PowerLogix

PowerForce G4 '57 and PowerForce G4 '47 Installation Instructions

This manual covers the Series 333 circuit with 7447 CPUS and the Series 100 Rev 7 circuit with PowerPC 7457 CPUs for installation into PowerMac G4 tower systems.

For the latest up-to-date revision of this document, please visit the PowerLogix Website

We wish to thank you for purchasing the PowerForce G4 upgrade card for your PowerMac G4 computer. The PowerLogix PowerForce G4 is a PowerPCTM processor card that will enable your Power Mac G4 to run at maximum speed with no compromises or permanent modifications.

This manual provides all the information you need to install the card. Please read the manual completely before installation. It will speed up the installation process and prevent downtime later.

Product Registration

To register your purchase for warranty purposes, please visit the PowerLogix Website:

http://www.powerlogix.com/support/registration

Warning! As with any hardware upgrade, back up your hard drive prior to installation.

The PowerForce G4 is a static-sensitive device. It is susceptible to invisible damage if not protected during installation. Do not remove the product from the anti-static bag until you are ready to install it.

We recommend proper grounding by using a grounding strap. Alternatively, touch the power supply of the computer to release any static build-up prior to installation. The computer must remain plugged into an AC outlet for this to work properly. Make sure to work in a clean and static-free area, and avoid wearing clothing that retains static charges.

Although these instructions should provide enough detail for almost anyone to install the PowerForce G4, if you are not comfortable opening your Mac, you can always have an authorized service provider install it for you.

System Requirements for PowerForce G4 7447 or 7457 Processor Upgrade
Series 100 (single 7457 CPU): Power Mac G4 "AGP" or "Gigabit Ethernet"

Series 100 (dual 7457 CPU): Power Mac G4 "AGP" with Uni-N***** revision 7 or greater; Power Mac G4 "Gigabit Ethernet" (***see Dual Compatibility, below**)

Series 333 (single 7447 CPU): Power Mac G4 "AGP", "Gigabit Ethernet", "Digital Audio", "QuickSilver", "Quicksilver 2002"

Series 333 (dual 7447 CPU): Power Mac G4 "AGP" with Uni-N*revision 7 or greater; "Gigabit Ethernet", "Digital Audio", "QuickSilver", "Quicksilver 2002" (*see Dual Compatibility, below)

AGP/Gigabit/Digital Audio

To determine which model PowerMac G4 you may have, please visit these pages:

http://docs.info.apple.com/article.html?artnum=58418

http://www.powerlogix.com/products/compatibility/powermacg4/index.html

*Dual Compatibility with early PowerMac "AGP" models:

To determine if your PowerMac G4 "AGP" is compatible with a dual processor card, visit this page:

http://www.powerlogix.com/support/notices/pfdualg4100/

Compatible OS Versions

Mac OS 9.2.2 or Mac OS X 10.2.8 (or later) is required for 7457 models.
Mac OS 9.2.2 or Mac OS X 10.3.5 (or later) is required for 7447 models.
Mac OS X 10.3.8 or later is recommended.

This package contains:
PowerForce G4 upgrade card, heat sink with fan and power connector
CD-ROM

Pre-Installation Instructions

Before proceeding, refer to the illustrations in this manual to familiarize yourself with the PowerForce G4 processor card. The PowerForce card plugs into a socket on the motherboard of the Mac. Your Mac may vary slightly from the illustrations; don't panic! It is not difficult.

Before installing your card, if you plan to use OS9 (actually boot from OS 9, as opposed to running Classic in OS X) you must remove the CPU Plugins file from the "/System Folder/Extensions/Multiprocessing/" folder after booting using the original CPU.

Firmware

IMPORTANT: This upgrade REQUIRES the PowerLogix 7447/7457 Firmware Update provided on CD or it WILL NOT WORK.

1)   Your computer must have the latest Apple Boot ROM version for your particular model of G4.
2)   To determine what version Apple Boot ROM your computer has, run Apple System Profiler (System Profiler in OS X) and look under Hardware Overview.
3)   If your computer has an earlier version than what is listed below, download the latest version and follow the instructions.

AGP, Gigabit Ethernet: Apple Boot ROM version 4.2.8

If you need to update, version 4.2.8 firmware is available here:

http://docs.info.apple.com/article.html?artnum=120068

4)   Insert the Powerlogix Firmware Update CD into the CD-Rom drive. Please make sure you use 7447/7457 Firmware Update 2.0f1 or higher.

