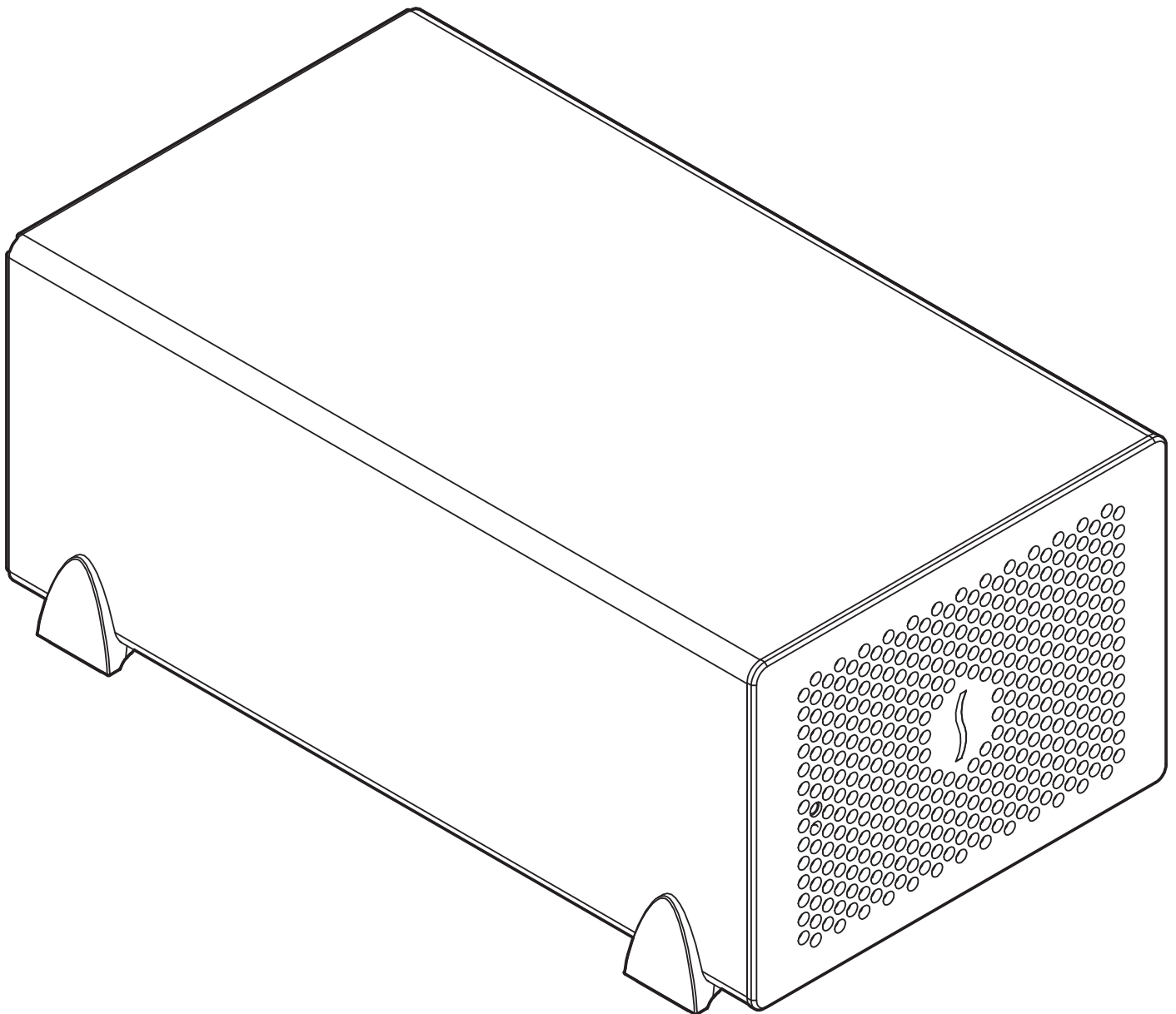


User's Guide

for Echo™ Express SE II

Thunderbolt™ 2-to-PCI Express® Card Expansion Chassis



For
Windows

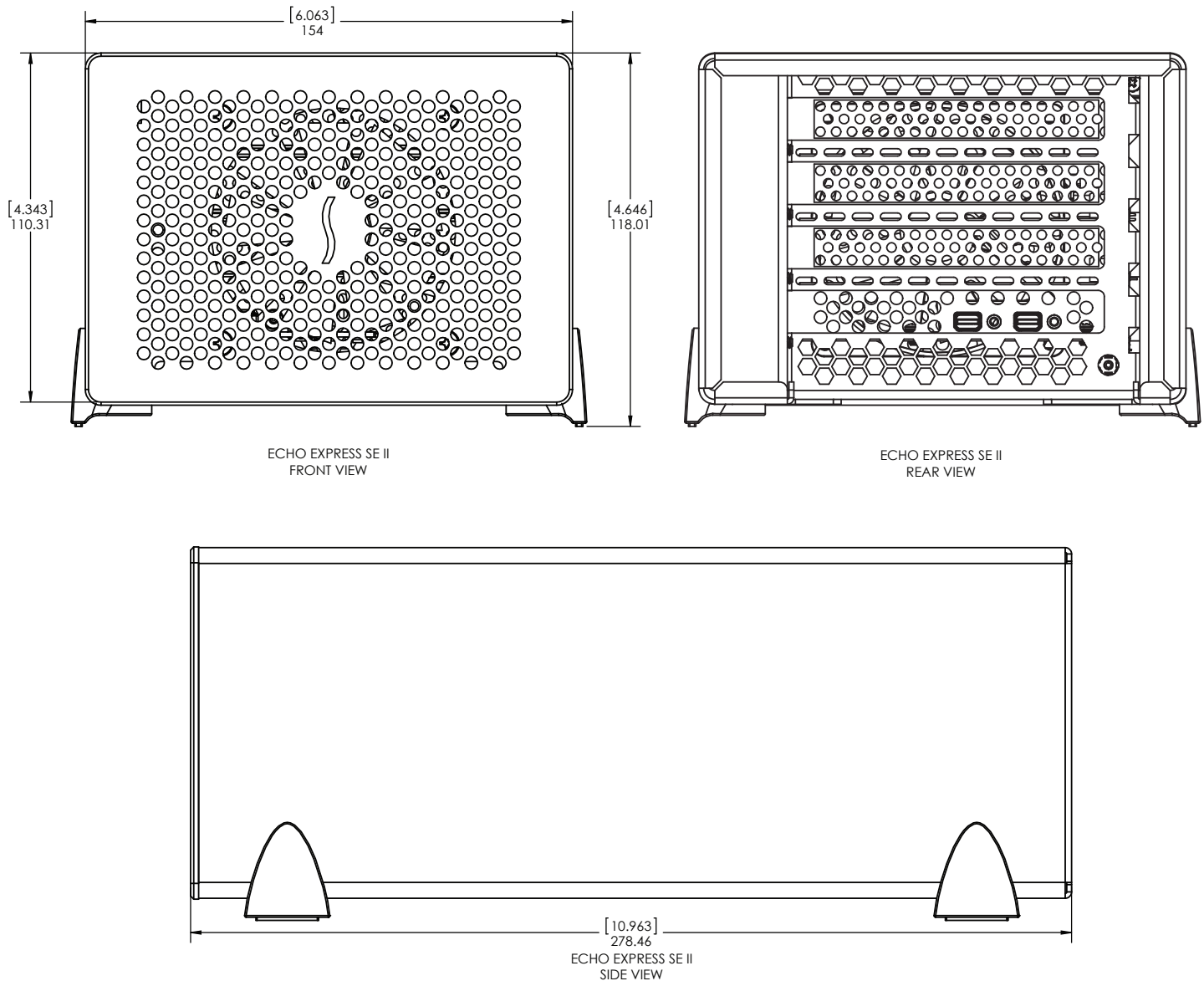


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Chapter 1 – Introduction, System Requirements



Introduction

Congratulations on your purchase! The Echo Express SE II is a Thunderbolt 2 expansion system for PCIe cards. Through its PCIe slots, you may connect two expansion cards to your iMac®, Mac® mini, Mac Pro®, MacBook Air®, or MacBook Pro® with Thunderbolt technology to expand its capabilities in ways never before possible! With its Windows® support, the Echo Express SE II offers you a handy way to connect expansion cards to your desktop or laptop PC with Thunderbolt technology.

