KANGURU Solutions™

"Technology on the move!"

Kanguru eFlash
User Guide

NOTICES AND INFORMATION

Please be aware of the following points before using your Kanguru eFlash

Kanguru Solutions will not be held responsible for any illegal use of this product nor any losses incurred while using this product. The user himself is responsible for the copyright laws, and is fully responsible for any illegal actions taken.

Customer Service

To obtain service or technical support for your system, please contact Kanguru Solutions Technical Support Department at 508-376-4245, or visit www.Kanguru.com for web support.

Legal notice

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Export Law Compliance

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Defragmenting Flash Memory Warning

Do not attempt to defragment your Kanguru Flash Drive. Flash memory does not need to be defragmented and does not gain any performance by doing so. Defragmenting your flash drive can actually degrade the flash memory which may reduce the drive's total capacity and lifespan.

Table of Contents

1. Introduction

Congratulations on purchasing the Kanguru eFlash. We appreciate the confidence you have in our products. Please read through these operating instructions and store them safely for future reference.

The Kanguru eFlash combines the convenience of USB connectivity with the blazing-fast speed of eSATA connectivity into one sleek, portable device. The USB 2.0 interface allows the eFlash to connect to most desktop computers or laptops. The high-speed eSATA 3Gb/s interface allows the eFlash to transfers data up to six times faster than USB 2.0.

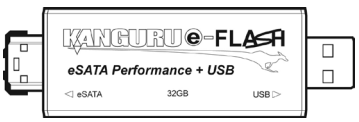
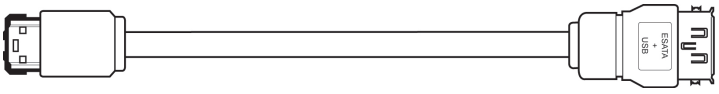
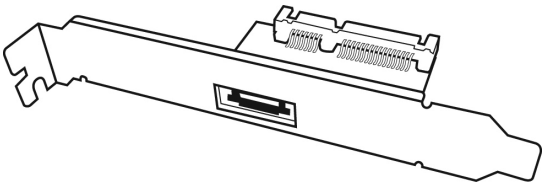
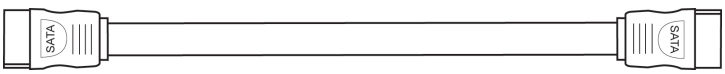
The Kanguru eFlash's fast transfer speed, large capacity and small size makes it a great alternative to an external Hard Drive.

The Kanguru eFlash is compatible with the following operating systems:

- √ Windows 2000 SP4
- √ Windows XP SP2 or SP3
- √ Windows Vista
- √ Windows 7
- √ MAC OS 9.x or above
- √ Linux Kernel 2.4 or above

1.1 Package Contents

Please check the contents of the package you received. If any of the parts listed below are missing, please contact Kanguru Solutions (508-376-4245) and you will be shipped replacement parts immediately.

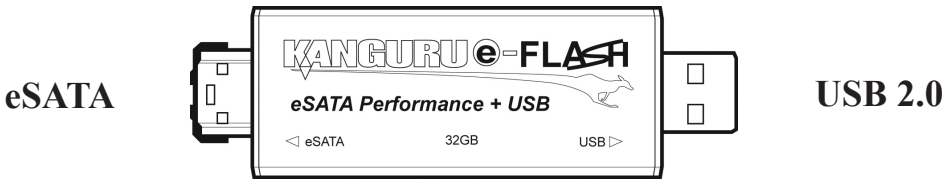
• Kanguru eFlash	
• Power Over eSATA cable	
• Power Over eSATA bracket ○ Includes SATA data cable ○ Includes SATA power adapter cable	  

1.2 Specifications

Interfaces	USB 2.0 eSATA
Housing	High-strength Anodized Aluminum
Memory	Solid State NAND Flash memory
Read Speed	eSATA: up to 85 MB/s USB 2.0: up to 33 MB/s
Write Speed	eSATA: up to 50 MB/s USB 2.0: up to 30 MB/s
Write Cycles	1,000,000
Data Retention	Up to 10 years
OS Compatibility	Windows 2000 SP4 Windows XP SP2 or SP3 Windows Vista Windows 7 MAC OS 9.x or above Linux Kernel 2.4 or above
Weight	22g
Dimensions	89mm x 24mm x 7mm

2. Connecting and Using Your Kanguru eFlash

The Kanguru eFlash supports both USB and eSATA connectivity. Both connections will read and write to the same data partition.



2.1 Connection Options

You have three options for connecting your eFlash to a computer:

1. **Connect through Power Over eSATA**
   When connected through Power Over eSATA, the eFlash transfers data at SATA speeds without the need for an external power source. This is the best connection option, however the majority of computers do not have a Power Over eSATA port. The eFlash comes with a Power Over eSATA bracket that once installed will provide your computer with a Power Over eSATA port. For more information on connecting the eFlash through Power Over eSATA, please see section 2.1.1 *Power Over eSATA,* p.7.

