

# FirmTek

*Store and Share your Digital Creations*



## SeriTek™ /6G

**Two Port External Serial ATA 6G ExpressCard/34 Adapter  
With Port Multiplication For Notebook Computers**

*User Manual for MacBook Pro*

**FirmTek, LLC**  
**www.firmtek.com**

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Before installing the SeriTek/6G or any other hardware or software, you are responsible for backing up data contained on any storage devices. After hardware or software installation, you are responsible for backing up data on any storage devices at frequent intervals. FirmTek, LLC is not liable for any loss of data or damage to equipment resulting from the use of the SeriTek/6G.

### **External Shielded Serial ATA Cable**

The SeriTek/6G host adapter uses specially shielded external Serial ATA cables to ensure integrity during data transfers. Please use caution and handle the cables carefully. Hold the connector at the ends (not the cable itself) when inserting and removing the cable from the SeriTek/6G and the external enclosure. To maintain peak performance keep the number of cable insertions and removals to a minimum.

**Note:** The SeriTek/6G supports the newer style Serial ATA connectors, called "eSATA" connectors. These connectors provide improved reliability with special metal shielding and retention springs for positive locking.

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## I. Introduction

### Welcome

Congratulations and thank you for purchasing the SeriTek/6G Serial ATA host adapter. This product is another innovative solution made possible by the creative engineers at FirmTek.

### About This Manual

This user manual was written with the assumption you are familiar with the Macintosh computer, and are comfortable with opening its case. For further information, and to get acquainted with your computer, please refer to your Macintosh user manual.

### About Serial ATA Technology

An evolutionary replacement for Parallel ATA, Serial ATA (Advanced Technology Architecture) provides an interface that allows computer users to connect additional hard disks and peripherals. Serial ATA offers insulated cables that are thinner and longer with smaller 7-pin connectors which results in easier installation and improved airflow, compared to wider and shorter Parallel ATA cables. Improved airflow translates into a cooler operating environment for the Macintosh and hard disks.

### About the Port Multiplier Specification

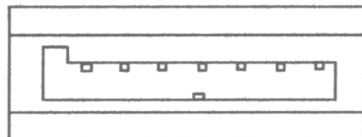
Originally, Serial ATA adapters and enclosures supported a single drive connected to a single port via a single cable. The maximum number of hard disks supported on a Serial ATA adapter depended on the adapter's port count. The Serial ATA port multiplier specification allows multiple hard disks to share a single port.

The SeriTek/6G supports traditional direct-connect enclosures with one drive per port such as the SeriTek/2EN2, and port multiplier enabled enclosures with up to 5 drives per port such as the SeriTek/5PM. Two SeriTek/5PM enclosures can be used to support up to 10 hard disks. Port multiplier enabled enclosures such as the SeriTek/5PM include additional internal circuitry, which allows the connection of multiple hard disks to a single SeriTek/6G port.

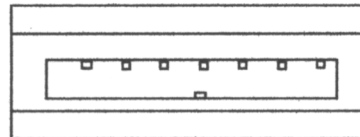
### About the SeriTek/6G eSATA ExpressCard/34 Adapter

The SeriTek/6G ExpressCard/34 adapter provides an easy and affordable way for Macintosh users to add inexpensive high-speed storage to their MacBook Pro. With two external eSATA ports, each offering performance up to 6.0 Gbits/sec, the SeriTek/6G provides the high bandwidth necessary to meet the needs of performance-hungry applications. With the use of up to two SeriTek/5PM enclosures up to ten hard disks can be connected to a single SeriTek/6G.

Note: The SeriTek/6G is not compatible with PC Card slots found in earlier generation PowerPC Macintosh notebooks. The SeriTek/6G requires the newer ExpressCard/34 interface. The SeriTek/6G host adapter provides the latest I-shaped eSATA connectors.



Original L-shaped  
Serial ATA connector



Newer rectangular  
eSATA I-shaped  
connector

## **About ExpressCard Technology**

ExpressCard is the name of a new technology standard introduced by PCMCIA. The ExpressCard/34 standard delivers thinner, faster and lighter modular expansion to notebook computer users. Consumers can add hardware capabilities such as memory, wired and wireless communications cards and security devices by simply inserting these modules into their systems. All ExpressCard slots accommodate modules designed to use either Universal Serial Bus (USB) 2.0, or the new PCI Express standards.

## **SeriTek/6G Package Contents**

- One SeriTek/6G eSATA ExpressCard/34 adaptor
- CD-ROM Containing the Macintosh User Manual

## **SeriTek/6G Key Features and Benefits**

- Two eSATA 6G ExpressCard/34 adapter ports with 64-bit & 32-bit compatibility
- Perfect for upgrading and expanding 2011 MacBook Pro 17" computers
- Features External Boot Support (2011 Apple MacBook Pro)
- Compatible with Mac OS X 10.6.6 or higher
- Fully supports ExpressCard/34 interface for 2011 Apple MacBook Pro 17" or later
- Offers reduced capabilities with 2009, 2010 MacBook Pro 17" models
- Onboard SATA 6Gb/s PCI-Express to Serial ATA controller chip
- Fully compliant with Serial ATA Revision 3.0 specification
- Supports Serial ATA and Solid State Disks
- Ultra low power consumption
- Supports Disk Utility RAID 0, 1 and JBOD configurations
- Data protection: S.M.A.R.T application support for third party Macintosh utilities
- PCI-Express compliant
- SATA 6Gb/s compliant, backward compatible with SATA 3.0 and SATA 1.5 Gb/s
- Features hot swap hard disk support and port multiplier (Sil3726) FIS based switching
- Complete CRC error checking, for all bits transmitted offers enhanced data protection
- Bus mastering operation enhances multitasking during disk transfers and increases CPU efficiency: The CPU is free to handle other tasks during data transfers between the PCI Express bus and system memory
- User-upgradeable firmware
- Utilizes standard eSATA connectors
- 2-port 6G ExpressCard/34 with PM support, Oxford 936 and direct connect support
- Port multiplier support: Connect up to 10 drives using SeriTek/5PM enclosures
- Direct connect support: Connect up to 2 drives with a SeriTek/2EN2 enclosure
- Brings High Performance data storage to the MacBook Pro.
- Storage-hungry applications that would normally require a Mac Pro can now be run on your MacBook Pro: Desktop publishing, Audio/Video storage and editing, photo/graphics storage and editing, serving files, etc.
- Simple to install, easy to use

