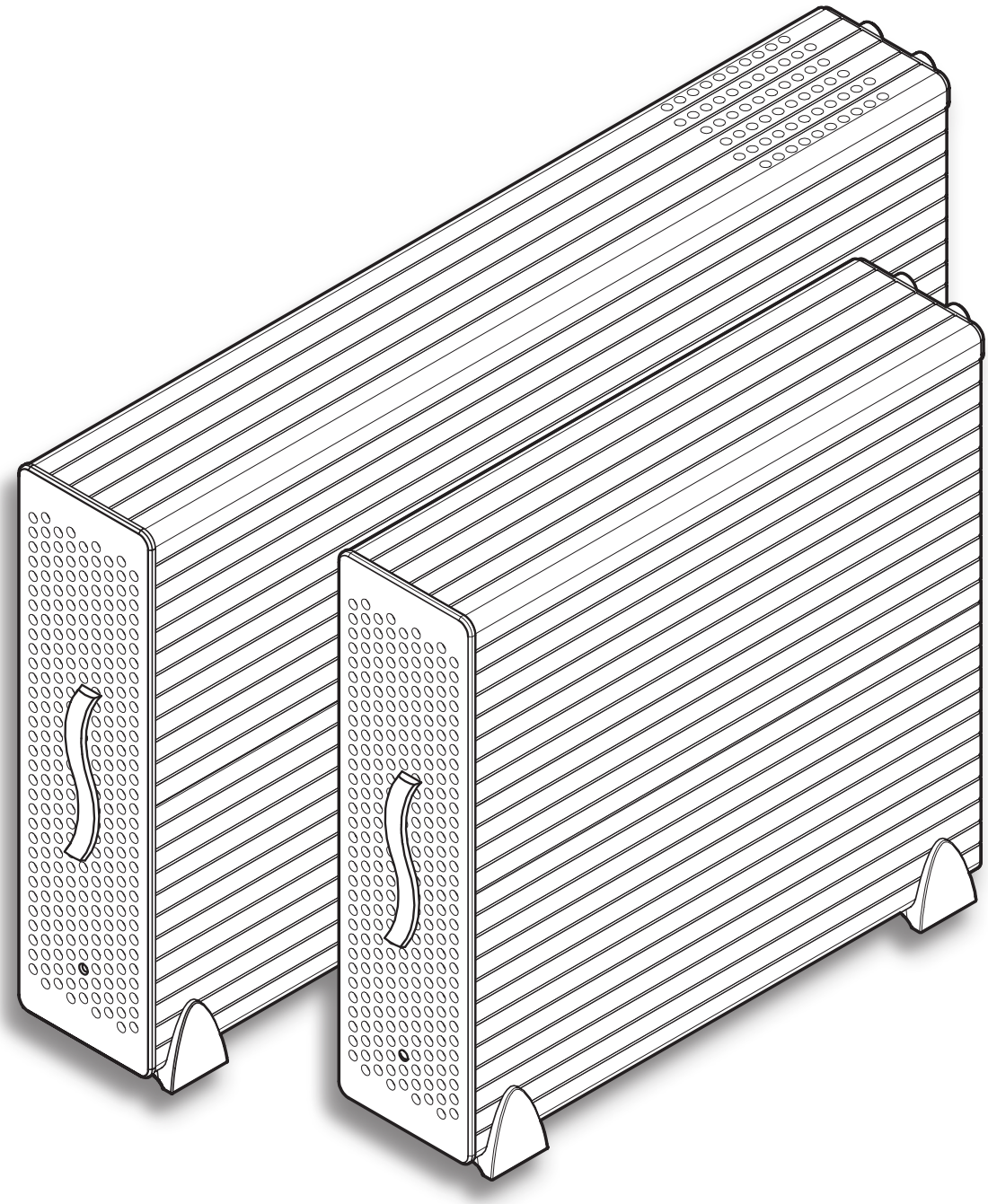
User's Guide

for Echo™ Express and Echo Express Pro Thunderbolt™ Expansion Chassis for PCIe Cards