2. **Connect through eSATA + USB**
   Since Power Over eSATA is a new technology, many computers will not have a Power Over eSATA port. However, many of today's newer computers will have a standard eSATA port. The eFlash's unique dual-connection design allows the eFlash to be connected to standard eSATA ports. When connected to a standard eSATA port, the eFlash must also be connected to a USB port. The eSATA connection transfers data while the USB connection powers the device. For more information on connecting the eFlash through eSATA + USB, please see section 2.1.2 *eSATA + USB*, p.12.

3. **Connect through USB only**
   Connecting through USB allows the eFlash to operate as a normal USB Flash Drive, making the eFlash compatible with almost any computer. When the eFlash is connected through USB it transfers data at USB 2.0 speed, which is slower than eSATA. For more information on connecting the eFlash through USB only, please see section 2.1.3 *USB Only*, p.13.

2.1.1 Power Over eSATA

The eFlash's main feature is Power Over eSATA compatibility.

Unlike a standard eSATA connection which only transfers data, the Power Over eSATA connection transfers both data and power. In order to take advantage of the eFlash's Power Over eSATA connection, you must have a Power Over eSATA port. The eFlash comes with a Power Over eSATA bracket that once installed on your computer, provides you with a Power Over eSATA port.

You can connect the eFlash directly to the Power Over eSATA port or to the Power Over eSATA port using the provided Power Over eSATA cable.

Note: Standard eSATA cables only transfer data and will not transfer power, even when connected to a Power Over eSATA port.

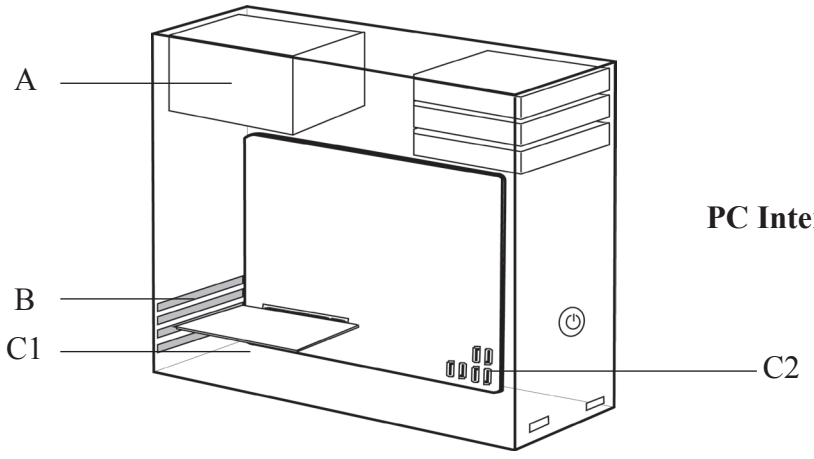
2.1.1.1 Installing the Power Over eSATA bracket

The eFlash comes with a Power Over eSATA bracket that once installed on your desktop computer, will provide a Power Over eSATA port. The bracket will occupy one PCI bay, so you will need to have an available PCI bay in your computer in order to install the Power Over eSATA bracket.

You may want to print out these instructions for your reference during installation.

1. Make sure your computer is powered down and then unplug the computer's power cable.
2. Open the computer's casing, which is usually held on by screws in the back. Locate the following components:

   (A) Power Supply
   (B) PCI Slot
   (C) SATA Port
   1) on host adapter (only necessary if your motherboard does not have SATA ports)
   2) on the mother board



PC Internal Diagram

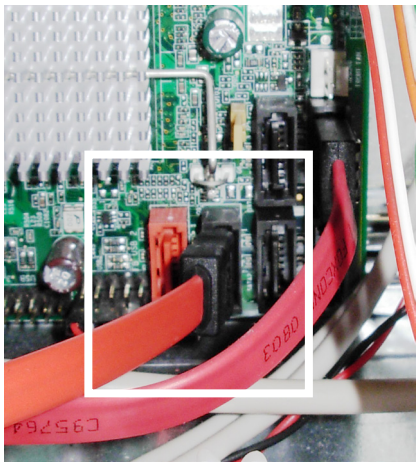
Note: The layout of your computer may differ from the images presented in these instructions. They should be used for reference only. Please refer to your computer's instruction manual to locate the components detailed above on your specific system.

Caution! Do not touch any of the boards or other components inside the computer without first grounding yourself by touching the computer's metal frame or power supply. This discharges any static electricity that could damage your system. To minimize the risk of static electricity damage, refrain from handling parts of your computer not used in this installation process.

