

# FirmTek



## SeriTek™ /1EN2

Dual-bay Hot-Swap External Serial ATA Enclosure

*User Manual*

**FirmTek, LLC**  
**www.firmtek.com**

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Before installing SeriTek/1EN2 or any other hardware or software, you are responsible for backing up data contained on any storage devices. After hardware or software installation, you are responsible for backing up data on any storage devices at frequent intervals. FirmTek, LLC is not liable for any loss of data or damage to equipment resulting from the use of FirmTek products.

### **External Shielded Serial ATA Cables**

The SeriTek/1SE2 uses specially shielded external Serial ATA cables to ensure integrity during data transfers. These cables are not designed for heavy duty use. Use caution and handle the cables carefully. When inserting and removing the cable, hold the connector at the ends (not the cable) when inserting and removing the cable from the SeriTek/1SE2 and external enclosure.

If you will be using the SeriTek/1EN2 with a Macintosh computer, please note that Macintosh computers require unique external shielded Serial ATA cables for maximum reliability. FirmTek Serial ATA cables were specially designed to be compatible with both PC and Macintosh computers. To ensure best fitting connections, please use only FirmTek external shielded Serial ATA cables with the SeriTek/1SE2.

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## **I. Introduction**

### **Welcome**

Congratulations and thank you for purchasing the SeriTek/1EN2 Serial ATA (SATA) dual-bay hot-swap external enclosure. This product is yet another innovative solution from the innovative folks at FirmTek.

### **About This User Manual**

This user manual will introduce you to the SeriTek/1EN2 enclosure. Please read it carefully and familiarize yourself with the proper operation of SeriTek/1EN2.

### **About Serial ATA Technology**

An evolutionary replacement for the Parallel ATA storage interface, Serial ATA (Advanced Technology Architecture) provides greater speed, simpler upgrades and easier configuration. Serial ATA is fully compliant with the ATA protocol and offers 150MB/sec performance compared to a maximum of 133MB/sec for Parallel ATA. Serial ATA devices can be hot-swapped (with most operating systems), something that is not normally possible with Parallel ATA devices. Serial ATA uses insulated cables that are thinner and longer with smaller 7-pin connectors.

### **About the SeriTek/1EN2**


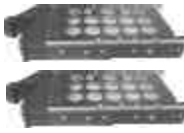







The SeriTek/1EN2 is a rugged, dual-bay Serial ATA (SATA) external hard drive enclosure. It provides versatile hot-swap capabilities with virtually unlimited storage possibilities in a small form-factor package. Built from the ground-up as a true Serial ATA solution, SeriTek/1EN2 features a case made of aluminum for maximum durability and heat dissipation.

SeriTek/1EN2 extends Serial ATA's storage capabilities outside of the computer chassis with flexibility on par with USB 2.0 or FireWire 800 but with much higher 1.5Gbps transfer rates. Serial ATA Hard drives can be swapped in and out of the SeriTek/1EN2 enclosure within seconds.

Allowing for true end-to-end Serial ATA capabilities, SeriTek/1EN2 is compatible with external PCI to Serial ATA host adapters such as SeriTek/1SE2. The SeriTek/1SE2 two-port host adapter, like the SeriTek/1EN2 enclosure, is designed with two shielded Serial ATA ports which meet regulatory requirements for electrostatic discharge (ESD), electromagnetic interference (EMI) emissions, and susceptibility. This ensures that a good ground path between the cables and the connectors exists to prevent any ESD discharge during cable insertion or removal.

## Package Contents

Part number **SATA-1EN2** includes:

One dual-Bay external Serial ATA enclosure	
Two removable hard drive trays (pre-inserted)	
One enclosure stand	
Two keys	
Eight hard drive countersink-style mounting screws	
Four clear rubber feet	
Two external shielded Serial ATA data cables, 1-meter each	
One universal power adapter	
One CD-ROM containing the SeriTek/1EN2 user manual	

Part number **SATA-1SE2** also includes:

One SeriTek/1SE2 two-port external Serial ATA host adapter	
------------------------------------------------------------	--------------------------------------------------------------------------------------

### ***SeriTek/1EN2 Highlights***

- .. Expand storage without overloading the computer's power supply or increasing heat within its chassis
- .. A true native Serial ATA solution, no master/slave settings
- .. Integrated with a specially-designed Serial ATA backplane, no need for internal cabling
- .. Cross-platform, PC and Macintosh compatible, operating system independent
- .. Perfect for both storage-hungry and speed-sensitive applications
- .. Enough performance to handle multiple projects simultaneously
- .. Aluminum body for maximum durability and heat dissipation
- .. Choice of hard drive brands and capacities
- .. Easy to set up: Only 3 steps to integrate each hard drive
- .. Easy to operate: Simply unlock and move latch to add or remove drives
- .. Easy to transport: Compact, portable, lightweight

