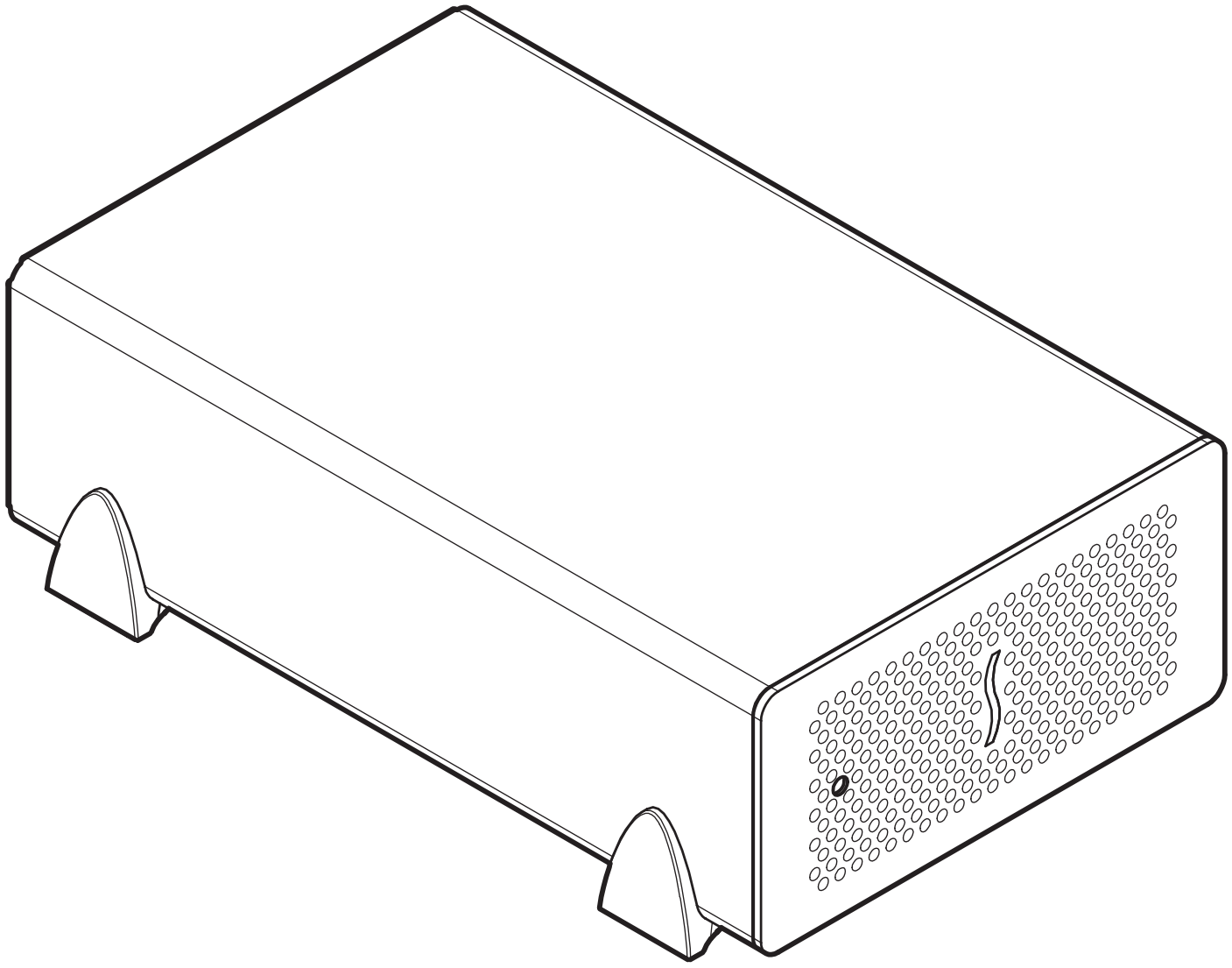
User's Guide

for Echo™ Express SE
Thunderbolt™ Expansion Chassis for PCIe Cards



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Contents

1 Introduction, System Requirements..... 1

2 Echo Express SE Description..... 2

Echo Express SE Extererior
Echo Express SE Inner Assembly
Echo Express SE Power Adapter

3 PCIe Card Installation Steps..... 4

4 Verify Connections Using System Information..... 7

Verify the Echo Express SE is Recognized
Verify the Installed Card is Recognized

5 Tips, General Information, and Known Issues..... 8

Tips, General Information
Known Issues

6 Specifications, Precautions, FCC Compliance, and Support Information..... 9

Specifications
Safety Precautions
FCC Compliance
Contacting Customer Service
Visit Our Website