Mac Compatibility

- Mac computer with a Thunderbolt 2 or Thunderbolt port
- OS X® 10.8.5 or later

Windows Compatibility

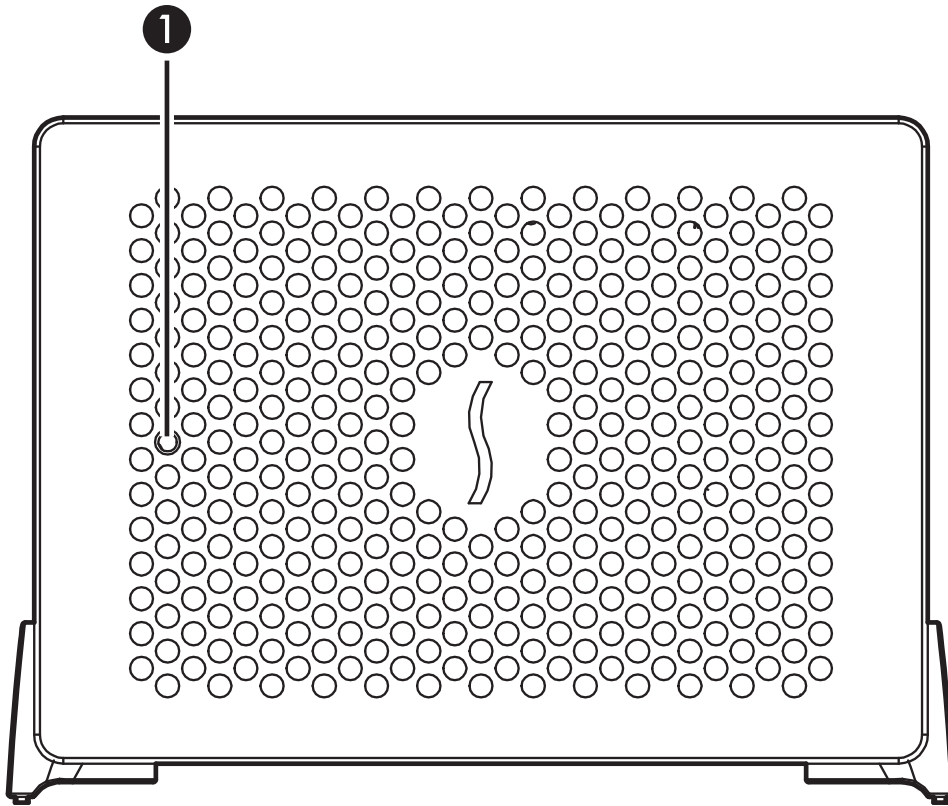
- Windows PC with a Thunderbolt 2 port (recommended) or Thunderbolt port*
- Windows 10, 8, 7

System Requirements

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

* To support more than two PCIe controllers, Windows requires a Thunderbolt 2 interface in both the computer and the expansion chassis. Note that some PCIe cards have a bridge to multiple controllers, so it is possible for a single dual-controller PCIe card to reach the limit if not connected via Thunderbolt 2. Not all Mac-compatible PCIe cards are also compatible with Windows.

