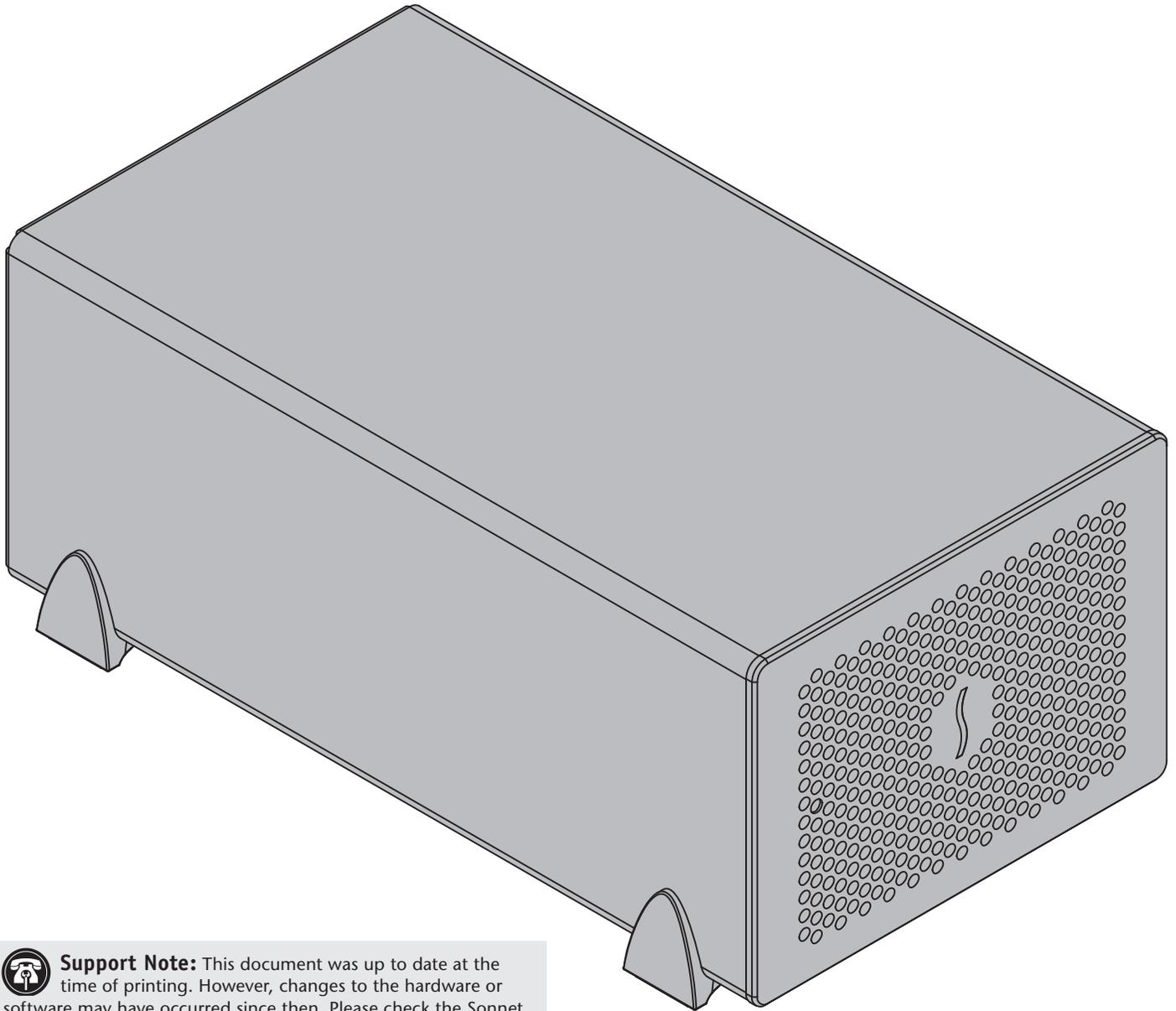


User's Guide

for Echo™ Express SE III

Thunderbolt™ 3 to PCI Express® Card Expansion Chassis



Support Note: This document was up to date at the time of printing. However, changes to the hardware or software may have occurred since then. Please check the Sonnet website for the latest documentation.

