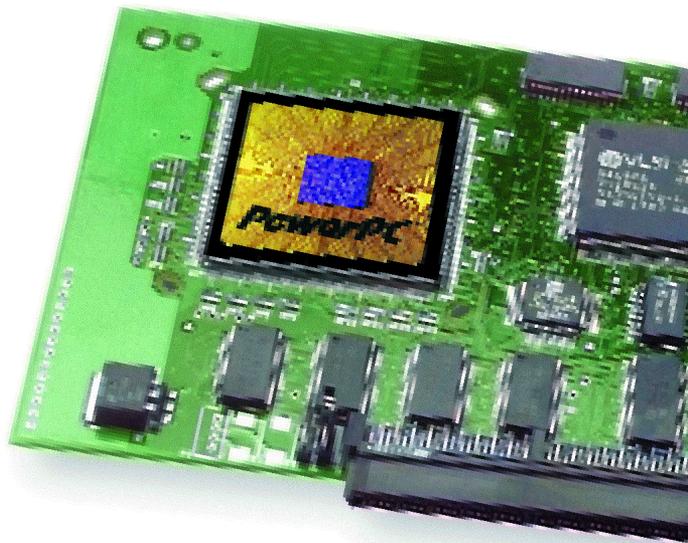


POWERPRO 601™

P O W E R P C U P G R A D E C A R D



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About the PowerPro 601

About the PowerPro 601

About the PowerPro 601 with RAM expansion

PowerPro software

Included with your PowerPro 601

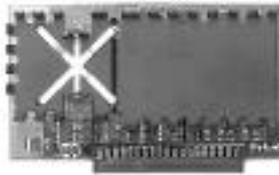
Installation tools required

Complete the warranty card

About this manual

Thank you for purchasing a DayStar product. You have purchased a performance upgrade with unsurpassed compatibility, reliability and performance. The PowerPro 601 substantially increases Macintosh system speed and responsiveness. Users benefit through increased productivity - complete more work in a day or spend the time saved to improve work quality.

About the PowerPro 601



To best match your needs, the DayStar PowerPro 601 is available in multiple speeds with some models even providing support for additional system memory. The standard PowerPro 601, shown above, supports the Macintosh Quadra 610, 650, 700, 800, 900, 950, Centris 610 and 650. (The Centris and Quadra 610 installations require an adapter card for installation.) The PowerPro 601 with RAM expansion capability is a full size add-in card that supports the Macintosh Quadra 650, 700, 800, 900, 950, and Centris 650.

PowerPro 601 uses the same PowerPC processor as Apple's Power Macintoshes. The PowerPC 601 is part of a family of high performance processors developed by Apple, IBM and Motorola. The PowerPC follows a Reduced Instruction Set Computer (RISC) architecture that provides significantly greater performance than the Complex Instruction Set Computer (CISC) architectures found in the original Apple Macintoshes.

Applications must be written with the PowerPC in mind to fully utilize its performance capability. Such software is referred to as being "native," or "Accelerated for Power Macintosh." When running older, non-native software on a PowerPC equipped machine, it must run in a slower "emulation" mode. This will result in performance comparable to a 68040 machine.

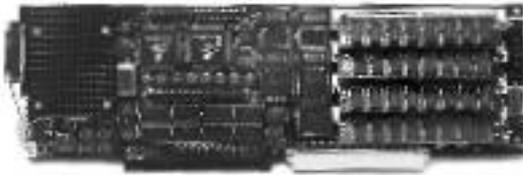
The PowerPro 601 even includes Apple's Power Macintosh Read Only Memory (ROM) code licensed from Apple, which allows the card to completely transform your Macintosh into a full-fledged Power Macintosh. The PowerPro 601 also supports Insignia Solutions' SoftWindows, which allows users to run Windows or DOS applications at up to 80486 speeds.

The PowerPro 601 provides a simple plug and play installation. Install the card, update your system software and run the DayStar installer software. It's that easy. The PowerPro 601 supports all applications that run on Apple's Power Macintoshes!

The PowerPro 601 gives users the best of both worlds. Native applications can run at full speed using the board's PowerPC processor. And, when non-native applications run slower than 68040 speeds in emulation mode, the user can turn off the PowerPro 601 and use the motherboard's 68040.

The PowerPro 601 provides a 1 MB secondary (or Level 2) cache that allows the PowerPro 601 to run at maximum speed by providing information to the CPU at much faster speeds than the standard memory and by providing information through the PowerPC's 64-bit data path. The cache increases the speed of both native and emulated software, but provides the biggest boost to software running in emulation mode.

About the PowerPro 601 with RAM expansion



The PowerPro 601 with RAM expansion, shown above, offers all of the features of the standard board and adds 4 standard 72-pin SIMM sockets for installing up to 128 MB of true System Memory. This memory is completely optional but, when added, works with the memory you already have on your motherboard. All memory added to the PowerPro 601 is available in PowerPC or 68040 mode.

PowerPro memory communicates with the PowerPC processor through a 64-bit data path instead of the motherboard's 32-bit data path. The 64-bit data path allows the PowerPC processor to operate more efficiently, increasing processor and system performance.

NOTE: The PowerPro 601 requires System 7.5 or 7.5.1, sold separately. It is recommended that you have at least 8 megabytes (MB) of random access memory (RAM) and 20 MB of hard disk space to install System 7.5 or 7.5.1. You must upgrade any existing NuBus cards that are not PowerPC compatible in order to use them with the PowerPro 601.

ALSONOTE: DayStar provides a fan on some models of the PowerPro 601 to ensure that the CPU operates within its specified temperature range.

PowerPro 601 Software

The PowerPro 601 requires a Control Panel to operate. The included DayStar installer will install the necessary file(s) onto your hard disk. Once you have completed the hardware installation of the PowerPro 601, be sure to follow the provided instructions for installing and using the software.

Included with your PowerPro 601

The PowerPro 601 is shipped with the following parts:

- PowerPro 601 in an anti-static bag
- PowerPro 601 Installation Manual
- PowerPro disks (3)
- Warranty card
- Anti-static wrist strap

If any of the parts listed above are missing when you receive your PowerPro 601, please contact your computer dealer or call DayStar Customer Service (9 A.M. to 6 P.M. EST) at 404-967-2077 for further assistance. You can also contact DayStar's online services: Internet address is support@daystar.com, World Wide Web page is <http://www.daystar.com>, CompuServe: 75300,1544, AppleLink: DAYSTAR.TECH, America Online: DAYSTAR OL, eWorld: DAYSTAR OL or the DayStar BBS at 404-967-2978.

Installation tools required

Installation tools required:

- Phillips screwdriver
- Slotted screwdriver

Complete the warranty card

As DayStar continues to improve and enhance its product line, we would like to keep you informed of new product advancements and upgrade opportunities.

Please take a moment to complete the product warranty card.

About this manual

This manual provides basic information for installing and using the DayStar PowerPro 601. If you are unfamiliar with using the Macintosh, review the Apple Owner's Guide before installing the board.

Here's what you'll find in this manual:

- **Chapter 1:** "Getting Started" lists some precautions you should take before beginning the installation. It also includes quick reference sections for installing the PowerPro 601.
- **Chapter 2:** "About PowerPro 601 with RAM Expansion" includes detailed instructions on preparing and installing SIMM memory on the PowerPro 601 with RAM expansion.
- **Chapter 3:** "Installing the PowerPro 601 - Macintosh Centris 610 or Quadra 610" includes detailed instructions on preparing and installing the PowerPro 601 in a Macintosh Centris 610 or Quadra 610. It includes a section on testing the installation.
- **Chapter 4:** "Installing the PowerPro 601 - Macintosh Centris 650 or Quadra 650" includes detailed instructions on preparing and installing the PowerPro 601 in a Macintosh Centris 650 or Quadra 650. It includes a section on testing the installation.

- **Chapter 5:** “Installing the PowerPro 601 - Macintosh Quadra 700” includes detailed instructions on preparing and installing the PowerPro 601 in a Macintosh Quadra 700. It includes a section on testing the installation.
- **Chapter 6:** “Installing the PowerPro 601 - Macintosh Quadra 800” includes detailed instructions on preparing and installing the PowerPro 601 in a Macintosh Quadra 800. It includes a section on testing the installation.
- **Chapter 7:** “Installing the PowerPro 601 - Macintosh Quadra 900 or 950” includes detailed instructions on preparing and installing the PowerPro 601 in a Macintosh Quadra 900 or 950. It includes a section on testing the installation.
- **Chapter 8:** “Installing and Using the PowerPro 601 Software” provides the procedures for installing and using the software included with the PowerPro. It also contains sections on installing and using PowerPC software.
- **Chapter 9:** “Troubleshooting” provides information on troubleshooting and compatibility issues, should you experience any problems. It also discusses tips to further increase your system’s performance.
- **Appendix A:** “Product Support” includes the product specifications, warranty and instructions for returning the PowerPro 601 for service.

Getting Started

The danger of static electricity

Precautions

Quick installation reference

Removing the PowerPro 601

NOTE: Check the Last Minute Additions & Info file on the DayStar disk for late breaking news or changes.

The danger of static electricity

WARNING: The DayStar PowerPro 601 uses electronic components that are sensitive to static electricity. When handling and installing these boards, you must take care to prevent the components from being damaged by static currents. Always work in an area of low static electricity and connect the anti-static bracelet to a grounded surface to prevent static discharge.

Precautions

Here is a brief list of precautions that help ensure proper grounding:

- PUT ON THE ANTI-STATIC WRIST STRAP
- DO NOT attempt installation on a carpeted floor.
- DO NOT wear leather shoes—we recommend shoes with rubber soles.
- DO NOT attempt installation in an overly dry environment—spray mist the work area with water prior to installation.
- DO NOT wear silk or polyester clothing while doing the installation—we recommend cotton clothing.
- REMOVE ALL JEWELRY (rings, bracelets, watches, etc.) before installation.

NOTE: If you open your computer once the PowerPro 601 is installed, don't touch the heat sink on the card. It can get very hot.

Quick installation reference

If you are not experienced in the installation of the PowerPro 601, we suggest that you follow the detailed instructions in the following chapters. If you are familiar with installing the PowerPro 601, you may follow these steps:

1. Back up all hard drives.
2. Check your hard drives with Apple's Disk First Aid.
3. Update your hard drives' driver software with a version known to be compatible with the Power Macs. If you are using Apple HD SC Setup, update your drives using version 7.3.2 or greater. If you used a non-Apple formatter, be sure that blind transfers are disabled and that the version of your formatter is compatible with the PowerPC.
4. Turn off the Macintosh and remove all connectors and the power cord.
5. Remove the Macintosh cover.
6. Put on the anti-static wrist strap following the instructions on the package.
7. Remove any add-in cards from the PDS or in-line NuBus slot.
8. (Centris and Quadra 610 only-) Install the PowerPro 601 onto the Adapter.
9. Install additional SIMM memory onto the PowerPro 601 (if applicable).
10. (Centris and Quadra 650 only-) If the PowerPro 601 has a fan, move the fan to the top edge of the board.
11. If installing the 100 MHz PowerPro 601 without RAM expansion in the Centris 610, 650, Quadra 610, 700 or 900, move the clock jumper to the top two pins.
12. Orient the PowerPro 601 over the PDS connector (and over the in-line NuBus slot if you are installing the PowerPro 601 with RAM expansion). Press down until the PowerPro 601 is firmly seated.
13. Replace the cover and attach the power cord and other remaining cables.
14. Update your system software to a universal version and then run the DayStar installer to place the necessary software on your hard disk.
15. Restart the Mac. If any problems occur, see Chapter 9, Troubleshooting."

Removing the PowerPro 601

If you must remove the PowerPro 601, follow the instructions below:

1. Remove the PowerPro software from the Control Panels folder in the System Folder.
2. Follow the “Quick installation reference” for opening your particular Macintosh.
3. Remove the board from the motherboard by holding the edges of the card. Be sure to avoid the PowerPro 601’s heat sink and components, as they can get very hot.
4. Replace the cover and make sure all cables are properly connected.
This concludes removal of the PowerPro 601.