5)   Shut down your Mac.

6)   While you press the programmer's button, press the Power button to start up your Mac. You will hear a long tone. At the same time (if you have enough hands) press and hold the 'C' key. This will tell the Mac to boot from the Powerlogix Firmware Update CD.

Power Button
Programmer's Button

7)   The Firmware Enabler CD boot screen will appear and you will see the following:

        Powerlogix 7447/7457 Enable Script

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        Please Select one of the following options:

1.   Install 7447/7457 enabler patch

2.   Install 7447/7457 PLL patch

3.   Install L3CR extended ratios

4.   Install all 7447/7457 patches

5.   Set up NVRAM for booting into Mac OS 9

6.   Shut down

7.   Exit to Open Firmware

Select option 4 from the above choices. You will see a notice that verifies the flash has burned successfully and your computer will shut down in 30 seconds.

Note: if your computer was previously patched for 7457 compatibility, you will simply be prompted to add 7447 compatibility and the menu above won't appear.

Mac OS 9.2.2 Compatibility

Press "5" to enable Mac OS 9.2.2 compatibility.

Note: This step is not required to operate Classic under OS X; it is only required if you intend to actually boot directly into Mac OS 9.2.2.

After a few second, the NVRAM will be updated, and your Mac will shut down in 30 seconds.

Note for 7447 upgrades: Upon bootintg into Mac OS 9.2.2, you will receive a cache error when booting into OS 9 because this upgrade does not have L3 cache. Normal operation will resume after error is acknowledged.

Note: If you reset the PRAM, the NVRAM code for OS9 compatibility is cleared, and you will have to boot from the Firmware Update CD and perform this process again in order to boot into OS9.

Note: Make sure any OS 9 boot volumes have the CPU Plugins file removed from the System Folder/Extensions/Multiprocessing folder, or your machine will not boot.

Note: Any boot CDs must also have CPU Plugins removed. This includes any emergency disks from Norton, Disk Warrior, etc. You will need to make backup copies of these boot CDs with the CPU Plugins file removed from the System Folder/Extensions/Multiprocessing folder. If CPU Plugins is present in that location on the CD, it will prevent the machine from booting, as CPU Plugins is not 7457-aware.

Your Mac is now compatible with the Powerlogix processor upgrade. Please proceed to the installation instructions.
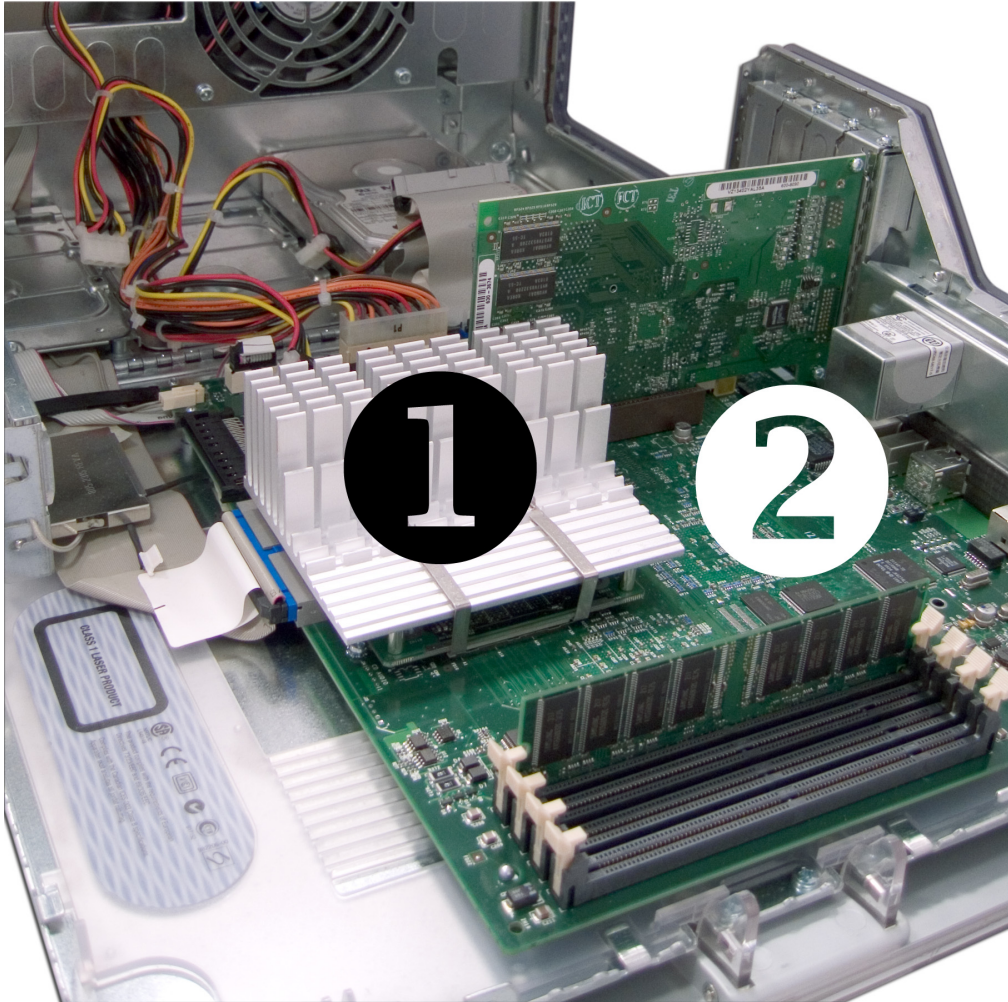
Mac OS Installations

