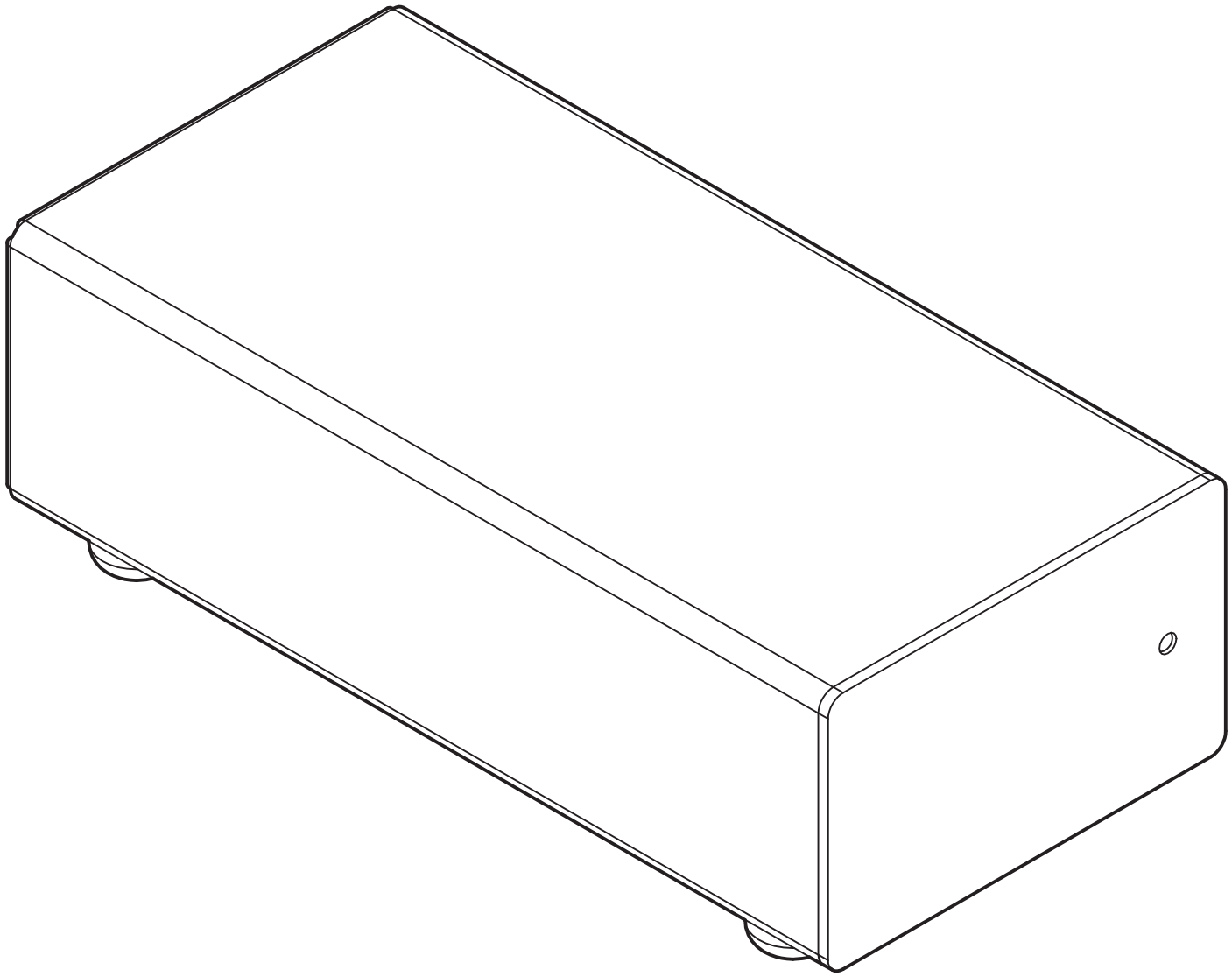
# User's Guide

## for Echo™ Express SEL
## Thunderbolt™ 2-to-PCIe Card Expansion Chassis



THUNDERBOLT™ PCI EXPRESS® Mac

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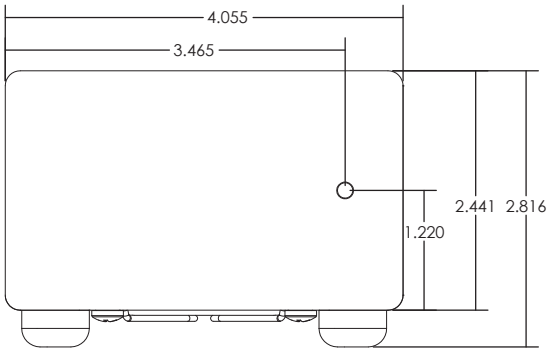
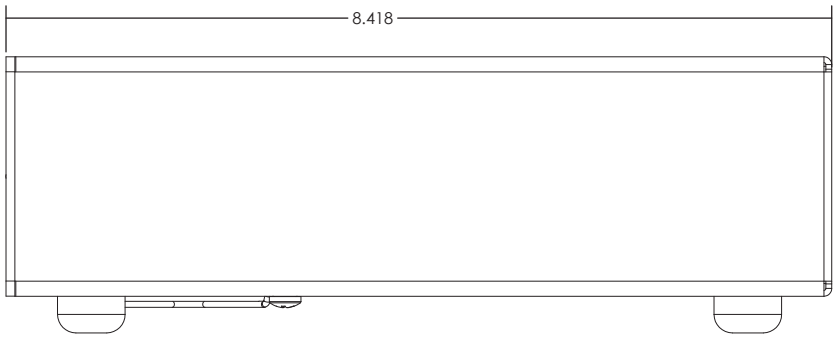
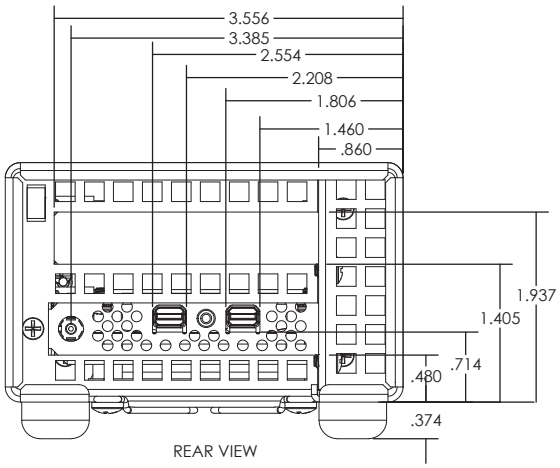
# Chapter 1 – Introduction and System Requirements



