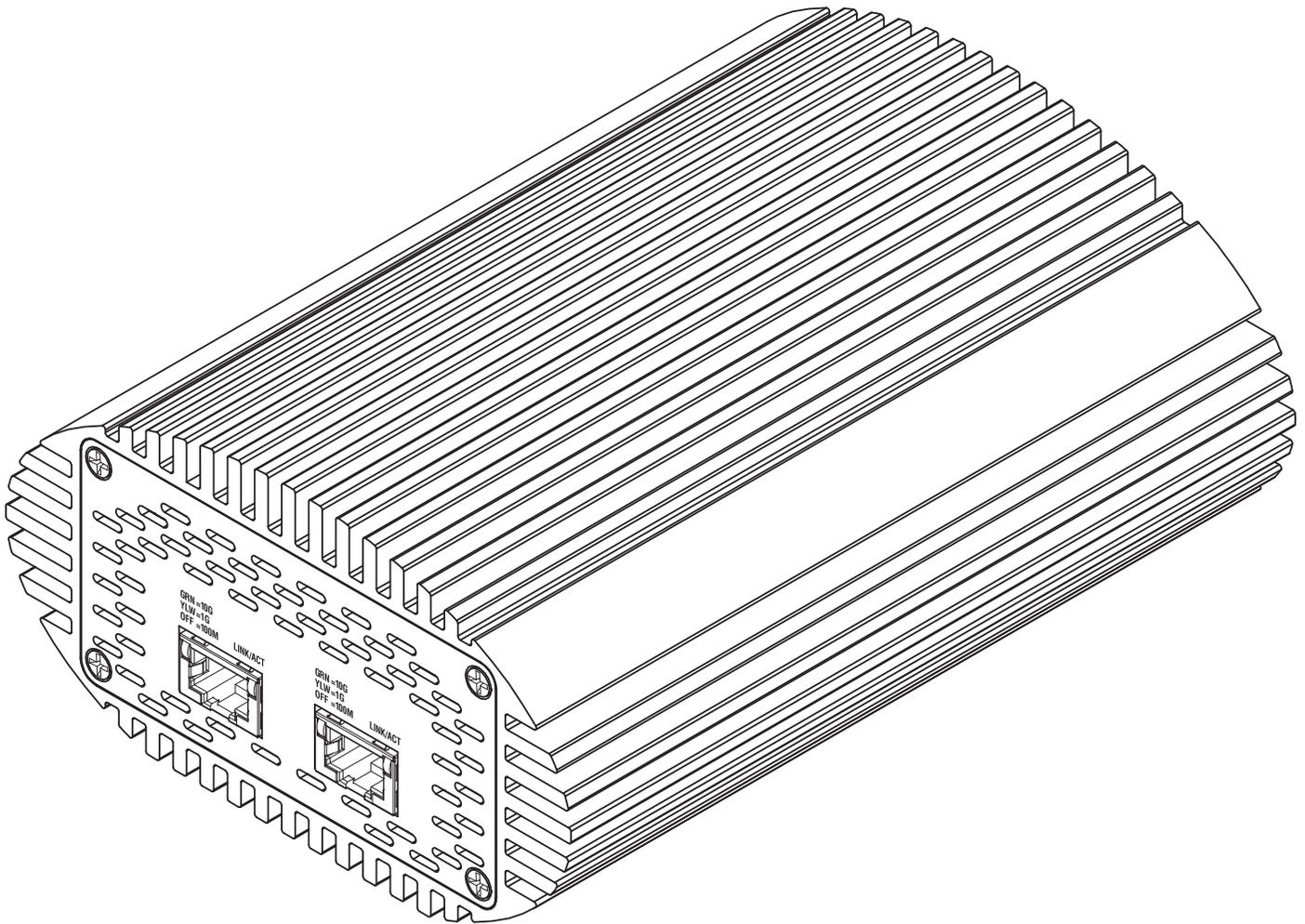


User's Guide

for Twin 10G™

Dual-Port 10GBASE-T 10 Gigabit Ethernet
Thunderbolt™ 2 Adapter



THUNDERBOLT™



For
Windows

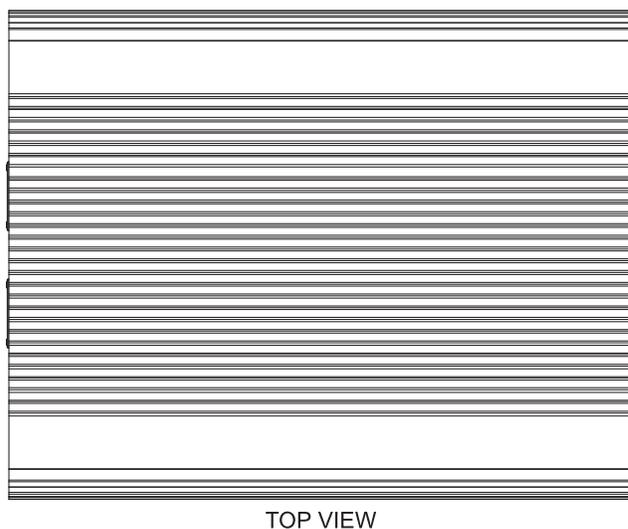
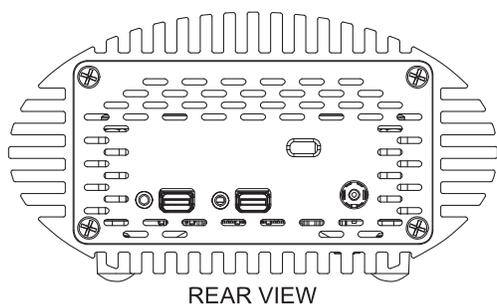
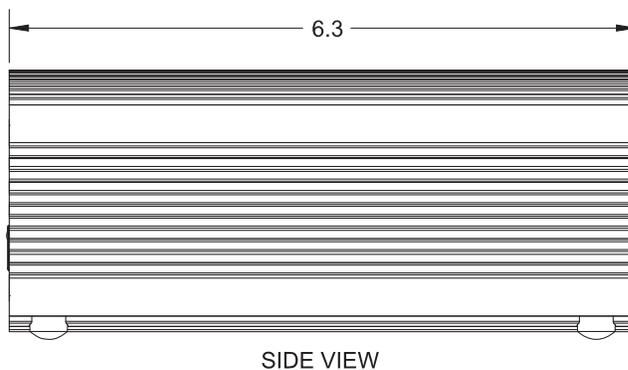
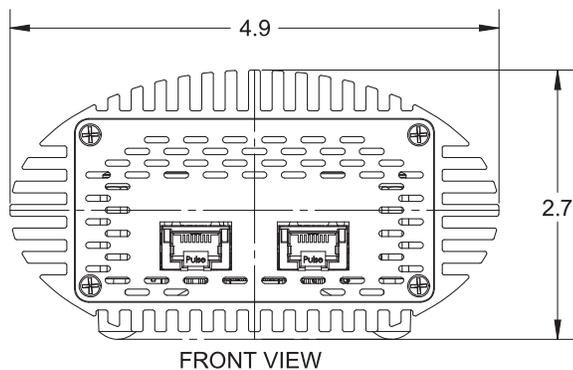


SIMPLY FAST™
www.sonnettech.com

Contents

1	Introduction, System Requirements, Driver Information	1
	Introduction	
	Mac Compatibility	
	Windows Compatibility	
	System Requirements	
	Driver Information	
2	Twin 10G Description	2
	Twin 10G Ports and Indicators	
	Power Adapter	
	Thunderbolt Cable	
	Thunderbolt Connector Retainer Clip	
3	Software Installation Steps	4
	Driver Download and Installation Steps—Mac Users	
	Driver Download and Installation Steps—Windows Users	
4	Twin 10G Adapter Connection	5
5	Verification and Configuration Steps	6
	Confirm the Twin 10G and Its Ethernet Controllers Are Recognized—Mac Users	
	Confirm the Twin 10G and Its Ethernet Controllers Are Recognized—Windows Users	
	Basic Configuration Steps—Mac Users	
	Performance Tuning Steps—Mac Users	
	Basic Configuration Steps—Windows Users	
6	Tips, General Information, and Known Issues	10
	Tips, General Information	
	Known Issues	
7	Precautions, FCC Compliance, and Support Information	11
	Warnings	
	FCC Compliance	
	Contacting Customer Service	
	Visit Our Website	

Chapter 1 – Introduction, System Requirements, Driver Information



Introduction

Congratulations on your purchase! The Twin 10G is a Thunderbolt 2-to-10 Gigabit Ethernet (10GbE) adapter that enables you to connect your computer with a Thunderbolt 2 port to 10GbE infrastructure.

Connection of the Twin 10G adapter to your computer requires a single Thunderbolt cable (included), while connection to 10GbE infrastructure requires the use of one or two CAT-6 or CAT-6A cables.



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 Twin 10G link, and then click the Documentation link.
4. Click the Twin 10G 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.

Mac® Compatibility

- Mac with a Thunderbolt or Thunderbolt 2 port
- Mac with a Thunderbolt 3 port when used with an Apple Thunderbolt 3 (USB C) to Thunderbolt 2 Adapter
- OS X® 10.8.5+
- macOS® High Sierra compatible

Windows® Compatibility

- PC with a Thunderbolt 2 port
- 64-bit editions of Windows 10, 8, 7

System Requirements

The Twin 10G adapter requires the following to operate:

- Thunderbolt cable (included)
- One or two CAT-6 or CAT-6A cables

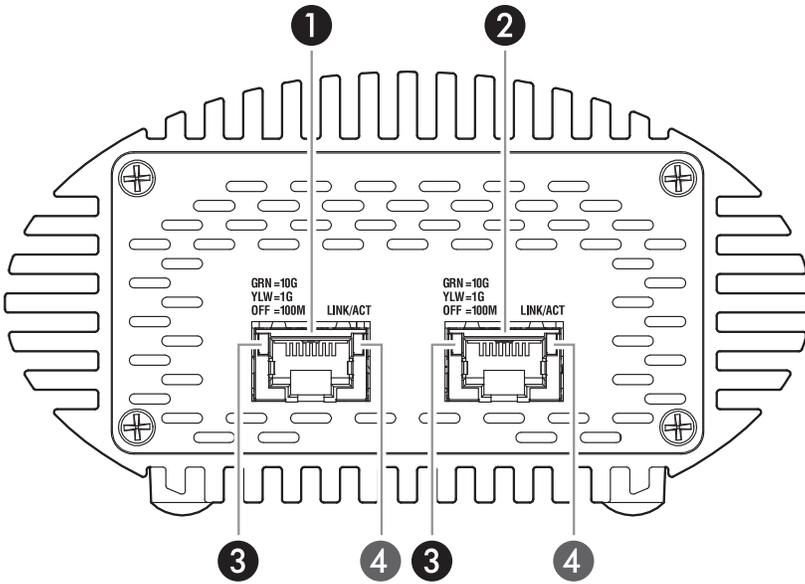


Support Note: For link aggregation (teaming) support, the switch or router to which the Twin 10G is connected must also support link aggregation, and ports must be configured for link aggregation. Windows 10 teaming requires Creator's update, version 1703 or greater.

Driver Information

The drivers that enable the Twin 10G adapter to work with your computer must be downloaded from Sonnet's Website; instructions follow.

Chapter 2 – Twin 10G Description



Twin 10G Ports and Indicators

1 – RJ45 (10GBASE-T) Port 1

Connect a CAT-6 or CAT-6A cable between this port and the switch's or storage system's RJ45 port.

2 – RJ45 (10GBASE-T) Port 2

Connect a CAT-6 or CAT-6A cable between this port and the switch's or storage system's RJ45 port.

3 – Link Speed Indicators

When a link is established between the Twin 10G and the switch, these LEDs light to indicate the link speed to the switch: green = 10Gb, yellow = 1Gb, off = 100Mb.

4 – Link/Activity Indicators

These LEDs light up green to indicate a link is established between the Twin 10G and the switch, and flash green when there is activity between the two.

5 – Security Slot

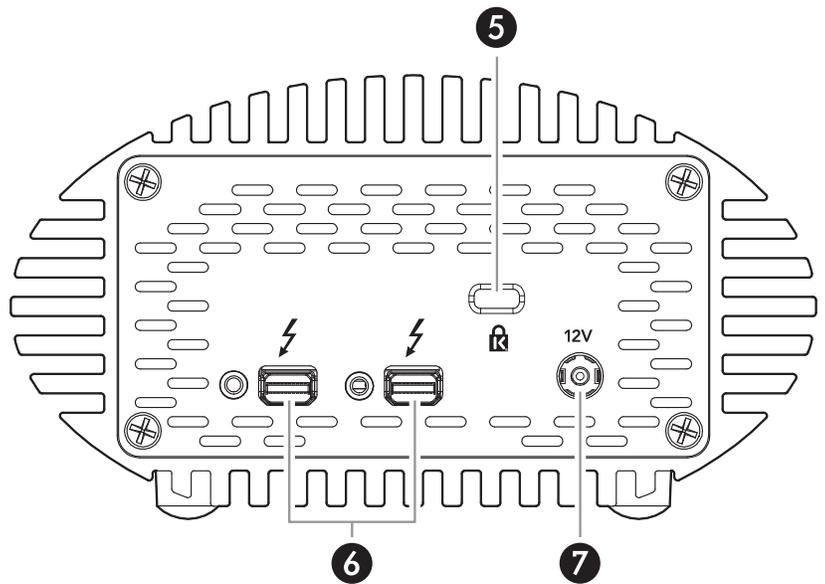
This slot works with Kensington® brand and similar security locks to secure the Twin 10G enclosure and deter theft.

6 – Thunderbolt Ports

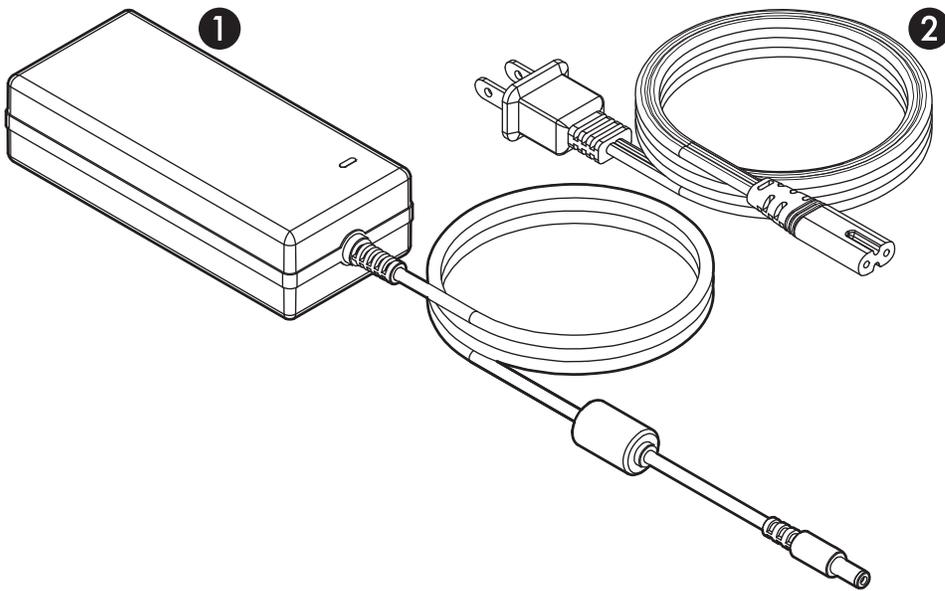
Connect the included Thunderbolt cable between either of these ports and your computer's (or intermediate device's) Thunderbolt port; the open port may be used to connect another Thunderbolt device.

