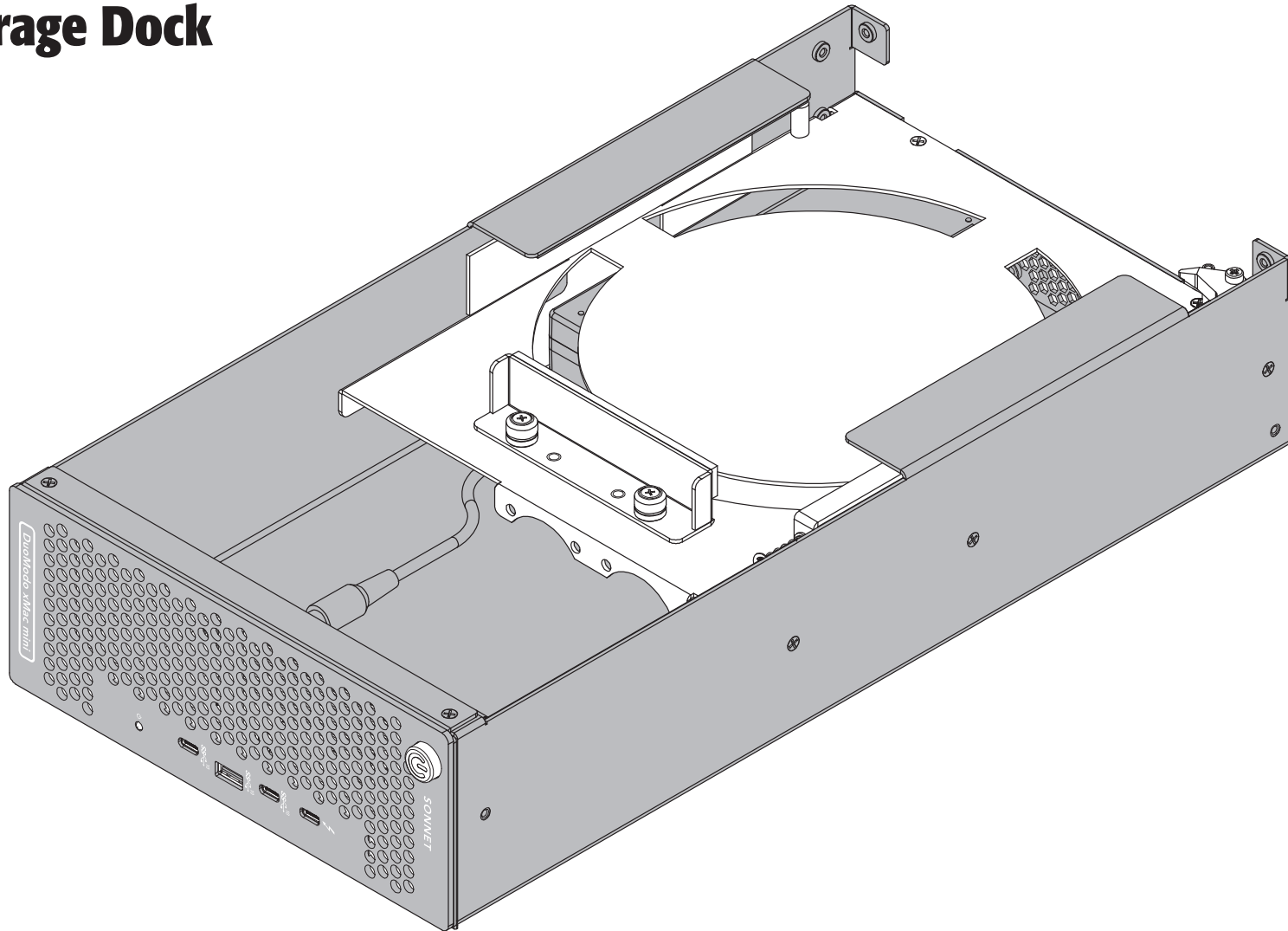


User's Guide

for DuoModo™ xMac™ mini Module
Mac mini® Mount + Thunderbolt™ 3
SSD Storage Dock



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Chapter 1 – Introduction and System Requirements

Introduction

Congratulations on your purchase! The DuoModo xMac mini Module is an enclosure for Mac mini computers that includes a Thunderbolt 3 dock with support for M.2 NVMe SSDs, and is designed for use in a DuoModo desktop or rackmount enclosure.

