# User's Guide
## for Echo™ Dual NVMe Thunderbolt™ Dock

THUNDERBOLT™

Mac **For Windows** chromeOS

SONNETTECH™

# Contents

# Chapter 1 – Compatibility Information and Computer Preparation
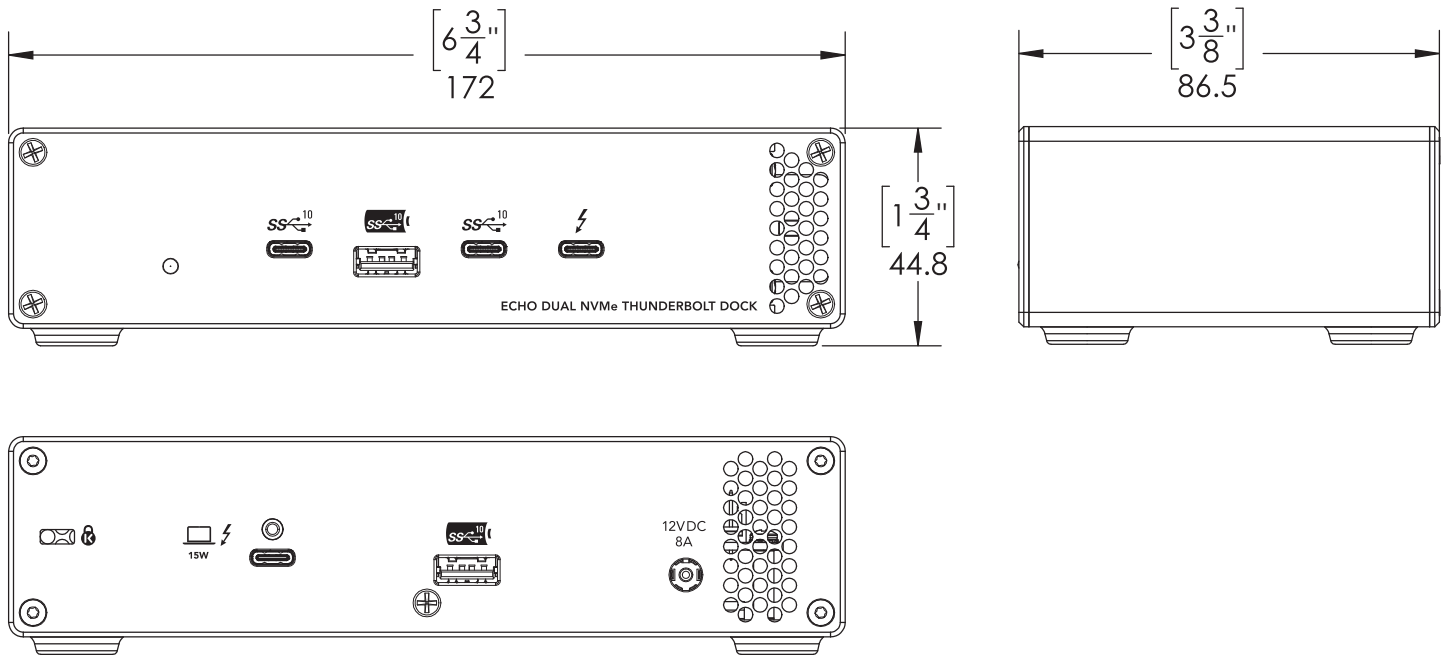
## Mac® Compatibility

• Mac (M series)
• Mac (Intel®) with Thunderbolt 3 ports
• Macs with Thunderbolt 2 or Thunderbolt ports via an
  Apple Thunderbolt 3 (USB-C) to Thunderbolt 2 Adapter plus
  Thunderbolt cable (both sold separately)
• macOS® 10.12.+

## Windows® Compatibility

• PCs with Thunderbolt 4 or Thunderbolt 3* port(s)
• Windows 11, 10

## Chromebook Compatibility

• Chromebook with a Thunderbolt 4 port

## iPad® Compatibility

• iPad Pro® (M series)

## M.2 SSD Compatibilty

Both single- and double-sided (components on both sides) SSDs are
supported. To view a list of known compatible SSDs, visit https://
sonnettech.com/support/downloads/manuals/M2_compatibility.pdf

## Required Drivers

The standard drivers required to support Echo Dual NVMe
Thunderbolt Dock are installed as part of macOS 11 and later;
Windows 11 and 10, ChromeOS, and iPadOS®.

