



# Kanguru QSX User Guide



#### NOTICES AND INFORMATION

#### Please be aware of the following points before using your Kanguru QSX

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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 instructions, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to 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 Distance between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.



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#### 1. Introduction

Thank you for purchasing the Kanguru QSX from Kanguru Solutions. The Kanguru QSX features dual SATA hard drives (HDDs), allowing for huge storage capacities. The QSX supports both USB2.0 and eSATA connectivity, providing you with the convenience of USB and the blazing fast transfer rates of eSATA to create a perfect storage solution.

The Kanguru QSX is more than a basic storage device; it can be configured to operate in one of several storage modes to fit your needs. You can configure the QSX to operate as two mirrored disks for redundant data backup (RAID1), one large spanning volume (BIG), a striped array for faster performance (RAID0), or two individual hard drives (JBOD).

#### **Key Features**

- √ Dual SATA HDDs
- √ USB2.0 & eSATA interface
- √ BIG, JBOD, RAID0 or RAID1 storage modes
- √ Adjustable dip switches to change storage modes
- √ Durable aluminum housing
- √ LED indicators display the hard drives' status
- $\sqrt{}$  Built-in cooling fan

### 1.1 Package Contents

If any of these items are missing, please contact the Kanguru Solutions Technical Support Department at: (508) 376-4245 and replacement parts will be shipped ASAP.

- Kanguru QSX
- · Power adapter
- User Guide CD with HotSwap!
- Quick Start Guide
- USB Cable
- eSATA cable



### 1.2 System Requirements

- Operating System
  - o Windows 2000/XP/Server 2003/Vista/7
  - o Mac OS 10.3 or later
  - o Linux
- Intel Pentium-III 500MHz equivalent or faster
- 128MB RAM or higher
- 1 x USB port or 1 x eSATA port (for eSATA connection)

**Note:** eSATA connection requires a Port Multiplier aware host adapter in order for your computer to recognize both hard drives. If your eSATA host adapter is not Port Multiplier aware, only one hard drive will be recognized by your computer. This does not apply to USB connection. For additional information please see Chapter *4. Troubleshooting*, p.18.

Kanguru Solutions recommends the following third party PCI and PCIe eSATA host adapters which are Port Multiplier aware:

- PCI SYBA SATAII NCQ Host Controller Card
- PCIe SIIG eSATAII PCIe i/e

### 1.3 Specifications

Host Interface	eSATA (3Gb/s) USB2.0 (480 Mb/s)
Drive Interface	SATA I or II
Hard Drives	2 x 3.5" SATA Hard drives
Storage Modes	BIG, JBOD, RAID0 and RAID1
Operating System	Windows 2000/2003/XP/Vista/7 Mac OS X 10.3 or later Linux
Cooling Fan	4cm Ball Bearing Fan
Power Supply Input	100-240V
Dimensions	4.5"W x 7.7"L x 2.8"H



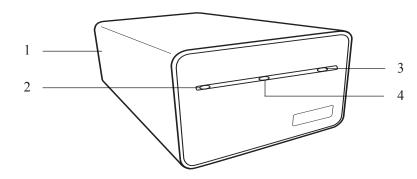
### 2. Basic Operation

The Kanguru QSX is extremely versatile and can meet almost any storage need. It can be configured to operate in several different storage modes, but is as simple to operate as a basic external hard drive.

#### 2.1 Parts and Functions

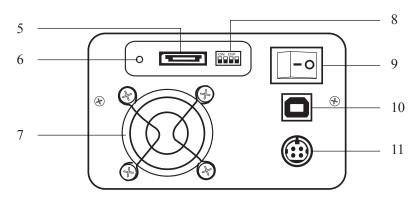
#### Front

- 1. Aluminum Housing
- 2. Hard Drive 2 LED Indicator
- 3. Hard Drive 1 LED Indicator
- 4. Power LED Indicator



#### Back

- 5. eSATA interface
- 6. Reset Button
- 7. Cooling Fan
- 8. Dip Switches
- 9. Power On/Off Switch
- 10. USB Interface
- 11. Power Connector



### 2.2 Setting up Your Kanguru QSX

Please follow these instructions to setup and connect your Kanguru QSX to your computer.