Mac® Compatibility

- Intel® Mac mini with Thunderbolt 3 ports running macOS® 10.12.6+
- Mac mini (2020 M1) running macOS 11.3+

M.2 SSD Compatibility

Both single- and double-sided (components on both sides) M.2 2280 NVMe PCIe SSDs are supported.

Preparing to Use the xMac mini Module

The drivers required to support the xMac mini Module's dock are installed as part of macOS; there are no preparation steps beyond updating your computer to the minimum required macOS version or newer.



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 <https://www.sonnettech.com/support/kb/kb.php>
2. Navigate to and click the DuoModo xMac mini Module link.
3. Click the Manual link.
4. Click the DuoModo xMac mini Module User's Guide [English] link and then check the Document Version information. If the version listed on the last page of this manual is later than this document (**revision C**), click the Download Now button for the latest version.

Chapter 2 – xMac mini Module Description

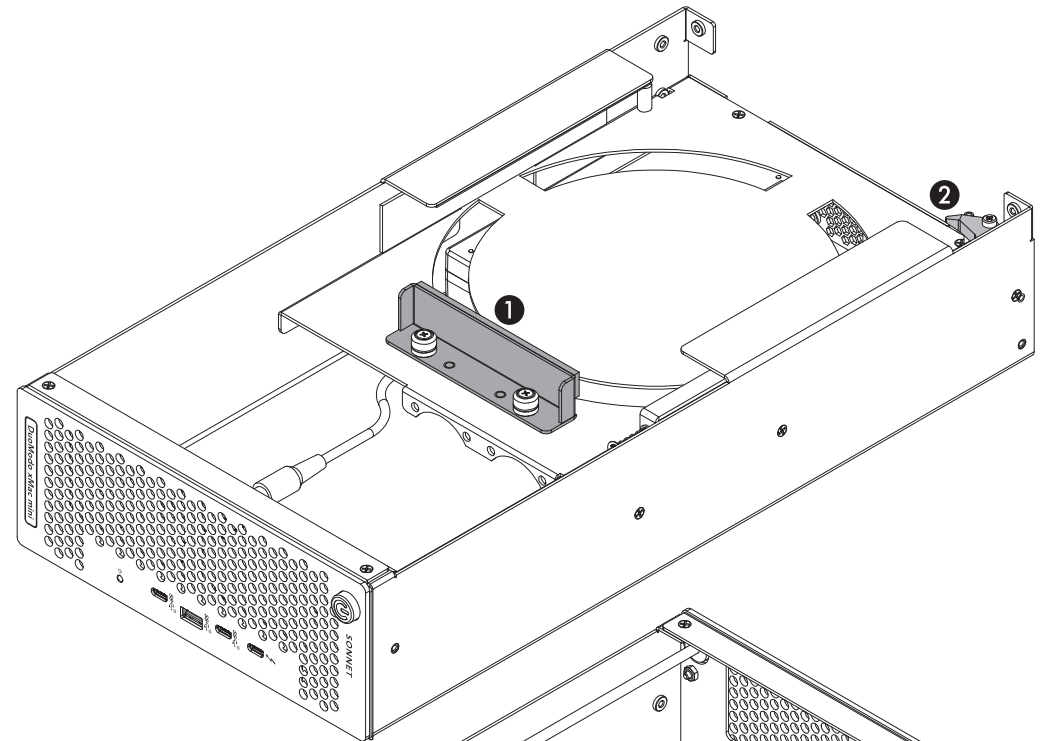
Interior Features

1 – Computer Brace

This bracket secures the Mac mini in place inside the DuoModo xMac mini module.

2 – Computer Power Button Actuator

Activated by the front panel power switch, this contacts the installed computer's power button to switch power on and off.



Thunderbolt 3 Dock Interior Features

3 – SSD Mounting Posts (Standoffs)

Secure SSDs (sold separately) to these posts.