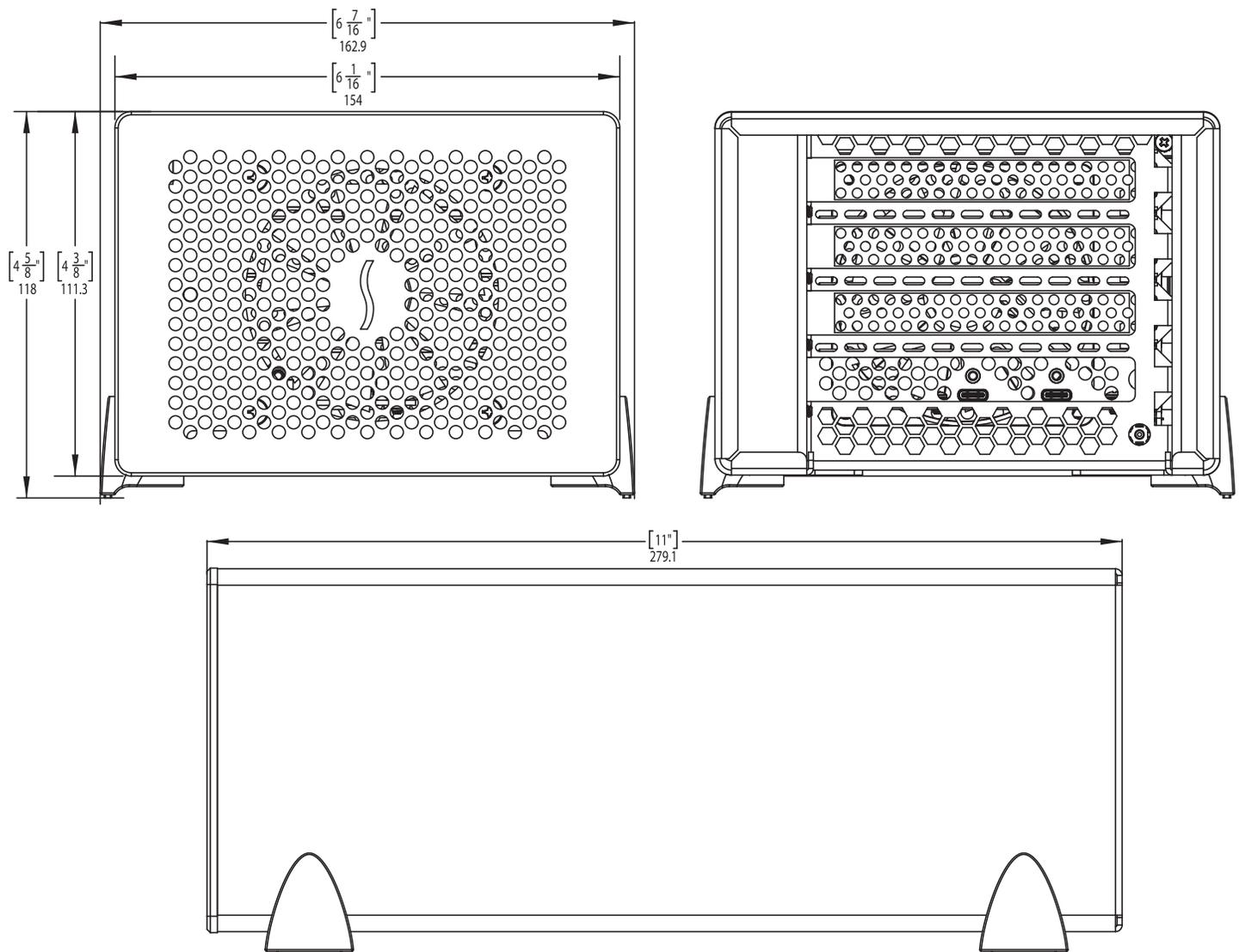
1. Go to www.sonnettech.com/support/kb/kb.php
2. Click the Thunderbolt Product link.
3. Click the Echo Express SE III link, and then click the Documentation link.
5. Click the Echo Express SE III User's Guide [English] link and then check the Document Version information. If the version listed is later than this document (**revision C**), click the Download Now button for the latest version.



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Chapter 1 – Introduction and System Requirements



Introduction

Congratulations on your purchase! The Echo Express SE III is a Thunderbolt 3 expansion system for PCIe cards. Through its PCIe slots, you may connect three adapter cards to any Mac® with Thunderbolt 3 ports to expand its capabilities and add connectivity beyond what's offered through its native ports.

Mac Compatibility

- Macs with Thunderbolt 3 ports
- Macs with Thunderbolt 2 or Thunderbolt ports and Apple Thunderbolt 3 (USB-C) to Thunderbolt 2 Adapter (sold separately)
- macOS® 10.12.6+
macOS High Sierra compatible

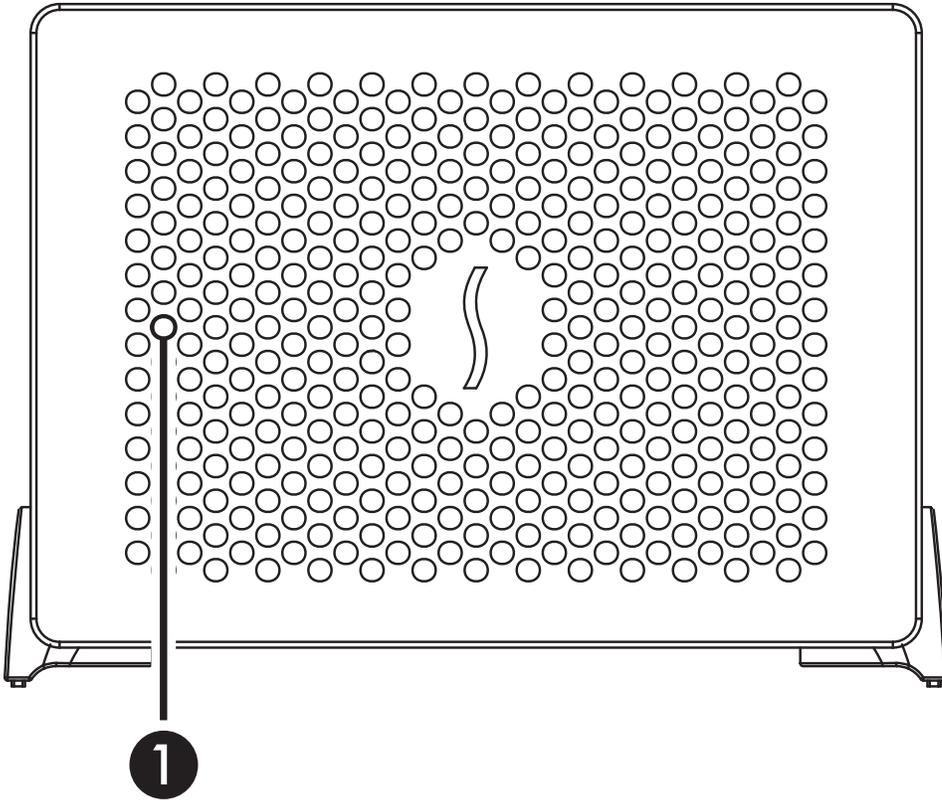
System Requirements

While the Echo Express SE III requires no drivers, most 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 III is available at: <http://sonnettech.com/support>