7 – 12VDC Socket

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



Chapter 2 – Twin 10G Description



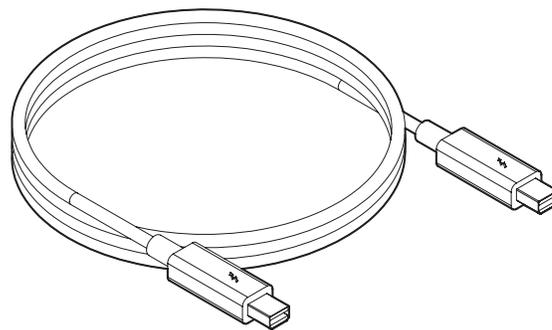
Power Adapter

1 – Power Adapter

Connect this to the Twin 10G adapter's 12VDC socket. Note that the power indicator on top lights when the adapter is connected to AC power.

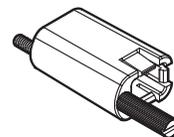
2 – Power Cord

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 Cable

Connect this cable between the Twin 10G adapter and your computer or other Thunderbolt peripheral device.



ThunderLok™ Thunderbolt Connector Retainer Clip

This secures a Thunderbolt connector plugged into the Twin 10G adapter's Thunderbolt port to prevent accidental cable disconnection. This clip is not compatible with optical Thunderbolt cables.

Chapter 3 – Software Installation Step

Driver Download and Installation Steps—Mac Users

This section describes the download and installation of the drivers required to support the Twin 10G adapter connected to your Mac computer.

1. Launch a Web browser and go to www.sonnettech.com/support, and then click the Downloads, Manuals, & Knowledgebase link.
2. On the Support Categories page, click the Thunderbolt link, and then click the Twin 10G Thunderbolt 2 Adapter link.
3. On the Twin 10G page, click the Driver link, and then click the Download Now button next to driver software for macOS; the software will be downloaded.
4. Double-click the .dmg you downloaded; the file will expand and a new window will open.
5. Double-click the Sonnet Twin-10G.pkg file to launch the driver installer. Follow the on-screen instructions to install the software.
6. When the window appears indicating the software installation is complete, click Restart to restart your system and finish the driver installation.

Driver Download And Installation Steps—Windows Users

This section describes the download and installation of the drivers required to support the Twin 10G adapter connected to your Windows PC.



Windows Support Note: For users with custom built PCs, or systems that have been extensively modified, it may be necessary for you to install the PC or motherboard manufacturer's Thunderbolt drivers to enable the Thunderbolt port(s) to operate. Visit the manufacturer's website to locate and download the appropriate drivers.

1. Launch a Web browser and go to www.sonnettech.com/support, and then click the Downloads, Manuals, & Knowledgebase link.
2. On the Support Categories page, click the Thunderbolt link, and then click the Twin 10G Thunderbolt 2 Adapter link.
3. On the Twin 10G page, click the Driver link, and then click the Download Now button next to the Windows software link; a new window or tab will open.
4. Locate and click the link for the Intel® Network Adapter Driver for the version of Windows installed on your computer; an *Intel® Network Adapter Driver for Windows®* page will open.
5. On the *Intel® Network Adapter Driver for Windows* page, locate and click the PROWin64.exe button; an *Intel Software License Agreement window* will open.
6. Read the license agreement, and then click the "I accept the terms in this license agreement" button; the *Opening PROWin64.exe* window will open.
7. In the *Opening PROWin64.exe* window, click Save File; the file will be saved.
8. Locate and double-click the PROWin64 application file to launch the installer. If you haven't disabled User Access Control (UAC) on your computer, another window will appear asking you to allow the program to run; click Allow; the installer will launch.
9. Follow the on-screen instructions to install the software.
10. When an *Install Wizard Completed* window appears, click Finish; the software installation is complete.

Chapter 4 – Twin 10G Adapter Connection



Support Note: To ensure the best performance possible when connecting multiple Thunderbolt devices in a daisy chain, be sure to connect 20Gbps Thunderbolt 2 devices such as the Twin 10G adapter closest to the computer, with 10Gbps Thunderbolt devices at the end.



Support Note: Unless your setup requires connection redundancy or link aggregation (and your switch or storage system supports those features), connecting the Twin 10G adapter to a switch or storage system requires only a single CAT-6 or CAT-6A cable.

1. Connect one or two CAT-6 or CAT-6A cables between the ports on the Twin 10G adapter and the ports on the switch or storage device (**Figure 1**).