About PowerPro 601 RAM Expansion

PowerPro 601 memory expansion

SIMM requirements

Valid SIMM configurations

Maximum total memory configurations

Installing SIMMs on the PowerPro 601

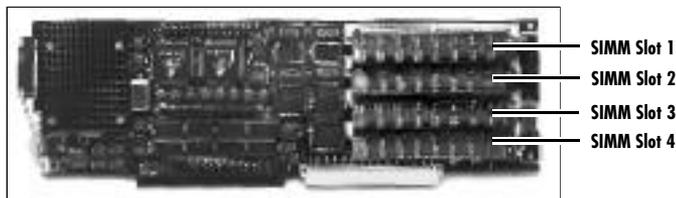
PowerPro 601 memory expansion

While the PowerPro 601 with RAM expansion can run with no memory on the card, you have the option of adding up to 128 MB of system memory using standard Single Inline Memory Modules (SIMMs). When memory is installed on the PowerPro 601, the Macintosh will transparently add it to any existing memory on your Mac's motherboard.

Memory on the PowerPro 601 with RAM expansion is 64-bits wide (versus 32-bits wide on the motherboard), which allows the PowerPC to transmit data faster. For this reason, adding memory to the PowerPro 601 with RAM expansion will further increase your performance by approximately 20% - 50%.

NOTE: If you own a Centris 650, Quadra 650 or 800, you can move motherboard memory, in pairs, to the PowerPro to take advantage of the PowerPC's 64-bit memory architecture.

The PowerPro 601 with RAM expansion has four standard 72-pin SIMM connectors. Memory must be added two SIMMs at a time because each SIMM is 32-bits wide and memory on the board is accessed 64-bits at a time ($2 \times 32 = 64$).



When installing SIMMs, keep in mind that they must be installed in pairs. If you are installing only a single pair, then the SIMMs should either be installed in slots 1&3 or slots 2&4. (It is generally recommended that each SIMM in a pair be the same size, but if two different size SIMMs are installed the smaller size will be recognized for each SIMM.) You can install different size SIMMs in slots 1&3 than those in slots 2&4; however, you can achieve slightly faster performance by having the same size SIMMs installed in all four SIMM slots. (Having four identical size SIMMs installed on the PowerPro 601 allows a capability referred to as memory interleaving to be enabled.)

SIMM requirements

SIMM requirements:

- Standard 72-pin, 32-bit SIMMs, must be installed two at a time, 4 to 32 MB each.
- 80 ns or faster (faster SIMMs may be used but will not improve performance).
- Non-parity (parity SIMMs may be used, but the board will ignore the parity bits).

Valid SIMM configurations

Possible SIMM configurations on the PowerPro 601 with RAM expansion:

<u>SIMMs 1&3</u>	<u>SIMMs 2&4</u>	<u>Total Memory</u>
-	-	0 MB
4 MB each	-	8 MB
4 MB each	4 MB each	16MB*
8 MB each	-	16MB
8 MB each	4 MB each	24MB
8 MB each	8 MB each	32MB*
16 MB each	-	32MB
16 MB each	4 MB each	40MB
16 MB each	8 MB each	48MB
16 MB each	16 MB each	64MB*
32 MB each	-	64MB
32 MB each	4 MB each	72MB
32 MB each	8 MB each	80MB
32 MB each	16 MB each	96MB
32 MB each	32 MB each	128MB*

*Configurations where memory interleaving is possible.

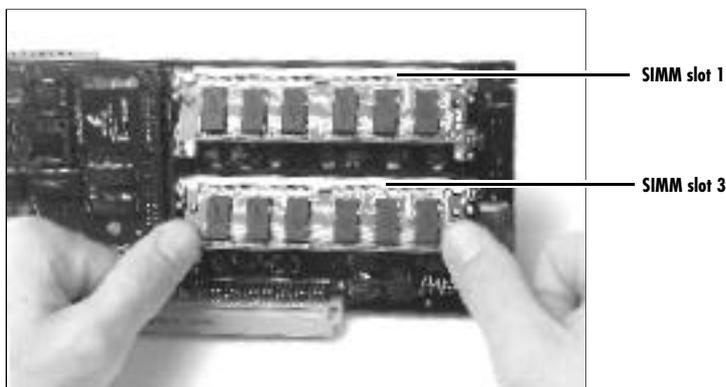
Maximum total memory configurations

Macintosh System	Maximum Motherboard Memory	Maximum PowerPro Memory	Maximum Total Memory
Centris 650	136 MB	128 MB	264 MB
Quadra 650	136 MB	128 MB	264 MB
Quadra 700	68 MB	128 MB	196 MB
Quadra 800	136 MB	128 MB	264 MB
Quadra 900	256 MB	128 MB	384 MB
Quadra 950	256 MB	128 MB	384 MB

Installing SIMMs on the PowerPro 601

To install SIMMs on the PowerPro 601 with RAM expansion, follow these installation instructions.

1. If the PowerPro 601 is already installed in the Mac, follow the removal instructions given in Chapter 1, "Removing the PowerPro 601."
2. Locate the four SIMM connectors on the front of the PowerPro 601.
3. Put on the anti-static wrist strap following the instructions on the package.
4. Position the SIMMs so that they are firmly seated in the connector and then rock them back until they lock into place on both sides. If you are only installing two SIMMs, they may be installed in SIMM slots 1&3 or 2&4.



Installing SIMMs

5. Once you have installed the SIMMs, place the PowerPro 601 in a safe, static-free area. Follow the instructions for installing the board into your particular Macintosh.

Note: Memory installed on the PowerPro 601 will operate transparently. If you wish to modify how the memory operates, consult Chapter 8, "Installing and Using the PowerPro 601 Software."

Installing the PowerPro 601- Macintosh Centris 610 or Quadra 610

Preparing the Macintosh for installation

Preparing the PowerPro 601

Beginning the installation

Testing the installation

Preparing the Macintosh for installation

The PowerPro 601 was designed to support the Quadra 610 and Centris 610 with the use of an adapter card. (NOTE: The PowerPro 601 with RAM expansion does not support the Quadra and Centris 610.)



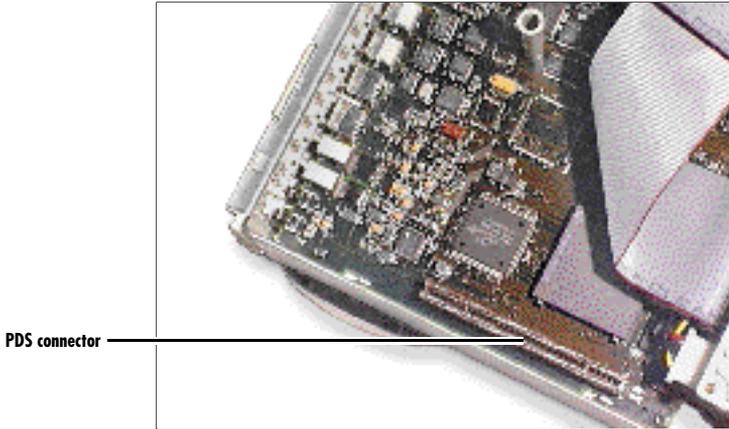
PowerPro Adapter 610 for 100MHz PowerPro

DayStar designed the installation of the PowerPro 601 to be easy. You must, however, take certain precautions:

1. Back up all hard drives before beginning the installation.
2. Check your hard drives with Apple's Disk First Aid.
3. Update your hard drives' driver software with a version known to be compatible with the Power Mac. If you are using Apple HD SC Setup, update your drives using version 7.3.2 or greater. If you used a non-Apple formatter, be sure that blind transfers are disabled and that the version of your formatter is compatible with the PowerPC. (A partial list of third party formatters and their appropriate version numbers can be found on page 88.)
4. Turn off the Macintosh and remove the power cord and all accessory cables from the back of the Macintosh.
5. Press the power switch on the front of the Macintosh three times to drain the power supply.
6. Place the Macintosh on an unobstructed flat work area with the front of the Macintosh facing you.
7. Put on the anti-static wrist strap following the instructions on the package. Be sure to follow the anti-static precautions outlined on page 15.
8. Open the Macintosh. (This procedure is detailed in the Apple Getting Started reference guide.)

3 INSTALLING THE POWERPRO 601—MAC CENTRIS 610 OR QUADRA 610

9. Locate the motherboard PDS connector and remove any cards that may be installed there.



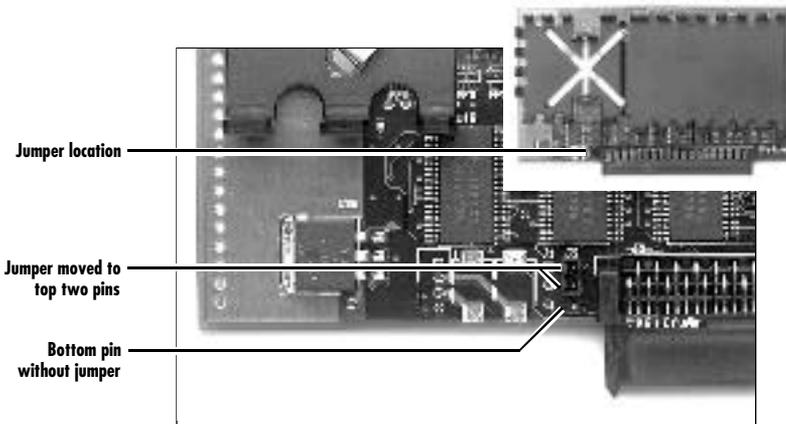
Motherboard PDS connector

Preparing the PowerPro 601

100 MHz PowerPro 601 without RAM expansion in the Centris or Quadra 610

You will need to move the clock jumper in order to have the card run at the appropriate clock speed. (Note: in the Centris 610, the 100 MHz PowerPro 601 will operate at 80 MHz).

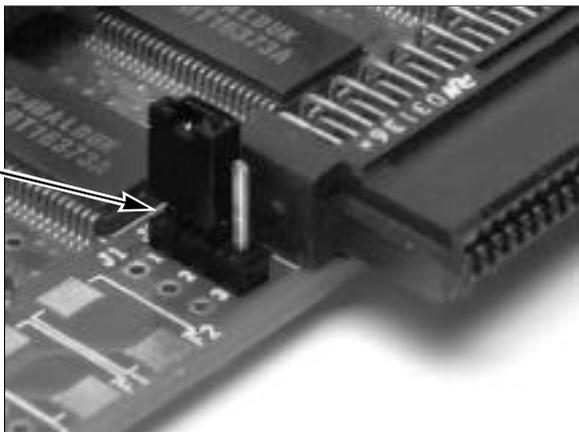
- Move the jumper shown below, from the bottom two pins to the top two pins.



Moving the jumper on the PowerPro 601

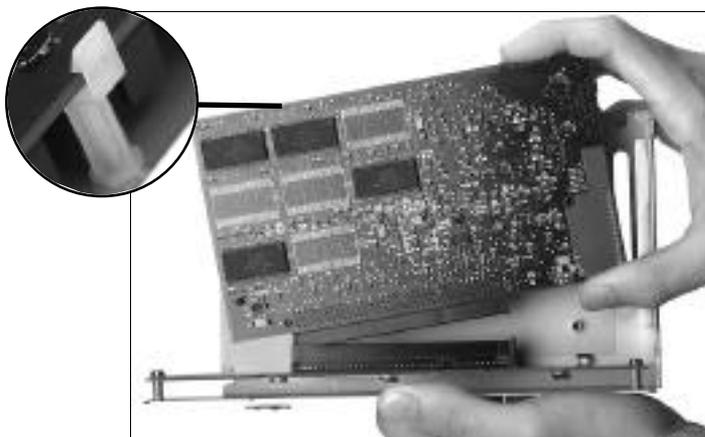
If the jumper is too stiff to remove by pulling, slide a fingernail under the jumper and carefully pry up on the plastic portion of the jumper

Lift jumper here with fingernail



If the jumper is stiff, insert a fingernail to gently pry the jumper off the pins

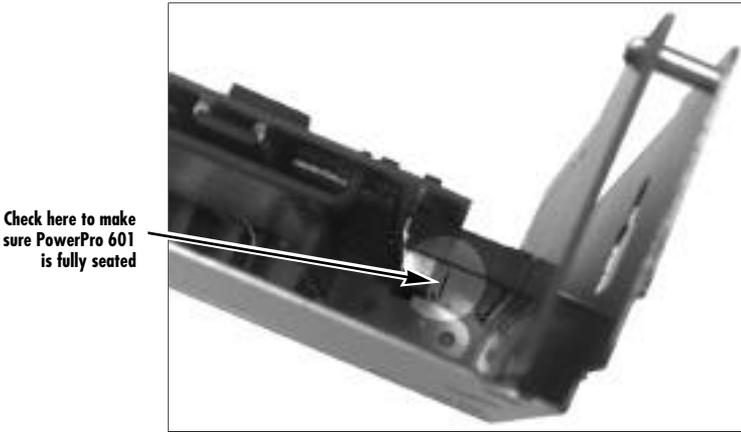
1. Install the PowerPro 601 into the adapter's PDS connector. Squeeze the connectors together with both hands until the board is fully seated. Gently snap the board into the nylon edge clip (100MHz version only).



