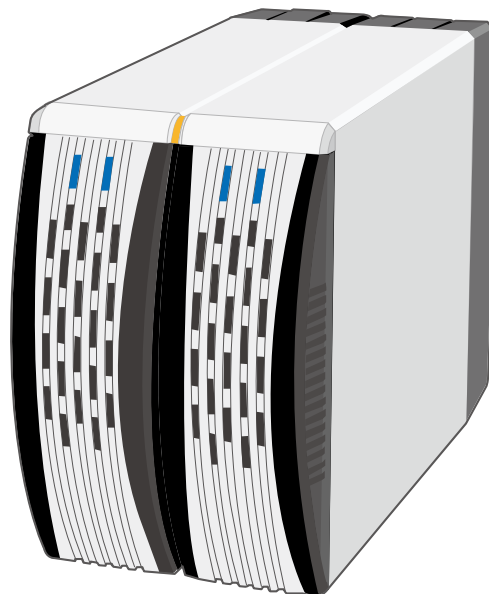


## 2-bay RAID Systems for 3.5" SATA HDD

Easy RAID Storage Management for High Productivity



USB 2.0

eSATA/USB 2.0

USB2.0/FireWire800

### ***User's Manual***

This User's Manual provides instructions on assembly and usage of the 3 models



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## **GENERAL INFORMATION**

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The product information provided in this manual is subject to change without prior notice and does not represent a commitment on behalf of the vendor. The vendor assumes no liability or responsibility for any errors that may appear in this manual.

### **NOTICES AND CLASSIFICATIONS**

#### ***FCC-B Radio Frequency Interference Statement***

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:

This device may not cause harmful interference.

This device must accept any interference received, including interference that may cause undesired operation.



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 when the equipment is operated in a commercial environment. 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.

### **CONTACT US**

We are committed to offer economical, high-quality connectivity and storage enclosure solutions to the market. Your questions, inquiries or comments are welcomed.

For Technical Support, please go to our website at [www.onnto.com.tw](http://www.onnto.com.tw)

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## **INTRODUCTION**

Thank you for purchasing the 3.5" SATA HDD 2-bay RAID System. The 2-bay RAID System provides massive storage capacity and advanced RAID configuration options in a desktop storage device. The Mode switches allow easy configuration of Striping (RAID 0), Spanning, Mirroring (RAID 1) and JBOD RAID Modes.

## **FEATURES**

- ◆ Provides Striping, Spanning, Mirroring, and JBOD RAID Modes for effective storage management
- ◆ Supports easy RAID Mode configuration with convenient Mode switches
- ◆ Offers easy monitoring of system status via LED indicators
- ◆ Dissipates heat efficiently with aluminum housing
- ◆ Maximizes airflow and product life with a silent, durable fan
- ◆ Increases data transfer speed with the Serial ATA technology
- ◆ Supports hot-plug and HDD hot-swap
- ◆ Enables flexible eSATA, USB 2.0 or 1394b connectivity



Any loss, corruption, or destruction of data is the sole responsibility of the user of the RAID System. Under no circumstances will the manufacturer be held liable for the recovery or restoration of any data.

This User's Manual provides instructions on assembly and usage of the following products:

- ◆ USB 2.0 2-bay RAID System
- ◆ eSATA/USB 2.0 2-bay RAID System
- ◆ USB 2.0/FireWire 800 2-bay RAID System



Please thoroughly read and follow the instructions provided in this manual. Failure to do so may result in damage to the RAID System, and any or all of the connected devices.



## **PRECAUTIONS FOR THE RAID SYSTEM**

- ◆ The main circuit board of the RAID System is susceptible to static electricity. Proper grounding is required to prevent electrical damage to the RAID System or other connected devices, including the computer host. **Always** place the RAID System on a smooth surface and avoid all dramatic movement, vibration and percussion.
- ◆ Do **NOT** allow water to enter the RAID System.
- ◆ Installation of additional equipment in the host computer may be required. Visit our website to download the latest product information updates.
- ◆ Do **NOT** attempt to service this unit yourself. Opening or removing the back cover will expose you to dangerous voltages or other hazards.
- ◆ Do **NOT** block the front and rear ventilation. Proper airflow is required to ensure reliable operation and to prevent overheating.
- ◆ Do **unplug** the RAID System from the electrical outlet when not in use to provide an ecological friendly environment.
- ◆ **Use only** the power supply cable provided with the RAID System.

## **USB 2.0 2-BAY RAID SYSTEM**

### **SYSTEM REQUIREMENTS**

#### **PC**

- ◆ 266MHz or faster CPU (Microsoft Vista requires a minimum 800MHz CPU)
- ◆ 64MB of RAM (Microsoft Vista requires a minimum 512MB of RAM)
- ◆ Microsoft Windows 2000, XP, 2003, or Vista
- ◆ One available USB 2.0 port