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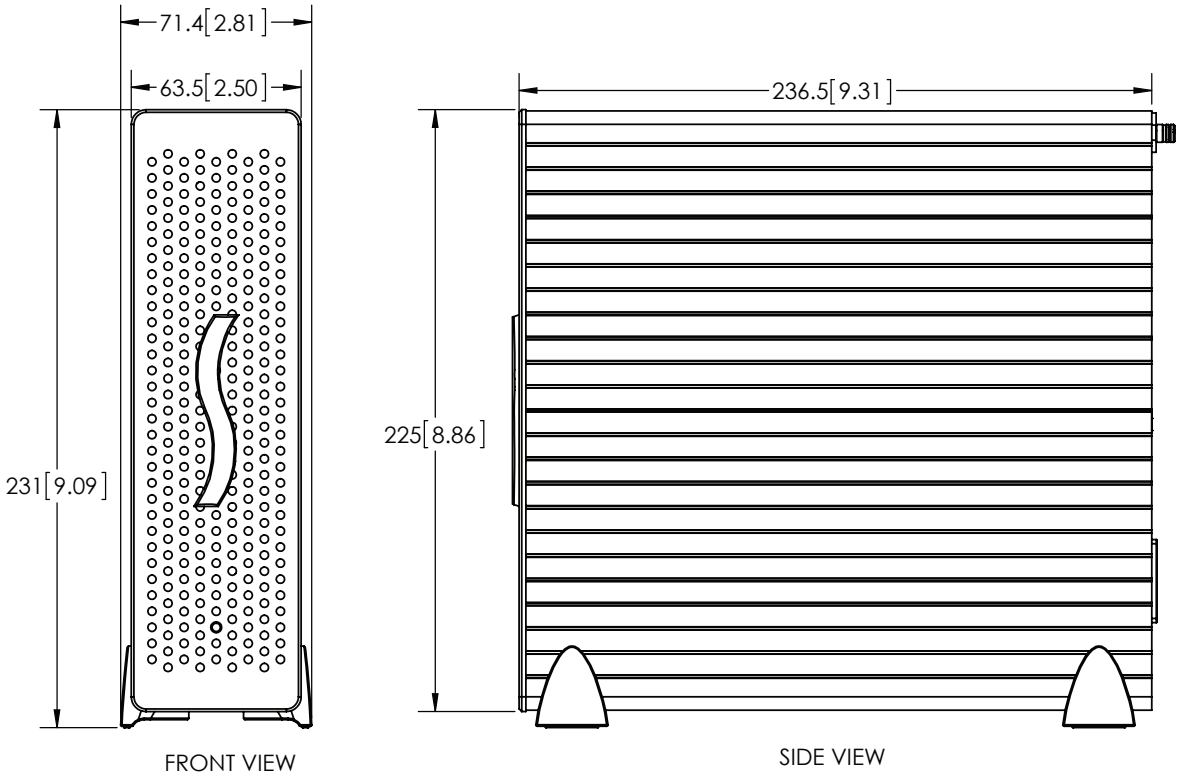
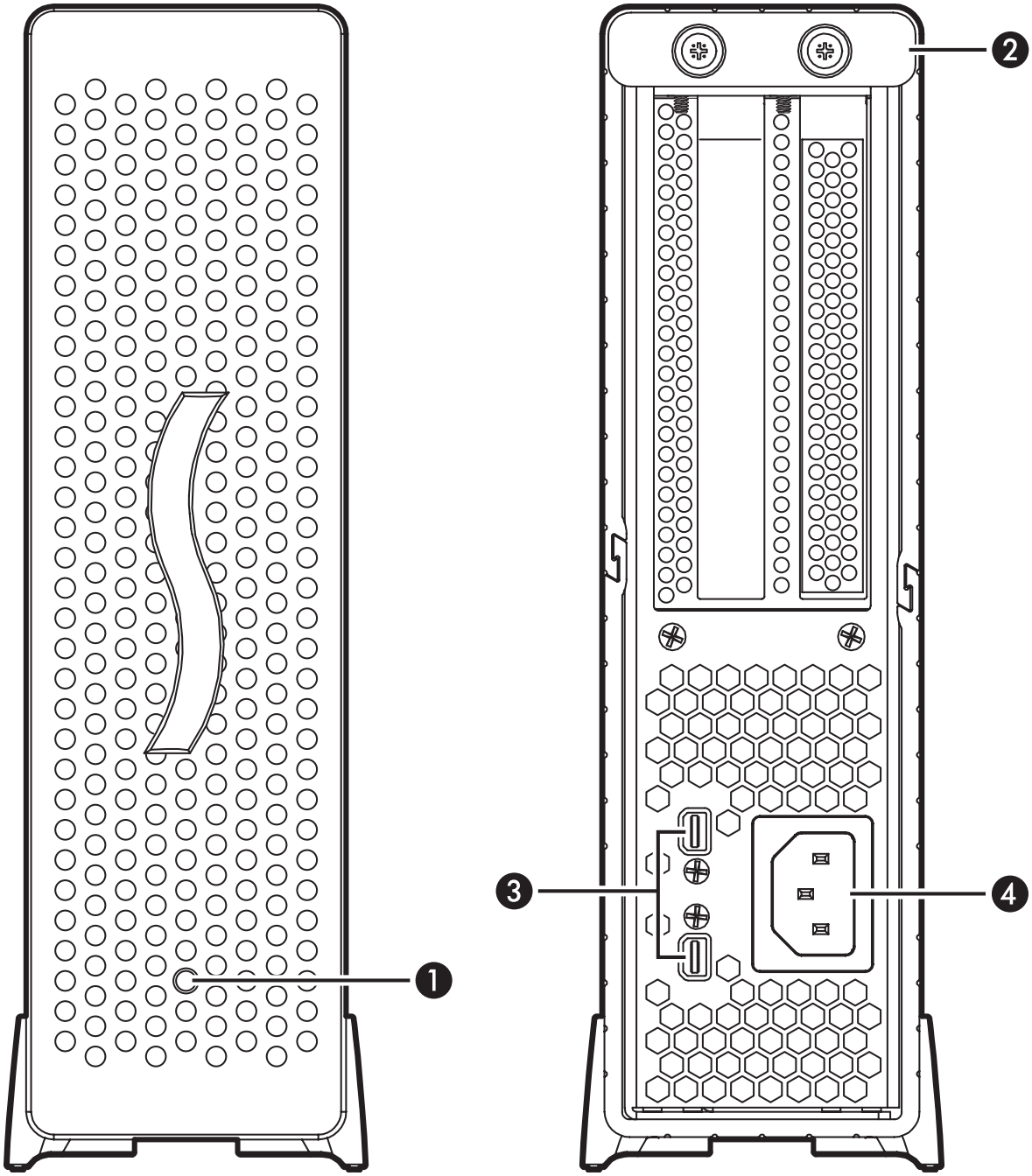
Chapter 1 – Introduction