* While Echo Dual NVMe Thunderbolt Dock features a 40Gbps Thunderbolt
  interface, some Windows computers equipped with Thunderbolt 3 use an
  x2 PCIe lane implementation of Thunderbolt 3 technology that limits PCIe
  performance to 20Gbps.

# Chapter 2 – Echo Dual NVMe Thunderbolt Dock Description
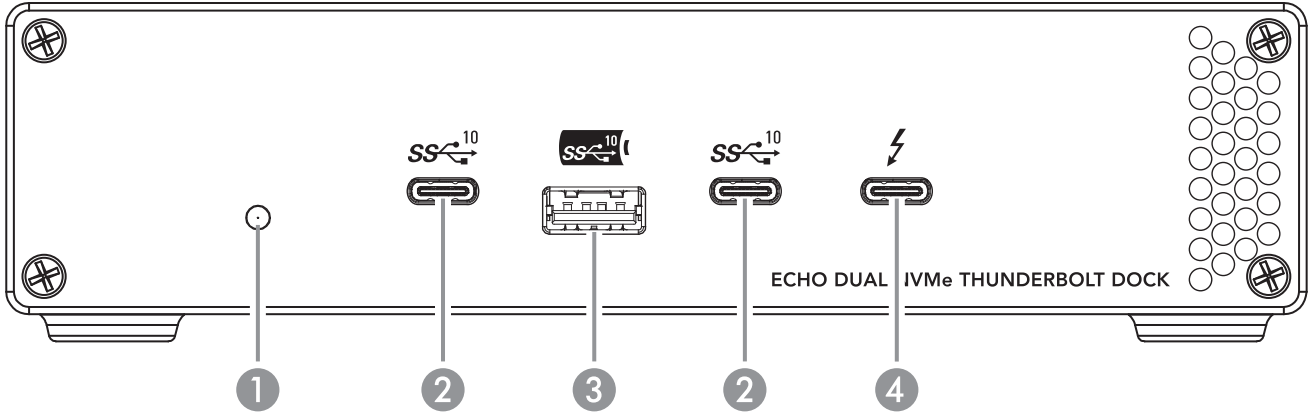


**Echo Dual NVMe Thunderbolt Dock Exterior**

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

**2 – USB 3.2 Gen 2 (10Gbps) Type-C Charging Ports**
Connect USB devices to these ports. Note that these ports are USB Type-C Charging–compliant; you may charge iOS® devices (and other devices that charge via USB) connected to this port.
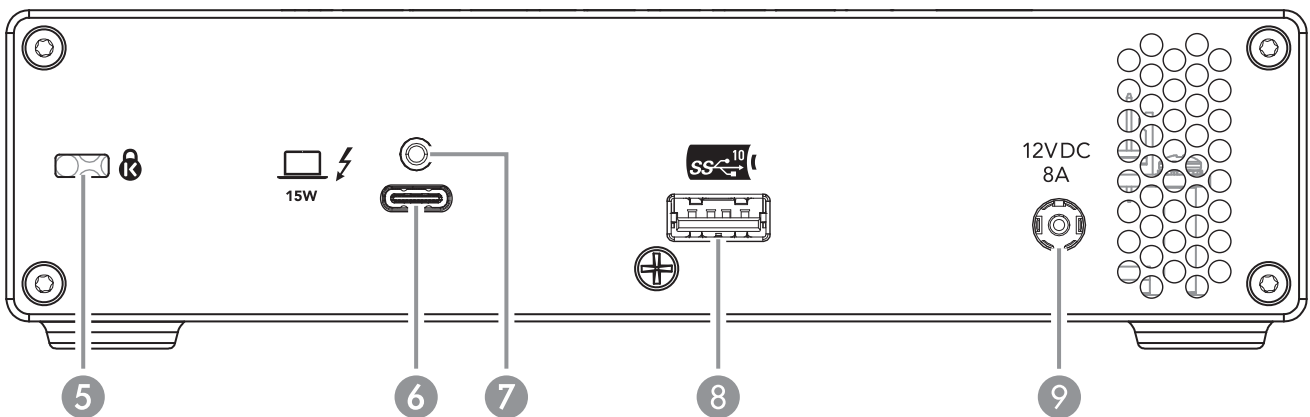
**3 – USB 3.2 Gen 2 (10Gbps) Type A Charging Port**
Connect a USB device to this port. Note that this port is USB Battery Charging 1.2–compliant; you may charge iOS devices (and other devices that charge via USB) connected to this port.