## SeriTek/6G Specifications

|                                      |  |
|--------------------------------------|--|
| <b>General Hardware Requirements</b> | <ul style="list-style-type: none"> <li>• 2011, 2010 or 2009 MacBook Pro with an available ExpressCard/34 expansion slot</li> </ul>   |
| <b>Operating Systems Supported</b>   | <ul style="list-style-type: none"> <li>• Mac OS X version 10.6.6 or later, Windows</li> </ul>  |
| <b>Bus Type</b>                      | <ul style="list-style-type: none"> <li>• PCI-Express</li> </ul>  |
| <b>External Connectors</b>           | <ul style="list-style-type: none"> <li>• 2-port external Serial ATA (SATA 6G) interface supports up to 2 compatible external storage enclosures with eSATA connectors</li> </ul>   |
| <b>Enclosure Support</b>             | <ul style="list-style-type: none"> <li>• Direct Connect eSATA (SeriTek/2EN2)</li> <li>• Sil-3726 Port Multiplier (SeriTek/5PM)</li> <li>• Oxford 936/946</li> </ul>  |
| <b>Drive Types Supported</b>         | <ul style="list-style-type: none"> <li>• Serial ATA and Solid State Disks</li> </ul>   |
| <b>Data Transfer Rates</b>           | <ul style="list-style-type: none"> <li>• Up to 380 MBytes/</li> </ul>  |
| <b>Drive Modes Supported</b>         | <ul style="list-style-type: none"> <li>• SATA 6G with or without Native Command Queuing</li> </ul>   |
| <b>Advanced Data Features</b>        | <ul style="list-style-type: none"> <li>• Fully compliant with Serial ATA Revision 3.0 specification</li> <li>• Supports SATA 6.0 Gb/s, 3.0 Gb/s and 1.5 Gb/s HDDs</li> <li>• Apple Port multiplier support: Connect up to 10 drives with SeriTek/5PM Port Multiplier enclosures</li> <li>• Performs FIS-Based Switching with Port Multiplier</li> <li>• Spread Spectrum Clocking (SSC)</li> <li>• SATA 6G Device compliant</li> <li>• Bus Mastering off-loads data I/O handling from CPU</li> <li>• CRC error checking, for all bits transmitted (command, data, and status), offers enhanced data protection for high-speed Serial ATA drives</li> <li>• Two independent data channels allows for separate device timings</li> <li>• Automatically identifies and configures drive types</li> </ul> |
| <b>Onboard Flash ROM</b>             | <ul style="list-style-type: none"> <li>• Allows easy upgrades to the latest firmware</li> </ul>  |
| <b>Cables Supported</b>              | <ul style="list-style-type: none"> <li>• 7-pin shielded eSATA cable, up to 2 meter in length</li> </ul>  |
| <b>Warranty</b>                      | <ul style="list-style-type: none"> <li>• One year limited parts &amp; labor</li> </ul>   |
| <b>Physical Dimensions</b>           | <ul style="list-style-type: none"> <li>• 4.5" (L) x 1.75" (W) x .88" (H)</li> <li>• 34mm ExpressCard Compliant</li> </ul>  |
| <b>Power Requirements</b>            | <ul style="list-style-type: none"> <li>• 5V ± 5%</li> </ul>  |
| <b>Environmental</b>                 | <ul style="list-style-type: none"> <li>• Temperature: <ul style="list-style-type: none"> <li>Operating: +5°C to +55°C</li> <li>Non-Operating: -25°C to +70°C</li> </ul> </li> <li>• Relative humidity: <ul style="list-style-type: none"> <li>Operating: 20% to 80%</li> <li>Non-Operating: 15% to 90%</li> </ul> </li> </ul>  |
| <b>EMC Compliance</b>                | <ul style="list-style-type: none"> <li>• EN55022/1998, EN55024/1998 (European Community)</li> <li>• FCC Part 15 Class B (US)</li> </ul>  |

## **SeriTek/6G System Requirements**

### **Operating System**

- 64-bit or 32-bit Macintosh OS X version 10.6.6 or later, or Microsoft Windows

### **Hardware Requirements**

- Fully compatible with 2011 MacBook Pro 17" notebook computers with available ExpressCard/34 expansion slot.
- The SeriTek/6G requires a MacBook Pro with at least one ExpressCard slot. The Apple 2009-2011 MacBook Pro 17" models include an ExpressCard/34 slot. The 2009-2011 MacBook Pro 15" and 13" models do NOT include an ExpressCard slot.
- External powered enclosure (with or without port multiplication support) equipped with Serial ATA hard disk(s) or Solid State Disk(s).
- The 2011 MacBook Pro or later is required for external boot support and amazingly fast Read performance. While the 2009/2010 MacBook Pro models are also supported by the SeriTek/6G, no boot capability is available and performance is reduced.

## II. Installing the SeriTek/6G



**Caution:** Please make sure your data is backed up prior to installing the SeriTek/6G ExpressCard adapter and hard drive(s) or peripheral(s).

The SeriTek/6G ExpressCard adapter and your Macintosh contain sensitive components that can be permanently damaged by Static Electric Discharge. To minimize the chance of Electro-Static Discharge avoid touching the ExpressCard connector, handle only the edges of the card (do not touch the interface connector) and work in an area free of static electricity.

### Introduction

This section describes the proper method of installing the SeriTek/6G.

### SeriTek/6G ExpressCard/34 Adapter Installation For Notebooks Running Mac OS X 10.6.6 or Later:

1. Before inserting the SeriTek/6G into your MacBook Pro computer, install the driver that is included on the SeriTek/6G CD.
2. The CD contains an installer application for notebooks running Mac OS X 10.6.6 or later. Insert the CD, open the /SeriTek-6G/Drivers/Macintosh folder and click on the installer application.
3. Once the driver is installed Shutdown the MacBook Pro.
4. Insert the SeriTek/6G adapter into the ExpressCard/34 slot (See Figure 1). Be sure the card fully seats and is retained by ExpressCard/34 latching mechanism.

