

HARMONi™ G3

iMac® Processor/FireWire® Upgrade

Quick Start Guide for HARMONi G3

iMac and Operating System Compatibility

The HARMONi G3 iMac processor/FireWire upgrade is compatible *only* with iMac® 233, 266, and 333 MHz models (Revisions A-D); do not install this product into models with faster (350 MHz or higher) processors. If you are unsure which iMac model you have, look at the front of your computer; compatible models have tray-loading CD-ROM players.

At this printing, the HARMONi G3 iMac processor/FireWire upgrade is compatible with Mac® OS 8.1 through the latest version of OS X. FireWire requires OS 8.6 or later; best compatibility with FireWire devices is achieved with OS 9.1 or later, and OS X Version 10.1 or later. For up-to-date Mac OS compatibility information, check our website at www.sonnettech.com.

You Should Have

The following items should be included in your product package:

- HARMONi G3 processor upgrade card
- FireWire adapter card
- Adapter card power cable
- Standoff for adapter card
- Replacement side plate
- Three small screws
- Plastic wire clamp
- Processor card removal tool
- Sonnet Installer CD

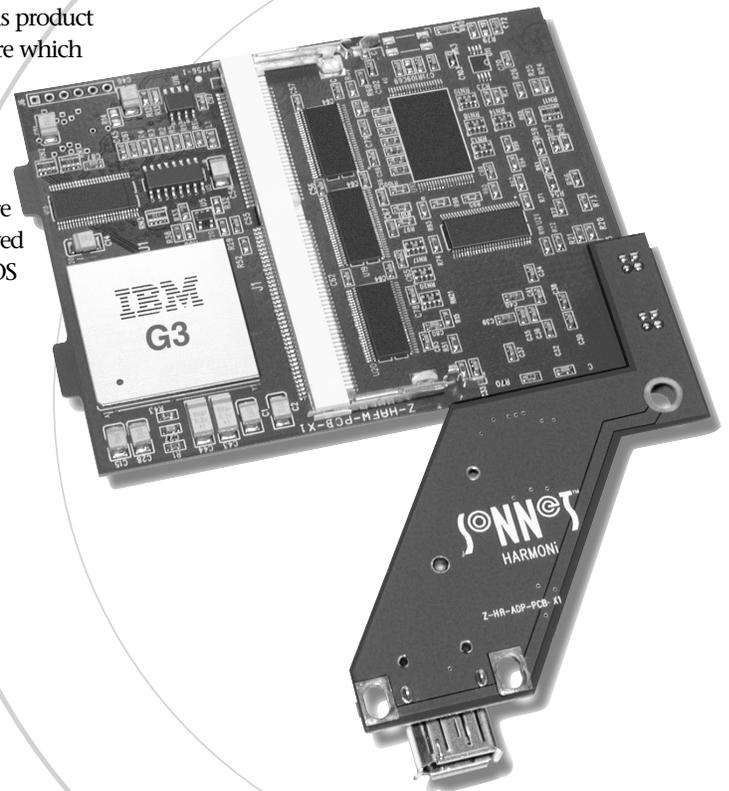
The following items are required for installation:

- #1 and #2 Phillips screwdrivers
- Flat blade screwdriver
- Soft, clean towel

System Requirements

The HARMONi requires the following in order to work in your system:

- Fully operational original processor (you must install Sonnet software prior to installing the HARMONi parts)
- FireWire 2.3.3 or later (*this driver should be installed after HARMONi has been installed; instructions follow*)



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Software updates and links are available from the Sonnet web site at www.sonnettech.com.

Remember to register your product online at <http://registration.sonnettech.com> to be informed of future upgrades and product releases.

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Support Note: Please familiarize yourself with the following instructions before beginning the installation. If you feel you are unable to install the computer hardware, please contact a qualified computer technician. **Sonnet strongly recommends that a qualified technician perform this installation.**

Before proceeding with the installation, we recommend that you make a backup of important information on your hard drive prior to installing new hardware or software.

Multiple Upgrade Recommendation

If you intend to perform multiple hardware upgrades to your iMac, we recommend that you complete the installation of the HARMONi first, then install the remaining upgrades; *complete each upgrade and test it before proceeding to the next.*



Support Note: Before proceeding with any other part of this installation, you must ensure that your system has the latest firmware installed. If you have already installed Mac OS 9 or later, you may skip this section and go to the next section, Install Sonnet Software.

Update iMac Firmware

If your iMac is running a Mac OS version prior to 9.0, you must update the system firmware, unless you have already done so in the past.

1. Insert the Mac OS 9.x CD into your computer's CD-ROM drive. Open the CD Extras folder and locate the Firmware Update folder containing the About iMac Firmware Update 1.2 document.
2. Double-click the About iMac Firmware Update 1.2 file. Print and read the instructions. Close the document.
3. Carefully follow the instructions to update the firmware on your iMac; if the firmware on your iMac is up to date, no update will occur.



Support Note: *Before proceeding with the HARMONi hardware installation, you must run the Crescendo/WS and HARMONi Install application.* Otherwise, your system will not operate with HARMONi installed.

Also, ensure your system is NOT booted in Mac OS X, nor Mac OS X Classic mode; the Sonnet installation software will only function in Mac OS 8.1 through OS 9.x. Quit any open applications and disable any security software installed in your system. *Please note that this installer only needs to be run once, prior to the hardware installation.*

Install Sonnet Software

1. Insert the Sonnet Installer CD into your computer's CD-ROM drive. Double-click the HARMONi Installer icon to start the utility.
2. Click the Install button to start the software installation; the process takes just a few seconds.
3. After the software installation is complete, click the Shut Down button to shut down your computer.

