or representative.

This guide describes

- the system configuration you need to support this card

- how to install the card

- how to install and use the software

- how to solve problems you may encounter while using the card

System Requirements

To use the Macintosh Display Card 8•24 GC, you need a Macintosh computer with at least one NuBus expansion slot, a monitor, and the following additional hardware and software:

- a hard disk

- 3 MB of RAM or more

- system software version 7.0 or later

The instructions on the following pages include more details about these requirements and how you can configure your system to meet them.

Installing the Card

You should use only one Macintosh Display Card 8•24 GC in your computer system.

!! IMPORTANT: If installing the 8•24 GC card fills all available expansion slots in your computer, check the total power consumption of the cards to make sure they do not collectively exceed the recommended limit for your Macintosh computer. The Macintosh Display Card 8•24 GC draws 20 watts of 5-volt power. (The Macintosh II, IIx, and IIfx provide 83.4 watts of power for six slots; the Macintosh IIcx and IIci provide 41.7 watts for three slots. See the documentation that came with your computer and cards for more information.) !!

- If you are installing this card as part of the process of setting up a new computer, follow the installation instructions in the setup guide that came with that computer. However, you should read and save this manual for more information about your video card.

- If you are adding or replacing a card in a Macintosh with more than one expansion slot (that is, any Macintosh other than a Macintosh IIsi), follow the installation

instructions in the next section.

- If you're adding or replacing a card in the Macintosh IIsi, go to the section "Installing the Card in a Macintosh IIsi."

Installing the card in a Macintosh with more than one expansion slot

This section gives instructions for installing the Macintosh Display Card 8•24 in any kind of Macintosh, except the Macintosh IIsi (which has only one expansion slot).

Begin the card installation process with your computer shut down.

1. Press the power button on the back of the monitor to turn it off.

This precaution protects the card from possible electrical damage when you reconnect your system components later.

2. Disconnect the monitor from the computer, if it's connected.

Disconnect both the video cable and the monitor power cord from the computer.

3. Remove the lid from the computer.

The setup guide that came with your computer provides instructions.

4. Touch the metal part of the power supply case inside the computer to discharge any static electricity that might be on your clothes or body.

Always do this before you touch any parts, or install any components, inside the computer.

5. If you are replacing a card, remove the card you are replacing by pulling straight up on the top edge of the card. (If you are adding rather than replacing a card, skip this step.)

Avoid wiggling the card as you remove it. Don't touch the connector on the bottom.

Now go to step 7.

6. If you are adding a card, remove the metal shield (if there is one) and plastic cover plate behind the expansion slot you want to use.

Your Macintosh may not have a metal shield, or it may look slightly different from the one pictured.

7. Remove the Macintosh Display Card 8•24 GC from its static-proof bag.

Hold the card by its top edge. Avoid touching the connector on the bottom of the card.

8. Align the card over the expansion slot.

9. Press down firmly on the card until the connector is seated.

Don't force the card. If you meet a lot of resistance, pull it out and try again.

To see if the card is properly connected, lift it gently. If it resists and stays in place, it's connected.

10. Replace the lid on the computer.

11. Reconnect your monitor.

Reattach the power cord to the computer and the video cable to the port on the card you just installed.

12. When all cable connections are secure, press the power button on the back of your monitor.

The next time you turn on the computer, the monitor will start up, supported by the new video card you just installed.

Installing the card in a Macintosh IIsi

Begin the card installation process with your computer shut down.

1. Press the power button on the back of the monitor to turn it off.

This precaution protects the card from possible electrical damage when you reconnect your system components later.

2. Disconnect the monitor from the computer, if it's connected.

Disconnect both the video cable and the monitor power cord from the computer.

3. Remove the lid from the computer.

- If your computer has a security screw on the back panel, remove it.

- Pull up on the two latches at the rear corners of the case and lift up the back of the lid.

- Lift the lid straight up and away from the case.

4. Touch the power supply case inside the computer to discharge any static electricity that might be on your clothes or body.

Always do this before you touch any parts, or install any components, inside the computer.