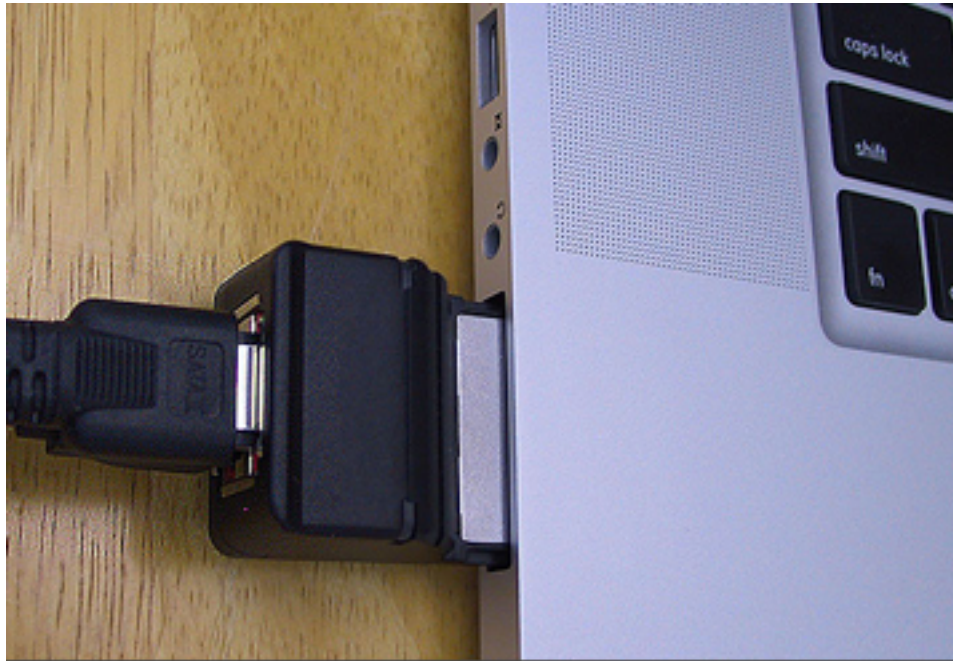


Figure 1: Inserting the SeriTek/6G


5. Turn on the MacBook Pro. (If the SeriTek/6G is removed from the ExpressCard/34 slot, the MacBook Pro will need to be restarted after the card is re-inserted.)



- Find the Icon in Finder that looks like an ExpressCard; it should appear at the top right, next to the other system status indicators.



Figure 2: ExpressCard Icon

- Click on the ExpressCard Icon (  ), you should see the system identifies the card as a storage controller, the SeriTek/6G (see Figure 3).

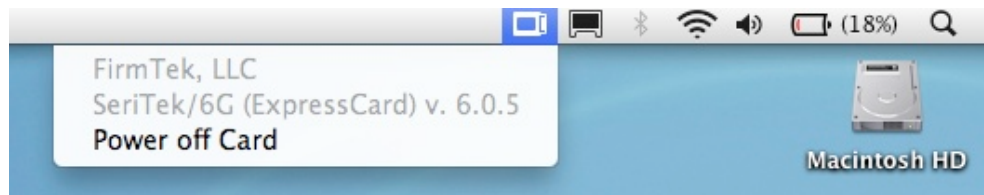


Figure 3: SeriTek/6G as Identified by the System

Note: If you inserted your SeriTek/6G card into a Mac OS X 10.6.x system before installing the driver, the MacBook Pro will identify the card as a "SATA Controller" (see Figure 4). This is not a reason for concern. To correct the issue, please install the SeriTek/6G driver. Next, restart the MacBook Pro so the card will be properly identified as the SeriTek/6G.



Figure 4: "SATA Controller" Identified by the System

- You are now ready to connect and initialize your storage.

### Ready for Use

Your SeriTek/6G ExpressCard/34 adapter is now installed. You are ready to connect and initialize your storage, described in the following section. The section below also describes important differences in Serial ATA connectors.

### III. Connecting External Enclosure(s)

#### Introduction

This section describes how to connect external hard drive enclosures and provides instructions for formatting the Serial ATA hard drive(s) using Apple's *Disk Utility*. If you decide to use a third party drive setup utility, please refer to the documentation provided with the utility.

#### Connecting the SeriTek/6G to an External Enclosure

1. The SeriTek/6G is compatible with a wide range of external enclosures. However, the enclosure must meet the following basic requirements:
  - Adequate power to support the hard drives (dedicated power supply)
  - 7-pin shielded receptacles compatible with FirmTek's shielded Serial ATA cable
  - Support for Serial ATA Version 1.0, 2.0 or 3.0
  - Enclosure must be able to support and mount the Serial ATA hard disks
  - Enclosure types that have been tested and are supported by FirmTek include Direct Connect (SeriTek/2EN2), Port Multiplication enclosures like the SeriTek/5PM (Sil-3726) and Oxford 936/946 based enclosures. Other third party SATA enclosure types may or may not work.
2. Install hard disks into the external enclosure according to the instructions included with the enclosure.
3. Attach one end of FirmTek's shielded Serial ATA cable(s) to the Serial ATA receptacle(s) on the SeriTek/6G and connect the other end(s) to the external enclosure. (eSATA cables are not included with SeriTek/6G)
4. The external enclosure may be powered on or off at this time. If it is off, power it on.

Note: FirmTek Serial ATA cables are specially designed to work with both PC and Macintosh computers. Please use FirmTek external shielded Serial ATA cables with the SeriTek/6G.

- *The original Serial ATA connectors have an L-shaped opening, see Figure 5A.*
- *The newer eSATA connectors have a rectangular I-shaped opening, see Figure 5B*

The SeriTek/6G uses the newer eSATA connectors, also known as I-shaped connectors. Some hard disk enclosures require SATA cables that utilize an L-shaped connector. For these types of enclosures, the cable required will have a rectangular I-shaped eSATA connector on one end, and an L-shaped SATA connector on the other end.

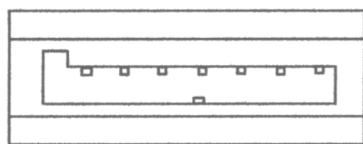


Figure 5A: Original L-shaped SATA connector

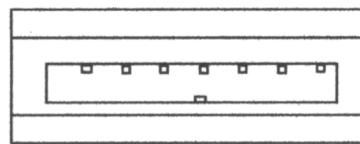


Figure 5B: Newer rectangular eSATA I-shaped connector

Figure 5: Serial ATA Connector Types: Original L-shaped and newer eSATA I-shaped

Note: If the SeriTek/6G is being used with a hard disk enclosure that uses eSATA connectors, eSATA cables with have rectangular I-shaped eSATA connectors on each end will be required, like the two connectors shown in Figure 6.



Figure 6: Using SeriTek/6G with a drive enclosure that has I-shaped eSATA connectors; both cable connectors will be identical.

### Making the eSATA Connection

**Caution:** Be sure to connect the cable using the proper orientation to your SeriTek/6G host adapter and external enclosure. It should easily snap into place. Please do not force the cable connector onto the ExpressCard/34 or the SATA interface of the enclosure.

Remember the male and female connectors must be of the same type for a proper fit: L-shaped female to L-shaped male or eSATA female to eSATA male.

Cable connection problems?

- First verify that you are connecting the correct type of connectors to each other
  - If your connectors still do not fit, rotate the cable and try again
1. Install the hard disk(s) in an enclosure. If your enclosure is powered on and the Macintosh is running the hard disk(s) should appear in Disk Utility.
  2. If all storage devices connected to the SeriTek/6G have valid system partitions the hard disk volume(s) will be mounted on the desktop. An icon will be displayed on the desktop for each valid Mac OS X partition attached to the SeriTek/6G.
  3. If the storage device(s) have not been formatted for use with the Macintosh, a *Disk Insertion* message will appear on the desktop for each unconfigured storage device. Select *Initialize* to configure your storage device or ignore if you wish to configure the disk(s) later (see Figure 7). Selecting Initialize will open Apple Disk Utility.



