FUSION™ D400RAID

4-Bay Serial ATA Disk Array Storage System

Drive Enclosure User's Guide

Fusion D400RAID Enclosure Specs and Features
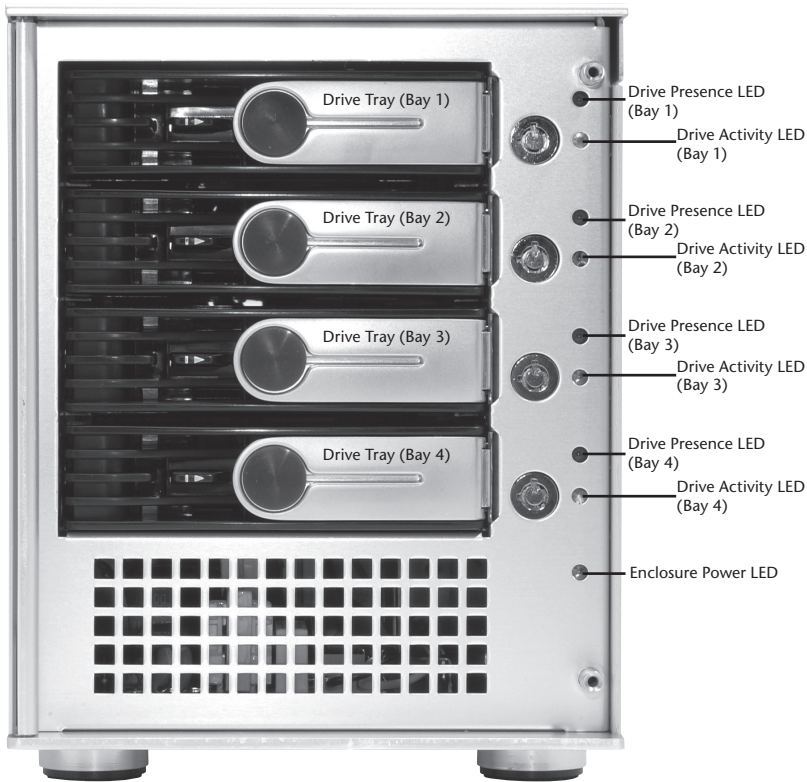

Drive Tray (Bay 1)
Drive Tray (Bay 2)
Drive Tray (Bay 3)
Drive Tray (Bay 4)

Drive Presence LED (Bay 1)
Drive Activity LED (Bay 1)
Drive Presence LED (Bay 2)
Drive Activity LED (Bay 2)
Drive Presence LED (Bay 3)
Drive Activity LED (Bay 3)
Drive Presence LED (Bay 4)
Drive Activity LED (Bay 4)
Enclosure Power LED

Figure 1

Specifications

Compatibility	Compatible with Mac, Windows, and Linux computers with Sonnet RAID Controller installed
Interface Connector	Infiniband multilane
Drives Supported	1.5 & 3 Gb/s Serial ATA; 7,200 RPM
Power Supply	100–240V AC, 50/60Hz
Operating Temperature	32 to 95° F (0° C to +35° C)
Dimensions	5.9 x 11.25 x 7.5 in (14,9 x 28,5 x 19 cm)
Weight	9.35 lbs (4.24 kg)
Warranty	2-year limited warranty