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Support Note: When handling computer products, take care to prevent components from being damaged by static electricity; avoid working in carpeted areas. Handle electronic components only by their edges and avoid touching connector traces and component pins.

Shut Down and Open Computer

1. If you have not already done so, shut down your iMac. If the computer has been on for any length of time, wait a couple of minutes for it to cool before beginning the installation.
2. Disconnect all cables from your iMac, including the power cable. If necessary, move your iMac to an area with a flat, level surface where you can freely work.
3. To protect the special glare-reduction coating on your iMac's monitor, place a clean, soft towel on your work surface (**Figure 1**). Grasping the built-in handle, carefully lift and tilt the iMac over so that the screen is resting face down on the towel (**Figure 1**).
4. Locate and remove the screw (#1 Phillips) securing the lower back cover (**Figure 2**). Using the built-in handle, pull the cover toward you and away from the computer; set the cover and screw aside.

Remove Logic Board/Drive Assembly

1. Touch the metal surface of the logic board/drive assembly to discharge static from your body (**Figure 3**).



Support Note: To avoid regenerating a static charge in your body, do not walk around the room until after you finish the installation, reassemble and close the computer.

When disconnecting cables from the logic board/drive assembly, do not pull on the wires; always pull on the connectors.

2. Pull out the cables from beneath the clamp on the right side of the logic board/drive assembly, and remove the screw, if present, securing the clamp on the left side (**Figure 4**). Using a flat blade screwdriver, unscrew the thumb-screws securing the large connector to the assembly, then disconnect the cable.
3. Disconnect the remaining connectors from the logic board/drive assembly (**Figure 5**). Remove Connector 1 by pressing in its locking tab and pulling the connector straight out. Remove Connector 2 by pulling it straight out; if there is a bracket around this connector, remove it along with the connector. Remove connector 3, if present, by pulling it straight out.