Congratulations on your purchase! Echo Express and Echo Express Pro are Thunderbolt expansion systems for PCIe cards. Through their one or two PCIe slots, you may connect one or two expansion cards, respectively, to your iMac®, Mac® mini, MacBook® Air, or MacBook Pro to expand its capabilities in ways never before possible!

While Echo Express chassis require 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 what cards are compatible with Echo Express and Echo Express Pro is available at http://sonnettech.com/support/charts/thunderbolt/index.html

Chapter 2 – Echo Express Chassis' Description



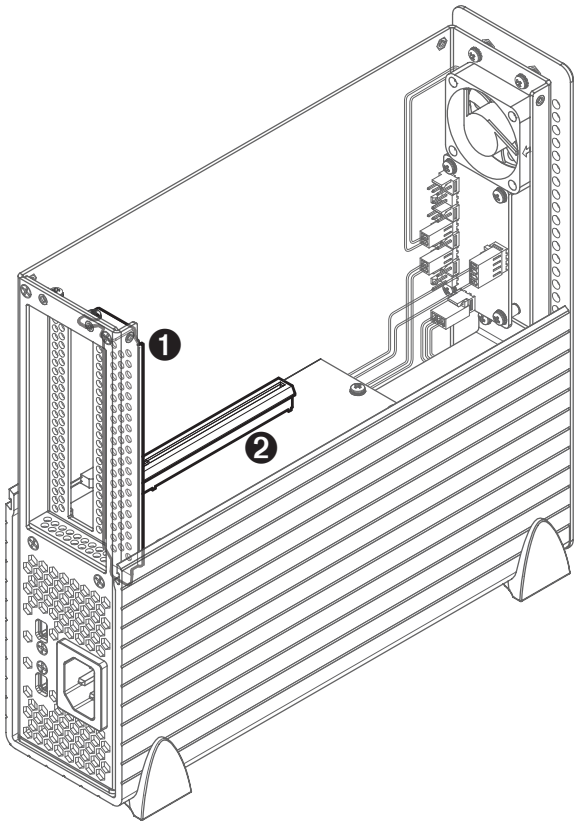
1 – Power Indicator LED
This indicator lights when the Echo Express is powered, the Thunderbolt cable between Echo Express and your computer is plugged in securely, and the computer powered on

