TEMPO™ SATA X4P
eSATA Host Controller for PCI-X or PCI Slot

Quick Start Guide for Tempo SATA X4P

You Should Have

The following item should be included in your product package:

• One Tempo SATA X4P card
• One Sonnet Software CD
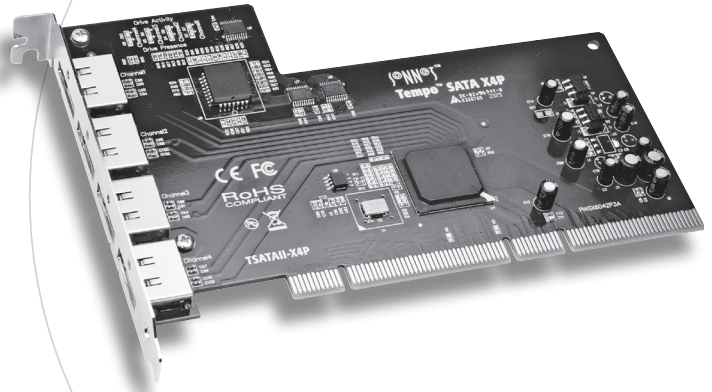
The following items are required (sold separately):

• Medium Phillips screwdriver
• One or more external Serial ATA (SATA) drive enclosures
• One or more external Serial ATA (eSATA) data cables

System Requirements

The Tempo SATA X4P requires the following in order to operate in your system:

• One available PCI-X or PCI slot
• Mac Users - Mac OS® X Version 10.5, 10.4.11, or 10.3; OR Mac OS X Server Version 10.5, 10.4.11, or 10.3
• Windows® Users - Windows 7, Windows Vista®, or Windows XP with SP2 installed; OR Windows Server 2008, or Windows Server 2003*

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.

* 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 X4P

Installation Preparation

Prior to installing the Tempo SATA X4P 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 card installation.

1. **Figure 1** shows the Tempo card's 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 SATA I connector on the other end. **Note**: SATA I connectors are used on bare SATA hard drives.

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

eSATA connectors

Figure 1

eSATA connector
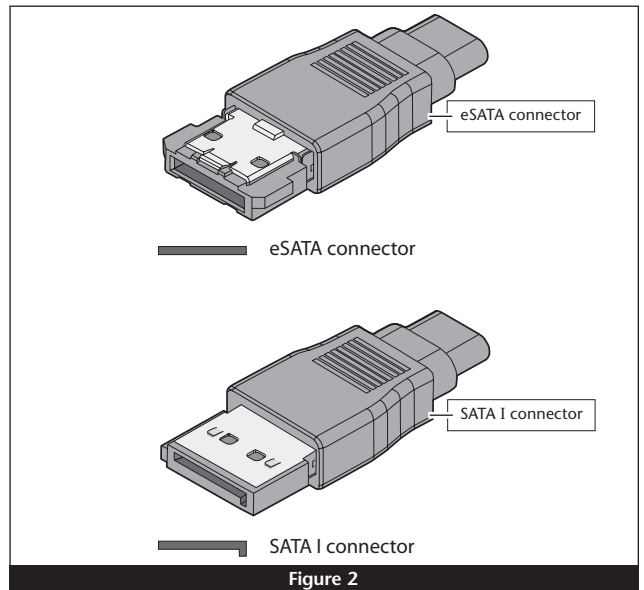
eSATA connector

SATA I connector

SATA I connector

Figure 2

Quick Start Guide for Tempo SATA X4P

Hardware Installation Steps

This section covers the installation of the Tempo SATA X4P into your system and connection of one or more drive enclosures.

1. Shut down the computer.

2. Open your computer to access its expansion card area (PCI slots); refer to your computer's user manual for specific information.

3. Locate an available PCI-X or PCI slot inside your computer and remove its access cover, if present, from the rear of the computer.

Support Note for Power Mac G5 Users: If your computer has PCI-X slots, you should be aware that when certain standard 33 MHz PCI adapter cards are installed along with the Tempo card in slots 2 and 3, the Tempo card's performance may be adversely affected.

4. Remove the Tempo card from its packaging and install it into the slot; **make sure the card is firmly seated**.

5. Secure the Tempo card firmly in place with the previously removed mounting screw if necessary, and then close the computer.

