TEMPO™ SATA E4P
eSATA Host Controller for PCI Express

Quick Start Guide for Tempo SATA E4P

You Should Have

The following item should be included in your product package:
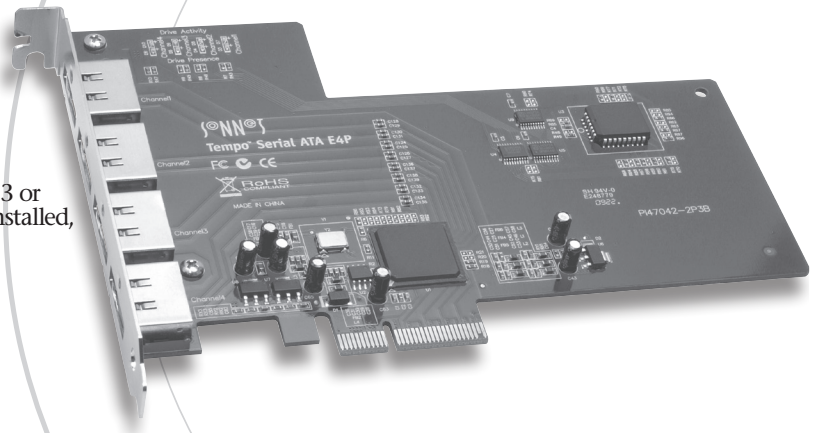
• One Tempo SATA E4P card

The following items are required (sold separately):

• One or more external Serial ATA drive enclosures
• One or more external Serial ATA (eSATA) data cables

System Requirements

The Tempo SATA E4P requires the following in order to operate in your system:

• One available PCI Express (PCIe) x4, x8, or x16 slot*
• Mac OS® X Version 10.3 or later, Mac OS X Server Version 10.3 or later, Windows® 7, Windows Vista®, Windows XP with SP2 installed, Windows Server 2008, or Windows Server 2003**
• Internet connection (for driver download)

Support Notes: We recommend that you make a backup of important information on your system's current hard drive prior to installing new hardware or software.

When handling computer products, you must take care to prevent components from being damaged by static electricity. Before opening your computer or removing parts from their packages, always ground yourself first by touching a metal part of the computer, such as a port access cover, and work in an area free of static electricity; avoid carpeted areas. Handle all electronic components only by their edges, and avoid touching connector traces and component pins. Also, avoid touching the logic board and any of its components.

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* x1 slot compatible, but with reduced performance

** Creating RAID volumes under Windows requires dynamic disk storage, a formatting option available with Windows Server 2008 R2, Windows Server 2003 SP1, Windows 7 Professional, Enterprise or Ultimate (32- and 64-bit versions), Windows Vista Enterprise or Ultimate (32- and 64-bit versions), or Windows XP Professional (32- and 64-bit versions).

In order to create RAID volumes larger than 2TB, you must do one of the following: Span (link together in a virtual chain) the volumes, and then format them as NTFS. **-OR-** Use GPT formatting. Note that drives and volumes with GPT formatting are not visible to any version of Windows XP Professional, nor to the 32-bit version of Windows Server 2003 SP1.

Quick Start Guide for Tempo SATA E4P

Installation Preparation

Prior to installing the Tempo SATA E4P into your system and connecting any drive enclosures, you should familiarize yourself with the parts to be installed. We also strongly recommend that you read the sections in your computer's user manual that address PCI Express card installation.

1. **Figure 1** shows the Tempo card's locking eSATA ports; depending on the drive enclosure(s) used, you will need to use data cables with eSATA connectors on both ends, or cables with an eSATA connector on one end and a SATA I connector on the other end. Enclosures with external SATA connectors use eSATA connectors. **Note**: SATA I connectors are used on bare SATA hard drives.

eSATA connectors

Figure 1

2. **Figure 2** shows eSATA and SATA I connectors.

Hardware Installation Steps

This section covers the installation of the Tempo SATA E4P into your system and connection of one or more drive enclosures.

1. Shut down your computer, and then open it to access the expansion card area (PCI Express slots); refer to your computer's user manual for specific information.

