Owner’s Manual

Add 2 SATA drives to the G5

G5 SATA Double Drive Internal Mounting Kit

Apple Macintosh G5
SATA (Serial ATA) 2 Internal Drive System
# Table of Contents

## User Guide

<table>
<thead>
<tr>
<th>Topic</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>How SATA (Serial ATA) Works</td>
<td>3</td>
</tr>
<tr>
<td>Difference between PCI and PCI-e</td>
<td>4</td>
</tr>
</tbody>
</table>

## Bracket, Drive, and Host Installation

<table>
<thead>
<tr>
<th>Topic</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connecting SATA Drives</td>
<td>5</td>
</tr>
<tr>
<td>Included in the Kit</td>
<td>6</td>
</tr>
<tr>
<td>Removing the DVD Drive &amp; Fan Assy.</td>
<td>7-8</td>
</tr>
<tr>
<td>Installing the SATA Data Cables</td>
<td>9</td>
</tr>
<tr>
<td>Installing the SATA Power Cable</td>
<td>10</td>
</tr>
<tr>
<td>Installing the Drives &amp; Bracket</td>
<td>11-12</td>
</tr>
<tr>
<td>Installing the PCI or PCI-e Host</td>
<td>13-14</td>
</tr>
<tr>
<td>Formatting and Partitioning</td>
<td>15-17</td>
</tr>
</tbody>
</table>

## Warranty & Service

<table>
<thead>
<tr>
<th>Topic</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warranty &amp; Service</td>
<td>18</td>
</tr>
</tbody>
</table>
How SATA Works

SATA II (Serial ATA) is a High Performance Serial Bus designed to transfer data at up to 300MBytes per second. This ultra-fast data transfer rate is perfect for storage applications where speed is a critical issue. The low cost of the SATA drives also provide affordable backup and archiving solutions.

Granite offers a variety of host adapters that support the Hot-Swap capabilities of SATA. These PCI cards and PCMCIA adapters support multiple drives. Check the Granite website (www.granitedigital.com) for a complete listing all our host adapters.

SATA is simple to configure because each drive operates on a separate channel. The cable goes from the host adapter to the drive and ends there. Installation is only a matter of plugging in the host adapter, plugging in the cable, turning on the drive and booting up the computer.

This G5 SATA Double Drive Internal Mounting Kit includes a bracket for mounting up to two drives, cables, and your choice of either a PCI or PCI-e Host Adapter. The newer dual and quad core G5’s use the newer PCI-e bus while older G5’s use the standard PCI bus.
How SATA Works

Older G5 models used the PCI and PCI-X bus system. These cards are longer than the newer PCI-E style bus used in the newer G5 dual and quad core models. The pictures below show the difference in the Host Adapters and the connectors.

**PCI**

Older G5 models use the PCI type bus. The connector is longer because this type of bus is known as a parallel type, needing a larger number of contacts.

**PCI-e (Express)**

Newer (late 2005) G5 models use the PCI-E type bus. The connector is smaller because this type of bus is known as a serial type, needing less contacts.
Bracket, Drive, & Host Installation

Connecting SATA Drives

SATA Drives use a 7 Pin Cable that connects the drive mechanism directly to the PCI Host Adapter... one drive mechanism per channel. The connector has an “L” shape and can only be plugged in one way. Care should be taken when inserting the cable as the connector is a little delicate and can be broken if the cable is inserted incorrectly.

The power to a SATA Drive can be from either the Legacy connector or the SATA Power Connector. In this kit we will power the drives using the SATA Power Connectors.
Included in the Kit

The SATA Double Drive Internal Mounting Kit contains all the necessary components to allow for installation of up to 2 SATA drives. The only tools necessary are a metric set of Allen Wrenches and a #2 Phillips Head Screwdriver.

Drive Mounting Bracket & Screws

The SATA Double Drive Bracket holds up to two standard 3.5” SATA Drive Mechanisms.

SATA 7 Pin Data Cables

Two SATA Data Cables are supplied with the kit. The right angle side plugs into the drive mechanism while the straight connector plugs into the PCI Host.

SATA 4 Pin Power Cable

The SATA Power Cable is installed between the DVD drive and the current power cable. We are simply patching into the existing power to supply power to the two SATA Drives.

Optional SATA PCI Host Adapters

The G5 uses two types of PCI buses. The newer models introduced in late 2005 use the PCI-e (Express) bus while the older G5’s use the PCI / PCI-X type bus. These cards are totally different and you must know which one the computer uses before installation.
Bracket, Drive, & Host Installation

Removing the DVD Drive & Fan Assembly

After opening the G5 two parts need to be removed. The first is the DVD Drive. There are two plastic latches that lock the drive in place. To remove the drive open both of these latches.

The 40 pin data cable needs to be unplugged from the motherboard, located directly under the DVD Drive. Use the plastic pull handle to remove it.

The 40 pin data cable needs to be guided through the hole as the DVD Drive is removed from the G5.
Removing the DVD Drive & Fan Assembly

Use the data cables cut-out hole to dislodge the DVD from it’s guides. The DVD needs to be broken loose from it’s locating pads. A little pressure on the DVD’s rear quarter and the drive will pop free.

Once the DVD has been dislodged simply slide it out of the computer. The 4 pin power cable will need to be disconnected before the DVD can be totally removed. Caution should be taken with the 40 pin data cable as it feeds through the hole.