6. 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 X4P. Low quality cables do not offer the proper shielding and durability high quality cables afford, and may allow data to be corrupted.

7. **If you are a Power Mac G5 user, your card installation is complete; skip to page 5 for drive formatting instructions. If you are a Windows user, go to the next panel for driver installation instructions.**

Support Note: When installed in a Power Mac G5, there is no driver to install. The card works without additional software.

Windows 7 Driver Installation

This section describes the installation of drivers to support the Tempo SATA X4P in systems running Windows 7.

Support Note: The software on the included Installer CD may not be the latest version available. Before installing this product, check the version number of the software on the CD and what's available at www.sonnettech.com/support/kb/kb.php. Download and install the newer version, if available.

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. Click Start > Control Panel.

3. In the *Control Panel* window, double-click Device Manager. If you have not disabled User Account Control (UAC), a *UAC* window will appear; click Continue.

4. 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.

5. When the *Update Driver Software* window appears, insert the Tempo SATA Host Controller Software CD into your computer's optical drive, and then click "Browse my computer for driver software".

6. When the next window appears, click Browse.

7. When the *Browse for Folder* window appears, click "Computer" to expand the list, then click the icon for the optical drive containing the software CD, and then click OK.

8. Back in the *Browse for driver software* window, make sure the checkbox next to Include Subfolders is checked, and then click Next. If a *Windows Security* window appears, click Install; the driver software will be installed.

9. 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 X4P

Windows Vista Driver Installation

This section describes the installation of drivers to support the Tempo SATA X4P in systems running Windows Vista.

Support Note: The software on the included Installer CD may not be the latest version available. Before installing this product, check the version number of the software on the CD and what's available at www.sonnettech.com/support/kb/kb.php. Download and install the newer version, if available.

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

2. Click Start > Settings > Control Panel.

3. In the *Control Panel* window, double-click Device Manager. If you have not disabled User Account Control (UAC), a *UAC* window will appear; click Continue.

4. 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 select Update Driver Software.

5. When the *Update Driver Software* window appears, insert the Tempo SATA Host Controller Software CD into your computer's optical drive, and then click "Browse my computer for driver software".

6. When the *Browse for Folder* window appears, click "Let me pick from a list of device drivers on my computer".

7. When the next window appears, click Have Disk; a new window will appear. **Substituting whatever drive letter is appropriate,** type F:\DRIVERS\x32 (or F:\DRIVERS\x64 if you're using 64-bit Windows Vista), and then click OK.

8. Back in the *Update Driver Software* 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.)

9. When the next 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 X4P 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 X4P in systems running Windows XP Professional.

Support Note: The software on the included Installer CD may not be the latest version available. Before installing this product, check the version number of the software on the CD and what's available at www.sonnettech.com/support/kb/kb.php. Download and install the newer version, if available.

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. Click Start > 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.)

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

4. 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 select Update Driver.

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

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

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

8. When the next window appears, click Have Disk; a new window will appear. Insert the Tempo SATA Host Controller Software CD into your computer's optical drive. **Substituting whatever drive letter is appropriate,** type F:\DRIVERS\x32 (or F:\DRIVERS\x64 if you're using 64-bit Windows XP), and then click OK.

9. 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.)

10. 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 X4P will be listed as a SCSI and RAID Controller in the *Device Manager* window under Windows XP.

Quick Start Guide for Tempo SATA X4P

Mac OS X Drive Formatting—RAID Sets

This section describes the process of formatting (initializing) multiple hard drives connected to the Tempo SATA X4P using Disk Utility under Mac OS X Version 10.5; the process is nearly identical under Mac OS X Version 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.