Attaching the PowerPro 601 to the adapter card.
Inset: gently snap the board into the nylon edge clip

3 INSTALLING THE POWERPRO 601—MAC CENTRIS 610 OR QUADRA 610

Look closely at the assembly to make sure the PowerPro 601 is fully seated in the connector. Reseat the PowerPro 601 in the connector if necessary. The printed circuit card on the Adapter may flex slightly as you seat the PowerPro.



Carefully check the assembly to make sure the PowerPro 601 is completely seated

Begin the installation

1. With the PowerPro 601 installed in the adapter, align the adapter over the empty motherboard PDS connector. Gently push the adapter into the slot until fully seated. Be sure that the metal tab on the adapter shield slides into the slot on the side of the 610's case.



Inserting the PowerPro/Adapter combination in the PDS connector.
Inset: the metal tab in the adapter shield must engage the slot in the 610 case.

2. Replace the case cover and retaining screw. Reattach all the cables you have removed.

Testing the installation

You have installed the PowerPro 601. Make sure that all connections are tight. You must now test the installation and install the system software.

Please read all of this section before you test the installation.

Turn the Macintosh on. You should hear the customary “BONG.”

If you do not hear the “BONG,” skip the next paragraph.

YES! I hear the “BONG.”

NOTE: If you hear the new PowerPC bong and the Mac does not boot properly, clear the parameter RAM by holding down the ⌘-Option-PR keys simultaneously while the computer is starting up. (Make sure the Caps Lock key is not pressed.)

You are now ready to install the software. Please go to Chapter 8, “Installing and Using the PowerPro 601 Software.”

NO! I DO NOT hear the “BONG.”

There is no response when the Macintosh is turned on.

or

A different sound (the failure tone) is heard when power is turned on.

If you experience either of the above, remove the power cord from the back of the Macintosh. Then, do the following:

1. Review the instructions and make sure the PowerPro 601 is firmly seated in the adapter and that the adapter is firmly seated into the motherboard.
2. Plug the power cord into the back of the Macintosh and restart as before.

If the startup process continues to fail, the board may have been damaged during installation or shipment. Contact your computer dealer or call DayStar

3 INSTALLING THE POWERPRO 601—MAC CENTRIS 610 OR QUADRA 610

Technical Support (9 A.M. to 6 P.M. EST) at 404-967-2077 for further assistance.

You can also contact DayStar's online services: Internet address is support@daystar.com, World Wide Web page is <http://www.daystar.com>, CompuServe: 75300,1544, AppleLink: DAYSTAR.TECH, America Online: DAYSTAR OL, eWorld: DAYSTAR OL or the DayStar BBS at 404-967-2978.

Installing the PowerPro 601- Macintosh Centris 650 or Quadra 650

Preparing the Macintosh for installation

Preparing the PowerPro 601

Beginning the installation

Testing the installation

Preparing the Macintosh for installation

Both the PowerPro 601 and the PowerPro 601 with RAM expansion support the Quadra and Centris 650. Many of the photographs in this chapter are of the PowerPro 601 with RAM expansion, but the installation instructions will differ slightly, depending on the card you are installing.

POWERPRO WITH RAMEXPANSION NOTE: You can move your motherboard memory, in pairs, to the PowerPro for faster performance. See Chapter 2, 'About PowerPro Memory Expansion,' for further instructions before proceeding with the installation of the PowerPro 601.

DayStar designed the installation of the PowerPro 601 to be easy. You must, however, take certain precautions:

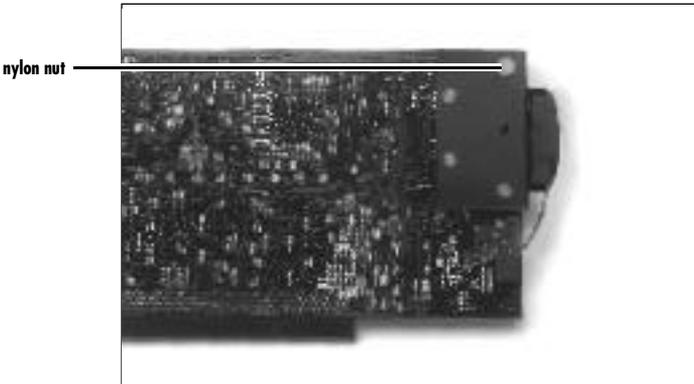
1. Back up all hard drives before beginning the installation.
2. Check your hard drives with Apple's Disk First Aid.
3. Update your hard drives' driver software with a version known to be compatible with the Power Mac. If you are using Apple HD SC Setup, update your drives using version 7.3.2 or greater. If you used a non-Apple formatter, be sure that blind transfers are disabled and that the version of your formatter is compatible with the PowerPC. (A partial list of third party formatters and their appropriate version numbers can be found on page 88.)
4. Turn off the Macintosh and remove the power cord and all accessory cables from the back of the Macintosh.
5. Press the power switch on the rear of the Macintosh three times to drain the power supply.
6. Place the Macintosh on an unobstructed flat work area with the front of the Macintosh facing you.
7. Put on the anti-static wrist strap following the instructions on the package. Be sure to follow the anti-static precautions outlined on page 15.
8. Open the Macintosh. (This procedure is detailed in the Apple Getting Started reference guide.)

Preparing the PowerPro 601

PowerPro 601 with fan only

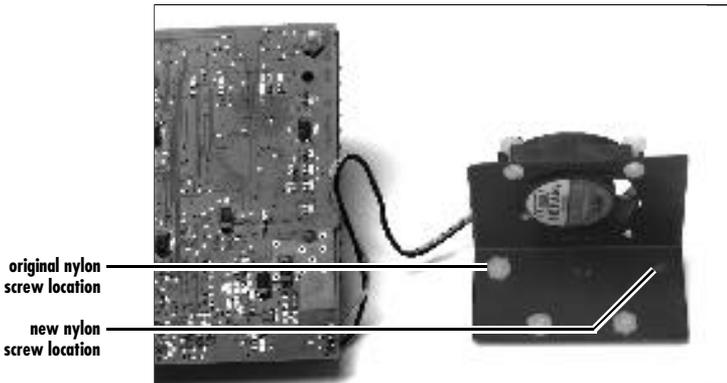
If your PowerPro 601 came with a fan installed on the end of the board, it must be moved to the top of the board following the instructions below.

1. Locate and remove the nylon nut that holds the fan assembly on the PowerPro 601.



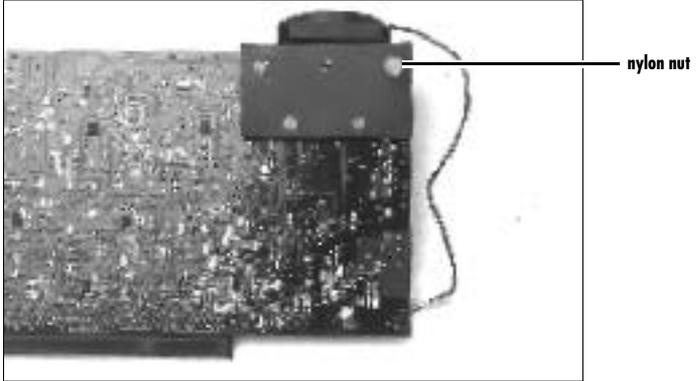
Nylon nut on the fan assembly

2. Locate and move the nylon screw shown below.



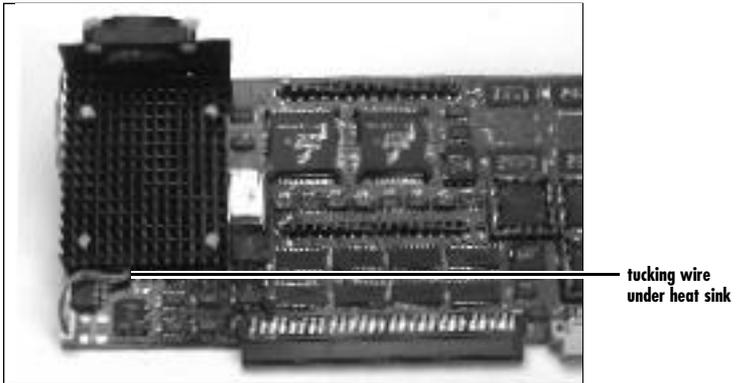
Moving the nylon screw on the fan assembly

3. Reinstall the fan using the nylon nut to secure it to the top of the PowerPro 601 as shown.



Fan installed on top of PowerPro 601

4. Tuck the excess fan wire beneath the bottom of the heat sink.



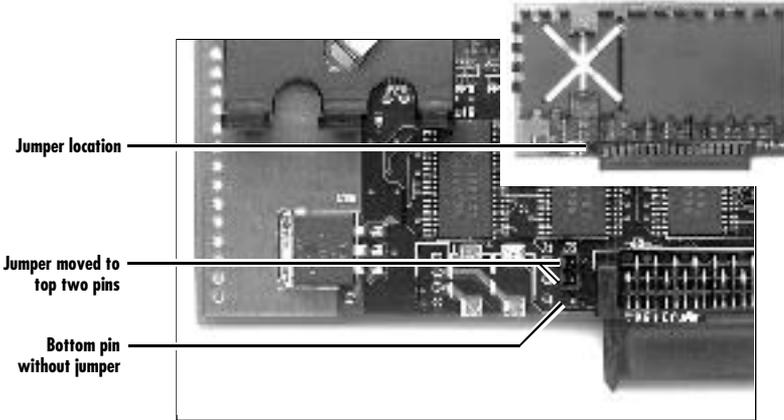
Fan wire under heat sink

4 INSTALLING THE POWERPRO 601—MAC CENTRIS 650 OR QUADRA 650

100 MHz PowerPro 601 without RAM expansion in the Centris 650 only

If you are installing a 100 MHz PowerPro 601 into the Centris 650, you will need to move the clock jumper in order to have the card run at 100 MHz instead of 75 MHz.

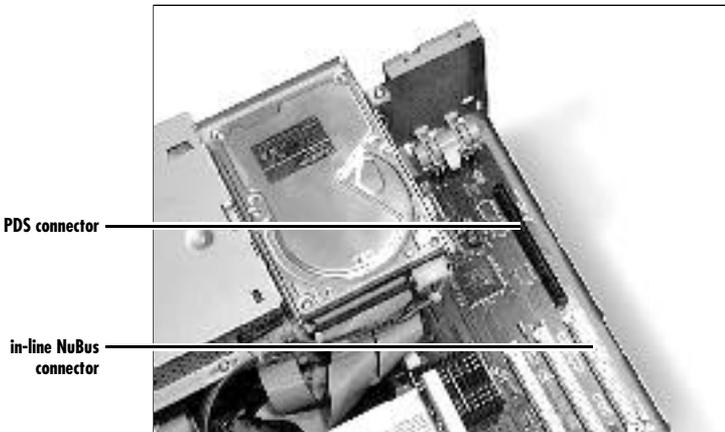
- Move the jumper shown below, from the bottom two pins to the top two pins.



Moving the jumper on the 100 MHz PowerPro 601 for the Centris 650

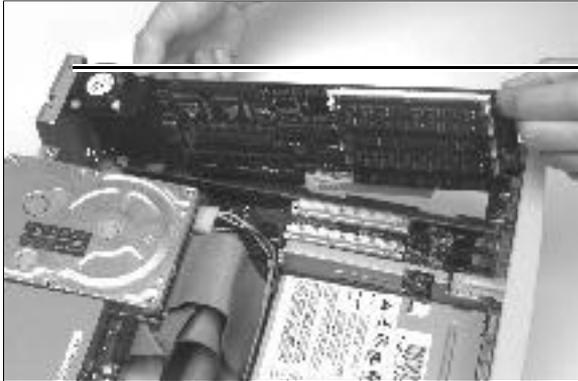
Begin the installation

1. Locate the PDS and in-line NuBus connectors and remove any card installed there.



PDS and inline NuBus slots

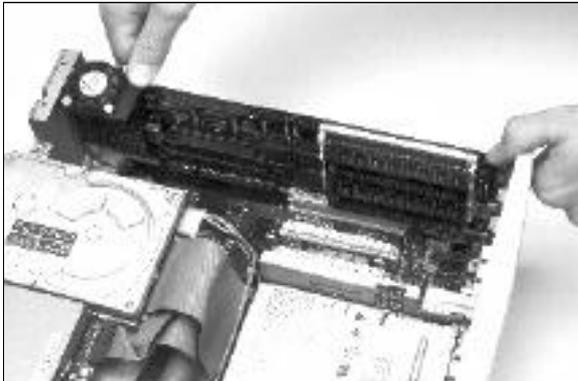
2. If you are installing the PowerPro 601 with RAM expansion, you will need to tilt and slide the PowerPro beneath the flange on the 650's chassis.