The fan assembly pulls straight out.
Installing the Data Cables

When the DVD Drive and the Fan Assembly have been removed the first things to install are the two 7 Pin SATA Data Cables.

The SATA Data Cables have both a right angle which attaches to the drives and a straight connector which attaches to the PCI Host Adapter. Push the straight connector through the hole.

On newer G5’s the small clip needs to be bent out of the way so the cables can pass through. Push the straight connectors through the hole because they’re smaller than the right angle connectors.

Pull the two data cables until they are centered with the hole. This will give you the needed room to plug the drives in and get them positioned.
Installing the SATA Power Cable

The SATA Power Cable is routed above the fans and through the DVD Cable cut-out in the rear. Push the white 4 Pin connectors through the hole.

The black SATA Power Connectors plug into the drives while the white 4 Pin patch connector goes in-line with the DVD Drive and its existing power cable.

Plug the white male connector into the existing G5 DVD power connector.

Plug the white female connector into the DVD Drive. Push firmly to make sure the pins are locked into place.

Slide the DVD Drive back into place while feeding the 40 pin Data Cable back through the hole along with the excess SATA Power Cable. Lock both latches.
Bracket, Drive, & Host Installation

Installing the Drives & Bracket

Attach the two SATA Drive Mechanisms to the mounting plate using the supplied 6/32” flat head screws.

Position the drive assembly so that you have room to plug in the data and power connectors.

Plug the two SATA Data Cables and the SATA Power Cable into the drive mechanisms. Note that the connectors only plug in one way.
Installing the Drives & Bracket

Slide the drive assembly into the G5 and center it. Align the 4 mounting holes.

Use the provided 3MM Allen Head Screws and wrench to secure the assembly. Pull any excess SATA Data Cabling through the hole.

Reinstall the fan assembly.
Bracket, Drive, & Host Installation

Installing the PCI Host Adapter

The PCI Host Adapter has two SATA Data Connectors that plug into the two cables. Note the orientation of the connectors and make sure the cables lock into place.

The card can be inserted into any of the G5 open slots.

Make sure the card is seated properly. Use the Apple provided screw to secure the SATA PCI Host Adapter into place.
Installing the PCI Host Adapter

Once the SATA PCI Host Adapter has been installed the plastic and aluminum doors can be reinstalled and the G5 is ready for driver installation.
Bracket, Drive, & Host Installation

Installing the Software Drivers & Formatting

The PCI-e Host Adapter must have a driver installed in order for the G5 to recognize the drives. The PCI Host Adapter does not need a driver installed, go directly to page 17 for information on Formatting a Drive.

Supplied with the PCI-e Host Adapter is a CD that contains drives. The G5 driver looks like the icon above. The card uses the Silicon Image 3132 chipset and the driver is written by Silicon Image. To check for updates go to their website, www.siliconimage.com.

Upon opening the application continue through all the dialog boxes.

You will be prompted as to where you want the driver installed which must be on the boot drive. The driver file is called a .kext file. It is located in the system/library/extensions/directory.
In order to install the driver you must have administrative privileges. If your user does not then your system administrator will need to log in and install the drivers.

The driver installation should take a few minutes.

Upon completion this dialog box will appear. At this point the application has installed the “siliconimage3132.kext” file into the system/library/extensions folder. A reboot is necessary for the driver to take effect.
Bracket, Drive, & Host Installation
Installing the Software Drivers & Formatting

Launch the G5’s Disk Utility Application. This program allows you to Format and prepare the new SATA Drives for use. Select the drive you want to work with, make sure your selection is correct because after you Format the drive and data that was on it is lost.

Pick the type of Volume Format you wish to use. The default is “Mac OS Extended (Journeled)” and should be used unless your specific needs are different. Next, name the volume, and hit the Erase button.

When Disk Utility has completed it’s Format and Erase the new drive icon will appear on the desktop. The process should only take a few minutes. You are now ready to use the drive.
Warranty and Service

Granite Digital warrants your G5 Internal Drive System against any defects in material and workmanship, under normal use, for a period of one year following its date of purchase. In the event this product is found to be defective within the warranty period, Granite Digital will, at its option, repair or replace the defective unit.

This warranty is void: a) if the unit is operated or stored under abnormal use and maintenance conditions; b) if the unit is repaired, modified or altered, unless such repair, modification or alteration is expressly authorized in writing by Granite Digital; c) if the unit is subjected to abuse, neglect, lightning strike, electrical fault, improper packaging, or accident; d) if the unit is installed improperly; e) if the serial number of the unit is defaced or missing.

Granite Digital will not, under any circumstances, be liable for direct, special, or consequential damages such as, but not limited to, damage or loss of property or equipment, loss of profits or revenues, cost of replacement goods, or expense or inconvenience caused by service interruptions. Under no circumstances will any person be entitled to any sum greater than the purchase price paid for the unit.

To obtain warranty service, you must contact Granite Digital’s Technical Support Department by calling 510-471-6442. They will attempt to diagnose and correct your problem by phone. If the unit does not function properly, they will issue a Return Material Authorization (RMA) number. You may be asked to furnish proof of purchase to confirm that the unit is still under warranty. Also have the serial number available.

All enclosures returned to Granite Digital must be securely packaged and shipped postage prepaid. All the product returns must be authorized in advance by Granite Digital’s Technical Support Department. Authorization is confirmed by issuance of the RMA number, which must be written prominently on the outside of the box in which the defective unit is returned to Granite Digital.