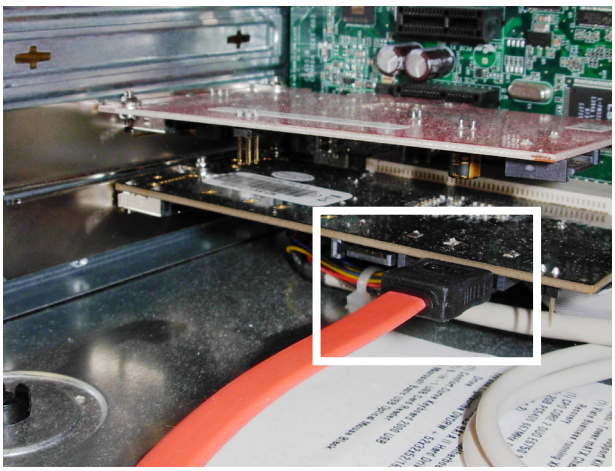
3. Locate an available SATA port on your computer motherboard. If your computer has an internal SATA hard drive installed, you can trace the data cable from the hard drive to the SATA ports on the mother board.

   If your motherboard does not have SATA ports, you will have to purchase and install a separate SATA host controller card in order to connect the Power Over eSATA bracket. If you purchase a PCI or PCIe SATA host controller card, make sure that it has an internal SATA port.

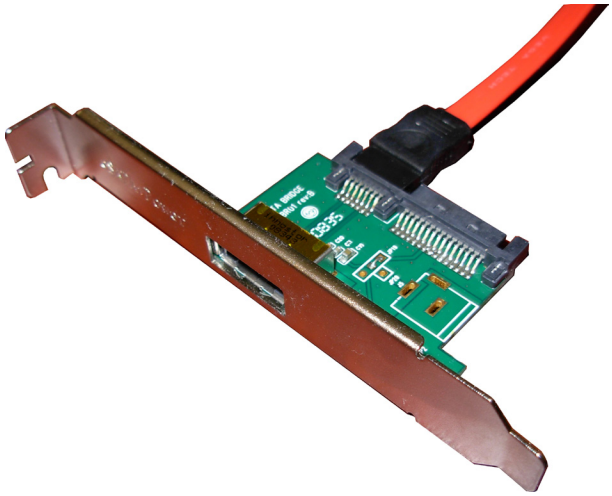
4. Connect one end of the provided SATA data cable to an available SATA port, and then connect the other end to the Power Over eSATA bracket. Both ends of the SATA data cable are identical.



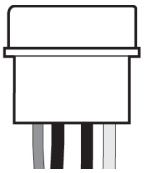
Connecting to the motherboard



Connecting to the SATA host controller card



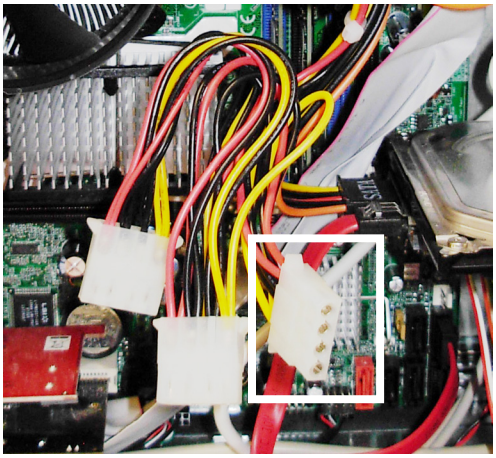
5. Locate the power connectors coming from your computer's power supply. If you can locate a 15-pin SATA power connector, please skip directly to step 8. If not, continue to step 6.



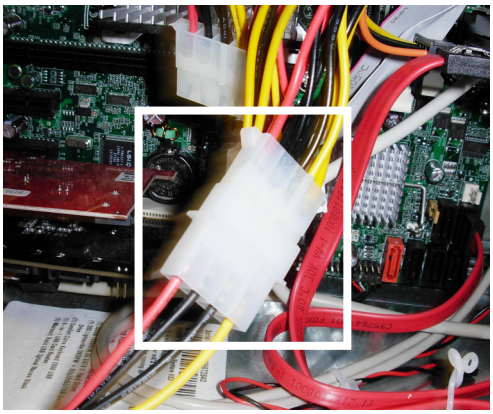
4-pin Molex power connector

15-pin SATA power connector

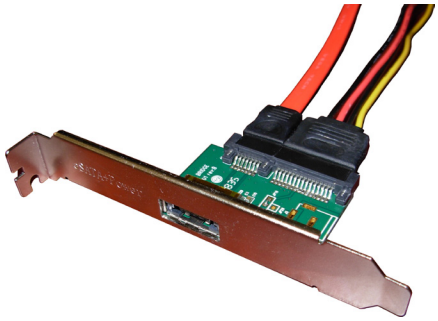
6. Locate an available four-pin Molex power connector in your computer.