#### **MAC**

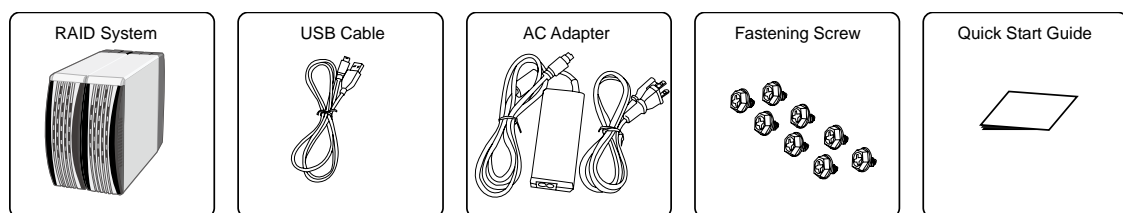
- ◆ PowerPC or Intel Core Duo processor
- ◆ 64MB of RAM (Mac OS X 10.4 requires 256MB of RAM)
- ◆ Mac OS 10.2 or higher (PowerPC) or Mac OS X 10.4 (Intel)
- ◆ One available USB 2.0 port



SATA compatible hard drive is required for the RAID System. Once the HDDs are formatted, the actual available storage capacity can vary depending on selected operating environment (normally 5-10 % less).

### **PACKAGE CONTENTS**

- ◆ 2-bay RAID System
- ◆ USB Type A to mini-B Cable
- ◆ AC Adapter
- ◆ Fastening Screws x 8
- ◆ Quick Start Guide

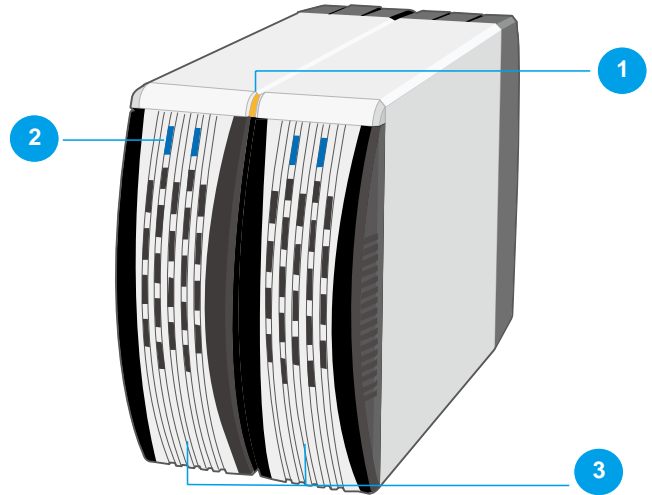


Please keep all package contents and packaging material in the event that the product must be returned.

## USB 2.0 2-BAY RAID SYSTEM VIEWS

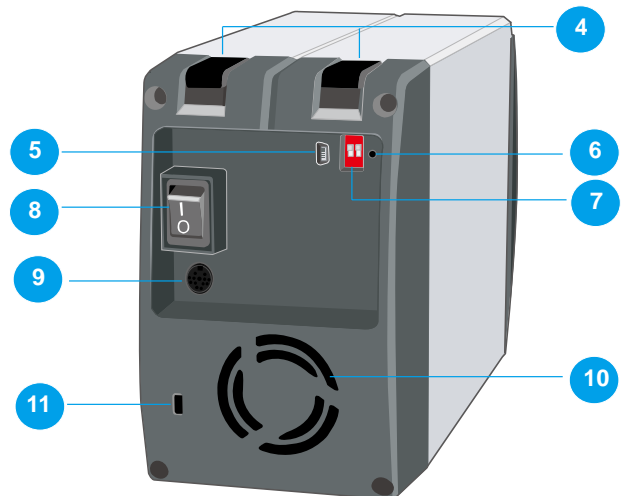
### **FRONT VIEW**

1. System LED Indicator
2. HDD LED Indicator
3. HDD Trays



### **REAR VIEW**

4. Quick HDD release levers
5. USB mini-B port
6. Reset Button
7. Mode Switch
8. Power Switch
9. DC IN
10. Fan
11. Lock Port

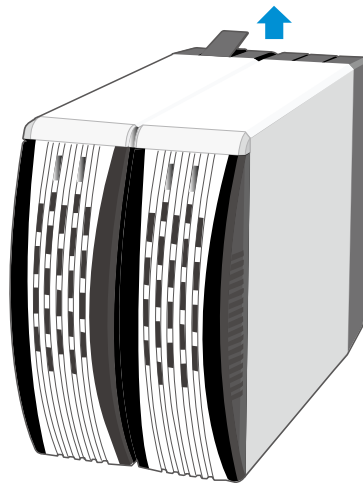




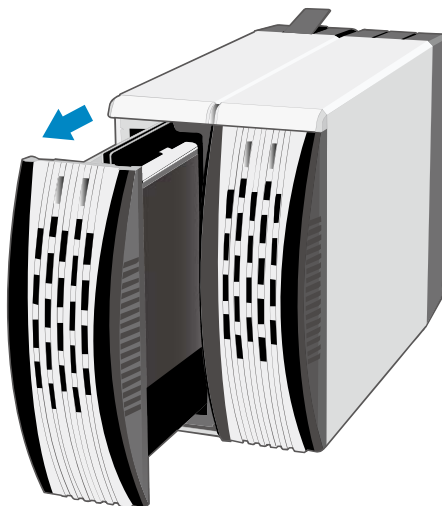
## INSTALLING/REPLACING THE HARD DRIVES IN THE RAID SYSTEM


When the HDD is not installed, simply slide the tray out of the drive bay without using the lever and be cautious when lifting the RAID System with the trays inside. When the HDD is installed, after lifting the level, the tray should easily be released from the drive bay.