**PowerPro
beneath
chassis flange**

Inserting the PowerPro beneath the chassis flange

3. Align the PowerPro's PDS connector over the motherboard PDS connector with the heat sink side of the board facing the power supply. (If you are installing the PowerPro with RAM expansion you will also need to align the PowerPro's NuBus connector over the motherboard's in-line NuBus connector.) Gently push the card down until it is fully seated.



Installing the PowerPro 601

4. Replace the case cover and retaining screw. Reattach all the cables you have removed.

Testing the installation

You have installed the PowerPro 601. Make sure that all connections are tight. You must now test the installation and install the system software.

Please read all of this section before you test the installation.

Turn the Macintosh on. You should hear the customary “BONG.” If you do not hear the “BONG,” skip the next paragraph.

YES! I hear the “BONG.”

NOTE: If you hear the new PowerPC bong and the Mac does not boot properly, clear the parameter RAM by holding down the ⌘-Option-P-R keys simultaneously while the computer is starting up. (Make sure the Caps Lock key is not pressed.)

You are now ready to install the software. Please go to Chapter 8, “Installing and Using the PowerPro 601 Software.”

NO! I DO NOT hear the “BONG.”

There is no response when the Macintosh is turned on.

or

A different sound (the failure tone) is heard when power is turned on.

If you experience either of the above, remove the power cord from the back of the Macintosh. Then, do the following:

1. Review the instructions and make sure the PowerPro 601 is firmly seated in the motherboard.
2. If you installed SIMMs on the PowerPro 601 with RAM expansion, be sure that they are firmly seated.
3. Plug the power cord into the back of the Mac and restart as before.

If the startup process continues to fail, the board may have been damaged during installation or shipment. Contact your computer dealer or call DayStar Technical Support (9 A.M. to 6 P.M. EST) at 404-967-2077 for further assistance.

You can also contact DayStar's online services: Internet address is support@daystar.com, World Wide Web page is <http://www.daystar.com>, CompuServe: 75300,1544, AppleLink: DAYSTAR.TECH, America Online: DAYSTAR OL, eWorld: DAYSTAR OL or the DayStar BBS at 404-967-2978.

Installing the PowerPro 601— Macintosh Quadra 700

Preparing the Macintosh for Installation

Preparing the PowerPro 601

Beginning the installation

Testing the installation

Preparing the Macintosh for installation

Both the PowerPro 601 and the PowerPro 601 with RAM expansion support the Quadra 700. Many of the photographs in this chapter are of the PowerPro 601 with RAM expansion, but the installation instructions will differ slightly, depending on the card you are installing.

DayStar designed the installation of the PowerPro 601 to be easy. You must, however, take certain precautions:

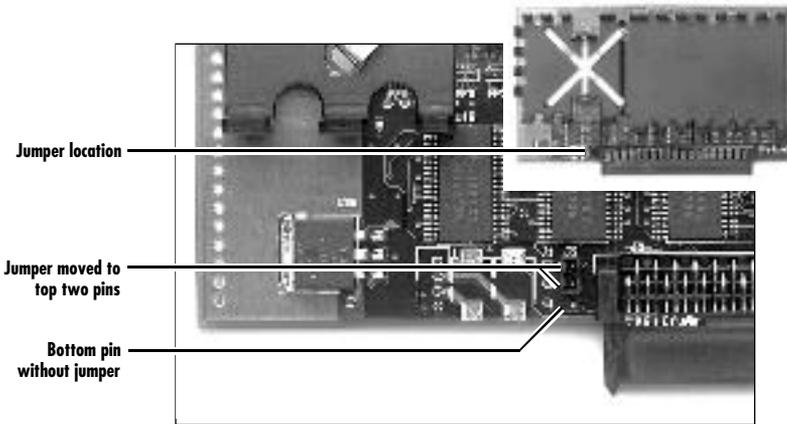
1. Back up all hard drives before beginning the installation.
2. Check your hard drives with Apple's Disk First Aid.
3. Update your hard drives' driver software with a version known to be compatible with the Power Mac. If you are using Apple HD SC Setup, update your drives using version 7.3.2 or greater. If you used a non-Apple formatter, be sure that blind transfers are disabled and that the version of your formatter is compatible with the PowerPC. (A partial list of third party formatters and their appropriate version numbers can be found on page 88.)
4. Turn off the Macintosh and remove the power cord and all accessory cables from the back of the Macintosh.
5. Press the power switch on the rear of the Macintosh three times to drain the power supply.
6. Place the Macintosh on an unobstructed flat work area with the front of the Macintosh facing you.
7. Put on the anti-static wrist strap following the instructions on the package. Be sure to follow the anti-static precautions outlined on page 15.
8. Open the Macintosh. (This procedure is detailed in the Apple Getting Started reference guide.)

Preparing the PowerPro 601

100 MHz PowerPro 601 without RAM expansion only

If you are installing a 100 MHz PowerPro 601 into the Quadra 700, you will need to move the clock jumper in order to have the card run at 100 MHz instead of 75 MHz.

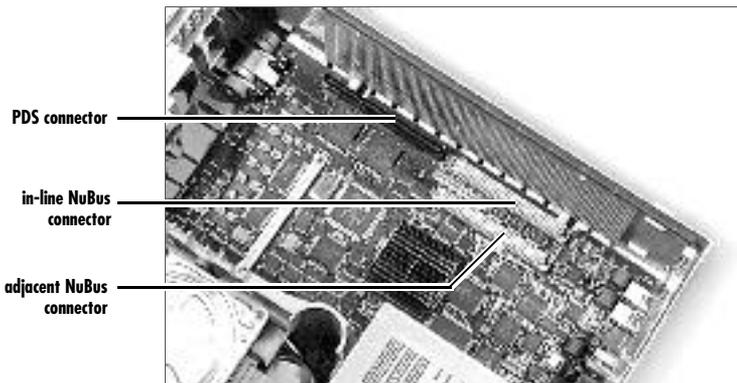
- Move the jumper shown below, from the bottom two pins to the top two pins.



Moving the jumper on the 100 MHz PowerPro 601 for the Quadra 700

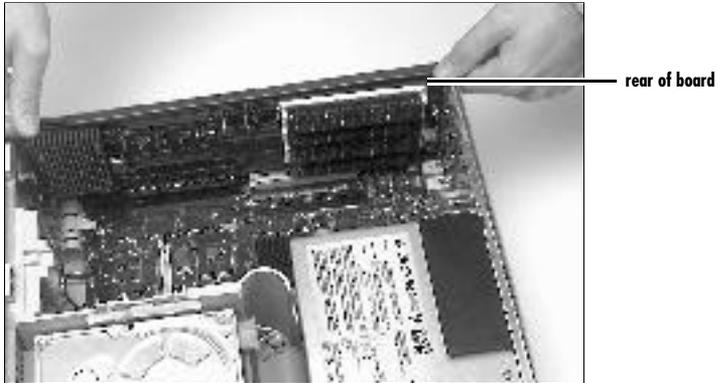
Beginning the installation

1. Locate the PDS and in-line NuBus connectors and remove any card installed there. Note: If your PowerPro 601 has a fan and you have a NuBus card in the adjacent slot, remove the NuBus card before installing the PowerPro. With the PowerPro installed, reinstall the NuBus card.



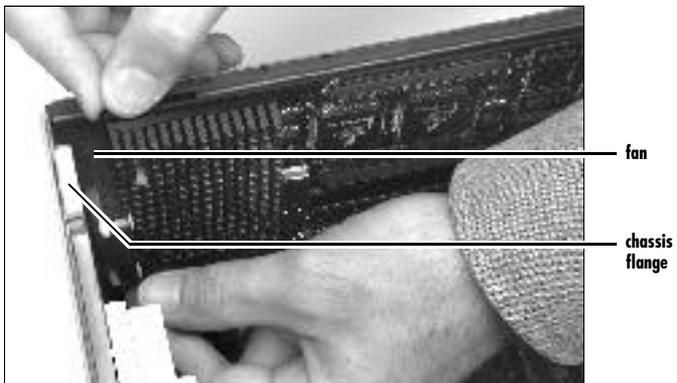
PDS and inline NuBus slots

2. Align the PowerPro's PDS connector over the motherboard PDS connector with the heat sink side of the board facing the power supply. (If you are installing the PowerPro with RAM expansion you will also need to align the PowerPro's NuBus connector over the motherboard's in-line NuBus connector.) Gently push the card down until it is fully seated.



Installing the PowerPro 601

3. **(PowerPro 601 with RAM expansion only-)** While holding the rear of the card in place, gently push down on the front of the card until the fan is below the chassis flange and the PDS connector has begun seating in the PDS slot. You may now gently push both ends of the card down until it is fully seated into both connectors.



Installing the PowerPro 601 with RAM expansion

4. Replace the case cover and retaining screw. Reattach all the cables you have removed.

Testing the installation

You have installed the PowerPro 601. Make sure that all connections are tight. You must now test the installation and install the system software.

Please read all of this section before you test the installation.

Turn the Macintosh on. You should hear the customary “BONG.”

If you do not hear the “BONG,” skip the next paragraph.

YES! I hear the “BONG.”

NOTE: If you hear the new PowerPC bong and the Mac does not boot properly, clear the parameter RAM by holding down the ⌘-Option-PR keys simultaneously while the computer is starting up. (Make sure the Caps Lock key is not pressed.)

You are now ready to install the software. Please go to Chapter 8, “Installing and Using the PowerPro 601 Software.”

NO! I DO NOT hear the “BONG.”

There is no response when the Macintosh is turned on.

or

A different sound (the failure tone) is heard when power is turned on.

If you experience either of the above, remove the power cord from the back of the Macintosh. Then, do the following:

1. Review the instructions and make sure the PowerPro 601 is firmly seated in the motherboard.
2. If you installed SIMMs on the PowerPro 601 with RAM expansion, be sure that they are firmly seated.
3. Plug the power cord into the back of the Macintosh and restart as before.

If the startup process continues to fail, the board may have been damaged during installation or shipment. Contact your computer dealer or call DayStar Technical Support (9 A.M. to 6 P.M. EST) at 404-967-2077 for further assistance.

You can also contact DayStar's online services: Internet address is support@daystar.com, World Wide Web page is <http://www.daystar.com>, CompuServe: 75300,1544, AppleLink: DAYSTAR.TECH, America Online: DAYSTAR OL, eWorld: DAYSTAR OL or the DayStar BBS at 404-967-2978.

Installing the PowerPro 601— Macintosh Quadra 800

Preparing the Macintosh for Installation

Beginning the installation

Testing the installation

Preparing the Macintosh for installation

Both the PowerPro 601 and the PowerPro 601 with RAM expansion support the Quadra 800. The photographs in this chapter are of the PowerPro 601 with RAM expansion, but the installation instructions will differ slightly, depending on the card you are installing.

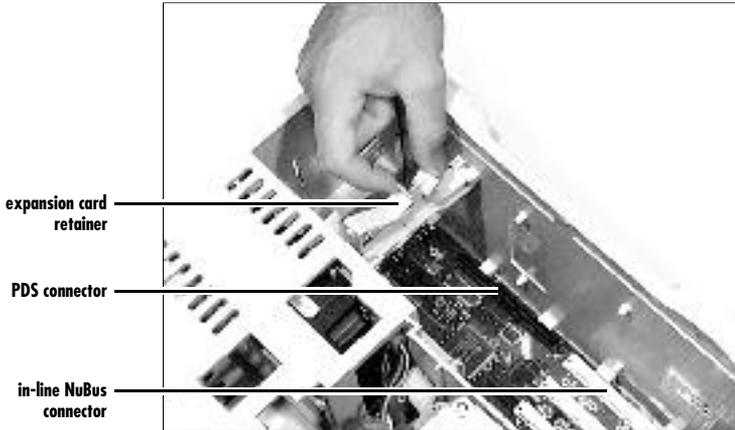
POWERPRO WITH RAMEXPANSION NOTE: You can move your motherboard memory SIMMs, in pairs, to the PowerPro for faster performance. See Chapter 2, 'About PowerPro Memory Expansion,' for further instructions before proceeding with the installation of the PowerPro 601.