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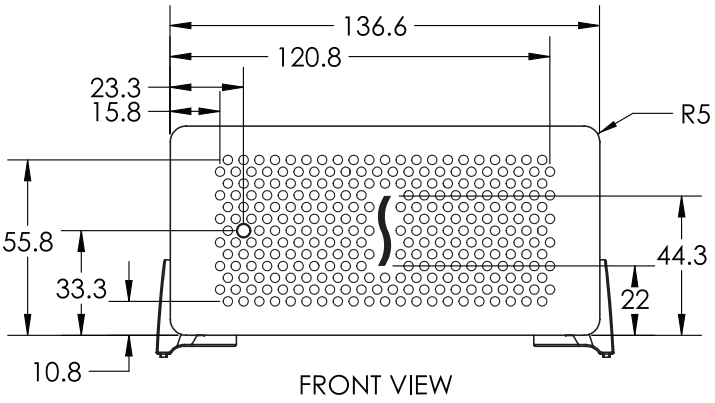
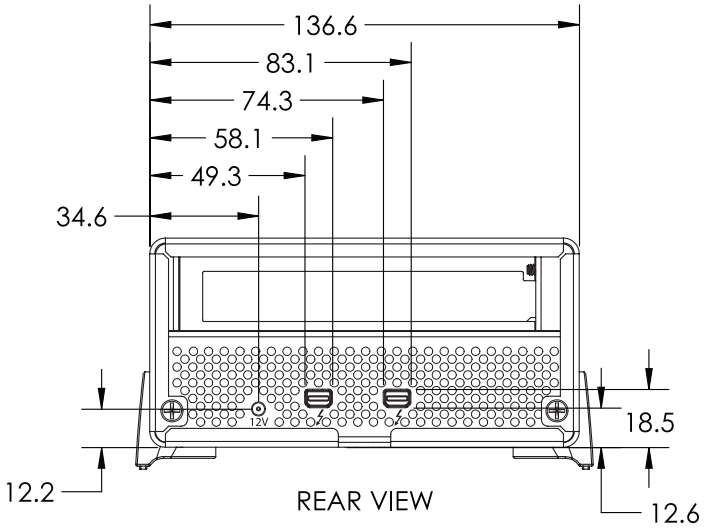
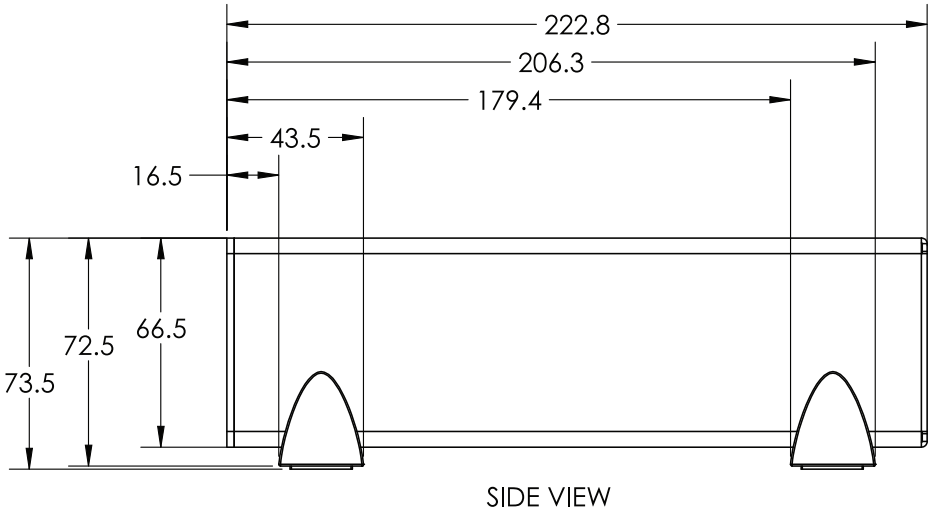
Chapter 1 – Introduction, System Requirements







Introduction

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

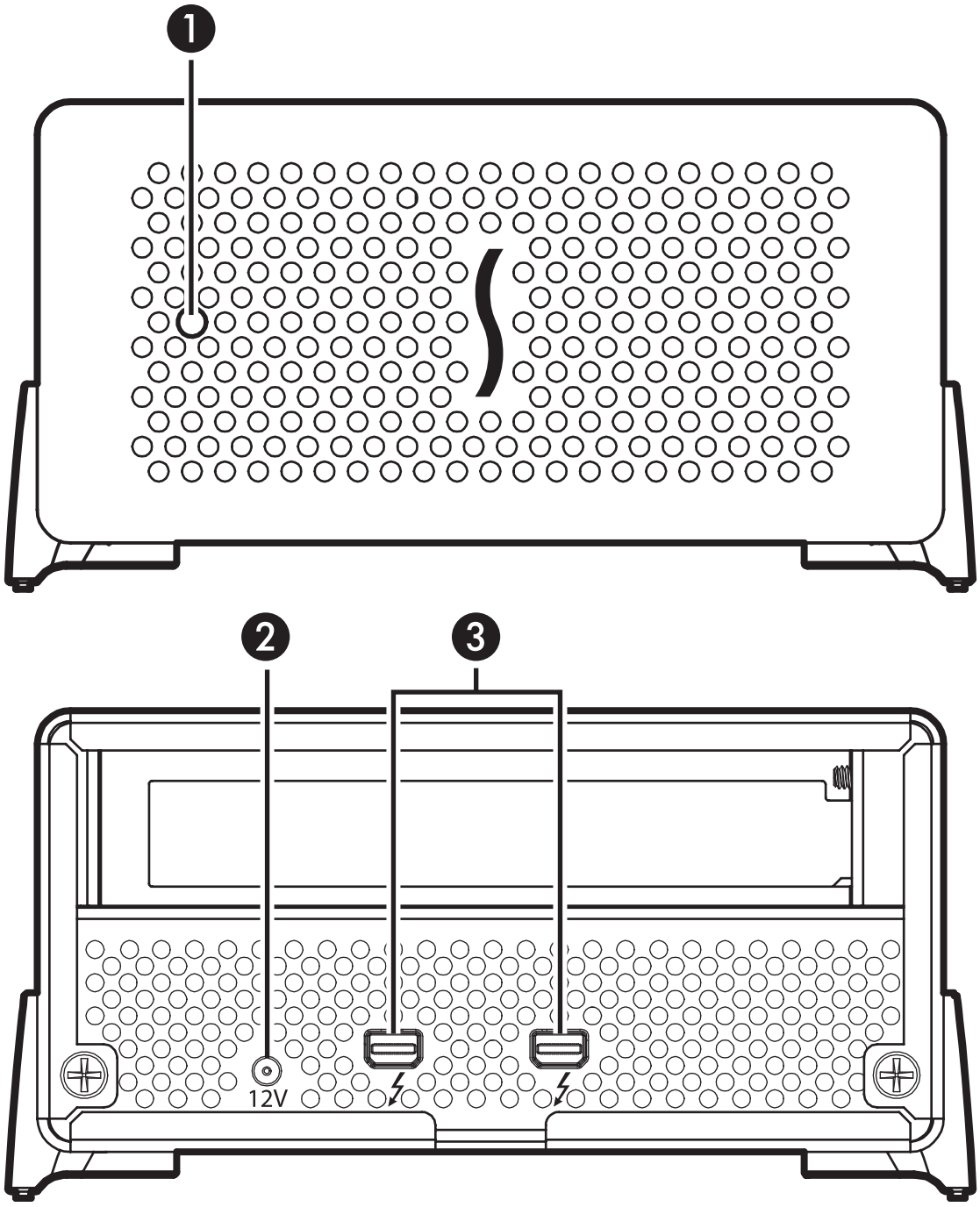
While the Echo Express SE chassis requires no drivers, the expansion card you install does; Thunderbolt-compatible drivers to enable it to work properly through the Thunderbolt interface are required. More information on what cards are compatible with Echo Express SE is available at: http://sonnettech.com/support/charts/thunderbolt/index.html