2. Locate an available x4 (4-lane) or x8 (8-lane) PCI Express slot inside your computer and remove its access cover.

3. Remove the Sonnet card from its packaging, and then install it into the PCI Express slot; **make sure the card is firmly seated and secured.**
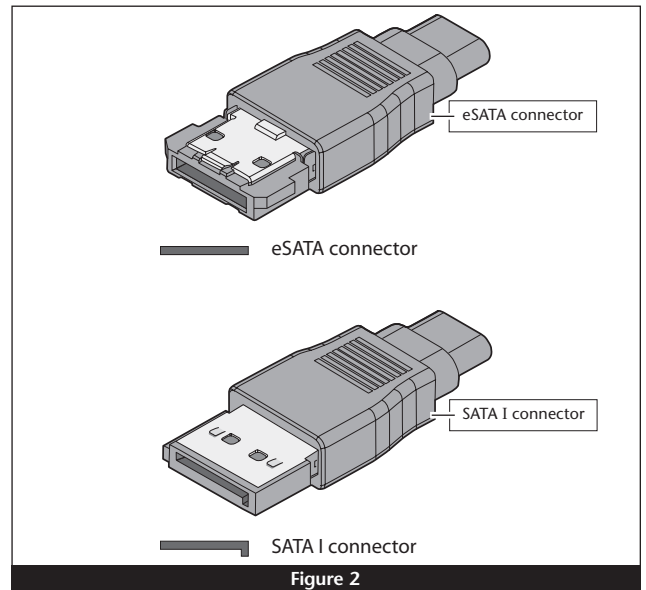

eSATA connector

eSATA connector

SATA I connector

SATA I connector

Figure 2

Support Note for Mac Users: Please install the Tempo SATA E4P in a recommended slot:
Mac Pro (Mid 2010) - Use only slot 3 or 4
Mac Pro (Early 2009) - Use only slot 3 or 4
Mac Pro (Early 2008) - Use only slot 3 or 4
Pre-2008 Mac Pro - Use any available slot
Power Mac G5 - Use slot 2 or 4.

4. Close your computer.

5. Connect the eSATA data cable(s) between the Tempo card and the drive enclosures; **make sure all cables are connected securely to the Tempo card and the enclosures**.

Support Note: Sonnet strongly recommends you use high quality external SATA cables to connect your drive enclosures to Tempo SATA E4P. Low quality cables do not offer the proper shielding and durability high quality cables afford, and may allow data to be corrupted.

Quick Start Guide for Tempo SATA E4P

Mac Pro Driver Installation

This section describes the download and installation of drivers to support the Tempo SATA E4P in Mac Pro computers.

1. Turn on your computer; *if you installed the Tempo card into a Mac Pro (Early 2008) or newer computer, skip to the next step*. If you installed the card into a pre-2008 Mac Pro, depending on which version of Mac OS X your computer is running, the Expansion Slot Utility application will open automatically. If it does not open by itself, you must do so manually (Expansion Slot Utility is located in the /System/Library/CoreServices folder). Select the configuration appropriate for your setup (Tempo SATA E4P is an x4 card, and should be assigned at least an x4 slot), and then click Quit if the default configuration was appropriate, or click Save and Restart if you changed the configuration.

2. Log onto the Internet. Go to http://www.sonnettech.com/support/kb/kb.php, click on the Computer Cards link, and then click on the PCIe Cards link.

3. Locate and click the Tempo SATA E4P link, then click the Driver link, and then click the Tempo SATA Pro Family Driver (OS X) appropriate for your setup.

4. Click the Download Now button; the file will be downloaded.

5. Double-click the temposatapro_vxxx.zip file you just downloaded. Locate and double-click the Tempo SATA Pro Installer x.x.x.pkg file to launch the installer; when the *Welcome to the Tempo SATA Pro for Mac Pro and MacBook Pro Installer* window appears, click Continue.

6. When the *Important Information* window appears, click Continue.

7. When the *Software License Agreement* window appears, read the license, click Continue, and then click Agree.

8. When the *Select a Destination* window appears, accept the default or choose a new location, and then click Install.

9. When asked, enter your password, and then click OK.

10. Click Continue Installation to install the driver.

11. While the driver is installed, a progress bar appears. When the *Installation Completed Successfully* screen appears, click Restart; you may format drives attached to the Tempo card after your system finishes restarting. Skip to page 5 for drive formatting information.

Windows 7 Driver Installation

This section describes the download and installation of drivers to support the Tempo SATA E4P in systems running Windows 7.

