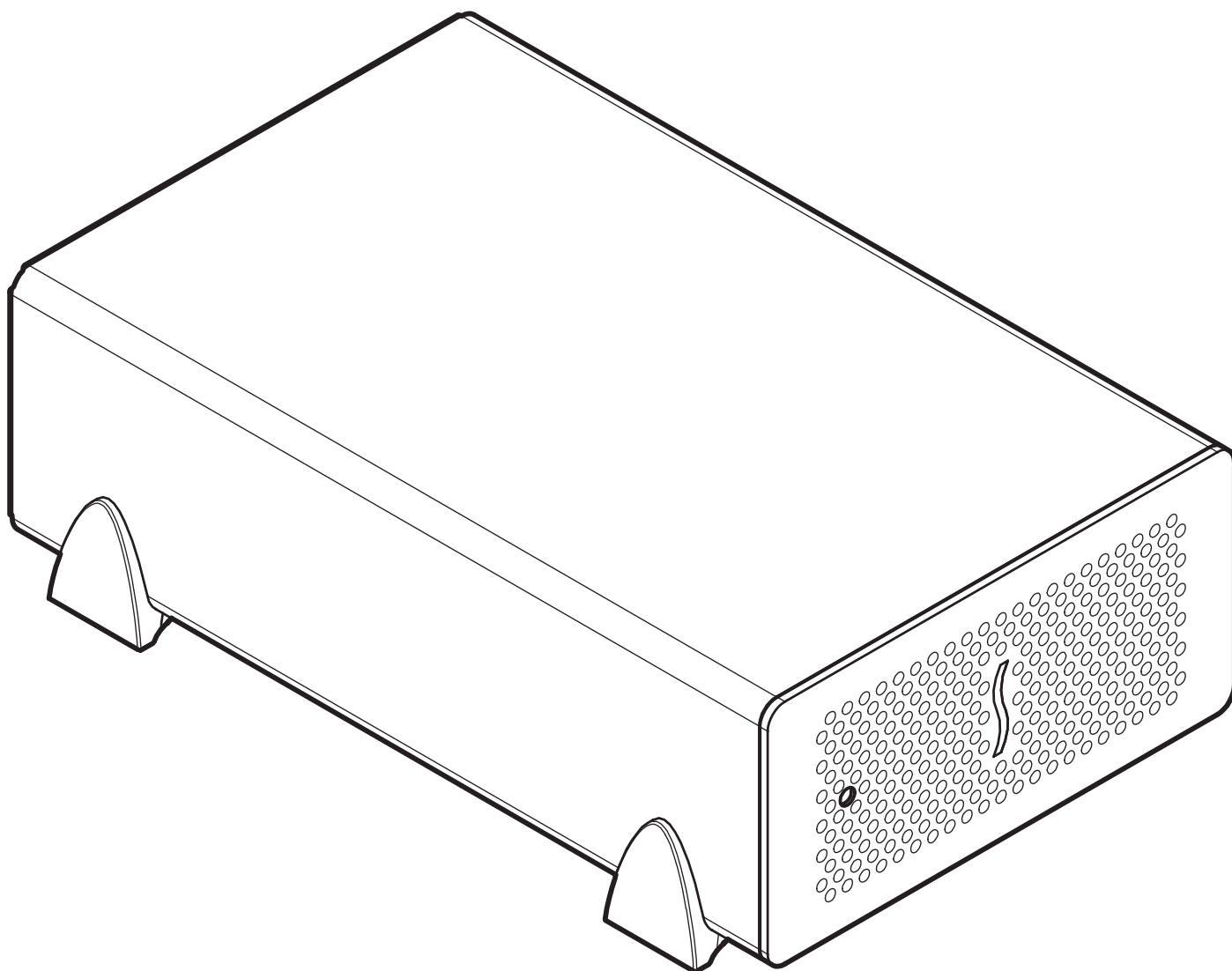


User's Guide

for Echo™ Express SE eSATA Pro 4-Port
Thunderbolt™ -to-eSATA Adapter



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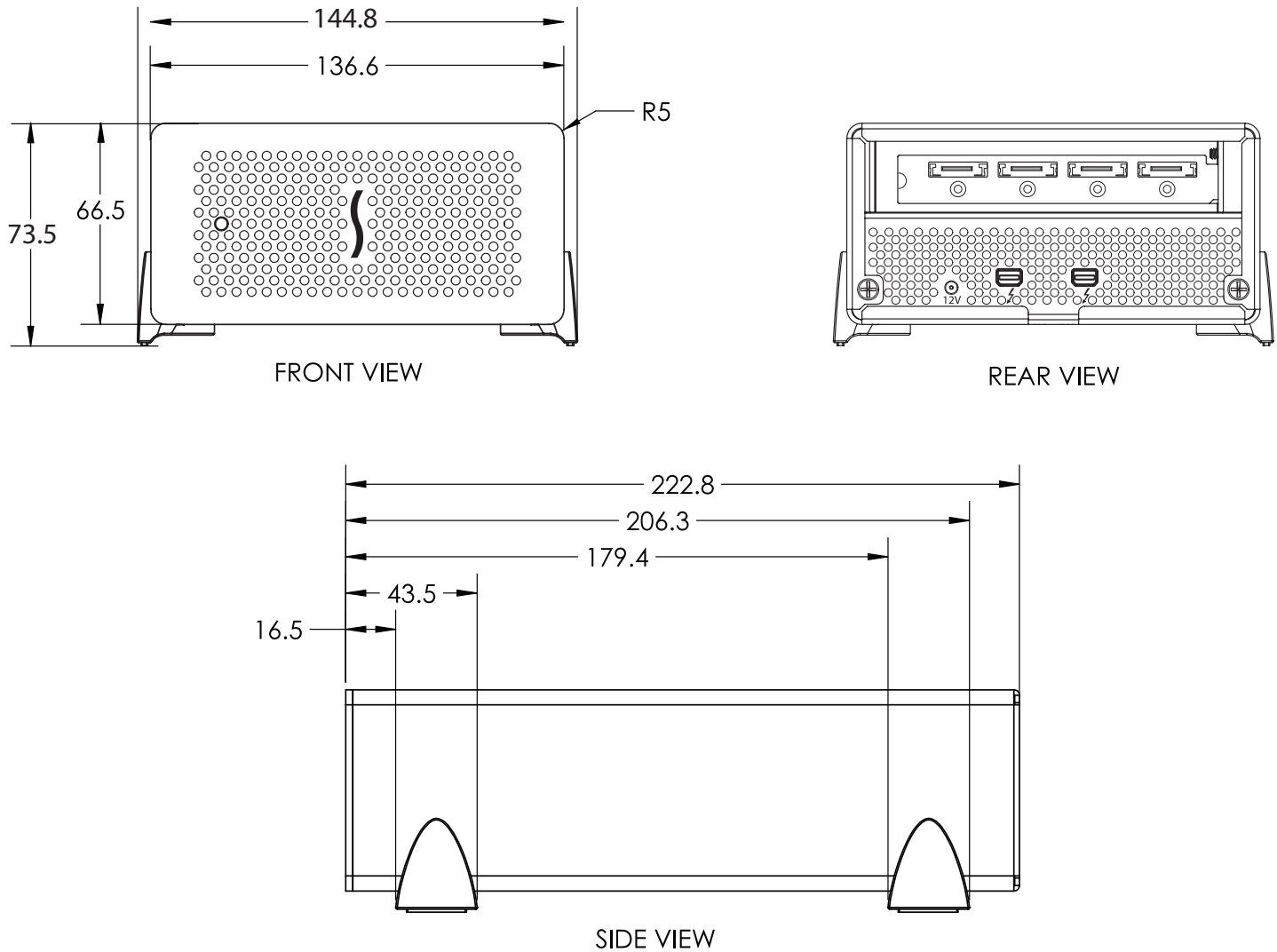
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Contents

1	Introduction, System Requirements, Driver Information	1
2	Echo Express SE eSATA Pro 4-Port Description	2
	Echo Express SE eSATA Pro 4-Port Exterior Power Adapter	
3	Verifying Adapter Recognition Using System Report	4
	Confirming the Thunderbolt and eSATA Ports are Recognized	
4	Connecting eSATA Devices	5
	Connecting Drives and Media Readers – General Information Connecting Drives to Create RAID Sets	
5	Formatting Attached Drives	6
	Formatting Individual Drives (Not in a RAID Set) Formatting Drives into RAID Sets	
6	Tips, General Information, and Known Issues	8
	Tips, General Information Known Issues	
7	Specifications, Precautions, FCC Compliance, and Support Information	9
	Specifications Safety Precautions FCC Compliance Contacting Customer Service Visit Our Website	

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Chapter 1 – Introduction, System Requirements, Driver Information



Introduction

Congratulations on your purchase! The **Echo Express SE eSATA Pro 4-Port** is a Thunderbolt-to-eSATA adapter that, through its four eSATA ports, you may connect single- and multi-drive storage systems with an eSATA interface to your iMac®, Mac® mini, MacBook® Air, or MacBook Pro with a Thunderbolt port. You may also use media readers and optical drives with an eSATA interface with the Echo adapter.

Connection of the Echo adapter to your computer requires a single Thunderbolt cable, while connection to storage systems, media readers, and optical drives require the use of eSATA data cables.

The Echo adapter works in concert with your computer, turning on only when connected to your computer and the computer turned on. When your computer is turned off or sleeping, the Echo adapter turns off automatically to save energy.