Preparing to Use the Echo Express Chassis

The drivers required to support the Echo Express chassis are installed as part of macOS; there are no preparation steps beyond updating your computer to macOS 10.12.6 or newer.

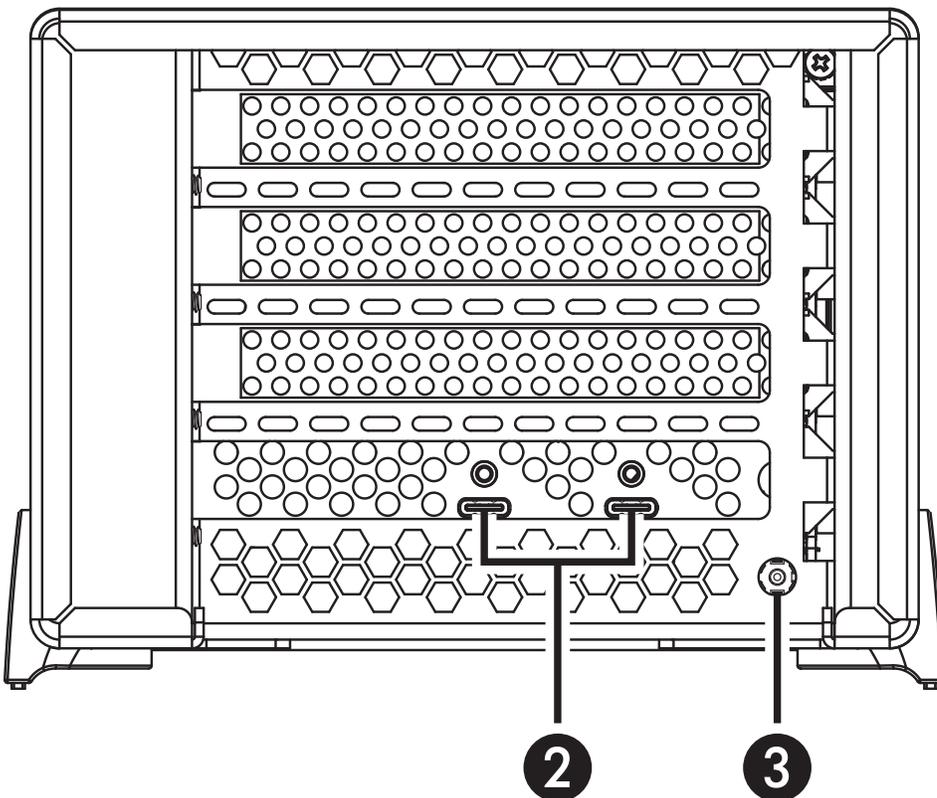
Chapter 2 – Echo Express SE III Description



Echo Express SE III Exterior

1 – Power Indicator

This lights when the Echo Express SE III is powered, the Thunderbolt cable between the Echo chassis and your computer is plugged in securely, and the computer powered on. Note that if the Echo chassis 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 3 Ports

