Sonnet M.2 4x4 PCIe Card
Quick Start Guide
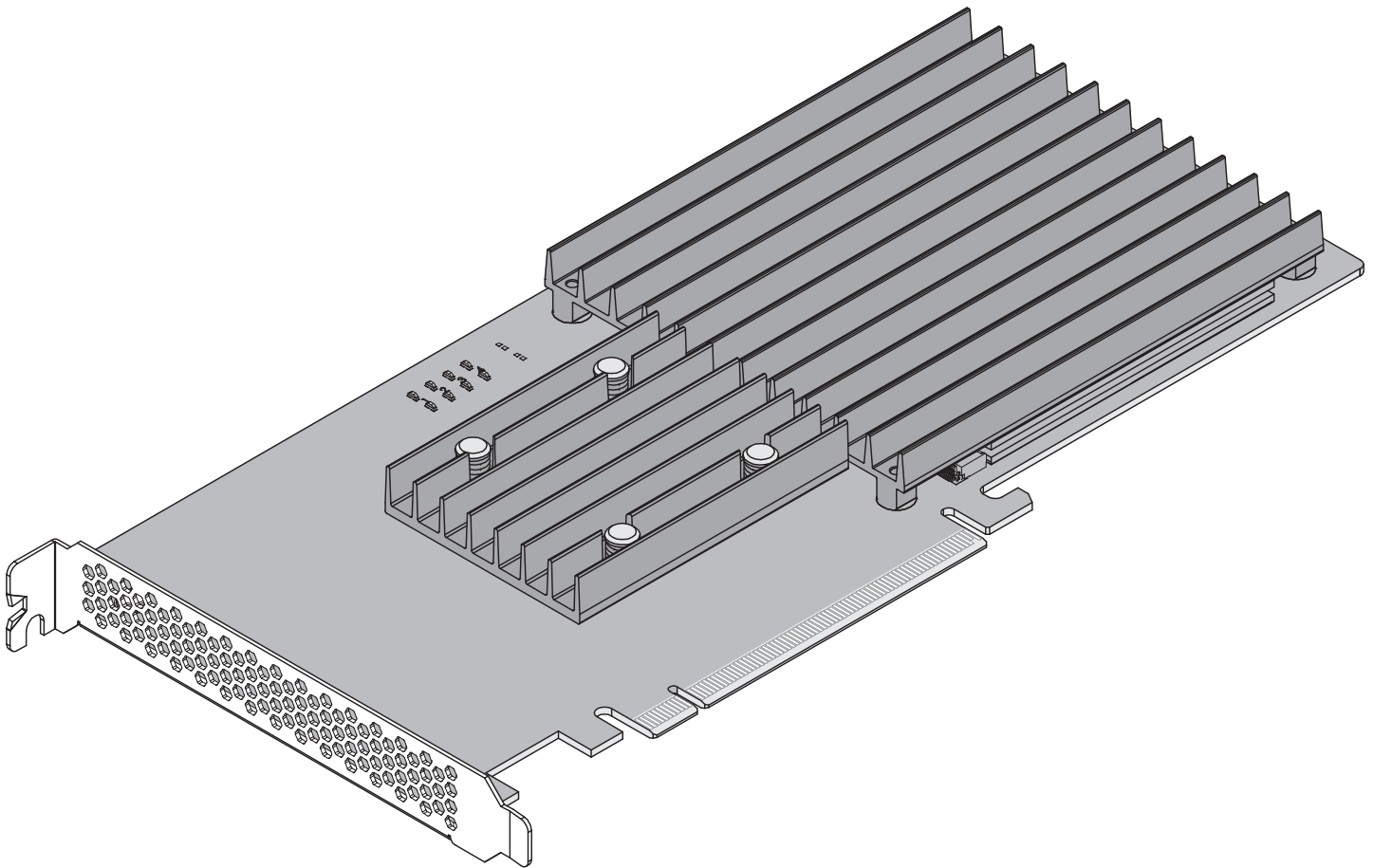
PCI**≫**
EXPRESS®

Mac **For Windows**

SONNETTECH®

Introduction, Compatibility Information, and Card Description

Congratulations on your purchase! Sonnet M.2 4x4 PCIe Card provides a handy way to install up to four M.2 form factor NVMe SSDs into a PCIe card slot. macOS, Windows, Linux, and Thunderbolt compatible, this card works in computers and Thunderbolt-to-PCIe card expansion systems.