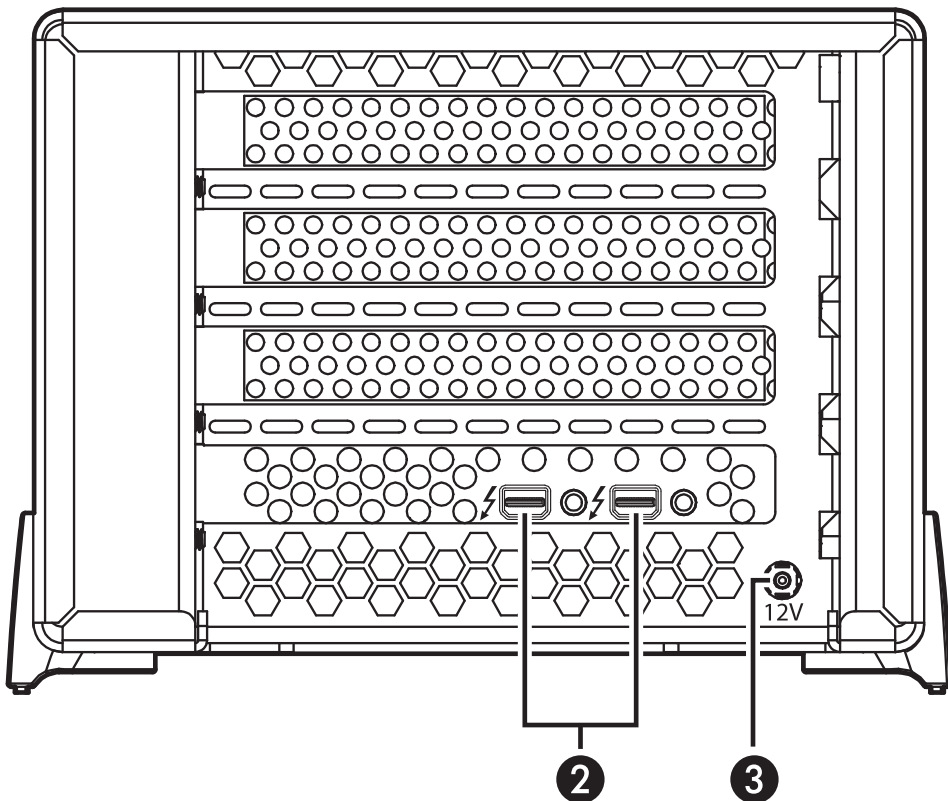
Chapter 2 – Echo Express SE II Description



Echo Express SE II Exterior

1 – Power Indicator

This lights when: the Echo Express SE II 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 II is connected to another Thunderbolt device instead of directly to the computer, any other Thunderbolt devices connected between the computer and Echo chassis must also be powered on before the Echo chassis' power indicator will light up.



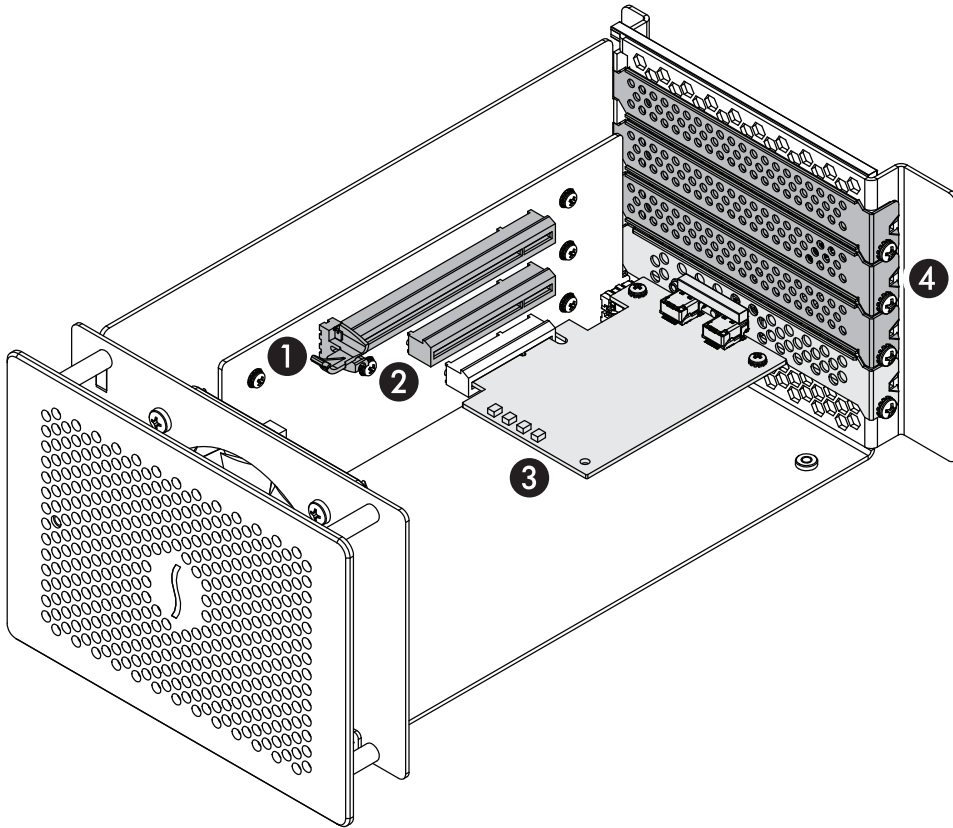
2 – Thunderbolt Ports

Connect the included Thunderbolt cable between either port and your computer's Thunderbolt port (or other Thunderbolt device in the chain connected to the computer); the other may be used to connect to another Thunderbolt device.

3 – 12V DC Socket

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

Chapter 2 – Echo Express SE II Description



Echo Express SE II Inner Assembly

1 – PCIe Slot 1

This is an x16 mechanical (x4 electrical) PCIe 2.0 slot. It is also compatible with PCIe 1.1 and 3.0 cards.