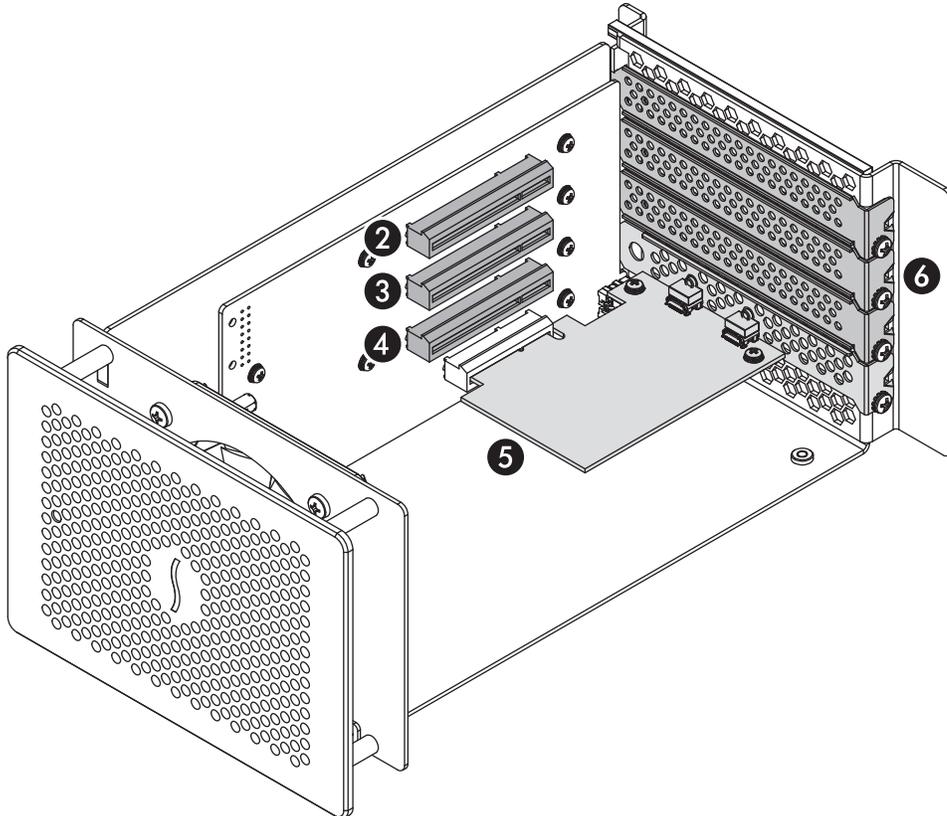
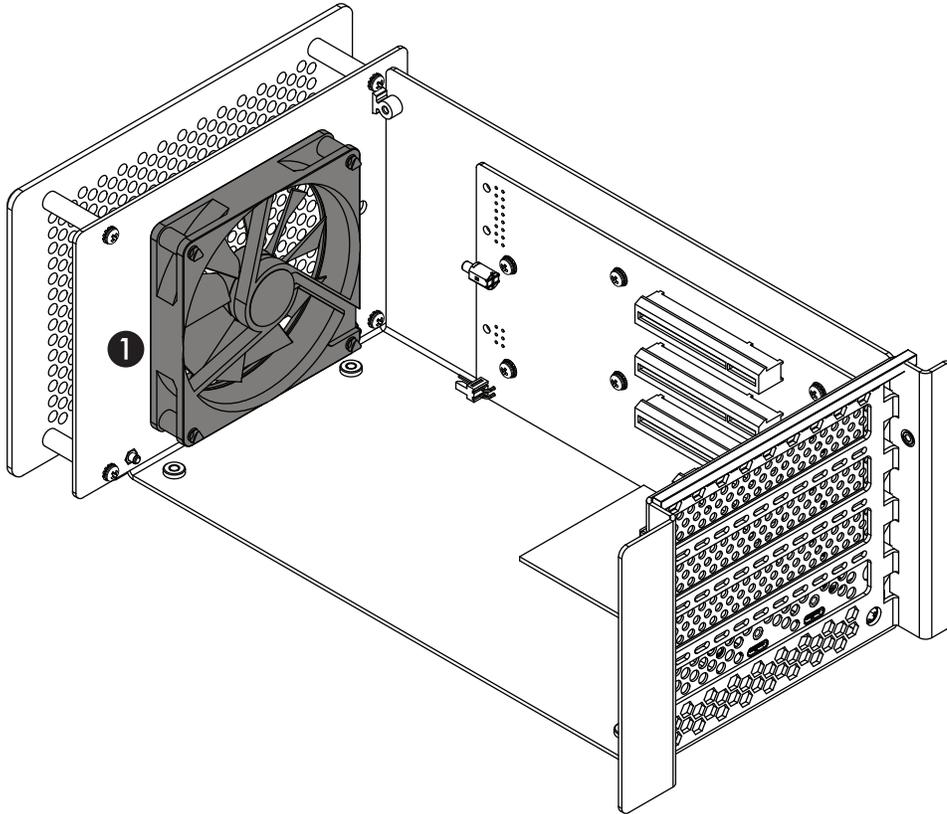
Connect the included Thunderbolt cable, or comparable Thunderbolt 3 (40Gbps) cable, between either port and your computer's Thunderbolt port (or other Thunderbolt device in the chain connected to the computer).

The second port may be used to connect to another Thunderbolt peripheral device, display(s), or USB device (when connected with the proper cable or adapter).

3 – 12V DC Socket

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

Chapter 2 – Echo Express SE III Description



Echo Express SE III Inner Assembly

1 – 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.

2 – PCIe Slot 1

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

3 – PCIe Slot 2

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

4 – PCIe Slot 3

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

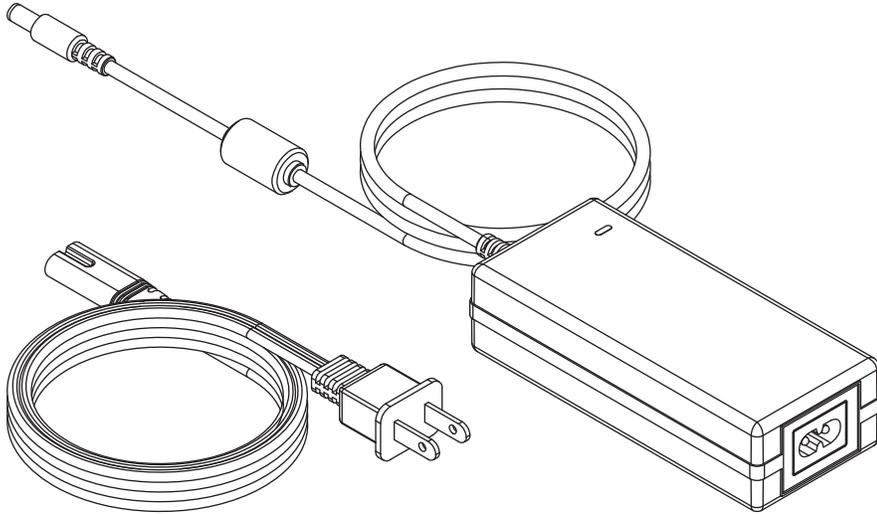
5 – Thunderbolt 3 Interface Card

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

6 – Port Access Covers

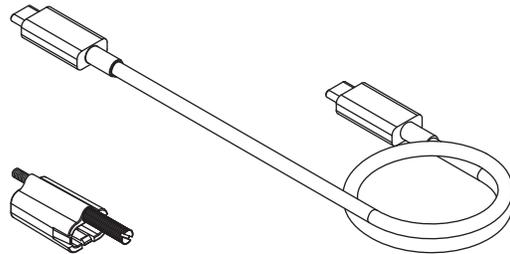
These cover openings in the chassis when PCIe slots are unoccupied.