1. Lift the quick HDD release lever to release the selected HDD tray from the desired drive bay.

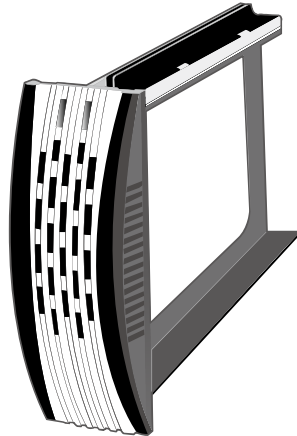


2. Slide the HDD tray out of the drive bay.

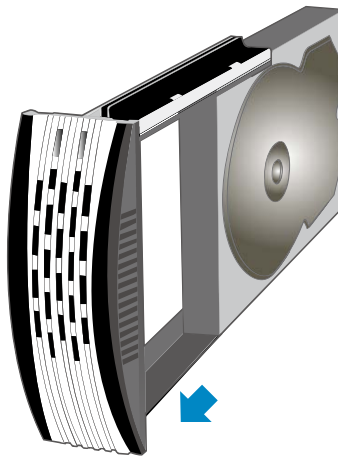


 Due to the design tolerance of the SATA HDD connector, however, the HDD tray may not always be released from the drive bay easily, or may not be released at all. If this occurs, carefully slide the HDD tray out of the drive bay after lifting the quick HDD release lever.

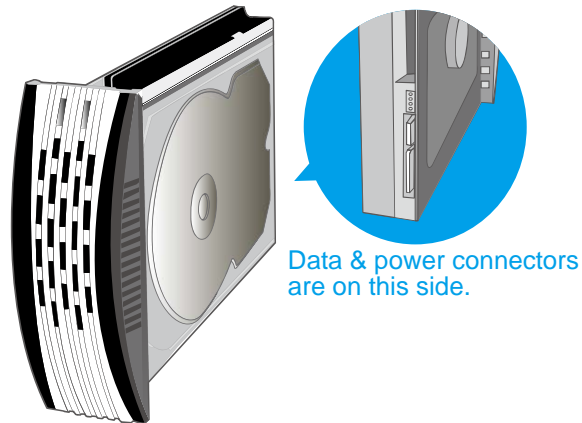
3. When removed, the HDD tray appears as shown below.



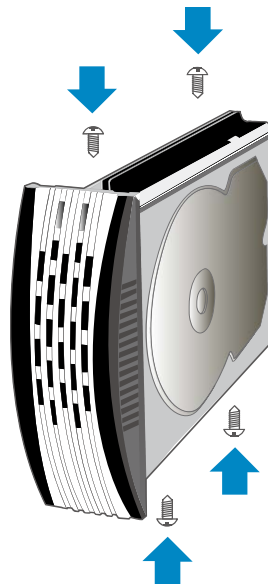
4. Carefully slide the HDD into the drive tray.



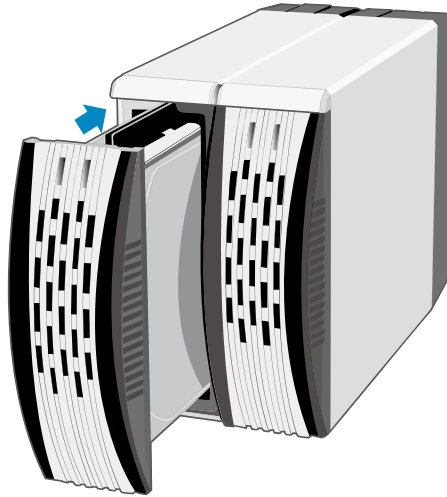
5. Ensure that the interface connectors are oriented toward the rear of the drive tray.




6. Locate the screws included in the package. Ensure that the screw guides on the side of the HDD are aligned with the openings on the side of the drive tray. Fasten the HDD to the drive tray by inserting and tightening the screws.

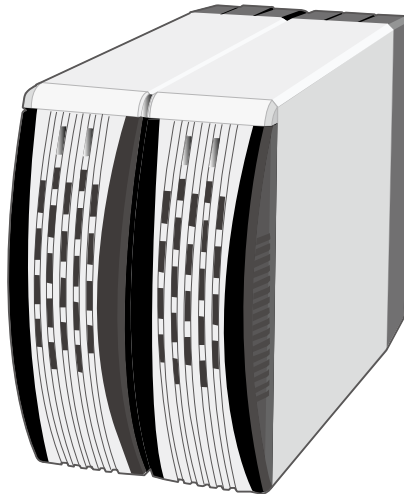


7. Align the drive tray with the guide rails and slide it into the drive bay. Ensure that the tray is completely inserted and that the interface connectors are properly seated.



 In most cases, you would need to firmly push the trays to a close until a “click” sound is heard.