2 – Locking Plate
This plate secures the top cover in place. Loosen the retained thumbscrews to remove the plate and enable removing the top cover

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

4 – Power Input Socket
Connect the included AC power cable here

Chapter 2 – Echo Express Chassis' Description



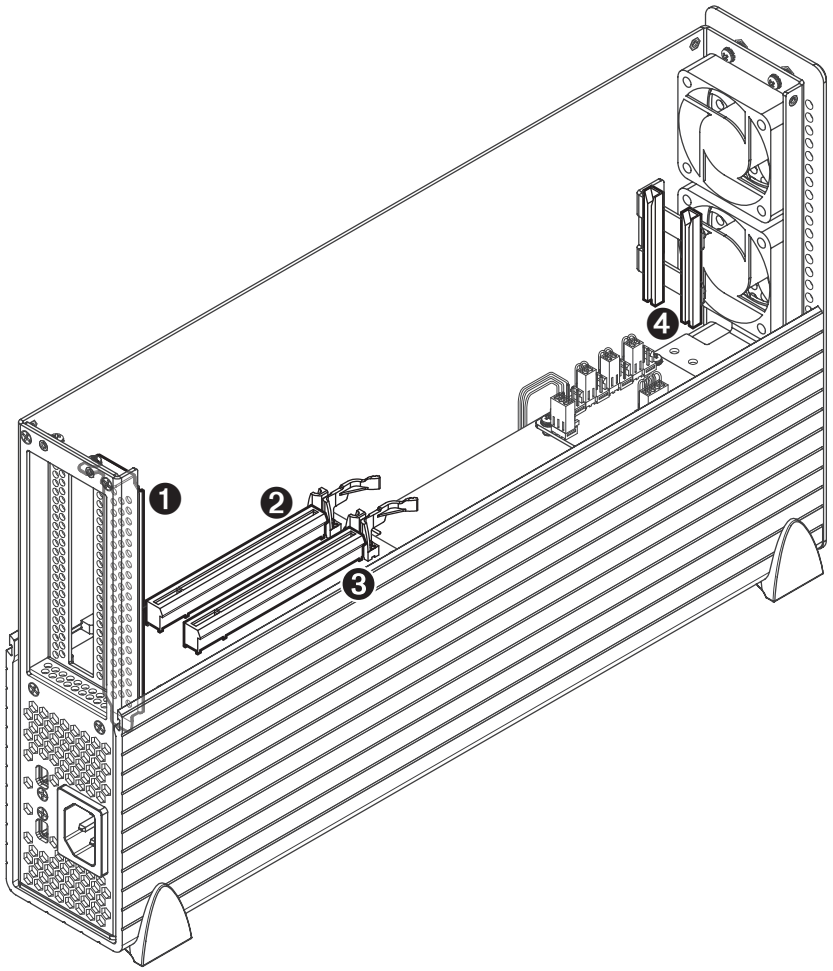
Echo Express Interior

1 – Port Access Cover

Although the Echo Express has only one PCIe slot, it will accommodate a double-width card, and will support an I/O plate that connects to the PCIe card; remove as necessary

2 – PCI Slot

This slot accepts up to an x16 mechanical, half-length (up to 7.75" long), full- height, double-width PCIe 2.0 card, and is also compatible with PCIe 1.1 cards



Echo Express Pro Interior

1 – Port Access Cover

Remove this cover when installing a double-width card, an I/O plate that connects to a PCIe card, or a second PCIe card