2 – PCIe Slot 2

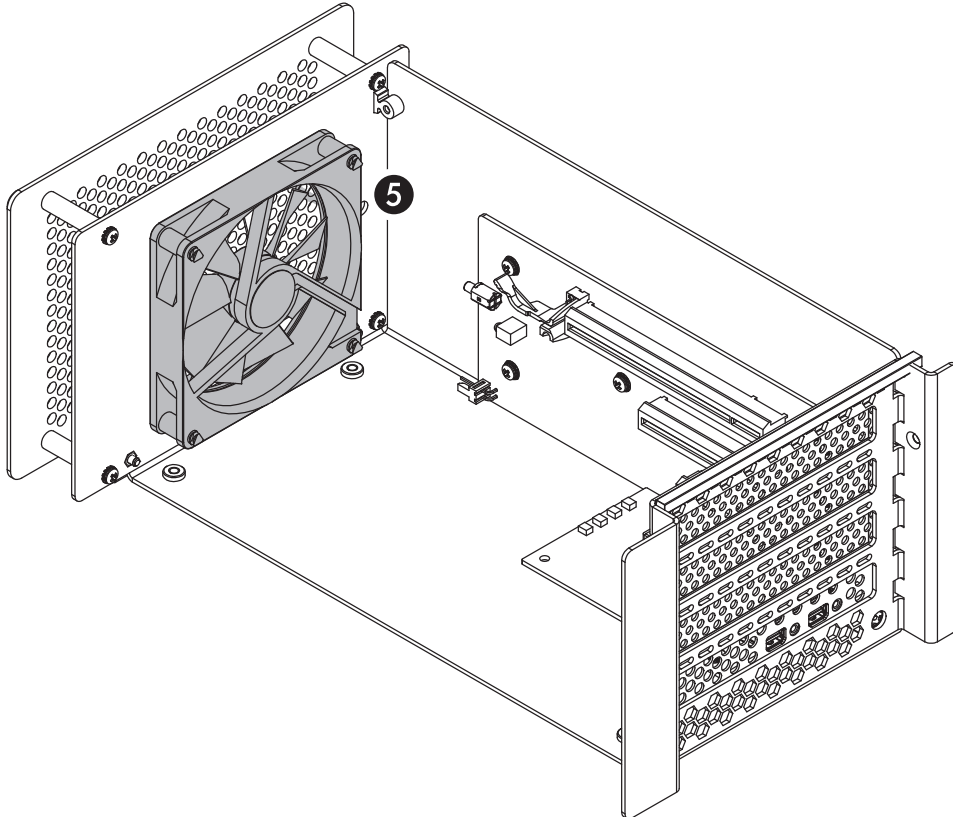
This is an x8 mechanical (x4 electrical) PCIe 2.0 slot. It is also compatible with PCIe 1.1 and 3.0 cards.

3 – Thunderbolt Interface Card

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

4 – Port Access Covers

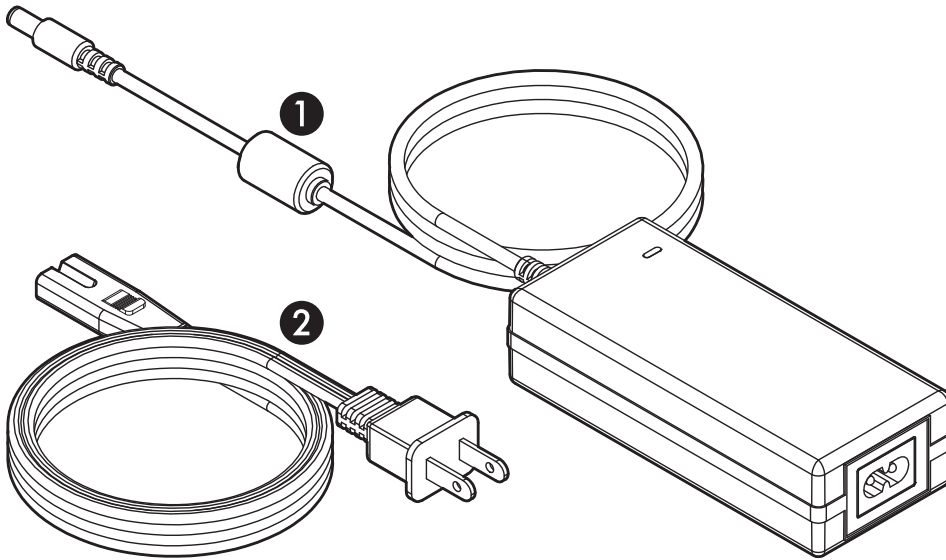
These cover openings in the chassis when PCIe slots are unoccupied.



5 – Fan

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

Chapter 2 – Echo Express SE II Description



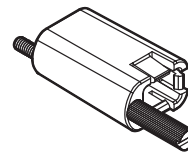
Echo Express SE II Power Adapter

1 – Power Adapter

Connect this to the Echo Express SE II chassis' power port. Note that the power indicator on top lights when the adapter is connected to AC power.

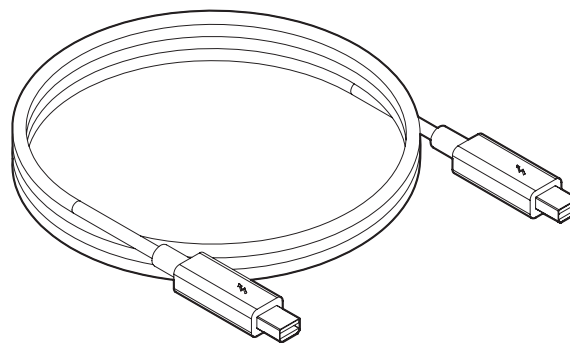
2 – Power Cord

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 Retainer Clip

This secures a Thunderbolt connector plugged into the Echo chassis' Thunderbolt port to prevent accidental cable disconnection. This clip is not compatible with optical Thunderbolt cables.



Thunderbolt Cable

Connect this cable between the Echo chassis and your computer (or other Thunderbolt device in the chain connected to the computer).

Chapter 3 – PCIe Card Installation and Chassis Setup Steps

1. Remove the Echo Express SE II chassis from its packaging, and then set it upside-down on a soft, flat, level surface.
2. Using a Phillips screwdriver, remove and set aside the four screws securing 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 II.

3. Flip the Echo chassis over. Place your hand on top of the outer case. Push the inner assembly into the outer case, and then gently pull out the inner assembly (**Figure 2**). Set aside the outer case.