Chapter 2 – Echo Express SE III Description



Power Adapter and Cord

Connect the adapter to the SE III's 12VDC socket. Connect the cord 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 3 (40Gbps) Cable

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

Thunderbolt Connector Retainer Clip

This secures a Thunderbolt 3 connector plugged into the Echo chassis' Thunderbolt 3 port to prevent accidental cable disconnection. This clip is compatible with the included Sonnet 0.5-meter Thunderbolt 3 cable, but not with Sonnet 1-meter Thunderbolt 3 cables.

Chapter 3 – PCIe Card Installation and Chassis Setup Steps

1. Remove the Echo Express SE III 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 III.

3. Flip the Echo chassis over. Place one hand on top of the outer case. Remove the inner assembly by gently grasping its faceplate by the edges and pulling (**Figure 2**). Set aside the outer case.

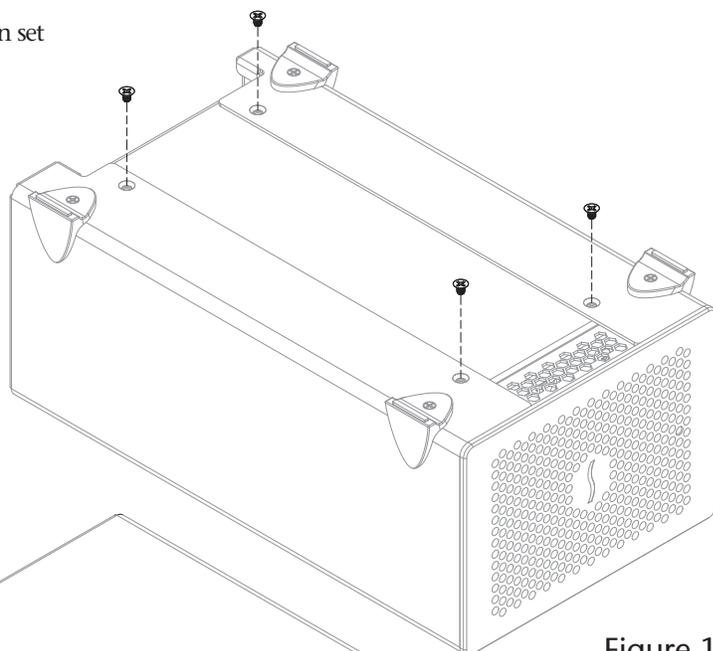


Figure 1

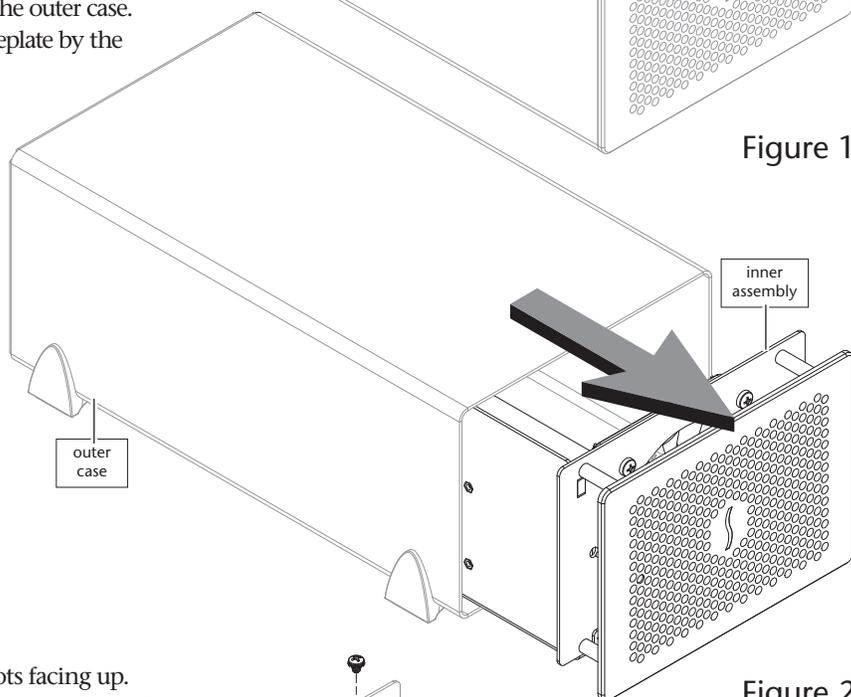


Figure 2

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 III 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.