4 – M.2 SSD Sockets

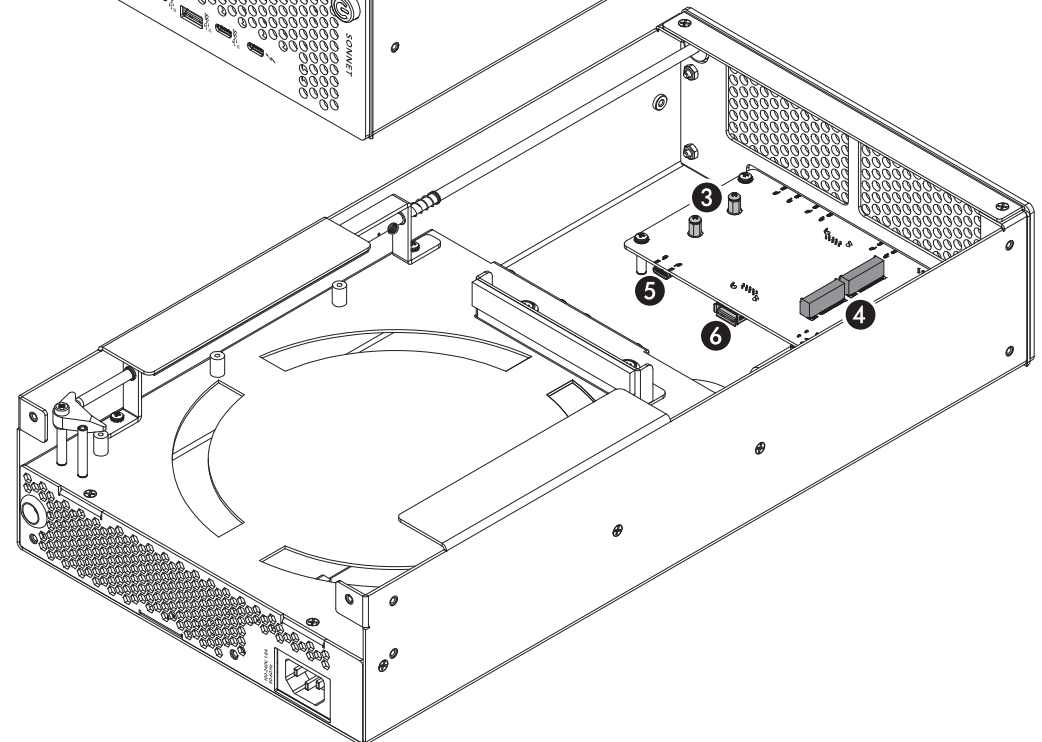
The DuoModo xMac mini Module supports the installation of two single- or double-sided M.2 2280 NVMe PCIe SSDs with “M” key connectors.

5 – Internal Thunderbolt Connector

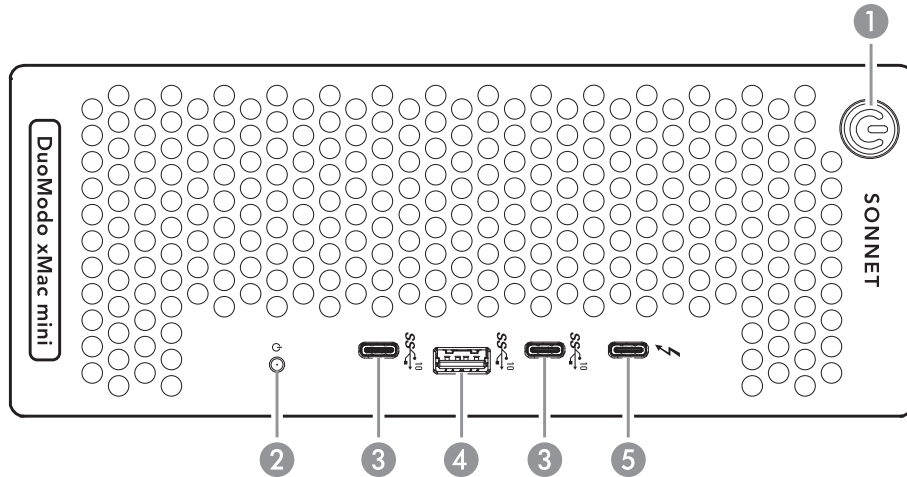
Connect the included (or comparable) Thunderbolt 3 (40Gbps) cable, or any Thunderbolt 4 cable, between this dock interface connector and a Thunderbolt connector on the installed Mac mini.

6 – Internal USB Type A Connector

Connect a USB device that won't need to be frequently accessed, such as a software license authorization key dongle or bus-powered drive to this port.



Chapter 2 – xMac mini Module Description



Front Panel/Thunderbolt 3 Dock Connections

1 – Power Switch

This button activates the Mac mini's power button; the xMac mini Module's dock's power supply turns on and off along with the computer.

2 – Power Indicator LED

This lights when the xMac mini Module is powered, the Thunderbolt cable between the module and your computer is plugged in securely, and the computer powered on.