System Requirements

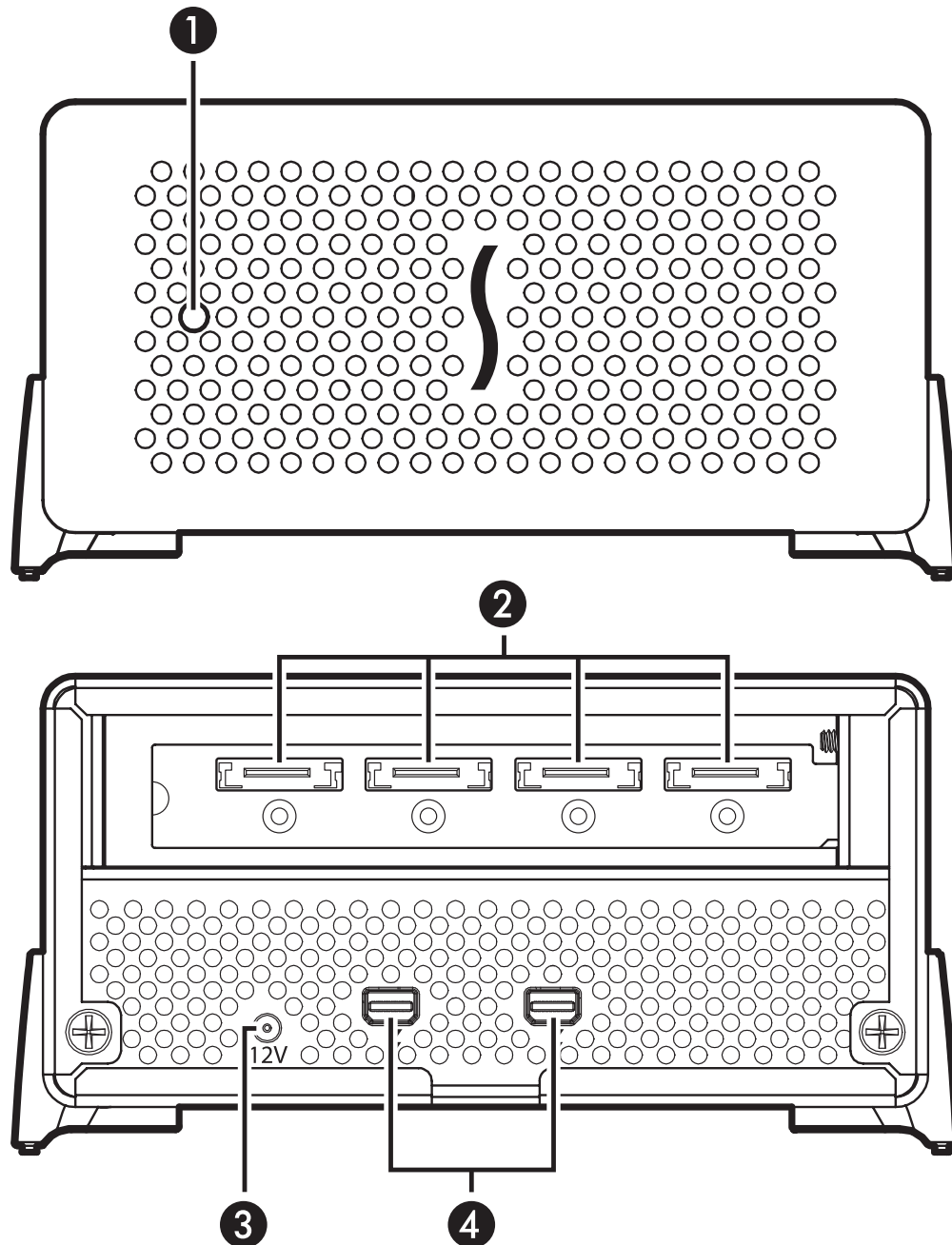
The Echo adapter requires the following to operate:

- Mac computer with a Thunderbolt port
- OS X 10.6.8 or later
- Thunderbolt cable (not included; sold separately)
- eSATA cables (not included; sold separately)

Driver Information

The drivers that enable the SATA controller card inside the Echo adapter to work with your computer are installed as part of OS X; the Echo adapter is ready to use when you power on your computer.

Chapter 2 – Echo Express SE eSATA Pro 4-Port Description



Echo Express SE eSATA Pro 4-Port Exterior

1 – Power Indicator

This indicator lights when the Echo adapter is powered, the Thunderbolt cable between the adapter and your computer is plugged in securely, and the computer powered on. Note that if the Echo adapter is connected to another Thunderbolt device instead of directly to the computer, any other Thunderbolt device connected between the computer and Echo adapter must also be powered on before the Echo adapter's power indicator will light up

2 – Locking eSATA Ports

Connect eSATA data cables (with or without locking connectors) between these ports and your storage systems' or other devices' eSATA ports

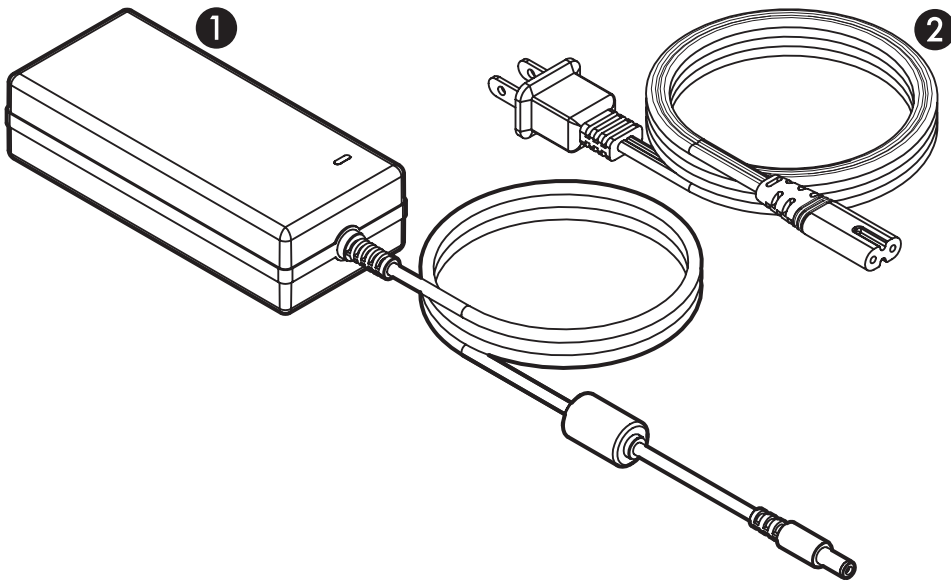
3 – 12VDC Socket

Connect the included DC power adapter between this socket and the included power cord