Mac Compatibility
• Mac Pro® 14,8 (2023): Use x16 slot 1 or 2
• Mac Pro 7,1 (2019) – Use x16 PCIe slot (3, 4, or 5)
• Thunderbolt Expansion System – Use x16 PCIe slot
• macOS 15.2+

Windows Compatibility
• Computer with available full-height x16 PCIe card slot (use PCIe 3.0 or 4.0 slot for full performance; PCIe bifurcation not required)
• Thunderbolt Expansion System – Use x16 PCIe slot
• Windows 11, 10

Linux Compatibility
• Computer with available full-height x16 PCIe card slot (use PCIe 3.0 or 4.0 slot for full performance; PCIe bifurcation not required)
• Thunderbolt Expansion System – Use x16 PCIe slot
• Linux Kernel 5.4+

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 **Note that some SSDs are not currently compatible with macOS.**

RAID Configuration Support Information
Supports RAID 0 (Stripe), RAID 1 (Mirror), RAID 5 (Parity) and RAID 1+0 configurations of SSDs under macOS*, Windows, and Linux. **Note that Mac Pro 7.1 (2019) does not currently support RAID or more than one PCIe card with SSDs.**

* RAID 5 support under macOS requires third-party software such as SoftRAID, sold separately.

Card Description
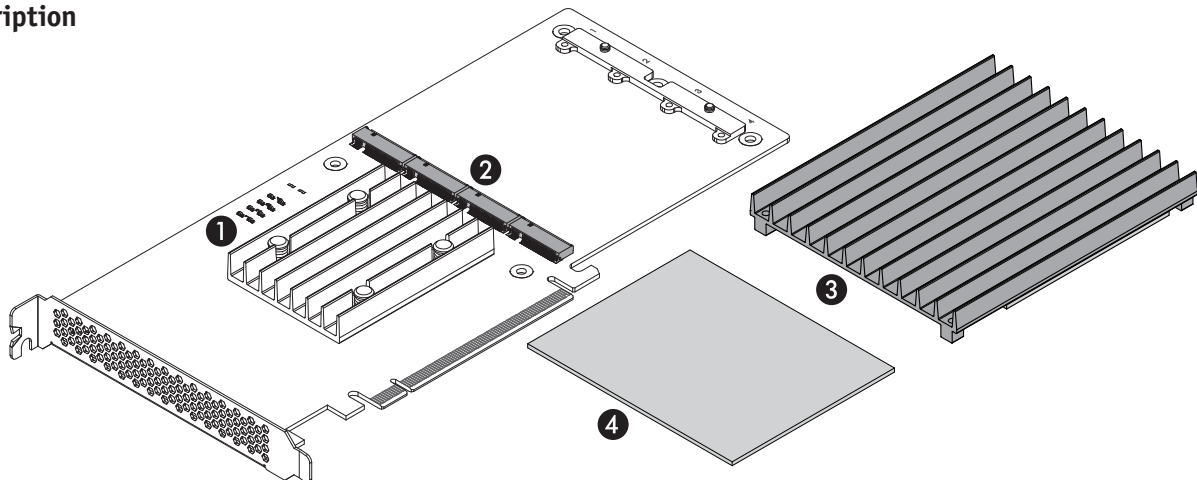
1 – Read/Write Activity LEDs
Indicate read and write activity by SSD.

2 – M.2 SSD Sockets
The Sonnet M.2 4x4 PCIe Card supports the installation of four M.2 2280 NVMe PCIe SSDs with "M" key connectors. When configuring them as RAID volumes, Sonnet recommends the use of identical SSDs.

3 – SSD Heatsink
Backed with a thermal transfer pad that contacts the SSDs' components, the heatsink conducts heat away from the SSDs.

4 – Thermal Transfer Pad
Apply this to the card when you install single-sided SSDs; instructions follow.

Support Notes: Depending on the timing of your purchase, your card may appear different (longer) than what is pictured here; the instructions are the same for both cards.

Also, depending on the timing of your purchase, additional half-size thermal transfer pads may have been included in the package. If your package includes any half-size pads, discard them; they are not needed.