### ***SeriTek/1EN2 Applications***

- .. Graphics arts
- .. Digital photography
- .. Computer Animation
- .. High-performance workstations
- .. File sharing over high-speed networks
- .. Digital audio/music composition, recording, editing, storage and playback
- .. Personal and professional high-definition digital video creation and editing

### ***SeriTek/1EN2 Features***

- .. Provides physical lock and key security
- .. Power and activity LEDs for each hard drive
- .. High-performance storage data transfer up to 1.5Gbps (150MB/sec) per drive
- .. Faster than USB2.0, and FireWire 800
- .. Dual hot-swappable 3.5" Serial ATA drive bay enclosure with removable trays
- .. Additional trays are available separately for virtually unlimited storage possibilities
- .. Built-in ultra quiet exhaust fan for cool-running hard drives
- .. Surpasses rotational vibration and heat dissipation requirements of high RPM drives
- .. Fully RAID capable: Compatible with Operating System and host adapter based RAID solutions
- .. RAID arrays can span across multiple enclosures
- .. Works with PC and Macintosh computers with shielded Serial ATA ports running OS 8, OS 9, OSX, Windows 98/SE/ME/2000/XP/2003 and Linux
- .. External power adapter offloads computer's power supply, keeps heat and electromagnetic interference away from hard drives

## SeriTek/1EN2 Specifications

General System Hardware Requirements	<ul style="list-style-type: none"> <li>• Compatible with external PCI to Serial ATA host adapters such as SeriTek/1SE2</li> <li>• RAID or non-RAID configurations</li> </ul>
Operating Systems Supported	<ul style="list-style-type: none"> <li>• Operating system independent</li> <li>• Cross-platform, PC and Macintosh compatible</li> </ul>
Enclosure Capacity	<ul style="list-style-type: none"> <li>• Dual 3.5" drive bays hot-swappable</li> </ul>
External Connectors	<ul style="list-style-type: none"> <li>• 2-port shielded Serial ATA receptacles</li> </ul>
Cables Supported	<ul style="list-style-type: none"> <li>• 7-pin shielded Serial ATA data cable, up to 1 meter in length</li> </ul>
Hard Drive Types Supported	<ul style="list-style-type: none"> <li>• 3.5" Serial ATA hard drive</li> <li>• Any capacity</li> </ul>
Data Transfer Rates	<ul style="list-style-type: none"> <li>• Up to 150 MBytes/second or 1.5Gbits/second burst data transfer rate per port</li> </ul>
Advanced Data Features	<ul style="list-style-type: none"> <li>• Fully compliant with Serial ATA 1.0a specification</li> <li>• Dual independent data channels allows for separate device timings</li> <li>• Individual drive data transfers</li> <li>• RAID-capable: Compatible with most operating system and host adapter based RAID solutions</li> <li>• RAID arrays can span across multiple enclosures</li> </ul>
Warranty	<ul style="list-style-type: none"> <li>• One year limited parts &amp; labor</li> </ul>
Enclosure Dimensions	<ul style="list-style-type: none"> <li>• 26.9cm(L) x 8.66cm(W) x 14.1cm(H)</li> </ul>
Enclosure Weight	<ul style="list-style-type: none"> <li>• Enclosure: 1.1Kg (without hard drives)</li> <li>• Enclosure with stand: 1.2Kg</li> </ul>
Color	<ul style="list-style-type: none"> <li>• Front Rim, Tray-Face, Enclosure stand: Dark gray</li> <li>• Body: Natural brushed aluminum</li> </ul>
Enclosure cooling	<ul style="list-style-type: none"> <li>• Aluminum body for maximum durability and heat dissipation</li> <li>• Ultra-quiet exhaust fan</li> </ul>
Power Input: Enclosure	<ul style="list-style-type: none"> <li>• DC 5V/2.5A</li> <li>• DC 12V/3A</li> </ul>
Power Input: External Power Adapter	<ul style="list-style-type: none"> <li>• 100-240VAC</li> <li>• 50-60Hz</li> </ul>
Environmental	<ul style="list-style-type: none"> <li>• Temperature: +5°C to +45°C</li> <li>• Relative humidity: 15% to 80% non-condensating</li> </ul>
EMC Compliance	<ul style="list-style-type: none"> <li>• EN55022/1998, EN55024/1998 (European Community)</li> <li>• FCC Part 15 Class B (US)</li> </ul>