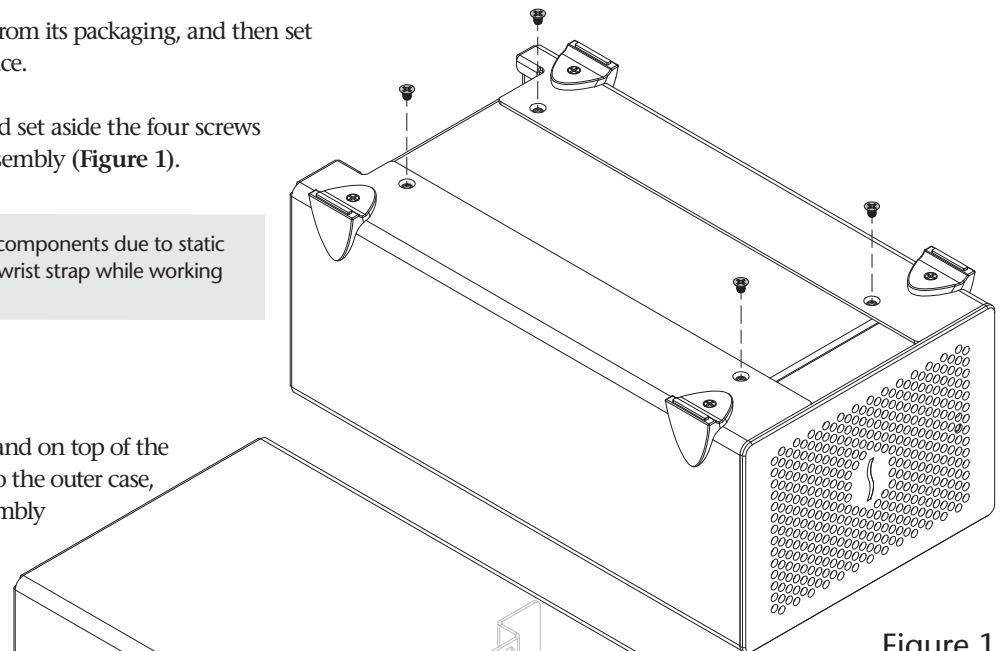


Figure 1

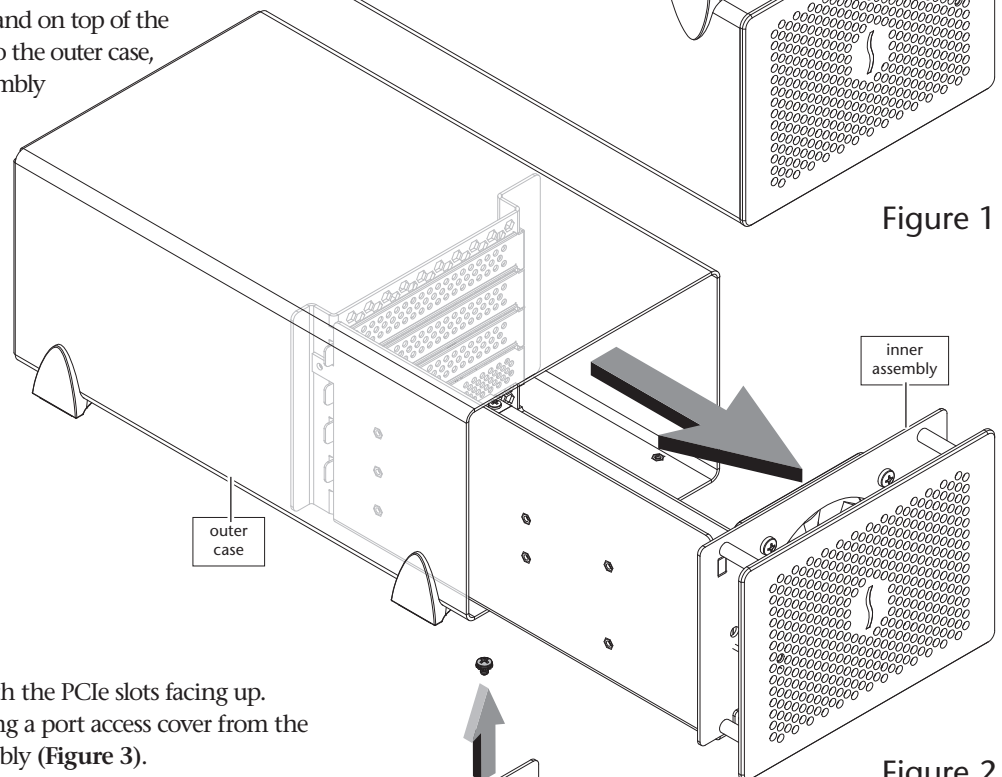


Figure 2

4. Turn the inner assembly on its side with the PCIe slots facing up. Remove and set aside the screw securing a port access cover from the Echo Express SE II chassis' inner assembly (**Figure 3**).
5. Remove and set aside the loose port access cover (**Figure 3**).
6. Repeat steps 4 and 5 as necessary with the remaining port access covers to install a second card or double-width card.

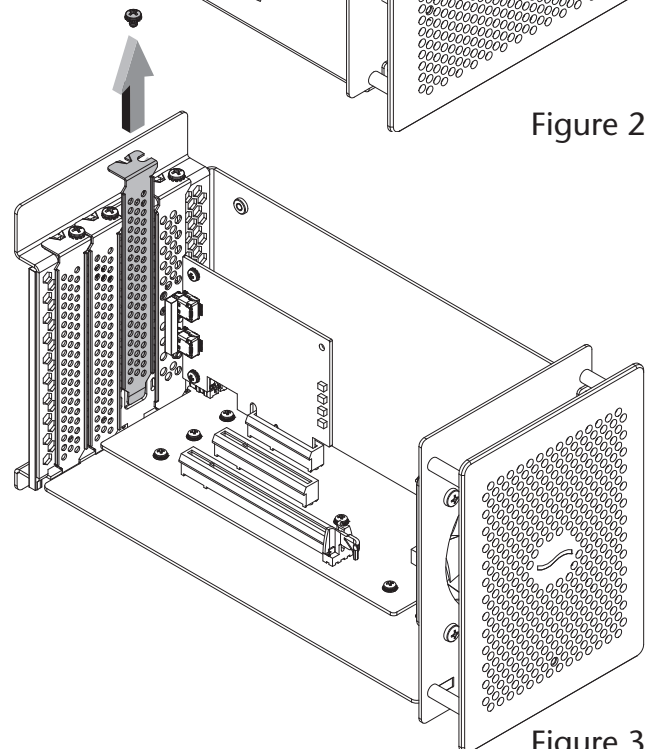


Figure 3

Chapter 3 – PCIe Card Installation and Chassis Setup 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 SE II chassis' circuit boards and any of its components.