1. Turn on your computer and log in; during startup, an *Installing Device Driver Software* pop-up will appear, followed by a message that the device driver software was *not* successfully installed. Close the message.

2. Log onto the Internet. Go to http://www.sonnettech.com/support/kb/kb.php, click on the Computer Cards link, and then click on the PCIe Cards link.

3. Locate and click the Tempo SATA E4P link, then the Driver link, and then click Tempo SATA Pro Family Driver (Windows) x.x.x. Click the Download Now link. Depending on how your computer is configured, a new window may appear asking you what to do with the file; click Open. If another window appears asking for permission to open the file, click Allow.

4. When the window showing the contents of the .zip file appears, accept the default location or select a new destination for the files to be extracted, note the name and location of the file, and then click Extract Files.

5. Click Start > Control Panel. In the *Control Panel* window, click Device Manager. If you haven't disabled User Account Control (UAC), a *UAC* window will appear; click Continue.

6. When the *Device Manager* window appears, click the arrow next to IDE ATA/ATAPI controllers to expand the list. Right-click "Standard Dual Channel PCI IDE Controller" and select Update Driver Software.

7. When the *Update Driver Software* window appears, click "Browse my computer for driver software".

8. When the next window appears, click Browse. When the *Browse for Folder* window appears, locate the file you extracted (unzipped), click it, and then click OK.

9. Back in the *Browse for driver software* window, click Next; the driver software will be installed.

10. When the *Windows has successfully updated your driver software* window appears, click Close; you may now format drives attached to the Tempo card. Skip to page 7 for drive formatting information.

Quick Start Guide for Tempo SATA E4P

Windows Vista Driver Installation

This section describes the download and installation of drivers to support the Tempo SATA E4P in systems running Windows Vista.

1. Turn on your computer and log in; during startup, an *Installing Device Driver Software* pop-up will appear, followed by a message that the device driver software was *not* successfully installed. Close the message.

2. Log onto the Internet. Go to http://www.sonnettech.com/support/kb/kb.php, click on the Computer Cards link, and then click on the PCIe Cards link.

3. Locate and click the Tempo SATA E4P link, then the Driver link, and then click Tempo SATA Pro Family Driver (Windows) x.x.x. Click the Download Now link. Depending on how your computer is configured, a new window may appear asking you what to do with the file; click Open. If another window appears asking for permission to open the file, click Allow.

4. When the window showing the contents of the .zip file appears, accept the default location or select a new destination for the files to be extracted, note the name and location of the file, and then click Extract Files.

5. Click Start > Settings > Control Panel. In the *Control Panel* window, double-click Device Manager. If you haven't disabled User Account Control (UAC), a *UAC* window will appear; click Continue.

6. When the *Device Manager* window appears, click the arrow next to IDE ATA/ATAPI controllers to expand the list. Right-click "Standard Dual Channel PCI IDE Controller" and select Update Driver Software.

7. When the next window appears, click "Let me pick from a list of device drivers on my computer".

8. When the *Select the device driver* window appears, click Have Disk.

9. When the *Install From Disk* window appears, click Browse.

10. When the *Locate File* window appears, double-click the Vista*x.x.x folder*. Double-click the appropriate folder (x32 for 32-bit operating systems, x64 for 64-bit versions), and then double-click the "mvsata" file.

11. Back in the *Install from Disk* window, click OK.

12. Back in the *Select the device driver* window, click Next; the driver software will be installed.

13. When the *Windows has successfully updated your driver software* window appears, click Close; you may now format drives attached to the Tempo card. Skip to page 7 for drive formatting information.

Support Note: After its driver software has been updated, Tempo SATA E4P will be listed as a Storage Controller in the *Device Manager* window under Windows Vista.

Windows XP Professional Driver Installation

This section describes the installation of drivers to support the Tempo SATA E4P in systems running Windows XP Professional.

1. Turn on your computer; during startup, two *New Hardware Found* pop-ups may briefly appear, with IDE Controller and Standard Dual Channel PCI IDE Controller listed as the new hardware types.

2. Log onto the Internet. Go to http://www.sonnettech.com/support/kb/kb.php, click on the Computer Cards link, and then click on the PCIe Cards link.

3. Locate and click the Tempo SATA E4P link, then the Driver link, and then click Tempo SATA Pro Family Driver (Windows) x.x.x. Click the Download Now link. Depending on how your computer is configured, a new window may appear asking you what to do with the file; click Open. If another window appears asking for permission to open the file, click Allow.