4 – Thunderbolt Ports

Connect a Thunderbolt cable between either of these ports and your computer's (or intermediate device's) Thunderbolt port; the open port may be used to connect another Thunderbolt device

Chapter 2 – Echo Express SE eSATA Pro 4-Port Description



Power Adapter

1 – Power Adapter

Connect this to the Echo adapter's 12VDC socket. Note that the power indicator on top lights when the adapter is connected to AC power

2 – Power Cord

Connect this between a power outlet and the power adapter. Note that the power cord included with your product may appear different than the one pictured here, depending on where the product was purchased

Chapter 3 – Verifying Adapter Recognition Using System Report

Confirming the Thunderbolt and eSATA Ports are Recognized

1. With the Echo adapter powered and connected to the computer, turn on the computer. Note that if there are any other Thunderbolt devices connected between the Echo adapter and your computer, they must also be powered for you to perform the following steps.
2. From the Apple menu, select About This Mac; the System Information application will launch.
3. When the *About This Mac* window opens, click More Info; a summary of specifications will appear.
4. Click System Report; a full report window will appear.
5. In the System Report window, click Thunderbolt under the Hardware header in the left column (Figure 1).
6. In the top right column under the Thunderbolt Device Tree header, you will see the computer listing, with “Echo Express SE” appearing below it (Figure 1).



Support Note: If you do not see “Echo Express SE” listed, disconnect and reconnect the Thunderbolt cable between the computer and Echo Express SE. Note that it is not necessary to shut down the computer before disconnecting and reconnecting the cable.

7. Click PCI Cards under the Hardware header in the left column (Figure 2).
8. At the top of the right column, the installed Tempo SATA Pro 6Gb 4-Port card is listed, identified as two “pci1b4b,9182” AHCI controllers. By selecting one of the controllers, detailed information is listed. You will see “Yes” next to Driver Installed and Tunnel Compatible (Figure 2).