8. Now, the RAID System is ready for connection to a host



## SETTING THE RAID MODE

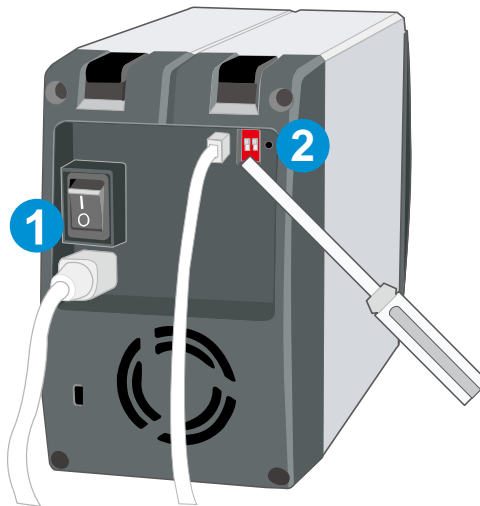
Deleting the current partition prior to changing RAID modes is highly recommended.

For the USB 2.0 model, after deleting the current partition and turning “off” the power switch, set the new RAID mode and power the RAID system “on” again. The RAID system can then be used with the updated RAID mode.

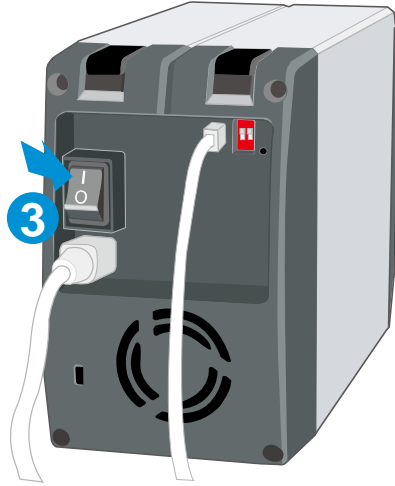


Pressing the reset button is not required.

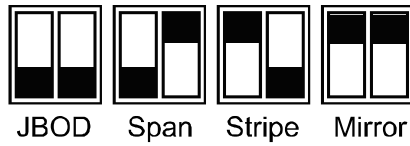
1. Power “off” the RAID System.
2. Use a small, flat-blade screwdriver to select the RAID Mode.




3. After setting the new RAID mode, power the RAID System “on”.



### USB 2.0 RAID Modes:

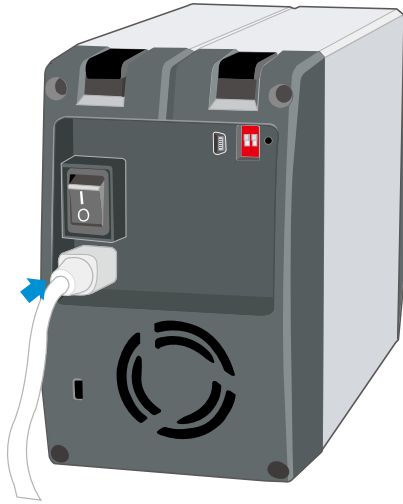


 Changing the RAID Mode deletes all data stored on the device. If you have saved data in the drives, backup all data before changing the RAID Mode.

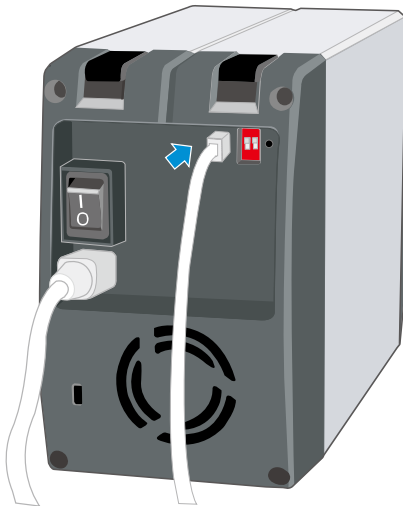
## CONNECTING THE RAID SYSTEM TO A COMPUTER

Complete the following steps to connect the RAID System to a host computer.

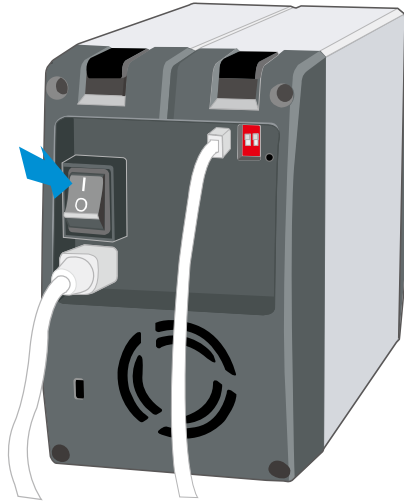
1. Connect the AC/DC power adapter.



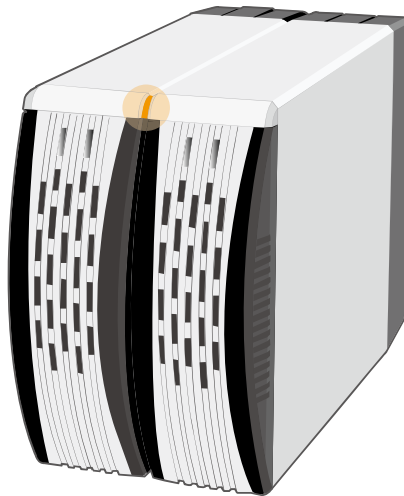
2. Insert both ends of the USB 2.0 cable into the corresponding port of the RAID System and the host.