System Requirements

The Echo Express requires the following to operate:

- Mac computer with a Thunderbolt port
- OS X 10.6.8 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 SE Description



Echo Express SE Exterior

1 – Power Indicator

This indicator lights when the Echo Express SE is powered, the Thunderbolt cable between Echo Express and your computer is plugged in securely, and the computer powered on. Note that if the Echo Express SE 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

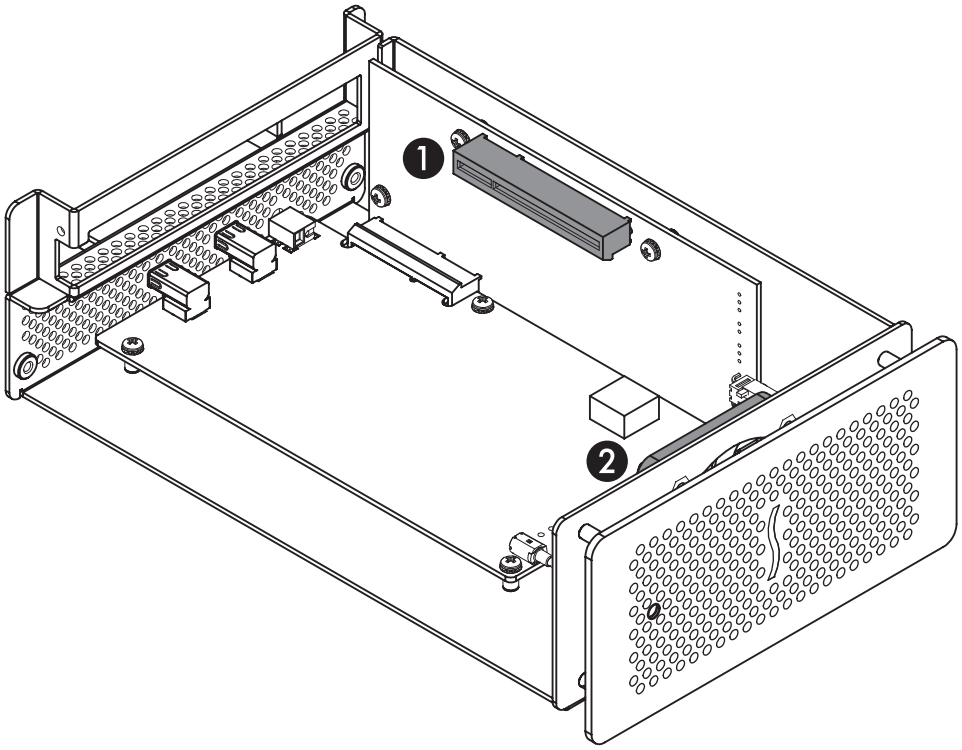
2 – 12VDC Socket

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

3 – Thunderbolt Ports

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

Chapter 2 – Echo Express SE Description



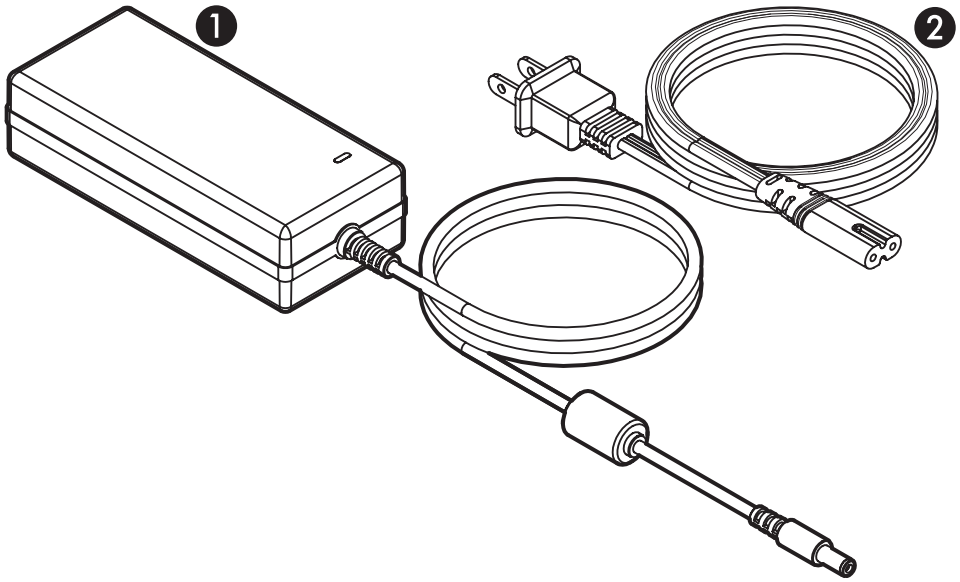
Echo Express SE Inner Assembly

1 – PCIe Slot

This slot accepts up to an x8 mechanical, half-length (up to 6.6" long), full- height, single-width PCIe 2.0 card, and also supports PCIe 1.1 cards

2 – 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 SE Power Adapter

1 – Power Adapter

Connect this to the Echo Express SE 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