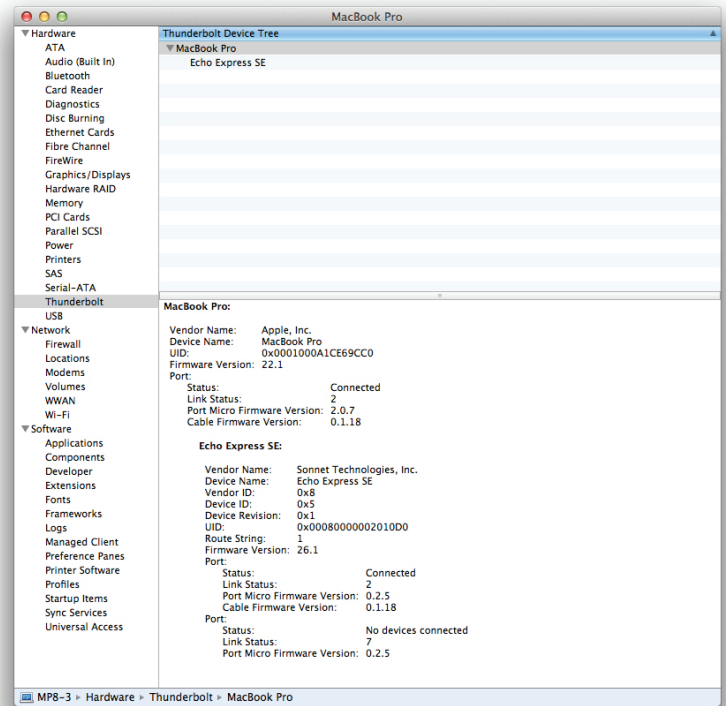


Figure 1

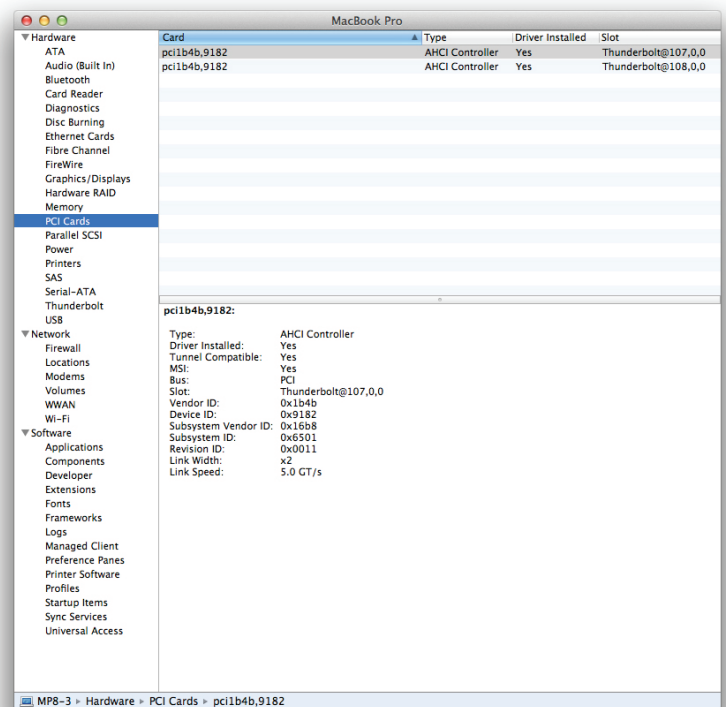


Figure 2

Chapter 4 – Connecting eSATA Devices

Connecting Drives and Media Readers – General Information

Data cables with eSATA connectors are required for use with the Echo adapter, drive enclosures, and other devices with eSATA ports. Bare SATA drives and some old drive enclosures use SATA I connectors; use of these devices require cables with a SATA I connector at one end (SATA I to eSATA cables are available separately from Sonnet.) **Figure 3** shows the difference between eSATA and SATA I connectors.

When you connect eSATA data cable(s) between the Echo adapter and the drive enclosures or other devices, **make sure all cables are connected securely.**

Connecting Drives to Create RAID Sets

The SATA card inside the Echo adapter features two SATA controllers, one for the left pair of eSATA ports (ports 4 and 3), and one for the right pair of eSATA ports (ports 2 and 1). To obtain the best performance when using an OS X-formatted striped RAID set (RAID 0) or mirrored RAID set (RAID 1), you should use drives connected to ports 1 and 3 together, and 2 and 4 together (**Figure 4**). Connecting drives this way enables both controllers to be used at the same.

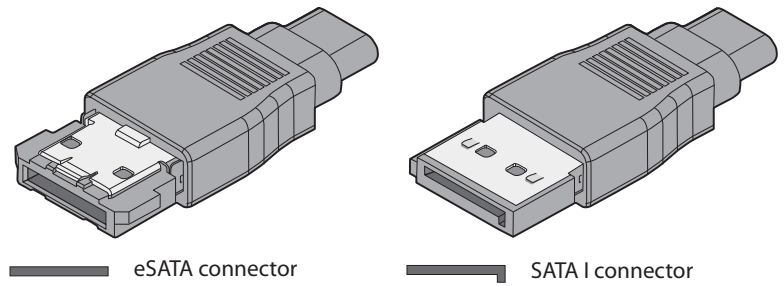


Figure 3

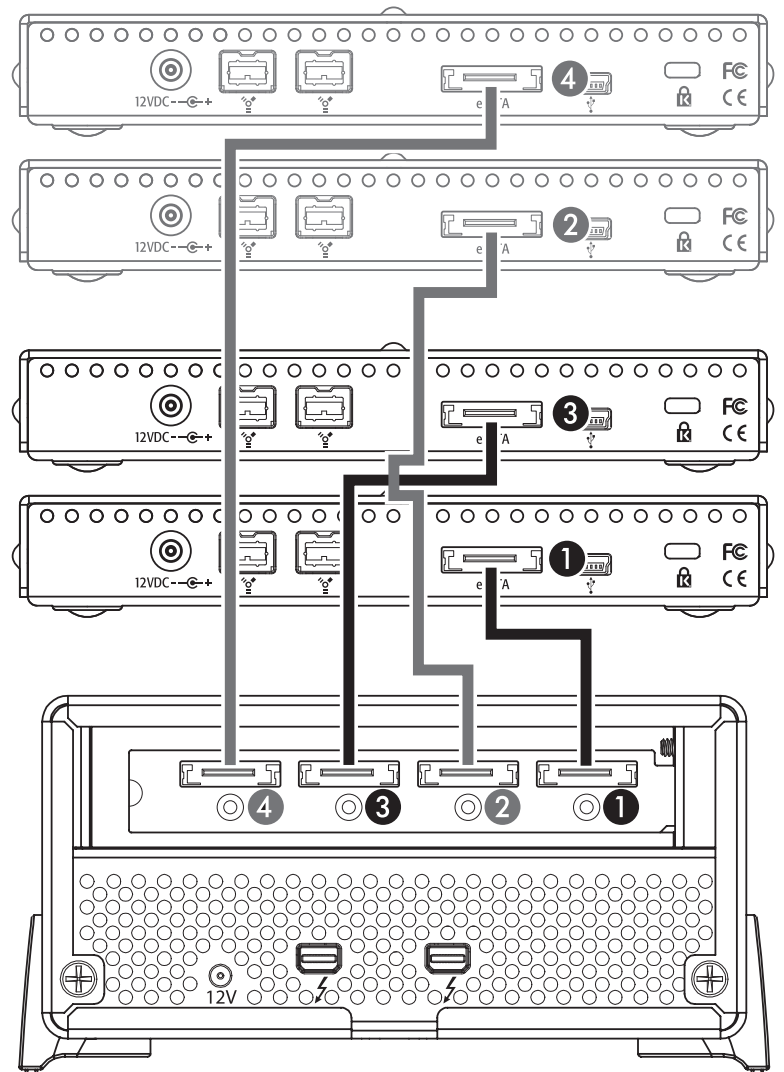


Figure 4

Chapter 5 – Formatting Attached Drives

Formatting Individual Drives (Not in a RAID Set)

This section describes the process of formatting (initializing) new, individual drives connected to the Echo adapter using Disk Utility under OS X Version 10.7; the process is nearly identical under OS X Versions 10.6 and 10.8. If you intend to create a OS X-formatted RAID set with the drives attached to the Echo adapter, skip to “Formatting Drives into RAID Sets” on the next page.