4. Click Start > Settings > Control Panel. When the *Control Panel* window appears, double-click the System icon. (If the System icon is not visible, click the Switch to Classic View link to make it appear.)

5. When the *System Properties* window appears, click the Hardware tab, and then click Device Manager.

6. When the *Device Manager* window appears, click the + sign next to IDE ATA/ATAPI controllers to expand the list. Right-click "Standard Dual Channel PCI IDE Controller" and then select Update Driver.

7. When the *Hardware Update Wizard* window appears, select "No, not this time", and then click Next.

8. When the next window appears, click "Install from a list or specific location", and then click next.

9. When the next window appears, click "Don't search. I will choose the driver to install", and then click Next.

10. When the next window appears, select Standard Dual Channel PCI IDE Controller, and then click Have Disk.

Quick Start Guide for Tempo SATA E4P

Windows XP Professional Driver Installation (continued)

11. When the *Install From Disk* window appears, click Browse.

12 When the *Locate File* window appears, double-click the Vista*x.x.x folder.* Double-click the appropriate folder (x32 for 32-bit operating systems, x64 for 64-bit versions), and then double-click the "mvsata" file.

13. Back in the *Install from Disk* window, click OK.

14. Back in the *Hardware Update Wizard* window, click Next; the software will be installed. (If a window appears stating that the Tempo software has not passed Windows Logo testing, click Continue Anyway.)

15. When the next window appears, click Finish; you may now format drives attached to the Tempo card. Skip to page 7 for drive formatting information.

> **Support Note:** After its driver software has been updated, Tempo SATA E4P will be listed as a SCSI and RAID Controller in the *Device Manager* window under Windows XP.

Quick Start Guide for Tempo SATA E4P

Mac OS X Drive Formatting—RAID Sets

This section describes the process of formatting (initializing) multiple hard drives connected to the Tempo SATA E4P using Disk Utility under Mac OS X Version 10.5; the process is nearly identical under Mac OS X Versions 10.6 and 10.4. If you choose to do so, you may format your drives using SoftRAID 3.1 or later; refer to that product's documentation for instructions.

Support Note: Depending on how you set it up, a drive enclosure with a built-in hardware RAID controller, like Sonnet's Fusion D400QR5, may not present its drives separately to the operating system. For instance, if you choose a RAID 0 or RAID 5 configuration, only one "drive" will appear in Disk Utility. If this is the case, skip to "Mac OS X Drive Formatting—Individual Drives" on the next page for drive formatting instructions.

1. Turn on your storage system, and then turn on your computer. During startup, one or more messages referring to unreadable volumes will be displayed; click Initialize… to launch Disk Utility. After Disk Utility launches, click the Initialize button in each remaining message window.

2. If it is not already open, launch Disk Utility **(Figure 3)**. Note that all drives attached to the Tempo card may be identified in the information window by their custom icon with the Sonnet S logo.

Support Notes: The remaining steps in this section describe the creation of a RAID 0 (striped) set. If you intend to create a RAID 1 (mirrored) or RAID 10 (striped/mirrored) set, the procedure is similar to the remaining steps. Please refer to Disk Utility help for further information.

All hard drives connected to the Tempo card will be described by Disk Utility as having an internal connection.

3. Select one of the drives you want to format in a RAID set by clicking the drive symbol or the "name" of the drive; a set of tabs will appear in the right pane. Click the RAID tab, select all the drives you will use to create your striped RAID set, and then drag them into the disk field **(Figure 4)**. **Be careful NOT to accidentally drag in a drive you don't want included in the RAID.**

4. From the drop-down menus, select the volume format and the RAID scheme (Striped RAID Set), and then type in the name for your RAID volume **(Figure 4)**.

5. Click the Options button. From the drop down menu, select a RAID block size **(Figure 5)**. If you are working with video, selecting the largest block size will help improve performance. If you are working with many smaller files (databases, etc.) a smaller block size will work well. Click OK.

6. Click Create. When the *Creating RAID* window appears, click the Create button; all of the selected drives will be formatted and the RAID volume created. Close Disk Utility; your drives are now ready for use and your installation is complete.