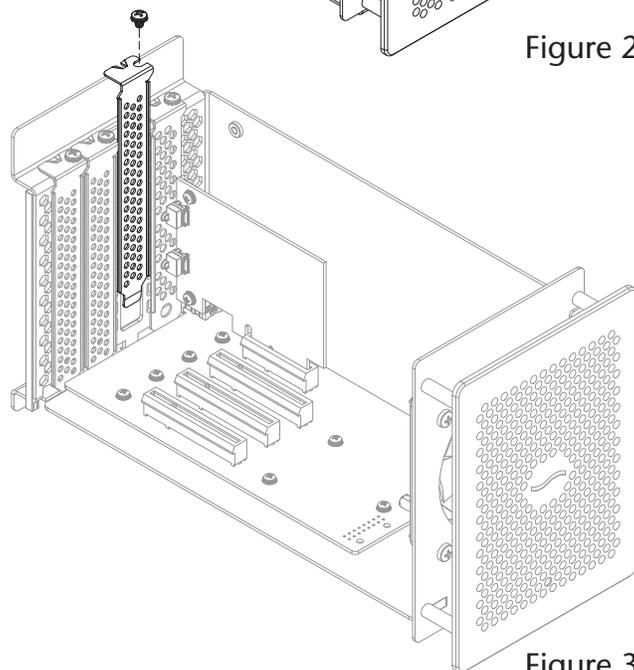


Figure 3

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 III 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.



Support Note: If you are installing an x8 PCIe 1.1 card like certain 10 Gigabit Ethernet cards, installing it into slot 1 (furthest from the Thunderbolt interface card) may result in reduced performance. We recommend you install it into either slot 1 or 2 for best performance.

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 any additional cards. Replace and secure any port access covers where an empty slot remains.
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 III 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**).