RoHS COMPLIANT
Power Switch
Infiniband multilane connector
Power Cable Connector

Figure 2
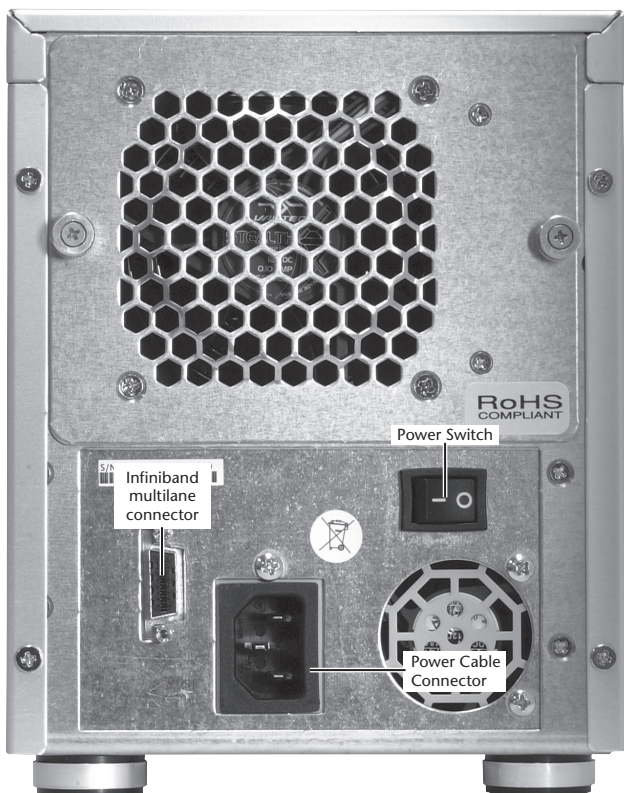
Safety Precautions and Disclaimers

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:

• With the exception of the user-swappable parts, do not attempt to disassemble or modify the enclosure. If this device appears to be malfunctioning, contact your reseller or local distributor.

• Do not drop the enclosures or any of its drive modules; dropping or mishandling of the enclosure or drive modules may result in a malfunction.

• Do not insert your fingers or foreign objects inside the enclosure; take particular care when small children are present.

• 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.

DISCLAIMERS

Drive Usage:
Sonnet Technologies has qualified and specifies Enterprise/RAID edition hard drives for use in Fusion storage systems. These drives were chosen for their superior performance, error handling, and reliability characteristics, especially when used in RAID groups. One important difference between Enterprise/RAID edition hard drives and standard hard drives is how quickly each type handles read errors—Enterprise/RAID edition hard drives attempt to recover from errors for just a few seconds, while standard hard drives may take minutes. Because RAID controller cards and software-based RAID schemes allow only a very short time for drives to recover before dropping them from the RAID group, hard drive manufacturers recommend against using standard hard drives in RAID storage systems. Enterprise/RAID edition hard drives also feature improved vibration characteristics that influence and support storage reliability. **Only use Enterprise/RAID edition hard drives in your Fusion storage system to ensure system reliability and performance. Standard drives may not be supported and may degrade system reliability and performance. Sonnet has qualified and recommends the following hard drives:**

• **500GB Hitachi Deskstar E7K500, model #HDS725050KLA360**
• **500GB Hitachi Ultrastar A7K1000, model #HUA721050KLA330**
• **500GB Seagate Barracuda ES, model #ST3500630NS**
• **500GB Maxtor MaXLine Pro 500, model #7H500F0**
• **750GB Hitachi Ultrastar A7K1000, model #HUA721075KLA330**
• **750GB Seagate Barracuda ES, model #ST3750640NS**
• **1TB Hitachi Ultrastar A7K1000, model #HUA721010KLA330**

Creating RAID Volumes Under Windows:
Creating RAID volumes under Windows requires dynamic disk storage, a formatting option available with Windows Server 2003 SP1, Windows XP Professional (32- and 64-bit versions), or Windows Vista Enterprise or Ultimate (32- and 64-bit versions). In order to create RAID volumes larger than 2TB, you must do one of the following:

• Use the software configuration tools included with the Fusion storage to create volumes up to 2TB, concatenate (link together in a virtual chain) the volumes, and then format as NTFS.

• Use GPT formatting. Note that drives and volumes with GPT formatting are not visible to any version of Windows XP Professional, nor to the 32-bit version of Windows Server 2003 SP1.

Drive Installation and Enclosure Setup

1. Remove the Fusion drive enclosure and drive trays from their packaging, and place the enclosure near the computer to which it will be connected.