3 – USB-C Ports

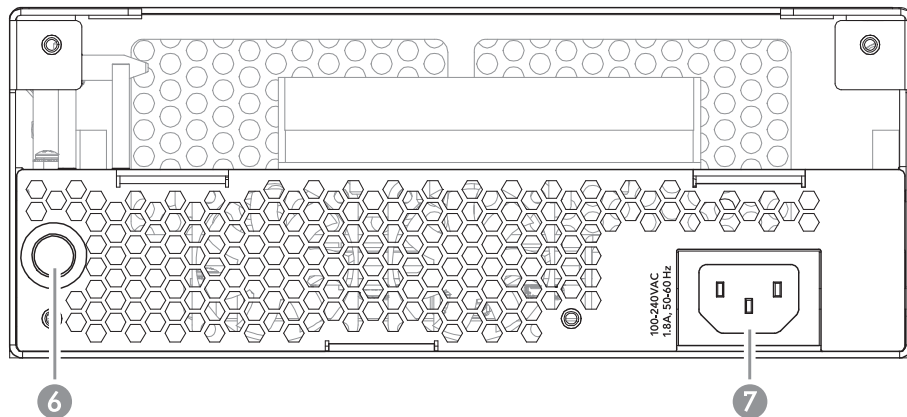
Connect USB devices to these ports.

4 – USB-A Port

Connect a USB device to this port.

5 – Passthrough Thunderbolt Port

Connect a Thunderbolt 3 or Thunderbolt 4 peripheral device, display, or USB device (when connected with the proper cable or adapter).



Back Panel

6 – External Cable Passthrough Grommet

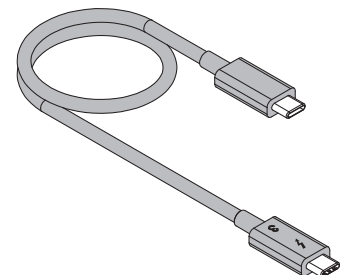
This opening allows the connection of the included Thunderbolt cable from the computer to the internal Thunderbolt port on the xMac mini Module's Thunderbolt 3 dock.

7 – Power Input Socket

Connect the included AC power cable here.

Thunderbolt 3 (40Gbps) Cable

Connect this cable between the xMac mini Module's internal Thunderbolt 3 port and a Thunderbolt port on the installed Mac mini.



Chapter 3 – Mac mini and Optional SSD Installation Steps

1. Remove the DuoModo xMac mini Module from its packaging, and then set it on a flat, level surface.
2. Loosen the two captive thumbscrews securing the computer brace to the module (**Figure 1**).
3. Remove and set aside the computer brace (**Figure 1**).

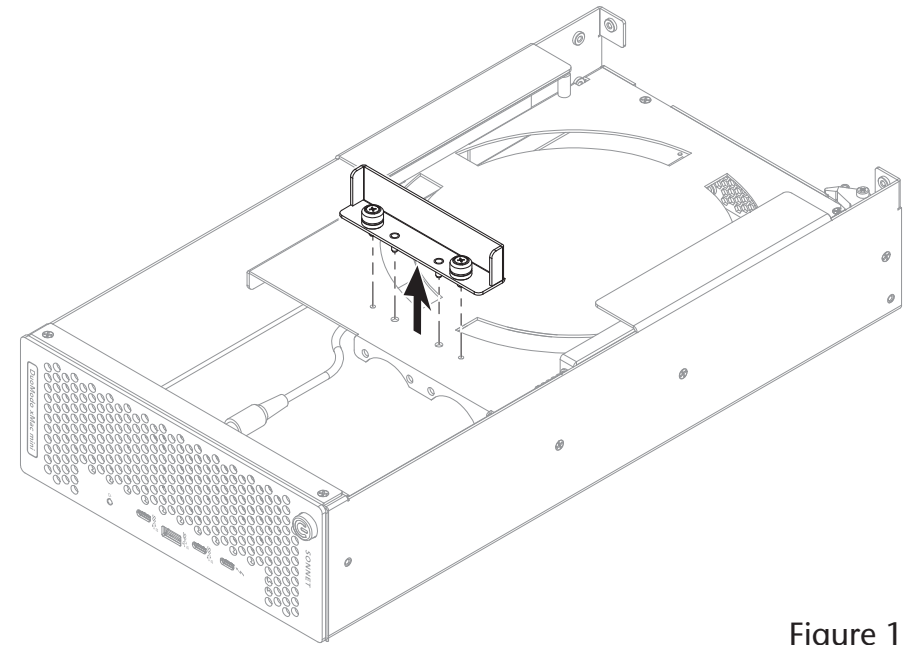


Figure 1

4. Remove your Mac mini from its packaging.
5. With its ports facing away from you and the Apple logo on top, carefully insert the Mac mini as shown, and then push it back against the small plastic posts (**Figure 2**).