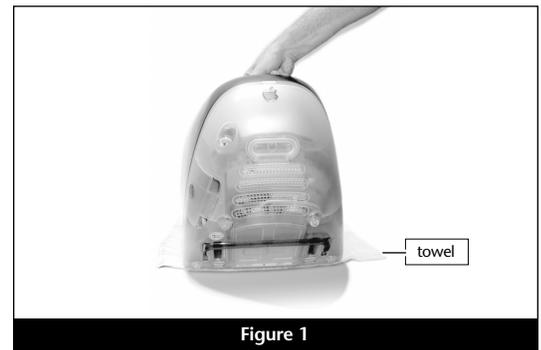


Figure 1

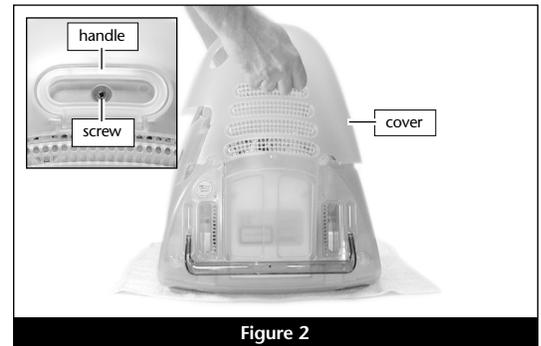


Figure 2

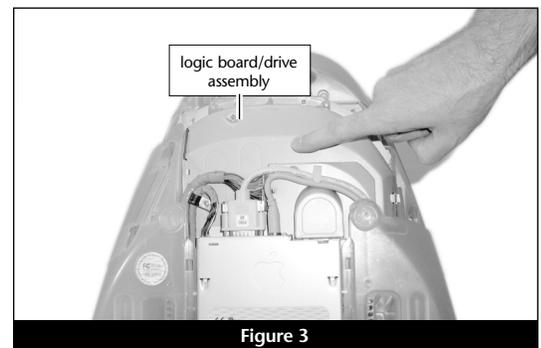


Figure 3

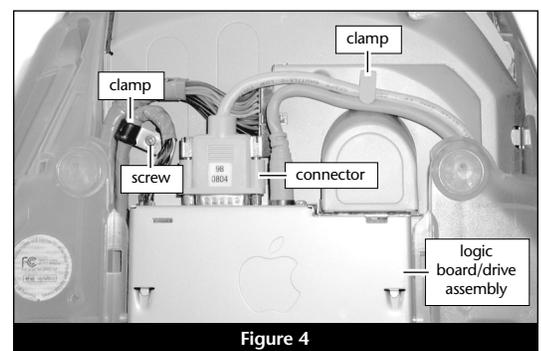


Figure 4

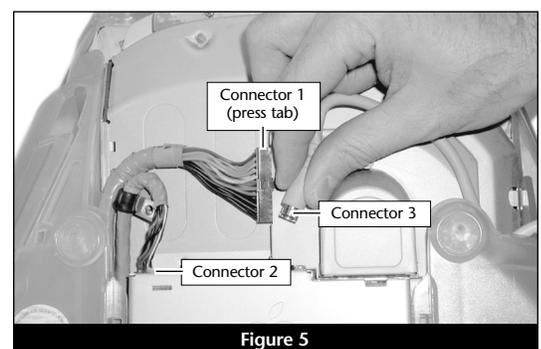


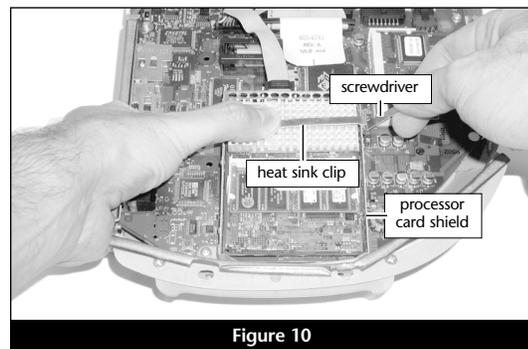
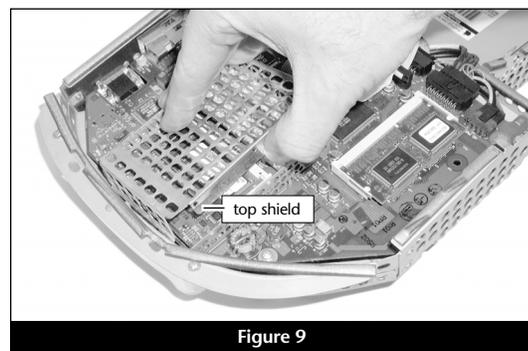
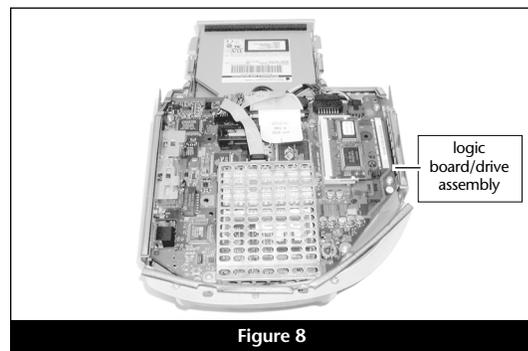
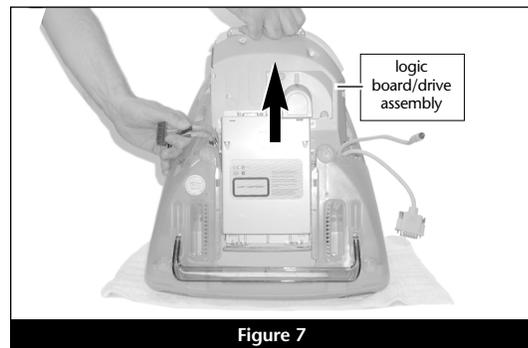
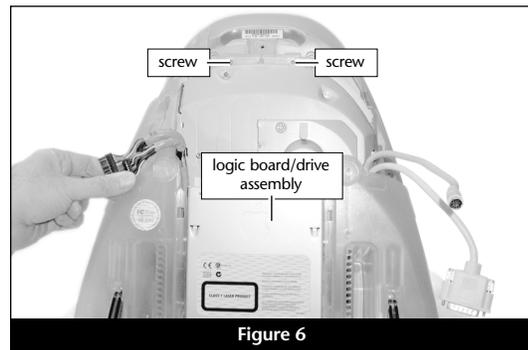
Figure 5

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4. Move the cables off to the sides of the logic board/drive assembly (**Figure 6**).
5. Locate the two screws (#2 Phillips) inside the plastic handle (**Figure 6**), then remove them; set the screws aside.
6. Using the handle, carefully lift the logic board/drive assembly out of the computer (**Figure 7**); *when it becomes possible, use both hands to support the assembly.*
7. Set the logic board/drive assembly on a clean, flat surface, with the curved portion of the assembly facing you (**Figure 8**).

Remove Processor Card

1. Unhook a long edge of the metal shield covering the processor card, then remove it from the logic board/drive assembly (**Figure 9**).
2. While grasping the underside the logic board/drive assembly and the top of the heat sink clip with one hand, use a flat blade screwdriver to carefully unhook the heatsink clip from the processor card shield (**Figure 10**). Remove the clip and set it aside.



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3. Remove the heatsink and set it down with the fins face down (Figure 11).
4. While holding down the logic board/drive assembly with one hand, insert the hook end of the processor card removal tool under the bottom left corner of the processor card, then *gently* and slowly pull straight up on the edge of the card to disengage it from the logic board (Figure 12). *Do not attempt to pry out the processor card; you may damage it.*

Move RAM From Processor Card to HARMONi Processor Card

Depending on the configuration of your iMac, your processor card may have RAM (memory) modules installed on both sides of the processor card.



Support Note: Do not touch the RAM modules' connectors; always handle RAM only by its edges.

1. Turn the processor card over so the two long connectors are face up (Figure 13). Grasping the processor card by its edges, gently pull apart the retainer clips on both sides of the RAM module (Figure 13); the module will pop up. Remove the module, then set it and the processor card aside on a static-free surface.
2. Remove the HARMONi processor card from its anti-static bag, making sure to handle the card by its edges (Figure 14). If present on the card, remove the foam block protecting the small 4-pin connectors.



Support Note: If you are installing two RAM modules into the HARMONi card, be sure to install them into the expansion slots that correspond to those on the original processor card. When you install RAM, note that the modules are designed to fit into the slot only one way; align the notch in the module to the guide in the slot.

3. Turn the HARMONi processor card over, so that the two long connectors are face up (Figure 15). Align the RAM module removed from the bottom of the original processor card with the RAM slot on the HARMONi processor card, and insert it at a 30° angle, all the way into the slot (Figure 15).