5. Remove the cover from the access port on the back panel of your computer and set is aside.

Use your thumb to push the access port cover outward. (The access port cover may already have been removed, if you've installed another NuBus card in the computer.)

6. If you're replacing a card, remove the adapter card assembly from the computer by pulling straight up along the left edge of the assembly (as you look at the computer from the front).

Avoid wiggling the assembly as you remove it. Avoid touching the connector on the bottom.

7. If you're replacing a card, remove the old card from the adapter card assembly by pulling straight up on the top edge of the card.

8. Attach the Macintosh Display Card 8•24 GC to the adapter card assembly.

- Rest the assembly on the edge of a flat surface, such as your desk, with the metal bracket pointing up.

- Slide the card into the bracket. Make sure that the pin on the bracket is aligned with the hole on the metal end of the card.

- Press gently to push the connectors together.

When the card is attached correctly, the pin fits into the hole and the guide fits into the slot, as shown in the illustration above.

9. Insert the expansion slot connector on the adapter card into the expansion slot in the computer.

Line up the connector with the slot. Then press down gently but firmly on the adapter card until the connector is fully inserted.

10. Attach the thumbscrews.

Position the bracket against the access port while inserting and tightening the thumbscrews.

The thumbscrews anchor the bracket and card in place.

11. Replace the lid on the computer.

- Lower the lid onto the case, lining it up from the back of the computer to the front, and press firmly on the back corners until the rear latches snap into place.

- Replace and tighten the security screw (if there is one).

12. Reconnect your monitor.

Plug in the power cord and attach the video cable to the port on the card you just installed.

13. When all cable connections are secure, press the power button on the back of your monitor.

The next time you turn on the computer, the monitor will start up, supported by the new video card you just installed.

Installing the 8•24 GC Software

To benefit from your video card's acceleration capability, you need to install the 8•24 GC file in your System Folder. The file is provided on an 800K floppy disk labeled 8•24 GC.

1. Insert the 8•24 GC disk into a floppy disk drive.

2. Find the 8•24 GC icon and drag it to the icon of the System Folder on your startup hard disk.

Do not drag it to the System Folder window. If you do, the 8•24 GC software won't be installed.

A dialog box appears, asking whether you want to put the 8•24 GC file into your Control Panels folder.

3. Click OK in the dialog box.

4. Choose Restart from the Special menu.

Choosing Restart ejects the floppy disk and allows the computer and video card to recognize the new software you just installed.

Turning the Software On and Off

Once you have installed the 8•24 GC file in your System Folder and restarted your computer, the graphics and acceleration capabilities of your new video card are in

effect. You need do nothing more with either the card or the software.

However, there may be situations when you will want to turn acceleration off. Some application programs may not work with acceleration on. If unexpected objects appear on your screen or your program exhibits other problems, try turning acceleration off.

To turn acceleration off, follow these steps.

1. Choose Control Panels from the Apple menu.

2. Double-click the 8•24 GC file in the Control Panels window.

3. In the 8•24 GC control panel, click the icon with a circled line through it to turn acceleration off.

4. Close the 8•24 GC control panel by clicking its close box.

The change takes effect immediately;

Another way to turn off the 8•24 GC software for a work session is to hold down the Shift key at startup. If you do this, you need to restart the computer to turn the software back on again.

Changing the Shade of White shown On the Screen

When used with the Macintosh Display Card 8•24 GC, certain monitors display a shade of white that's similar to the whiteness of a piece of paper. This shade of white -- called the page-white gamma option -- is different from the standard white normally displayed on Macintosh screens.

Page-white gamma makes it easier to create on the screen exactly what you want to see printed on white paper. However, this shade of white isn't as bright as the standard white on Macintosh screens. If you want to change to the standard (brighter) shade of white, follow these steps:

1. Choose Control Panels from the Apple menu.

2. Double-click the Monitors file in the Control Panels window.

3. In the Monitors control panel, hold down the Option key and click the Options button.

4. Click the option Use Special Gamma to turn it on.

When it's turned on, an X appears in the checkbox.

5. Select the Mac Std Gamma option by clicking it in the list.

6. Click OK.

The new setting takes effect in a few seconds and remains in effect until you change it again.