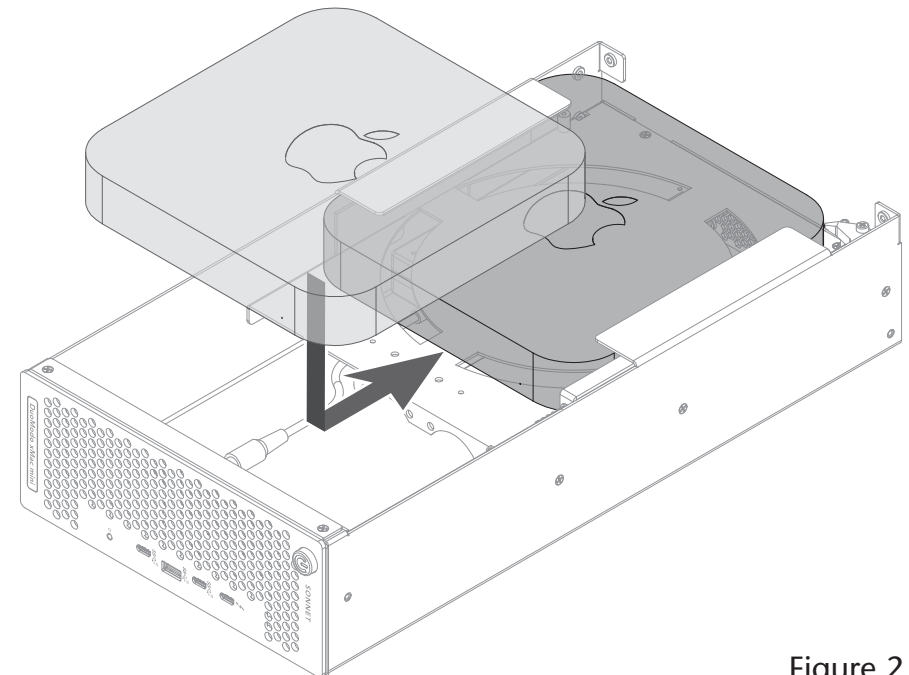


Figure 2

Chapter 3 – Mac mini and Optional SSD Installation Steps

6. Align the computer brace's guide pins with the corresponding holes in the module, and then place the brace on the module and secure it with the captive thumbscrews (**Figure 3**).

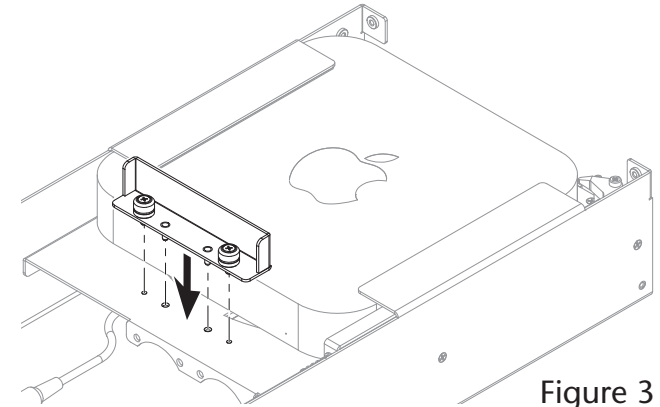


Figure 3

Optional SSD Installation (Steps 7–11)

If you are *not* installing SSDs, skip to step 12 on the next page.

7. Using a Phillips screwdriver, remove the two screws from the standoffs as shown (**Figure 4**).

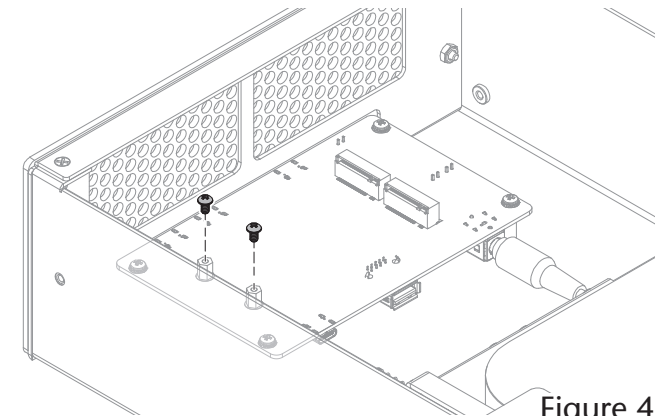


Figure 4

8. Handling it by its edges, remove an SSD from its packaging.
9. Insert the SSD at an angle into one of the SSD sockets until it snaps into place (**Figure 5**).
10. When installing a second SSD, repeat steps 8 and 9 (**Figure 5**). Otherwise, skip to the next step.