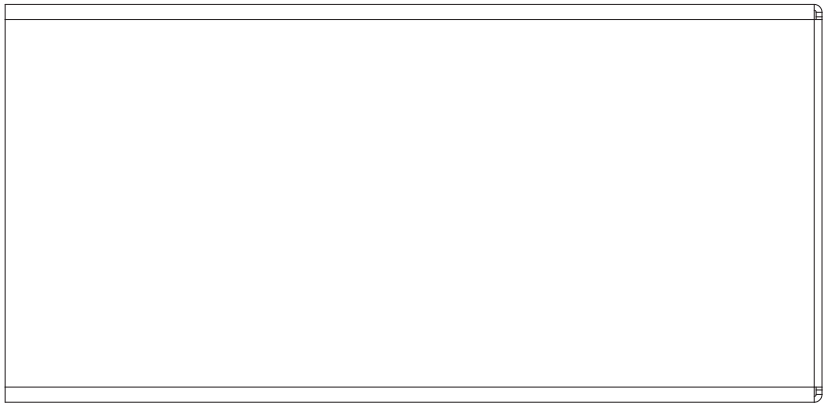
FRONT VIEW



SIDE VIEW



REAR VIEW


TOP VIEW

## Introduction

Congratulations on your purchase! The Echo Express SEL is a Thunderbolt 2 expansion system for PCIe cards. Through its PCIe slot, you may connect a low-profile expansion card to your iMac®, Mac® mini, Mac Pro®, MacBook Air®, or MacBook Pro® with Thunderbolt technology to expand its capabilities in ways never before possible!

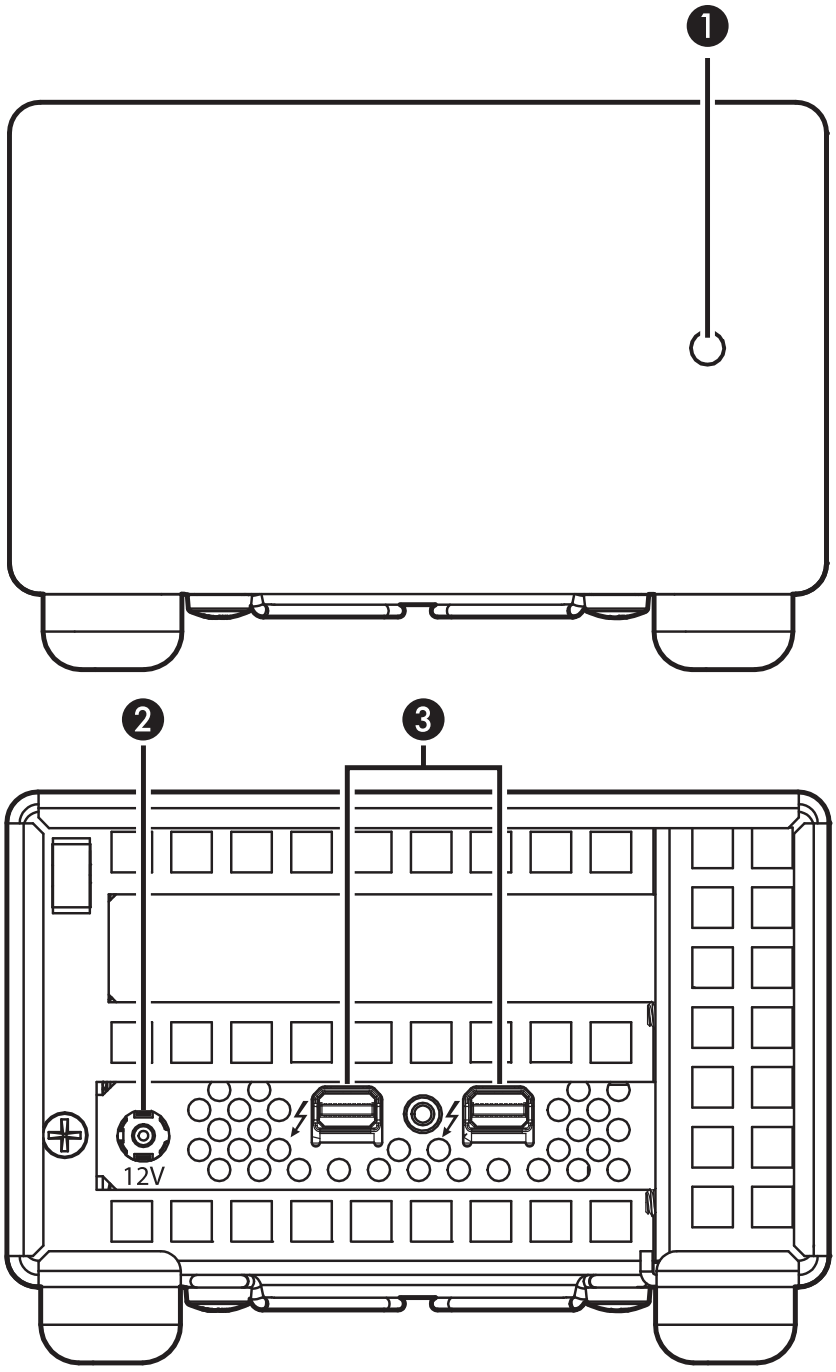
While the Echo Express SEL chassis requires no drivers, the expansion card you install does; Thunderbolt-compatible drivers to enable it to work properly through the Thunderbolt interface are required. More information on which cards are compatible with Echo Express SEL is available at: http://sonnettech.com/support/charts/thunderbolt/index.html