Before proceeding to hardware installation, make sure your G4 has the proper version of the OS installed. (Refer to page 4.)
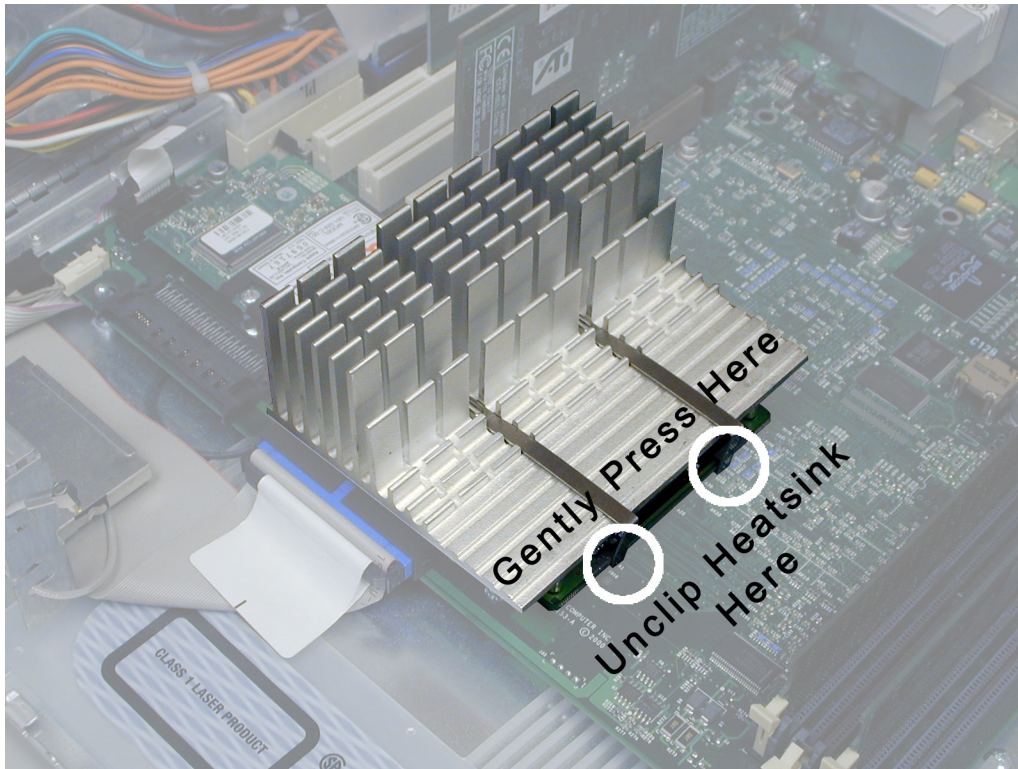
Installing the CPU Card

Power down the computer. Review the static-safe procedures from Page 4 before proceeding.