Chapter 3 – PCIe Card Installation Steps

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

2. Remove and set aside the two screws securing the bottom of the outer case to the inner assembly **(Figure 1)**.

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

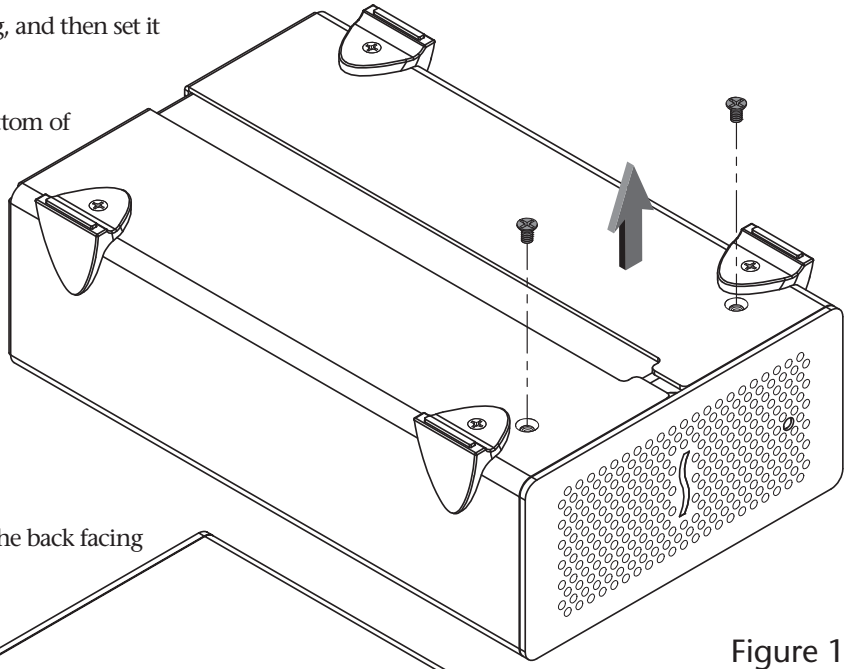


Figure 1

3. Turn the Echo Express SE chassis right-side-up, with the back facing you **(Figure 2)**.

4. Remove and set aside the two screws securing the back edge of the outer case to the inner assembly **(Figure 2)**.