## SeriTek/1EN2 System Requirements

### Hardware Requirements

- SeriTek/1SE2 two-port external host adapter or other external Serial ATA adapter with shielded Serial ATA receptacles
- 3.5" Serial ATA hard drive
- RAID or non-RAID configurations

### Materials Required

- Standard medium-sized Phillips screwdriver

## II. Preparing the SeriTek/1EN2



### Caution:

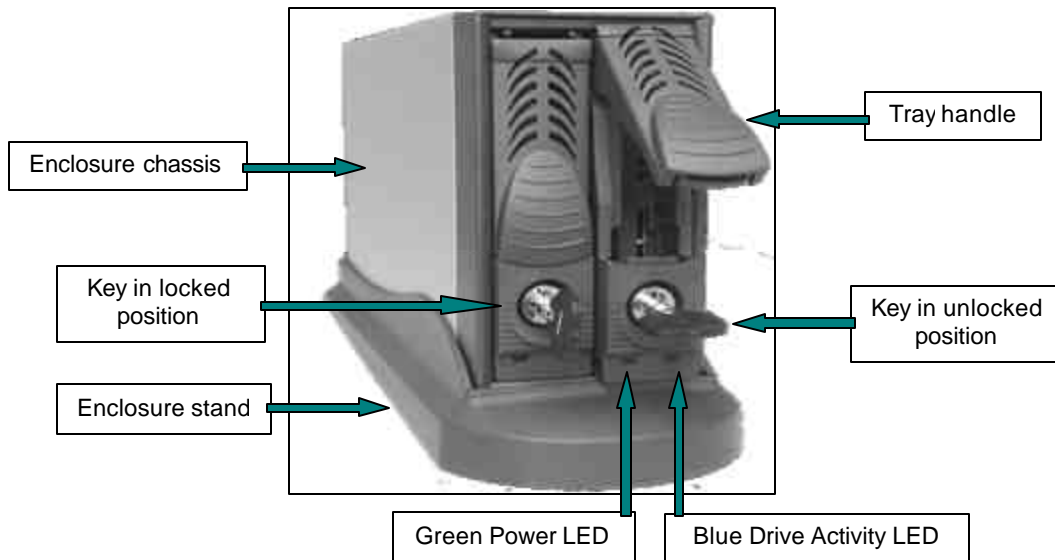
Please make sure your data is backed up before attempting to use the SeriTek/1EN2 external enclosure.

Your SeriTek/1EN2 enclosure, hard drive and computer contain sensitive components that can be permanently damaged by Static Electric Discharge. Be sure you're working in an area free of static electricity to prevent them from being damaged. Use a wrist grounding strap if you have one or regularly touch a metal part of the computer chassis such as the power supply case or a port access cover to discharge any built-up static electricity from your body. Make sure to handle your hard drives around its edges to avoid damage by static electricity.

### Introduction

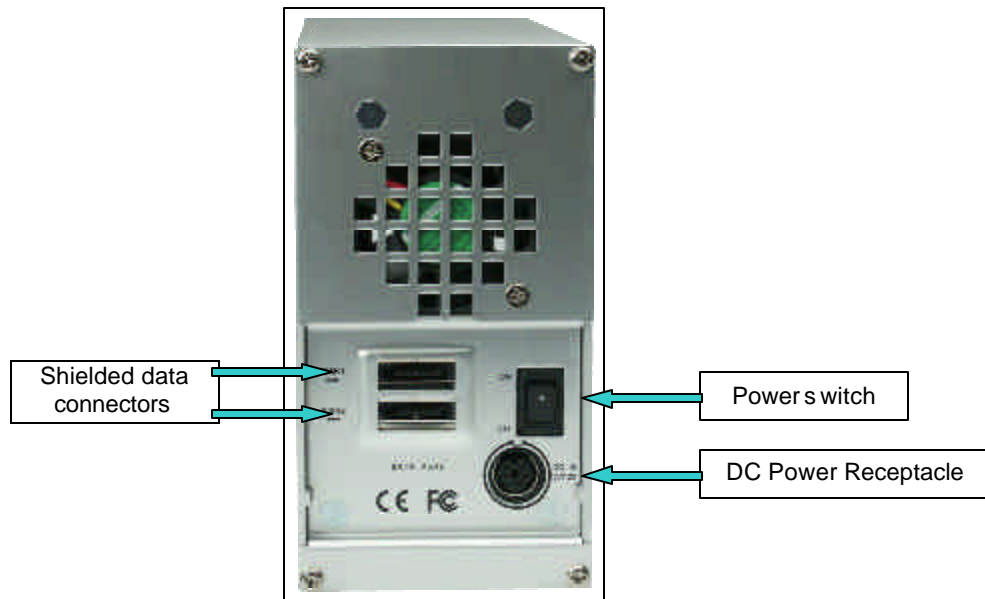
This section describes the proper method of preparing your SeriTek/1EN2 for use. Please review this section and familiarize yourself with the SeriTek/1EN2 enclosure before installing hard drives and connecting it to your computer.