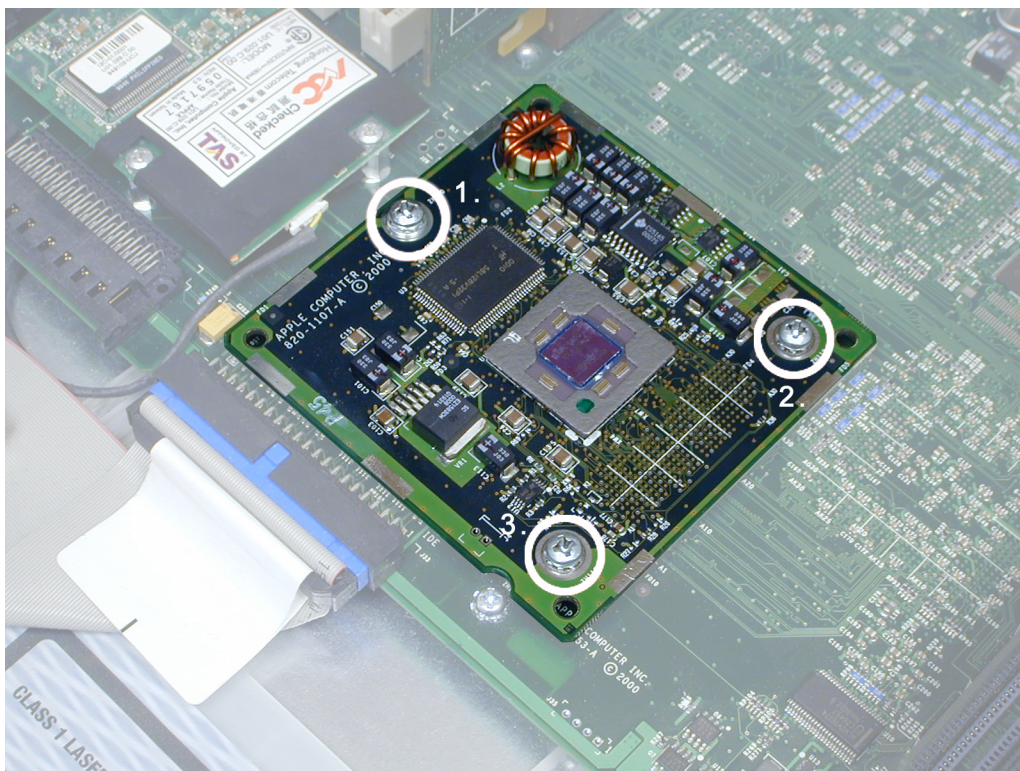Unhook the latch on the side of the case and pull down the cover.