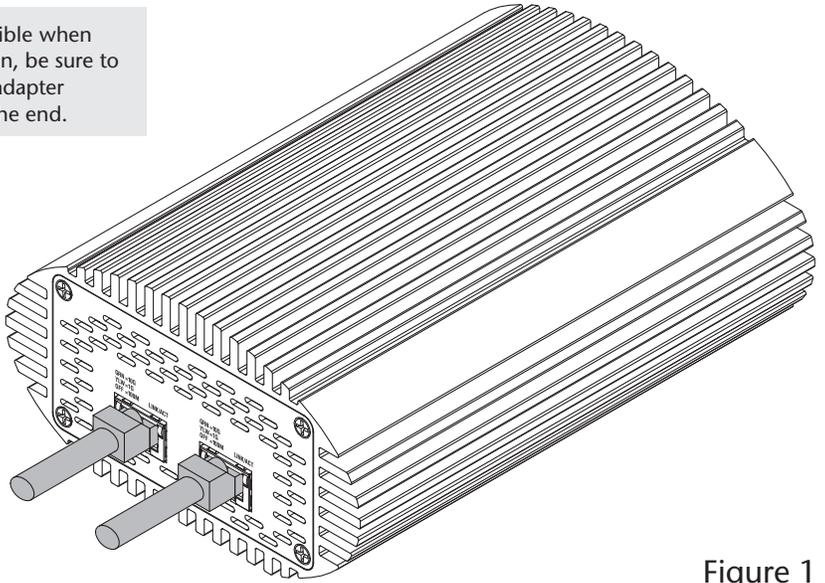


Figure 1



Support Note: Sonnet's ThunderLok™ Thunderbolt connector retainer clip secures the included Thunderbolt cable to the Twin 10G adapter to prevent accidental disconnects. Although it is compatible with other copper Thunderbolt cables like Apple's, it is not compatible with optical Thunderbolt cables.

To attach the clip to the cable, remove them from their packaging. Turn one of the cable's connectors so the Thunderbolt icon is facing down, and then insert the connector into the connector clip as shown (**Figure 2**). Note that the connector will pass all the way through the clip; when you connect the cable to the adapter, the clip will secure the cable.

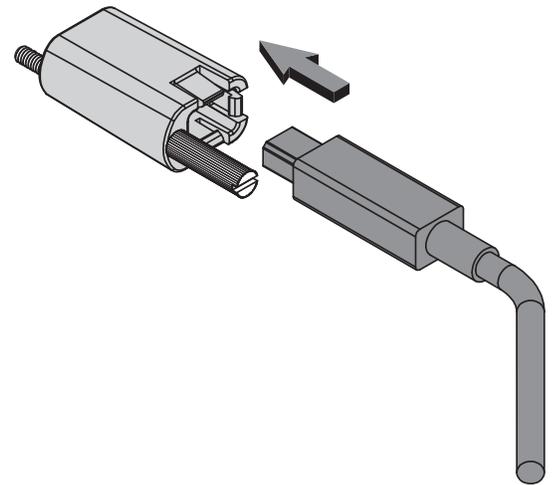


Figure 2

2. Connect the included Thunderbolt cable between either Thunderbolt port on the Twin 10G adapter and a Thunderbolt port on your computer, or other Thunderbolt peripheral device in the chain connected to the computer (**Figure 3**). Secure the retainer clip to the adapter if you attached it to the cable. If you are daisy chaining additional Thunderbolt peripheral devices, connect another Thunderbolt cable between the downstream device and the open Thunderbolt port on the Sonnet adapter. Note that **you may not connect two computers to the Sonnet adapter's Thunderbolt ports, nor to a daisy chain of Thunderbolt devices**.
3. 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.
4. Connect the power adapter cable to the Twin 10G adapter's 12V power socket (**Figure 3**).
5. Go to the next section, Verification and Configuration Steps.

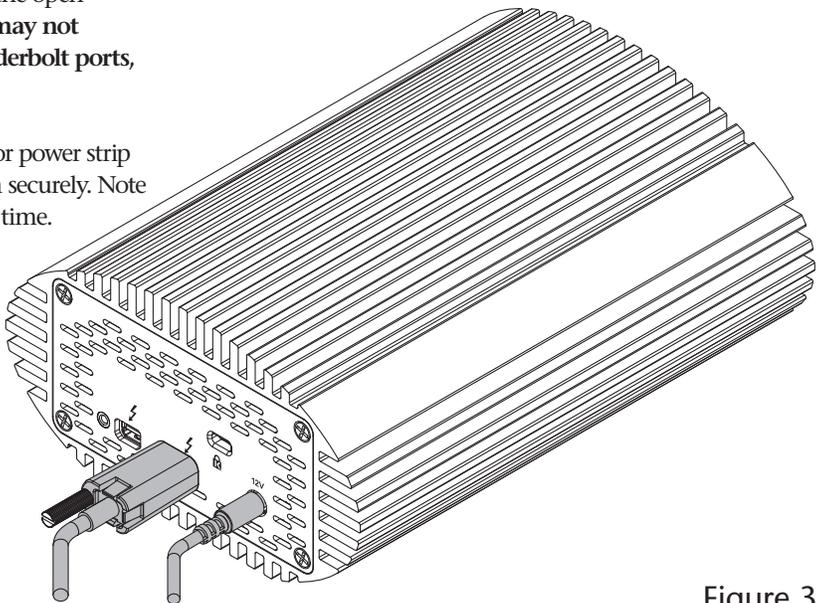


Figure 3

Chapter 5 – Verification and Configuration Steps

Confirm the Twin 10G and Its Ethernet Controllers Are Recognized—Mac Users

This page instructs Mac users how to verify the Twin 10G is recognized by the computer; Windows users should skip to the next page.