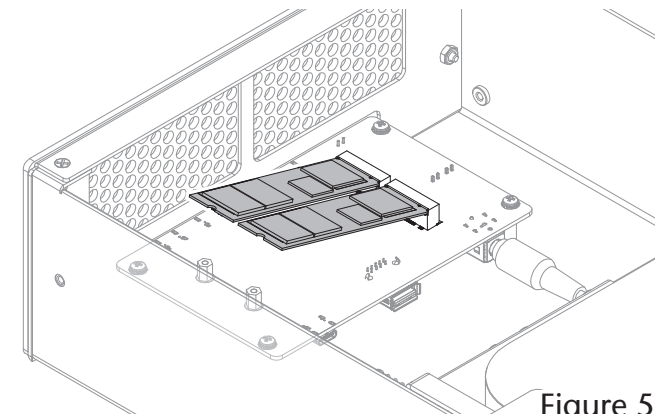


Figure 5

Chapter 3 – Mac mini and Optional SSD Installation Steps

11. Using the screws you removed previously, secure the SSDs to the standoffs (Figure 6); **do not overtighten the screws**. If you installed only one SSD, reinstall the remaining screw into the standoff.

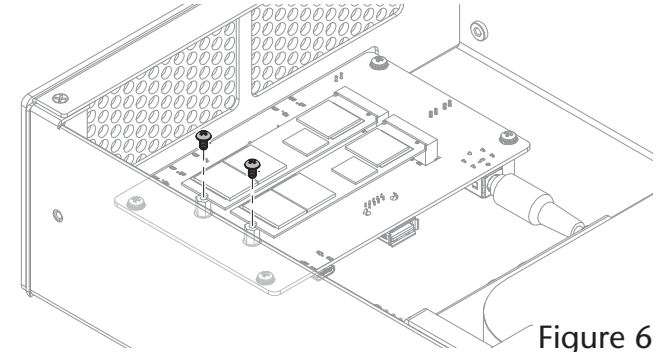
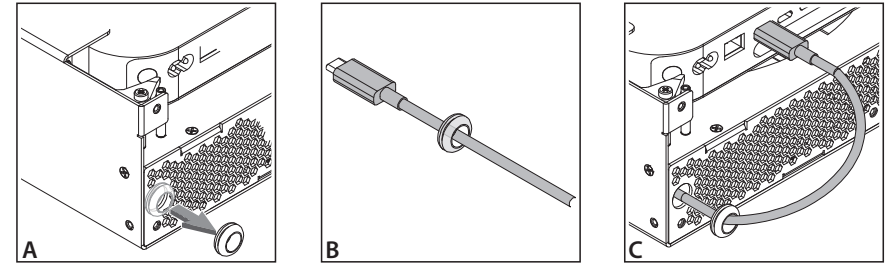


Figure 6

12. Remove the external cable passthrough grommet from the back of the module (Figure 7A).

13. Insert one end of the supplied Thunderbolt cable through the grommet (Figure 7B).

14. Insert the Thunderbolt cable connector through the module's grommet opening, and then route the cable toward the front of the module (Figure 7C).



15. Connect the Thunderbolt cable to one of the ports on the computer (Figure 7C).

16. Reinstall the grommet into its opening in the module (Figure 7D).

17. Connect the Thunderbolt cable to the internal Thunderbolt 3 connector on the dock (Figure 7D).

18. Following the instructions included with the DuoModo enclosure you purchased, install the DuoModo xMac mini Module into the enclosure now.

19. Connect a monitor to the Mac mini, and the computer's power cable between a wall outlet or power strip and the computer's power socket.

20. Connect the included power cord between a wall outlet or power strip and the xMac mini Module's power socket. Note that the module's power indicator will not light until the computer is powered on. Go to the next page.