## System Requirements

The Echo Express requires the following to operate:

- Mac computer with a Thunderbolt 2 or Thunderbolt port
- OS X 10.8.5 or later
- Thunderbolt-compatible PCIe card (see Specifications on page 9 for details), and Thunderbolt-compatible drivers for the card
- Thunderbolt cable (not included; sold separately)

## Chapter 2 – Echo Express SEL Description




**Echo Express SEL Exterior**

**1 – Power Indicator**

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

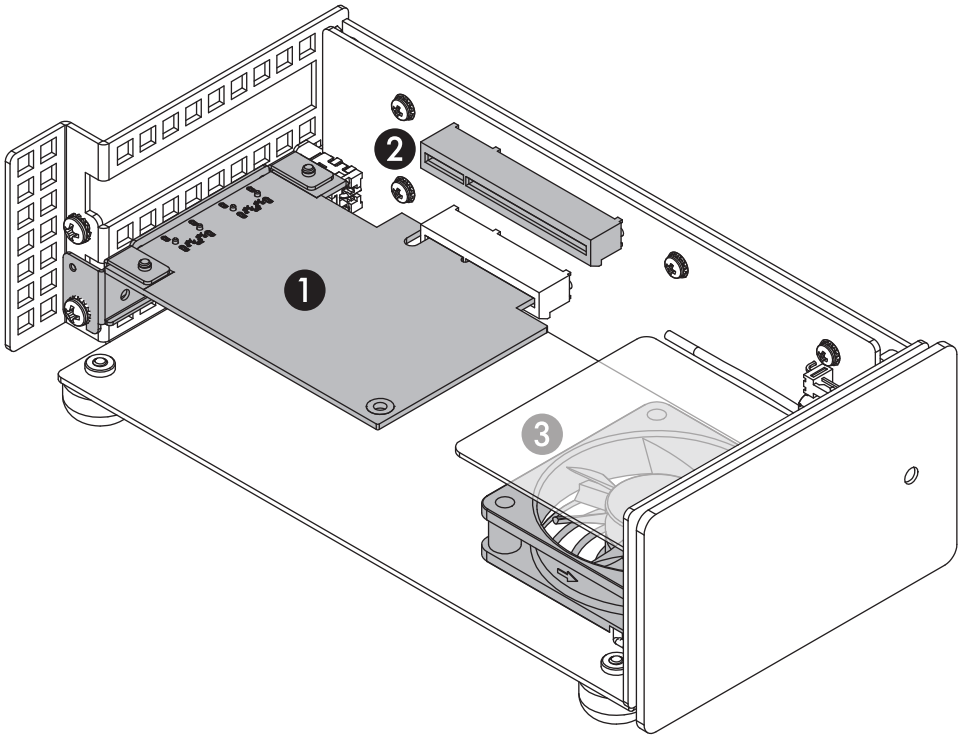
**2 – 12V DC Socket**

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

**3 – Thunderbolt Ports**

Connect a Thunderbolt cable between either port and your computer's Thunderbolt port; the other may be used to connect to another Thunderbolt device.

## Chapter 2 – Echo Express SEL Description




**Echo Express SEL Inner Assembly**

**1 – Thunderbolt Interface Card**

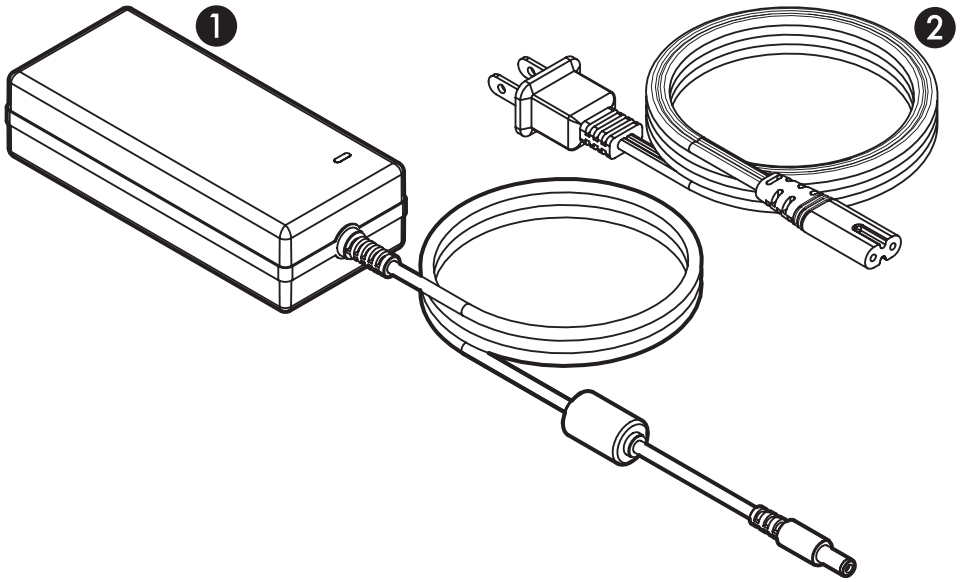
This is installed into its own slot and may not be moved to the PCIe slot.