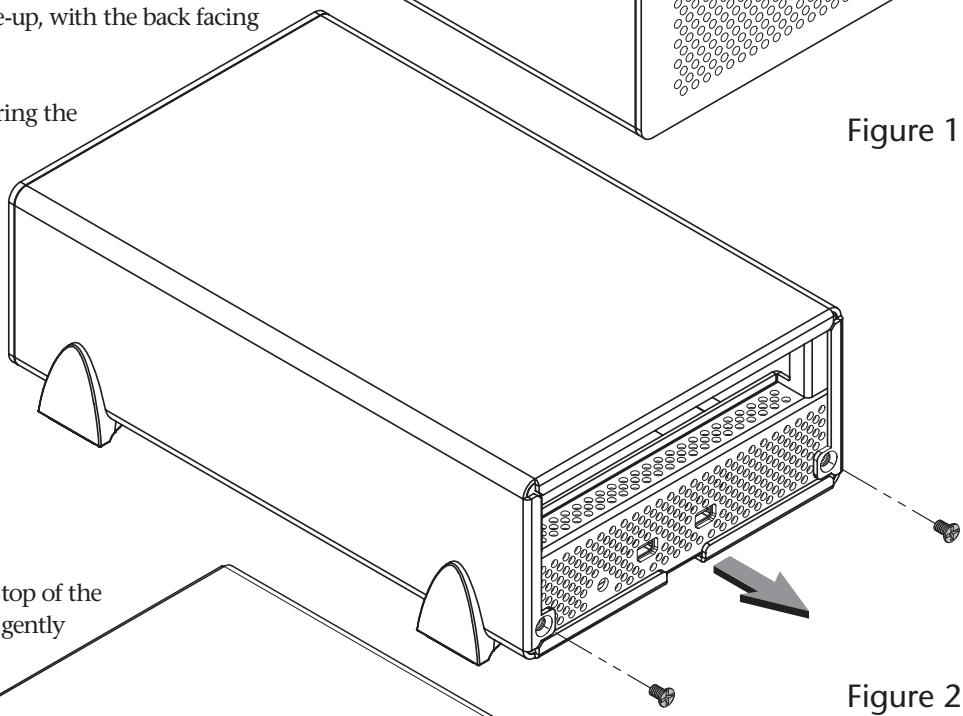


Figure 2

5. Without squeezing it, 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.

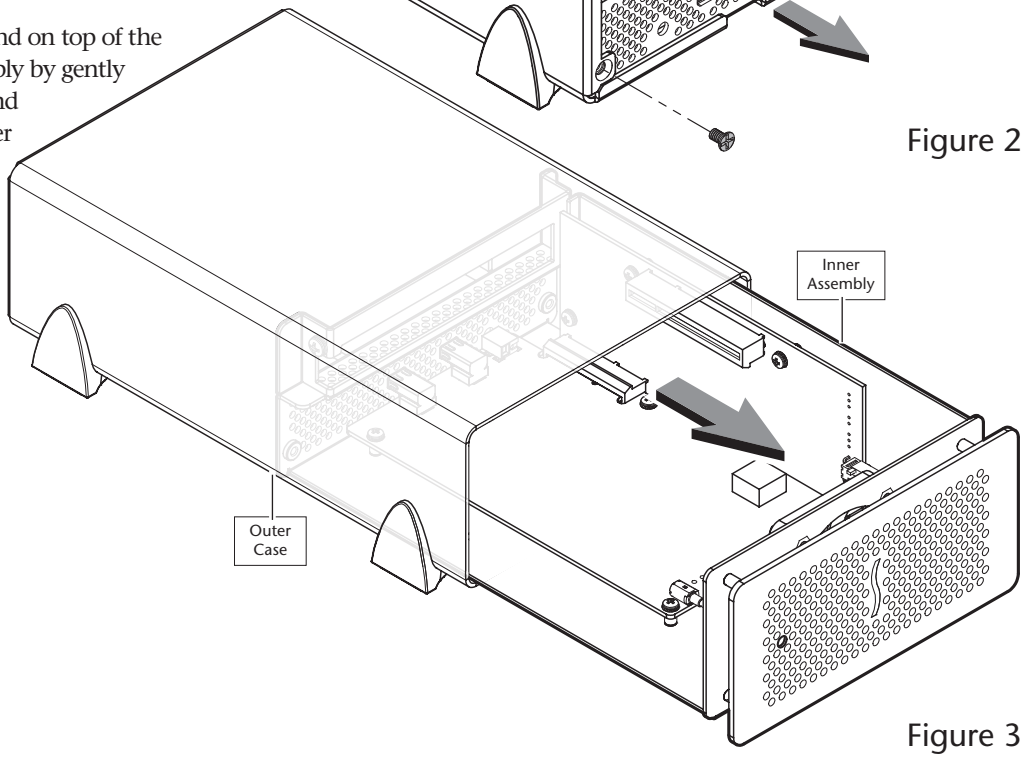


Figure 3

Chapter 3 – PCIe Card Installation Steps

6. Remove and set aside the screw used to secure a PCIe card from the Echo Express SE chassis' inner assembly **(Figure 4)**.

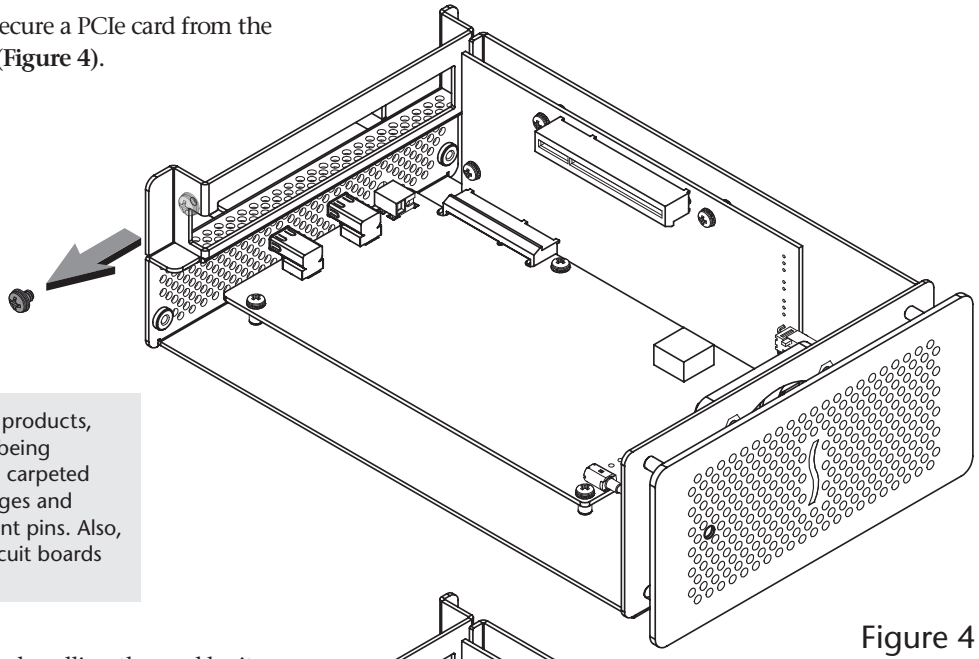


Figure 4

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 SE chassis' circuit boards and any of its components.