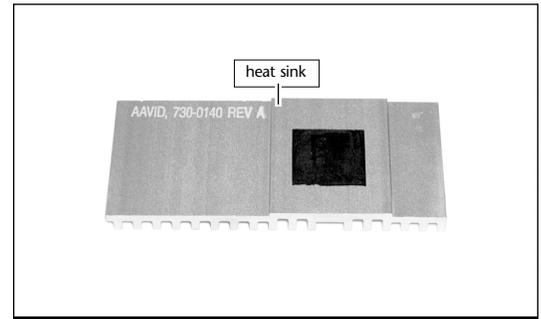


Figure 11

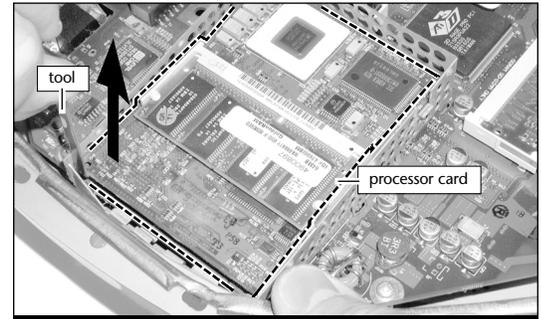


Figure 12

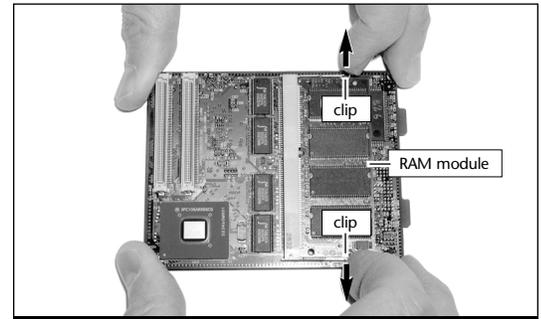


Figure 13

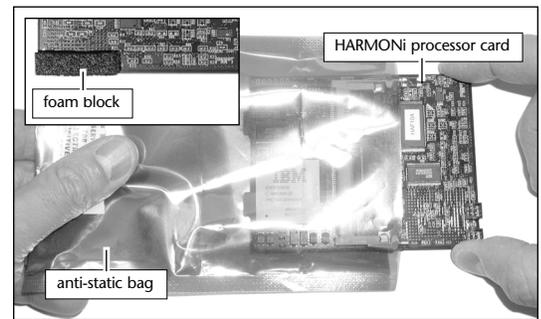


Figure 14

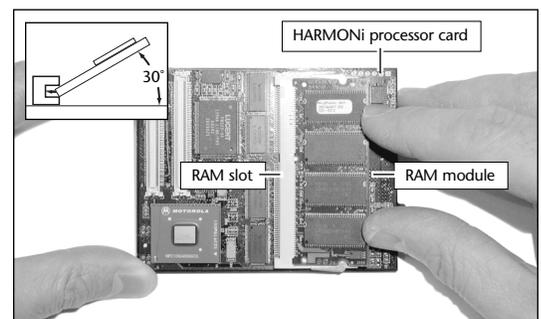


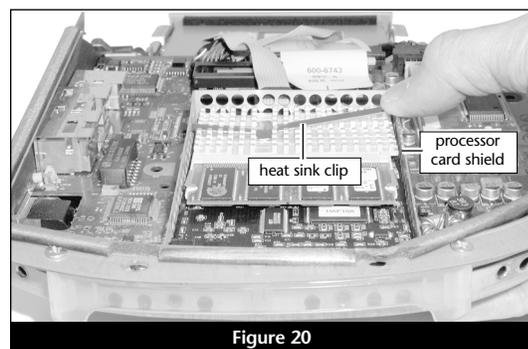
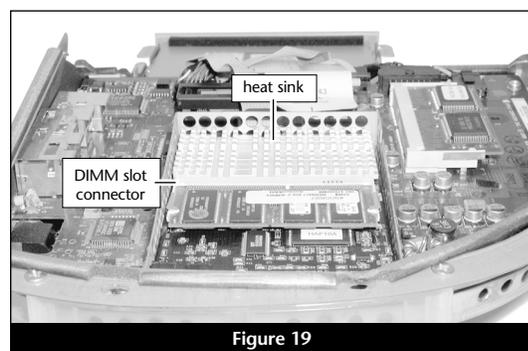
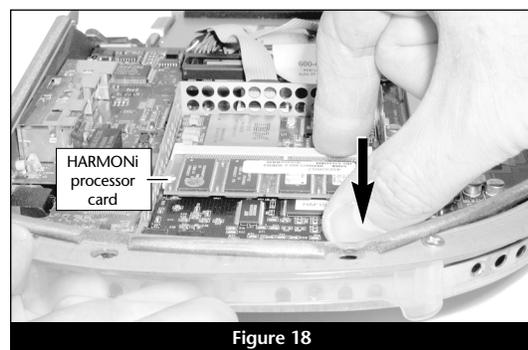
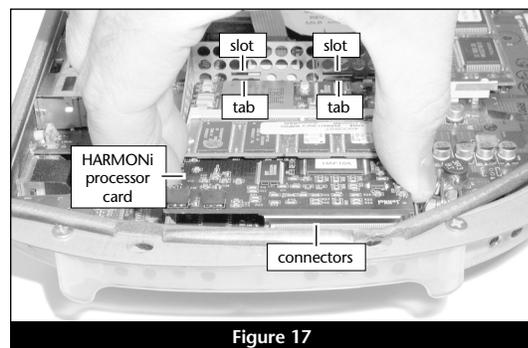
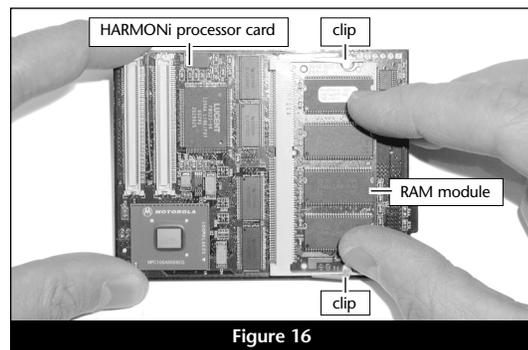
Figure 15