Support Note: See page 8 for port and channel identification, and information on Tempo SATA E4P's status LEDs.
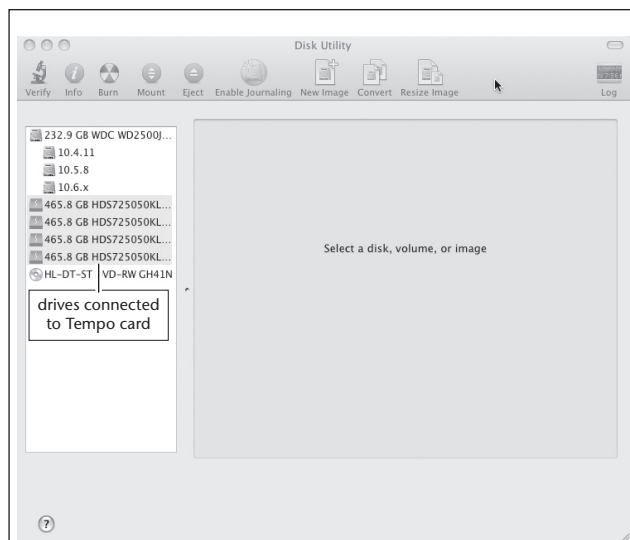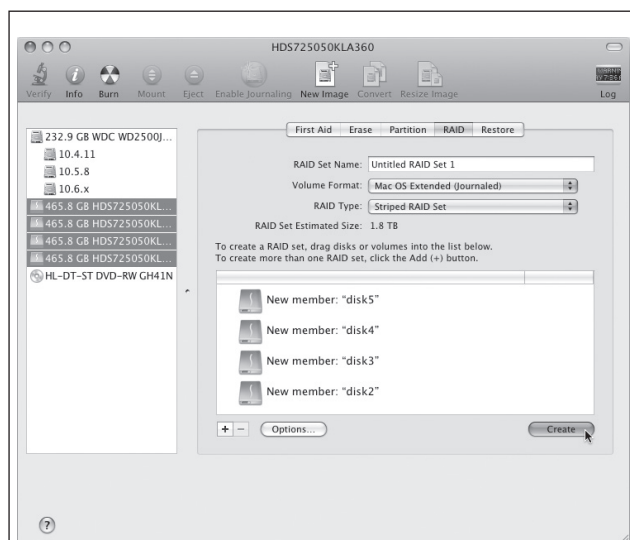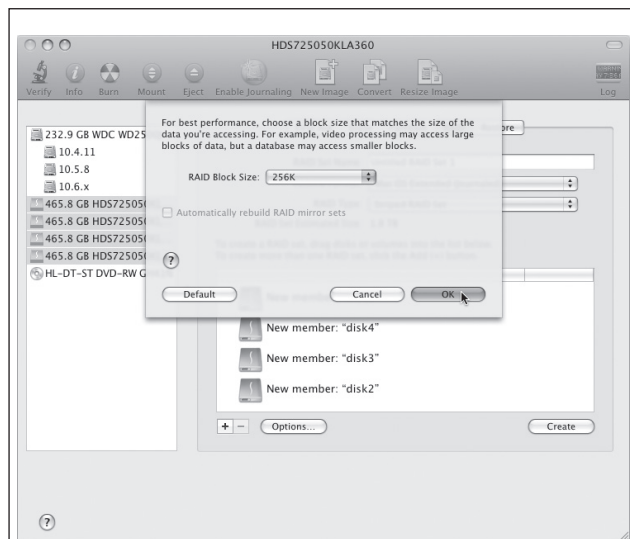

Figure 3

Figure 4

Figure 5

Quick Start Guide for Tempo SATA E4P

Mac OS X Drive Formatting—Individual Drives (Not in a RAID Set)

This section describes the process of formatting (initializing) individual hard drives connected to the Tempo SATA E4P using Disk Utility under Mac OS X Version 10.5; the process is nearly identical under Mac OS X Versions 10.6 and 10.4. If you intend to create a Mac OS-formatted RAID set with the drives attached to the Tempo card, go back to "Mac OS X Drive Formatting—RAID Sets" on the previous page.

1. Turn on your storage system, and then turn on your computer. During startup, one or more messages referring to unreadable volumes will be displayed; click Initialize… to launch Disk Utility. After Disk Utility launches, click the Initialize button in each remaining message window.

