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SeriTek™ /2EN2

**Dual Bay Hot-Swap External Serial ATA Enclosure
With eSATA Connectors**

User Manual

FirmTek, LLC
www.firmtek.com

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Before installing SeriTek/2EN2 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 family of external Serial ATA adapters (SeriTek/1SE2, SeriTek/1eSE2, SeriTek/1VE2+2, SeriTek/1VE4, SeriTek/1eVE4, SeriTek/1SM2, and SeriTek/2SM2-E) use specially shielded external Serial ATA cables to ensure integrity during data transfers. Use caution and handle the cables carefully. Hold the connector at the ends (not the cable) When inserting and removing the cable.

Note: The SeriTek/1eSE2, SeriTek/1eVE4, SeriTek/1SM2, and SeriTek/2SM2-E support the newer style Serial ATA connectors, called "eSATA" connectors. These connectors provide improved reliability with special metal shielding and retention springs for positive locking. See "Connecting the Shielded Data Cables" section of this document for more details.

FirmTek Serial ATA cables were specially designed to be compatible with both PC and Macintosh computers. Please use only FirmTek external shielded Serial ATA cables with the SeriTek/2EN2.

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I. Introduction

Welcome

Congratulations and thank you for purchasing the SeriTek/2EN2 Serial ATA dual bay hot-swap Serial ATA 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/2EN2 enclosure. Please read it carefully and familiarize yourself with the proper operation of SeriTek/2EN2.

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 up to 300MB/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/2EN2

The SeriTek/2EN2 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/2EN2 features a case made of aluminum for maximum durability and heat dissipation.

SeriTek/2EN2 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 3.0 Gbps transfer rates (speed dependant on specific hard drive model used) . Serial ATA Hard drives can be swapped in and out of the SeriTek/2EN2 enclosure within seconds.

Allowing for true end-to-end Serial ATA capabilities, SeriTek/2EN2 is compatible with external PCI to Serial ATA host adapters such as SeriTek/1VE4 (using SATA I to eSATA external shielded data cable), or SeriTek/1eVE4 (using eSATA to eSATA data cables). The SeriTek/1VE4 and SeriTek/1eVE4 host adapters, like the SeriTek/2EN2 enclosure, are designed with 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.

In contrast to competing solutions, the SeriTek/2EN2 is designed with an innovative internal Serial ATA backplane that makes the installation and removal of disk drives very easy and provides maximum signal/data transfer quality.



Package Contents

Part number **SATA-2EN2** includes:

One Dual-Bay external Serial ATA chassis	
Two removable hard drive trays (pre-inserted)	
Two keys	
Eight hard drive countersink-style mounting screws	
Four clear rubber feet	
Two external shielded Serial ATA data cables eSATA, 1-meter each	
One universal power adapter	
One CD-ROM containing the SeriTek/2EN2 User's Manual	

Available Bundles:

<p><i>Part number</i> SATA-2eVEN2-1 <i>includes:</i></p>	<p>(1) SATA-2EN2 eSATA enclosure (1) SeriTek/1eVE4 Host Adapter: PCI-X to Serial ATA adapter; four external eSATA ports</p>	
<p><i>Part number</i> SATA-2eSEN2 <i>includes:</i></p>	<p>(1) SATA-2EN2 eSATA enclosure (1) SeriTek/1eSE2 Host Adapter: PCI to Serial ATA adapter; two external eSATA ports</p>	
<p><i>Part number</i> SATA-2ENSM2 <i>includes:</i></p>	<p>(1) SATA-2EN2 eSATA enclosure (1) SeriTek/1SM2 CardBus 32 Host Adapter: PC Cards to Serial ATA adapter; two external eSATA ports</p>	
<p><i>Part number</i> SATA-2ENSM2-E <i>includes:</i></p>	<p>(1) SATA-2EN2 eSATA enclosure (1) SeriTek/2SM2-E ExpressCard/34 Host Adapter: ExpressCard to SATAII/3Gbps adapter; two external eSATA ports</p>	

SeriTek/2EN2 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, sturdy

SeriTek/2EN2 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/2EN2 Features

- ◆ Provides physical tray lock and key security for each disk drive
- ◆ New eSATA connectors
- ◆ Kensington Security Slot
- ◆ Power and activity LEDs for each hard drive
- ◆ High-performance storage data transfer up to SATA 3.0Gbps (300MB/sec) per drive (depending on drive)
- ◆ Faster than USB 2.0, and FireWire 800
- ◆ Two hot-swappable 3.5" Serial ATA drive bay enclosure with removable trays
- ◆ Additional trays are available separately for virtually unlimited storage possibilities
- ◆ Built-in quiet exhaust fan with three user-selectable speeds 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 9, OS X, Windows 98/SE/ME/2000/XP/2003 and Linux