**4 – Thunderbolt Peripheral Port**
Connect a Thunderbolt or USB peripheral device (including a monitor) to this port using an appropriate cable or adapter.



**5 – Kensington® Lock Slot**
When used with a Kensington Lock (sold separately), this can provide added security for the Echo dock. Also compatible with Kensington MicroSaver® and MicroSaver 2 locks.

**6 – Thunderbolt (Computer) Port**
Connect the included (or comparable) Thunderbolt 3 (40Gbps) cable, or any Thunderbolt 4 cable, between this connector and your computer's Thunderbolt port.

**7 – Threaded Nut for ThunderLok™**
Attach the included Thunderbolt connector retainer clip here.

**8 – USB 3.2 Gen 2 (10Gbps) Type A Charging Port**
Connect a USB device to this port. Note that this port is USB Battery Charging 1.2–compliant; you may charge iOS devices (and other devices that charge via USB) connected to this port.

**9 – 12VDC 8A Power Socket**
Connect the included DC power adapter between this socket and the included power cord.

## Chapter 2 – Echo Dual NVMe Thunderbolt Dock Description

**Echo Dual NVMe Thunderbolt Dock Inner Assembly**

**1 – M.2 SSD Sockets**
   The Echo dock supports the installation of two M.2 2280 NVMe PCIe SSDs (sold separately) with "M" key connectors.

**2 – SSD Mounting Posts (Standoffs)**
   Secure installed SSDs to these posts.

**3 – Fan**
   The temperature-controlled fan provides cooling for the installed SSDs and the dock's Thunderbolt circuitry. It operates at a whisper when the card is running cool, and speeds up when the temperature rises. Do not block the fan or the vent holes on the dock to prevent overheating.
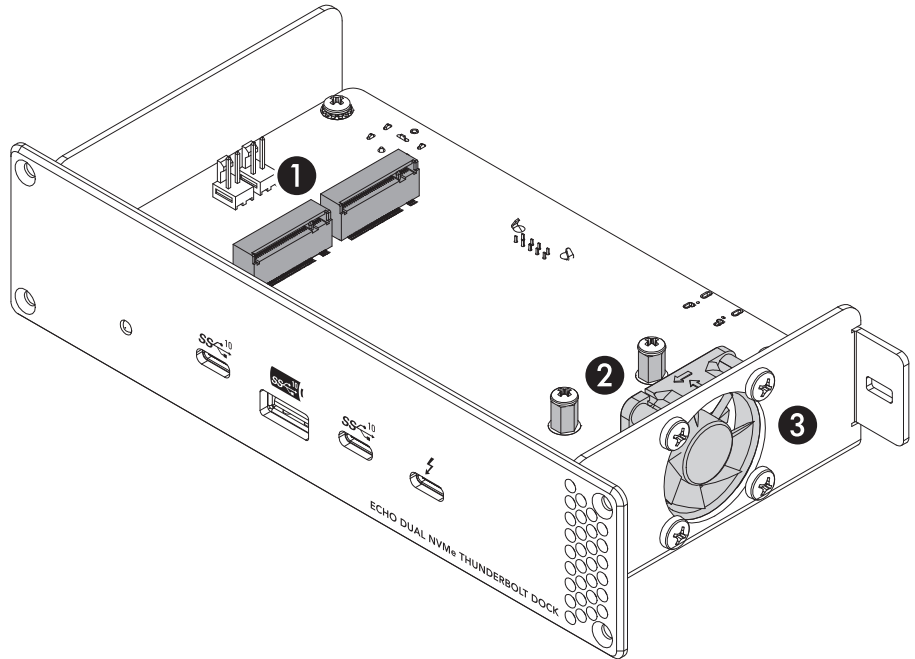
**Additional Package Contents**