7. Remove a PCIe card from its packaging, handling the card by its edges and without touching any components or gold connector pins.
8. Line up the card's 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 4).
9. Secure the card using the screw you removed previously; do not overtighten the screw (Figure 4).
10. Repeat steps 7 – 9 if you are installing a second card.
11. Flip the inner assembly back over to its upright position. Place your hand on top of the outer case, and then gently insert the inner assembly back into the outer case (Figure 5).
12. Turn the Echo Express SE II chassis upside-down, and then using the four screws you removed previously, secure the outer case to the inner assembly; do not overtighten the screws (Figure 6).

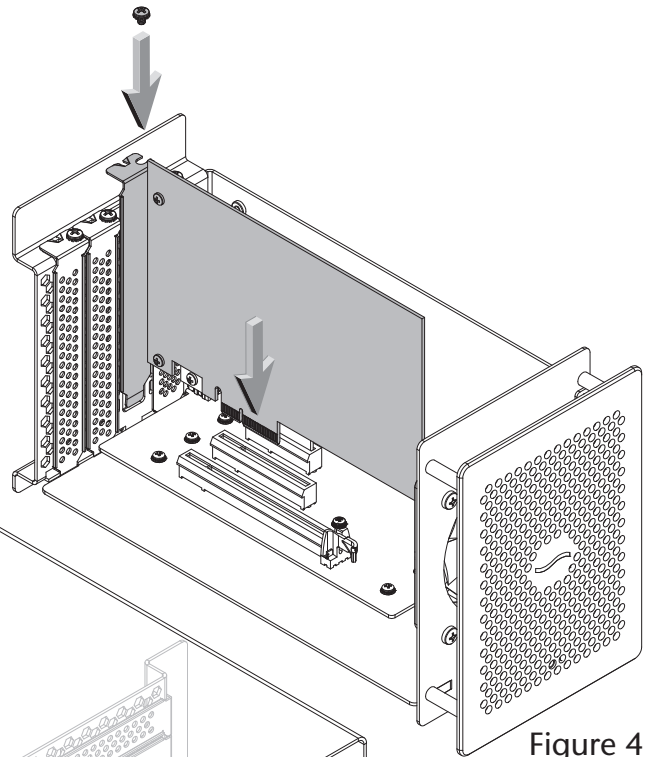


Figure 4

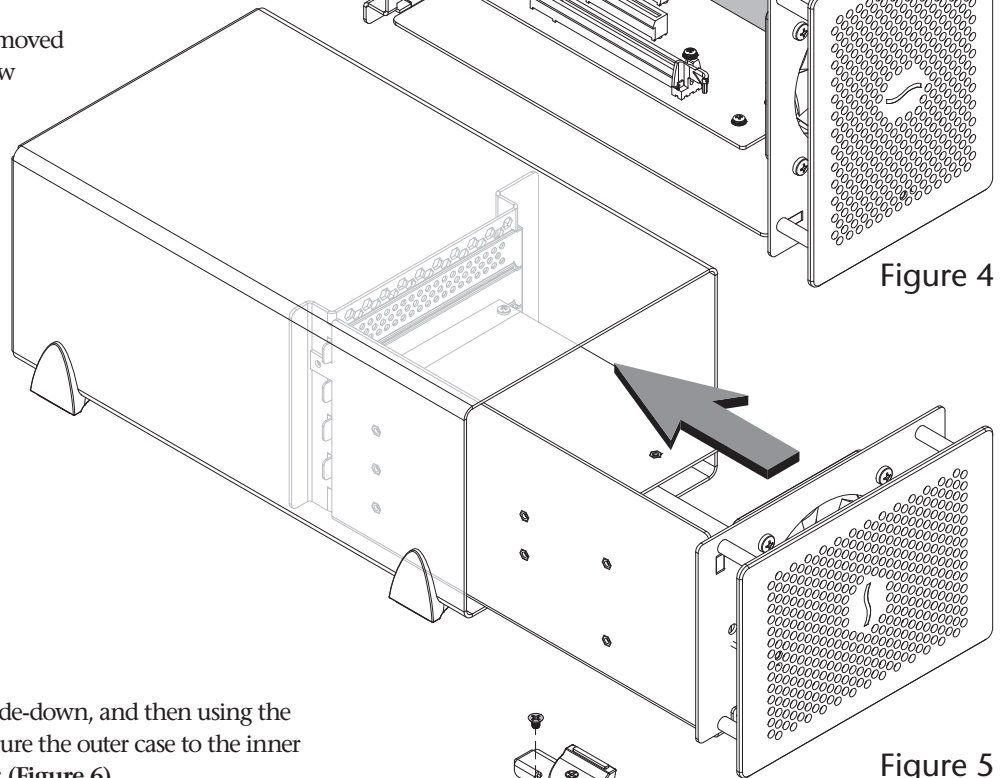


Figure 5

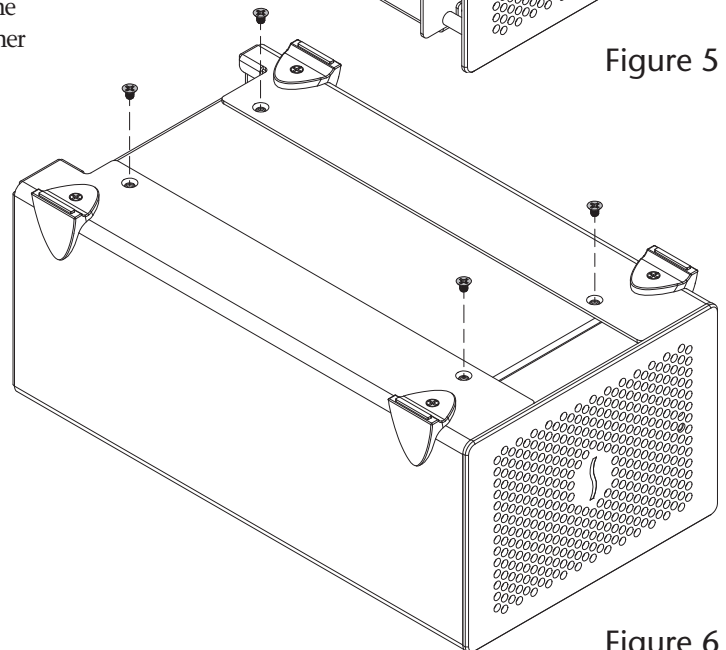


Figure 6

Chapter 3 – PCIe Card Installation and Chassis Setup Steps



Support Note: Sonnet's ThunderLok™ Thunderbolt connector retainer clip secures the included Thunderbolt cable to the Echo chassis to prevent accidental disconnects. Although it is compatible with other copper Thunderbolt cables like Apple's, it is not compatible with optical Thunderbolt cables.