DayStar designed the installation of the PowerPro 601 to be easy. You must, however, take certain precautions:

1. Back up all hard drives before beginning the installation.
2. Check your hard drives with Apple's Disk First Aid.
3. Update your hard drives' driver software with a version known to be compatible with the Power Mac. If you are using Apple HD SC Setup, update your drives using version 7.3.2 or greater. If you used a non-Apple formatter, be sure that blind transfers are disabled and that the version of your formatter is compatible with the PowerPC. (A partial list of third party formatters and their appropriate version numbers can be found on page 88.)
4. Turn off the Macintosh and remove the power cord and all accessory cables from the back of the Macintosh.
5. Press the power switch on the rear of the Macintosh three times to drain the power supply.
6. Place the Macintosh on an unobstructed flat work area with the front of the Macintosh facing you.
7. Put on the anti-static wrist strap following the instructions on the package. Be sure to follow the anti-static precautions outlined on page 15.
8. Open the Macintosh. (This procedure is detailed in the Apple Getting Started reference guide.)

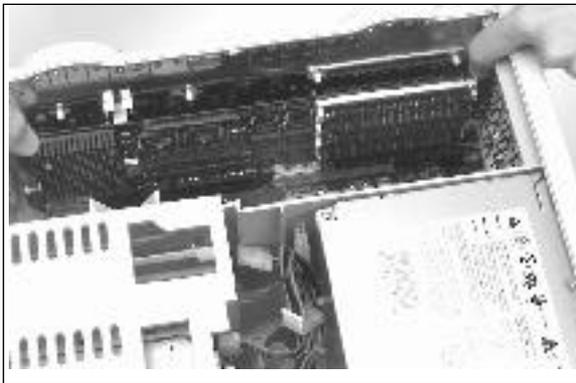
Beginning the installation

1. Locate the PDS and in-line NuBus connectors. Remove the plastic expansion card retainer and any cards in the PDS or inline NuBus slots.



PDS and inline NuBus slots

2. Align the PowerPro's PDS connector over the motherboard PDS connector with the heat sink side of the board facing the power supply. (If you are installing the PowerPro 601 with RAM expansion you will also need to align the PowerPro's NuBus connector over the motherboard's in-line NuBus connector.) Gently push the card down until it is fully seated.



Installing the PowerPro 601

3. Reinstall the plastic expansion card retainer.
4. Replace the case cover and retaining screw. Reattach all the cables you have removed.

Testing the installation

You have installed the PowerPro 601. Make sure that all connections are tight. You must now test the installation and install the system software.

Please read all of this section before you test the installation.

Turn the Macintosh on. You should hear the customary “BONG.”

If you do not hear the “BONG,” skip the next paragraph.

YES! I hear the “BONG.”

NOTE: If you hear the new PowerPC bong and the Mac does not boot properly, clear the parameter RAM by holding down the ⌘-Option-PR keys simultaneously while the computer is starting up. (Make sure the Caps Lock key is not pressed.)

You are now ready to install the software. Please go to Chapter 8, “Installing and Using the PowerPro 601 Software.”

NO! I DO NOT hear the “BONG.”

There is no response when the Macintosh is turned on.

or

A different sound (the failure tone) is heard when power is turned on.

If you experience either of the above, remove the power cord from the back of the Macintosh. Then, do the following:

1. Review the instructions and make sure the PowerPro 601 is firmly seated in the motherboard.
2. If you installed SIMMs on the PowerPro 601 with RAM expansion, be sure that they are firmly seated.
3. Plug the power cord into the back of the Mac and restart as before.

If the startup process continues to fail, the board may have been damaged during installation or shipment. Contact your computer dealer or call DayStar Technical Support (9 A.M. to 6 P.M. EST) at 404-967-2077 for further assistance. You can also contact DayStar's online services: Internet address is support@daystar.com, World Wide Web page is <http://www.daystar.com>, CompuServe: 75300,1544, AppleLink: DAYSTAR.TECH, America Online: DAYSTAR OL, eWorld: DAYSTAR OL or the DayStar BBS at 404-967-2978.

Installing the PowerPro 601— Macintosh Quadra 900 or 950

Preparing the Macintosh for installation

Preparing the PowerPro 601

Beginning the installation

Testing the installation

Preparing the Macintosh for installation

Both the PowerPro 601 and the PowerPro 601 with RAM expansion support the Quadra 900 and 950. Many of the photographs in this chapter are of the PowerPro 601 with RAM expansion, but the installation instructions will differ slightly, depending on the card you are installing.

DayStar designed the installation of the PowerPro 601 to be easy. You must, however, take certain precautions:

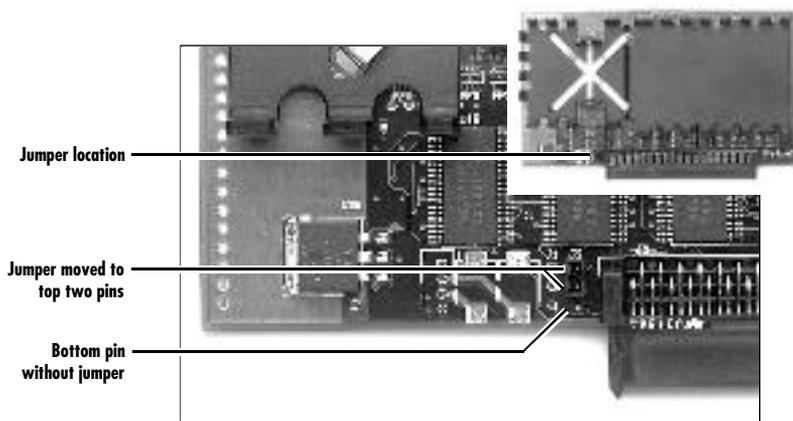
1. Back up all hard drives before beginning the installation.
2. Check your hard drives with Apple's Disk First Aid.
3. Update your hard drives' driver software with a version known to be compatible with the Power Mac. If you are using Apple HD SC Setup, update your drives using version 7.3.2 or greater. If you used a non-Apple formatter, be sure that blind transfers are disabled and that the version of your formatter is compatible with the PowerPC. (A partial list of third party formatters and their appropriate version numbers can be found on page 88.)
4. Turn off the Macintosh and remove the power cord and all accessory cables from the back of the Macintosh.
5. Press the power switch on the rear of the Macintosh three times to drain the power supply.
6. Place the Macintosh on an unobstructed flat work area with the front of the Macintosh facing you.
7. Put on the anti-static wrist strap following the instructions on the package. Be sure to follow the anti-static precautions outlined on page 15.
8. Open the Macintosh. (This procedure is detailed in the Apple Getting Started reference guide.)

Preparing the PowerPro 601

100 MHz PowerPro 601 without RAM expansion in the Quadra 900 only

If you are installing a 100 MHz PowerPro 601 into the Quadra 900, you will need to move the clock jumper in order to have the card run at 100 MHz instead of 75 MHz.

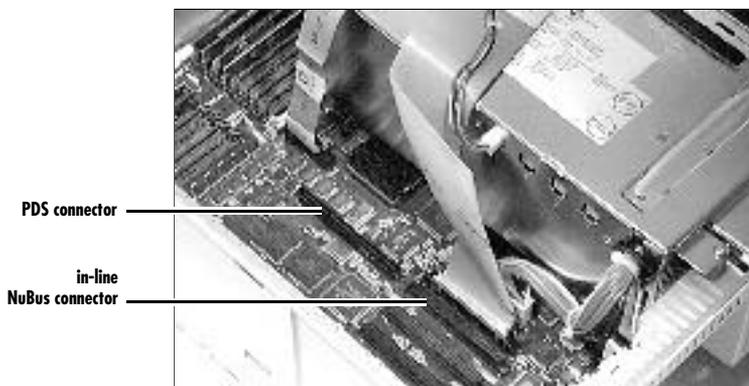
- Move the jumper shown below, from the bottom two pins to the top two pins.



Moving the jumper on the 100 MHz PowerPro 601 for the Quadra 900

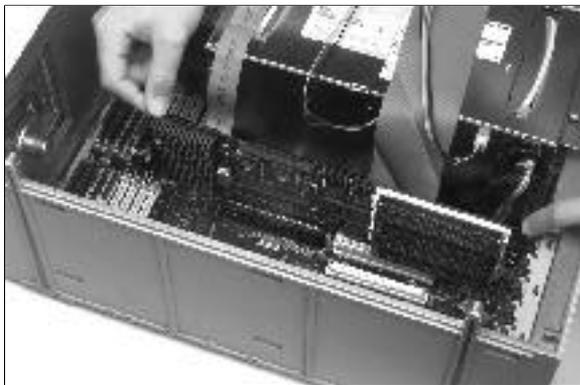
Beginning the installation

1. Locate the PDS and in-line NuBus connectors and remove any card installed there.



PDS and inline NuBus slots

2. Align the PowerPro's PDS connector over the motherboard PDS connector with the heat sink side of the board facing away from the power supply. (If you are installing the PowerPro 601 with RAM expansion you will also need to align the PowerPro's NuBus connector over the motherboard's in-line NuBus connector.) Gently push the card down until it is fully seated.



Installing the PowerPro 601

3. Replace the case cover and retaining screw. Reattach all the cables you have removed.

Testing the installation

You have installed the PowerPro 601. Make sure that all connections are tight. You must now test the installation and install the system software.

Please read all of this section before you test the installation.

Turn the Macintosh on. You should hear the customary "BONG."

If you do not hear the "BONG," go to the next page.

YES! I hear the "BONG."

NOTE: If you hear the new PowerPC bong and the Mac does not boot properly, clear the parameter RAM by holding down the ⌘-Option-P-R keys simultaneously while the computer is starting up. (Make sure the Caps Lock key is not pressed.)

You are now ready to install the software. Please go to Chapter 8, "Installing and Using the PowerPro 601 Software."

NO! I DO NOT hear the “BONG.”

There is no response when the Macintosh is turned on.

or

A different sound (the failure tone) is heard when power is turned on.

If you experience either of the above, remove the power cord from the back of the Macintosh. Then, do the following:

1. Review the instructions and make sure the PowerPro 601 is firmly seated in the motherboard.
2. If you installed SIMMs on the PowerPro 601 with RAM expansion, be sure that they are firmly seated.
3. Plug the power cord into the back of the Mac and restart as before.

If the startup process continues to fail, the board may have been damaged during installation or shipment. Contact your computer dealer or call DayStar Technical Support (9 A.M. to 6 P.M. EST) at 404-967-2077 for further assistance.

You can also contact DayStar's online services: Internet address is support@daystar.com, World Wide Web page is <http://www.daystar.com>, CompuServe: 75300,1544, AppleLink: DAYSTAR.TECH, America Online: DAYSTAR OL, eWorld: DAYSTAR OL or the DayStar BBS at 404-967-2978.

Installing and Using the PowerPro 601 Software

Updating the system software

Installing the PowerPro software

Using the PowerPro software

Total Memory

PowerPro startup or 68040 startup

Secondary cache

Modern Memory Manager

Set Menu Bar Indicator...

Use Default Settings...

PowerBoost

Advanced Features

PowerPro Info

Advanced system information

Installing new application programs

Using applications designed for the PowerPC

Shared libraries

NOTE: Check the Last Minute Additions & Info file on the DayStar disk for late breaking news or changes.

Updating the system software

The PowerPro 601 requires version 7.5 or greater of Apple's system software. Because the PowerPro 601 gives you the option of running in PowerPC mode or 68040 mode, you must have the system software for both environments. To install a "universal" version of the system software, follow these steps:

Note: These instructions are for installing a universal version of System 7.5.1. If you are installing a newer version of the system software consult the instructions that accompanied the software for information on installing a universal system.

1. Shut down your computer.
2. Insert the appropriate System Installer disk into a floppy disk drive.
3. Turn on the computer.
4. Run the Installer by double-clicking its icon.



5. When you see the Installer's welcome screen, click Continue.

The Easy Install dialog box appears.