1. Turn on your storage system, and then turn on your computer (with the Echo adapter connected). During startup, one or more messages referring to unreadable volumes will be displayed; click Initialize... to launch Disk Utility. (Note that if you wait too long, the messages will disappear, and Disk Utility will have to be launched manually.) After Disk Utility launches, click the Initialize button in each remaining message window.
2. If it is not open, launch Disk Utility. 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. Note that all drives attached to the Echo adapter may be identified in the information window by their icon along with the “External” connection type (Figure 5).
3. Click the Erase tab, and then click on the Format drop-down menu to select the drive formatting option for the volume (Figure 6).
4. Type a name for the volume in the Name field, and then click Erase (Figure 6).

5. When a dialog asking you to confirm you want to erase the disk appears, click the Erase button to erase and format the disk (Figure 7). If necessary, repeat steps 3 and 4 to format any other drives connected to the Echo adapter. When erasing and formatting are complete, close the Disk Utility application; you can now use your drive(s).

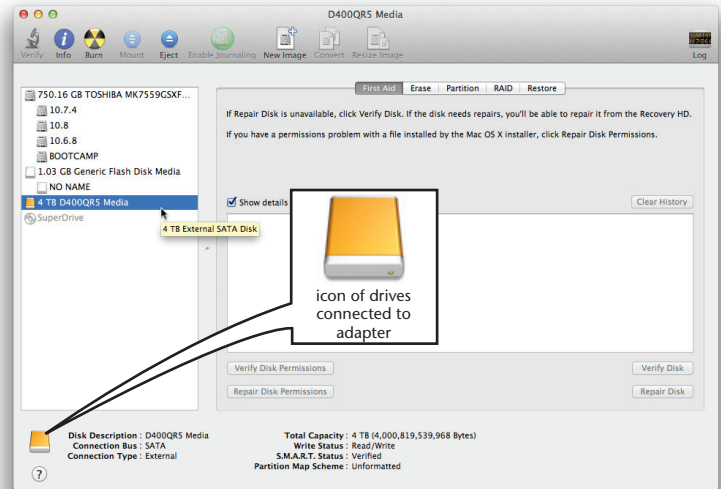


Figure 5

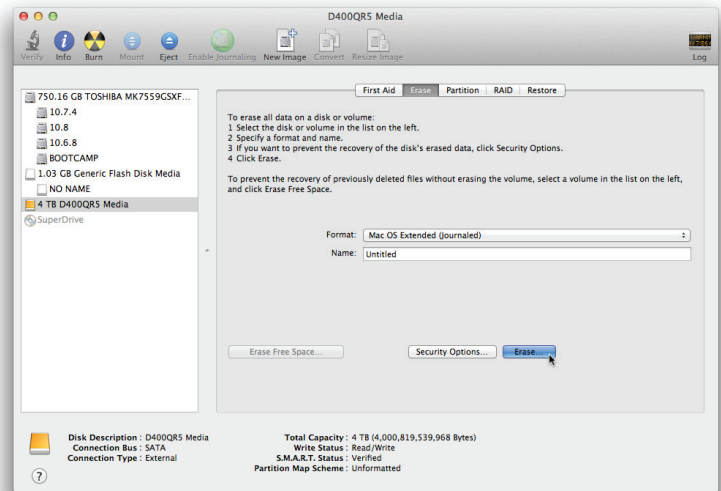


Figure 6

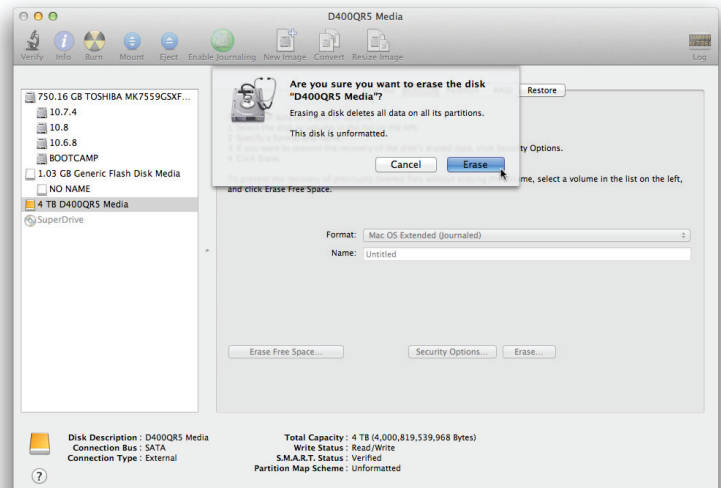


Figure 7

Chapter 5 – Formatting Attached Drives

Formatting Drives into RAID Sets

This section describes the process of formatting (initializing) multiple, new drives connected to the Echo adapter to create striped (RAID 0) or mirrored (RAID 1) RAID sets using Disk Utility under OS X Version 10.7; the process is nearly identical under OS X Versions 10.6 and 10.8.