2 – PCI Slot 1

This slot accepts up to an x16 mechanical, full-length, full- height, double-width PCIe 2.0 card, and is also compatible with PCIe 1.1 cards

3 – PCI Slot 2

This slot accepts up to an x16 mechanical, full-length, full- height, single-width PCIe 2.0 card, and is also compatible with PCIe 1.1 cards

4 – PCIe Card Guides

When installing full-length cards, use these guides to support and secure the cards

Chapter 3 – PCIe Card Installation Steps

Echo Express illustrations are used here; installation steps for both Echo Express and Echo Express Pro are identical (except for installation of a second PCIe card in the Echo Express Pro).

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

2. Loosen the two captive thumbscrews securing the locking plate, and then remove and set aside the locking plate **(Figure 1)**.

3. Slide the top cover back straight back to remove it **(Figure 1)**.

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

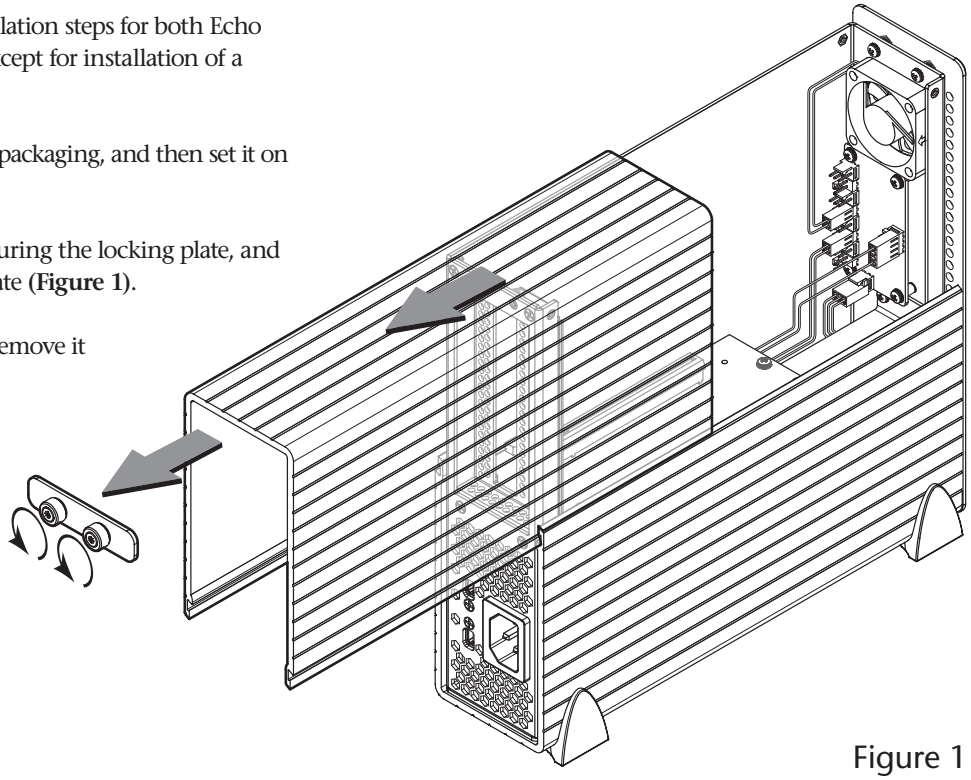


Figure 1

4. Remove and set aside the screw used to secure a PCIe card from the Echo Express chassis' frame **(Figure 2)**.

5. Optional: Remove and set aside the screw securing the port access cover, and the port access cover when installing a second PCIe card (Echo Express Pro only) or an I/O plate **(Figure 2)**.