SSD Installation Steps

Support Note: When handling computer products, you must take care to prevent components from being damaged by static electricity. Before opening your computer or removing parts from their packages, always ground yourself first by touching a metal part of the computer, such as a port access cover, and work in an area free of static electricity; avoid carpeted areas. Handle all electronic components by their edges, and avoid touching connector traces and component pins.

1. Handling the card by its edges, remove the Sonnet M.2 4x4 PCIe Card from its packaging.

2. Place the card upside-down on a flat, level surface **(Figure 1)**.

3. Using a Phillips screwdriver, remove the five screws securing the heatsink to the card **(Figure 1)**. Set aside the screws and heatsink.
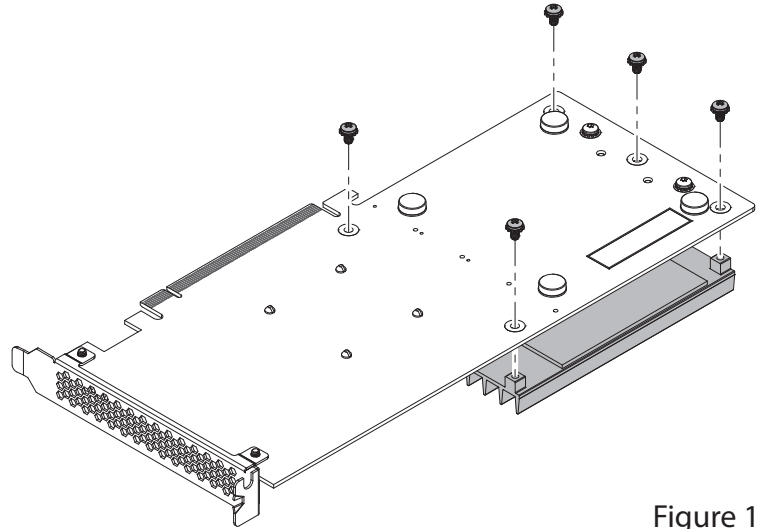
Figure 1

4. Flip the card over, and then remove the same number of retainer screws as SSDs you will install **(Figure 2)**. Set aside the screws. Note that if you are installing two or more SSDs, they should be installed side-by-side, starting on an outside edge.
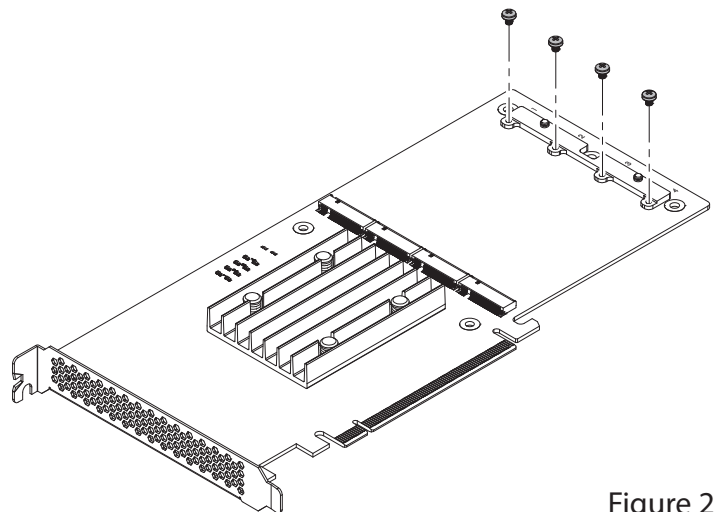
Figure 2

WARNING: You are required to install the included thermal transfer pad on the card before installing single-sided SSDs (large components on one side only). Failing to install the pad may result in poor performance, or may possibly damage the card.

5. Determine whether you are installing single- or double-sided SSDs (larger components on one or both sides). If you are installing single-sided SSDs, remove the thermal transfer pad from its packaging. Otherwise, skip to step 12.

6. Carefully peel off the backing material from *one* side of the pad.

7. Starting with one edge, carefully apply the pad to the card between the SSD sockets and the screw holes for retainer screws; be sure to avoid trapping air bubbles **(Figure 3)**.