SeriTek/2EN2 Specifications

General System Hardware Requirements	<ul style="list-style-type: none"> • Compatible with external PCI, PCI-X to Serial ATA host adapters: SeriTek/1SM2, SeriTek/2SM2-E, SeriTek/1eSE2, SeriTek/1VE4, or SeriTek/1eVE4 • RAID or non-RAID configurations
Operating Systems Supported	<ul style="list-style-type: none"> • Operating system independent • Cross-platform, PC and Macintosh compatible
Enclosure Capacity	<ul style="list-style-type: none"> • Two 3.5" drive bays hot-swappable
External Connectors	<ul style="list-style-type: none"> • 2-port shielded eSATA Serial ATA receptacles
Cables Supported	<ul style="list-style-type: none"> • 7-pin shielded Serial ATA data cable, up to 1 meter in length
Hard Drive Types Supported	<ul style="list-style-type: none"> • 3.5" Serial ATA hard drive • Any capacity
Data Transfer Rates	<ul style="list-style-type: none"> • Up to 300 MBytes/second or 3 Gbits/second burst data transfer rate per port
Advanced Data Features	<ul style="list-style-type: none"> • Fully compliant with Serial ATA 3Gpbs specification • Four independent data channels allows for separate device timings • Individual drive data transfers • RAID-capable: Compatible with most operating system and host adapter based RAID solutions • RAID arrays can span across multiple enclosures
Warranty	<ul style="list-style-type: none"> • One year limited parts & labor
Enclosure Dimensions	<ul style="list-style-type: none"> • 226.9cm(L) x 8.66cm(W) x 14.1cm(H)
Enclosure Weight	<ul style="list-style-type: none"> • 1.1Kg (without hard drives)
Color	<ul style="list-style-type: none"> • Anodized Aluminum – Silver Grey
Built in Heat Management System	<ul style="list-style-type: none"> • Aluminum body for maximum durability and heat dissipation • One quiet exhaust fan
Status LEDs	<ul style="list-style-type: none"> • Disk drive Power on LED on each tray – White • Disk drive activity LED on each tray – Blue (Disk activity LED not supported on all disk drives)
Power Input: Power Adapter	<ul style="list-style-type: none"> • 100-240VAC • 50-60Hz
Power Input: Enclosure	<ul style="list-style-type: none"> • DC 5V/2.5A • DC 12V/3A
Environmental	<ul style="list-style-type: none"> • Temperature: +5°C to internal temperature of +55°C: • Internal enclosure TEMP Fault at 55°C
EMC Compliance	<ul style="list-style-type: none"> • EN55022/1998, EN55024/1998 (European Community) • FCC Part 15 Class B (US)

SeriTek/2EN2 System Requirements

Hardware Requirements

- SeriTek/1SM2, SeriTek/2SM2-E, SeriTek/1eSE2, SeriTek/1VE2+2, SeriTek/1VE4, or SeriTek/1eVE4 external host adapters or other external Serial ATA adapter with shielded Serial ATA receptacles
- 3.5" Serial ATA hard drive
- RAID or non-RAID configurations
- Available 90-230VAC, 50-60Hz power

Materials Required

- Standard medium-sized Phillips screwdriver

II. Preparing the SeriTek/2EN2



Caution:

Please make sure your data is backed up before attempting to use the SeriTek/2EN2 external enclosure.

Your SeriTek/2EN2 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/2EN2 for use. Please review this section and familiarize yourself with the SeriTek/2EN2 enclosure before installing hard drives and connecting it to your computer.

Front view of the SeriTek/2EN2 enclosure:

Enclosure chassis



White Drive Power LED

Blue Drive Activity LED

Key in unlocked position

Tray handle

Rear view of the SeriTek/2EN2 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 the slide lock to the left (on the left side, where the key hole is) to release the tray latch:

Press the slide lock to the left



Tray latch will pop-out

- ◆ Pull the tray latch forward, then pull out the tray:



Operate and pull tray latch

2. Attach the hard drive to the tray

- ◆ Place your hard drive on a flat surface with the printed circuit board/circuitry 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):



Important:
Exposed hard
drive
connectors
should be flush
with the tray on
this end

3. Insert the drive tray into the enclosure

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

Note the Tray Rails
(On the Left and Right for each Drive)



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



Tray latch mated
with enclosure

Press the tray
handle toward to
enclosure and push
the tray into the
enclosure

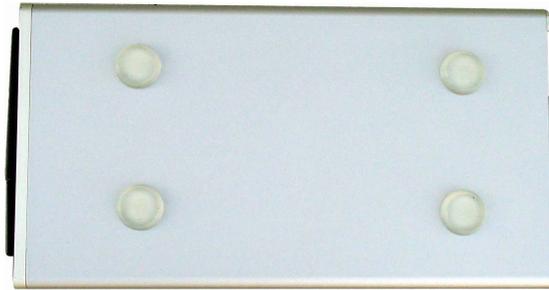
- ◆ Carefully push the tray into the enclosure while pressing the tray latch in. This will lock the tray and hard drive into position. **Note:** *This is a critical step. If there is any resistance, ensure the tray is positioned properly as shown in the previous step, and that the hard drive was properly 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 one drive is to be installed, keep the empty trays inserted in the enclosure to ensure proper airflow.