To attach the clip to the cable, remove both from their packaging. Turn one of the cable's connectors so the Thunderbolt icon is facing down, and then insert the connector into the connector clip as shown (Figure 7). Note that the connector will pass all the way through the clip; when you connect the cable to the chassis, the clip will secure the cable.

13. Turn the Echo Express SE II 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.

14. Connect the included 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 (Figure 8). Secure the retainer clip to the chassis if you attached it. 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.

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

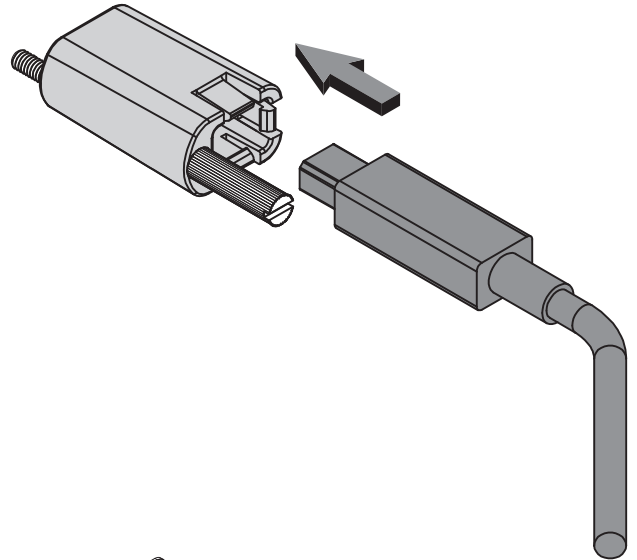


Figure 7

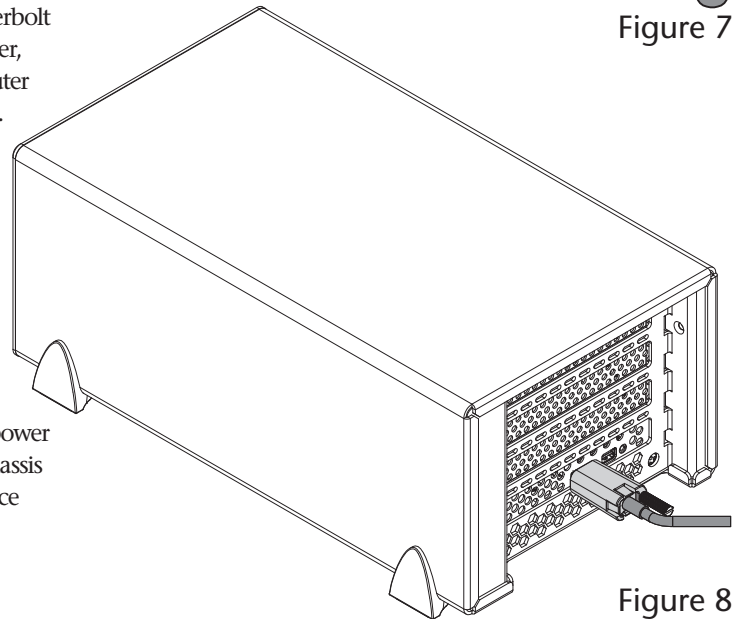


Figure 8

Chapter 4 – Verify Connections Using System Information

A – Verify the Echo Express SE II 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 II” (Figure 9).



Support Note: If “Echo Express SE II” is not listed, disconnect and reconnect the Thunderbolt cable between the computer and Echo Express SE II. 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.

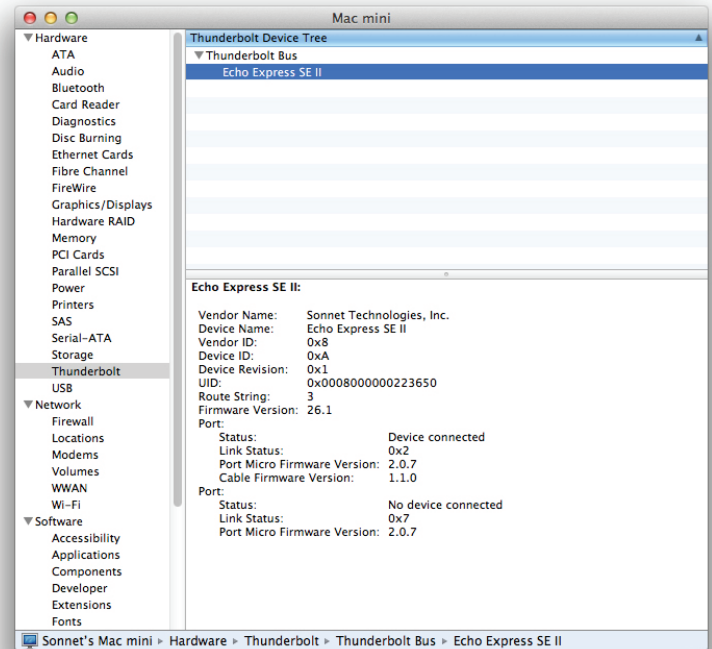


Figure 9

B – Verify the Installed Cards are 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 cards are listed. By selecting a 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 II expansion chassis requires no drivers, installed cards require Thunderbolt-compatible drivers to enable their use.