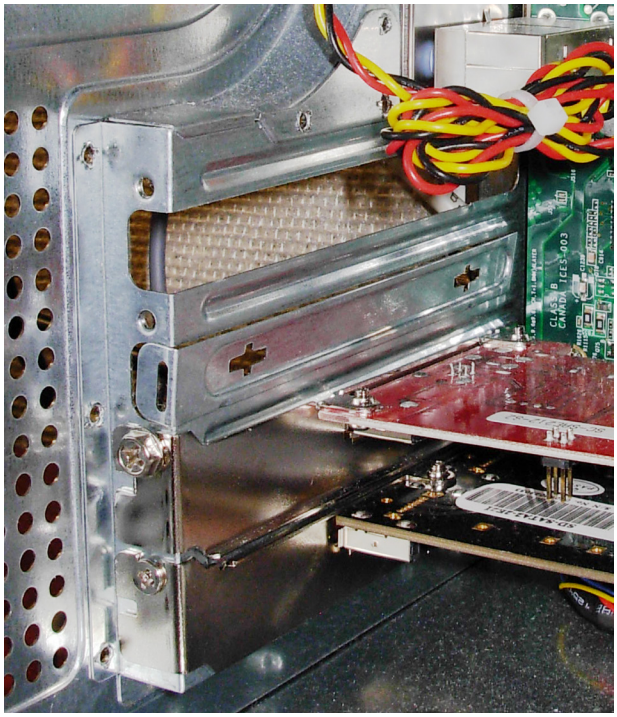
7. Connect the white end of the provided SATA power adapter cable to the computer's four-pin Molex power connector.



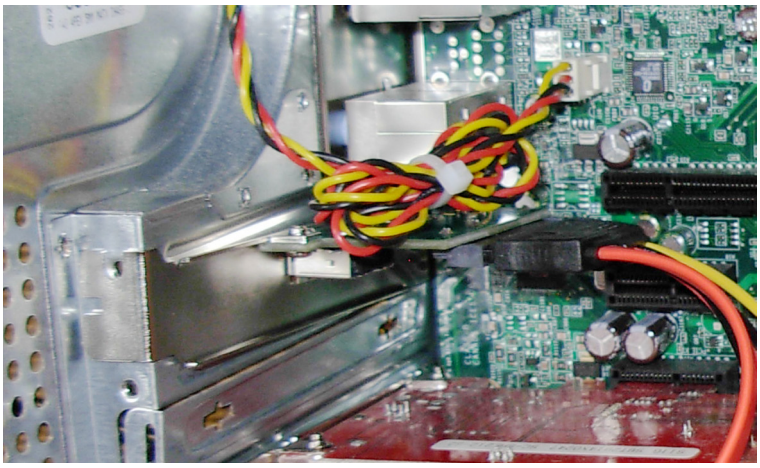
8. Connect the 15-pin SATA power connector to the Power Over eSATA bracket.



9. Remove one PCI SLOT cover from a PCI bay.



10. Insert the Power Over eSATA bracket into the open PCI bay and fasten it in place using the screw provided.



11. Make sure all cables are securely connected, and then replace the computer's casing.

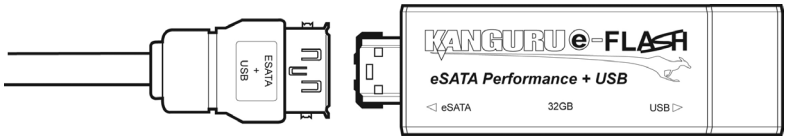
Your power over eSATA bracket is now ready for use.

Note: If you regularly use more than one desktop computer, you can purchase more Power Over eSATA brackets and cables for installation on all your systems. You can also purchase a Power Over eSATA ExpressCard, which will provide you with a Power Over eSATA port on your laptop computer. For more information, please contact Kanguru Solutions Sales at 1-888-KANGURU.

2.1.1.2 Connecting your eFlash through Power Over eSATA

If your computer has a Power Over eSATA port, simply remove the cap from the eFlash's eSATA connection and then connect the device to the Power Over eSATA port either directly or by using the provided Power Over eSATA cable.

Note: Some newer laptops come with an eSATA/USB combo port. If you have an eSATA/USB combo port on your laptop, you can use it with the eFlash as a Power Over eSATA port.



Note: The provided Power Over eSATA cable was designed specifically for transferring data and power through the Power Over eSATA connection. Standard eSATA cables will transfer data but not power, even if connected to a Power Over eSATA port.

For information on using the eFlash as an eSATA device see section 2.2.1 *eSATA,* p.14.

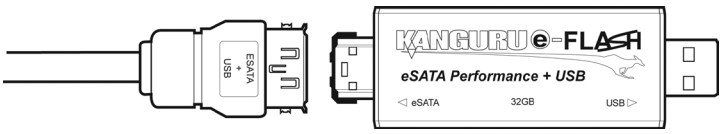
2.1.2 eSATA + USB

Standard eSATA connections only transfer data and require a separate power supply.

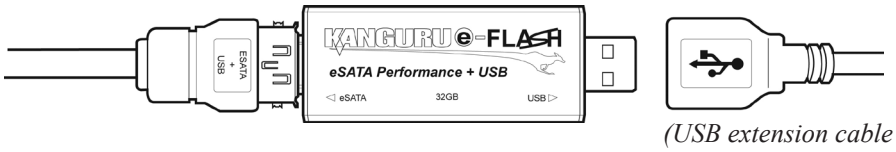
The eFlash's unique dual connection design allows you to use the USB connection to power the device while it sends data through the eSATA connection. You can connect the eFlash through a standard eSATA connection, but you must also have it connected to an available USB port to power the device as stated above.