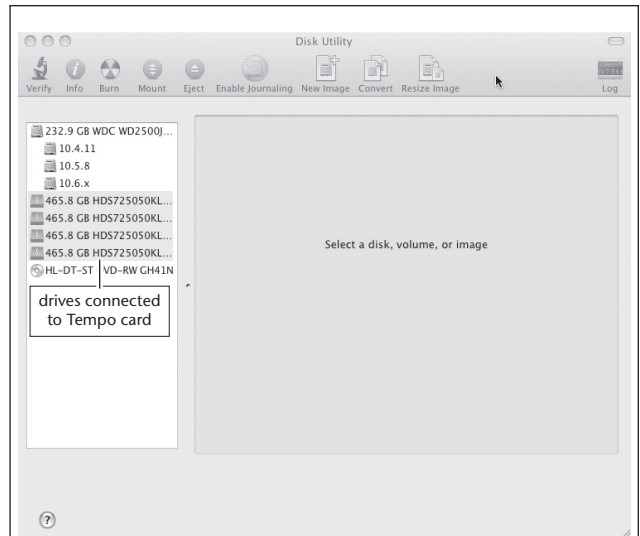**Support Note:** See page 8 for port and channel identification, and information on Tempo SATA X4P's status LEDs.
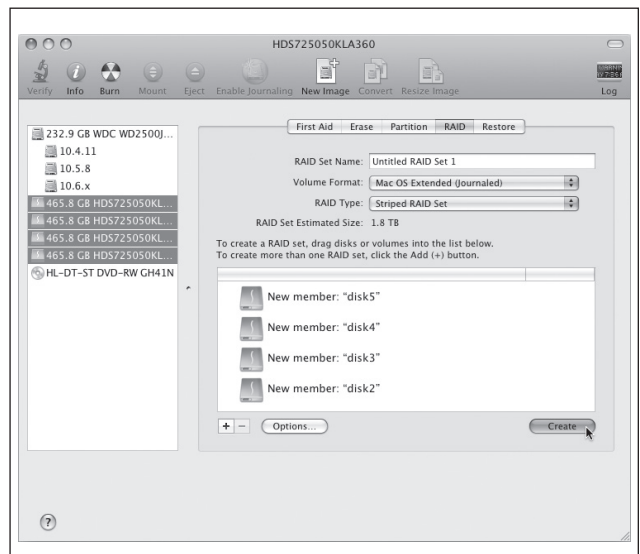

Figure 3
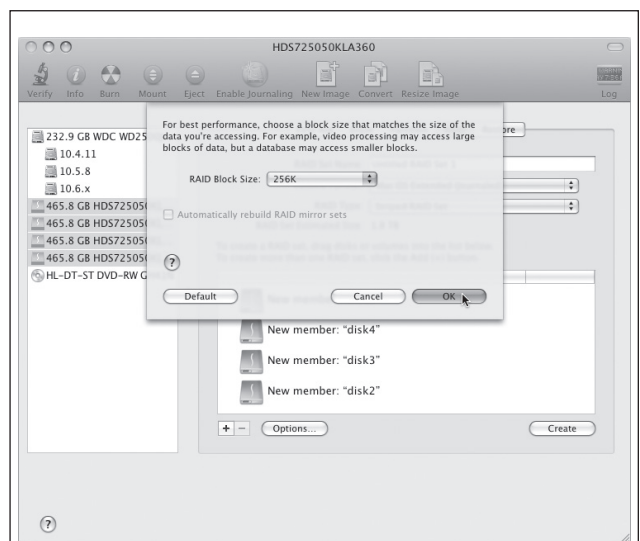

Figure 4

Figure 5

Quick Start Guide for Tempo SATA X4P

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 X4P using Disk Utility under Mac OS X Version 10.5; the process is nearly identical under Mac OS X Version 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).