2. If it is not already open, launch Disk Utility **(Figure 6)**. Note that all drives attached to the Tempo card may be identified in the information window by their custom icon with the Sonnet S logo.

3. Select one of the drives you want to format by clicking the drive symbol or the "name" of the drive; a set of tabs will appear in the right pane. Click the Partition tab, and then click on the drop down menu beneath "Volume Scheme:" to select a number of partitions for the volume; you may optionally choose to partition each drive to create two or more smaller "virtual" drives **(Figure 7)**.

4. Click to highlight a partition, and then type a name in the Name field; repeat for each partition **(Figure 7)**. After formatting, each partition will appear in the Finder window as a drive.

5. Click Apply **(Figure 7)**.

6. When the *Partition Disk* window appears, click the Partition button **(Figure 8)**. If necessary, repeat steps 3–5 to partition any other drives connected to the Tempo card. When partitioning and formatting are complete, close the Disk Utility application; you can now use your drive(s).

> **Support Note:** See page 8 for port and channel identification, and information on Tempo SATA E4P's status LEDs.
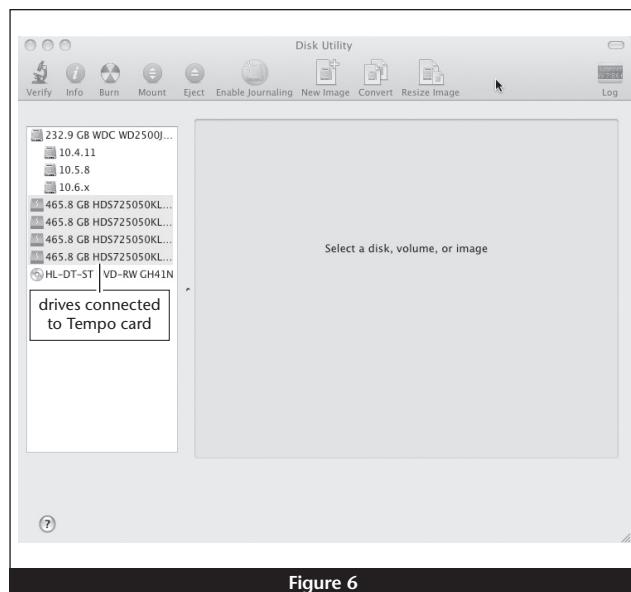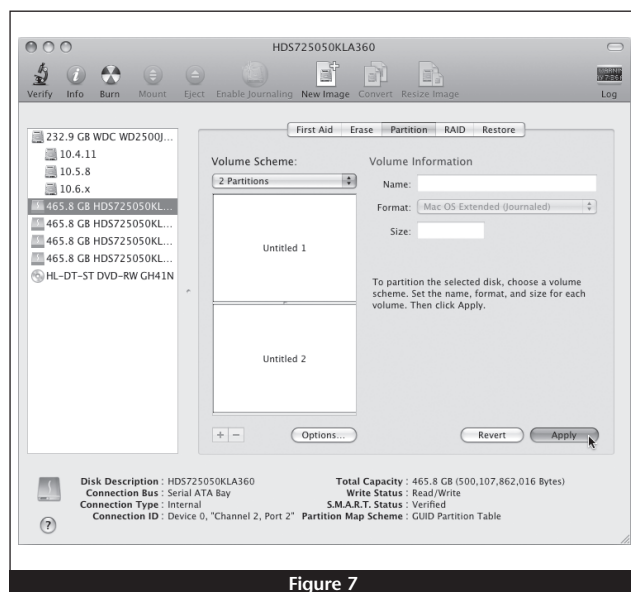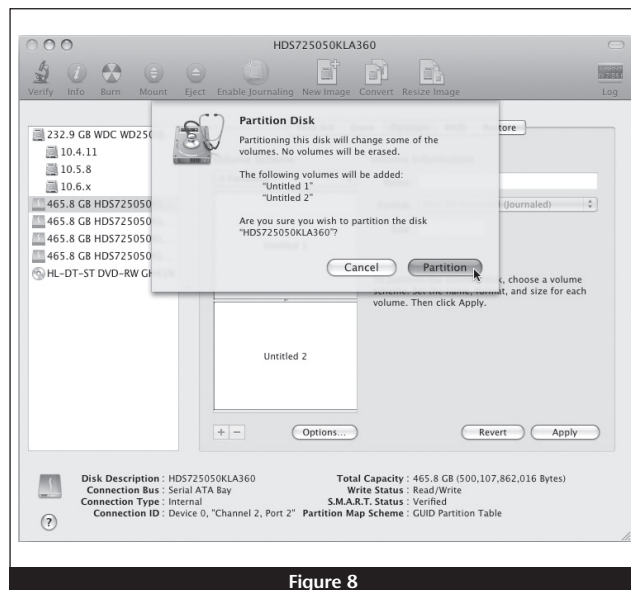