**Front view of the SeriTek/1SE2 enclosure:**





### Rear view of the SeriTek/1SE2 enclosure:

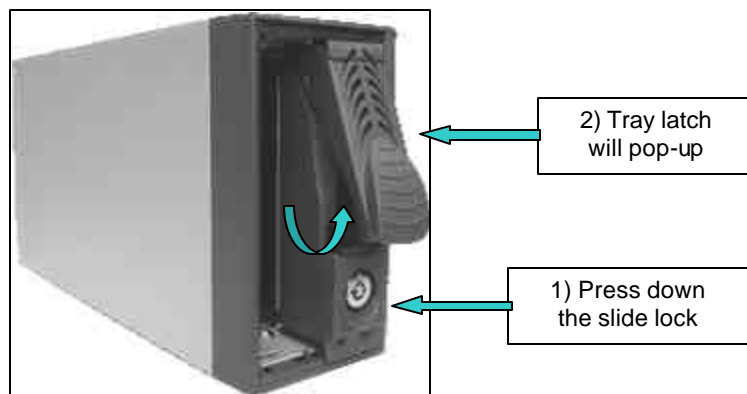


### Hard Drive Installation

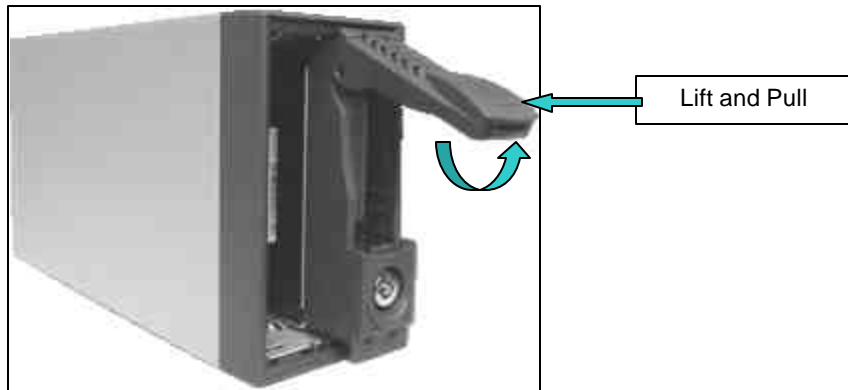
There are three steps to install a hard drive.

#### 1. Remove a tray from the enclosure

- On the front side of the tray, press down the slide lock (bottom, where the key hole is) to release the tray latch:



- Lift up the tray latch, then pull out the tray:



## 2. Attach the hard drive to the tray

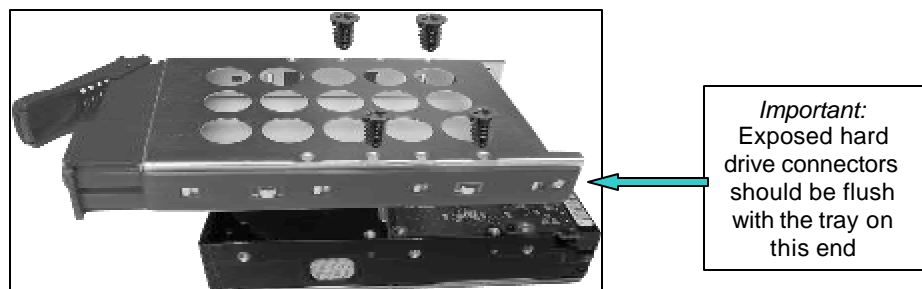
- Place your hard drive on a flat surface with the printed circuit board facing up:



- Position the tray over the hard drive and align the four screw holes on the drive to the countersunk screw holes on the tray. The connectors on the back of the hard drive must be aligned with the back of the tray (to the right in the picture below):