1. With the Twin 10G adapter connected to a power source and to the computer, turn on the computer. Note that if there are any other Thunderbolt devices connected between the Twin 10G adapter and your computer, they must also be powered for you to perform the following steps.
2. From the Apple menu, select About This Mac; the *About This Mac* window will appear.
3. Click More Info; a summary of specifications will appear.
4. Click System Report; the System Information application will launch.
5. In the *System Report* window, click Thunderbolt under the Hardware header in the left column (Figure 4).
6. In the top right column under the Thunderbolt Device Tree header, you will see the Thunderbolt Bus, with “Twin 10G” appearing below it (Figure 4).

 **Support Note:** If you do not see “Twin 10G” listed, disconnect and reconnect the Thunderbolt cable between the computer and Twin 10G. Note that it is not necessary to shut down the computer before disconnecting and reconnecting the cable.

7. Click PCI Cards under the Hardware header in the left column (Figure 5).
8. At the top of the right column, the Twin 10G’s Ethernet Controllers are listed; detailed information appears below. You will see “Yes” next to Driver Installed and Tunnel Compatible (Figure 5).
9. Skip to the next section, Basic Configuration Steps—Mac Users

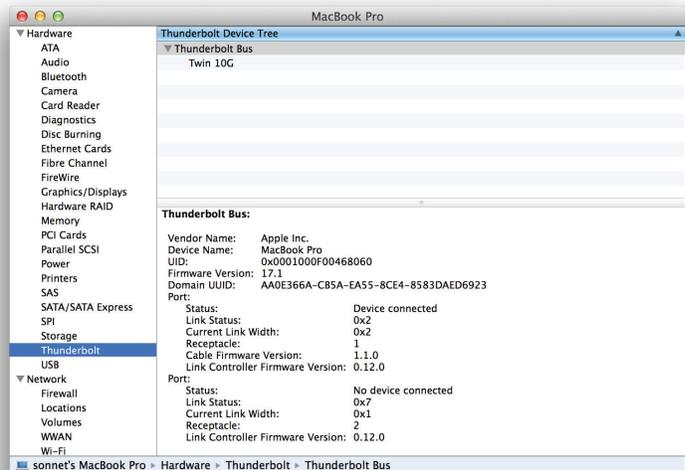


Figure 4

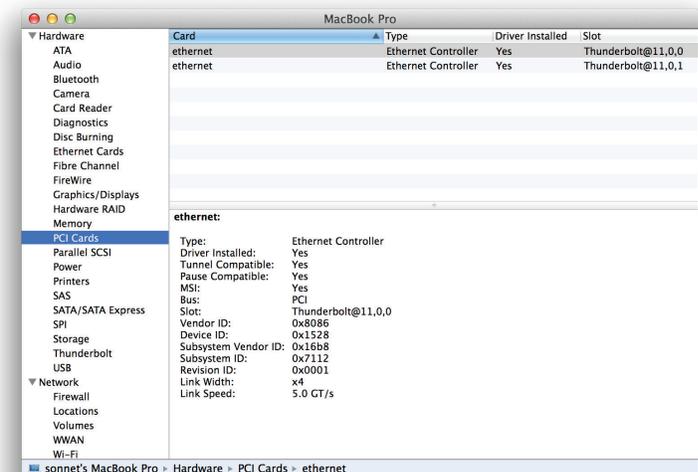


Figure 5

Chapter 5 – Verification and Configuration Steps

Confirm the Twin 10G and Its Ethernet Controllers Are Recognized—Windows Users

This section describes how to confirm the Twin 10G adapter is recognized by your Windows computer.

1. With the Twin 10G adapter connected to a power source and to the computer, turn on the computer. Note that if there are any other Thunderbolt devices connected between the Twin 10G adapter and your computer, they must also be powered for you to perform the following steps.
2. When the computer boots for the first time after connecting the Twin 10G, a *New Thunderbolt™ Devices Attached...* window appears (Figure 6). Select Always Connect from the drop-down menu; another alert appears.



Windows Support Note: If a *New Thunderbolt Devices Attached* window does not appear when you power your system, it is likely necessary for you to install (or reinstall) the PC or motherboard manufacturer's Thunderbolt drivers to enable the computer's Thunderbolt port(s) to operate. Visit the manufacturer's website to locate and download the appropriate drivers before proceeding.

3. When the alert stating the device is not certified for PC use appears click Yes (Figure 7). Back in the *New Thunderbolt™ Devices Attached...* window, click OK.
4. From the Windows Start menu, select the Windows Settings (gear) icon; the *Windows Settings* window will appear.
5. In the *Windows Settings* window, click on the Network & Internet Link; the *Network Status* window will appear. Click the Ethernet link on the left; the *Ethernet* window will appear.
6. In the *Ethernet* window, the various Ethernet ports recognized by the system are listed to the right. For most users, the Twin 10G adapter's will be the only other Ethernet ports listed, with the computer's onboard Ethernet port listed as "Network". Click on one of the other ports; an Ethernet port *Properties* window will appear. Each of the Sonnet adapter's ports will have the description "Intel(R) x540 10 Gigabit Dual Port Network Connection" with either #1 or #2 listed next to it.
7. Skip to the next section, Basic Configuration Steps—Windows Users.