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4. Gently push down on the RAM module until the retainer clips snap into place (Figure 16).
5. If there is a second RAM module installed on the reverse side of the processor card, remove it, then install it on the HARMONi processor card following the same procedure as for the first RAM module.
6. Place the original processor card in the HARMONi processor card's anti-static bag, and store it in a safe place.

Install the HARMONi Processor Card

1. Turn the HARMONi processor card so that the small 4-pin connectors are face up, and the tabs on the edge of the card are facing away from you (Figure 17). Grasping the card by its edges, carefully insert its tabs into the slots in the processor card shield, then gently move the card around until the connectors on the bottom of the card engage with the corresponding connectors on the logic board (Figure 17).
2. Firmly press on the bottom right portion of the HARMONi processor card until the connectors are completely coupled (Figure 18).
3. With the two small sections of fins on the left, place and center the heatsink on top of the HARMONi processor card, above the DIMM slot connector (Figure 19).
4. Insert the short side of the heat sink clip into the slot in the processor card shield, lay the clip across the heat sink, then push the clip down on the right side to latch onto the processor card shield (Figure 20).

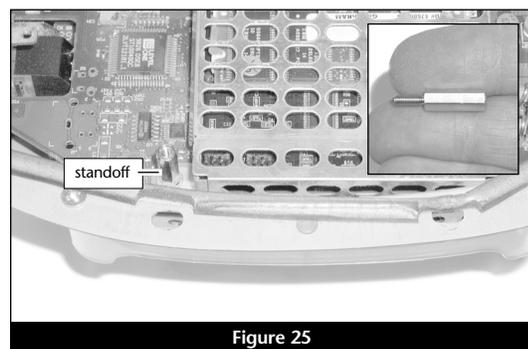
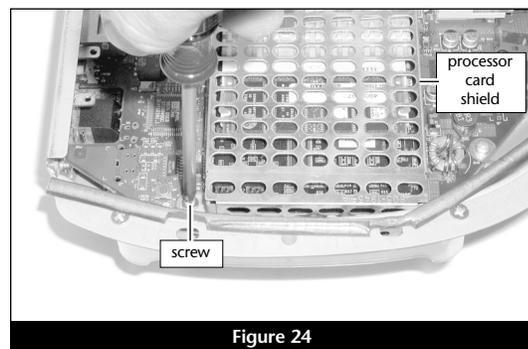
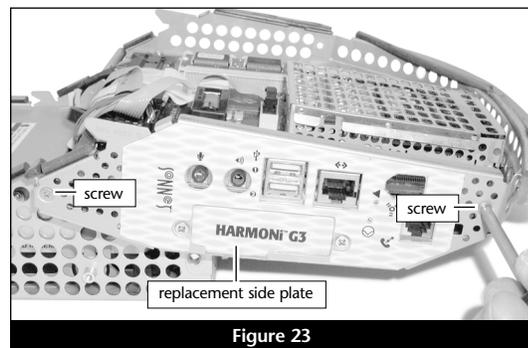
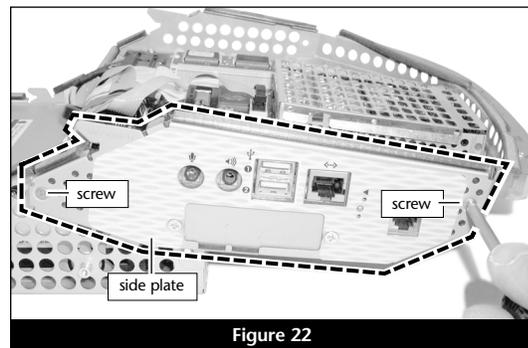
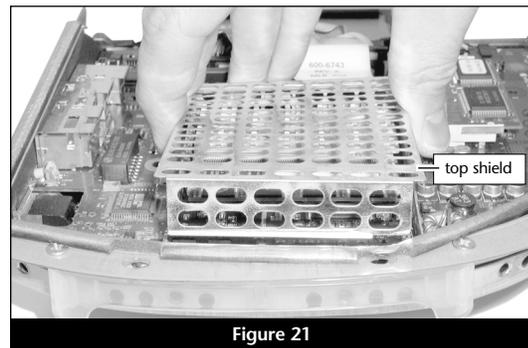


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5. With the tall side closest to you, install the top shield onto the processor card shield (Figure 21); verify that it is snapped securely into place.