Locate the original processor card in your computer. Pictured above with #1 is the location in an AGP "Sawtooth" or "Gigabit Ethernet" system. If you have a Power Mac G4 "Digital Audio" or QuickSilver system your processor card will be located where the #2 is.
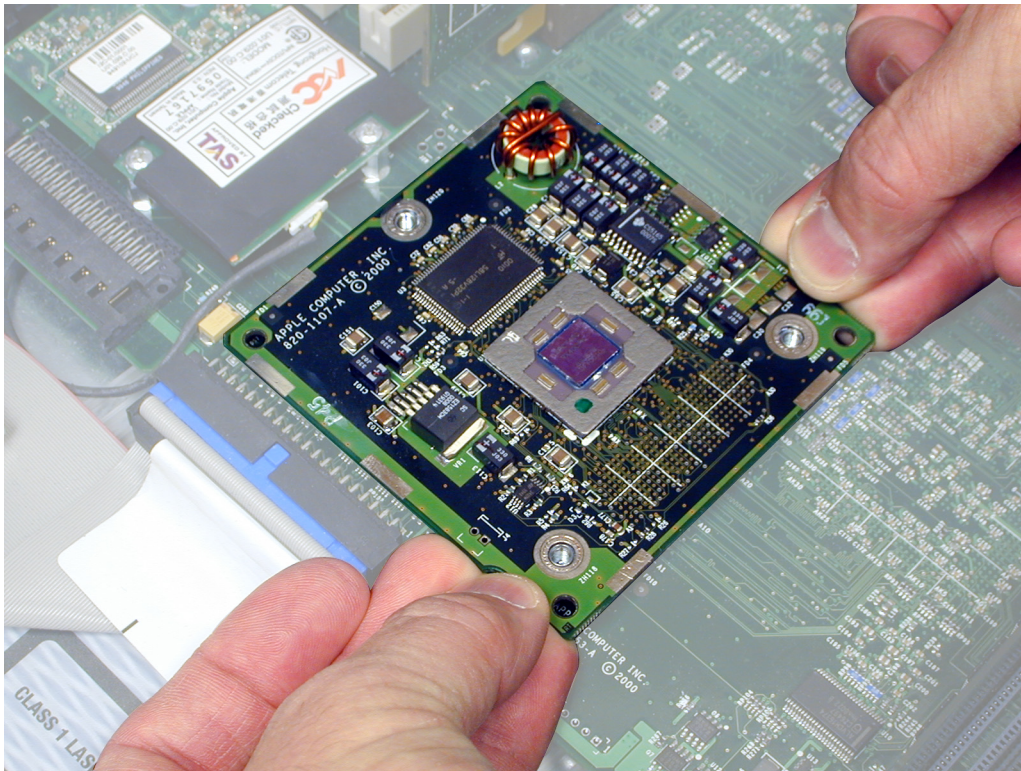
Remove the heat sink retainer clips. The retainer clips are fairly strong springs. Press down firmly but carefully with your finger on the center of the clip until the leg of the clip frees from the bottom of the processor card. Pull the leg out until it slips over the edge of the processor card. This may require an additional tool, such as a screwdriver to pry, or a pair of needlenose pliers. Remove both clips and remove the heat sink.
Note: If you have certain Digital Audio or Quicksilver systems, you will have to remove a plastic fan shroud and fan to expose the heatsink. Unplug the fan and remove the shroud, and set it aside.
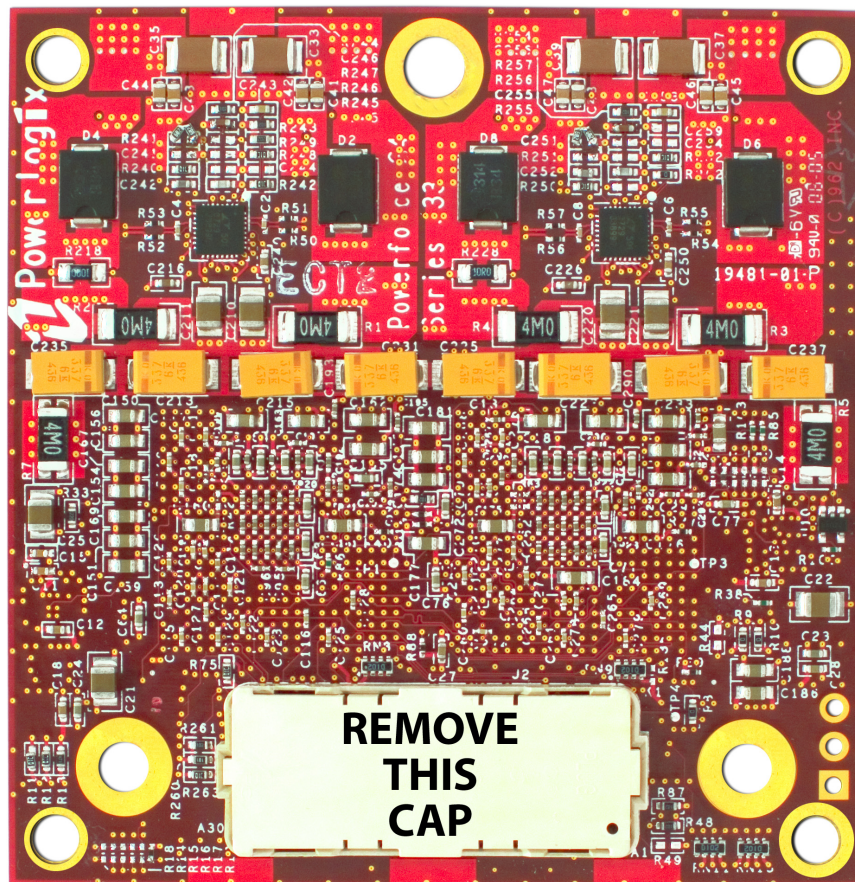

Remove the screws that hold the Apple CPU card in place. Be careful not to lose the screws as you will be reusing them to install the new PowerLogix processor upgrade card. If you have a Digital Audio or Quicksilver system, you will have 4 screws to remove. You will only reuse 3.

Carefully pull the original processor card straight up and out of the motherboard socket. Remove the protective cap from the socket on the PowerForce G4. (See figure below.) Place the cap on your original Apple CPU card.