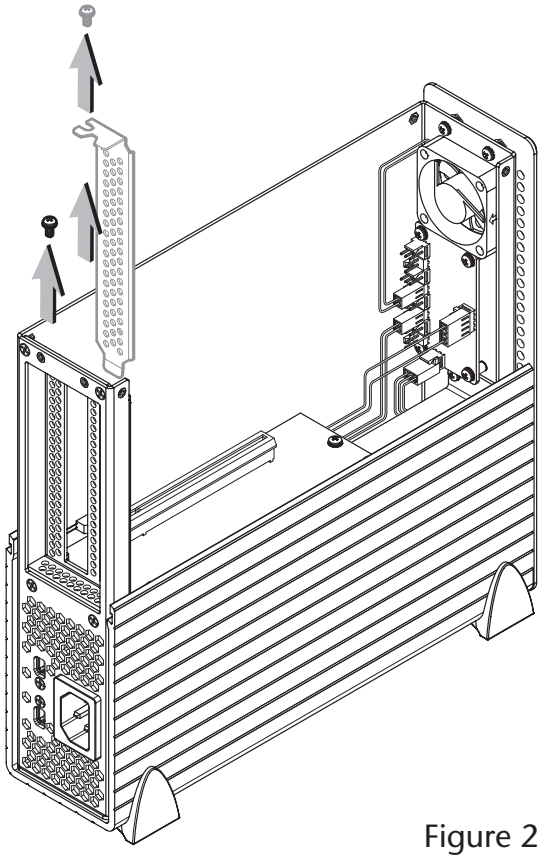


Figure 2

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 chassis' circuit boards and any of its components.

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

7. 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 3)**.

8. Secure the card using the screw you removed previously **(Figure 3)**.

9. Optional: Install the second PCIe card into slot 2 following the instructions in step 7 (Echo Express Pro only), or I/0 plate in the second opening.