Figure 7: Disk Insertion Window

## Formatting Serial ATA Drives Using Macintosh OS X Version 10.6.x or Later

Turn on your Macintosh computer.

1. Open Apple's *Disk Utility* which is located in the Utilities folder of the Macintosh OS X start-up volume.

To open Disk Utility:

- a) From the Finder, click on the Go menu
- b) Pull down to Utilities and release the mouse button
- c) Double click the Disk Utility Application (See Figure 8)

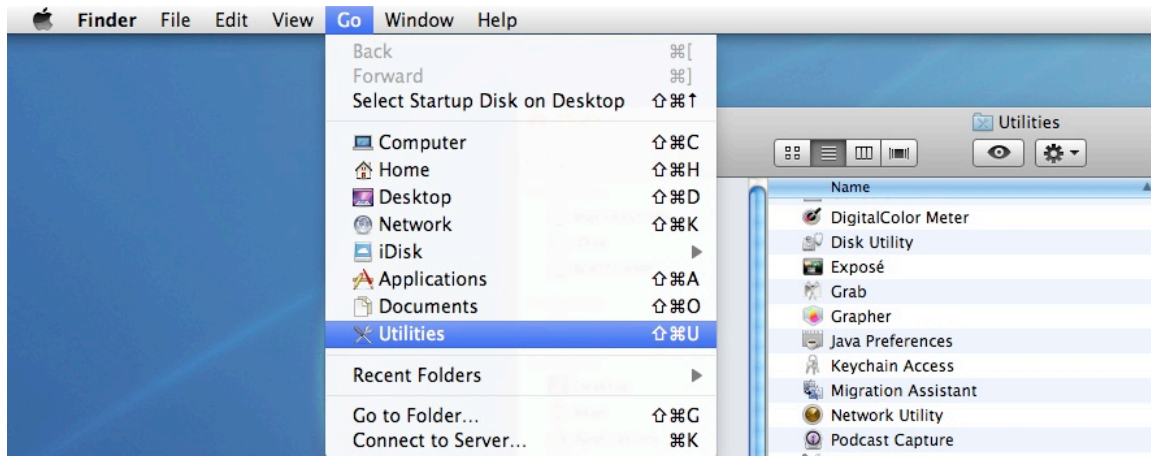


Figure 8: Locating Apple's *Disk Utility*

2. Review the list of hard disks shown in *Disk Utility* (see Figure 9). Hard disks that have been formatted should have a volume name below their listing. New, unformatted disks typically have no volume name. Carefully select the hard disk you wish to format.

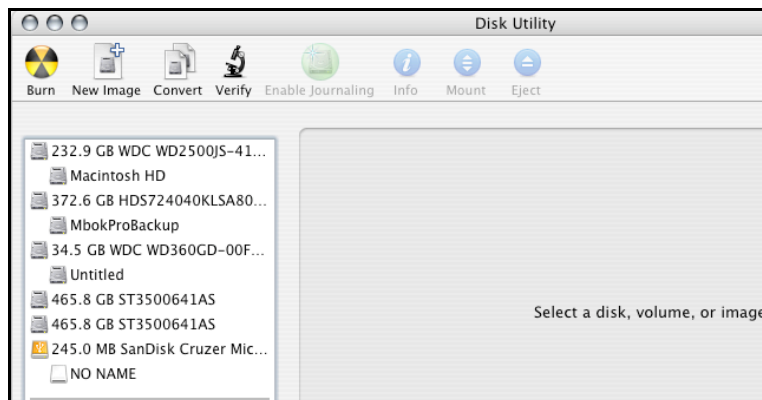


Figure 9: Example hard drive listing

3. After carefully selecting the hard drive you wish to format, select the *Erase* tab in Apple's *Disk Utility* (see Figure 10).