REMOVE THIS CAP

Align the CPU card with the motherboard by looking through the screw holes in the PowerForce card. Once the card is aligned, snap the PowerForce card into the motherboard socket. It will only install one way. There may be a positive 'click' when it is plugged in completely, however this is not always the case; sometimes there is no positive detent even though the connector is installed properly. **DO NOT EXERT EXCESSIVE FORCE!**

Using the original screws, secure the PowerForce card into place on the motherboard. This is a little tricky as the screws have to be placed through the heatsink; a magnetized screwdriver may help. To install the screw underneath the fan, you may want to remove the fan (if already attached) to aid installation of the screw. If removed, be sure to follow the instructions below to reattach the fan correctly.
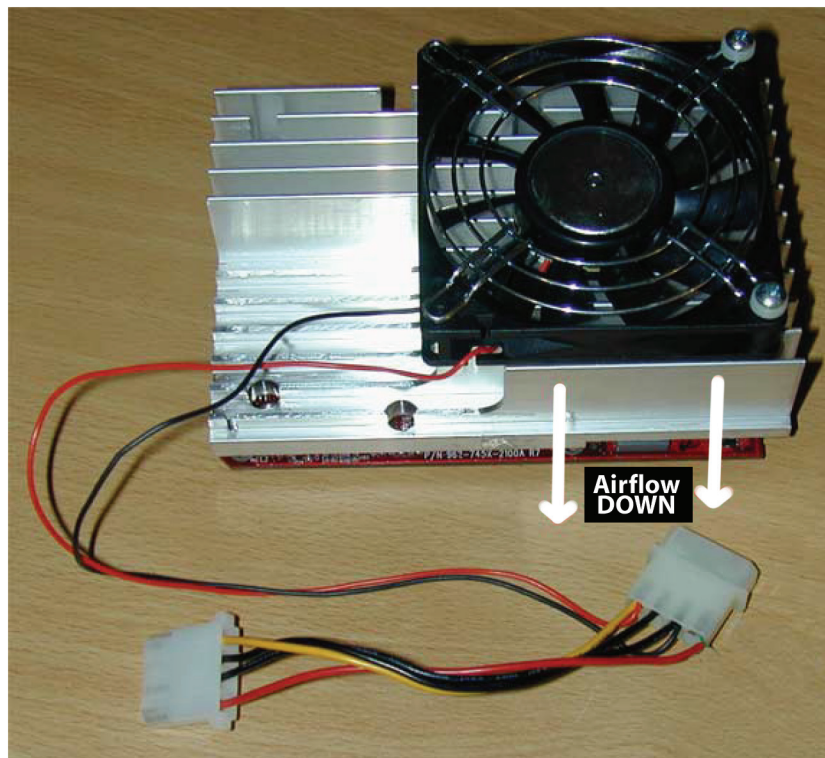
CPUs with included Fans:

 Connect the 4 pin wiring harness for the fan to one of the disk drive power connectors. A pass thru connector is provided.

Attach the fan guard to the top of the fan. Mount the fan on the heat sink as shown in the photo, and secure with the two screws.

Make sure the airflow indicator on the fan is in the proper direction. Air should be blowing down onto the card. Refer to the arrows in the photo below.

The label on the center of the fan should face towards the heatsink, and will not be visible.

Close the case cover. Do not operate the Mac with the cover open as the case needs to be closed for proper cooling. Some Mac models may have fans, but the cover still should be closed when operating the PowerMac.

Startup the Mac

You should hear the normal startup chime when the PowerMac boots up. Install the CPU Director software from the included CD as a final step.

If the startup tone does not sound, power down the Mac and make sure the processor card is plugged in and making full contact. Note: Failure to power down before re-seating the card can damage the processor or computer and will void the warranty.

Troubleshooting

If the machine doesn't boot (no video and/or no startup tone:)

• Make sure the Apple firmware is the latest version.

• Make sure you have installed the 7447/7457 patches. If the Firmware Update was not performed, the Mac will not boot.

• Make sure the Mac OS version is 9.2.x (or higher) with the NVRAM OS 9 compatibility enabled. If the NVRAM OS 9 was not set up, the Mac will not boot.

• Make sure the correct version of Mac OS X version is installed (see page 3.)

• Make sure processor card is plugged in properly.

• Press the Reset switch on the motherboard and try starting up again.(Labled 'S1' on the motherboard which should be in the corner behind the PCI slots on most motherboards.) You will have to reset the date and time and AppleTalk settings (ethernet or printer port) on your computer after pressing this button.