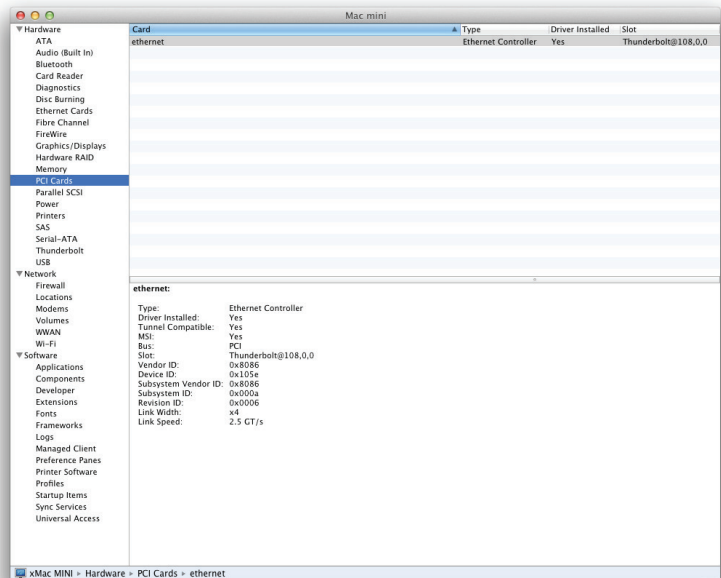


Figure 10

Chapter 5 – Tips, General Information, and Known Issues

TIPS, GENERAL INFORMATION

Keeping the Cards Cool

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

Hot-Plugging the Echo Express SE II – Mac Users

When a certified Thunderbolt-compatible card (used with Thunderbolt-compatible drivers) is installed in the Echo Express SE II, 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 II chassis.

There's No Need to Unplug the Power Adapter

Because the Echo Express SE II 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 II 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 Installing Additional 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 SE II

Cards installed into Echo Express SE II must be no more than 7.75 inches (19.7 cm) long.

Adding or Replacing a Card

Shut down the computer, and then disconnect the power adapter and Thunderbolt cables from the Echo Express SE II before disassembling the chassis and installing or replacing a card.

PCIe CARDS ARE NOT HOT-PLUGGABLE!

Never install a PCIe card into Echo Express SE II 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 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 to or farther from the computer in the chain.

Thunderbolt Support Under Windows is Incomplete

At the time of this writing, Intel and Microsoft have not settled on a certification standard for Thunderbolt devices under Windows. The main unresolved issues are how hot-plugging support and Sleep mode support for Thunderbolt devices are handled. Support for these features exists under OS X, but is still in development under Windows. While Thunderbolt-compatible cards will function in your Echo expansion chassis when attached to your computer at boot, we cannot guarantee how the Windows driver will respond to hot-plugging of the Thunderbolt cable after boot or how it will operate when returning from sleep. While we do expect these issues to be resolved in the future, at the present they are not.

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

Specifications

External Connectors	<ul style="list-style-type: none">• Two Thunderbolt 2• Power
Expansion Slots	<ul style="list-style-type: none">• One x16 mechanical (x4 electrical) PCIe 2.0• One x8 mechanical (x4 electrical) PCIe 2.0
PCIe Cards Supported	Two half-length (up to 7.75" long), full-height, single-width PCIe cards, or one double-width card plus one single-width card
Compatible PCIe Cards	See Sonnet Website: (www.sonnettech.com)
Power Adapter	Universal 80W, 100-240V, 50-60 Hz
PCIe Card Minimum Guaranteed Power	25W
Operating Temperatures	0° C to 35° C (32° F to 95° F)
Dimensions WxDxH	6.5 x 11 x 4.6 in. (16.5 x 27.9 x 11.7 cm)
Weight	3.7 lbs. (1.7 kg)
RoHS Compliant	Yes
Package Contents	<ul style="list-style-type: none">• Echo Express SE II chassis• Power adapter• Power cord• Thunderbolt connector retainer clip• Thunderbolt cable• User's guide

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.

Warnings (continued)

- 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 II 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

For Customers Outside the USA

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

Visit Our Web Site

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.



Statement of Conformity

Sonnet Technologies, Inc.
8 Autry
Irvine, CA 92618
USA

Declare under our sole responsibility that the product(s):

Product Name: Echo Express SEL Thunderbolt 2
Product Number(s): ECHO-EXP-SEL

Product Name: Echo Express SE I Thunderbolt 2
Product Number(s): ECHO-EXP-SE1

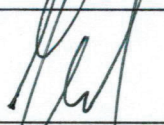
Product Name: Echo Express SE II Thunderbolt 2
Product Number(s): ECHO-EXP-SE2

To which this declaration relates is in conformity with the requirements of the following specifications:

**ANSI C63.4-2009
FCC 47 CFR Part 15, Subpart B, Class B Digital Device.
ICES-003 Issue 5**

Supplementary information:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Signed by or for manufacturer:	
	Name: George Smith
	Title: Director of Hardware Development
	Place and Date: Sugar Hill, GA USA, March 7, 2015



EC Declaration of Conformity

In accordance with EN ISO 17050-1:2004

Manufacturer's Name: Sonnet Technologies, Inc.

Manufacturer's Address: 8 Autry
Irvine, CA 92618
USA

In accordance with Directive(s):
LVD (2006/95/EC).
EMC Directive (2004/108/EC)

hereby declare, that the product(s)

Product Name: Echo Express SEL Thunderbolt 2
Product Number(s): ECHO-EXP-SEL

Product Name: Echo Express SE I Thunderbolt 2
Product Number(s): ECHO-EXP-SE1


Product Name: Echo Express SE II Thunderbolt 2
Product Number(s): ECHO-EXP-SE2

Conforms to the following Product Specifications:

Safety: IEC 60950-1:2005/A1:2009, EN 60950-1:2006/A11:2009/A1:2010/A12:2011/AC:2011

EMC: EN 55022:2010
EN 55024:2010
EN 61000-3- 2:2006 w/A1:2009 and A2:2009
EN 61000-3- 3:2008

I hereby declare that the equipment named above has been designed to comply with the relevant sections of the above referenced specifications. The unit complies with all applicable Essential Requirements of the Directives.


George Smith, Director of Hardware Development

Sugar Hill, GA USA
March 7, 2015