- 1. Place the Kanguru QSX on a flat stable surface by your computer.
- 2. Plug the Power Adapter into an appropriate electrical outlet and then plug the other end into the Power Connector (11).
- 3. Configure the QSX to the desired storage mode, turn on the QSX and then press the reset button (see section 2.3 Setting the Storage Mode, p.8).
- 4. Plug one end of the provided eSATA or USB cable into the QSX eSATA Interface (5) or USB Interface (10) and then connect the other end to the appropriate port on your computer. Although the Kanguru QSX has connections for both eSATA and USB, only one connection can be used at a time.

The Kanguru QSX will appear in My Computer if you are running Windows or it will appear on your desktop if you are running Mac OS X. The QSX may appear as one or two hard drives depending on the storage mode it is set in. If you are connecting the QSX via eSATA, it may not show up right away, For more information, see section 2.2.1 eSATA Connection, p.7.



#### 2.2.1 eSATA Connection

When connecting the QSX via eSATA, it may not appear in your computer right away. The Kanguru QSX is hotswap compatible. However, based on your eSATA host controller, several tasks may need to be performed in order to view the QSX.

Please do the following to rescan for newly connected eSATA devices:

1. Right click on the My Computer icon and click Manage.



- 2. The Computer Management window appears. From the list on the left side of the window, select **Device Manager.**
- 3. On the right side of the window, there will be a list of devices. Right click on your computer; it should be at the very top, and then select Scan for hardware changes.



4. Wait for the scan to complete and then check the **My Computer** screen again to see if the Kanguru QSX has been recognized by the computer. The QSX may appear as one or two hard drives depending on the storage mode it is set in.

If your computer still cannot recognize the Kanguru QSX, the computer may need to be restarted.

**Note:** For ease of use, the e-Flash comes with a 3<sup>rd</sup> party application HotSwap!. HotSwap! allows you to easily add and remove eSATA devices similarly to Windows Add/Remove hardware wizard. For more information on using HotSwap!, please see section *2.6 Using HotSwap!*, p.12.



### 2.3 Setting the Storage Mode

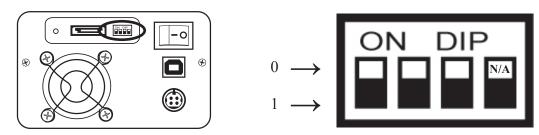
You can configure the way the Kanguru QSX operates by adjusting the dip switches located on the back of the unit (see section 2.1 Parts and Functions, p.6). The Kanguru QSX can be configured to operate in any one of the following 4 storage modes:

- **BIG** Combines two physical hard drives into a single volume (see section 3.1 BIG, p.14).
- **JBOD** Each hard drive operates as an independent drive (see section 3.2 JBOD, p.15).
- **RAID1 (SAFE)** Saves all data in duplicate on separate drives in a mirrored array to protect against data loss due to drive failure (see section 3.3 RAID1 (SAFE), p.16)
- **RAID0 (FAST)** Distributes data across both hard disks in a striped array. This allows for improved read/write transfer rates. (see section 3.4 RAID0 (FAST), p.17)

Storage modes can be changed by adjusting the position of the dip switches. It is NOT recommended to switch between storage modes after you have begun saving data to the Kanguru QSX. Switching storage modes may require that you reformat your hard drives which will cause all data on the hard drives to be erased.

To set the storage modes:

- 1. Make sure the Kanguru QSX is switched off.
- 2. Use a straightened paperclip or similar long, thin object to set a dip switch in either to the Up (0) position or Down (1) position.



**Note:** The switch furthest to the right is not used. Its position will not affect the storage mode.

The available storage mode settings are as follows:

BIG	000	ON DIP
JBOD	001	ON DIP
RAID0 (FAST)	010	ON DIP
RAID1 (SAFE)	011	ON DIP

3. Turn the power switch to the On position then press the reset button. You may need to use the same thin object to press the reset button.