• Reset the PRAM by holding Command-Option-P-R during boot until you hear the chime repeat several times. You will have to reset the date and time and AppleTalk settings (ethernet or printer port) on your computer after resetting the PRAM.

Note: Pressing the Reset switch or resetting PRAM will also render the machine unable to boot into OS 9.2.2, you will have to use the Firmware Update CD to reset Mac OS 9 compatibility.

• OS 9 and 7447 Processors: You will receive a cache error when booting into OS 9 because this upgrade does not have L3 cache. Normal operation will resume after error is acknowledged.

If after following the previous suggestions you still encounter problems with the PowerForce upgrade, contact Technical Support at: **plxsupport@powerlogix.com**

There are also Frequently Asked Questions (FAQ) available on the PowerLogix website. These questions cover most questions asked of our Technical Support staff.

Be sure to register your PowerLogix product. This will enable us to inform you of all product updates. You can use the easy online form on our website:

http://powerlogix.com/support/registration/

Declaration of Conformity

PowerLogix declares under sole responsibility that this product is in conformity with the following standard(s) or other normative document(s): EN 55022, Class B, Limits and methods of measurement of radio interference characteristics of information technology equipment, 1992. EN 50082-1, Electromagnetic compatibility - generic immunity standard - Part 1: Residential, commercial and light industry, January, 1992. following the provisions of the Electromagnetic Compatibility Directive, 89/336/EEC.

PowerLogix declares under sole responsibility that this product complies with FCC Part 15. Radio Frequency Interference Statement: Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15, Subpart B of the FCC Rules. This equipment generates, uses and can radiate radio frequency energy. If not installed and used in accordance with the instructions, it may cause interference to radio communications. The limits are designed to provide reasonable protection against such interference in a residential situation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment on and off, the user is encouraged to try to correct the interference by one or more of the following measures: Reorient or relocate the receiving antenna of the affected radio or television. Increase the separation between the equipment and the affected receiver. Connect the equipment and the affected receiver to power outlets on separate circuits. Consult the dealer or an experienced radio/TV technician for help. Modifications: Changes or modifications not expressly approved by PowerLogix could void the user's authority to operate the equipment. Shielded cables: shielded cables must be used with this equipment to maintain compliance with FCC Regulations.

Product Warranty

30-Day Money-Back Guarantee. If you're not satisfied with the product within 30 days, you can send it back to the reseller where you bought it for a refund. There may be other reseller conditions that must be met.

Limited Hardware Warranty. PowerLogix warrants that this product will be free from defects in material and workmanship when delivered to you, and will perform in accordance with PowerLogix's specifications on the date of delivery under normal usage for a period of two years for 7457 products and three years for 7447 products from the date of purchase. PowerLogix makes no warranty or representation with respect to the quality, performance, merchantability, or fitness for a particular purpose of this product. In no event will PowerLogix be liable for direct, indirect or consequential damages resulting form any defect in the product or manual even if they are advised of the possibility of such damages. In particular, they shall have no liability for any program or data used with the PowerLogix product, including the costs of recovering or reproducing these programs or data. PowerLogix will pay for return shipping to the original purchaser during the first year of the warranty period.

How to Return Merchandise. If this product fails to meet the standards set out in this warranty, PowerLogix will at its discretion repair or replace it. You must contact PowerLogix with the following information: your sales invoice number, date and place of purchase, and the description of the problem or failure. PowerLogix will provide you with the following information: an RMA number, information regarding any applicable charges, the address to which the board must be sent. Products MUST be shipped in their original shipping container and packing material. **NO MERCHANDISE WILL BE ACCEPTED BY POWERLOGIX FOR ANY REASON WITHOUT AN ACCURATE RMA CLEARLY DISPLAYED ON THE SHIPPING LABEL OF THE RETURNED MERCHANDISE. LIMITATIONS. THE WARRANTIES AND REMEDIES SET OUT ABOVE ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, AND ANY OTHER WARRANTY WHETHER EXPRESS, IMPLIED, OR STATUTORY.** No PowerLogix dealer, value-added reseller, agent, or employee is authorized to make any modification, extension or addition to this warranty. The exclusion or limitation of implied warranties or liability for incidental or consequential damages is not permitted in some states. So the above exclusions may not apply to you. These warranties provide you with specific legal rights. There may be other rights that you may have which vary from State to State.

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