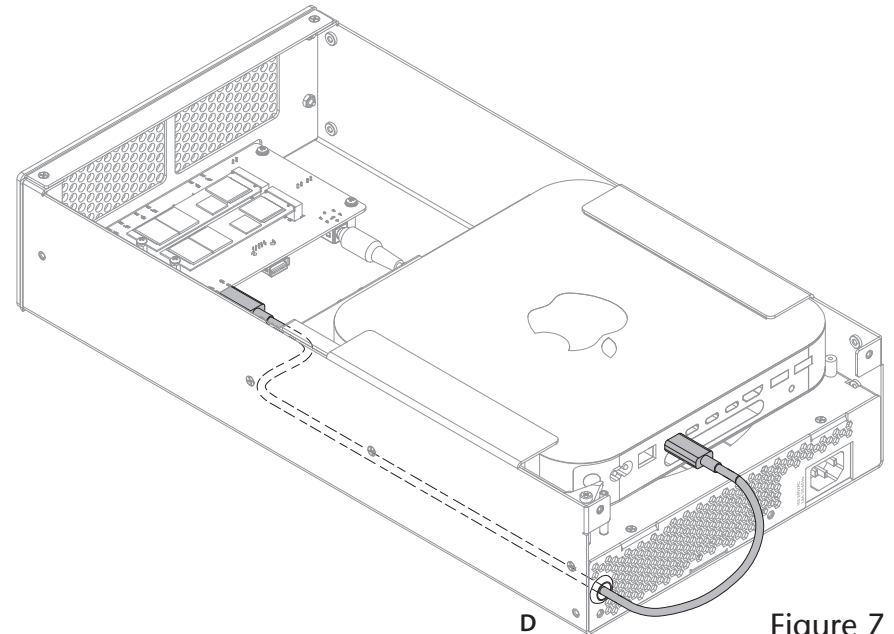


Figure 7

Chapter 4 – Complete Setup and Configuration

A – Confirm the Thunderbolt 3 Dock is Recognized

1. Press the power button on the front panel of the xMac mini module to turn on the Mac mini. If you haven't yet set up the computer, follow the onscreen directions to complete the setup process.
2. On the keyboard, 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 “DuoModo xMac mini Module” (Figure 8).

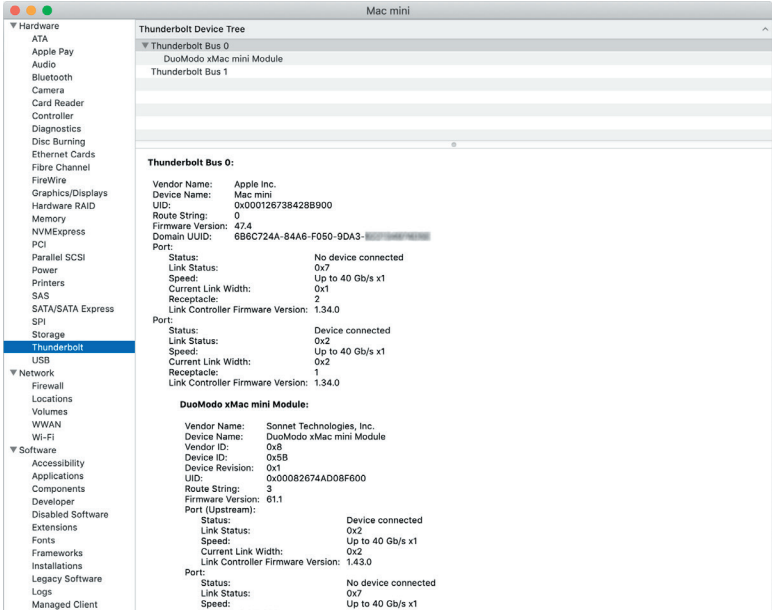


Figure 8

B – Confirm SSDs You Installed are Recognized

1. In the *System Information* window click NVMeExpress under the Hardware header in the left column (Figure 9).
2. At the top of the right column, the module's dock's SSD controllers are listed along with installed SSDs (Figure 9).