**2 – PCIe Slot**

This is an x8 mechanical (x8 electrical) PCIe 2.0 slot. It is also compatible with PCIe 1.1 and 3.0 cards. Note that the use of a low-profile bracket on the card installed into the slot is required.

**3 – Fan**

The temperature-controlled fan provides cooling for the installed PCIe card and the chassis' supporting Thunderbolt circuitry. It operates at a whisper when the card is running cool, and speeds up when the temperature rises. Do not block the vent holes on the front or back of the chassis to prevent overheating.



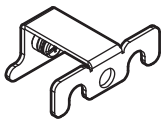

**Echo Express SEL Power Adapter**

**1 – Power Adapter**

Connect this to the Echo Express SEL chassis' power port. 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



**Thunderbolt Connector Lock**

This secures Thunderbolt connectors plugged into the Echo chassis' Thunderbolt ports to prevent accidental cable disconnection. This lock is not compatible with optical Thunderbolt cables.

## Chapter 3 – PCIe Card Installation Steps

**1.** Remove the Echo Express SEL chassis from its packaging, and then set it upside-down on a soft, flat, level surface.

**2.** Remove and set aside the four screws securing the feet to the bottom of the outer case **(Figure 1)**. Set aside the screws and feet.

**Support Note:** To avoid damaging components due to static electricity discharge, wear an antistatic wrist strap while working inside Echo Express SEL.

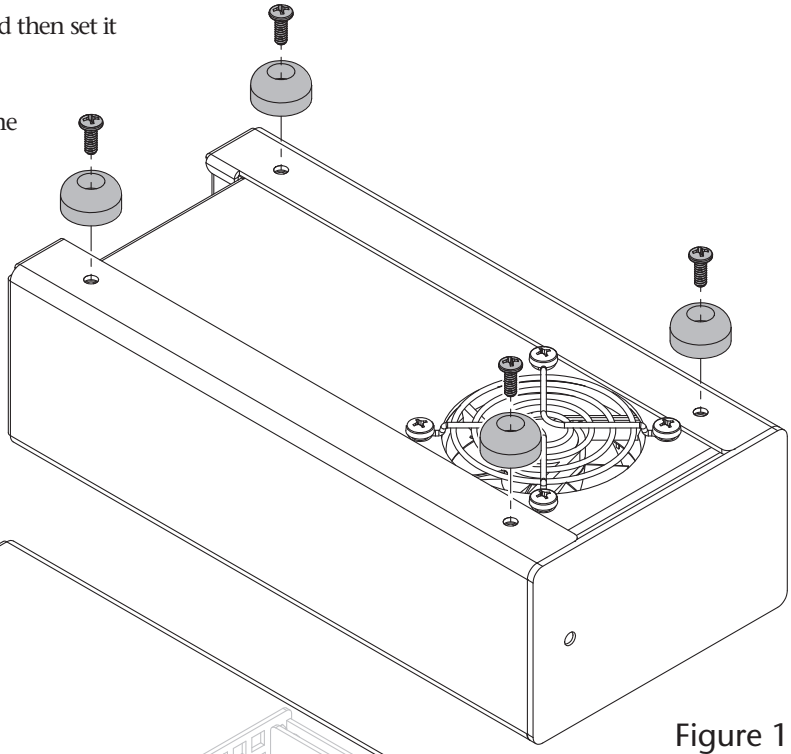


Figure 1

**3.** Turn the Echo Express SEL chassis right-side-up **(Figure 2)**.

**4.** Place your hand on top of the outer case. Remove the inner assembly by gently grasping its faceplate by the edges and pulling **(Figure 3)**. Set aside the outer case.

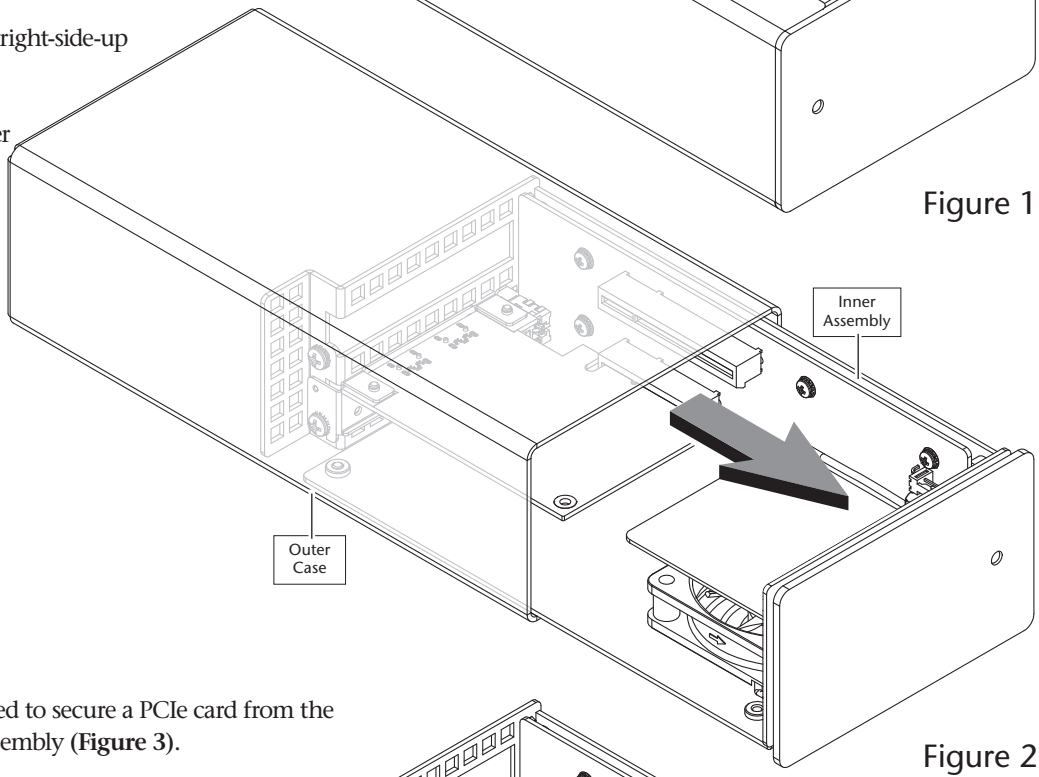



Figure 2

**5.** Remove and set aside the screw used to secure a PCIe card from the Echo Express SEL chassis' inner assembly **(Figure 3)**.