Enclosure Placement Horizontal position

Clear rubber feet: Peel and place the four clear rubber feet onto the bottom side of the enclosure. Multiple enclosures may be stacked on top of each other.



Connecting the Shielded Data Cables and Power Adapter



Connect one end of each Serial ATA data cable to the computer and the other end to the enclosure

Connect to an available power outlet or surge protector and the other end to the enclosure

DC Power Receptacle



Caution: Use only 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.

Note: 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. Please use FirmTek external shielded Serial ATA cables with the SeriTek/2EN2.

There are two styles of SATA connectors:

- The original Serial ATA connectors have an L-shaped opening, see Figure 2A.
- The newer eSATA connectors have a I-shaped rectangular opening, see Figure 2B

The SeriTek/2EN2 uses the newer eSATA connectors, also known as I-shaped connectors, yet some host adapters require cables that utilize an L-shaped connector. To use the SeriTek/2EN2 with these types of host adapters, the cable required will have a rectangular I-shaped eSATA connector on one end, and one L-shaped SATA connector on the other end as shown below in Figures 2A and 2B.

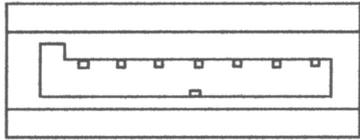


Figure 2A: Original L-shaped SATA connector

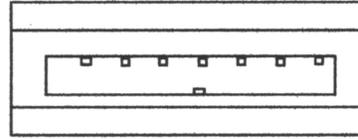


Figure 2B: Newer rectangular eSATA I-shaped connector

Figure 2: Serial ATA Connector Types: Original L-shaped and newer eSATA I-shaped

Newer SeriTek host adapters such as the SeriTek/1eSE2, SeriTek/1SM2, SeriTek/2SM2-E, and SeriTek/1eVE4 offer eSATA I-shaped connectors. Connecting these host adapters to the SeriTek/2EN2 enclosure requires cables with eSATA I-shaped connectors on both ends as shown in Figure 3.



Figure 3: Using SeriTek/2EN2 with a host adapter that has I-shaped eSATA connectors; both cable connectors will be identical.

Making the Serial ATA Connection

Caution: Be sure to connect the cable using the proper orientation to your host adapter and SeriTek/2EN2 external enclosure. It should easily snap into place. Please do not force the cable connector onto the host adapter and enclosure.

- First check that you are connecting the correct type of connectors to each other
- If your connectors still do not fit, rotate the cable and try again

Remember that connectors and receptacles must be of the same type for them to fit: *L-shaped connector to L-shaped receptacle or eSATA connector to eSATA receptacle.*

III. Hot-Swapping Hard Drives

Introduction

The SeriTek/2EN2 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/2EN2 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/1VE4, or SeriTek/1eVE4 external host adapters that include advanced hot-swap capabilities. Windows 2000, Windows XP, and Windows 2003 hot swapping is supported with some host adapters 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/2EN2 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/2EN2 external enclosure.

Macintosh Hot-Swap Procedure with the SeriTek/1VE4 or SeriTek/1eVE4 External Host Adapters

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/2EN2 external enclosure will effectively power-cycle the drive. If several drives are to be removed/disabled, then the external enclosure itself may be power-cycled).

IV. Sleeping & Waking-Up Procedures:

When you wish to sleep or shutdown the system with the SeriTek/2EN2:

1. Dismount the volume: On a Mac dragging the volume to the trash causes the trash icon to change; dropping the volume there dismounts the volume.
2. Put the system into deep sleep, or shutdown normally.
3. Turn off the SeriTek/2EN2 enclosure.

When you wish to Wake-Up to Turn-On your System:

1. Turn on your SeriTek/2EN2 enclosure.
2. Wake-up or power on your system normally.

At this point your system should automatically load, then discover and mount your volumes

V. 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.
- **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.

VI. Product Support

Technical Support

For additional information on how to use SeriTek/2EN2, download the latest firmware updates, or for technical assistance, please visit us at www.firmtek.com, or email us at 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.

VII. 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.

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VIII. 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

SeriTek/2EN2 TSLKC2KF0406