2. Take one of the drive trays and push its lever release button toward the right until the lever pops out. **(Figure 3)**.

⚠️ **WARNING:** When handling computer products, take care to prevent components from being damaged by static electricity; avoid working in carpeted areas. Handle hard drives only by their edges and avoid touching connector traces and component pins.

lever release button

Figure 3

3. Remove a SATA drive from its packaging and set it in on a flat, level surface with the label side down. Open the supplied tube of threadlocker and apply a single drop to each of the four screw holes on the bottom of the drive **(Figure 4)**.

screw hole   screw hole
screw hole   screw hole

Figure 4

4. Turn the drive tray upside down and lay it on top of the drive, with the back of the tray facing toward the drive's connectors **(Figure 5)**.

⚠️ **WARNING:** When securing the trays to the hard drives, you must verify the screw heads are flush with the tray. Otherwise, a screw may catch on the tray below and prevent you from removing the tray from the enclosure.

drive tray

drive

Figure 5

5. Using four of the supplied screws, secure the drive tray to the drive; tighten each screw to secure the tray snugly to the drive; **do not overtighten the screws (Figure 6)**.
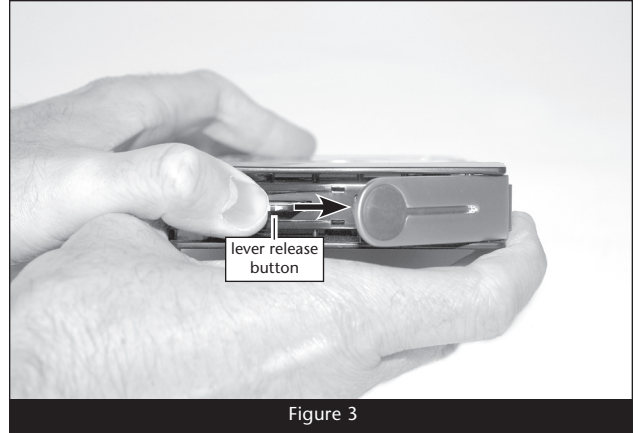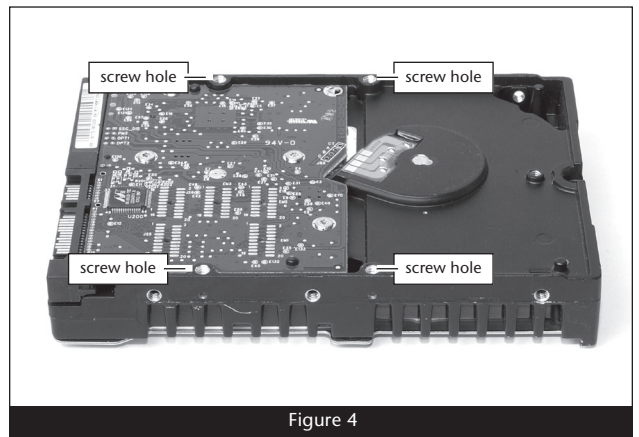