Install FireWire Adapter Card

1. Locate and remove the two screws (#1 Phillips) securing the plate on the side of the logic board/drive assembly, then remove the plate (Figure 22). Please note that the side plate on your iMac may appear different than the one pictured.
2. Install the replacement side plate, securing it with the original flat head screws (Figure 23); *do not overtighten the screws*. Note that the side plate holes should line up with the connectors on the logic board/drive assembly.
3. Locate and remove the screw (#1 Phillips) securing the lower processor card shield to the logic board (Figure 24).
4. Screw in, finger tight, the supplied support standoff in place of the screw you just removed (Figure 25).



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5. Locate the 4-pin connector at the upper right corner of the logic board (Figure 26). Press in its locking tab, and disconnect the connector by pulling it straight out.
6. Plug in the included adapter card power cable's 4-pin connectors between the logic board and the loose 4-pin connector (Figure 27). Verify the connectors are plugged in securely.
7. Tuck the 4-pin connectors beneath the logic board. If your iMac has a cable running across the logic board, route the yellow wire beneath it (Figure 27).
8. Remove the HARMONi FireWire adapter card from its anti-static package, making sure to handle the card by its edges (Figure 28).
9. Plug in the 2-pin connector at the end of the yellow wire to the adapter card's 2-pin connector (Figure 29). Verify the connector is plugged in securely.
10. Using the screw holes to align it, set the adapter card on top of the side plate's brackets and the support standoff (Figure 30); the small connectors on the bottom of the adapter card should fit through the slots on the processor card shield.

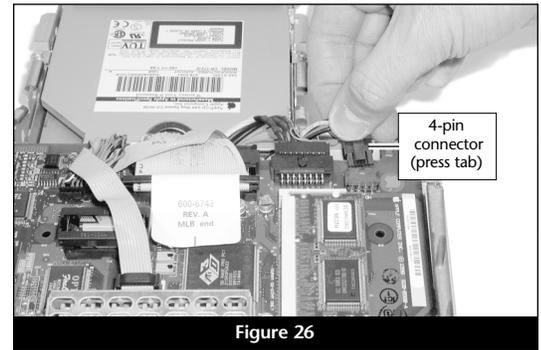


Figure 26

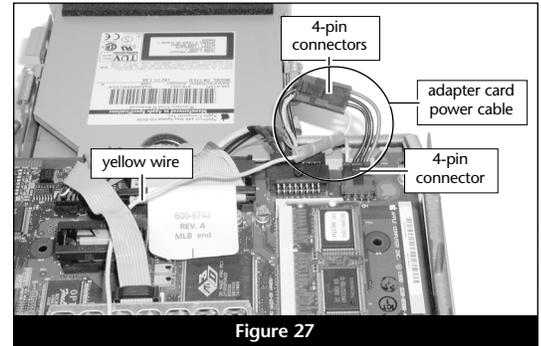


Figure 27

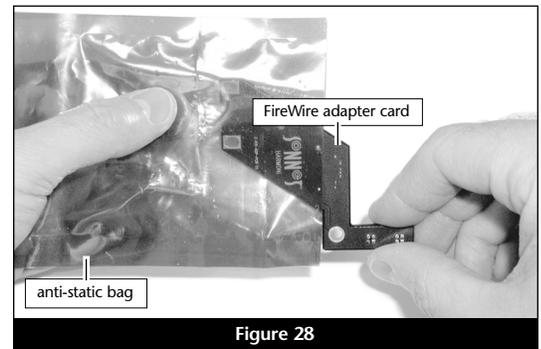


Figure 28

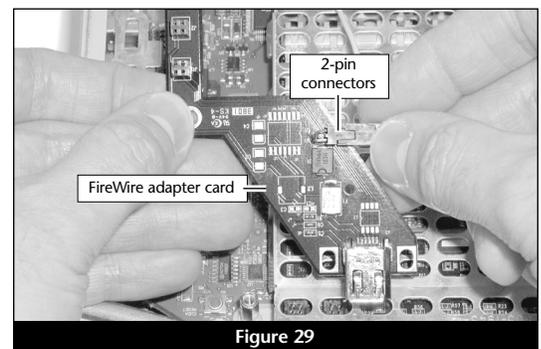


Figure 29

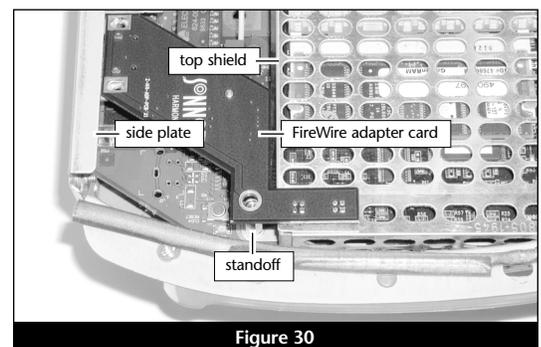


Figure 30

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11. Verify the connectors on the adapter card and the HARMONI processor card are aligned, then gently press down on the adapter card above the connectors until the connectors are completely coupled (Figure 31).
12. Secure the adapter card to the side panel brackets and to the support standoff with the three supplied screws (Figure 32).
13. Remove the protective backing sheet from the wire clamp, then press the wire clamp onto the logic board as shown (Figure 33).
14. Route the adapter card's power cable around the shield, position the crimp connector between the 4-pin connector and the Video connector, and secure the power cable with the wire clamp. (Figure 33).



Support Note: Before reassembling the computer, make sure that its cables are routed properly. Also, when reinstalling the logic board/drive assembly, verify that the guide pins on each side of the assembly slide behind the plastic rails in the computer case as you lower the assembly into the case.