Support Note: Depending on how you set it up, a drive enclosure with a built-in hardware RAID controller (like Sonnet's Fusion D400QR5 or F3) may not present its drives separately to the operating system. For instance, if you choose a RAID 0 or RAID 5 configuration in the enclosure, only one "drive" will appear in Disk Utility. If this is the case, go back to "Formatting Individual Drives (Not in a RAID Set)" on the previous page for drive formatting instructions.

1. Turn on your storage system, and then turn on your computer (with the Echo adapter connected). During startup, one or more messages referring to unreadable volumes will be displayed; click Initialize... to launch Disk Utility. (Note that if you wait too long, the messages will disappear, and Disk Utility will have to be launched manually.) After Disk Utility launches, click the Initialize button in each remaining message window.
2. If it is not open, launch Disk Utility. Note that all drives attached to the Echo adapter may be identified in the information window by their icon along with the "External" connection type (Figure 8).
3. Select one of the drives you want to format in a RAID set by clicking the drive symbol; a set of tabs will appear in the right pane. Click the RAID tab, select all the drives you will use to create your RAID set, and then drag them into the disk field (Figure 9). **Be careful NOT to accidentally drag in a drive you don't want included in the RAID set.**
4. From the drop-down menus, select the volume format and the RAID scheme (striped or mirrored RAID Set), and then type in the name for your RAID set (Figure 9).
5. Click the Options button. From the drop-down menu, select a RAID block size (Figure 10). 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 a dialog asking you to confirm you want to create a RAID set 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.

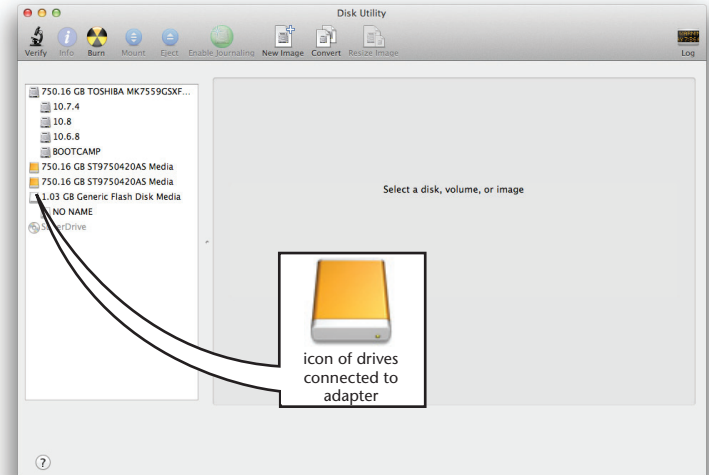


Figure 8

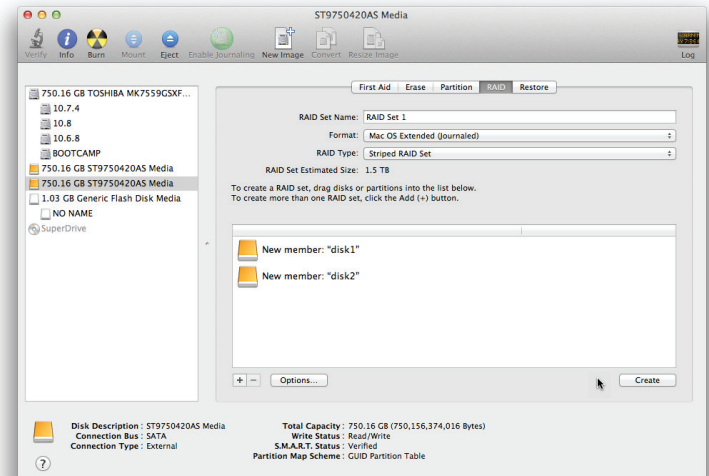


Figure 9

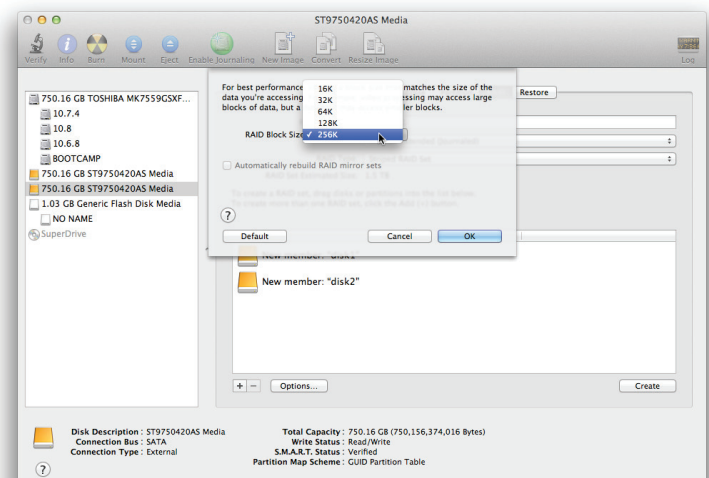


Figure 10

Chapter 6 – Tips, General Information, and Known Issues

TIPS, GENERAL INFORMATION

Keeping the Adapter Cool

With its optimized airflow design and temperature-controlled fan providing cooling at all times, the Echo adapter provides adequate cooling the Tempo eSATA card inside. *Do not block any of the vents while the adapter is operating!* Otherwise, the card and other components may overheat