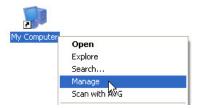


### 2.4 Formatting Large Volumes (for BIG and RAID0 modes)

When using your Kanguru QSX in either BIG or RAID0 (FAST) storage modes, they will initially appear at half capacity. In order to utilize the full capacity, you will need to reformat your hard drives so that they appear as one large volume.

#### 2.4.1 Formatting your hard drives using Windows

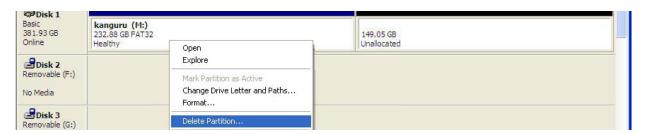
1. Right click on My Computer and then select Manage from the drop down menu.



- 2. Select **Disk Management** from the left side window. The Disk Management console will appear in the right side window.
- 3. In the bottom right side window, locate the disk named **Kanguru.** It should contain two partitions, one Healthy and one Unallocated.



4. Right click on the blue bar on the Healthy partition and select **Delete Partition**. **WARNING!** Deleting a partition will also delete any data stored on that partition.



- 5. A confirmation window appears, warning you that all data in the partition will be deleted. Click on **Yes** to continue.
- 6. The Disk will now appear as one large unallocated partition. Right click on the black bar in the unallocated partition and select **New Partition**. The New Partition Wizard opens.



7. Follow the instructions in the New Partition Wizard to complete formatting your hard drives. Your disk should now appear as one large drive.





### 2.4.2 Formatting your hard drives using Mac OS

- 1. From the **Finder** menu bar, select **Utilities** from the **Go** menu.
- 2. Double-click **Disk Utility** in the **Utilities** folder.
- 3. The Disk Utility window will appear. Select the disk labeled **Kanguru** from the list of available hard drives.
- 4. Select the **Partition** tab.
- 5. Under the Volume Scheme section, select 1 partition.
- 6. In the **Volume Information** section, enter a name for your new partition and choose the file system.
- 7. Once you have finalized the volume options, click **Partition**. Click **Partition** again when the alert message appears asking you to confirm.
- 8. Mac Disk Utility will format and partition the disk according to your settings, and your drive will be ready to use.

#### Important for Mac OS X 10.5 Users

If you are using the QSX with Mac OS X 10.5 or later, you may encounter some issues when trying to format/partition the QSX. In order to resolve these problems you will need to update the QSX firmware. None of your data stored on the QSX will be affected by this firmware upgrade.

To update your firmware version:

- 1. Download and install version 5.1.24 of SteelVine manager. You will want to download "SiI57xx SteelVine Manager for Max OS X Leapord" or "SiI57xx SteelVine Manager for Max OS X Tiger" depending on your version of Mac OS X. You can download SteelVine Manager here: <a href="http://www.siliconimage.com/support/searchresults.aspx?pid=105&cat=24">http://www.siliconimage.com/support/searchresults.aspx?pid=105&cat=24</a>
- 2. Download the firmware version 1.1576. You will want to download the "Firmware for Upgrade by GUI" version. Unzip the contents of the file to a folder. http://www.siliconimage.com/support/searchresults.aspx?pid=105&cat=23
- 3. After you have installed the SteelVine Manager, run the SteelVine Manager.
- 4. Click on the **Edit** menu and then select **Specify Firmware**.



- 5. You will be required to enter a password in order to update the firmware. The default password is: **admin**
- 6. The Firmware Manager appears. Click on the **Browse** button at the bottom of the window and then direct the Firmware Manager to the .bin firmware file.
- 7. Select the firmware file that you downloaded and unzipped in Step 2 and then click on the **Open** button.
- 8. Click on the **Install Firmware** button.

The firmware update process will begin automatically. **Caution!** Once the update process has begun, do not turn off or disconnect the unit until the update process has completed. You will be prompted to restart your computer once the update process is completed.



### 2.5 Disconnecting the Kanguru QSX

Do not disconnect the QSX from your computer while transferring files or while applications or files stored on the drive are in use. Doing so may result in data loss or damage to the drive. If you do not properly remove the drive from your system, then you may have to reboot your computer in order for the drive to be recognized again.