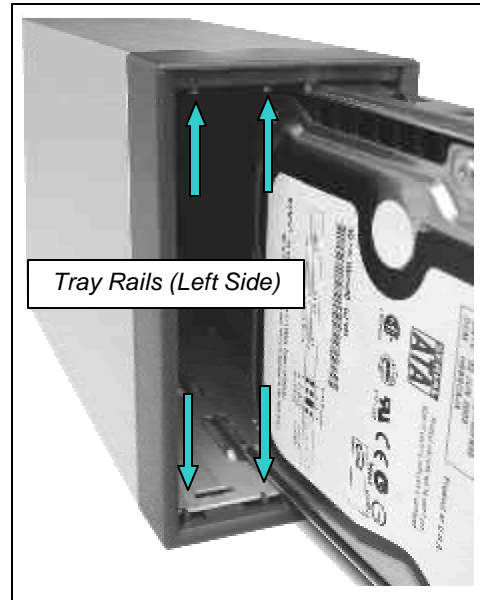


- Attach the hard drive to the tray with the four supplied countersink-type screws (do not over tighten):

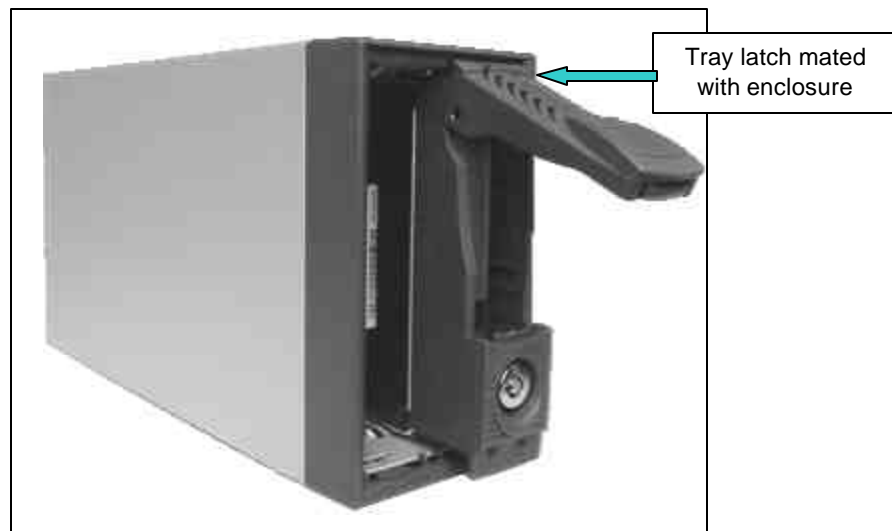


### 3. Insert the drive tray into the enclosure

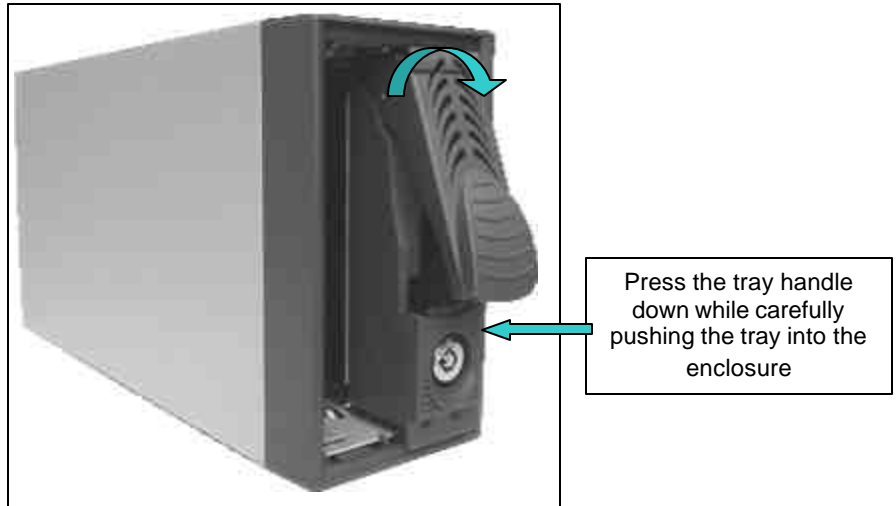
- There are two sets of tray rails inside the SeriTek/1EN2 enclosure, at the top and bottom of slots 1 (left) and 2 (right)
- Position the tray with the hard drive between the tray rails and carefully slide it into the enclosure:



- Holding the handle up, press the tray into position. The tray is ready to be secured and locked into position:



- .. Carefully push the tray into the enclosure while pressing the tray latch down. This will lock the tray and hard drive into position. Note: If there is any resistance, ensure the tray is positioned properly as shown in the previous step, and that the hard drive was properly attached to the tray. Damage can occur to the hard drive and enclosure if they are not installed properly.