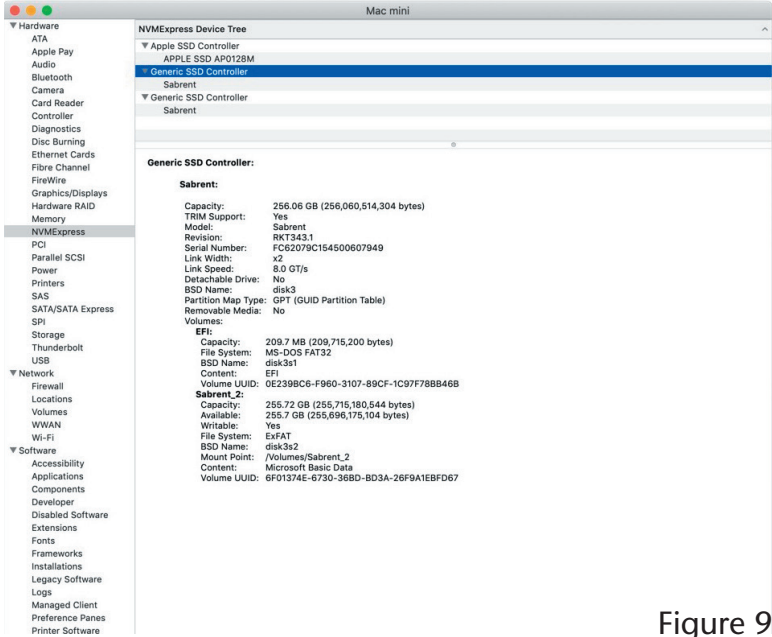


Figure 9

Chapter 4 – Complete Setup and Configuration

C – Format Installed SSDs

macOS:

Use Disk Utility (found in the Utilities folder within the Applications folder) to format installed SSDs.



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 DuoModo xMac mini Module, and then open the FAQ about *Programming SSDs to 4k Block Size for Compatibility With macOS 10.13.6* for more information.

Windows:

If you intend to format SSDs connected to the dock using Windows drive formatting tools (Disk Management), you may locate instructions by using “format volume”, and “create striped volume” as search items in Windows Help.

Linux

Use the tools or utilities you would normally use to format internal drives.

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 10 (64-bit Edition Version 1909 or greater), and Linux Kernel 5.0+.

Booting From Installed SSDs

macOS:

The DuoModo xMac mini Module supports booting your Mac mini 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 and Linux:

The DuoModo xMac mini Module does not support booting in computers running Windows or Linux.

Chapter 5 – Tips, General Information, and Known Issues

TIPS, GENERAL INFORMATION

Cooling the DuoModo xMac mini Module and Everything Inside It

With its optimized airflow design and temperature-controlled fans providing adequate cooling at all times, the xMac mini module is suited for horizontal or vertical installation; when installed in a rackmount enclosure, the enclosure may be installed anywhere in a rack. *Do not block the vents!* Otherwise, the Mac mini, its dock, and if present, installed SSDs, may overheat.

Connecting Additional Thunderbolt 3 and Thunderbolt 4 Peripheral Devices

The xMac mini Module includes two Thunderbolt ports; the internal port for the dock is reserved for connection to your computer, while the second (front panel) port supports one to five additional Thunderbolt peripheral devices.

Connecting a Thunderbolt 2 Peripheral Device

The xMac mini Module's second (front panel) 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 through the front panel port.

xMac mini Module Provides Downstream Power

For connected peripheral devices requiring extra power, the xMac mini Module provides up to 15 watts to bus-powered devices through its front panel Thunderbolt port, enabling them to operate without connecting an additional power adapter.

Power Indicator LED Operation

The module 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.

How to Identify Thunderbolt 3 (40Gbps) Cables

Look for the Thunderbolt icon (⚡) AND the number 3 on the connector housings to identify these cables. Aside from Thunderbolt cables from Apple, cables with USB-C connectors that only have the Thunderbolt icon without the number 3 may only support 20Gbps speeds, and are not recommended for use with this product. Cables marked with a generic USB icon (🔌) are NOT compatible for connecting the xMac mini Module's dock to the computer.

Thunderbolt 4 Cable Compatibility

You may use Thunderbolt 4 cables with Intel and M1 Mac mini computers and Thunderbolt 3 and Thunderbolt 4 peripherals without any compromise in performance or functionality.

KNOWN ISSUES

Not All Thunderbolt Cables Deliver Full Performance

Full performance from the xMac mini Module 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).

OS Updates May Break Compatibility

Specific device drivers that work under one operating system version may not work under a later version. It is even possible that an OS update may break compatibility. *Before updating to the latest drivers or OS version,* we recommend that you contact your peripherals' manufacturers to verify that the existing drivers work, and check online forums for reports of issues with the latest OS update.

Chapter 6 – 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.

- Do not attempt to modify the module. If this device appears to be malfunctioning, contact your reseller or local distributor.
- Do not drop the module; dropping or mishandling module 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, unplug it from the electrical outlet immediately.
- 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

DuoModo xMac mini Module 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 Quick Start 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
- Computer model
- Operating system version
- 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