10. Secure the card or plate using the screw you removed previously **(Figure 3)**.

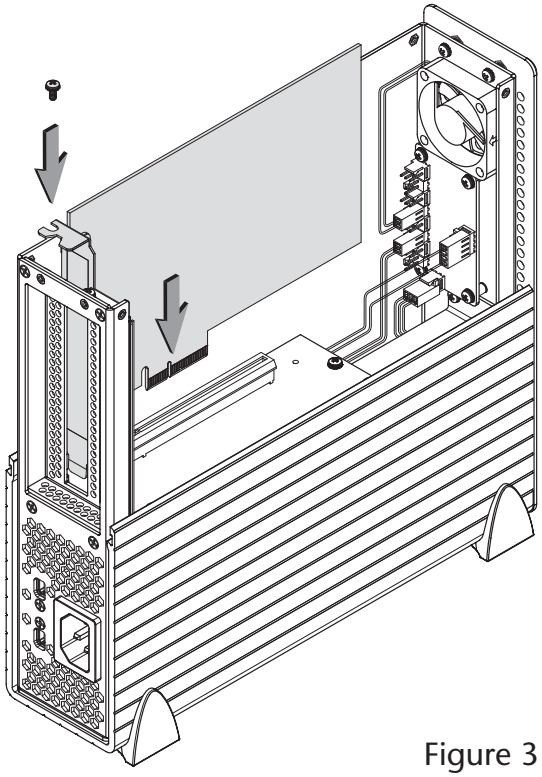


Figure 3

11. Replace the top cover, sliding it forward until it stops **(Figure 4)**.

12. Secure the top cover by replacing the locking plate **(Figure 4)**.

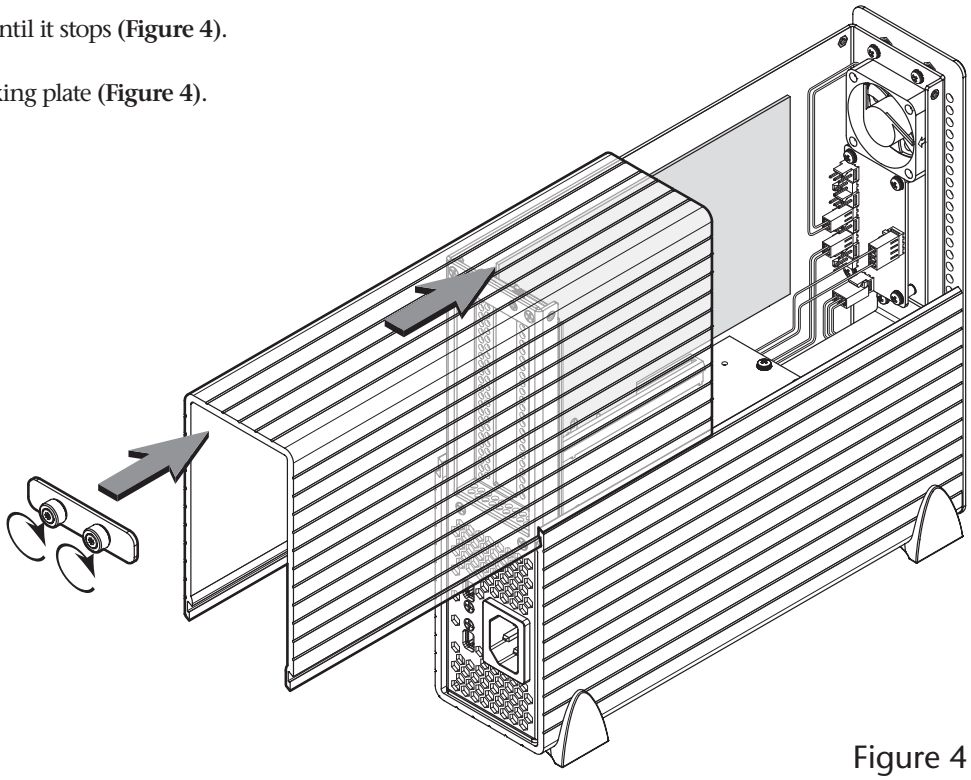


Figure 4

Chapter 4 – Verify Connections Using System Information

A – Verify the Echo Express is Recognized

1. Power 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 5)**.

6. In the top right column under the Thunderbolt Device Tree header, you will see the computer, followed by "Echo Express PCIe 2.0" **(Figure 5)**.

Support Note: If you do not see "Echo Express PCIe 2.0" listed, disconnect and reconnect the Thunderbolt cable between the computer and Echo Express. Note that it is not necessary to shut down the computer before disconnecting and reconnecting the cable.

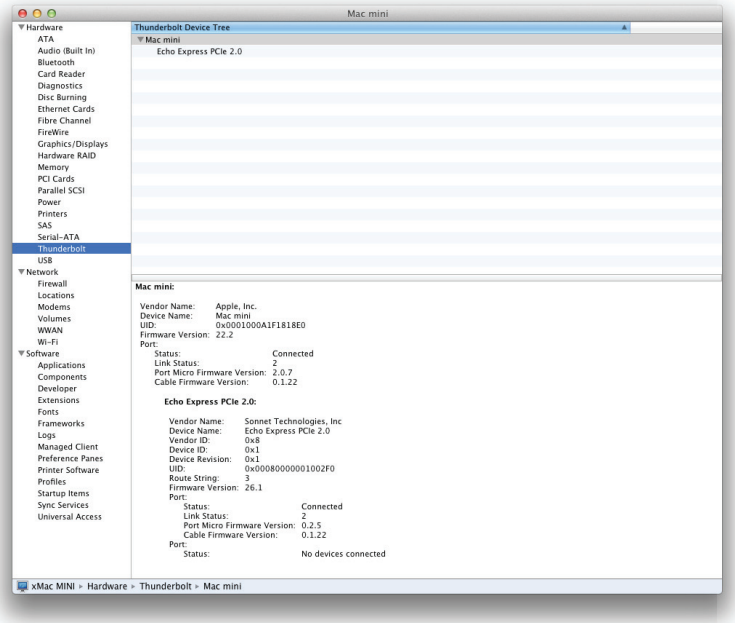


Figure 5

B – Verify Installed Cards are Recognized

1. When a card is installed into one of (or the) Echo Express chassis' PCIe slot(s), the PCIe slot (listed as a port), the Status should appear as connected **(Figure 5)**.

2. Click PCI Cards under the Hardware header in the left column **(Figure 6)**.

3. At the top of the right column, installed cards are listed. By selecting a card at the top, 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 6)**.

Support Note: While Echo Express expansion chassis require no drivers, installed cards require Thunderbolt-compatible drivers to enable their use.