**Repeat the same procedure to install a second hard drive**

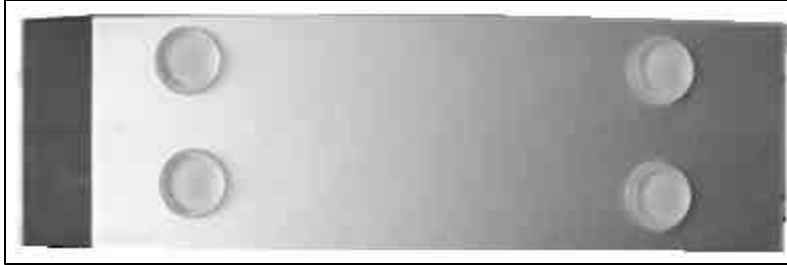
If only one drive is to be installed, keep the second/empty tray inserted in the enclosure to ensure proper airflow.

## Enclosure Placement

The SeriTek/1EN2 external enclosure may be seated in the included enclosure stand or can be used with the supplied clear rubber feet. When using the clear rubber feet, multiple enclosures may be set next to each other side-by-side or stacked with each enclosure placed horizontally on top of each other.

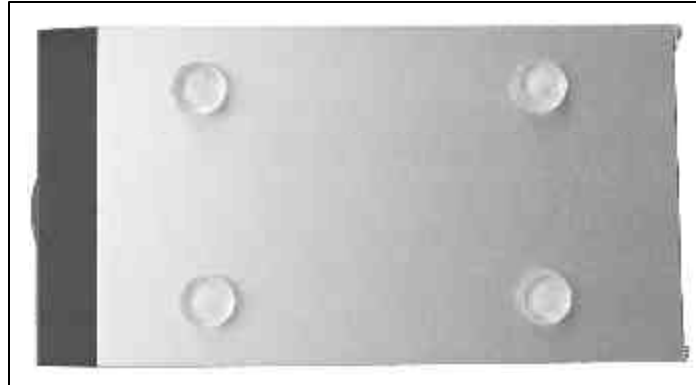
### Clear rubber feet

- **Vertical position:** Peel and place the four clear rubber feet onto the bottom of the enclosure:



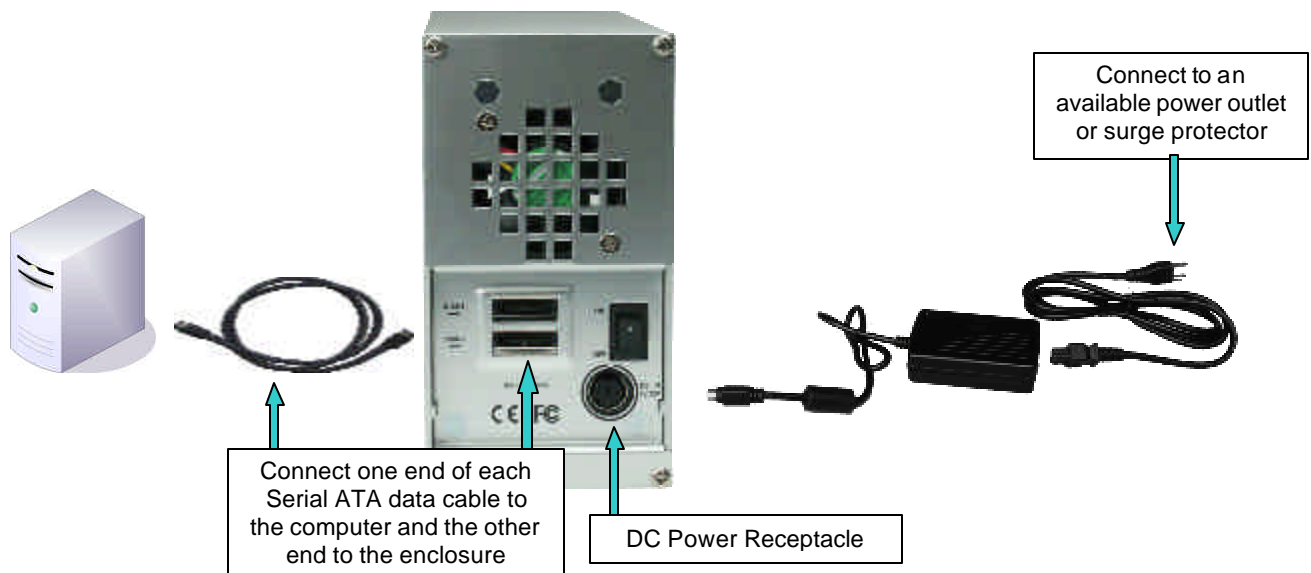
Attaching the clear rubber feet  
for the vertical position

**Horizontal position:** Peel and place the four clear rubber feet onto one side of the enclosure (Please do not stack more than two enclosures):



↑ ↑ ↑ ↑  
Attaching the clear rubber feet  
for the horizontal position

## Connecting the Shielded Data Cables and Power Adapter



**Caution:** Only use the power adapter provided with the enclosure. Use of any other power adapter may cause damage to the enclosure and hard drives and will void the warranty.