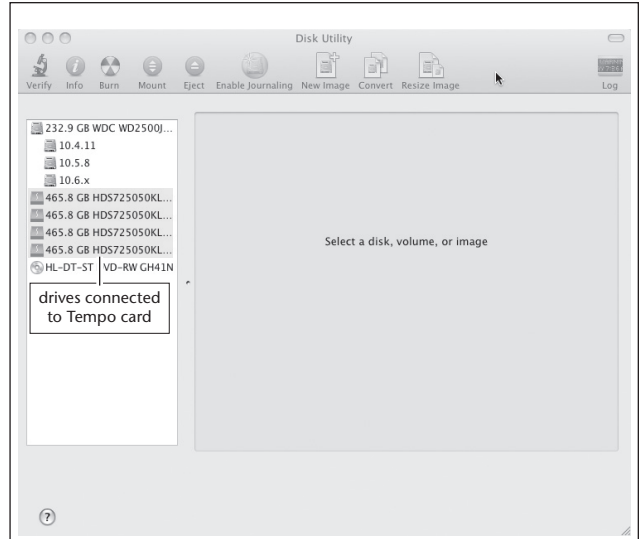> **Support Note:** See page 8 for port and channel identification, and information on Tempo SATA X4P's status LEDs.
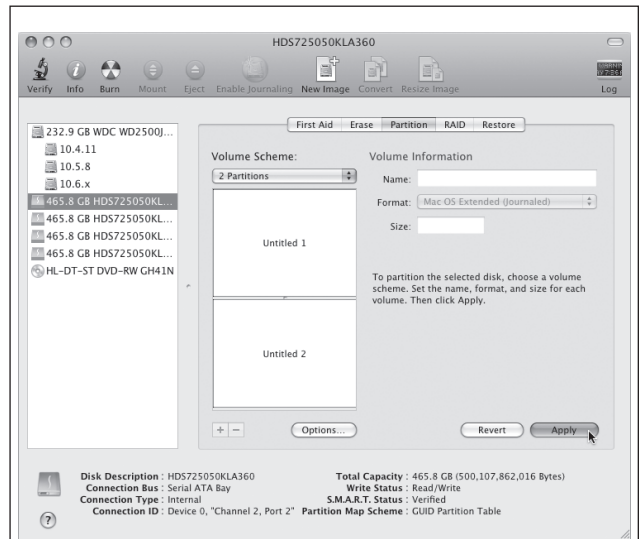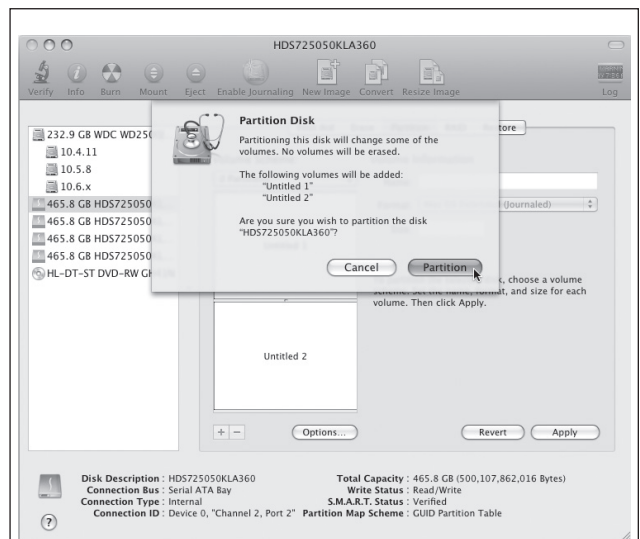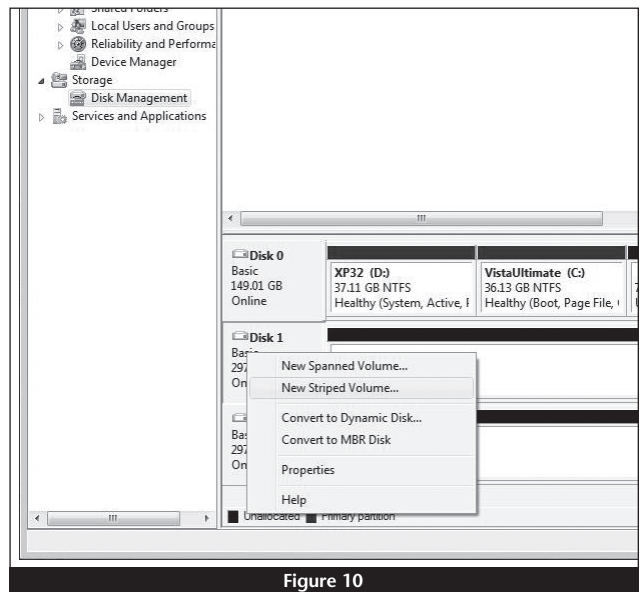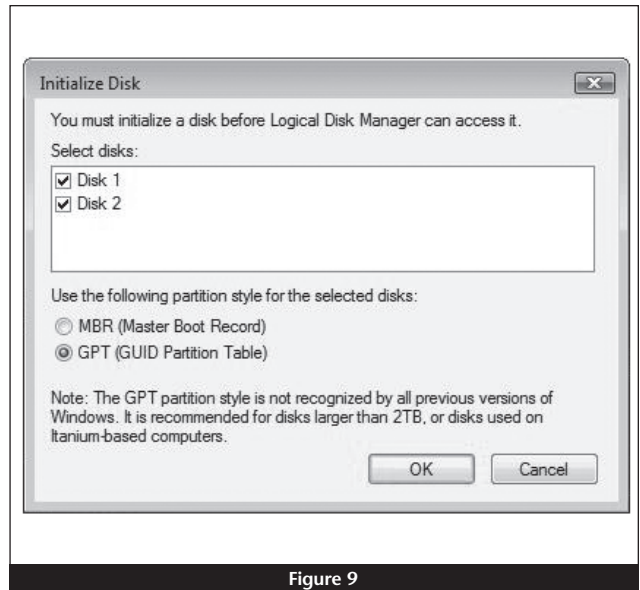