Figure 6

Figure 7

Figure 8

Quick Start Guide for Tempo SATA E4P

Windows Drive Formatting

If you intend to format drives connected to the Tempo SATA E4P using Windows drive formatting tools, you may find much more information by using "format volume" as the search item in Windows Help. The procedure listed below describes the process of formatting and configuring drives under Windows Vista; steps for formatting under Windows 7 and XP Professional are very similar.

1. Turn on your storage system, start Windows, log in, and then click Start > Control Panel.

2. In the *Control Panel* window, double-click Administrative Tools. If you are using Windows Vista or Windows 7 and have not disabled User Account Control (UAC), a *UAC* window will appear; click Continue.

3. In the *Administrative Tools* window, double-click Computer Management.

4. In the *Computer Management* window, click Disk Management under Storage to launch the Disk Management application.

5. If an *Initialize Disk* window appears or if disks are described as not initialized, select a partition style for the attached drive(s), and then click OK; the drive will be initialized **(Figure 9)**. Repeat as necessary with other drives attached to the Tempo card.

6. Right-click the field next to the name field of one of the attached drives and select the formatting type you wish to use for it. Repeat as necessary with other drives attached to the Tempo card **(Figure 10)**.

7. Depending on the formatting type you chose, a New Partition Wizard may appear; follow the onscreen instructions to complete formatting of the drive(s). Once the drives are finished being formatted, they are ready to use.
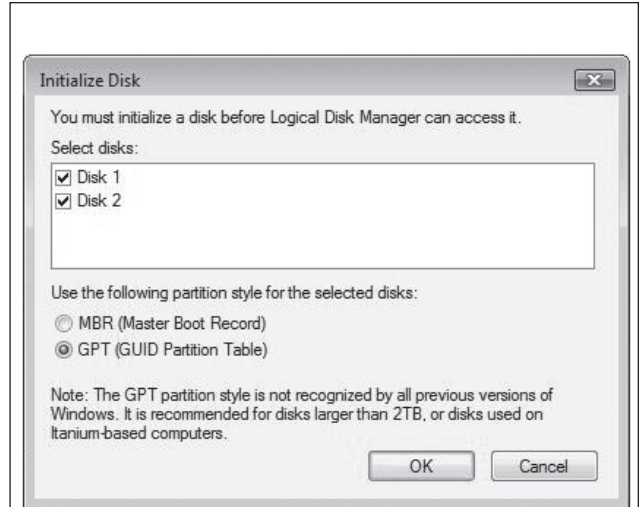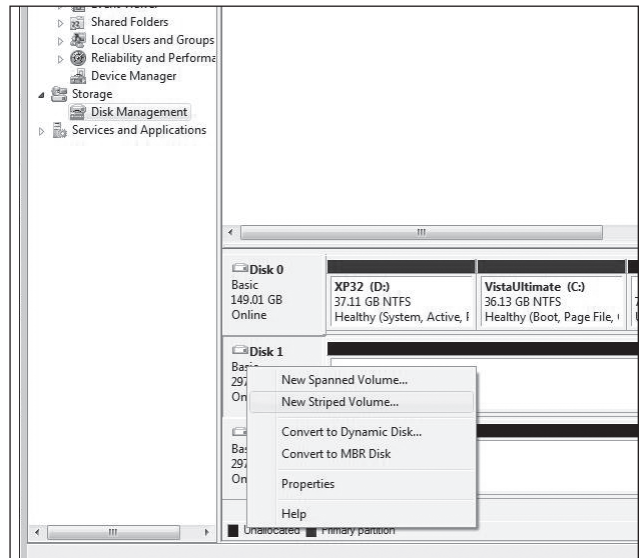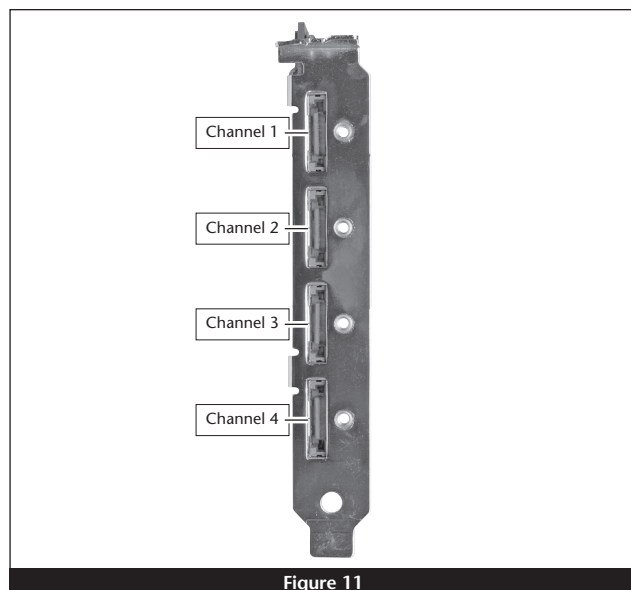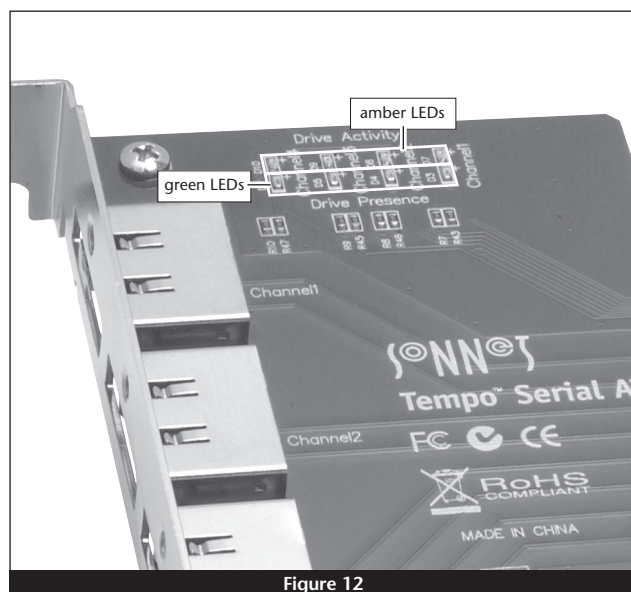