To connect the eFlash using the eSATA + USB method:

1. Remove the caps from both sides of the eFlash.
2. First connect the device via eSATA, either directly to an eSATA port or using an eSATA extension cable. You can use the provided Power Over eSATA cable as an eSATA extension cable (it will only transfer data if it is connected to a standard eSATA port).



3. After the eFlash has been connected via eSATA, connect it to a USB port. You can use a USB extension cable (not included) to connect via USB, or if you used an eSATA extension cable you can connect the eFlash directly to a USB port.



(USB extension cable not included)

If you followed these steps and connected the device in the proper order, the eSATA connection will transfer data while the USB connection provides power.

Note: Please be sure that you connect the eFlash to the eSATA port first. If you connect through USB before connecting to eSATA, the eFlash will operate as a USB device.

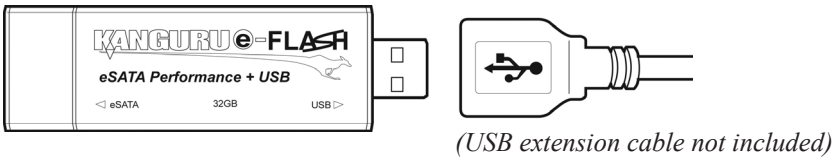
For more information on using the eFlash as an eSATA device see section 2.2.1 *eSATA* p.14.

2.1.3 USB Only

The Kanguru eFlash has a high speed USB2.0 connection that allows you to connect it to almost any computer. When the eFlash is connected through a USB port it behaves like a regular USB flash drive.

To use the eFlash as a USB flash drive:

1. Remove the cap from the eFlash's USB connection.
2. Connect the eFlash to an available USB 2.0 port on your computer (you can plug it into a USB 1.1 port, but it will not operate at USB 2.0 speeds).



(USB extension cable not included)

3. Your computer should automatically detect the device.

For information on using your eFlash as a USB device see section 2.2.2 *USB* p.18.

2.2 Using Your eFlash

There are 2 ways to use your eFlash depending on the way it is connected. If you are connecting the eFlash through Power over eSATA or eSATA + USB, the eFlash will operate as an eSATA device. If you are connecting the eFlash through USB only, the eFlash will operate as a USB device.

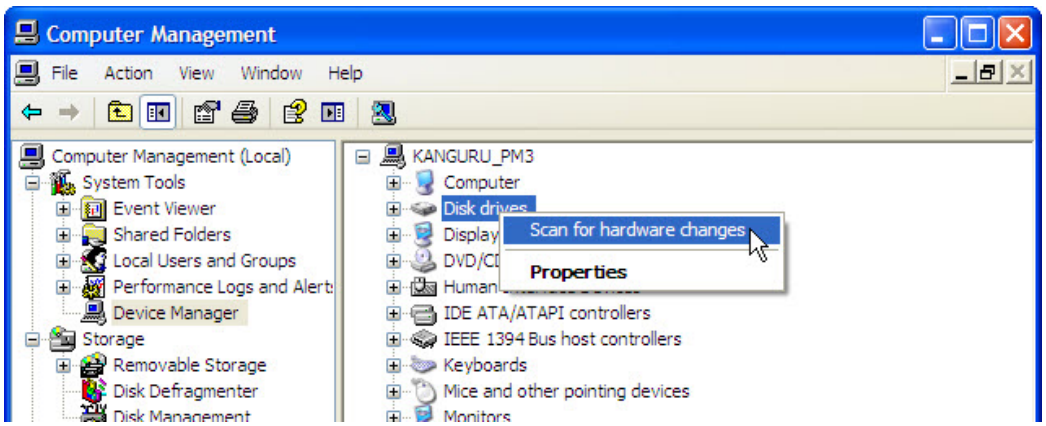
2.2.1 Using the eFlash as an eSATA device

When you connect the eFlash through Power Over eSATA or eSATA + USB, the eFlash will appear in the Hard Disk Drives section under My Computer if you are using Windows or as a drive icon on your desktop if you are using Mac OS.

Your system may not automatically recognize that the device has been connected. Although SATA was designed to be hot-swappable, not all systems support this feature. For more information, please refer to Appendix A: *eSATA Hot Swap*, p.21.

If you do not see the device right away:

1. Right click on the **My Computer icon** on your desktop and then select **Manage** from the popup menu. The Computer Management window appears.
2. Under System Tools in the left window, select **Device Manager.**
3. In the right window, right click on **Disk drives**.
4. Select **Scan for hardware changes**.



You should now be able to see your device in My Computer. If you still are not seeing the device, please see section 4. *Troubleshooting*, p.19 for possible solutions.