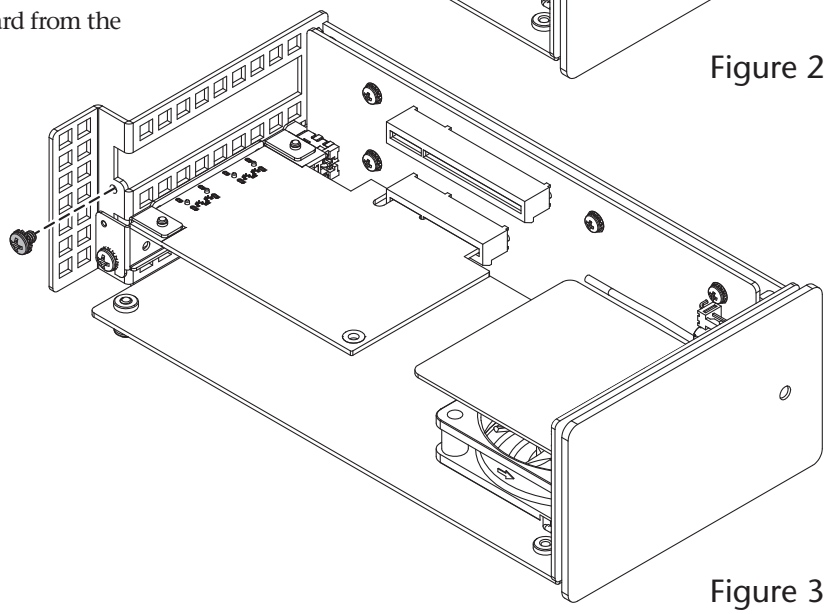


Figure 3

## Chapter 3 – PCIe Card Installation Steps

**WARNING:** When handling computer products, take care to prevent components from being damaged by static electricity; avoid working in carpeted areas. Handle expansion cards only by their edges and avoid touching connector traces and component pins. Also, avoid touching the Echo Express SEL chassis' circuit boards and any of its components.

**6.** Remove the PCIe card from its packaging, handling the card by its edges and without touching any components or gold connector pins.

**7.** If necessary, swap the card's standard PCIe bracket with its included low-profile bracket.

**8.** Holding the card with its bracket on the left and the connector pins facing away from you, line up its connector with the slot, and then gently but firmly insert the card straight into the slot; **do not rock the card or force the card into the slot**. If you encounter excessive resistance, check the card's connector and the slot for damage, and then try inserting the card again **(Figure 4)**.

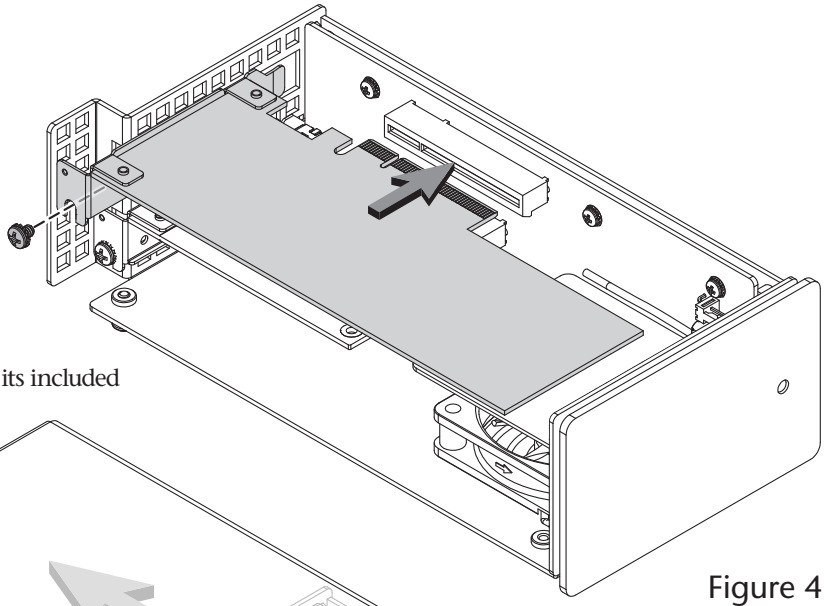


Figure 4

**9.** Secure the card using the screw you removed previously; do not overtighten the screw **(Figure 4)**.

**10.** Place your hand on top of the outer case, and then gently push the inner assembly back into the outer case **(Figure 5)**.