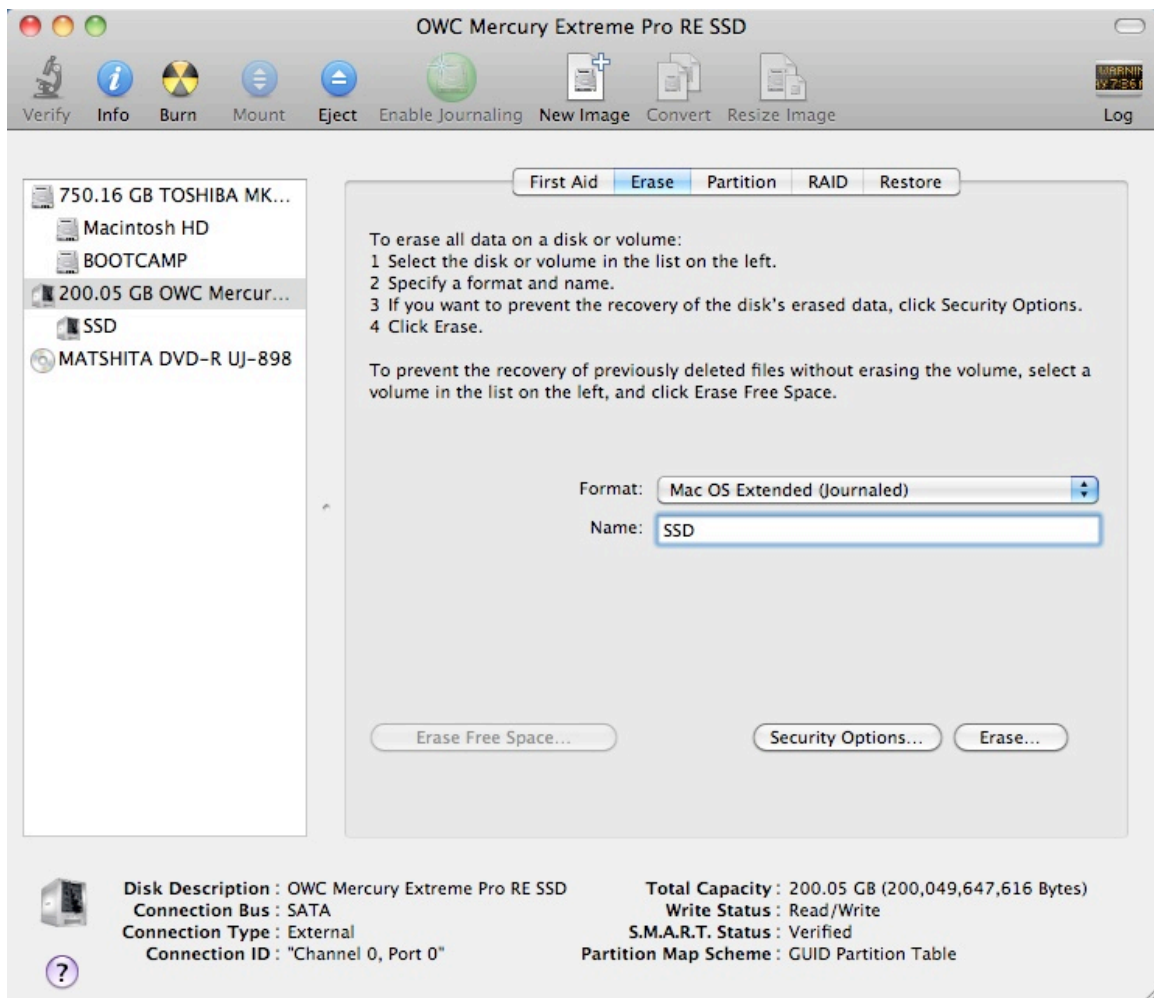


Figure 10: Selecting the *Erase* tab in Apple's *Disk Utility*

4. For *Volume Format*, the default choice is "Mac OS Extended (Journaled)".
5. In the *Name* field, users can type a name for the newly erased disk.
6. If the selected SATA hard disk or Solid State Drive (SSD) has data on it, be sure to back up any important data before clicking the *Erase* button. Once the Erase button is pushed the selected device will be formatted for use with Mac OS X. Any previous data on the disk will no longer be available.
7. Click the *Erase* button to format the selected drive.
8. Once the drive has been erased, it will be displayed as an icon on the Mac OS X desktop.

## Creating a RAID Volume

(Macintosh OS X version 10.6.x or Later)

Mac OS X 10.6.x or later Disk Utility RAID (Redundant Array of Independent Drives) options allow the user to display multiple disks as a single volume. A RAID 1 mirror can provide data redundancy in the case of a hard disk hardware failure. A RAID 0 striped RAID set, can increase performance and volume size by striping multiple disks into a single. Both methods are described below.

**Mirrored RAID Set** - Apple Disk Utility can be used to create a mirror. This is also known as a RAID 1 configuration. The hard disks should be the same size and model for optimal performance. Data written to a mirror volume is archived onto two separate duplicate hard disks. The mirror configuration provides redundancy that will usually protect data should a single hard disk fail. A mirror cannot protect against the user accidentally trashing an important file. In addition, if the mirror hard disk directory becomes corrupted, the corruption will be copied to all hard disks in the mirror configuration. As a result, a backup copy should always be maintained of any important data on the mirror. RAID 1 mirror performance equals the performance of the slowest hard disk in the mirror set. The RAID 1 mirror volume size equals the size of the smallest member disk. All data on hard disks used to create a new Disk Utility based mirror will be destroyed when the mirror is created.

**Striped RAID Set** - Apple Disk Utility can also be used to create a striped RAID set. This is also known as a RAID 0 configuration. The hard disks should be the same size and model for optimal performance. Data is spread (striped) equally across multiple hard disks for increased performance. A striped RAID set provides no data redundancy. As a result, should one hard disk fail all data stored on the RAID 0 volume is lost. While a striped RAID set provides excellent performance, a back up is required to protect important data. RAID 0 direct connect performance usually equals the performance of the slowest hard disk in the RAID 0 x the number of hard disks used. The RAID 0 volume size equals the size of the smallest member disk x the number of disks in the RAID 0. All data on all hard disks used to create a striped RAID set will be destroyed when the RAID 0 is created with Disk Utility.

### *Step by step instructions*

1. Turn on your computer.
2. Open Apple's *Disk Utility* which is located in the Utilities folder of the Mac OS X start-up volume.

To open Disk Utility please do the following:

- a) From the Finder, click on the Go menu
- b) Pull down to Utilities and release the mouse button
- c) Double click the Disk Utility Application

3. Review the list of hard disks show within *Disk Utility*. Hard disks that have been formatted should have a volume name below their listing. New, unformatted disks typically have no volume name. Carefully select the hard disk you wish to format.
4. Select the *RAID* tab in Apple's *Disk Utility* (see Figure 11)

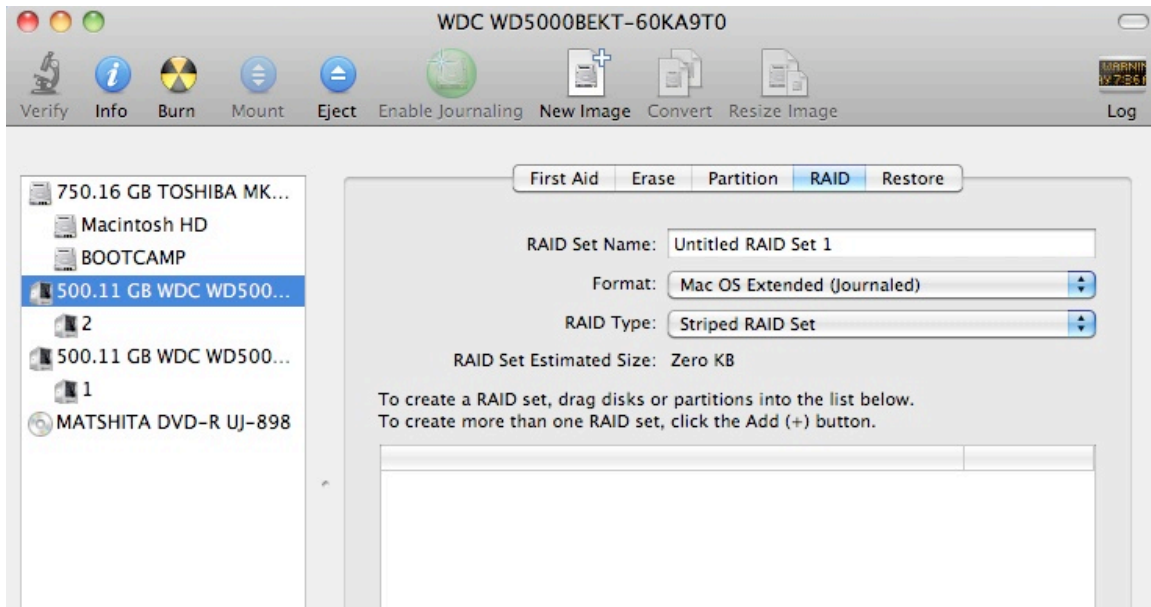


Figure 11: Selecting the RAID tab in Apple's *Disk Utility*

- Carefully select and drag a hard drive to add it as a member of the new RAID volume in the *Disk Utility* status window (Figure 12).