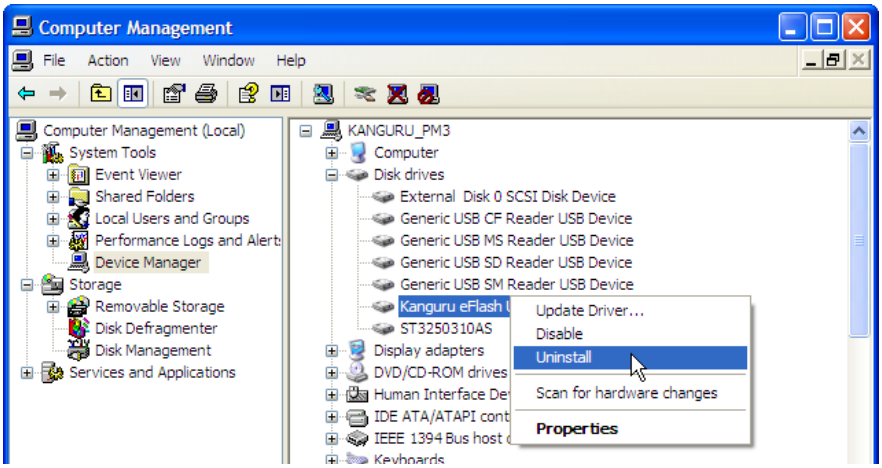
Note: The eFlash comes preloaded with a third party application, HotSwap!. HotSwap! allows you to easily add and remove eSATA devices with a few clicks of your mouse. We recommend using the preinstalled HotSwap! application to scan for hardware changes. If you are using HotSwap! you can right click on the HotSwap! icon in the taskbar and then select **Scan for hardware changes** from the popup menu. For more information on using HotSwap!, see section 2.2.1.1 *Using HotSwap!*, p.16.

Removing the eSATA device

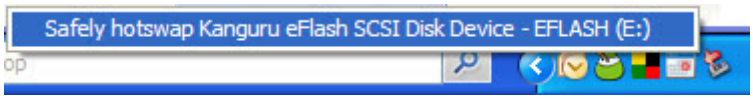
Windows Users
Before attempting to remove the eFlash, make sure that no data is being transferred to or from the device. The easiest way to determine that no data is being transferred to or from the device is to check that the blue LED indicator near the eFlash's eSATA connection is not blinking. Be sure to follow safe removal procedures to avoid loss of data.

To remove the eFlash:

1. Right click on the **My Computer icon** on your desktop and then select **Manage** from the popup menu. The Computer Management window appears.
2. Under System Tools in the left window, select **Device Manager.**
3. In the right window, select **Disk drives** to view all connected disk drives.
4. Right click on the **eFlash** and then click on **Uninstall** from the popup menu to remove the device.



If you are using HotSwap! you can click on the HotSwap! icon and then select **Safely hotswap Kanguru eFlash SCSI Device** from the popup menu. For more information on using HotSwap!, see section 2.2.1.1 *Using HotSwap!*, p.16.



If you receive an error message stating that the device cannot be removed yet, make sure that any programs that may still be accessing the device are closed and then try to remove it again.

Once the device has been successfully removed, you can safely disconnect the eFlash.

Mac Users
To safely remove the device, drag the eFlash drive icon on the desktop into the trash can.

Once the device has been successfully removed, you can safely disconnect the eFlash.

2.2.1.1 Using HotSwap!

The eFlash comes preloaded with a third party application HotSwap!. HotSwap! allows you to easily add and remove eSATA devices with a few clicks of your mouse. HotSwap! is extremely useful when using eSATA devices like the eFlash. We recommend that you install HotSwap! on any computer that you will be using with the eFlash. HotSwap! is only compatible with Windows XP / 2003 / Vista / 7. A Windows 2000 compatible version of HotSwap! is available for download from the HotSwap! website.

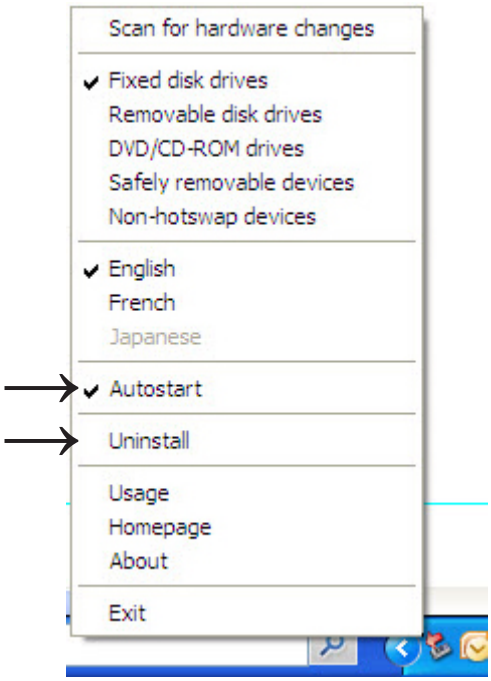
Note: HotSwap! is a 3rd party application and is NOT supported by Kanguru Solutions. You are not required to use HotSwap!, but we do feel that you will find it very convenient when connecting or disconnecting eSATA devices. For more information regarding HotSwap! or to find HotSwap! support, please visit their website: http://mysite.verizon.net/kaakoon/hotswap/index_enu.htm

To install HotSwap!:

1. Connect the eFlash.
2. Open the eFlash device and then open the **HotSwap!** folder.
3. Copy the **HotSwap!.exe** application onto your desktop.
4. Double click on the **HotSwap!.exe** file to run HotSwap!.