Hot-Plugging the Echo Adapter

You may connect and disconnect the Thunderbolt cable between the Echo adapter and your computer while your computer is on. BUT, if there are any storage devices connected to the eSATA ports, follow proper procedures for disconnecting those devices before unplugging the adapter

“Eject” Drives and Volumes Before Disconnecting Cables

Before disconnecting cables from the Echo adapter, attached drives, or media readers, eject any mounted drive or volume (connected through the Echo adapter) by dragging its icon to the Eject icon in the Dock, or clicking its Eject button in a Finder window; otherwise, data on the connected drives or volumes may be corrupted.

Connecting Additional Thunderbolt Devices

You may connect the Echo adapter plus up to five additional Thunderbolt devices, (including the Apple Thunderbolt Display) in a daisy chain connected to the computer

No Power Switch, and No Need to Unplug the Power Adapter

Because the Echo adapter automatically powers on and off with the computer to which it's connected, there's no power switch on the adapter, nor is there any need to disconnect the power cable under normal use

Power Indicator Operation

Because the Echo adapter powers on and off with the computer to which it's connected, its power indicator only lights when the computer is on, and turns off when the computer is sleeping or powered off. Note that the power adapter's power indicator remains lit as long as it is connected to a live power outlet

KNOWN ISSUES

Some Devices' Performance May be Affected by Where They Are Connected in a Thunderbolt Chain

However small, the Thunderbolt interface introduces latency to a device chain. If you add additional Thunderbolt devices to the chain, you may need to experiment with which device works better closer or farther to the computer in the chain

Chapter 6 – Specifications, Precautions, FCC Compliance, and Support Information

Specifications

External Connectors	Two Thunderbolt Four locking eSATA 12V Power
Power Adapter	Input: 100-240V AC 1.6A, 50-60 Hz Output: 12V@5.0A (60W)
Dimensions WxDxH:	5.7 x 8.8 x 2.9 in. (14.5 x 22.3 x 7.4 cm)
Weight	2.6 lbs. (1.18 kg)
Drives Supported	Up to 16 ⁽¹⁾
Drive Types Supported	SATA 6 Gb/s, SATA 3 Gb/s, and SATA 1.5 Gb/s
Data Transfer Rate	Up to 760 MB/s aggregate
AHCI Support	Boot from attached drives Hot-plug drives
Advanced Features	Supports drive hot-swapping Supports ATAPI (CD/DVD) drives Supports S.M.A.R.T. status data reporting Supports Spread Spectrum Clocking for compatibility with all SATA drives and for lower EMI emissions
Operating Temperature	0° C to 35° C (32° F to 95° F)
RoHS Compliant	Yes
Package Contents	Echo Express SE eSATA Pro 4-Port Thunderbolt-to-eSATA Adapter ⁽²⁾ Universal power adapter Power cord User's guide

1. Support for up to 16 drives requires the use of drive enclosures employing a hardware RAID controller (like Sonnet's Fusion D400QR5 or R400QR5).

2. Thunderbolt and eSATA cables required; available at the Apple Store and your reseller

Warnings

Always follow the basic warnings listed here to avoid the risk of serious injury or death from electrical shock, short-circuiting, fire, and other hazards. These warnings include, but are not limited to:

- **Do not open the Echo Express SE eSATA Pro 4-Port adapter or remove its cover under any conditions.** There are no user serviceable parts inside. *Breaking the seals and removing the cover will void the warranty!*
- Do not attempt to modify the enclosure. If this device appears to be malfunctioning, contact your reseller or local distributor
- Do not drop the chassis; dropping or mishandling the chassis may result in a malfunction leaving the product inoperable

- Do not expose the device to rain, use it near water or containers that contain liquids which might spill into any openings, or in damp or wet conditions
- If unusual smells, sounds, or smoke come from the device, or if liquids enter it, switch it off immediately and unplug it from the electrical outlet
- Follow the instructions in this manual carefully; contact your reseller or local distributor for additional advice not covered in this User's Guide

FCC Compliance

Echo Express SE eSATA Pro 4-Port complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: This device may not cause harmful interference, AND this device must accept any interference received, including interference that may cause undesired operation.

Contacting Sonnet Customer Service

USA Customers

The Sonnet Web site located at www.sonnettech.com has the most current support information and technical updates. Before you call Sonnet Customer Service, please check our Web site for the latest updates and online support files, and check this User's Guide for helpful information. When you call Sonnet Customer Service, have the following information available so our customer service staff can better assist you:

- Product name
- Date and place of purchase
- Computer model
- Operating system version
- Software/firmware versions

If further assistance is needed, please contact **Sonnet Customer Service** at:

Tel: 1-949-472-2772

(Monday–Friday, 7 a.m.–4 p.m. Pacific Time)

E-mail: support@sonnettech.com

For Customers Outside the USA

For support on this product, contact your reseller or local distributor.

Visit Our Website

For the most current product information and online support files, visit the Sonnet Website at www.sonnettech.com/support/. Register your product online at <http://registration.sonnettech.com> to be informed of future upgrades and product releases.



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