**• Power Adapter**
Connect this to the Echo dock's 12VDC socket.

**• 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.
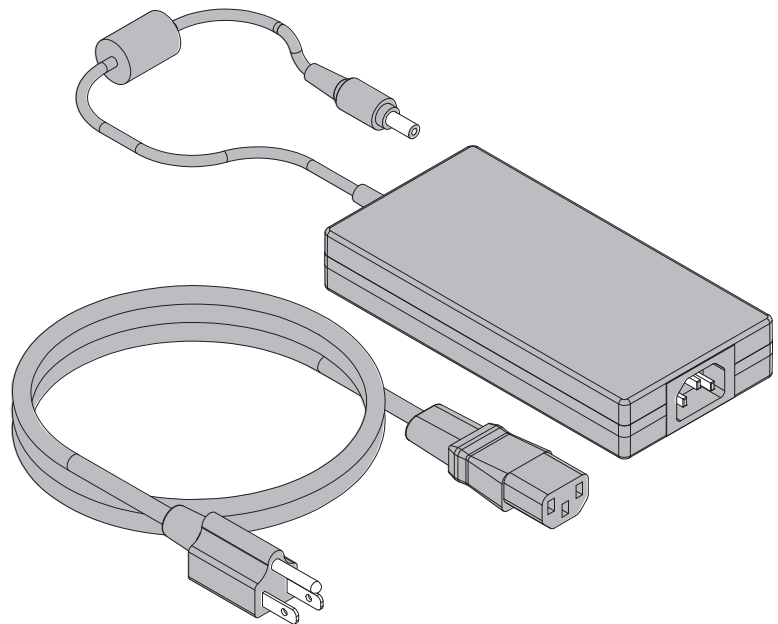
**• Thunderbolt (40Gbps) Cable**
Connect this cable between Echo dock and one of your computer's Thunderbolt ports (often indicated by a ⚡ logo), or other Thunderbolt peripheral device in the chain connected to the computer. Connecting the dock to a computer port marked with the generic USB icon (⚡) or USB + Charging Port icon (⚡) is NOT supported.
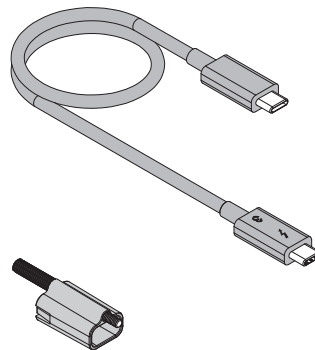
**• ThunderLok Thunderbolt Connector Retainer Clip**
This clip secures the included Thunderbolt cable's connector plugged into the Echo dock's Thunderbolt (Computer) Port to prevent accidental cable disconnection.

# Chapter 3 – SSD Installation Steps, Dock Connection, SSD Formatting Information

## SSD Installation Steps and Dock Connection

**Steps 1–8 are optional.** If you are *not* installing SSDs, skip to the Support Note at the bottom of the next page.

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

1. Using a Phillips screwdriver, remove the seven screws (one from the front panel, two from the bottom of the case, four from the back panel) securing the inner assembly to the outer case as shown **(Figure 1)**. Pull out the inner assembly from the case, and then set aside the case and screws.



Inner Assembly

Outer Case
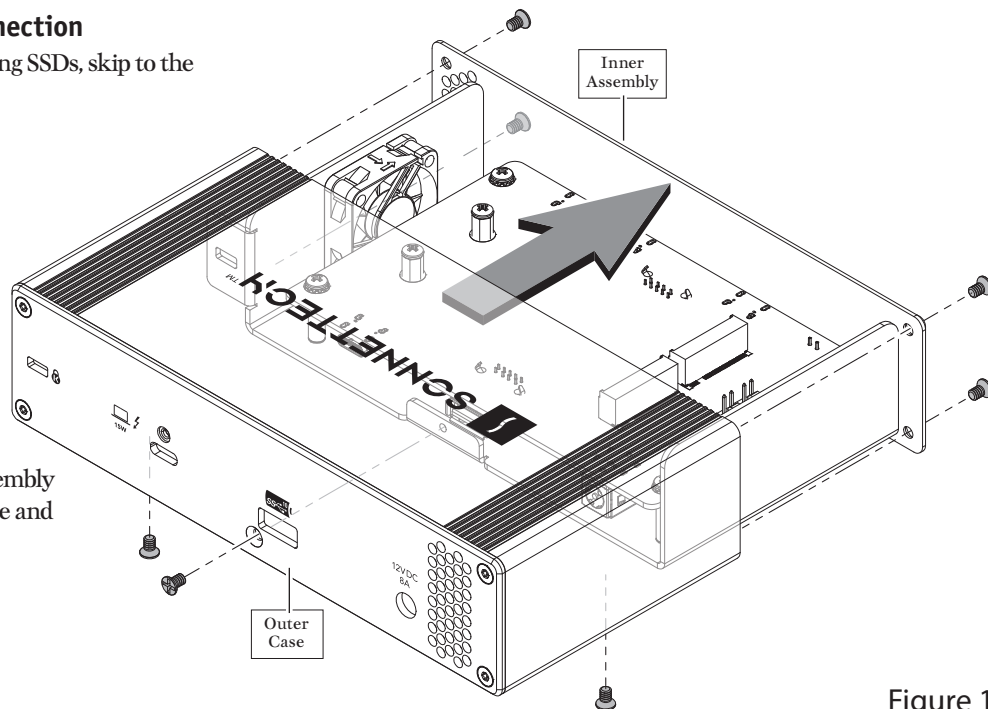
Figure 1

2. Remove the two screws from the standoffs as shown **(Figure 2)**. Note that if you are only installing one SSD, you only need to remove one screw.