2. Turn the power switch to the “on” position.



3. When connected, the System LED lights will become steadily orange.



You are now ready to begin using your RAID System!



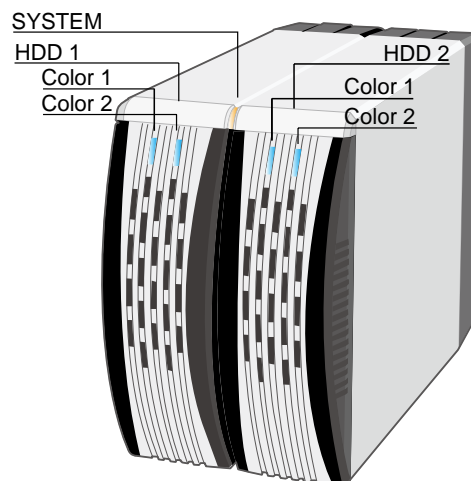
## SAFE REMOVAL OF THE RAID SYSTEM

Safe removal of the RAID System from the host controller requires the steps. First, you would need to eject the device from your host controller. Next, press the “off” button on the RAID System if necessary.



Most current USB host controllers handle USB devices as external devices, thus, it is highly recommended that the RAID System be safely removed from the host.

## LED INDICATORS



### SYSTEM LED x 1

Indicators	Color
Power on	Orange
Power off	None

### HDD LED x 2

Indicators		RAID Mode	Color 1	Color 2
Disk error		Stripe, Span, Mirror, JBOD	Red	None
Data access		Stripe, Span, Mirror, JBOD	None	Flash Blue
Disk rebuild	Source HDD	Mirror	None	Blink Blue
	Target HDD	Mirror	Red	Blink Blue



The difference between a flashing LED and a blinking LED is that flashing refers to the read/write activity, and blinking refers to slow but regular pulses.

## REBUILD

In Mirror mode, if one of the HDDs fails and is replaced with a functional HDD, the RAID System will automatically rebuild the target HDD (the new functional HDD) with data from the source HDD (the remaining functional HDD) sector by sector. After the rebuild is completed, data in both HDDs will be identical. The use of two identical HDDs from the same manufacturer, having the same capacity and RPM is highly recommended.



When the chipset is processing the Rebuild task, if data is accessed during this period, the speed of data access is around 2 ~ 3 MB/sec; thus, access of the HDD during a Rebuild is not recommended.

### **ONLINE REBUILD**

In most cases, Rebuild refers to “Online Rebuild”, meaning the rebuild is initiated when the RAID System is connected to the host. When the Online Rebuild is initiated, the RAID System cannot rebuild if it is not connected to the host.



For the USB 2.0 model, it can only support Online Rebuild.

### **REBUILD EXISTING DATA TO A BACKUP HDD**

Due to the Rebuild behavior, the first HDD inserted into one of the HDD trays and recognized by the RAID System becomes the source HDD. To rebuild existing data from a source HDD to a backup HDD (target HDD), the source HDD must first be inserted into one of the two drive bays. After the host detects the source HDD (in 10 to 15 seconds), and the RAID System indicates the target HDD tray is empty via the LED disk error light, the target HDD should then be inserted in the other HDD tray. The RAID System will then recognize the target HDD, the disk error LED will stop, and the rebuild process will begin automatically. These actions ensure that the RAID System recognizes the correct source and target HDDs and to prevent the source data from being overwritten.



The Rebuild Speed of the USB 2.0 Model is 100 GB per hour or 28.4 MB per second, approximately.

## HOT SWAP

Hot Swap here refers to HDD Hot Swap (Hard Disk Hot Swap), not True Hot Swap.

The USB 2.0 model does not support HDD Hot Swap in JBOD or Mirror. It is also not recommended to perform Hot Swapping in Span or Stripe modes. Ensure that the RAID System is powered "off" before replacing the HDDs.



HDD Hot Swap (Hard Disk Hot Swap) refers to the ability to add or remove a device from the host computer without powering "off" the device; the system automatically recognizes the change after the hot swapping is done. True Hot Swap refers to the ability to add or remove a device from the host computer when the data is still accessing.

## EXTERNAL BOOTUP

The External Bootup can only work for the USB 2.0 Model under DOS for PC operating system, and Intel-based CPU for Mac OS.



Please review the Troubleshooting section on our website for more information.

## **eSATA/USB 2.0 2-BAY RAID SYSTEM**

### **SYSTEM REQUIREMENTS**

#### **PC**

- ◆ 266MHz or faster CPU (Microsoft Vista requires a minimum 800MHz CPU)
- ◆ 64MB of RAM (Microsoft Vista requires a minimum 512MB of RAM)
- ◆ Microsoft Windows 2000, XP, 2003, or Vista
- ◆ One available USB or eSATA port

#### **MAC**

- ◆ PowerPC or Intel Core Duo processor
- ◆ 64MB of RAM (Mac OS X 10.4 requires 256MB of RAM)
- ◆ Mac OS 10.2 or higher (PowerPC) or Mac OS X 10.4 (Intel)
- ◆ One available USB or eSATA port