Figure 6

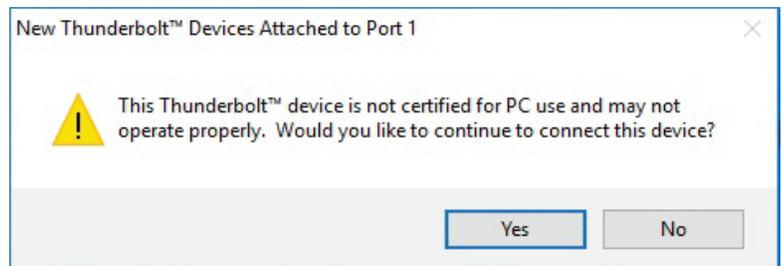


Figure 7

Chapter 5 – Verification and Configuration Steps

Basic Configuration Steps—Mac Users

Listed below are the basic steps necessary to configure the Twin 10G adapter for use with your computer.

1. With the Twin 10G adapter connected to your computer and 10GbE infrastructure, open System Preferences, and then click Network.
2. In the Network system preferences panel, click one of the Twin 10G's ports (identified as Thunderbolt Ethernet Slot x, Port 1 and Thunderbolt Ethernet Slot x, Port 2) in the left panel, and then configure the settings; repeat for the other port if necessary (Figure 8).
3. When you've completed reviewing or changing the settings, click Apply.

Performance Tuning Steps—Mac Users

Listed below are steps required to configure the Twin 10G adapter for maximum performance. Please note that to take advantage of these settings, the switch or router to which the Twin 10G is connected must also support these features.

1. With the Twin 10G adapter connected to your computer and 10GbE infrastructure, open System Preferences, and then click Network.
2. In the Network System Preferences panel, click one of the Twin 10G's ports (identified as Thunderbolt Ethernet Slot x, Port 1 and Thunderbolt Ethernet Slot x, Port 2) in the left panel, and then click Advanced; a new panel appears.
3. In the Advanced panel, click Hardware. From the Configure drop-down menu, select "Manually". In the Speed drop-down menu, leave the setting at 10G... In the Duplex drop-down menu, select "full-duplex" (*not* "full duplex, flow-control"). In the MTU drop-down menu, select "Custom," and then enter "9000" in the box below (Figure 9).
4. When you've completed changing the settings for the port, click OK.
5. Repeat steps 2–4 for the other port, if necessary.
6. Back in the main Network window, click Apply after you've completed changing the settings.
7. If you used existing settings and do not need to combine Ethernet ports (link aggregation), your installation is complete. For additional information on combining Ethernet ports, open a browser and go to support.apple.com; type "network, Ethernet" and "Manage Virtual interfaces" to display various articles.

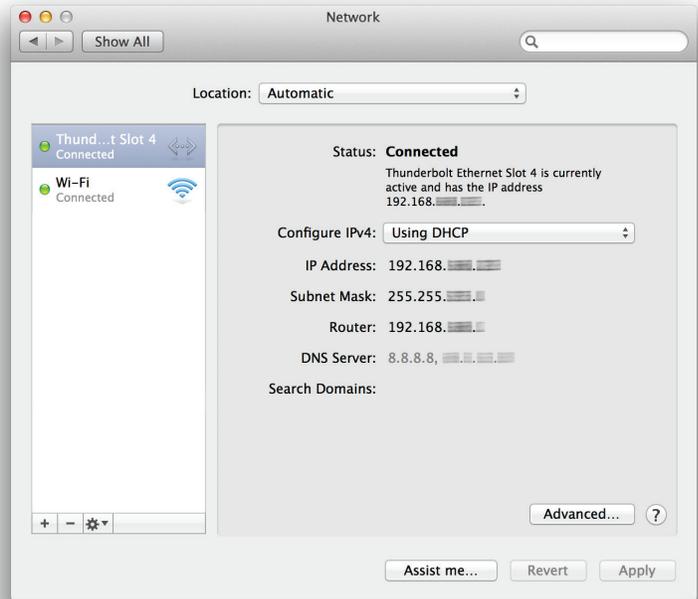


Figure 8

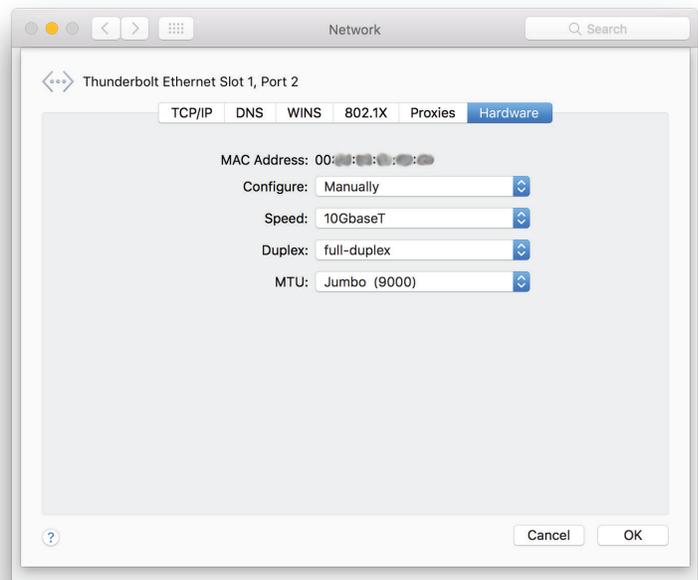


Figure 9

Chapter 5 – Verification and Configuration Steps

Basic Configuration Steps—Windows Users

Listed below are the basic steps necessary to configure the Twin 10G adapter for use with your computer.