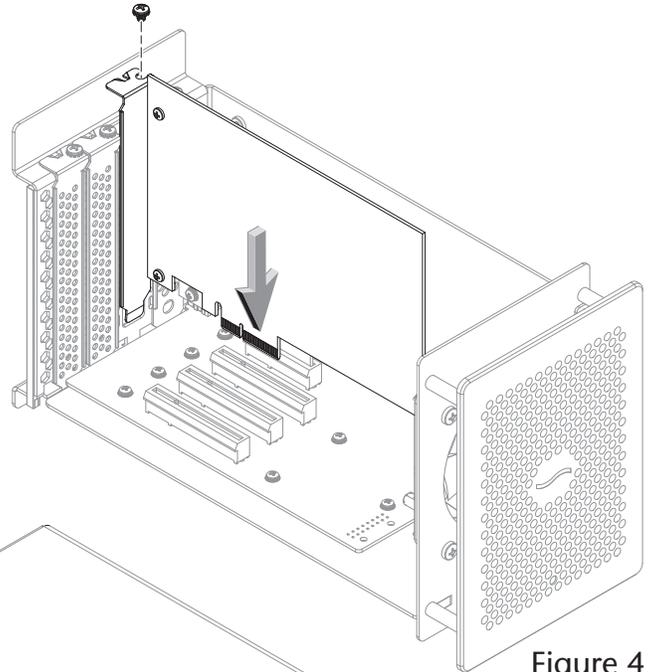


Figure 4

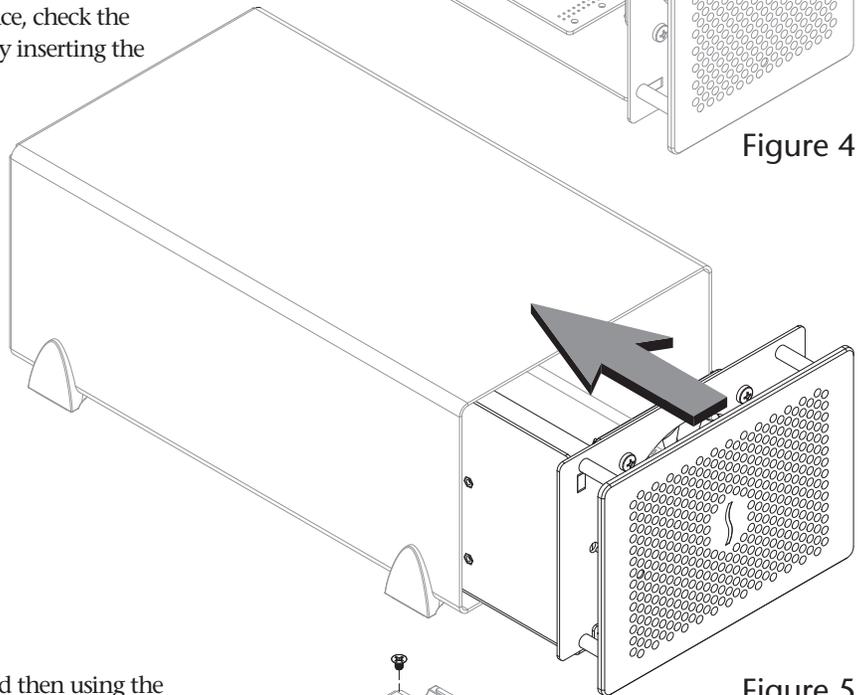


Figure 5

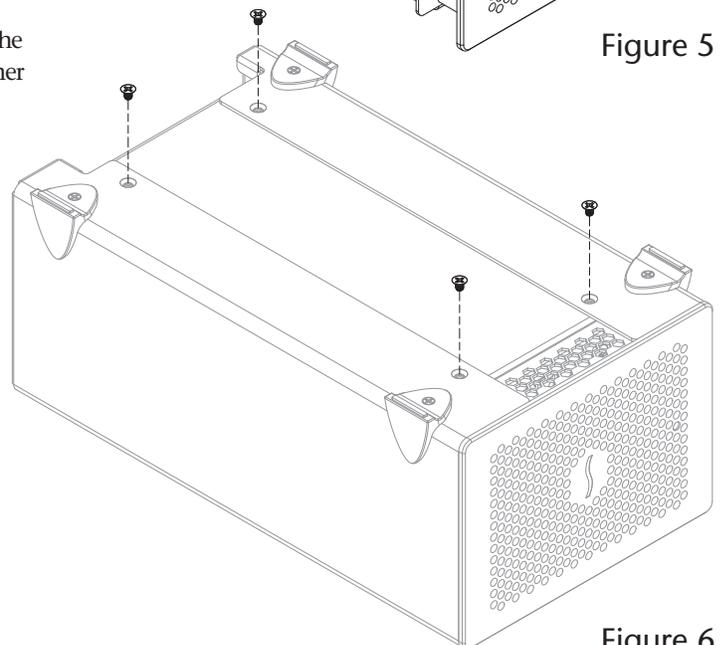


Figure 6

Chapter 3 – PCIe Card Installation and Chassis Setup Steps

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



Support Note: Sonnet's ThunderLok™ 3 Thunderbolt connector retainer clip secures the included Thunderbolt 3 (40Gbps) cable to the Echo chassis to prevent accidental disconnects. The included clip is compatible with Sonnet 0.5-meter Thunderbolt 3 (40Gbps) cables, but it is not compatible with Sonnet 1-meter Thunderbolt 3 (40Gbps) cables.

To attach the clip to the cable, remove both items from their packaging, and then insert the connector through 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 connector.

14. Connect the included Thunderbolt cable (or a comparable Thunderbolt 3 [40Gbps] cable) between a Thunderbolt 3 port on the Echo chassis and a Thunderbolt 3 port on your computer, or other Thunderbolt device in the chain connected to the computer (Figure 7). Note that cables marked with the USB icon (🔌) are NOT compatible. 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 III's 12V power socket. Note that the power indicator on the Echo Express SE III chassis will not light until the computer, and any other Thunderbolt device connected between it and the Echo chassis, is powered on.

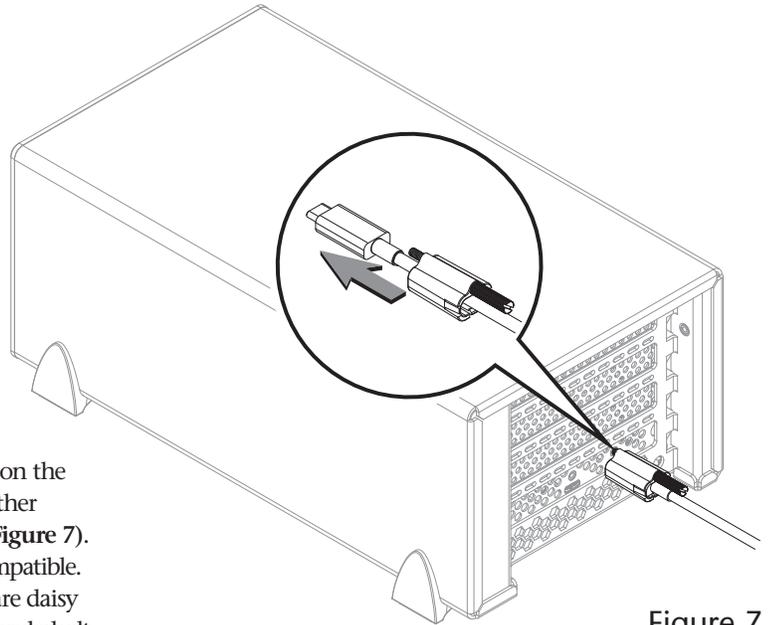


Figure 7

Chapter 4 – Complete Setup and Configuration

SETUP AND CONFIGURATION STEPS

This page instructs you how to verify the Echo chassis and installed cards are recognized by the computer.

A – Confirm the Echo Express SE III is Recognized

1. With the Echo chassis powered and connected to the computer, turn on the computer.
2. Press and hold down the Option key, and then from the Apple menu, select System Information; a *System Information* window will open.
3. In the *System Information* window, click Thunderbolt under the Hardware header in the left column (Figure 8).
4. In the top right column under the Thunderbolt Device Tree header, you will see Thunderbolt Bus, and then “Echo Express SE-III TB3” (Figure 8).



Support Note: If “Echo Express SE-III TB3” is not listed, disconnect and reconnect the Thunderbolt cable between the computer and Echo chassis. 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.

B – Confirm the Installed Cards are Recognized

1. In the *System Information* window click PCI under the Hardware header in the left column (Figure 9).
2. At the top of the right column, the installed cards are listed (if not, you may to install drivers before the cards are recognized). Click one of the cards; 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 SE III expansion chassis requires no drivers, installed cards require Thunderbolt-compatible drivers to enable their use.

C – Install Card Drivers (If Necessary)

1. Launch a web browser, and then go to your card manufacturer’s website. Download and install the latest drivers according to the manufacturer’s directions.
2. Restart your computer; your Echo chassis is ready to use!