**WARNING!** Failure to disconnect the QSX properly may result in data loss or corruption.

#### **USB 2.0**

- Windows 2000 / XP / Vista / 7: Click on the green Remove Hardware icon in the taskbar and select the USB Mass Storage Device to safely remove the drive.
- Mac: When removing the drive from your Mac, close all windows and quit all applications that
  are stored on the QSX and drag the drive icon(s) to the Trash/Eject to remove the drive from
  your computer.

#### **eSATA**

- Windows 2000 / XP / Vista / 7
  - 1. Right click on the My Computer icon and select Manage from the drop down menu.
  - 2. The Computer Manager appears. Click on **Device Manager**.
  - 3. The Device Manager appears. Double click on **Disk Drives**.
  - 4. Right click on the device labeled SCSI Disk Device and select Uninstall.



- 5. When the confirm dialog appears, click **OK** to remove the device.
- 6. It is now safe to unplug the device from your computer.

**Note:** For ease of use, the e-Flash comes with a 3<sup>rd</sup> party application HotSwap!. HotSwap! allows you to easily add and remove eSATA devices similarly to Windows Add/Remove hardware wizard. For more information on using HotSwap!, please see section *2.6 Using HotSwap!*, p.12.

Mac: When removing the drive from your Mac, close all windows and quit all applications that
are stored on the QSX and drag the drive's icon to the Trash/Eject to remove the drive from your
computer.



### 2.6 Using HotSwap!

The Kanguru QSX comes 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 QSX. We recommend that you install HotSwap! on any computer that you will be using with the QSX. HotSwap! is only compatible with Windows XP / 2003 / Vista. A Windows 2000 compatible version of HotSwap! is available for download from the HotSwap! website.

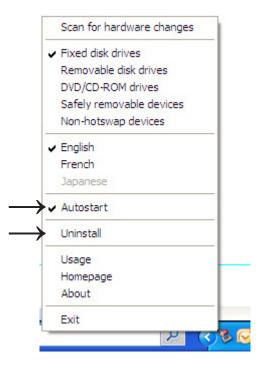
**Note:** HotSwap! is a 3rd party application and is NOT supported by Kanguru Solutions. You are not required to use HotSwap!, but we do feel that you will find it very convenient when connecting or disconnecting eSATA devices. For more information regarding HotSwap! or to find HotSwap! support, please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

To install HotSwap!:

- 1. Insert the provided Manual CD into your PC.
- 2. 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 papear 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!.

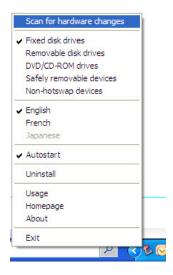




### 2.6.1 Connecting the QSX using HotSwap!

To connect the QSX using HotSwap!:

- 1. Connect the QSX via the eSATA interface.
- 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.

### 2.6.2 Disconnecting the QSX using HotSwap!

To disconnect the QSX 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 neither of the Hard Drive LED indicators are blinking.
- 2. Left click on the **HotSwap! icon** in the taskbar. A popup menu appears, listing any connected eSATA devices.
- 3. Select **QSX** 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

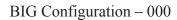
**Note:** HotSwap! is a free application. If you enjoy HotSwap!, you can make a donation at their website through PayPal.



### 3. Storage Modes

The following sections will describe, in detail, each of the storage modes that are supported by the Kanguru QSX.

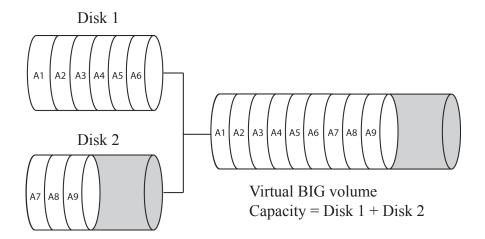
#### **3.1 BIG**





Before using the Kanguru QSX in BIG mode, you first have to reformat your hard drives. For more information, please see section 2.4 Formatting Large Volumes (for BIG and RAID0 modes), p.9.