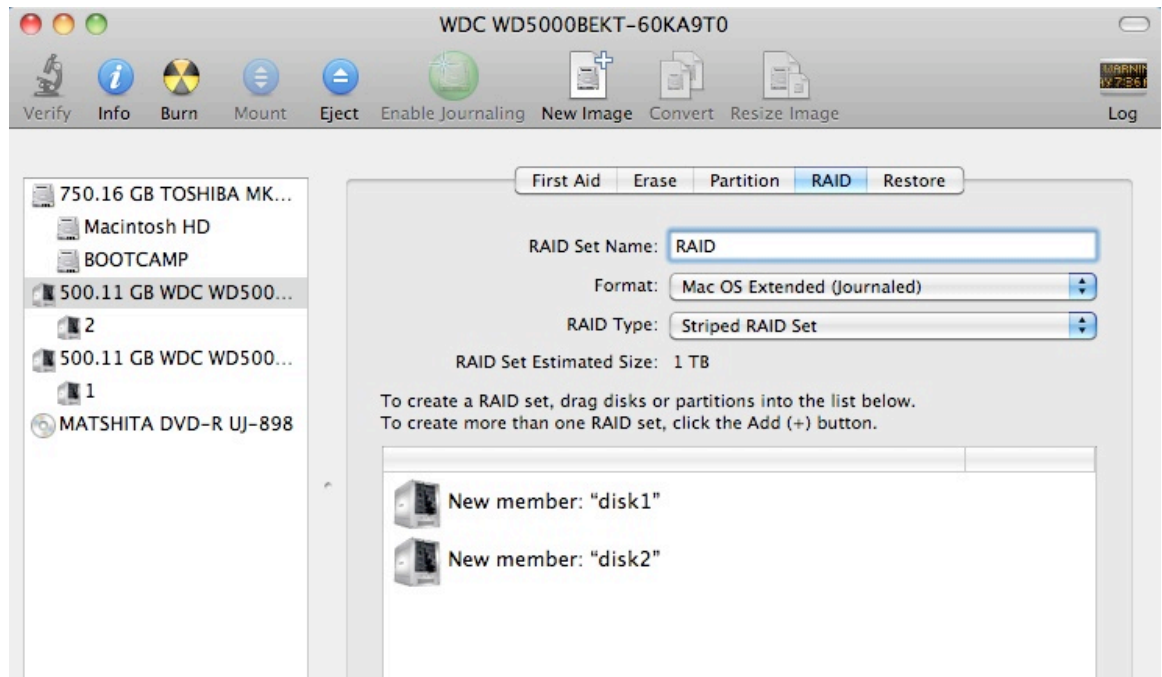


Figure 12: Example drives and options for a RAID volume; Drag and Drop Drives into the RAID Set Window

- Repeat step 5 for each member for the RAID volume.
- Choose a *RAID Scheme*: Stripe or Mirror.

8. Name the new RAID volume.
9. For *Volume Format*, the default choice is “Mac OS Extended (Journaled)”. Note: Mac OS X 10.6.x users and later can select the RAID block size. For enhanced performance with large file sizes push the option button and select a RAID block size of 64K or 128K.

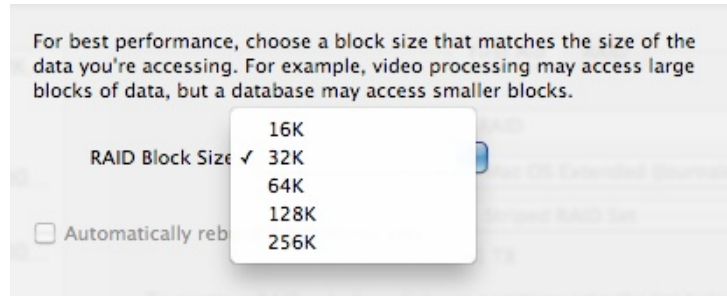


Figure 13: Selecting a RAID Block Size

10. After reviewing the options selected, click on the *Create* button to initialize the new RAID volume (see Figure 14). Next, click the *Create* button in the dialog box for the RAID to be created.

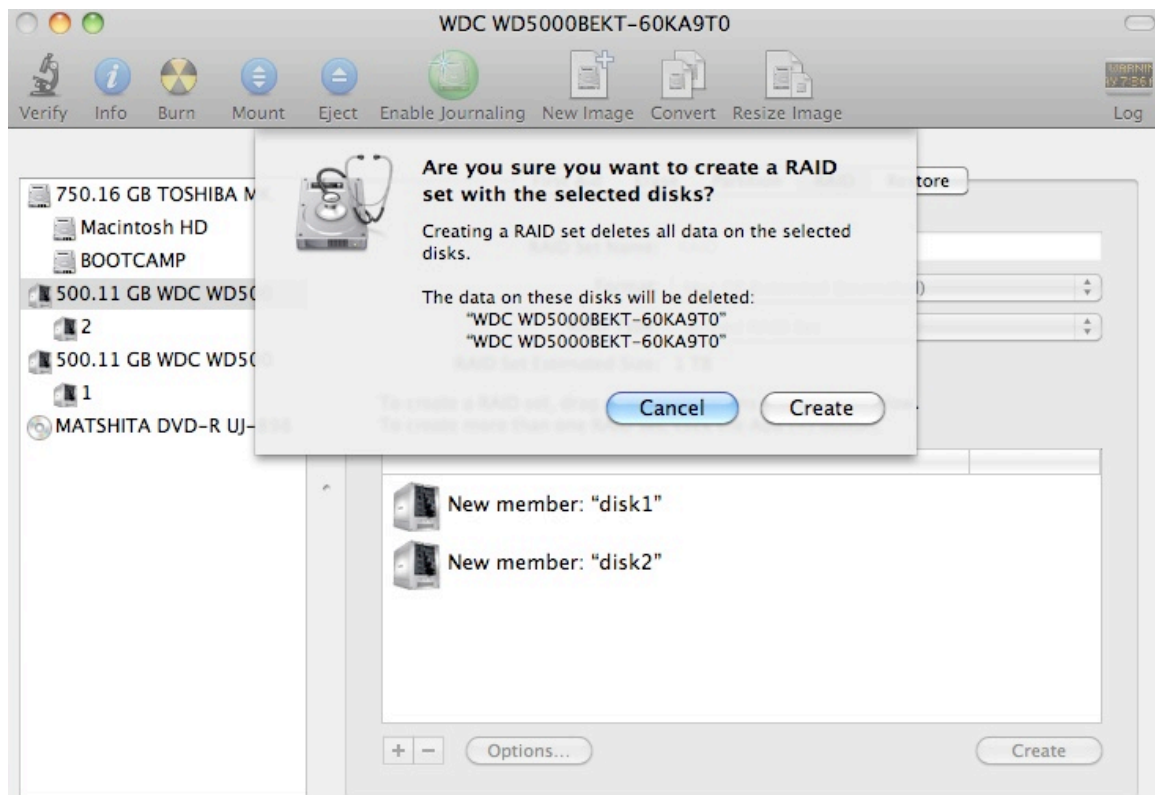


Figure 14: Creating a new RAID volume

11. The disk icon representing the RAID volume will now show up on the desktop and is ready to be used.



## IV. Using SeriTek/6G Hot-Swap Functionality

### Introduction

The SeriTek/6G ExpressCard/34 adapter provides advanced hot-swap disk functionality. The user simply dismounts the hard disk or SSD from the desktop and then removes the disk from the FirmTek enclosure. To mount a hard disk, simply insert the hard disk into the FirmTek enclosure. The easy to use, hot swap disk system provided with FirmTek enclosures provides optimal compatibility with the SeriTek/6G.