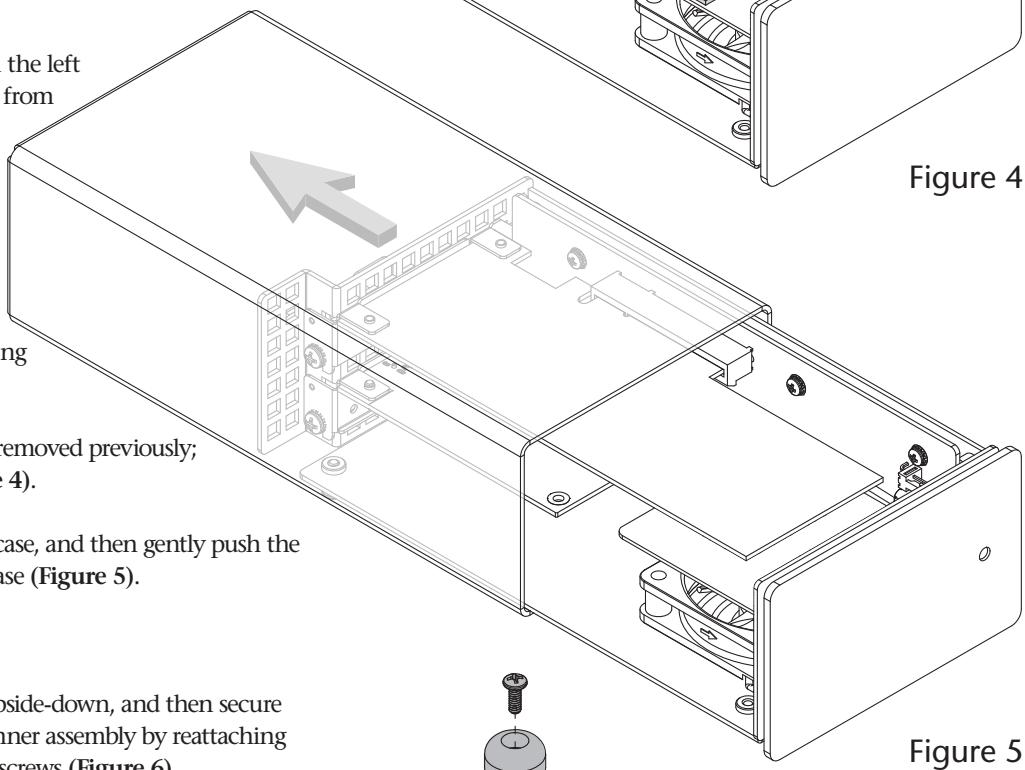


Figure 5

**11.** Turn the Echo Express SEL chassis upside-down, and then secure the bottom of the outer case to the inner assembly by reattaching the four feet; do not overtighten the screws **(Figure 6)**.

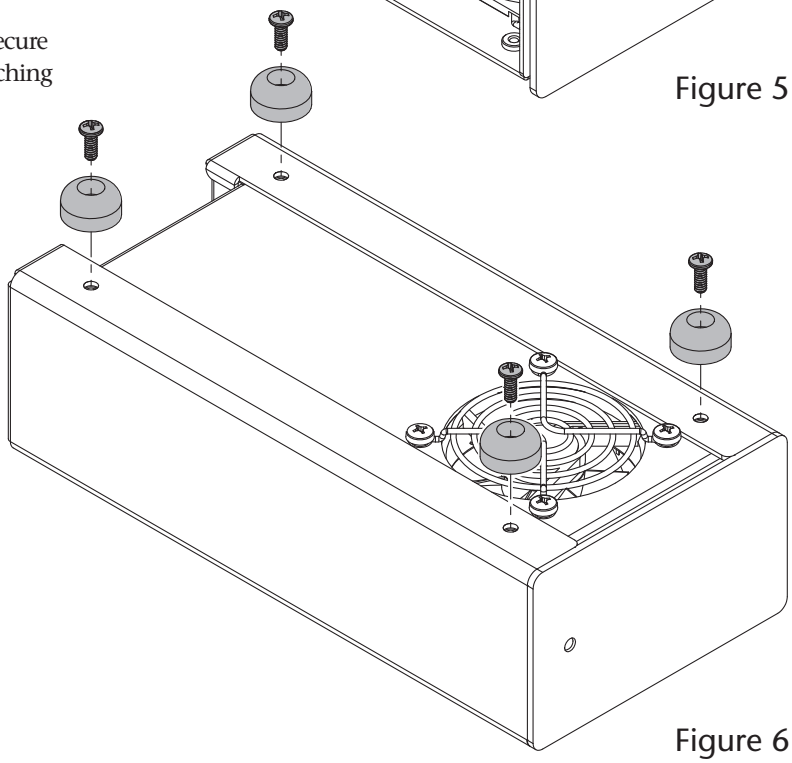


Figure 6

**12.** Turn the Echo Express SEL right-side-up.

**Support Note:** To ensure the best performance possible when connecting multiple Thunderbolt devices in a daisy chain, be sure to connect 20Gbps Thunderbolt 2 devices such as this Echo chassis closest to the computer, with 10Gbps Thunderbolt devices at the end.

**13.** Connect a Thunderbolt cable between either Thunderbolt port on the Echo chassis and a Thunderbolt port on your computer (or other Thunderbolt device in the chain connected to the computer). If you are daisy chaining additional Thunderbolt devices, connect another Thunderbolt cable between the downstream device and the open Thunderbolt port on the Echo chassis **(Figure 7)**.

**14.** Using a Phillips screwdriver, secure the Thunderbolt cable(s) to the Echo Express SEL with the supplied Thunderbolt cable lock as shown **(Figure 7)**. Note that if you are using an optical Thunderbolt cable, the supplied Thunderbolt cable lock is not compatible; skip to the next step.