Figure 9

Figure 10

Quick Start Guide for Tempo SATA E4P

About Tempo SATA E4P's Ports and LEDs

1. Each eSATA connector on the Tempo card is assigned a channel number that may be helpful if you need to diagnose any issues (**Figure 11**). Depending on the drive enclosure you use (with or without port multiplier), each channel can support from one to five drives.

Channel 1

Channel 2

Channel 3

Channel 4

Figure 11

2. When drives connected to the Tempo card are powered and active, the status LEDs on the card will light (**Figure 12**):
   • Green LED ON: Drive(s) present and ready.
   • Amber LED ON/Flashing: Drive(s) reading/writing data.

amber LEDs

green LEDs

Figure 12

Additional information for Mac Users

When drive enclosures with port multipliers are connected to Tempo SATA E4P, you can identify individual drives within those enclosures in Disk Utility (**Figure 13, top**). In the Connection ID field, "Channel" indicates the channel (as well as the connector) on the Tempo card, while "Port" identifies the drive in the enclosure.

When drive enclosures without port multipliers are connected, a simple drive-to-card signal path exists. In the Connection ID field in Disk Utility, "Channel" indicates the channel (as well as the connector) on the Tempo card and the drive in the enclosure (**Figure 13, bottom**).

Repair Disk Permissions

Disk Description : External Disk 0   Total Capa
Connection Bus : Serial ATA Bay   Write St
Connection Type : Internal   S.M.A.R.T. St
Connection ID : Device 0, "Channel 1, Port 1"

drive in enclosure with port multiplier

Split   Delete

Disk Description : HDT722525DLA380   Total Capaci
Connection Bus : Serial ATA Bay   Write Stat
Connection Type : Internal   S.M.A.R.T. Stat
Connection ID : Device 0, "Channel 4"

drive in enclosure without port multiplier

Figure 13