Reassemble Computer

1. Pick up the logic board/drive assembly by the handle with one hand and support the opposite side of the assembly with the other, then slowly lower the assembly into the computer (Figure 34). If there is any resistance, pull the assembly back out, make sure all cables and connectors are routed properly, then lower the assembly into the computer again.
2. Carefully tilt the computer to check and verify that the CD-ROM drawer is aligned properly in the opening in the front of the iMac. Secure the logic board/drive assembly to the computer with the two screws you removed previously (Figure 35).

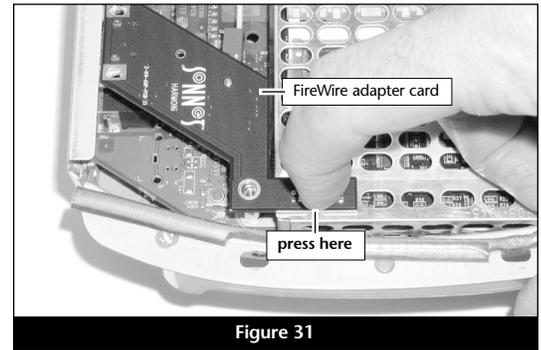


Figure 31

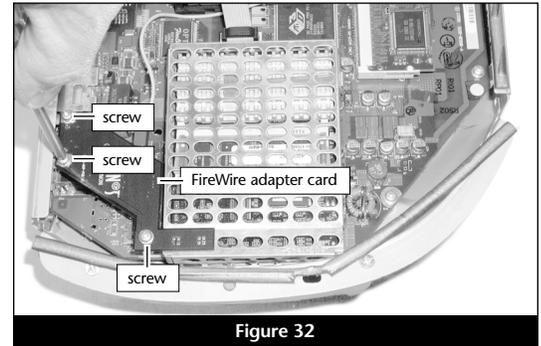


Figure 32

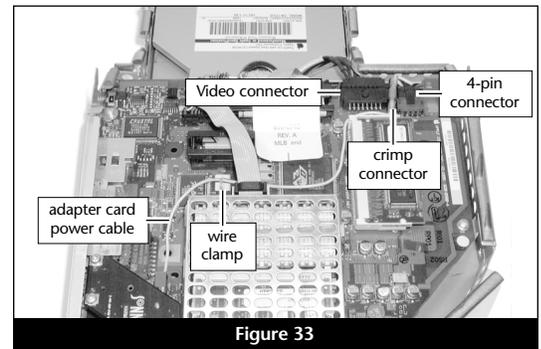


Figure 33

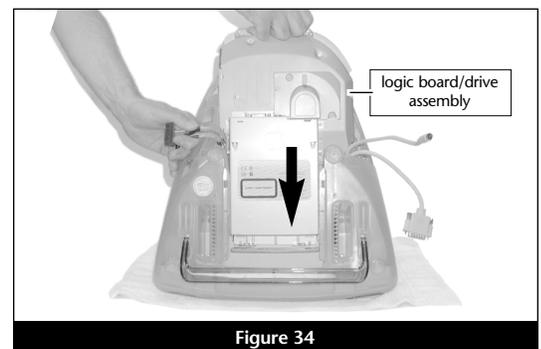


Figure 34

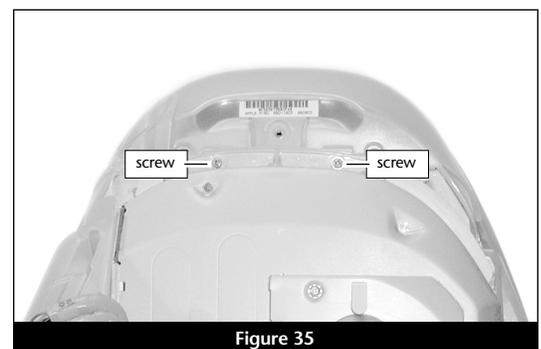


Figure 35

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3. Reconnect all the cables to the logic board, except for the one with thumbscrews (Figure 36). **Verify the connectors are plugged in securely.** If necessary, secure the cable clamp to the logic board/drive assembly with the screw you removed previously (Figure 36).
4. Reconnect the cable with thumbscrews, tighten the thumbscrews, then tuck the cables back under the cable clamp on the logic board/drive assembly (Figure 37). **Verify the connector is plugged in securely.**
5. Place the lower back cover onto the computer, and snap the cover into place (Figure 38); check around the entire edge of the cover to make sure every clip is engaged with the rest of the iMac case.
6. Secure the lower back cover with the screw you removed previously (Figure 39).
7. Move the computer to its operating area, then reconnect its power cable, the keyboard, and the mouse; wait until after the installation is complete to connect any remaining cables.

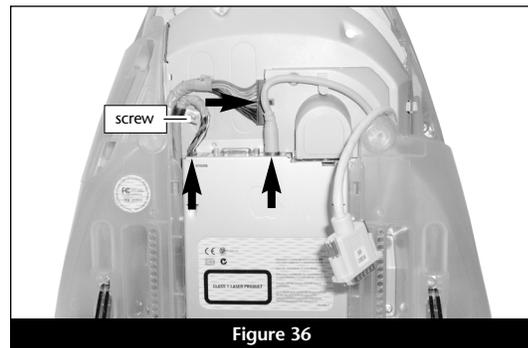


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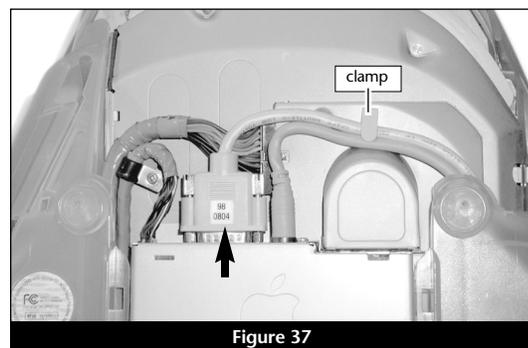


Figure 37



WARNING: Do not shut down or otherwise interrupt the operation of your iMac during the next three steps. If this process is interrupted, your iMac may be left in a disabled condition that is very difficult to remedy.