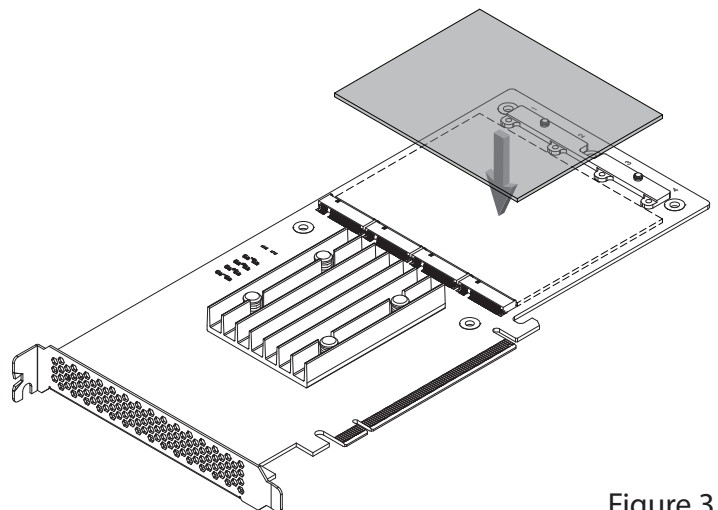8. Rub the pad all over to ensure good contact with the card **(Figure 3)**.

Figure 3

SSD Installation Steps

9. Peel off and set aside the backing material from the top of the pad you just installed **(Figure 4)**.
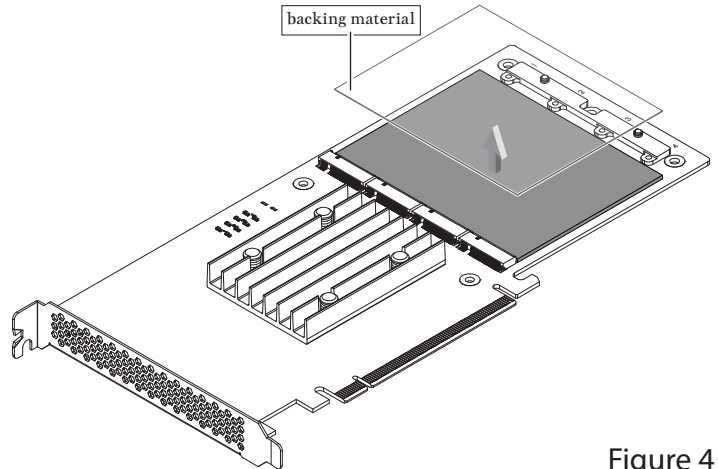
backing material

Figure 4

10. If you are installing four SSDs now, skip to step 19. Otherwise, cut the backing material as shown, removing 1/4 of the sheet when installing one or three SSDs, or 1/2 of the sheet when installing two SSDs **(Figure 5)**.
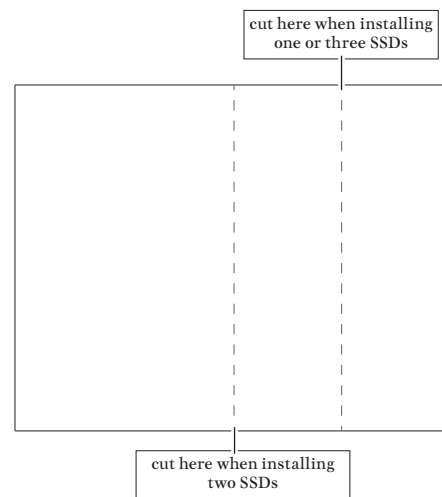
cut here when installing one or three SSDs

cut here when installing two SSDs

Figure 5

11. Reapply the cut backing material to the thermal transfer pad as shown where no SSD(s) will be installed **(Figure 6)**. By reapplying the backing plastic, you are protecting the sticky thermal pad from collecting dust, leaving the pad clean for when you are ready to install additional SSDs. Note that this example shows preparation for installing only one SSD.
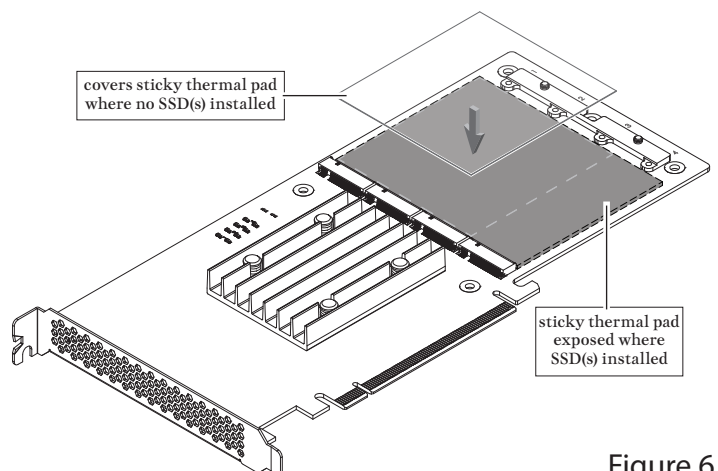
covers sticky thermal pad where no SSD(s) installed