1. With the Twin 10G adapter connected to your computer and 10GbE infrastructure, open the Network and Sharing Center control panel (**Figure 10**).
2. Set up network connections by clicking “Set up a new connection or network”.

You may also configure the Sonnet adapter’s settings using Windows Device Manager. You may locate the device’s ports in the Network adapters category, listed as Intel Ethernet Controller X540 dual port network connections.

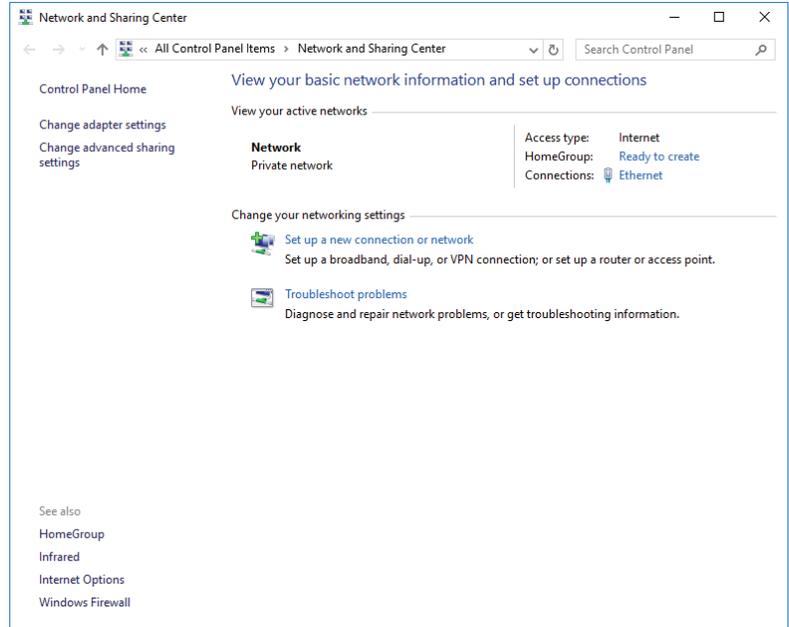


Figure 10

Chapter 6 – Tips, General Information, and Known Issues

TIPS, GENERAL INFORMATION

Keeping the Twin 10G Adapter Cool

With its optimized airflow design and automatic, temperature-controlled fan providing cooling at all times, the Twin 10G adapter provides adequate cooling for the components inside. *Do not block any of the vents while the adapter is operating!* Otherwise, the adapter may overheat.

Hot-Plugging the Twin 10G Adapter

You may connect and disconnect the Thunderbolt cable between the Twin 10G and your computer while your computer is on.

Connecting Additional Thunderbolt Devices

You may connect up to six Thunderbolt peripheral devices total in a daisy chain, including a Thunderbolt Display, to a single host computer. *You may not connect two computers to the Sonnet adapter, nor to a daisy chain of Thunderbolt devices.*

There's No Need to Unplug the Power Adapter

Because the Twin 10G adapter 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. When your computer is sleeping, the Twin 10G enters a low-power state; this allows it to wake with your computer, or be ready to wake your computer if you've set the Energy Saver control to wake for network access (Wake On LAN).

Indicator Operation

Because the Twin 10G adapter powers on and off with the computer to which it's connected, its external indicators light only when the computer is on, and turn off when it 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.

KNOWN ISSUES

Some Devices' Performance May be Affected by Where They Are Connected in a Thunderbolt Chain

However small, the Thunderbolt interface introduces latency to a device chain. If you add additional Thunderbolt devices to the chain, you may need to experiment with which device works better closer or farther to the computer in the chain.

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 to the latest OS, we recommend that you contact Sonnet to verify that the existing Twin 10G drivers work.* Note that other software updates for the computer may also break compatibility.

Chapter 7 – Warnings, FCC Compliance, and Support Information

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 open the Twin 10G adapter under any conditions. There are no user serviceable parts inside.**
- Do not attempt to modify the enclosure. If this device appears to be malfunctioning, contact your reseller or local distributor.
- Do not drop the Twin 10G; dropping or mishandling the Twin 10G 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.
- Follow the instructions in this manual carefully; contact your reseller or local distributor for additional advice not covered in this User's Guide.
- 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.

FCC Compliance

Twin 10G 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.

When you call 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

USA Customers

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.



©2017 Sonnet Technologies, Inc. All rights reserved. Sonnet, the Sonnet logotype, Creativity Stored Here, Simply Fast, the Simply Fast logotype, and Twin 10G are trademarks of Sonnet Technologies, Inc. Mac, the Mac logo, macOS, and OS X are trademarks of Apple Inc., registered in the United States and other countries. Thunderbolt and the Thunderbolt logo are trademarks of Intel Corporation in the U.S. and/or other countries. Other product names are trademarks of their respective owners. Product specifications subject to change without notice. Printed in the USA. UG-TWIN10G-TB2-E-C-092817