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

8. Holding the card with the bracket on the left and the connector pins facing away from you, line up its connector with the slot, and then gently but firmly press 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 5)**.

9. Secure the card using the screw you removed previously; do not overtighten the screw **(Figure 5)**.

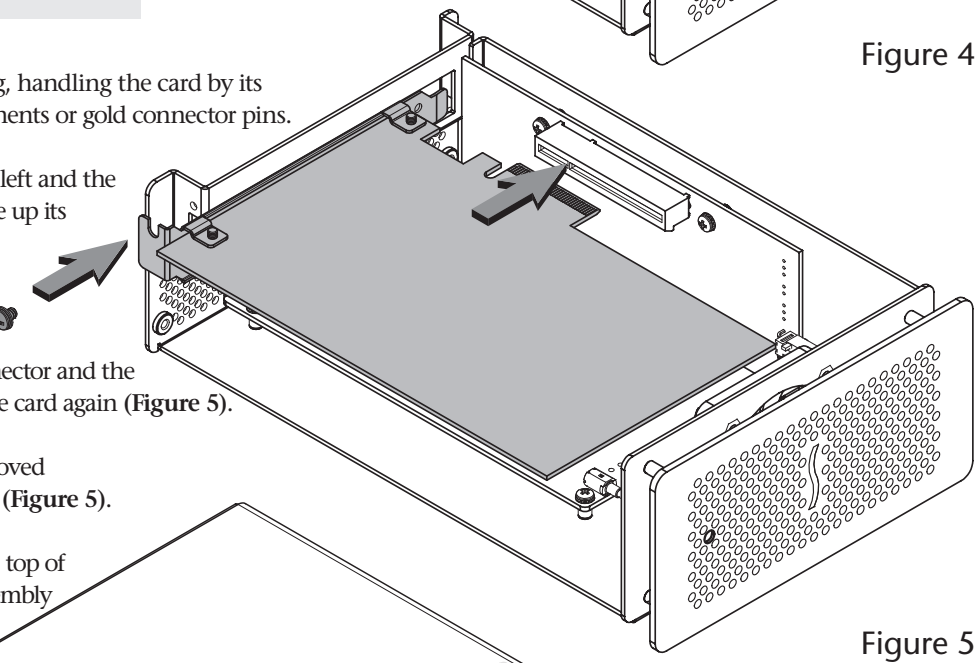


Figure 5

10. Without squeezing it, place your hand on top of the outer case. Gently push the inner assembly back into the outer case **(Figure 6)**.

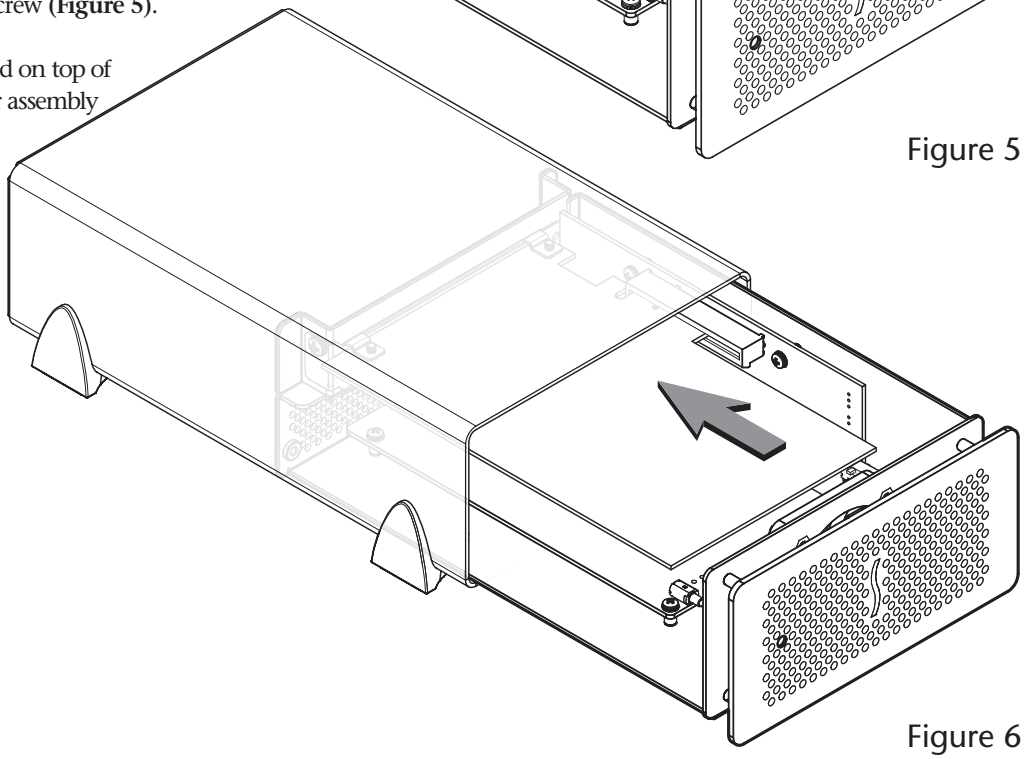


Figure 6

Chapter 3 – PCIe Card Installation Steps

11. Using two of the screws you removed previously, secure the back edge of the Echo Express SE's outer case to its inner assembly; do not overtighten the screws **(Figure 7)**.