sticky thermal pad exposed where SSD(s) installed

Figure 6

SSD Installation Steps

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

13. Insert the SSD fully into one of the SSD sockets where the sticky side(s) of the thermal transfer pad(s) is exposed **(Figure 7).**

14. Repeat steps 12 and 13 with any remaining SSDs left to install **(Figure 7).**
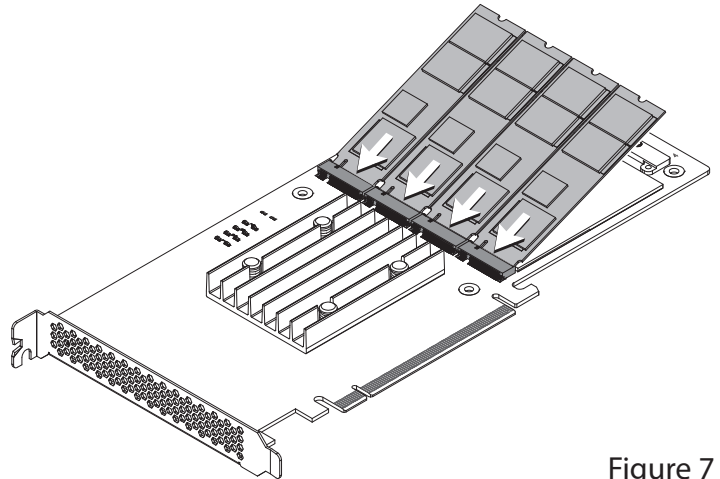
Figure 7

15. Using screws you removed previously, secure the SSD(s) to the card **(Figure 8); do not overtighten the screws.**
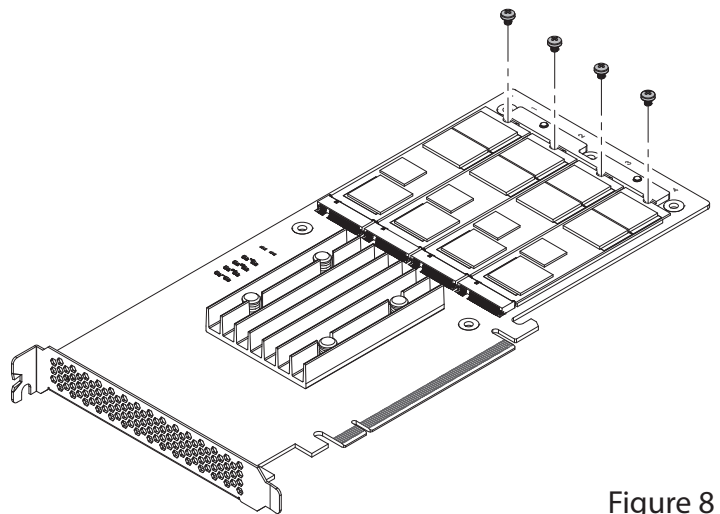
Figure 8

16. Peel off and set aside the backing material to expose the sticky side on the thermal transfer pad attached to the heat sink **(Figure 9).**
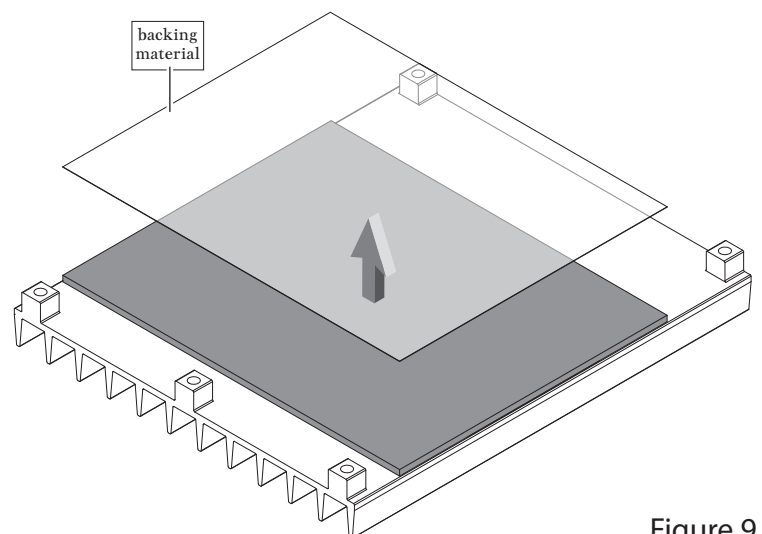
backing material