The SeriTek/1EN2 shielded Serial ATA data cables have keyed L-shaped 7-pin connectors at each end. Be sure to connect the cable using the proper orientation to the computer Serial ATA receptacle and the SeriTek/1EN2 external enclosure. If you are having difficulty connecting the cable, try reversing the orientation of the connector. It should easily snap into place. Please do not force the cable connector into the Serial ATA receptacle.

### III. Hot-Swapping Hard Drives

#### Introduction

The SeriTek/1EN2 external enclosure extends Serial ATA's storage capabilities outside of the computer chassis. Serial ATA Hard drives can be swapped in and out of the SeriTek/1EN2 enclosure within seconds.

While hard drives may be easily inserted and removed, some operating systems do not support the removal and addition of hard drives while the computer is running. Hot-swapping hard drives on the Macintosh computer is only supported when utilizing FirmTek's SeriTek/1SE2 external host adapter which includes advanced hot-swap capabilities. Windows 2000, Windows XP, and Windows 2003 hot swapping is supported when a special procedure is followed (described below under "Windows Hot-Swap Procedure").

#### General Hot-Swap Guidelines

- .. Do not disconnect or remove hard drives while transferring data.
- .. Save your work and close associated applications before removing the external hard drive (applications need to be closed since they may keep temporary working files open on the external hard drive).
- .. Always unmount the volumes (eject, disable, or drag the volumes to trash) associated with an external hard drive before removing it.
- .. As a general rule, power down the SeriTek/1EN2 external enclosure after powering down the computer. Power on the external enclosure before powering on the computer.
- .. If RAID volumes span internal and external hard drives, do not attempt to remove and insert external hard drives that partially support the RAID volume or data loss may occur. An example is a RAID volume that spans hard drives located within the computer chassis and the SeriTek/1EN2 external enclosure.


#### Macintosh Hot-Swap Procedure with the SeriTek/1SE2 External Two-Port Host Adapter

The hot-swap procedure is the same for both Macintosh OS 9.XX and 10.1.5 and later.

##### ***Connecting External Hard Drive(s)***

If your Macintosh computer is not yet powered on, power on the external enclosure then power on the computer. If the Macintosh computer is already powered on, you may power on the external enclosure and insert the hard drives. When you connect the first hard drive, you will see a "SATA Configuration Changed" window. If this is the only hard drive you connect, you may select "OK" in the dialog box. If you have an additional hard drive to connect, connect it and then select "OK" in the dialog box.

##### ***Removing External Hard Drive(s)***

 **Caution:** To prevent loss of data, save your work and close associated applications before removing the external hard drive (applications need to be closed since they may keep temporary working files open on the external hard drive). Always unmount the volumes (eject or drag the volumes to trash) associated with an external hard drive before removing it.

Eject or drag all of the volumes associated with the hard drive(s) before disconnecting or removing them. When removing a hard drive you will see a "SATA Configuration Changed" window. If this is the only hard drive you remove, you may select "OK" in the dialog box. If you have an additional hard drive to remove, remove it and then select "OK" in the dialog box.



## Windows Hot-Swap Procedure

Hard drives may be hot-swapped under Windows 2000, Windows XP, and Windows 2003.

Note: Hot-swap functionality is not available for Windows 98/98SE/ME; please shut down the system before adding or removing hard drives when using these operating systems.



**Caution:** To prevent loss of data, save your work and close associated applications and directory folders before removing the external hard drive (applications need to be closed since they may keep temporary working files open on the external hard drive).

### **Hot-Swap Procedure**

- .. Bring up the Windows Device Manager: Right-click on *My Computer*, click *Manage*, and then click *Device Manager*.
- .. Go to *Disk Drives* and find the disk you want to remove.
- .. Right click on the desired disk drive and select *Remove/Disable*.
- .. After performing this operation, you can remove the hard drive without risk of losing any data that is currently stored in cache memory.
- .. To reconnect the external hard drive, reconnect it and Windows will automatically detect it.
- .. If you are re-attaching a hard drive after the remove/disable operation as explained above, you must make sure that the hard drive is power cycled before reconnecting it (Removing, waiting a few seconds, and reinserting the hard drive into the SeriTek/1EN2 external enclosure will effectively power-cycle the drive. If both drives were removed/disabled, then the external enclosure itself may be power-cycled).