You will see the HotSwap! icon  appear in the taskbar. The icon will look similar to the Safely Remove Hardware icon, except that the icon's arrow is red instead of green.

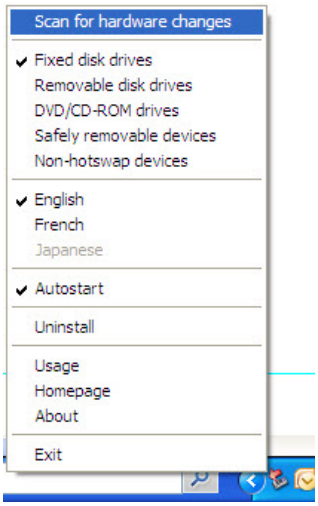
Note: This will install and autostart HotSwap!. To uninstall or to turn off autostart, right click on the HotSwap! icon in the taskbar. A pop up menu will appear. Click on **Autostart** to turn Autostart On/ Off. Click on **Uninstall** to uninstall HotSwap!.



Connecting the eFlash using HotSwap!

To connect the eFlash using HotSwap!:

1. Connect the drive via eSATA as described in sections 2.1.1 *Power Over eSATA,* p.6 & 2.1.2 *eSATA* p.14.
2. Right click on the **HotSwap! icon** in the taskbar.
3. Select **Scan for hardware changes.**



This performs the same action as going into the Device Manager and running a Scan for hardware changes action. You should now be able to see your device in My Computer.

Disconnecting the eFlash using HotSwap!

To disconnect the eFlash using HotSwap!:

1. Make sure that no data is being transferred to or from the device. The easiest way to determine that no data is being transferred to or from the device is to check that the blue LED indicator near the eFlash's eSATA connection is not blinking.
2. Left click on the **HotSwap! icon** in the taskbar. A popup menu appears, listing any connected eSATA devices.

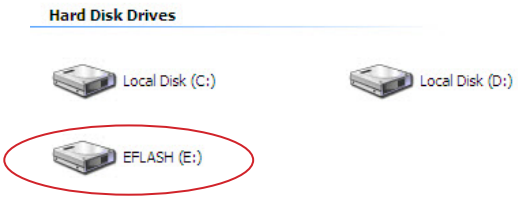
3. Select **eFlash** from the popup menu. You will receive a message notifying you that it is safe to hot swap the hardware.

You can configure the way HotSwap! functions by right clicking on the taskbar icon. We recommend that you leave these configurations in the default settings or that you read the HotSwap! documentation at the link below before doing so. For more information regarding HotSwap! or to find HotSwap! support, please visit their website: http://mysite.verizon.net/kaakoon/hotswap/index_enu.htm

Note: HotSwap! is a free application. If you enjoy HotSwap!, you can make a donation at their website through PayPal.

2.2.2 Using the eFlash as a USB device

Windows Users
The eFlash will appear in the Hard Disk Drives section under My Computer.



Mac Users
The eFlash will appear on your desktop as a drive icon.

You can now access the eFlash as you would a standard USB device.

Removing the eFlash

Before attempting to remove the eFlash, make sure that no data is being transferred to or from the device. The easiest way to determine that no data is being transferred to or from the device is to check that the red LED indicator near the eFlash's USB connection is not blinking. Be sure to follow safe removal procedures. Failure to do so may result in data corruption.

Windows Users

1. Left click on the **Safely Remove Hardware icon** in the taskbar.
2. Select the **eFlash** from the popup menu.
3. A message will appear informing you that it is safe to remove the device.

If you receive a message that the device cannot be removed, close any programs that may be accessing the device and then try to safely remove it again.

Mac Users
To safely remove the device, drag the eFlash drive icon on the desktop into the trash can.

3. Maintenance and Care

- This is an electronic device. It requires careful handling and use.
- Keep the device free from dust and contaminants by always replacing the safety caps when the device is not in use.
- Keep liquid and moisture away from the drive.
- Clean the exterior of the device by wiping with a soft, dry cloth. Do not use any harsh or abrasive cleaning agents as it could damage the surface of the device.
- Do not attempt to open or repair the device yourself. There are no serviceable parts inside. Opening the device or attempting unauthorized repairs will void your warranty. If you need to have the device serviced, contact Kanguru Solutions Tech Support at 508-376-4245.