### **OPTIONAL ACCESSORIES**

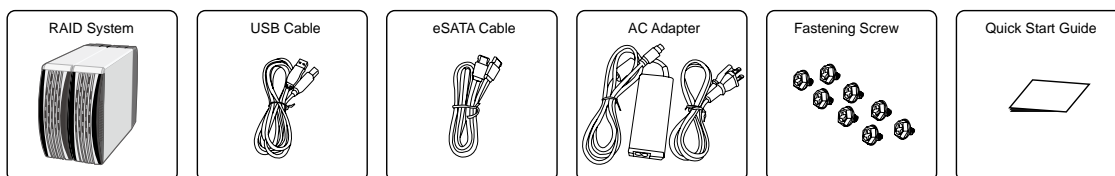
- ◆ eSATA PCI, PCI-X, or PCI-Express Card



SATA compatible hard drive is required for the RAID System. Once the HDDs are formatted, the actual available storage capacity can vary depending on selected operating environment (normally 5-10 % less).

### **PACKAGE CONTENTS**

- ◆ 2-bay RAID System
- ◆ USB Type B to A Cable
- ◆ eSATA Cable
- ◆ AC Adapter
- ◆ Fastening Screws x 8
- ◆ Quick Start Guide

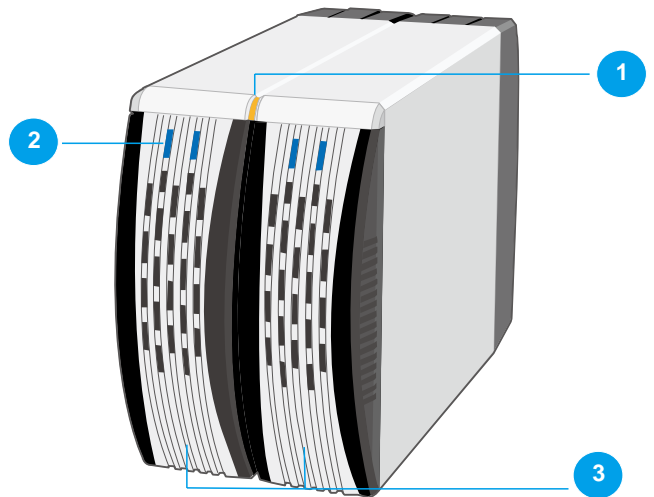


Please keep all package contents and packaging material in the event that the product must be returned.

## eSATA/USB 2.0 2-BAY RAID SYSTEM VIEWS

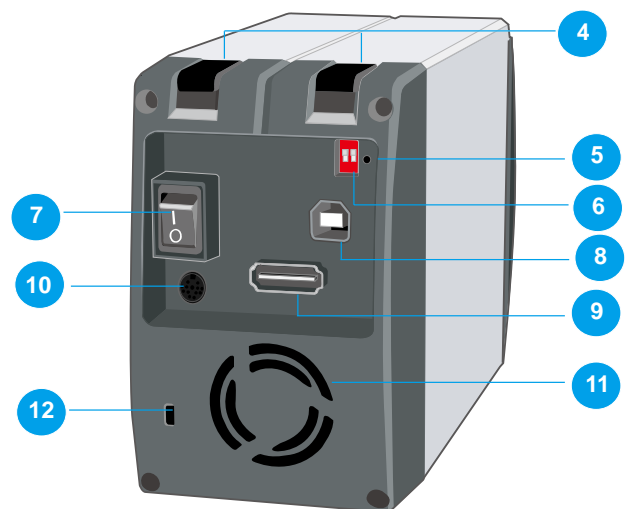
### FRONT VIEW

1. System LED Indicator
2. HDD LED Indicator
3. HDD Trays



### REAR VIEW

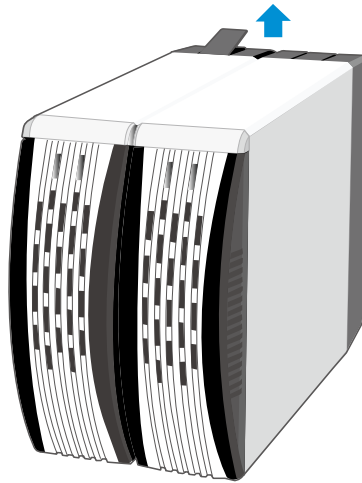
4. Quick HDD release levers
5. Reset Button
6. Mode Switch
7. Power Switch
8. USB Type B Port
9. eSATA Port
10. DC IN
11. Fan
12. Lock Port



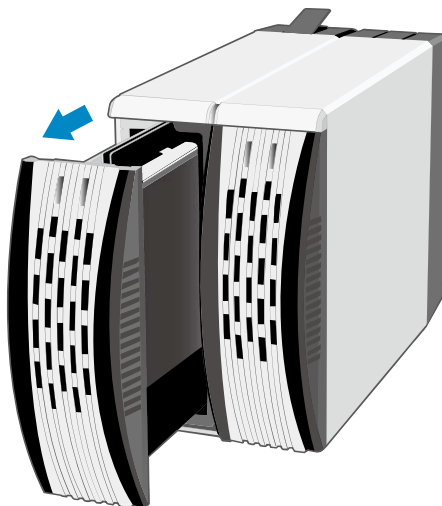
## INSTALLING/REPLACING THE HARD DRIVES IN THE RAID SYSTEM


When the HDD is not installed, simply slide the tray out of the drive bay without using the lever and be cautious when lifting the RAID System with the trays inside. When the HDD is installed, after lifting the level, the tray should easily be released from the drive bay.