BIG storage mode combines the two physical hard drives into a single large volume; resulting in a seamless expansion of virtual volumes beyond the physical limitations of a single hard drive. When writing to the QSX in BIG mode, data will be saved to Disk 1 first. Once Disk 1 has run out of space then data will be written to Disk 2. This process will happen transparently. Hard drive A and B are combined into a single virtual volume, with a storage capacity that is equal to the sum of each of the physical hard drives A and B. BIG mode does not provide any data redundancy or performance gain.



**WARNING!** If one of your hard drives fails, do not attempt to replace the faulty drive. Doing so will void the warranty. If one of your hard drives fails, please contact Kanguru Solutions Tech Support at 508-966-4245.

**Note:** If Disk 2 fails, all data on Disk 1 will still be recoverable. Similarly, if Disk 1 fails, any data in Disk 2 will be recoverable. It is advisable that you backup any data before sending the unit in for repair. In order to access the uncorrupted data, change the QSX storage mode to JBOD (see section 3.2 JBOD, p.15). The remaining healthy disk will appear under My Computer.

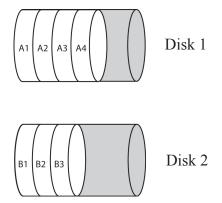


#### **3.2 JBOD**

JBOD Configuration - 001



JBOD (Just a Bunch of Disks) storage mode enables each hard drive to be seen and operate separately as independent drives. JBOD mode does not provide any data redundancy or transfer performance gain. When in JBOD mode, the QSX will show up as two separate drives in My Computer. Both Disk 1 and Disk 2 operate as individual drives.



When using an eSATA host controller, JBOD should only be used if the eSATA host controller is Port Multiplier (PM) aware. If the host is not PM aware, only one drive will be detected by your system. Kanguru Solutions recommends the following third party PM aware PCI eSATA host adapters:

- PCI SYBA SATAII NCQ Host Controller Card
- PCIe SIIG eSATAII PCIe i/e

There is no such limitation if you are connecting via a USB host connection.

**Warning!** If one of your hard drives fails, the data on the second drive will not be affected. Do not attempt to replace the faulty drive. Doing so will void the warranty. If one of your hard drives fails, please contact Kanguru Solutions Tech Support at 508-966-4245.

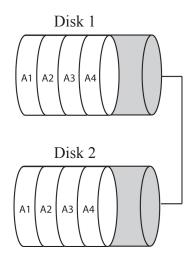


### **3.3 RAID1 (SAFE)**

RAID1 (SAFE) Configuration – 011



RAID1 (SAFE) storage mode saves all data in duplicate on separate drives, providing real time backup to protect against data loss due to drive failure. RAID1 provides the highest level of protection for critical data. One drive mirrors the other at all times. The resulting storage capacity of the RAID1 volume will be equivalent to the size of one hard drive (half the total capacity). RAID 1 mode provides data redundancy but reduces performance because all data has to be written twice.



RAID 1 Volume Capacity = (Disk 1 + Disk 2) / 2

#### **Building and Verifying the Mirrored Array**

The first time you transfer data to your QSX in RAID1 storage mode, the QSX will automatically begin building the mirrored array. After a few moments, both Hard Drive LED Indicators will turn off, and then the Hard Drive 1 LED Indicator will blink rapidly. This indicates that the mirrored array is being built. After the mirrored array is built the QSX will begin verifying the mirrored array. During this time, the Hard Drive 1 LED Indicator will be on and the Hard Drive 2 LED Indicator will blink rapidly. The entire process may take upwards of 4 hours to build the mirrored array depending on the HDD capacity.

It is not necessary to build and verify the mirrored array in one session. You can disconnect and turn off the QSX while the mirrored array is being built or verified and it will continue from the point where it was stopped when power on the unit again. **Warning!** Until the mirrored array is built, data is only stored to one drive and is not mirrored.

If one of the hard drive fails, the RAID1 volume is still usable, but it is in a vulnerable state because there is no longer a mirror of your data. If this happens, one of the Hard Drive LED Indicators will constantly blink even if there is no data being transferred.

**Warning!** If one of your hard drives fails, do not attempt to replace the faulty drive. Doing so will void the warranty. If one of your hard drives fails, please contact Kanguru Solutions Tech Support at 508-966-4245.