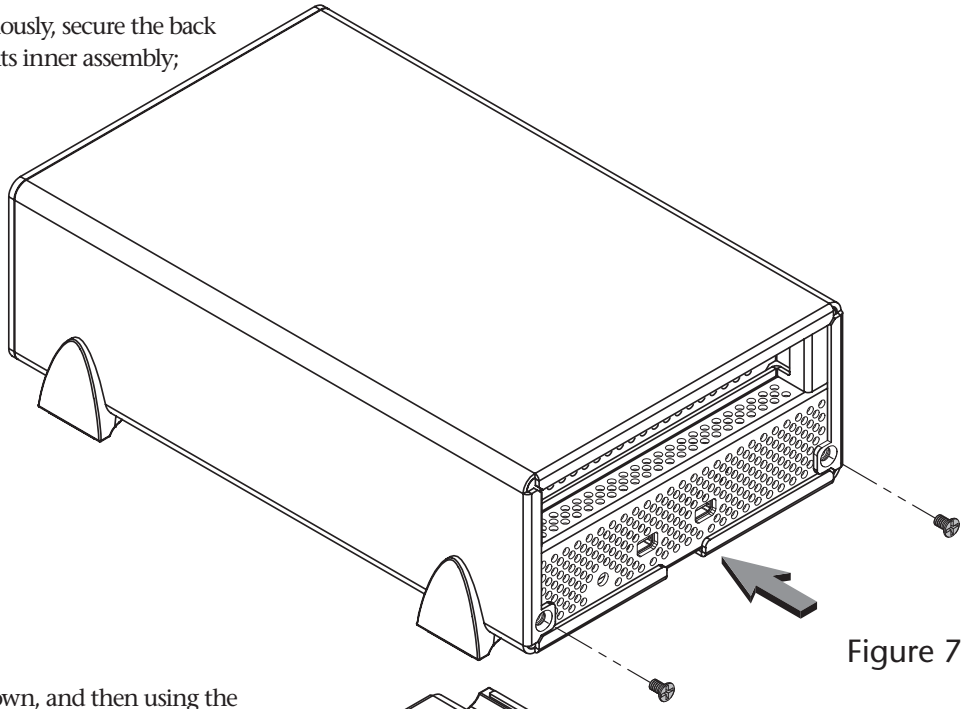


Figure 7

12. Turn the Echo Express SE chassis upside-down, and then using the remaining two screws you removed previously, secure the bottom of the outer case to the inner assembly; do not overtighten the screws **(Figure 8)**.

13. Turn the Echo Express SE right-side-up.

14. Connect a Thunderbolt cable between either Thunderbolt port on the Echo chassis and a Thunderbolt port on the computer (or other Thunderbolt device in the chain connected to the computer).

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 SE's 12V power socket. Note that the power indicator on the Echo Express SE chassis will not light until the computer, and any other Thunderbolt device connected between it and the Echo chassis, is powered on.

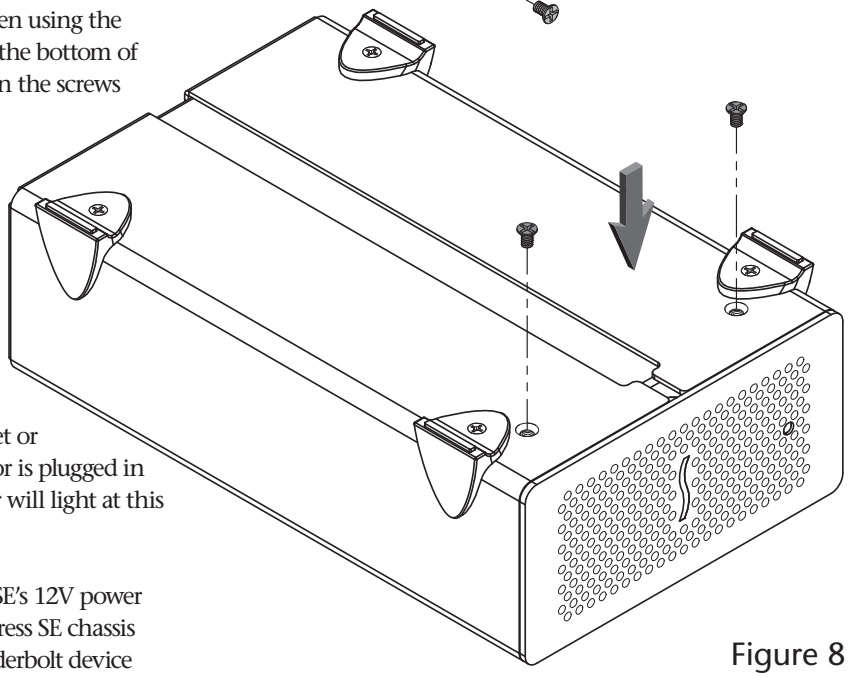


Figure 8

Chapter 4 – Verify Connections Using System Information

A – Verify the Echo Express SE 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 9)**.

6. In the top right column under the Thunderbolt Device Tree header, you will see the computer, followed by "Echo Express SE" **(Figure 9)**.

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, so long as the installed card is Thunderbolt-compatible.