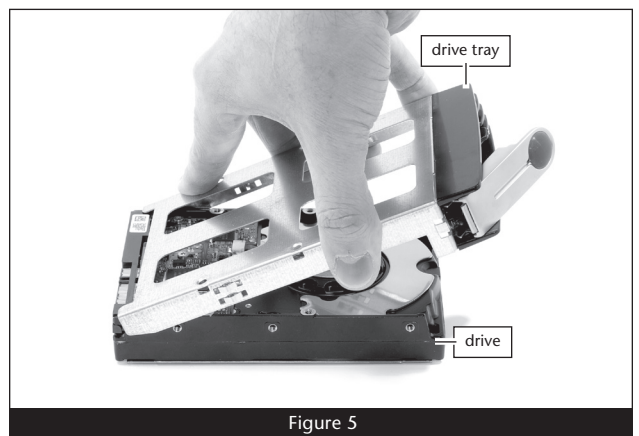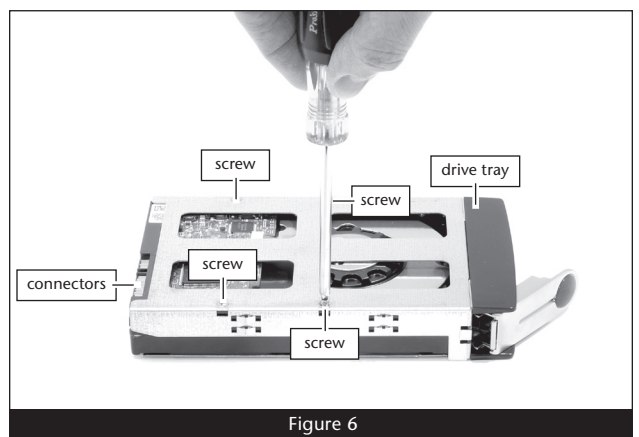screw   drive tray
screw
connectors   screw
screw

Figure 6

Drive Installation and Enclosure Setup

⚠️ **WARNING:** When inserting drive modules into the enclosure, **do not force the levers closed**. If a lever does not close easily, remove and reinsert the module, and then push the lever in again.

6. Carefully insert the drive module into the enclosure until it clicks, and then push the lever in to secure the module inside the enclosure **(Figure 7)**.

7. Repeat steps 2-6 for additional drives.

push tray in until it clicks
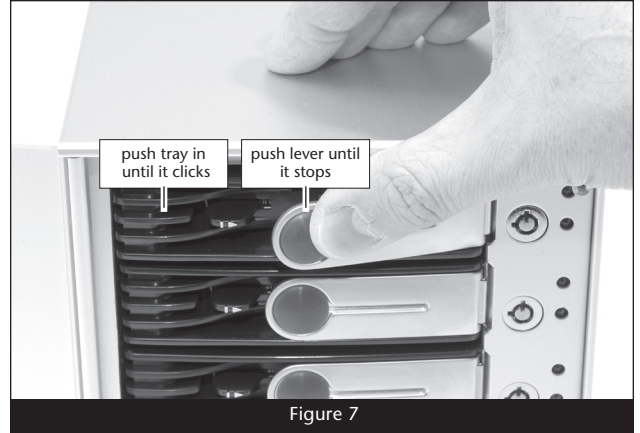
push lever until it stops

Figure 7

Connect Fusion D400RAID Drive Enclosure to Sonnet RAID Controller

This section describes the connection of the Fusion D400RAID drive enclosure to the Sonnet RAID controller card.

1. Connect the Infiniband end (with thumbscrews) of the supplied data cable to the Infiniband port on the enclosure; **use the thumbscrews to secure the connector (Figure 8)**.

Infiniband connector

Figure 8

2. Connect the mini-SAS end of data cable to a port on the Sonnet RAID controller card; **verify the connector is plugged in securely (Figure 9)**.

3. Connect the supplied power cable between the Fusion D400RAID enclosure and a grounded wall outlet or power strip; **verify the cable is plugged in securely**.