4. Troubleshooting

Q: Can I use this device with Windows 95 / 98 / NT / ME?
A: No, these versions of Windows do not provide adequate support for eSATA. Please upgrade your version of Windows.

Q: Can I use both the USB and eSATA connections at the same time to transfer data?
A: No, you cannot use both connections to transfer data simultaneously. Your device will automatically transfer data through whichever side was connected first.

Q: The device cannot be detected or is disabled (has a yellow exclamation point next to the device name in the Device Manager).
A: Make sure that you are logged in as the Administrator or a user with Administrator privileges when you are installing new hardware. If the device is appearing in the Device Manager with a yellow exclamation mark next to it, right click on the device and then select uninstall. Then right click on the Disk Drives and then select Scan for hardware changes.

Q: The device cannot be detected even after I have scanned for hardware changes under the Device Manager.
A: Your computer does not support hot swap. You will have to restart your computer with the eFlash connected during boot up.

Q: I'm receiving the following warning when trying to safely unmount the device, "The device cannot be stopped because a program is still accessing it".
A: The device is still in use. Close all folders, files and programs that may be accessing the device and then try again.

Q: I'm receiving the following warning when trying to safely unmount the device, "The device cannot be uninstalled right now because the device requested a system restart".
A: Even if no programs are accessing the drive, if something is referencing the memory on the drive Windows fails to remove the drive and requests a system restart. Unfortunately, it is almost impossible to prevent this situation before actually attempting to remove the drive. Please try again later or restart Windows.

Q: How can the eFlash perform faster through eSATA than through USB2.0? Doesn't the flash memory limit the data rate?
A: Earlier generation NAND Flash memory and USB controllers did in fact throttle the transfer speed of data over USB2.0. Modern NAND Flash and USB Controllers though have overcome these limitations. Although there are many factors that contribute to the measured speed of USB2.0 on a PC, the practical limit is typically ~35MB/s for bulk data transfer. This means that by using the eSATA interface, the eFlash is able to overcome this transfer limit for enhanced speed.

Q: Why can't I copy some of my files to the eFlash?
A: There may be a single file size limit if your eFlash was formatted with a FAT32 file system. FAT32 has a limit of 4GB per file. We recommend formatting the eFlash in NTFS if you will be copying files of 4GB or bigger. Please note that formatting the drive will cause all the data stored on the eFlash to be permanently erased. Also note that the NTFS file structure is not compatible with all operating systems.

5. Warranty

This product carries a 3-year limited* warranty from the date of purchase. Kanguru Solutions is not responsible for any damages incurred in the shipping process. Any claims for loss or damage must be made to the carrier directly. Claims for shipping errors should be reported to Kanguru Solutions within three (3) working days or receipt of merchandise.

*90-day warranty on labor.

6. Tech Support

If you experience any problems installing your Kanguru product or have any technical questions regarding any of our products, please call our tech support department. Our tech support is free and available Monday thru Friday, 9am to 5pm EST.

Call 1-508-376-4245
Or visit our website at www.Kanguru.com

APPENDIX A: eSATA Hot Swap

Hot Swapping allows you to add and remove hardware to your computer while the computer is powered on and running. The eFlash is designed to be eSATA hot swap compatible, but not all computers support hot swap.

There are three components that factor in to whether a device can be hot swapped:

1. **The device -** The device in this case is the Kanguru eFlash. The Kanguru eFlash was designed to support hot swapping.

2. **The SATA controller -** The SATA controller is either integrated into your computer's motherboard or an add on SATA controller card, depending on where the eSATA port is connected to. If the eSATA port is connected to the motherboard then the motherboard's south bridge must support hot swap. If the eSATA port is connected to a host controller (i.e. PCI SATA host controller) then the host controller's chip needs to support hot swap.

3. **The driver -** The driver is the software that controls how your hardware operates. If the eSATA port is connected to the motherboard, then your computer will most likely be using the native Windows driver. SATA controller cards come with their own driver software typically.

Depending on these three components, your eFlash will behave in one of 3 ways when attached via eSATA:

- It will automatically appear under My Computer when you plug it in. In order to have the eFlash appear automatically, your controller must support hot swap and the driver must allow you to hot swap on the fly. Whether you remove the device using the Safely Remove Hardware tool or through the Device Manager depends on your setup.

- It will not appear when you plug it in until you run the "Scan for new hardware changes" from the Device Manager or HotSwap! application. If your controller supports hot swapping, but the driver does not allow you to hot swap on the fly, you will have to run the Scan for hardware changes from the Device Manager before your computer can recognize that the eFlash is connected. You will have to uninstall the device from the Device Manager in order to safely unmount it.

- It will have to be connected while your system boots up. If your controller does not support hot swap you will need to have the eFlash connected while the computer while the system boots up in order for it to be seen. This is referred to as cold swapping. You can remove the device once the computer has been shut down or you can uninstall it from the Device Manager.

For more information on what type of hot swap support your computer has, please refer to your computer's instruction manual.

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