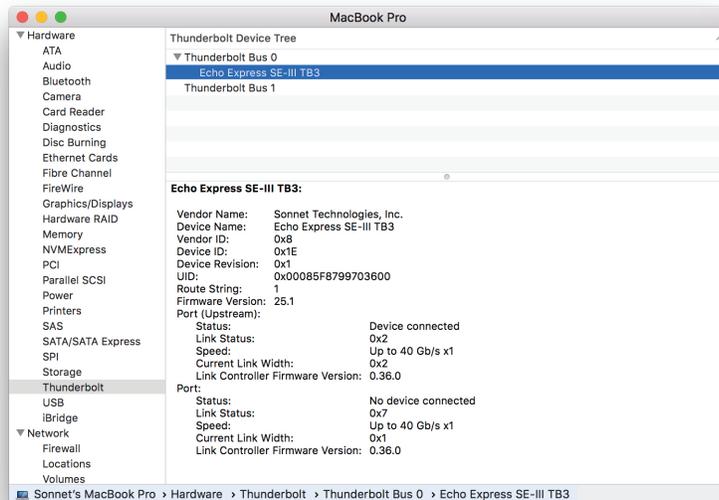


Figure 8

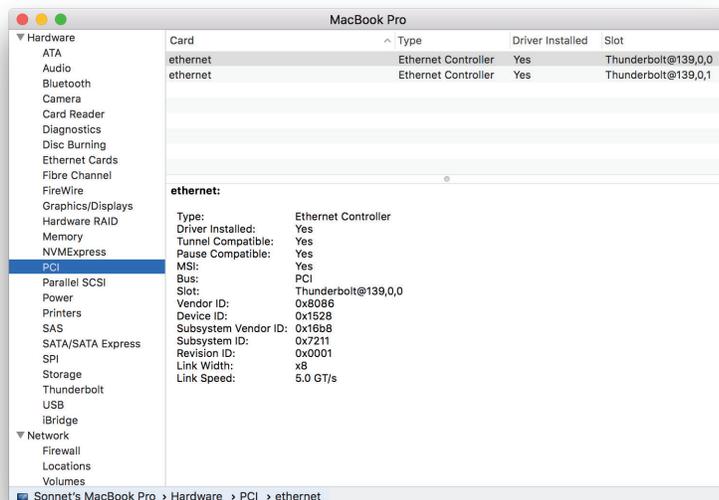


Figure 9

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

Hot Plugging the Echo Express SE III

When a certified Thunderbolt-compatible card (used with Thunderbolt-compatible drivers) is installed in the Echo chassis, you may connect and disconnect it 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 chassis.

There's No Need to Unplug the Power Adapter

Because Echo Express SE III 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.

Echo Express SE III Power Indicator LED Operation

The chassis automatically powers on and off with the computer to which it's connected, and 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 3 Peripheral Devices

The Echo Express SE III includes two Thunderbolt 3 ports; the first is reserved for connection to your computer, while the second supports daisy-chaining of up to five additional Thunderbolt peripheral devices.

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, and are ready to use out of the box.

Some PCIe Cards May Not Fit in Echo Express SE III

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

Replacing a Card After Initial Installation

Shut down the computer, and then disconnect the power adapter and Thunderbolt cables from the Echo Express SE III before opening the chassis and replacing the card.

PCIe CARDS ARE NOT HOT-PLUGGABLE!

Never install a PCIe card into Echo chassis while it is connected to a computer or power outlet! If you do, you risk injury, and damage to the card, chassis, and computer.

Echo Express SE III Provides Upstream Power

For connected peripheral devices requiring extra power, the Echo chassis provides up to 15 watts of power to bus-powered devices.

Using the Echo Express SE III to Charge Your Notebook Computer

Apple® MacBook Pro® computers with Thunderbolt 3 may be charged via the Echo chassis' Thunderbolt 3 port (via 15W Power Delivery). Computers with Thunderbolt 2 or Thunderbolt ports may not be charged via Thunderbolt.

How to Identify Thunderbolt 3 (40Gbps) Cables

Look for the Thunderbolt icon (⚡) AND the number 3 on the connector housings to identify these cables. Cables with USB-C connectors that only have the Thunderbolt icon without the number 3 support 20Gbps speeds, and are not recommended for PCIe cards with high bandwidth requirements. Cables marked with the USB icon (🔌) are NOT compatible.

KNOWN ISSUES

Not All Computers' Thunderbolt 3 Performance is Equal

While the Echo Express SE III features a 40Gbps Thunderbolt 3 interface, some computers equipped with Thunderbolt 3 use an x2 PCIe (2-lane) implementation of Thunderbolt 3 technology that limits PCIe performance to 20Gbps. For more computer information, visit <http://gtrusted.com/technology/thunderbolt/thunderbolt3-hosts/>

Not all PCIe Cards Will Perform at 100%

Thunderbolt 3's PCIe bandwidth is limited to 40Gbps. While most cards will operate at full performance, some may not due to the fact they require more bandwidth than Thunderbolt 3 is capable of supporting.

Not All Thunderbolt 3 Cables Deliver Full Performance or Power Delivery Capabilities

Full performance and power delivery capabilities from the Echo Express SE III require the use of the included or comparable Thunderbolt 3 (40Gbps) cable. When shopping for a Thunderbolt 3 cable, please be aware that some cables support only lower data transfer speeds (20Gbps) and/or power delivery capabilities.

Operating System (OS) Updates May Break Compatibility

Specific device drivers that work under one OS version may not work under a later version. Before updating your computer to the latest OS, we recommend that you contact Sonnet or 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 – Safety Precautions, FCC Compliance, and Support Information

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.
- 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 III 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.

Email support requests generally receive the fastest responses, and are usually processed within a 24-hour period during normal business hours, excluding holidays. When you contact 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
- A macOS System Report, along with a description of the issue(s) you are encountering with your device.

USA Customers

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

E-mail: support@sonnettech.com

Tel: 1-949-472-2772

(Monday–Friday, 9 a.m.–4 p.m. Pacific Time)

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.