8 INSTALLING AND USING THE POWERPRO 601 SOFTWARE

6. Open the pop-up menu and choose Custom Install. The Custom Install dialog box appears.



7. Click the triangle next to System Software so the triangle points down. Select System for any Macintosh.



8. Make sure that the destination disk listed is the one on which you want to install software. If the wrong disk name appears, click the Switch Disk button until the correct disk name appears.
9. Click Install and follow the instructions on the screen, inserting disks as needed. It takes a few minutes to complete the installation.

10. After the installation is complete, restart your computer.

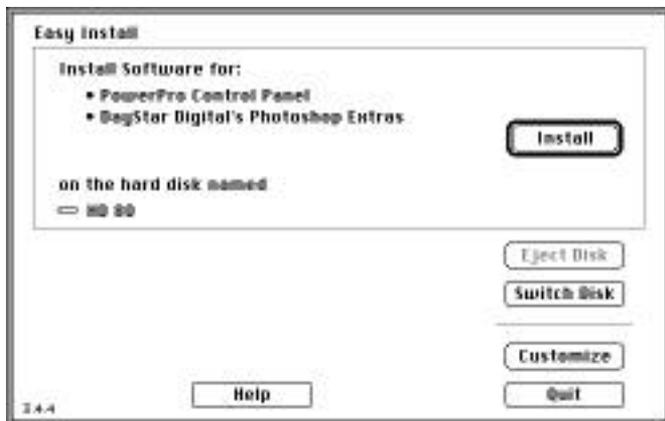
If for some reason the installation was not successful, try again.

If you can't restart the computer: See Chapter 9 "Troubleshooting."

Installing the PowerPro software

1. Insert the DayStar Install Me First disk into a floppy disk drive.
2. Run the PowerPro 601 Installer by double-clicking its icon.
3. When you see the Installer's welcome screen, click Continue.

The Easy Install dialog box appears.



4. Click Install.
5. During the installation, you will be given the option of moving the CloseView and Easy Access Control Panels to the Disabled Control Panels folder in your System folder in order to improve PowerPC performance. These files were designed for the physically challenged, so they should not be moved if physically impaired persons may be using this Macintosh.
6. When the installation is completed, restart the computer. It should boot as a PowerPC; if it does not see Chapter 9 "Troubleshooting."

NOTE ON CUSTOM INSTALL: You can also use the Installer's Customize feature to install the provided files individually, but be sure to install the PowerPro software.

Using the PowerPro software

To access the PowerPro software, select Control Panels from the Apple pull-down menu. Double click the PowerPro icon. The PowerPro Control Panel will look slightly different depending on which PowerPro 601 you have installed.



PowerPro Control Panel



PowerPro with RAM expansion Control Panel



A checked box means the corresponding feature is turned on.



Balloon Help. To make it even easier to access Balloon Help, DayStar has added a button to the Control Panel that turns Balloon Help on and off.

Total Memory

Total Memory: Displays the total amount of memory you have available (both on the motherboard and on the PowerPro if you have the PowerPro with RAM expansion). This total amount is also listed in About This Macintosh, found under the Apple menu in the Finder.



PowerPro Memory: Shows how much memory is installed on the PowerPro 601 with RAM expansion. If you do not have the PowerPro with RAM expansion, this line will be grayed out.



Macintosh Memory: Shows how much memory is installed on your machine's motherboard.

POWERPRO WITH RAMEXPANSIONNOTE: The PowerPro 601 was designed so that additional memory on the board can also be used when running off the motherboard's 68040. The Advanced Features, discussed later in this chapter, allow your Macintosh to disable the PowerPro RAM. If you have turned off the PowerPro memory, that line will be grayed out, and the memory will not be included in the Total Memory value. If you have enabled PowerBoost, 4 MB of memory will be allocated for a copy of ROM information and will not appear under the Total Memory.

PowerPro Startup or 68040 Startup

Currently Running: Shows whether the PowerPro or the motherboard 68040 is currently being used and the speed at which it is operating.



PowerPro 601 Startup. Allows you to turn on the PowerPro 601 the next time you restart the machine.



68040 Startup. Allows you to run from the motherboard 68040 the next time you restart the machine.

NOTE: The PowerPro 601 cannot switch processor modes until you shut down your Macintosh. The PowerPro with RAM expansion can switch modes by restarting. When the computer restarts, you may notice that your computer's startup sound is different. The startup sound depends on the processor the computer uses.

ALSO NOTE: RAM disk information will be lost when switching modes. If you have created a RAM disk, be sure to back up the information you have stored there before switching modes.

Secondary Cache

-  **Secondary Cache.** Allows you to turn the 1 MB Static RAM cache on and off. The cache can greatly increase the performance of the PowerPro 601. If the cache is not present this feature will be grayed out. The default is “on,” and changes take effect immediately.

Modern Memory Manager

-  **Modern Memory Manager.** Allows you to turn Apple’s Modern Memory Manager on and off. Although Apple has greatly improved the System software’s memory manager, some older applications may not work properly with the new memory manager turned on. This switch allows you to turn off the Modern Memory Manager if older applications fail to run with it turned on. The default is “on,” and changes do not take effect until the machine has been restarted.

NOTE: The Modern Memory Manager control is also accessible from the Memory Control Panel.

Set Menu Bar Indicator...

Allows you to add an icon to the menu bar to show which processor the Macintosh is currently using.

-  **PowerPro 601.** Shows that the PowerPro 601 is currently being used.

-  **68040.** Shows that the motherboard 68040 is currently being used.

With the Menu Bar Mode Indicator you have the option of having the icon appear on the left or right side of the menu bar, or you can disable it completely.

Use Default Settings...

Resets all the options in the PowerPro Control Panel to their factory default settings. Many of the changes do not take effect until the machine has been restarted.

PowerBoost– PowerPro with RAM expansion only

PowerBoost. Allocates part of the PowerPro’s RAM for storing ROM information. (This feature provides a more significant benefit to users who don’t have the secondary cache installed, which caches the slow ROM in very fast Static RAM.) The default is off if the 1 MB cache is present, and the default is on if the cache is not present. Changes do not take effect until the machine has been restarted.

NOTE: To operate, PowerBoost uses 4 MB of RAM, so at least 8 MB of memory must be installed on the PowerPro 601. This memory will not appear in the Total Memory or “About This Macintosh.”

Advanced Features– PowerPro with RAM expansion only

Clicking on the Advanced Features button of the PowerPro control panel displays the following dialog box:



Advanced Features with their default settings

Note: Changes to the settings of the following features will not take effect until the machine has been restarted.

- Use PowerPro Memory** allows you to turn memory installed on the PowerPro on and off. The default is on. If you experience problems with the PowerPro, you can turn the board's RAM off to help pinpoint the problem.

NOTE: RAM disk information may be lost when modifying memory settings. If you have created a RAM disk, be sure to back up the information you have stored there before making changes to any memory settings.

- PowerPro Memory Test** allows you to turn the PowerPro's RAM test on and off at startup. The default is on. Once your PowerPro is operating properly, you can turn this feature off to decrease the startup time of your Mac.

NOTE: This test is only for memory installed on the PowerPro. The motherboard memory is always tested at startup.

- FastCache PowerPro Test** allows you to turn the cache's self test on or off at startup. The default is on. Once your PowerPro is operating properly, you can turn this feature off to decrease the startup time of your Macintosh. This feature is grayed out if the cache is not present.

- Modern Memory Manager.** See page 66.

Set Menu Bar Mode Indicator Location. See page 66.

Note: Changes to the settings of the following features will take effect immediately:

PowerPro Cache Control:

The 1 MB secondary cache can be used to cache the PowerPro's memory, ROM or motherboard memory. The cache stores the most recently used 1 MB of information in very fast Static RAM. Any items that are allowed to use the cache (i.e., ROM, RAM) must compete for this 1 MB. The following features allow you to select which types of information are cached in order to fine tune the PowerPro for your working environment. Generally, the more often your machine requires information from a certain source, the more important it is to cache that item. These features are grayed out if the cache is not present.

Cache PowerPro Memory allows you to turn the caching of the PowerPro's on-board memory on and off. The default is on. In some situations, you may be able to increase performance by turning this feature off in order to allocate more of the cache for the slower motherboard memory. If you have enough memory installed on the PowerPro to run most of your applications without using motherboard RAM, then this feature should remain turned on to provide the best overall performance.

Cache Motherboard Memory allows you to turn the caching of the motherboard memory on and off. The default is on. Caching the slower motherboard memory generally increases performance. If you have enough memory installed on the PowerPro to run most of your applications without using motherboard RAM, freeing the cache from caching motherboard memory may improve performance.

Cache ROM allows you to turn the caching of the PowerPro's ROM on and off. The default is on. Some applications access the ROMs more frequently than others. Also, if you frequently use non-native applications on the PowerPro, they must use the emulator built into the ROMs. By caching the ROMs, emulated software will be able to run faster.

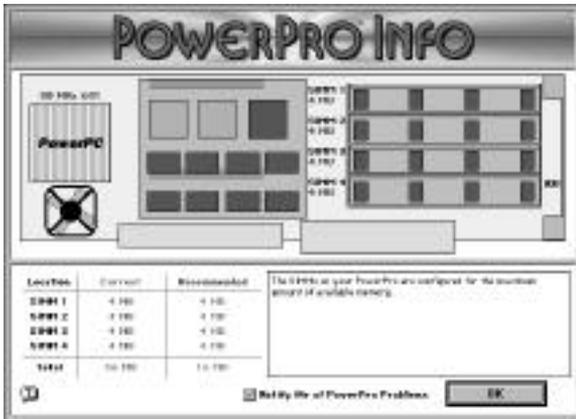
NOTE: With PowerBoost on, caching ROM will have little impact on performance.

Safe Cache Mode allows you to turn the PowerPro's Safe Cache Mode on and off. The default is on. Some bus master NuBus cards and motherboard Ethernet solutions do not interact properly with a secondary cache. The Safe Cache Mode fixes this problem but decreases performance slightly. Once your PowerPro is running properly, you can try turning this feature off for faster performance. If you experience consistent crashes or bus errors, simply turn the Safe Cache Mode back on.

Reset All Settings to Factory Defaults. Resets all the options in the PowerPro Control Panel to their factory default settings. Many of the changes do not take effect until the machine has been restarted.

PowerPro Info– PowerPro with RAM expansion only

Provides detailed information on the size and location of memory installed on the PowerPro and also reports the results of the startup memory and cache tests.



Advanced Features with their default settings

Notify Me of PowerPro Problems. Allows you to turn the PowerPro warning dialogs on and off. With this feature turned on you will be notified if the PowerPro detects a problem with the memory installed on the card. The default is on and changes take effect immediately. You may wish to disable this feature if you are purposely using two different size SIMMs as a matched pair.

Advanced system information

The PowerPro 601 Control Panel will provide a display of your current system information by pressing COMMAND-CONTROL and clicking on the PowerPro logo in Control Panel's main screen. A dialog box similar to the one below will be displayed:



Advanced system information

ROM Version: indicates the version of ROM installed in your machine.

ROM Checksum: differentiates between machines with the same ROM Version.

AppleTalk Version: the version of AppleTalk installed. It will display 0.0.0.0 if AppleTalk is inactive or not installed.

Processor: shows the type of CPU the system thinks it has installed. The 680x0 emulator appears as an "020" when running on the PowerPro 601's processor.

CPUFlag: is another way of telling the type of CPU.

FPU Type: shows the kind of math coprocessor installed. The 68040 emulator does not provide an FPU when running on the PowerPro 601's processor. FPU will show up as 68881 if Software FPU (from John Neil & Associates) is installed. The PowerPC 601's FPU is always present when running on the PowerPro601

Machine Type: is the kind of machine.

MMU Type: is the kind of memory management unit installed.

Physical RAM: displays the amount of memory installed on the motherboard.

ROM Size: shows the size of the Macintosh ROMs on your machine.

System Version: is the version of System software you are running.

Virtual Memory: tells you whether Virtual Memory (either by Apple or Connectix) is on or off.

32-bit mode: shows that the system is running in 32-bit mode.

Instruction Cache: displays whether the instruction cache (internal to the CPU) is on or off. It should be on for normal operation. Note: the instruction cache is different from the secondary cache.

Data Cache: displays whether the data cache (internal to the CPU) is on or off. It should be on for normal operation. Some system extensions, such as A/ROSE, can disable the data cache and lower the performance of your system. If your Mac does not require the use of the A/ROSE software, we recommend that it be removed from your hard drive. Note: the data cache is different from the secondary cache.