> **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 dock's circuit board and any of its components.



Figure 2

3. Handling it by its edges, remove an SSD from its packaging.

4. Insert the SSD at an angle into one of the SSD sockets until it is fully seated **(Figure 3)**.

5. When installing a second SSD, repeat steps **3** and **4** **(Figure 3)**. Otherwise, skip to the next step.
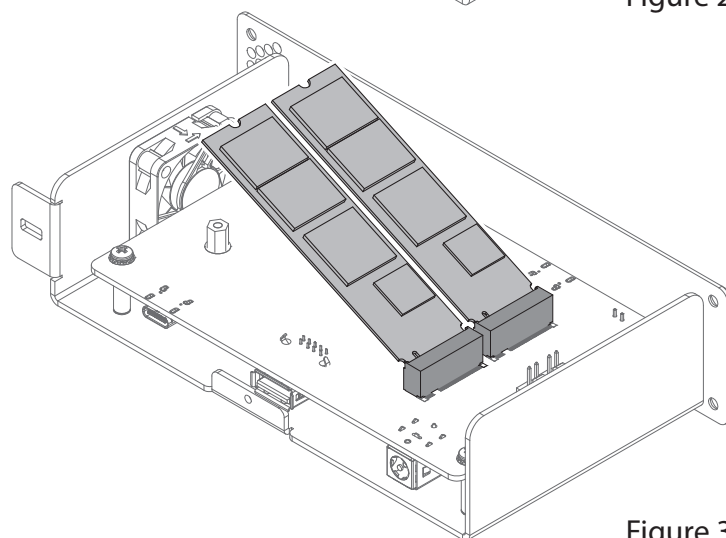


Figure 3

6. Using the screw(s) you removed previously, secure the SSD(s) to the standoff(s); **do not overtighten the screws (Figure 4)**.
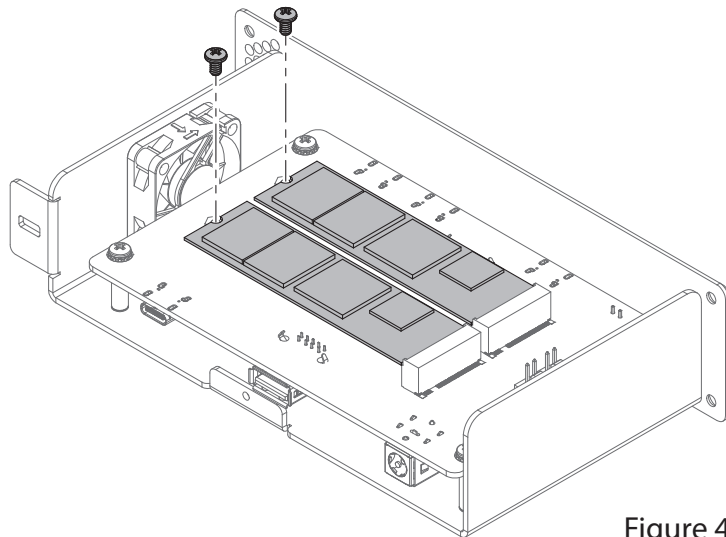
Figure 4