7. Close the Monitors control panel by clicking its close box.

Using Television Equipment

If you want to use the Macintosh Display Card 8•24 GC with color television equipment -- such as an NTSC (American television standard) or a PAL (European television standard) monitor, or a videocassette recorder -- you need a color composite video adapter. You can ask your authorized Apple dealer for information about these special adapters.

Minimizing flicker

Televisions typically display a noticeable flicker. When the Macintosh Display Card 8•24 GC is used with a television monitor, it automatically minimizes flicker, using a feature called Apple Convolution. The Macintosh Display Card 8•24 GC comes with this feature turned on, and it should be left on. However, if you need to turn it off, follow these steps:

1. Choose Control Panels from the Apple menu.

2. Double-click the Monitors file in the Control Panels window.

3. In the Monitors control panel, click the Options button.

4. Click the "Unconvolved" option you want.

5. Click OK.

6. Close the Monitors control panel by clicking its close box.

7. Choose Restart from the Special menu.

Troubleshooting

The Macintosh Display Card 8•24 GC is designed to be easy to install and use. If you encounter problems, they are probably related to your hardware or software configuration rather than to the card itself. This section describes problems you may encounter and explains how to solve them.

!! WARNING: If you have a problem with your Macintosh Display Card 8•24 GC and nothing presented in this chapter solves it, take the card to your Apple authorized dealer or service provider. Attempting to repair the card yourself may void the Limited Warranty. Contact your authorized Apple dealer or service provider for additional information about this or any other warranty question. !!

Problem: The card has been correctly installed, but now the Macintosh won't start up.

Possible explanation: The total power consumption of the cards in your computer may exceed the recommended limits for your Macintosh, leaving insufficient power for the hard disk to start up.

What to do: Check the total power consumption of your cards to make sure it doesn't exceed the limits recommended in the documentation that came with your computer. If your cards use more power than recommended, you may need to remove one of the cards.

Problem: When you start up the computer, the 8•24 GC icon has a circled line through it.

Possible explanation: The 8•24 GC software may be turned off.

What to do: Open the 8•24 GC control panel and turn the software on, then restart the computer.

Possible explanation: There might be a problem with your hardware or software configuration.

What to do: Check the 8•24 GC control panel for messages.

Problem: While you are using an application program, a dialog box appears mentioning a problem related to the 8•24 GC card.

Possible explanation: Your program might have compatibility problems with the 8•24 GC card.

What to do: Turn off the 8•24 GC software before using the program (see page 10).

Warning messages

If the Macintosh detects any of the circumstances listed in this section, a warning message appears in the 8•24 GC control panel.

- Only one of the 8•24 GC cards installed will be used as the graphics coprocessor.

If you have more than one Macintosh Display Card 8•24 GC in your computer, only one will be used for acceleration; the other will function as a high-resolution video card. (Drawing to both screens will be accelerated, but it will be noticeably faster to the screen that displays the menu bar.)

- Please restart to activate the 8•24 GC software.

This message appears in two circumstances:

If you have just dragged the 8•24 GC icon into your System Folder, you need to choose Restart to turn acceleration on.

If you turned acceleration off by holding down the Shift key at startup, you need to choose Restart to turn acceleration back on.

Error messages

If the Macintosh detects a problem, one of the error messages listed in this section appears in the 8•24 GC control panel, and the 8•24 GC software turns itself off automatically. After correcting the problem, you need to restart the computer to turn on the software.

- System 7.0 or later is required.

Contact your authorized Apple dealer or representative if you need to upgrade your system software.

- The 8•24 GC card is not installed.

You need to install the card according to the instructions beginning on page 2 of this guide.

- At least three megabytes of memory are required.

Contact your authorized Apple dealer or representative if you need to add more memory to your computer.

- A hardware error has been detected on the card.

The card may be defective. Consult your authorized Apple dealer or representative.

- A software error has been detected.

You are using an application program that's not compatible with the 8•24 GC software. To use the program, you need to turn acceleration off (see page 10 for instructions).

- There is a problem with the DRAM expansion memory on the card.

The memory expansion chips on your video card may be defective or improperly installed. Consult your authorized Apple dealer.