1. Lift the quick HDD release lever to release the selected HDD tray from the desired drive bay.

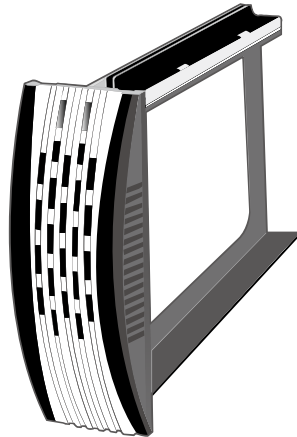


2. Slide the HDD tray out of the drive bay.

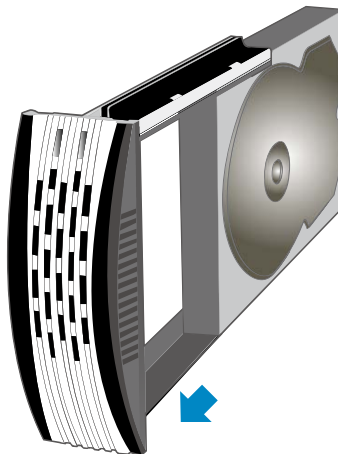


 Due to the design tolerance of the SATA HDD connector, however, the HDD tray may not always be released from the drive bay easily, or may not be released at all. If this occurs, carefully slide the HDD tray out of the drive bay after lifting the quick HDD release lever.

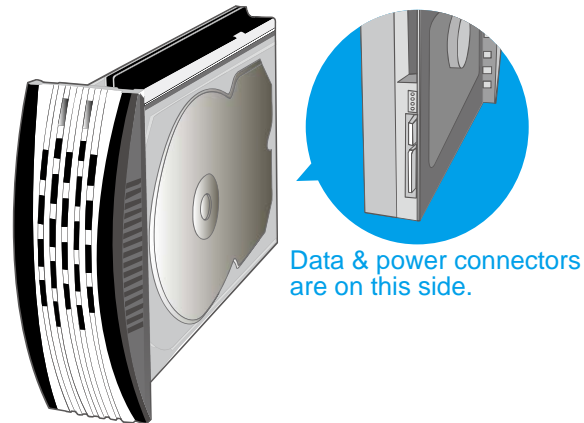
3. When removed, the HDD tray appears as shown below.



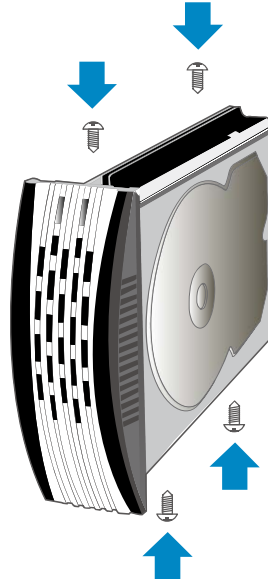
4. Carefully slide the HDD into the drive tray.



5. Ensure that the interface connectors are oriented toward the rear of the drive tray.

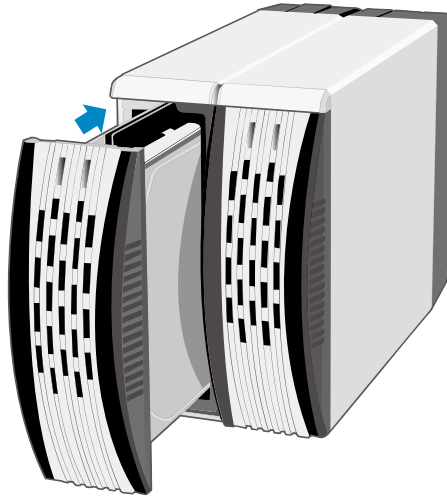


6. Locate the screws included in the package. Ensure that the screw guides on the side of the HDD are aligned with the openings on the side of the drive tray. Fasten the HDD to the drive tray by inserting and tightening the screws.



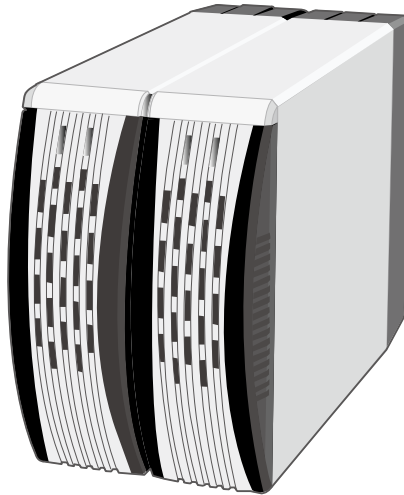


7. Align the drive tray with the guide rails and slide it into the drive bay. Ensure that the tray is completely inserted and that the interface connectors are properly seated.



In most cases, you would need to firmly push the trays to a close until a “click” sound is heard.