Figure 9

SSD and Card Installation Steps

17. If have installed four SSDs, skip to step **19**. Otherwise, cut off 1/4 of the backing material sheets as shown if you installed one or three SSDs, or cut off 1/2 of the backing material if you installed two SSDs **(Figure 10)**.
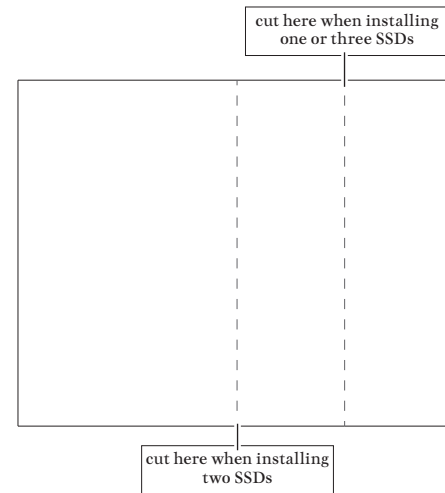
cut here when installing one or three SSDs

cut here when installing two SSDs

Figure 10

18. Reapply the cut backing material to the heatsink's thermal transfer pad corresponding to where no SSD(s) were installed on the card **(Figure 11)**. By reapplying the backing plastic, you are protecting the sticky thermal pad from collecting dust, and the thermal pad will be clean when you are ready to install additional SSDs.

This example illustrates reapplying the backing material when only one SSD was installed. Note the location of the threaded screw holes on the heatsink; the side with two holes covers the SSD sockets.

covers sticky thermal pad where no SSD(s) installed

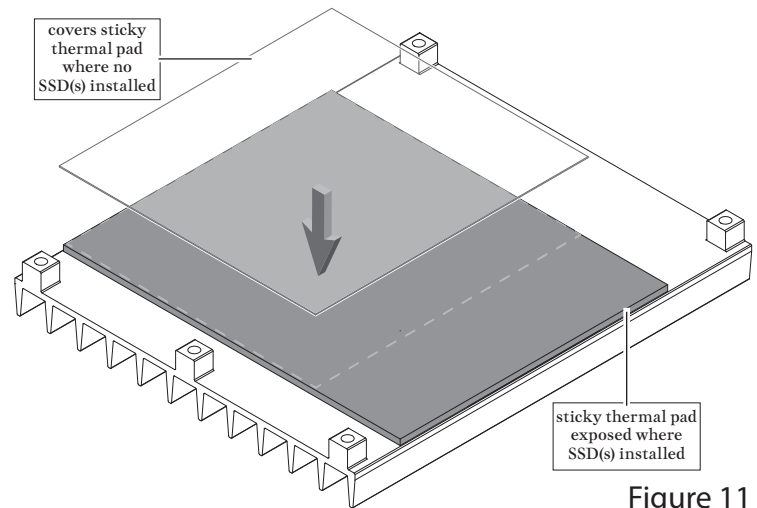sticky thermal pad exposed where SSD(s) installed