7. Slide the inner assembly back into the outer case **(Figure 5)**.

8. Using the seven screws you removed previously, secure the inner assembly to the outer case; **do not overtighten the screws (Figure 5)**.
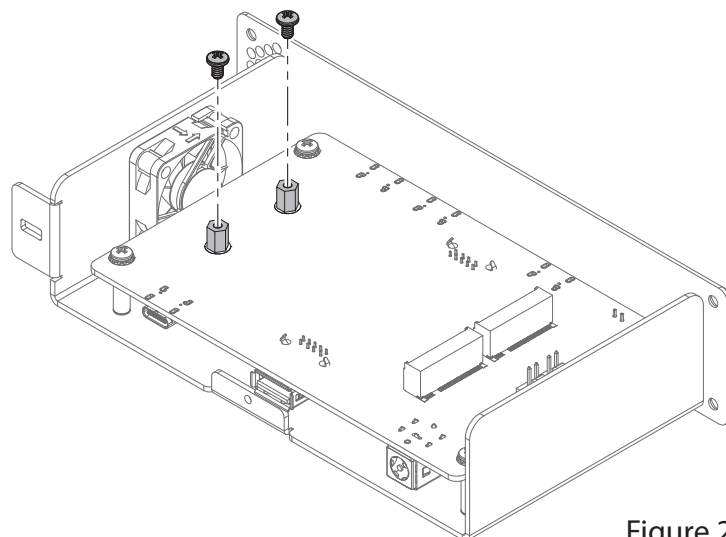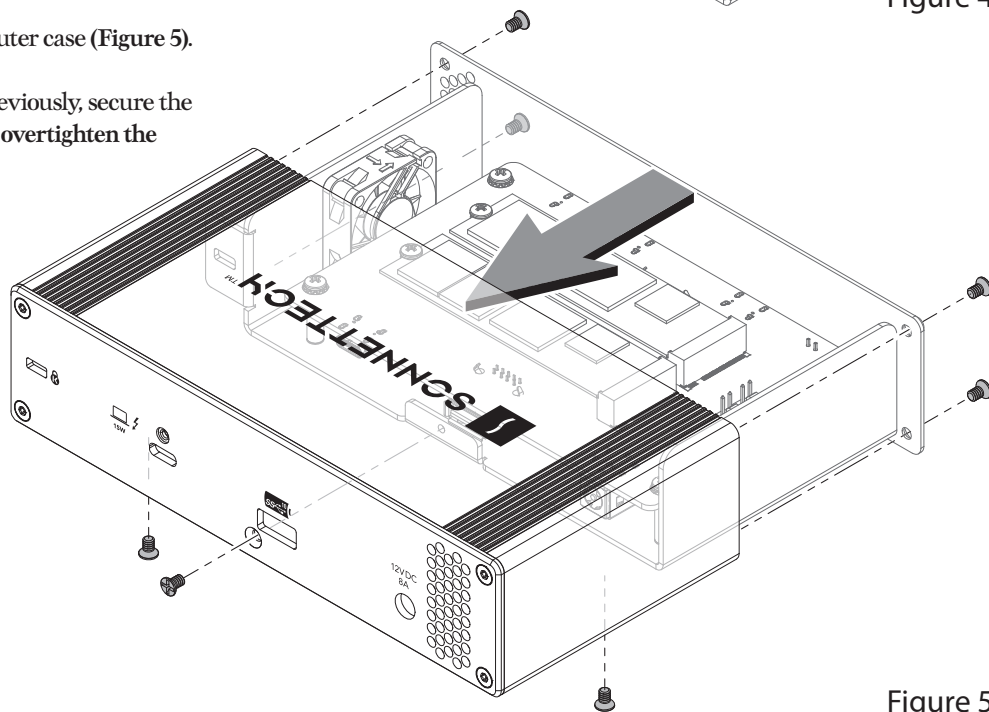
Figure 5

**Support Note:** Sonnet's ThunderLok Thunderbolt connector retainer clip secures the included Thunderbolt (40Gbps) cable to the Echo dock to prevent accidental disconnects. The included clip is compatible with Sonnet 0.5- and 0.7-meter Thunderbolt (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 6)**. Note that the connector will pass all the way through the clip; when you connect the cable to the dock, the clip will secure the connector.
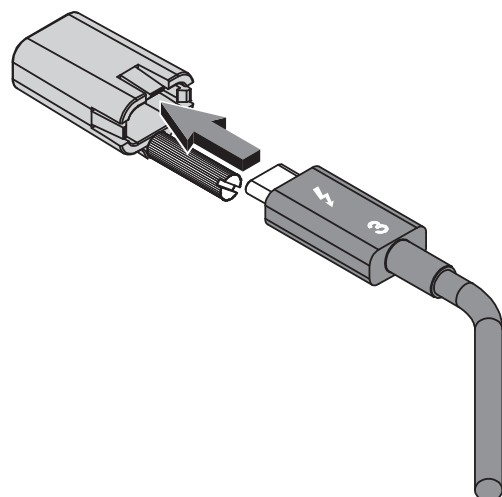
Figure 6

# Chapter 3 – SSD Installation Steps, Dock Connection, SSD Formatting Information

9. Connect the included (or comparable) Thunderbolt 3 (40Gbps) cable, or any Thunderbolt 4 cable, between a Thunderbolt port on the Echo dock and a Thunderbolt port on your computer, or other Thunderbolt device in the chain connected to the computer **(Figure 8)**. Note that cables and computer ports marked with a generic USB icon (•⇌•) or USB + Charging Port icon (⚡) are NOT compatible. Secure the retainer clip to the dock 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 dock.