Turn On Computer

1. Press the Power button on your iMac. *You will not hear the normal startup sound, but a long tone instead; the display will remain blank.*
2. During the next 30 to 45 seconds, the hard drive will spin up and you will hear eight tones.
3. Your iMac will restart. Your accelerated machine should boot normally. *If Mac OS 9.2 or later is already installed in your system, your iMac is ready to use and your installation is complete.* Otherwise, continue reading.

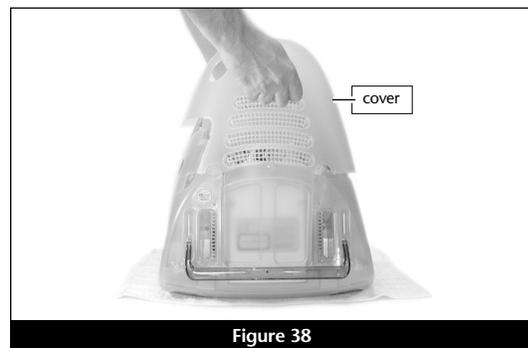


Figure 38

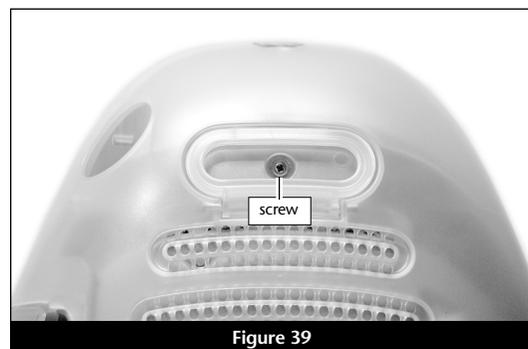


Figure 39



Support Note: Although the processor card portion of the HARMONi upgrade will function under OS 8.1 through 8.5, the FireWire adapter will not. For FireWire device use, you must install Mac OS 8.6 or Mac OS 9.x and FireWire driver software as part of this installation. Mac OS 9.1 or later, and/or Mac OS X Version 10.1 and later, is recommended for maximum compatibility with FireWire devices.

Installing Mac OS 9 (any version)

Only if you are upgrading to Mac OS 9 as part of this installation, do so now; otherwise, skip to the next section appropriate to your version of Mac OS.

1. Insert the Mac OS 9.x CD into your computer's CD ROM drive. In the finder menu, select Special: Restart, then immediately press and hold down the C key on your keyboard until your system restarts and the *Welcome to Mac OS* screen appears.

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2. Double-click the Mac OS Install icon. In the *Select Destination* window, click the Options button and click the Perform Clean Installation check box that appears in the subsequent screen. Click the Select button. Proceed through the next several screens until you reach the *Install Software* window. Click OK, Start, then Continue, and complete the installation. After the software is installed, quit the Mac OS Install application. Follow the directions below according to whether you installed Mac OS 9.0, 9.1, or 9.2 or later.

Mac OS 9.0 (or OS 8.6): Download/Install FireWire Driver Software

If Mac OS 8.6 through 9.0.4 is installed in your iMac, you must download and install the appropriate FireWire driver software.

1. Turn on your computer.
2. Log on to the Internet and type in www.sonnettech.com/support/harmoni.
3. Locate and click on the link for HARMONi FireWire drivers.
4. Read the information on the page, then click on the appropriate link to download the driver.
5. Install the driver, then restart the computer.
6. Your installation is complete.

Mac OS 9.1: Install FireWire Driver Software From Mac OS CD

This section covers the installation of the necessary FireWire driver into your system using the Mac OS 9.1 CD. Complete these steps only if you installed Mac OS 9.1 before installing the HARMONi upgrade. *If you installed Mac OS 9.1 after installing the HARMONi upgrade, your installation is complete.*

1. Start up your computer from the Mac OS 9.1 CD and double-click the Mac OS Install application. In the *Select Destination* window, click the Select button. Proceed through the next several screens until you reach the *Install Software* window. Click the Customize button. In the *Custom Installation and Removal* window, deselect all the Software component check boxes (click on each check or dash until the box is empty), except Mac OS 9.1. Click the pop-up menu to the right of Mac OS 9.1. Change from "Recommended Installation" to "Customized Installation." The *Select Mac OS 9.1 Features to Install* window will appear shortly.
2. Change "Recommended Installation" to "Customized Installation" from the pop-up menu. deselect all the feature check boxes except "Network and Connectivity." Click the arrow next to "Network and Connectivity" to view the features. Deselect all the features except "FireWire." Click OK, Start, then Continue to complete the installation. After the software is installed, quit the Mac OS Install application and restart your computer from the hard drive where Mac OS 9.1 is installed.
3. Your installation is complete.

Mac OS 9.2 or later

Your installation is complete. The appropriate FireWire driver software is already installed in your iMac.