Figure 11

19. Set the heatsink on top of the SSDs, aligning the threaded holes in the heatsink with the corresponding holes in the card as shown **(Figure 12)**. Note that there are three holes on one side and two on the other.
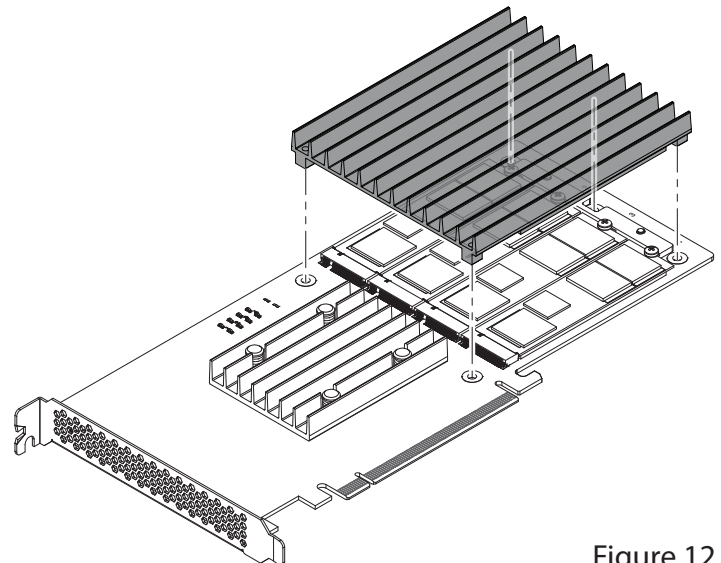
Figure 12

20. Holding the heatsink firmly against the card, flip over the Sonnet M.2 4x4 PCIe Card.

21. Secure the heatsink to the card with the five screws you removed previously **(Figure 13)**; **do not overtighten the screws.**

> **Support Note:** After securing the heatsink to the card, it is normal and safe for the card to bend a small amount; there is no need for concern.
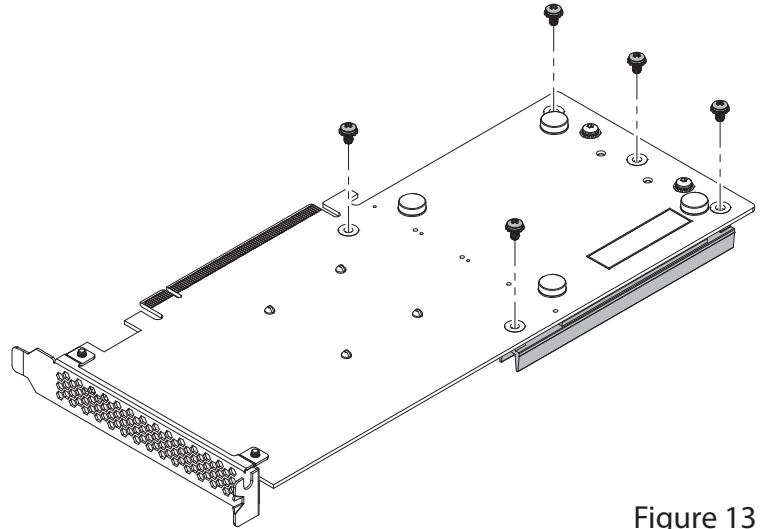
Figure 13

Card Installation Steps

1. Shut down your computer or expansion chassis, disconnect its power cable, and then open it to access the expansion card area (PCI Express slots); refer to the user manual for specific information

2. Locate an available x16 PCIe slot and remove its access cover if necessary.

3. Install the Sonnet card with attached SSDs into the slot; **make sure the card is firmly seated and secured (use the computer's PCIe card retaining latch on the slot if present).**

4. Close your computer or expansion chassis.

5. Reconnect the computer's power cable.

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.

Formatting and Configuring SSDs—Windows

If you intend to format SSDs connected to the Sonnet card 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), Two-way mirror (RAID 1) or Three-way mirror (also RAID 1, but on more drives), or Parity (RAID 5).

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.

Formatting and Configuring SSDs—Linux

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

SSD Formatting and Configuration, and Support Information

Booting From Attached SSDs

macOS:
Sonnet M.2 4x4 PCIe Card supports booting from individual (non-RAIDed) SSDs when the card is installed in 2019 and 2023 Mac Pro computers, plus Thunderbolt-to-PCIe card expansion systems. 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.

If the Sonnet card is installed in a Thunderbolt chassis, and you are using a Mac with the Apple T2 Security Chip, then you must enable External Boot in the Startup Security Utility.

Windows and Linux:
Sonnet M.2 4x4 PCIe Card supports booting from a single, non-RAIDed SSD *only* in computers with UEFI.

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.

If further assistance is needed, please contact **Sonnet Customer Service via email** at support@sonnettech.com

Japan Customers
Contact **Sonnet Customer Service Japan** via email at jp.support@sonnettech.com

When you contact Customer Service, please provide the following information available so the customer service staff can better assist you:

• Product name
• SSD model(s)
• Computer model
• OS 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