### Hot-Swap Guidelines


- Do not eject or dismount a hard disk that is being used as the boot drive.
- Do not disconnect or remove hard drives while transferring data.
- Save your work and close associated applications before removing the external hard drive (applications need to be closed since they may keep temporary working files open on the external hard drive).
- Always unmount the volumes (eject or drag the volumes to trash) associated with an external hard drive before removing it.
- Remove or power down every drive associated with a particular RAID volume before reintroducing them to the system. For example, do not remove just two drives of a four drive RAID volume and reinsert them. All four drives must be removed and then reinserted.
- As a general rule, power down the external hard drives after powering down the Macintosh computer. Power on the external enclosure before powering on the Macintosh computer.
- If the computer is waking from sleep, please wait 60 seconds before turning on the hard disk enclosure. On wake from sleep the driver requires 60 seconds to load before it can recognize the hard disks.

### Hot-Swap Procedure

#### ***Connecting External Hard Drive(s)***

If your Macintosh computer is not yet powered on, power on the external enclosure then power on the computer. If the Macintosh computer is already powered on, users can connect the external hard drive(s) without powering down the computer first.

#### ***Removing External Hard Drive(s)***

 **Caution:** To prevent loss of data, save your work and close associated applications before removing the external hard drive (applications need to be closed since they may keep temporary working files open on the external hard drive). Always unmount the volumes (eject or drag the volumes to trash) associated with an external hard drive before removing it. Eject or drag all of the volumes associated with the hard drive(s) before disconnecting or removing them.

#### ***Improperly Removing External Hard Drive(s)***

If you do not properly unmount volumes before removing the associated hard drive(s), a "Device Removal" dialog box will appear (See Figure 15). This dialog box shows up as a reminder to unmount volumes properly before disconnecting or removing external hard drives. Failure to properly unmount volumes before disconnecting external hard drives may result in loss of data.



Figure 15: Improperly removing External Hard Drive(s)

## V. Troubleshooting and Frequently Asked Questions

- **The SeriTek/6G ExpressCard/34 is not recognized by the MacBook Pro**

Make sure the SeriTek/6G adapter is properly seated in the ExpressCard/34 slot and restart the MacBook Pro. The MacBook Pro must be restarted after the SeriTek/6G is inserted into the ExpressCard/34 slot. If the ExpressCard menu bar icon does not display “SeriTek/6G” when clicked, please verify the FirmTek driver is installed.

- **Is the SeriTek/6G ExpressCard/34 Bootable with Mac OS X?**

Yes, the SeriTek/6G can be used to support a boot volume when used with the 2011 MacBook Pro 17”. However, the bootable disk attached to the SeriTek/6G must have a version of Mac OS X specifically designed to boot the 2011 MacBook Pro. Apple Disk Utility can be used to clone the internal disk to the external ExpressCard/34 connected disk using the “Restore” tab. Any important data on the SeriTek/6G connected disk **MUST** be backed up before starting this process, as the external disk will be erased.

To create the clone, please do the following:

1. Open Disk Utility
2. Select the Erase Tab and erase all data on the chosen External disk
3. Select the Macintosh HD on the left and then click on the “Restore” tab
4. Drag Macintosh HD to the Source: window
5. Drag the SeriTek/6G attached disk to the Destination: window
6. Click the “Restore” button to start the clone process
7. After the cloning process is completed, boot from the SeriTek/6G disk by selecting it in System Preferences: Startup Disk or by holding the option key and restarting the 2011 MacBook Pro. Once booted from the external volume use Disk Utility to “Repair Disk Permissions” on the new external Startup Disk.

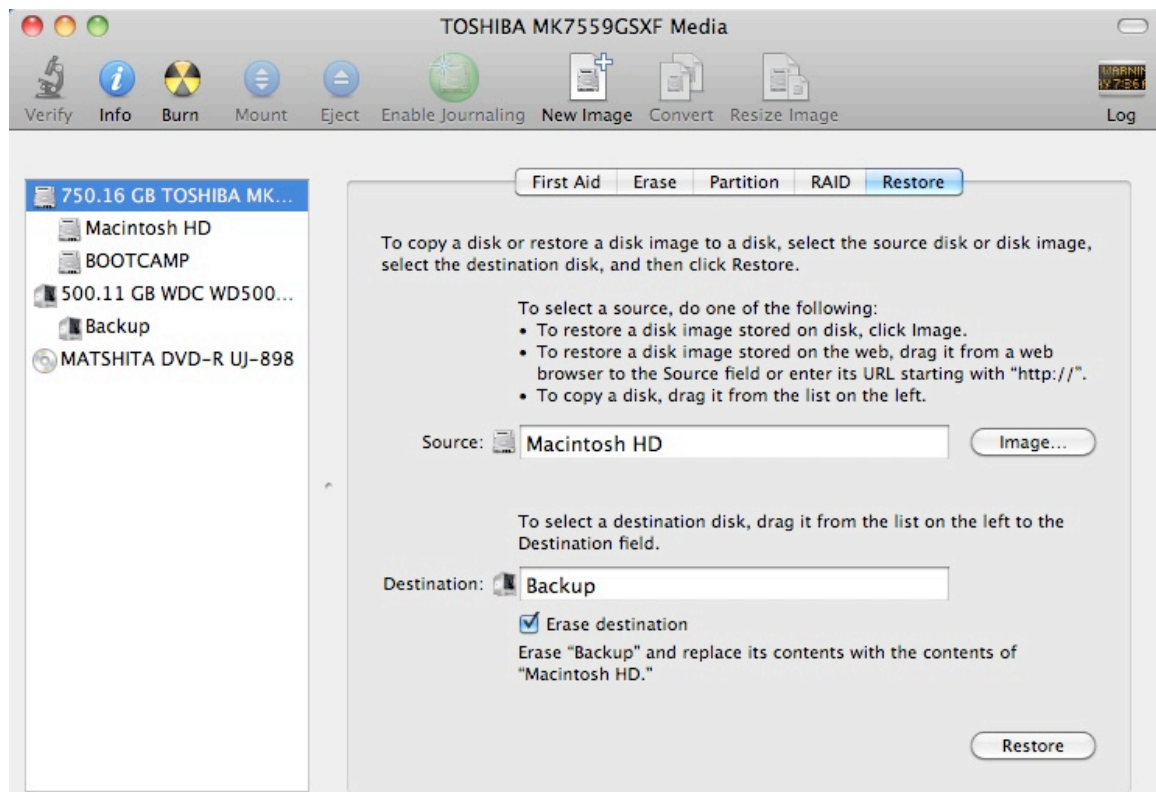


Figure 16: Cloning internal disk to SeriTek/6G attached disk

- **Does the SeriTek/6G ExpressCard/34 support a Mac OS X RAID Boot Volume?**

Yes, if the Disk Utility “Restore” cloning process can be completed, the volume should be bootable when connected to the SeriTek/6G. The boot volume can be a single disk or a RAID configuration. FirmTek has successfully booted the 2011 MacBook Pro with Mac OS X 10.6.7 using the SeriTek/6G and the following eSATA enclosures: SeriTek/2EN2, SeriTek/5PM, Oxford 936DS and Oxford 936QS based enclosures.