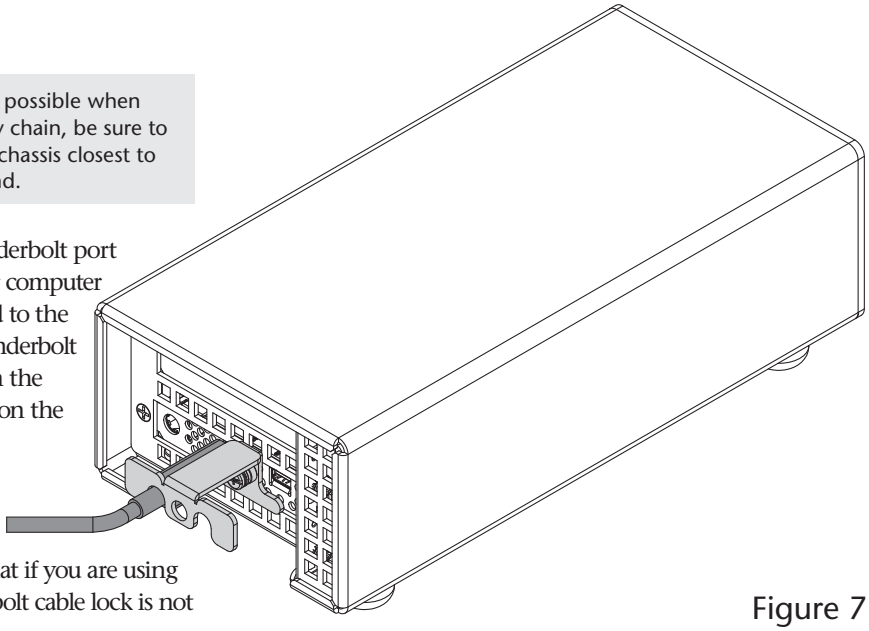


Figure 7

**15.** Connect the included power cord between a wall outlet or power strip and the power adapter; verify the connector is plugged in securely. Note that the power adapter's power indicator will light at this time.

**16.** Connect the power adapter cable to the Echo Express SEL's 12V power socket. Note that the power indicator on the Echo Express SEL chassis will not light until the computer, and any other Thunderbolt device connected between it and the Echo chassis, is powered on.

# Chapter 4 – Verify Connections Using System Information

## A – Verify the Echo Express SEL is Recognized

1. With the Echo chassis powered and connected to the computer, turn on the computer.

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 Information* window, click Thunderbolt under the Hardware header in the left column **(Figure 8)**.

6. In the top right column under the Thunderbolt Device Tree header, you will see the computer, followed by Thunderbolt Bus, and then "Echo Express SEL" **(Figure 8)**.

**Support Note:** If you do not see "Echo Express SEL" listed, disconnect and reconnect the Thunderbolt cable between the computer and Echo Express SEL. Note that it is not necessary to shut down the computer before disconnecting and reconnecting the cable, so long as the installed card is Thunderbolt-compatible.

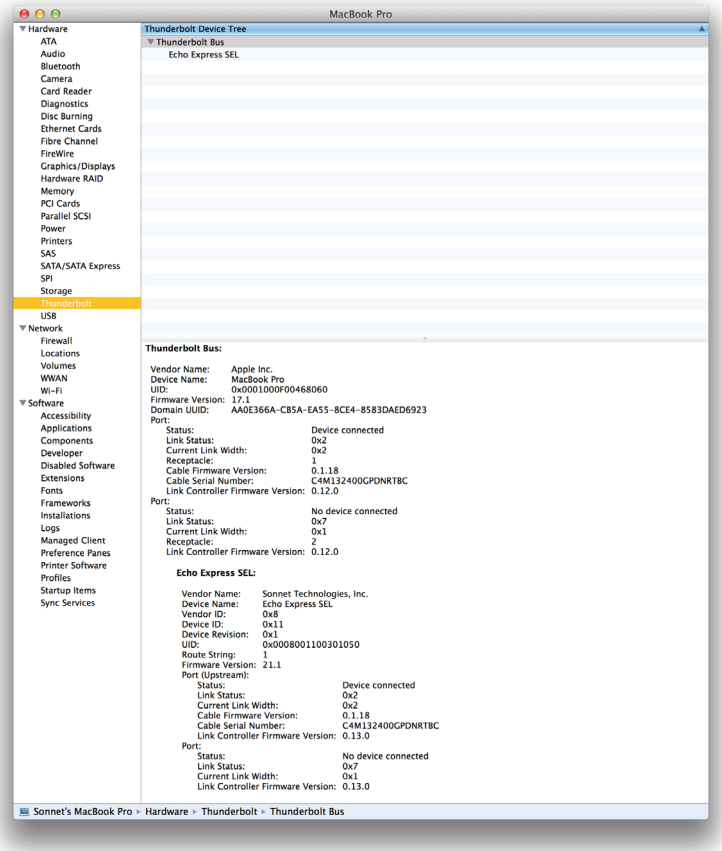



Figure 8

## B – Verify the Installed Card is Recognized

1. Click PCI Cards under the Hardware header in the left column **(Figure 9)**.

2. At the top of the right column, the installed card is listed. By selecting the card, detailed information is listed. You should see "Yes" next to Driver Installed and Tunnel Compatible, otherwise the card or driver may not be Thunderbolt-compatible **(Figure 9)**.

**Support Note:** While the Echo Express SEL expansion chassis requires no drivers, the installed card requires Thunderbolt-compatible drivers to enable its use.