## IV. Troubleshooting

- **My hard drive isn't recognized**

Check cables and connections. Ensure the 7-pin Serial ATA cable is properly oriented to the connectors on the computer and the external enclosure. Ensure the enclosure is properly powered.

- **The transfer rate on my Power Macintosh 8500 seems less than the Serial ATA specified maximum of 150Mbytes/sec.**

Early Power Macintosh computers, typically built before the "beige G3" was available, have limited hardware resources. These limited resources severely limit data transfer rates of many storage technologies, including Serial ATA.

- **Does the SeriTek/1EN2 work with all Power Macintosh computers?**

No, SeriTek/1EN2 only works with Power Macintosh computers with at least one PCI slot available. If your system lacks PCI slots you cannot use SeriTek/1SE2.

- **My older Parallel ATA hard drives and peripherals have jumper settings. However I can't find jumper settings on my new Serial ATA hard drive or peripheral. How can I set it to Master or Slave; is there any way to set the SCSI ID?**

Serial ATA hard drives and peripherals are internally configured as Master drives. Only one drive can be attached to each Serial ATA bus/connector. There is no need to change settings on either the drive or the controller.

- **I have an old Parallel ATA drive which I am trying to use with a Parallel ATA to Serial ATA converter, but it doesn't seem to work.**

Some older Parallel ATA drives do not comply with current ATA standards. Parallel ATA to Serial ATA converters cannot recognize such drives.

## V. Product Support

### Technical Support

For additional information on how to use SeriTek/1EN2, download the latest firmware updates, or for technical assistance, please visit us at [www.firmtek.com](http://www.firmtek.com), or email us at [support@firmtek.com](mailto:support@firmtek.com).

Please provide the following information when contacting us:

- Product model and serial number
- Computer model
- Computer OS type and version (example: Mac OS X, version 10.2; Windows 2000 or Windows XP)
- Hardware and software installed on your system
- Contact information including daytime telephone number and email address
- A detailed description of the question or problem

### Return Merchandise Authorization

If FirmTek technical support determines the product needs to be repaired or replaced, a Return Merchandise Authorization (RMA) number and shipping address will be provided. Please pack in the original shipping container all of the original packaging - including the static bag, all hardware, software, cables, and other accessories that came with the original product. You are responsible for shipping and insurance costs, and any damage incurred due to improper packaging or transport.

FirmTek reserves the right to determine whether the product is to be repaired or replaced with new or refurbished parts, or with a new or refurbished product. Standard United States return shipping charges will be paid by FirmTek. Foreign and other shipping methods such as express shipping are available for an additional charge.

Write down the RMA number on the outside of the shipping container, and include the following information with the shipment:

- A description of the problem
- A copy of the original purchase invoice
- Return shipping address
- Contact information including daytime telephone number and email address

FirmTek, LLC reserves the right to refuse shipments missing a valid RMA number.

## **VI. Product Warranty and Disclaimers**

FirmTek warrants to the original buyer only that this product shall be free from defects in material and workmanship for a period of one year from the original date of purchase. This warranty is valid only when the original purchase invoice is provided. This warranty shall not apply to any defects resulting from improper handling, misuse, misapplication, abuse, or unauthorized modification(s) which are performed by end user.

FirmTek, LLC reserves the right to make changes to any products described in this manual at any time without notice. FirmTek, LLC assumes no responsibility for the use or reliability of hardware or software that is not supplied by FirmTek, LLC or its affiliated companies. FirmTek, LLC does not assume any responsibility or liability arising out of the application or use of any product described in this document, except as expressly agreed to in writing by FirmTek, LLC; nor does the purchase or use of a product from FirmTek, LLC convey a license under any patent rights, copyrights, trademark rights, or any other intellectual property rights of FirmTek, LLC or third parties.

## **VII. Regulatory Compliance Statements**

### **Federal Communications Commission Radio Frequency Interference Statement**

**WARNING:** Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. However, if this equipment does cause interference to radio or television equipment reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between equipment and receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/television technician for help.
- Use a shielded and properly grounded I/O cable and power cable to ensure compliance of this unit to the specified limits of the rules.

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.

## **CE European Union Compliance Statement**

EMC compliance:

Emissions: EN55022: 1998, Class B

Immunity: EN55024: 1998

EN61000-4-2: 1995+A1: 1998

EN61000-4-3: 1995+A1: 1998

EN61000-4-4: 1995

EN61000-4-6: 1996

EN61000-4-8: 1993

SerTek/1EN2 TSLKC2KD1106