Figure 6

Figure 7

Figure 8

Quick Start Guide for Tempo SATA X4P

Windows Drive Formatting

If you intend to format drives connected to the Tempo SATA X4P 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.
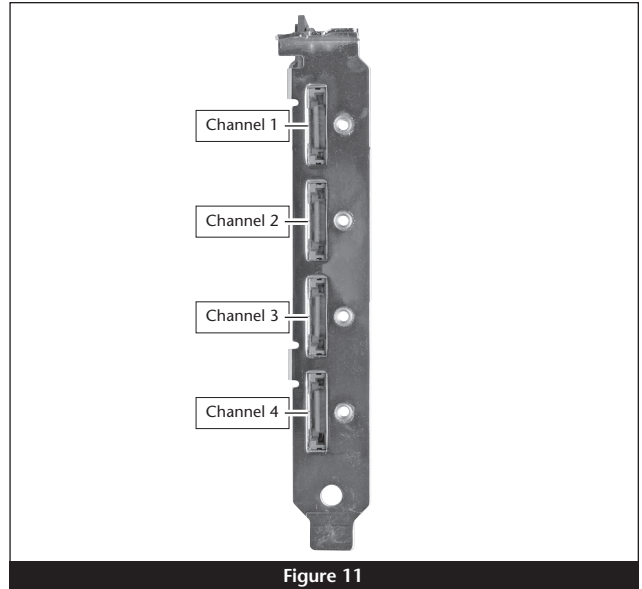
1. Turn on your storage system, start Windows, log in, and then click Start > Control Panel.

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

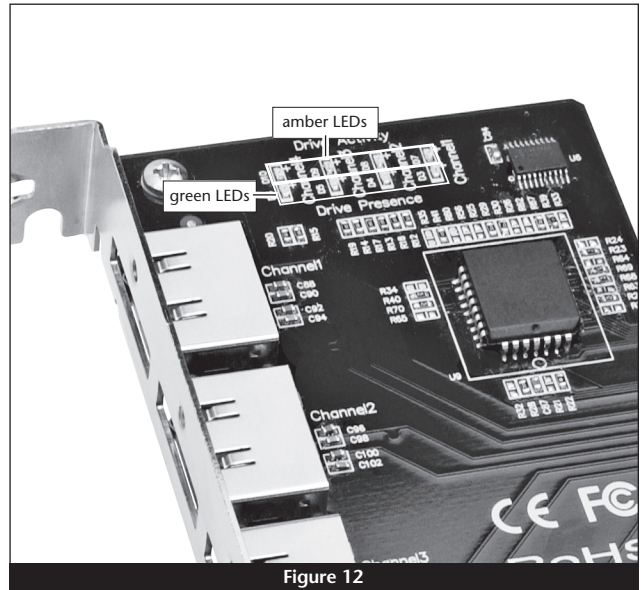Figure 10

Quick Start Guide for Tempo SATA X4P

About Tempo SATA X4P'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 Power Mac G5 Users

When drive enclosures with port multipliers are connected to Tempo SATA X4P, 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