Disk Spinup: displays the number of seconds that the Macintosh will wait at power up for your hard disk(s) to spin up. A value of 0 (the default) will cause the Macintosh to wait for 15 seconds. A maximum of 31 seconds can be specified.

Installing new application programs

Once you have followed the steps earlier in this chapter, the full capabilities of the new PowerPC processor are in effect.

Your upgraded Macintosh is compatible with most software intended for use with Macintosh computers. Certain application programs (sometimes called “native applications”) are designed especially for computers with the new PowerPC microprocessor. These programs take best advantage of your computer’s speed.

If you purchased a program designed for use with the PowerPC microprocessor, you can install them now by following the instructions that came with them. Be sure that you have the PowerPro 601 turned on during the installation to insure that the PowerPC version of the program is installed. If you have problems

installing a program, see the manual that came with the program or call the software publisher for assistance.

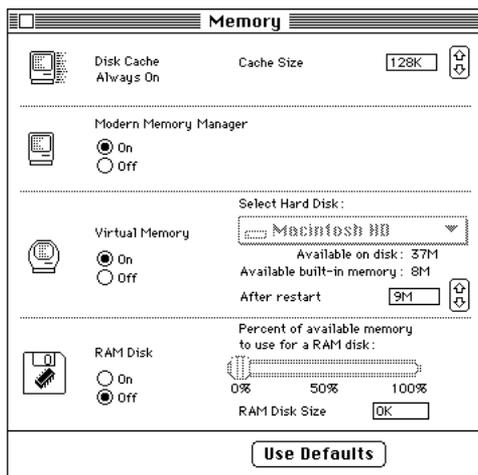
Using application programs designed for the PowerPC

Some of the new PowerPC programs may require more memory (RAM) to work than other programs. If you run out of memory when you use these programs, you can use space on your computer's hard disk as additional memory. This feature is called *virtual memory*. Turning on virtual memory increases the amount of available memory, but it may slightly reduce your programs' speed. If maximum speed is important, you can install more memory in your computer.

NOTE: RAM Doubler, a product from Connectix Corporation, provides features similar to Apple's virtual memory but without decreasing performance as significantly. For more information contact Connectix at 800-950-5880.

To turn on Apple's virtual memory, follow these steps:

1. Choose Control Panels from the Apple () menu and open the Memory Control Panel.
2. Turn on Virtual Memory.



3. Try setting the virtual memory size (in the "After restart" box) to the size of the available built-in memory plus 1.

4. Close the Control Panel by clicking the close box in the upper-left corner.
5. Choose Restart from the Special menu.
6. If you still need additional memory, try increasing the virtual memory size.

Shared libraries

Programs designed for the new PowerPC chip use special files called *shared libraries*. Any necessary shared libraries are installed automatically in the System Folder when you install these programs.

If a program requires a shared library and there is not enough memory available for the shared library, you see a message that the program could not be opened because there is not enough system memory available for the shared library. You can solve this problem by turning on virtual memory as described in the previous section, “Using application programs designed for the PowerPC.”

If a required shared library is missing, you see a message that the program could not be opened because the shared library could not be found. If this happens, reinstall the program, following the directions that came with it. If the shared library is still missing, contact the program’s publisher for assistance.

Troubleshooting

Problems installing software

Poor performance

Problems using the PowerPro 601

Testing for compatibility

Performing a clean system installation

Incompatible formatting software

Performance notes

Problems installing software

This section helps you solve problems you might encounter while installing System 7.5 or 7.5.1 and related software.

Not enough memory to use the Installer

When you try to use the Installer, you see a message that the Installer is out of memory. Usually this means that your disk cache or RAM Disk is set too high.

- Quit all open application programs. Open the Memory control panel, set your disk cache to the lowest possible setting, turn off your RAM disk and turn on Virtual Memory.

Not enough memory to install the software

When you try to use the Installer, you see a message that your computer doesn't have enough memory to install the software. This means that your Macintosh has less RAM (random-access memory) than is required to use System 7.5 or 7.5.1

- Contact your reseller for information on purchasing additional memory.

Not enough disk space

When you try to use the Installer, you see a message that there is not enough disk space available to install the software.

- Make more space available on your hard disk by removing some files from the disk. Make backup copies of the files, if necessary, and then drag them to the Trash and choose Empty Trash from the Special menu.
- If you are installing from floppy disks, you can also try starting up your Macintosh using the *Install Me First* disk. Using the Installer this way requires less disk space.

Difficulty modifying the System file

When you try to use the Installer, you see a message that the System file cannot be modified (or repeated messages asking if it's okay to modify the System file).

- If virus-protection software is turned on, turn it off by dragging it out of the System Folder and restarting your computer. Turn it back on after installation.

- Try disabling your extensions by holding down the Shift key while you restart the computer (If you are installing over a network, you cannot use this solution).
- Your System Folder may be protected, or the System and Finder files may be locked. To turn off System Folder Protection use the General Controls panel. To see if your System file or Finder file is locked, select the file's icon, then open the File menu and choose Get Info. To unlock the file, click the Locked checkbox to remove the X. Restart your computer and make sure that the System file and Finder file are unlocked.

A non-native application will not install properly.

- Turn off the PowerPro 601. Open the PowerPro Control Panel and select 68040 Startup, then shutdown your Mac. Restart your Macintosh and reinstall the software.

Poor performance

This section helps with performance problems you might encounter after installing the PowerPro 601.

Your overall performance seems sluggish or an application runs slower than it did before installing the card.

- Make sure that you have disabled the Easy Access and CloseView Control Panels and have updated your System software to a full "Universal" version.
- If the program is PowerPC native, make sure that the PowerPro 601 was turned on during the program's installation. Some program installers detect which processor is being used and only install a version for that processor. Also be sure that the Modern Memory Manager is turned on.
- If the program is not PowerPC native, it may run faster if you turn off the card when you use it. Use the PowerPro Control Panel to switch to the 68040. For optimal performance contact the program's manufacturer for a PowerPC native upgrade.

(See "Performance Tips" at the end of this chapter for additional suggestions.)

You notice a decrease in your computer's speed after adding a control panel or system extension.

- The software may not work well with Power Macintosh computers. To find out if your new system extension or control panel software is the problem, hold down the Space bar while you start up your computer. When the Extensions Manager opens, turn off the suspect file. Close the Extensions Manager to resume startup. If the computer performs better when the software is turned off, contact the software's manufacturer for information or an upgrade.

Your screen refresh seems sluggish and you are using a NuBus accelerated video card.

- Many NuBus accelerated video cards require an upgrade to their ROM chip and driver software to operate at optimal performance with the PowerPC. Consult the card's vendor to ensure that you are using the latest version for PowerPC machines.

Your hard disk performance seems sluggish.

- Make sure that your hard disks are using a formatter that supports SCSI Manager 4.3. (Refer to "Performance Tips" at the end of this chapter.)

Problems using the PowerPro 601

This section helps with problems you might encounter using the computer after installing the PowerPro 601.

The computer behaves strangely or has problems starting up with the PowerPro 601 card turned on.

- It may help to clear out all the computer's settings (PRAM) by holding down the ⌘-Option-P-R keys simultaneously while the computer is starting up. (Make sure the Caps Lock key is not pressed.) After restarting, you will need to turn on the PowerPro 601 using the PowerPro control panel. You may need to use other control panels to adjust your settings for the date, time, monitors, and file sharing, and you may need to reselect your printer in the Chooser.

An error message appears at startup that informs you that the PowerPro RAM or cache is either not installed properly or is failing the self test.

- Make sure the SIMMs and the cache card (if your PowerPro model's cache is a daughtercard) are installed properly.

If you continue to have this problem...

- Try removing the SIMMs or the daughtercard cache, whichever was listed in the error message. If removing the SIMMs solves the problem, replace them with known working modules. If removing the daughtercard cache solves the problem, contact DayStar Technical Support to arrange for a replacement unit.

Your Macintosh will not start up properly and no PowerPro error screens appear.

- Review the installation instructions for your Macintosh model and make sure that the PowerPro is properly installed.
- Make sure that you have at least 8 MB of Random Access Memory (RAM) installed in your machine.

If the problem persists...

- Hold down the shift key and turn the Macintosh on.

If the machine starts up properly...

- Refer to the section entitled "Testing for compatibility."

If the machine does not start up properly...

- If you did not update your hard disk and removable media drivers during the installation, try booting from the Disk Tools disk, with all external SCSI devices disconnected and the command, option, shift and delete keys held down. This keeps your internal hard drive from mounting. If the machine starts up properly, update your hard disks or removable media with a PowerPC compatible version of the application that was used to format them. Refer to the section entitled "Incompatible formatting software" for further information.

If the machine still does not start up properly...

- Refer to the section entitled “Performing a clean system installation.”

If the machine still does not start up properly...

- As a final test to see if the problem is with the PowerPro or your system configuration, try removing all NuBus cards other than the PowerPro; disconnect all external and internal SCSI devices; disconnect any non-Apple mice, keyboards, trackballs or tablets connected to the ADB ports and also disconnect any cables connected to the printer or modem ports. Insert the Disk Tools disk and turn on the Macintosh. If it starts up properly, one of the devices you disconnected is conflicting with the PowerPro. Try adding the devices back one at a time until you pinpoint the incompatible device. Contact the manufacturer of the device for the latest updates for PowerPC compatibility.

You can't open a PowerPC native program, it quits unexpectedly, or you see a message that it needs additional memory.

The application may not have enough memory to operate properly. Try to:

- Allocate more memory to the application by quitting the application, selecting the application and then choosing Get Info from the File menu in the Finder. You should increase both the Minimum and Preferred memory sizes.
- Quit other applications to free up memory (you may need to Restart your Mac to completely free up previously used memory).
- Turn on the Modern Memory Manager. (Refer to the section entitled “Modern Memory Manager in Chapter 8.”)
- Turn on Virtual Memory or add more memory to the machine. (Refer to the section entitled “Using application programs designed for the PowerPC” in Chapter 8.)
- If you own the PowerPro 601 with RAM expansion, you can disable PowerBoost to free up the approximately 4 MB of RAM that it requires, but this may decrease your performance. (Refer to the section entitled “Using the PowerPro software in Chapter 8.”)

If the problem does not appear to be memory-related, try the following...

- Turn on the Safe Cache Mode, located in the PowerPro Control Panel's Advanced Features window.
- The problem may be related to a problem with your Control Panels or system extensions. Refer to the section entitled "Testing for compatibility."

You see a message that your PowerPC native application program can't be opened because a file can't be found.

Programs designed specifically for the PowerPC microprocessor use special files called *shared libraries*. Any necessary shared libraries should be automatically installed in the System Folder when you install these programs.

- Follow the directions that came with your program and reinstall. If the shared library is still missing, contact the program's manufacturer.

Your non-native applications will not run or they crash when you use them.

- If the application requires a floating point unit (FPU), you will either need to install SoftwareFPU or switch to the 68040. SoftwareFPU is a shareware utility available from most on-line services and Macintosh users' groups.
- Disable the Modern Memory Manager, located in either the Memory Control Panel or the PowerPro Control Panel's main or Advanced Features window. Restart your Macintosh. If this solves the problem, you should turn the Modern Memory Manager back on for best performance when using native applications.
- Turn on the Safe Cache Mode located in the PowerPro Control Panel's Advanced Features window.
- The problem may be related to a problem with your Control Panels or system extensions. Refer to the section entitled "Testing for compatibility."

Note: A small number of applications may not work with the Apple emulator, which is used to run non-native applications. To run applications that don't work with the emulator, simply disable the PowerPro by opening the PowerPro Control Panel, turning on 68040 Startup, and restarting the Mac.

When the mouse cursor moves, the cursor jerks erratically.

- This is generally due to a low memory situation or the use of virtual memory. Try disabling virtual memory, adding more memory, and/or quitting out of some of the other open applications.
- The problem may also be an incompatible, defective or dirty mouse or trackball. Try switching mice. If the problem goes away with a known good mouse, consult the documentation that came with the unit for cleaning instructions or contact the manufacturer for PowerPC compatibility and update information.

Quadra 900 and 950 users only:**You experience problems with software that uses high speed serial communications when the PowerPro is turned on.**

- Make sure the serial port is set to “Compatible.” (Open the Serial Switch control panel and click Compatible.)