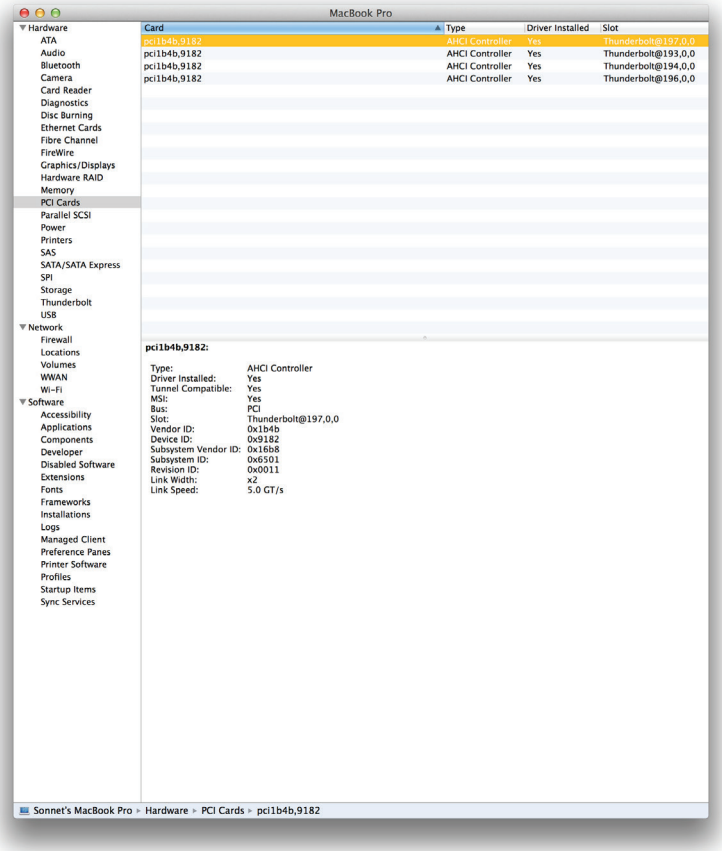



Figure 9

## Chapter 5 – Tips, General Information, and Known Issues

### TIPS, GENERAL INFORMATION

**Keeping the Card Cool**
With its optimized airflow design and temperature-controlled fan providing cooling at all times, Echo Express SEL provides adequate cooling for the installed card. *Do not operate the Echo Express SEL with its cover off, and do not block any of the vents*! Otherwise, the installed card and Echo Express SEL's components may overheat.

**Hot Plugging the Echo Express SEL Expansion Chassis**
When a certified Thunderbolt-compatible card (used with Thunderbolt-compatible drivers) is installed in the Echo Express SEL, you may connect and disconnect the chassis while the computer is on. Of course, if you have anything connected to the card, such as storage devices, cameras, etc., follow proper procedures for disconnecting those devices before unplugging the Echo Express SEL chassis.

**There's No Need to Unplug the Power Adapter**
Because Echo Express SEL automatically powers on and off with the computer to which it's connected, there's no power switch, nor is there any need to disconnect the power cable under normal use.

**Power Indicator Operation**
Because the Echo Express SEL chassis automatically 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.

**Connecting Additional Thunderbolt Devices**
You may connect up to six Thunderbolt devices total in a daisy chain, including the Apple Thunderbolt Display.

**Using Expansion Cards Without Drivers**
Some Thunderbolt-compatible expansion cards, like Sonnet's Presto™ Gigabit Pro PCIe and Sonnet's Tempo™ SATA Pro 6Gb PCIe 2.0 eSATA card, use drivers built into the OS.

**Some PCIe Cards May Not Fit in Echo Express SEL**
Cards installed into Echo Express SEL must be no more than 6.6 inches (16.76 cm) long, and must have a low-profile PCIe card bracket attached.

**Replacing a Card After Initial Installation**
Shut down the computer, and then disconnect the power adapter and Thunderbolt cables from the Echo Express SEL before disassembling the chassis and replacing the card.

**PCIe CARDS ARE NOT HOT-PLUGGABLE!**
Never install a PCIe card into Echo Express SEL while it is connected to a computer or power outlet! If you do, you risk injury, and damage to the card, chassis, and computer.

### KNOWN ISSUES

**Not all PCIe Cards Will Perform at 100%**
Thunderbolt 2's PCIe bandwidth is limited to 20Gbps. While most cards will operate at full performance, some may not due to the fact they require more bandwidth than Thunderbolt 2 is capable of supporting.

**OS X Updates May Break Compatibility**
**Specific device drivers that work under one version of OS X may not work under a later version**. *Before updating to the latest OS*, we recommend that you contact your PCIe card's manufacturer to verify that the existing drivers work. Note that other software updates for the computer may also break compatibility.

**Some Devices' Performance May be Affected by Where They Are Connected in a Thunderbolt Chain**
However small, Thunderbolt introduces latency to a device chain. If you expand with additional Thunderbolt expansion chassis, you may need to experiment with which cards work better in chassis closer to or farther from the computer in the chain

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

## Specifications

| | |
|---|---|
| External Connectors | Two Thunderbolt<br>Power |
| Expansion Slot | x8 mechanical (x8 electrical) PCIe 2.0 |
| PCIe Card Support | Half-length (up to 6.6 in. long), full-height, single-width x8 PCIe card |
| Compatible PCIe Cards | See Sonnet Website: (www.sonnettech.com) |
| Power Adapter | Input: 100-240V AC 1.6A, 50-60 Hz<br>Output: 12V@7.0A (80W) |
| PCIe Card Minimum Guaranteed Power | 25W |
| Operating Temperatures | +32˚ F to +95˚ F<br>(0˚ C to +35˚ C) |
| Dimensions WxDxH | 4 x 8.42 x 2.82 in.<br>(10.16 x 21.39 x 7.16 cm) |
| Weight | 1.75 lbs.<br>(.8 kg) |
| RoHS Compliant | Yes |
| Package Contents | • Echo Express SEL chassis(1)<br>• Power adapter<br>• Power cord<br>• Thunderbolt cable lock(2)<br>• User's guide |

1. Thunderbolt cable required; available at the Apple Store and your reseller.
2. Not compatible with optical Thunderbolt cables.

## SAFETY PRECAUTIONS

Please read this section carefully before proceeding. These precautions explain the correct and safe use of this device, thereby helping to prevent injury to you or others, and also help you to minimize the risk of damaging the device.

### 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 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

### Warnings (continued)

- 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 SEL 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 Customer Service

The Sonnet Web site located at www.sonnettech.com has the most current support information and technical updates. Before you call 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 Customer Service, have the following information available so the customer service staff can better assist you:

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

**USA Customers**

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

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

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For the most current product information and online support files, visit the Sonnet Web site 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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