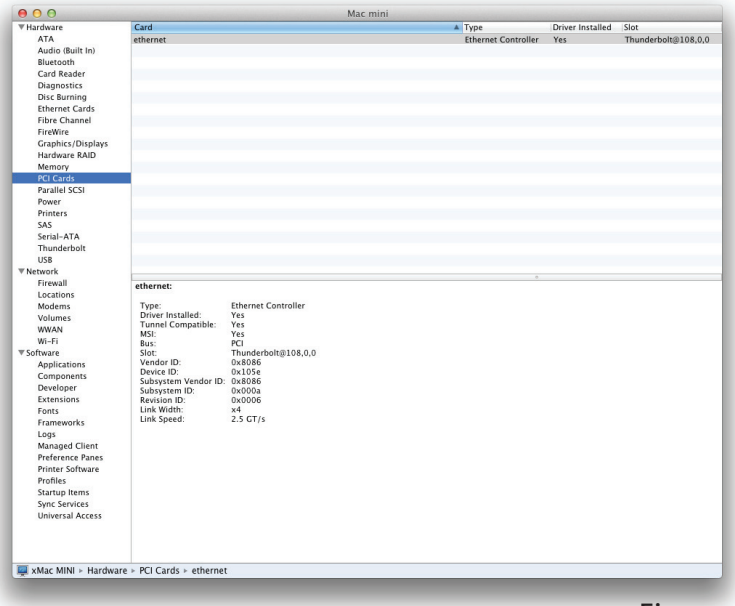


Figure 6

Chapter 5 – Tips, General Information, and Known Issues

TIPS, GENERAL INFORMATION

Keeping the Cards Cool
With its optimized airflow design and temperature-controlled fans providing cooling at all times, Echo Express provides adequate cooling for most cards. *Do not operate the Echo Express with the top cover removed, and do not block any of the vents*! Otherwise, the installed cards and Echo Express' components may overheat

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

There's No Need to Unplug the Power Cable
Because Echo Express 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 LED Operation
Because Echo Express automatically powers on and off with the computer to which it's connected, the power indicator LED only turns on when the computer is on, and turns off when the computer is sleeping or powered off

Connecting Additional Thunderbolt Devices
You may connect up to five additional Thunderbolt devices in a daisy chain to Echo Express, including the Apple Thunderbolt Display

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
Cards installed into Echo Express (not Echo Express Pro) must be no more than 7.75 inches (19.68 cm) long

Replacing Cards or Adding Cards After Initial Installation
If you decide to replace or add a card to Echo Express after the initial setup, shut down the computer, and then disconnect the power cord and Thunderbolt cables before installing a card

Using Echo Express in a Horizontal Orientation
You may use Echo Express laying in the horizontal position; be sure to attach the included rubber feet to the side of the chassis that will become the bottom

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

Mac OS 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 cards' manufacturers 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 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 (C14-type)
Expansion Slots (Echo Express Pro)	Two x16 mechanical, x4 electrical PCIe 2.0
Expansion Slot (Echo Express)	x16 mechanical, x4 electrical PCIe 2.0
PCIe Cards Supported (Echo Express Pro)	• One (up to) full length, full-height, double-width x16 PCIe card • Two (up to) full length, full-height, single-width x16 PCIe cards
PCIe Cards Supported (Echo Express)	One (up to) full length, full-height, single- or double-width x16 PCIe card
Compatible PCIe Cards	See Sonnet Website (www.sonnettech.com)
Power Supply (Echo Express Pro)	Universal 150W, 100-240V AC, 50-60 Hz
Power Supply (Echo Express)	Universal 100W, 100-240V AC, 50-60 Hz
Operating Temperatures	+32˚ F to +95˚ F (0˚ C to +35˚ C)
Dimensions WxDxH (Echo Express Pro)	2.8 x 15.3 x 9.1 in. (7.1 x 37.9 x 23.1 cm)
Dimensions WxDxH (Echo Express)	2.8 x 9.9 x 9.1 in. (7.1 x 23.7 x 23.1 cm)
Weight (Echo Express Pro)	7.3 lbs (3.31 kg)
Weight (Echo Express)	5.0 lbs (2.27 kg)
RoHS Compliant	Yes
Package Contents	• Echo Express Chassis(1) • Power Cord • Rubber Feet • User's Guide

1. 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 chassis may result in a malfunction leaving the product inoperable

Warnings (continued)

- Do not insert your fingers or foreign objects inside the slot(s)
- 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 and Echo Express Pro comply 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 models
- 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 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.

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