PowerPro with RAM expansion only:**You don't have as much system memory as you expected.**

- You may have incorrectly installed the SIMMs on your PowerPro. Check the PowerPro control panel and be sure that the amount of memory that the software sees on the card is equal to what you expected. (Refer to the section marked “PowerPro Control Panel.”)
- You can disable PowerBoost, which uses approximately 4 MB of RAM, but this may decrease your performance. (Refer to the section marked “PowerPro Control Panel.”)

If none of these suggestions solves your problem, try removing the PowerPro. If your Macintosh starts up properly without the PowerPro installed, contact your dealer or call DayStar Technical Support (9 A.M. to 6 P.M. EST) at 404-967-2077 for further assistance.

Testing for compatibility

If your Macintosh does not start up properly or behaves erratically, you may have a startup program (also known as a system extension or control panel) that's incompatible with your system software.

This section tells you how to remove startup programs that are incompatible with the PowerPC or with System 7.5 or 7.5.1.

Remove incompatible startup programs

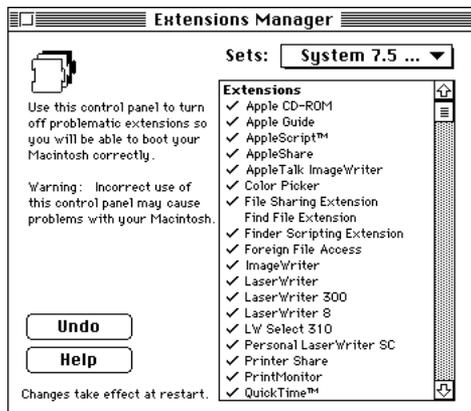
To verify that you have a compatibility problem and test individual programs, follow the steps below.

Verify the problem

1. Start up your computer holding down the space bar.

Holding down the space bar opens the Extensions Manager control panel during startup.

2. Release the space bar when the Extensions Manager control panel opens.



3. Open the Sets menu and choose "System 7.5 only." This turns off all extensions and control panels except those installed with System 7.5 or 7.5.1.
4. Close the Extensions Manager to continue startup.
5. When the computer is ready, try the same actions that caused the problem.

If the problem no longer occurs, you probably have an extension or control panel that doesn't work with the PowerPC. Continue with the next section.

Test individual extensions and control panels

1. Start up your computer, holding down the space bar. Holding down the space bar opens the Extensions Manager control panel during startup.
2. Release the space bar when the Extensions Manager control panel opens.
3. To turn on one of the extensions or control panels by clicking its name.
4. Close the Extensions Manager to continue startup.
5. When the computer is ready, try the same actions that caused the problem.

If the problem does not occur again, then the item is probably compatible with the PowerPC and System 7.5 or 7.5.1.

If the problem occurs again, the program is probably incompatible. Open the Extensions Manager and click the program's name to remove the check.

6. Repeat steps 1 through 5 for each item you want to test.

Performing a clean system installation

This section provides instructions for what is commonly called a “clean” installation of system software onto hard drives.

Clean installation renames your System Folder and installs a new System Folder on your hard disk drive. Any special files you've added to your System Folder remain on your hard disk, and you can install them into your new System Folder after you install the system software.

IMPORTANT You should perform a clean installation only if you suspect that the system software on your startup disk is damaged.

1. Shut down your computer.
2. Insert the *Disk Tools* disk (from System 7.5 or 7.5.1 into the floppy drive.
3. Turn on your computer. The Disk Tools icon appears on your screen.
4. Double-click the Disk First Aid icon and follow the on-screen instructions. Disk First Aid checks your hard drive for any problems.



Disk First Aid

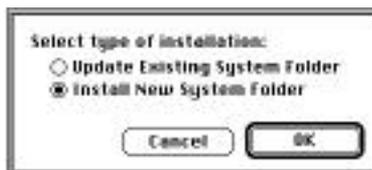
5. When you are finished, choose Quit from the File menu.
6. Choose Restart from the Special menu.
7. Insert the *Install Me First* disk into a floppy disk drive and open the disk by double-clicking its icon.
8. Open the Installer by double-clicking its icon.



9. When you see the Installer's welcome screen, click Continue. The Easy Install dialog box appears.



10. Make sure that the Destination Disk indicated on the screen is the one on which you want to install system software. If the wrong disk name appears, click the Switch Disk button until the correct disk name appears.
11. Hold down Shift-⌘-K to start the clean installation. The following dialog box appears.



12. Click the Install New System Folder button and click OK. In the Easy Install dialog box, the Install button changes to Clean Install.
13. Follow the on-screen instructions. It takes a few minutes to complete the installation.
14. When you see a message reporting that the installation was successful, you may need to click Restart. (You need to restart only if you installed software onto the startup disk.)
15. Run the DayStar Installer to reinstall the PowerPro 601 software. See “Installing the PowerPro 601 software” in Chapter 8.
16. You may want to copy some other files (such as screen savers or other personalized items) from the “Previous System Folder” into the new System Folder. Be sure to test these items for compatibility by following the instructions in the previous section, “Testing for compatibility”.

Incompatible formatting software

Some older formatters are not compatible with the PowerPC CPU. Upgrading to the latest release of your formatting software and updating your disk’s driver will solve the problem.

If you failed to update your driver during the installation of the PowerPro 601 and are experiencing problems, remove the PowerPro 601, update the disk driver and then reinstall the card. If you do not know which software was used to format your troublesome disk, contact the vendor that sold it to you. If you cannot find out which formatter was used or you don’t have access to it, you can try to update the driver with a different formatter, being sure to back up your data first. If this fails, you will need to reformat the disk, again making sure you use a PowerPC compatible version of the formatter.

A note on Blind Transfers. Many third party (non-Apple) formatters provide a “blind transfers” option for faster SCSI performance. Because the reliability of blind transfers is less than standard handshaking, we typically suggest that you disable the blind transfers feature before installing the PowerPro 601.

Performance notes

Here are a few tips to get the most from your PowerPro 601:

- Whenever possible, keep the Modern Memory Manager turned on.
- If you are using an accelerated video card, contact the vendor to be sure that you have the latest software and/or firmware that allows the card to operate in accelerated mode with the PowerPC.
- Upgrade your non-native applications, control panels and extensions to PowerPC versions as they become available.
- If the application that you are running is not native (emulated), you may be able to run it faster by turning off the PowerPro and running from the motherboard processor.
- The ROMs on the PowerPro include Apple's improved SCSI Manager 4.3. To get the best performance out of your hard disks, be sure to update the driver on each of your disks to versions optimized for use with SCSI Manager 4.3. The Apple HD SC Setup application, included with System 7.5 or 7.5.1, will update any disk that the Apple formatter formatted. If you used a third party formatter, contact the vendor for the version that will install 4.3 specific drivers. A list of the more well known formatters and the appropriate version numbers follows:

FWB's Hard Disk Toolkit	1.5 or later
LaCie's Silverlining	5.6 or later
Casa Blanca Works' Drive 7	3.0 or later
Micronet's Micronet Utility	6.1.0 or later
PLI's PLI Formatter	4.1 or later
CharisMac's Anubis	2.52 or later

- Keep the number of control panel and system extension files that you have in the System Folder to a minimum. If you find that you are not using the features of such a file, turn it off with the Extension Manager. Not only can these files cause conflicts with one another, they can also rob the system's performance, especially if they are not written in the native PowerPC format.

- Vary the size of the Apple Disk Cache, located in the Memory control panel, to find an optimal setting for your system. Some hard drives and specific applications perform better with the cache set to its minimum.
- As Apple updates the operating system, additional portions of it may become native. By upgrading, you may be able to increase your performance.

PowerPro with RAM expansion only:

- If you are using a Quadra 650, 800 or Centris 650, you can move your motherboard memory to the PowerPro for faster performance. Remember, you must install the PowerPro SIMMs in pairs, so if you do move memory to the board, it must be moved in pairs.
- Try changing the PowerBoost setting and adjusting the settings in the Advanced Features window of the PowerPro software. (See Chapter 8.) You can increase your performance by fine tuning these features to best match the way you use the machine.

Product Support

Product Specifications

Product warranty

Upgrading the PowerPro

How to return your board for service

Contacting DayStar online

Product Specifications

System Requirements

- Apple® Macintosh Centris 610, 650 or Quadra 610, 650, 700, 800, 900, 950
- 8 MB of random-access memory (RAM) or more

Processor

- PowerPC™ 601 (check the PowerPro 601's packaging for the clock speed)
- 64-bit data bus
- 32-bit address bus
- Processor Direct Slot (PDS) interface
- Built-in 32KB unified instruction and data cache

Secondary Cache

- 1 MB secondary, Level 2 Static RAM cache

ROMs

- Apple® PowerPC™ licensed ROMs

PowerPro 601 with RAM expansion

Memory requirements

- Uses standard 72-pin Macintosh SIMMs
- 2 banks with two 72-pin SIMM slots each
- 1M x 32 (4 MB), 2M x 32 (8 MB), 4M x 32 (16 MB), 8M x 32 (32 MB)
- 80 ns or faster
- Non-parity or parity (parity not used)

Memory Configurations

- Valid on board configurations: 0 MB, 8 MB, 16 MB, 24 MB, 32 MB, 40 MB, 48 MB, 64 MB, 72 MB, 80 MB, 96 MB, 128 MB

Software

- PowerPro Control Panel (included)
- Requires Apple® System 7.5 or 7.5.1

Environmental Conditions

- 50° to 104° F (10° to 40° C)
- Humidity: 10% to 80% (non-condensing)
- Altitude: Sea level to 10,000 feet

Compatibility

- Compatible with System 7.5 or 7.5.1 and standard Macintosh software & hardware

Three Year Limited Warranty

Product warranty

DayStar Digital, Inc. warrants that it will repair or replace, at its option, any defective products properly returned to our factory at no additional charge for a period of THREE (3) FULL YEARS from the date the product is purchased by the original enduser.

This warranty does not apply if the hardware product has been damaged by accident, misused, abused, installed with non-compatible products, modified in any way or if the serial number has been removed or defaced. This warranty does not apply to damage or failure of the host computer power supply, analog and/or CPU logic board or any other add-in boards. This warranty is extended only to original endusers. The customer must provide a copy of the bill of sale bearing the appropriate DayStar serial numbers as proof of the original date of purchase.

THE GUARANTEE, WARRANTY AND REMEDIES SET FORTH ABOVE ARE EXCLUSIVE AND IN LIEU OF ALL OTHERS, ORAL OR WRITTEN, EXPRESS OR IMPLIED. DAYSTAR IS NOT RESPONSIBLE FOR SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM ANY BREACH OF WARRANTY OR UNDER ANY LEGAL THEORY, INCLUDING BUT NOT LIMITED TO LOST PROFITS, DOWNTIME, GOODWILL, DAMAGE TO OR REPLACEMENT OF EQUIPMENT AND PROPERTY AND ANY COSTS OF RECOVERING, PROGRAMMING OR REPRODUCING ANY PROGRAM OR DATA STORED OR USED WITH DAYSTAR PRODUCTS.

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How to return your board for service

If you believe service is needed, please visit DayStar Technical Support at <http://daystar.com> before you return the product. Many times we can solve problems without asking you to send the board in for service. If the board does need service, please take it back to the dealer who sold it to you first.

Items returned for service must have an RA (Return Authorization) number, which will be issued to you or your dealer when you call DayStar's Technical Support Department. Returned items must be sent back in good condition, unmodified and undamaged, with shipping charges prepaid. DayStar will repair or replace the board and ship it back to you or your dealer. For each item you return, you must enclose your name, address, telephone number, RA number, a description of the problem and a copy of the bill of sale bearing the appropriate DayStar serial numbers as proof of the original date of purchase.

NOTE: Products returned without appropriate authorization on the outside of the package will not be accepted upon arrival at DayStar.

You can also contact DayStar's online services: Internet address is support@daystar.com, World Wide Web page is <http://www.daystar.com>,

Contacting DayStar online

Internet

Our Internet address: support@daystar.com

World Wide Web

Our World Wide Web address: <http://www.daystar.com>

Please direct all correspondence and technical questions to:

DayStar Digital, Inc.
Technical Support Department
5556 Atlanta Highway
Flowery Branch, GA 30542
404-967-2077
Internet (support@daystar.com)
World Wide Web (<http://www.daystar.com>)

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This manual was designed and produced on a Macintosh with the PowerPro 601 installed.

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Manual version number 1.1, 4/95.

CB, TC, DD, GD, IK, KK, MK, DM, VT, DC



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