10. Connect the included power cord between a wall outlet or power strip and the power adapter; verify the connector is plugged in securely.

11. Connect the power adapter cable to the dock's 12V 8A DC Power socket. Note that the power indicator on the Echo dock will not light until the computer, and any other Thunderbolt device connected between it and the Echo dock, is powered on.
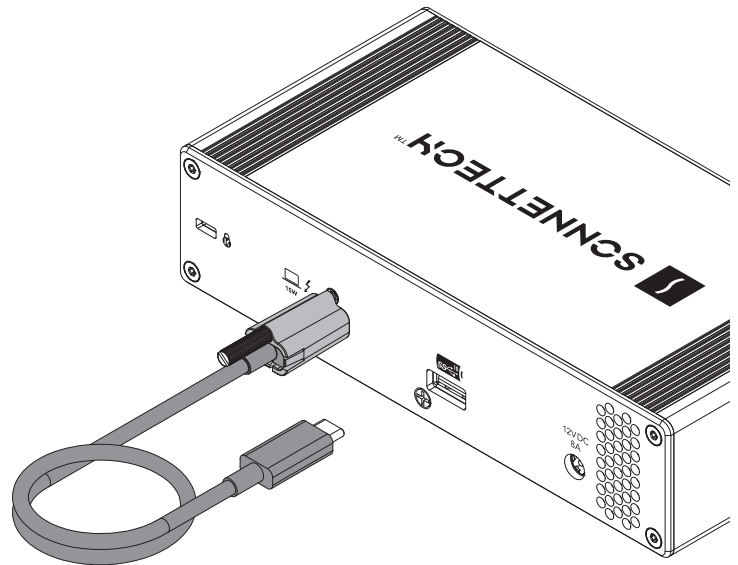


Figure 8

## Formatting and Configuring SSDs—macOS

Use Disk Utility (found in the Utilities folder within the Applications folder) to format installed SSDs. For step-by-step instructions on how to create RAID 0, RAID 1, or concatenated sets with installed SSDs, open Disk Utility, click Help and then select Disk Utility Help. In the *Disk Utility User Guide* window, type "create a disk set" and then press return. Click "Create a disk set using Disk Utility on Mac" to read the directions.

> **Support Note for macOS Users:** macOS 10.14.6+ supports both 512 and 4k block size SSDs, but macOS 10.13.6 supports only 4k block size SSDs. 1TB or larger SSDs are shipped from the factory programmed with a 4k block size. If you have smaller SSDs that are programmed with 512 byte block size, and you need to be compatible with macOS 10.13.6, you may need to reprogram your SSDs to a 4k block size. Go to www.sonnettech.com/support/kb/kb.php, navigate to the support page for Echo Dual NVME Thunderbolt Dock, and then open the FAQ about *Programming SSDs to 4k Block Size for Compatibility With macOS 10.13.6* for more information.

## Formatting and Configuring SSDs—Windows

If you intend to format SSDs installed in the Sonnet dock using Windows drive formatting tools (as opposed to using third party software), you may use either Disk Management or Storage Spaces.

### Basic RAID Configuration Steps for Windows

Assuming you have installed two or more SSDs, you may follow these instructions to format them into a RAID array (Storage Space).

1. Go to the taskbar, type Storage Spaces in the search box, and then select Storage Spaces from the search results list.

2. In the *Storage Spaces* window, click Create a new pool and storage space.

3. Click the check boxes next to each SSD you want to add to the new storage space (RAID volume), and then click Create pool. Be very careful not to select a drive you don't want to include, and note that all data on the SSDs you include in a Storage Space will be erased.

4. Give the "drive" a name and letter, and then choose a file system.

5. From the Resiliency type drop-down, select Simple (RAID 0) or Two-way mirror (RAID 1).

6. Depending on the Resiliency type you chose, the wizard will set the maximum available disk capacity. If necessary, you can also enter the maximum size the storage space. Click Create storage space to complete the formatting and configuration; your SSDs are ready to use.

## RAID Configuration Support Information

RAID 0, RAID 1, and concatenated disk set configurations of SSDs are supported under macOS 10.14.6 and later, Windows 11 and 10.