4. Push the switch on the back of the enclosure to the on position, and then power on your computer.

5. Format the drives installed in the Fusion enclosure according to your needs; refer to the Configuration Tool and Utilities Operation Manual for more information.
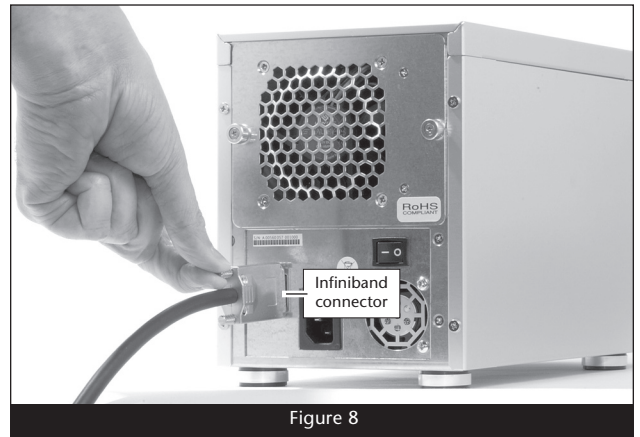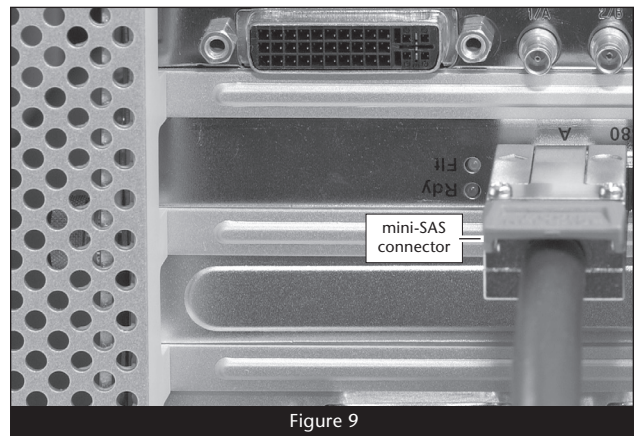

mini-SAS connector

Figure 9

Tips and Additional Information

Tips

This section covers some common sense tips for using the Fusion D400RAID enclosure.

Connecting Fusion D400RAID enclosures to a Sonnet RAID controller other than the one with which it shipped, or connecting a Fusion D400RAID Expansion:
Fusion D400RAID enclosures are matched with their included Sonnet RAID controller. When you connect a Fusion D400RAID enclosure to a different card, or when you add a D400RAID Expansion to your system, you may have to force them to pair up.

1. Launch the ATTO Configuration Tool. Expand the device tree in the Device Listing section on the left side of the window until ExpressSAS R380 is displayed, and then click ExpressSAS R380.

2. Click the CLI tab. Type *automap* and then tap the return key; type *saveconfiguration*, and then tap the return key again.

Hot-swapping drives:
Fusion D400RAID supports drive hot-swapping* for Mac users, enabling you to exchange a drive or a set of drives without having to shut down your computer. This does not mean you can simply pull out a drive module at any time; you must follow the procedures below or you may lose data in the process.

• Before removing a drive module, you must put away ("eject", "unmount", "dismount") the drive volume. Simply drag the drive icon associated with the drive(s) you wish to remove to the eject icon on the dock.

• If you remove a drive module from the Fusion D400RAID with a drive that was part of a RAID group, you should power off the enclosure before reinserting the module. Once the module is secured, power on the enclosure again; this will ensure that the RAID group will mount properly.

* Windows and Linux do not provide hot swap support for drives (drive enclosures) connected to a SATA host controller card installed in a desktop PC or server.

Tips (continued)

Connections:
If you experience issues where a drive or volume does not appear on your computer, or you see an error message stating a drive is missing when you have the drives configured as a RAID set, the cause may be as simple as a loose connector, or a drive module that is not fully seated.

• Disconnect the data cables and reconnect them one at a time, making sure each one "clicks" in place at the RAID controller end, and is screwed in securely at the enclosure end.

• Check the drive presence indicator LEDs on the front of the enclosure. If the LEDs are not lit on one of the bays, remove and reinsert the drive module.

Limited Warranty and Contacting Customer Service

Sonnet Technologies, Inc. warrants that this product shall be free from defects in materials and workmanship for a period of two years following the date of original purchase. For complete warranty information, go to www.sonnettech.com.

For support on this product, contact your reseller or local distributor. Before you call for support, please check Sonnet's web site at www.sonnettech.com for the latest updates and online support files, and check this User's Guide for helpful information. Remember to register your product online at http://registration.sonnettech.com to be informed of future upgrades and product releases.

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