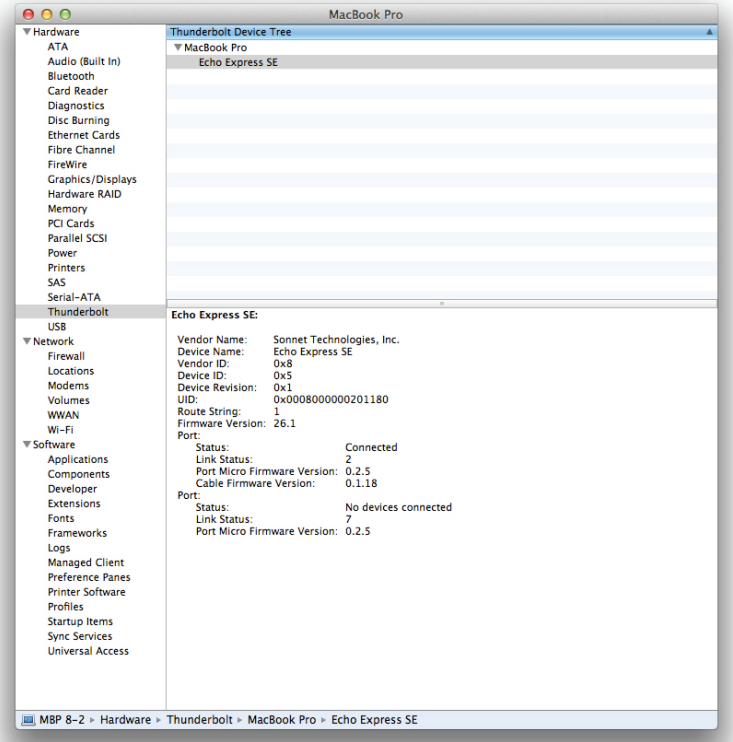


Figure 9

B – Verify the Installed Card is Recognized

1. Click PCI Cards under the Hardware header in the left column **(Figure 10)**.

3. 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 10)**.

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

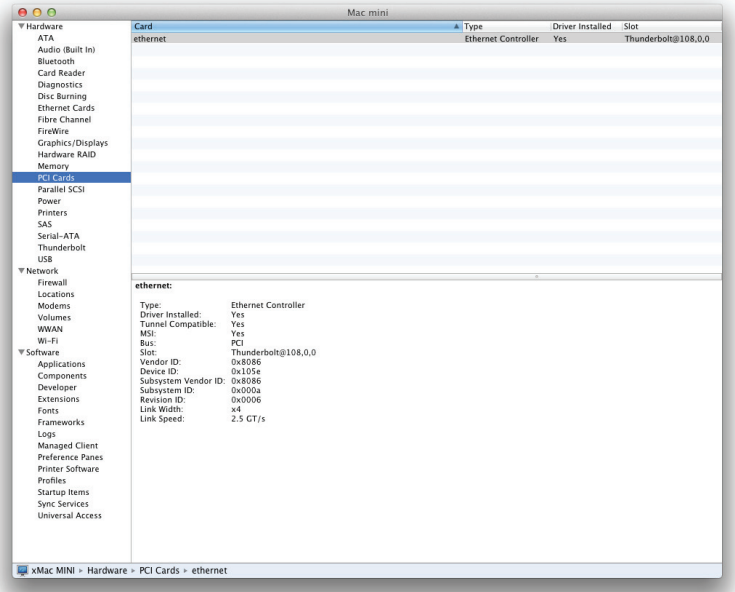


Figure 10

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 SE provides adequate cooling for most cards. *Do not operate the Echo Express SE with its cover off, and do not block any of the vents*! Otherwise, the installed card and Echo Express SE's components may overheat

Hot Plugging the Echo Express SE Expansion Chassis
When a certified Thunderbolt-compatible card (used with Thunderbolt-compatible drivers) is installed in the Echo Express SE, 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 SE chassis

There's No Power Switch and No Need to Unplug the Power Adapter
Because Echo Express SE 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 SE 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 the Echo Express SE plus up to five additional Thunderbolt devices, including the Apple Thunderbolt Display, in a daisy chain connected to the computer

Using Expansion Cards Without Drivers
Some Thunderbolt-compatible expansion cards, like Sonnet's Allegro™ FW800 PCIe FireWire® adapter and Sonnet's Tempo™ SATA Pro 6Gb eSATA cards, use drivers built into the OS. Cards listed as Thunderbolt-compatible, but stating "no drivers required" fall into this category

Some PCIe Cards May Not Fit in Echo Express SE
Cards installed into Echo Express SE must be no more than 6.6 inches (16.76 cm) long

Replacing a Card
Shut down the computer, and then disconnect the power adapter and Thunderbolt cables from the Echo Express SE before disassembling the chassis and replacing the card

KNOWN ISSUES

Not all PCIe Cards Will Perform at 100%
Thunderbolt's PCIe bandwidth is limited to 10 Gb/s. While many cards will operate at full performance, some may not due to the fact they require more bandwidth than Thunderbolt is capable of delivering

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 or farther to the Mac mini in the chain

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

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

Specifications

External Connectors	Two Thunderbolt Power
Expansion Slot	x8[1] 10 Gb/s PCIe 2.0
PCIe Card Support	Half-length, 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 Output: 12V@5.0A (60W)
PCIe Card Minimum Guaranteed Power	25W
Operating Temperatures	+32˚ F to +95˚ F (0˚ C to +35˚ C)
Dimensions WxDxH	5.7 x 8.8 x 2.9 in. (14.5 x 22.3 x 7.4 cm)
Weight	2.4 lbs. (1.1 kg)
RoHS Compliant	Yes
Package Contents	• Echo Express SE Chassis[2] • Power Adapter • Power Cord • User's Guide

1. Slot will physically accommodate an x8 PCIe card; however, the actual electrical bandwidth of Thunderbolt is x4.

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

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 SE 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
- PCIe card 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

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