## Booting From Installed SSDs

### macOS:

The Echo dock supports booting your Mac from individual (non-RAIDed) SSDs. Please note that in some cases it may be necessary for you to hold the *option* key during a start, and then select the startup disk attached to the Sonnet card.

### Windows:

The Echo dock supports booting from a single, non-RAIDed SSD *only* with computers with UEFI.

# Chapter 4 – Tips, General Information, and Known Issues

## TIPS, GENERAL INFORMATION

### There's No Need to Unplug the Power Adapter
Because the Echo dock 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
The dock's power indicator only lights when the computer to which it's connected is on, and turns off when the computer is sleeping or powered off.

### Hot Plugging the Echo Dock
You may connect and disconnect the dock while the computer is on. If you have anything connected to the dock such as storage devices, cameras, etc., follow proper procedures for ejecting (unmounting) those devices before unplugging the dock from the computer.

### Using the Dock to Charge Your Portable Computer or iPad Pro
MacBook Air® and MacBook Pro® computers with Thunderbolt ports, some PC laptop computers with Thunderbolt 3 ports, all PC laptops with Thunderbolt 4 ports, and iPad Pro with a Thunderbolt port may be charged *slowly* via the Echo dock's Thunderbolt (Computer) port (via 15W Power Delivery). Computers with Thunderbolt 2 or Thunderbolt ports cannot be charged via Thunderbolt.

### The Echo Dock Provides Upstream Power
For connected peripheral devices requiring power, the Echo dock provides up to 15 watts to bus-powered devices through its front Thunderbolt port and 7.5W per USB port, enabling peripherals to operate without connecting an additional power adapter.

### Connecting Additional Thunderbolt 3 or 4 Peripheral Devices
The dock includes two Thunderbolt ports; the back port is reserved for connection to your computer, while the front port supports connection of up to five additional Thunderbolt peripheral devices through daisy-chain connection.

### Connecting a Thunderbolt 2 Peripheral Device (Mac Only)
The Echo dock's second (front) Thunderbolt port supports a self-powered Thunderbolt 2 peripheral device when connected with an Apple Thunderbolt 3 (USB-C) to Thunderbolt 2 Adapter plus a Thunderbolt 2 cable (both sold separately); bus-powered Thunderbolt 2 devices are not supported.

### How to Identify Thunderbolt 3 (40Gbps) Cables
Full performance requires the use of the included 40Gbps Thunderbolt cable, another 40Gbps (not 20Gbps) Thunderbolt 3 cable, or any Thunderbolt 4 cable; look for the Thunderbolt icon (⚡) AND the number 3 or 4 on the connector housings to identify Thunderbolt cables. Cables marked with the generic USB icon (•⟼) are NOT compatible for connecting the Echo dock to the computer.

### Thunderbolt Cable Compatibility
You may use Thunderbolt 3 (40Gbps) or Thunderbolt 4 cables with Thunderbolt 4 or Thunderbolt 3 peripherals and computers without any compromise.

## KNOWN ISSUES

### Not All Computers' Thunderbolt Performance is Equal
When using the dock with the 2017 MacBook Pro 13-inch model with four Thunderbolt 3 ports, you should connect the dock to one of the ports on the left side of the computer. The right side ports use an x2 (2-lane) implementation of Thunderbolt 3 that limits PCIe bandwidth to 20Gbps (up to 1,400 MB/s). Some Windows computers equipped with Thunderbolt 3 also use the x2 PCIe lane implementation.

### Not All Thunderbolt Cables Deliver Full Performance
Full performance from the Echo dock requires the use of the included (or comparable) Thunderbolt 3 (40Gbps) cable, or any Thunderbolt 4 cable. When shopping for a Thunderbolt 3 cable, please be aware that some support only lower data transfer speeds (20Gbps).

### 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 to verify that the existing drivers work. Note that other computer software updates 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 connect additional Thunderbolt devices to the dock, you may need to experiment with ones work better closer to or farther from the computer in the chain.

# Chapter 5 – 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 dock; dropping or mishandling the dock 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 Dual NVMe Thunderbolt Dock 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 contacting 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
• Operating system version
• Software/firmware versions
• A System Report (macOS) or a Microsoft System Information MSINFO32 (Windows) report (Windows), along with a description of the issue(s) you are encountering with your device

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.–5 p.m. Pacific Time, excluding holidays)

**Japan Customers**
Contact Sonnet Customer Service Japan at:
**E-mail**: jp.support@sonnettech.com