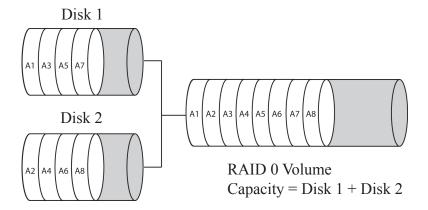


### **3.4 RAID0 (FAST)**

RAID0 (Fast) Configuration – 010



RAID0 (FAST) storage mode distributes data across both hard disks in a striped array. While in RAID0 (FAST), data is transferred to both disks simultaneously, in parallel, improving data transfer speed but offering no data redundancy. Kanguru QSX creates a single virtual volume that is striped across both hard drives, with a storage capacity that is equal to the sum of both hard disk drives.



**Warning!** If one hard drive fails, all data stored on both hard drives will be corrupted. RAID0 doubles your potential for data loss, since if either one of the two disks fails then all your data will be corrupted. Do not attempt to replace the faulty drive. Doing so will void the warranty. If one of your hard drives fails, please contact Kanguru Solutions Tech Support at 508-966-4245.

Before using the Kanguru QSX in RAID0, you first have to format your hard drives. For more information, please see section 2.4 *Formatting Large Volumes*, p.9.

### 3.5 Comparison of Storage Modes

Please refer to the following chart to compare the different features available with each storage mode.

	Single large volume	Data recoverable if 1 disk fails	Redundant data mirroring	Increased performance
BIG	X	<b>X</b> *		
JBOD		<b>X</b> *		
RADI1		x	x	
RAID0	Х			X

<sup>\*</sup> Only data on the remaining disk that did not fail can be recovered.



# 4. Troubleshooting

Problem	Possible Cause	Possible Solution
QSX is not powering on.	Power adapter is not connected correctly.	Make sure that the power adapter is plugged into a compatible electrical outlet and that the other end is securely connected to the power connection.
QSX turns on but is not recognized by the computer or is not displaying the correct capacity.	USB or eSATA cable is not connected securely.	Make sure that all cables connecting the QSX to the computer are connected securely.
	Hard drive is not initialized or formatted.	Make sure your hard drives are correctly initialized and formatted. If the QSX is in BIG or RAID0 storage mode, see section 2.4 Formatting Large Volumes, p.9.
	Hard drive is not formatted in the right file system.	If you are using a Mac, make sure the drive is formatted as FAT32 or another Mac compatible file system. If you are using windows, make sure the drive is formatted as FAT32 or NTFS.
	The QSX is not in the correct storage mode.	Make sure the dip switch configuration is correct for the storage mode that you want and then press the reset button.
	Your system does not support HotSwapping (eSATA connection only).	See section 2.2.1 <i>eSATA Connection</i> , p.7 for more information.
One or both of the LED hard drive indicator lights are blinking constantly even though there is no activity or are off.	One or both of the hard drives are corrupted or have failed.	Please call Kanguru Solutions Technical Support for assistance. Under no circumstances should you try to service the unit yourself; doing so will void the warranty.
Receiving a "Resource Busy" error when partitioning the hard drive using Mac OS X 10.5.	This is a known issue with Max OS X 10.5.	Please update the firmware on your unit. For more information, please see section 2.4.2 Formatting your hard drives using Mac OS, p.10.
I cannot format my hard drive in FAT32.	Windows hard drive formatter limits FAT32 partitions to 32GB maximum capacity per volume.	Format your hard drive using a 3rd party FAT32 format tool or format in another compatible file system that doesn't have such limitations such as NTFS.
In JBOD mode only one drive is showing up under My Computer.	If you are connecting via eSATA, your eSATA host adapter is not Port Multiplier aware.	You may need to purchase a PCI eSATA card that is PM aware. You can also connect the QSX via USB, as USB does not have this limitation.



### **5. WARRANTY**

This product carries a 1 year warranty from the date of purchase on the enclosure, and a 3 year warranty from the date of purchase on the HDDs. Any claims for loss or damage must be made to carrier directly. Claims for shipping errors should be reported to Kanguru Solutions within three (3) working days of receipt of merchandise.

### 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



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