- **Does the SeriTek/6G ExpressCard/34 support Sleep with Mac OS X?**

Yes, the standard configuration for the SeriTek/6G is to use the MacBook Pro internal disk as the Startup disk. In this configuration, the SeriTek/6G supports Sleep.

However, there may be instances when the customer desires to Startup the 2011 MacBook Pro 17” using an external Boot drive connected to the SeriTek/6G. If both eSATA ports on the SeriTek/6G are used to support a single RAID boot volume, sleep is supported. If a single eSATA port on the SeriTek/6G is used to support an external boot volume, sleep may not function properly. If this is the case for your particular configuration, please contact FirmTek support for a solution. Another issue to be aware of is SATA hard disks typically support sleep while third party SSD devices may not.

- **My hard disk won't mount?**

Check cables and connections. Ensure the 7-pin Serial ATA cable is properly oriented to the connectors on the SeriTek/6G host adapter and the external enclosure. Ensure the hard drives in the enclosure are properly powered.

Apple System Profiler - Mac OS X

1. Open the *Apple System Profiler* by clicking opening the *Finder*, opening *Applications*, opening the *Utilities* folder, and double clicking on *Apple System Profiler*. Select *PCI Cards*. Under *PCI Cards* section, SeriTek/6G should show up as an “ata” card type.
2. If SeriTek/6G is not listed, re-seat the card in the ExpressCard/34 slot by removing and reinserting it and then restart the MacBook Pro. If the SeriTek/6G still doesn't show up in the *Apple System Profiler*, verify the proper FirmTek driver is installed. The SeriTek/6G driver can be found on the FirmTek CD or [www.firmtek.com](http://www.firmtek.com).

- **The transfer rate of my disk connected to the SeriTek/6G seems low.**

The bandwidth limit of the SeriTek/6G is approximately 380 MB/s with the 2011 MacBook. When the 2011 MacBook Pro and the SeriTek/6G were performance tested in FirmTek labs, Read transfer rates of 381MB/s and Write transfer rates of approx. 129MB/s were achieved using two 120GB 6G SSD in a RAID 0 configuration. Slower storage devices will provide slower transfer rates. FirmTek is researching whether it might be possible to enhance SeriTek/6G Write performance in a future update.

- **Does the SeriTek/6G work with all Macintosh computers?**

No, the SeriTek/6G only works with notebook computers with at least one ExpressCard/34 slot available. While the SeriTek/6G may work with 2009/2010 MacBook Pro models, it is not bootable with pre-2011 MacBook Pro models. FirmTek recommends the 2011 MacBook Pro 17” model for optimal functionality with the SeriTek/6G.

- **Does the SeriTek/6G work with Boot Camp?**

Yes, a separate Windows driver is provided on the FirmTek CD that can be used to support a Windows 7/Boot Camp configuration with the SeriTek/6G. This driver supports up to two direct connect eSATA hard disks when used a Boot Camp/Windows configuration.

## **VI. Product Support**

### **Technical Support**

For additional information on how to use SeriTek/6G, download the latest firmware updates, or for technical assistance, please visit us at [www.firmtek.com](http://www.firmtek.com), or email us at [support@firmtek.com](mailto:support@firmtek.com).

Please provide the following information when contacting FirmTek:

- Product model and serial number
- Firmware version (Use the Apple System Profiler as described in the troubleshooting section to determine the firmware version. Look for ROM # and Revision #)
- Macintosh model
- Macintosh OS type and version (example: Mac OS X, version 10.6.6)
- Hardware and software installed on your system
- Contact information including daytime telephone number and email address
- A detailed description of the question or problem

### **Return Merchandise Authorization**

If FirmTek technical support determines the product needs to be repaired or replaced, a Return Merchandise Authorization (RMA) number and shipping address will be provided. Please pack the SeriTek/6G in the original shipping container along with all of the original packaging - including the static bag, all hardware, software, cables, and other accessories that came with the original product. You are responsible for shipping and insurance costs, and any damage incurred due to improper packaging or transport.

FirmTek reserves the right to determine whether the product will be repaired or replaced with new or refurbished parts, or with a new or refurbished product. Standard United States return shipping charges will be paid by FirmTek. Foreign and other shipping methods such as express shipping are available for an additional charge.

Write the RMA number on the outside of the shipping container, and include the following information with the shipment:

- A description of the problem
- A copy of the original purchase invoice
- Return shipping address
- Contact information including daytime telephone number and email address

FirmTek, LLC reserves the right to refuse shipments missing a valid RMA number.

## **VII. Product Warranty and Disclaimers**

FirmTek warrants to the original buyer only that this product shall be free from defects in material and workmanship for a period of one year from the original date of purchase. This warranty is valid only when the original purchase invoice is provided. This warranty shall not apply to any defects resulting from improper handling, misuse, misapplication, abuse, or unauthorized modification(s) which are performed by end user.

FirmTek, LLC reserves the right to make changes to any products described in this manual at any time without notice. FirmTek, LLC assumes no responsibility for the use or reliability of hardware or software that is not supplied by FirmTek, LLC or its affiliated companies. FirmTek, LLC does not assume any responsibility or liability arising out of the application or use of any product described in this document, except as expressly agreed to in writing by FirmTek, LLC; nor does the purchase or use of a product from FirmTek, LLC convey a license under any patent rights, copyrights, trademark rights, or any other intellectual property rights of FirmTek, LLC or third parties.

## VIII. Regulatory Compliance Statements

### Federal Communications Commission Radio Frequency Interference Statement

WARNING: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. However, if this equipment does cause interference to radio or television equipment reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between equipment and receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/television technician for help.
- Use a shielded and properly grounded I/O cable and power cable to ensure compliance of this unit to the specified limits of the rules.

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.

### CE European Union Compliance Statement

EMC compliance:

Emissions: EN55022: 1998, Class B  
Immunity: EN55024: 1998  
EN61000-4-2: 1995+A1: 1998  
EN61000-4-3: 1995+A1: 1998  
EN61000-4-4: 1995  
EN61000-4-6: 1996  
EN61000-4-8: 1993