8. Now, the RAID System is ready for connection to a host.



## SETTING THE RAID MODE

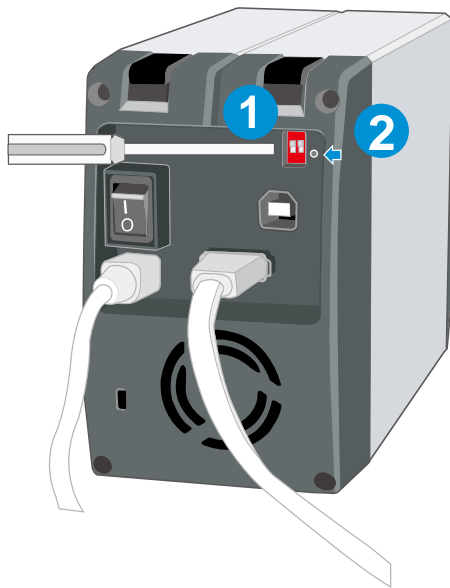
Deleting the current partition prior to changing RAID modes is highly recommended.

Due to the chipset of the eSATA/USB 2.0 model, after deleting the current partition and setting the new RAID mode, the reset button on the right side of the Mode switch must be pressed in order for the updated RAID mode to take effect.

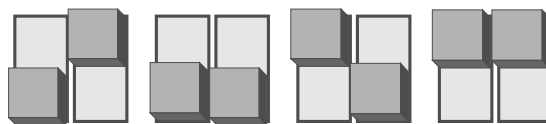


Pressing the reset button for at least 3 ~ 5 seconds is highly recommended.

1. Use a small, flat-blade screwdriver to select the RAID mode.
2. Press the reset button.



### eSATA/USB 2.0 RAID Modes:



JBOD Span Stripe Mirror

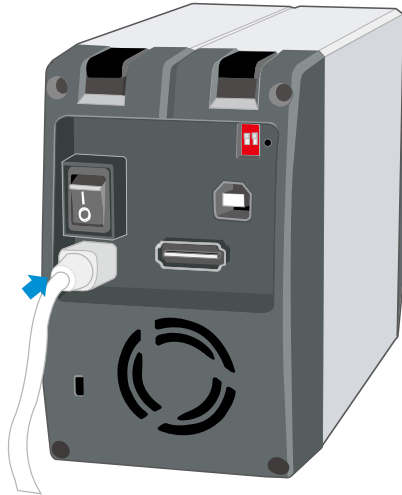


Changing the RAID Mode deletes all data stored on the device. If you have saved data in the drives, backup all data before changing the RAID Mode.

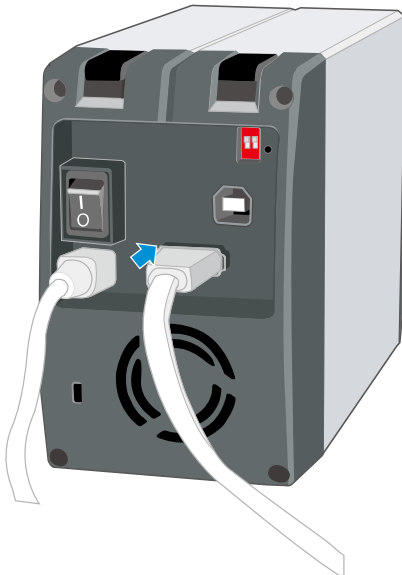
## CONNECTING THE RAID SYSTEM TO A COMPUTER


Complete the following steps to connect the RAID System to a host computer.

1. Connect the AC/DC power adapter.

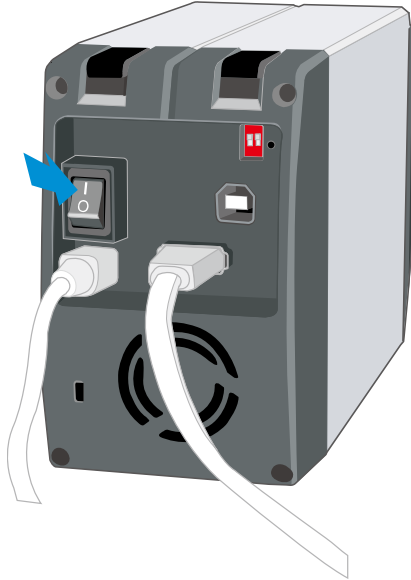


2. Insert both ends of the eSATA or USB 2.0 cable into the corresponding port of the RAID System and the host.

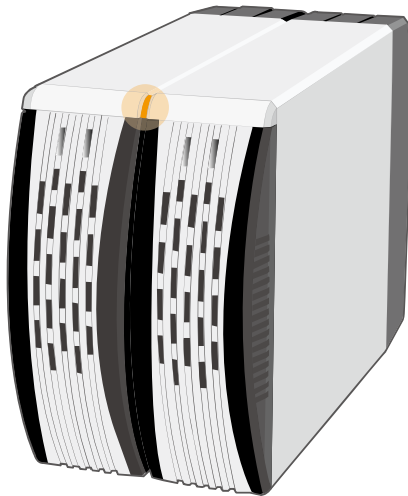



 Due to compatibility issues, the Silicon Image eSATA host controller is highly recommended.

3. Turn the power switch to the “on” position.



4. When connected, the System LED lights will become steadily orange.



 The RAID System should only be connected to a host computer via one interface. Connection of the system to a computer via two or more interfaces simultaneously is not recommended.

You are now ready to begin using your RAID System!

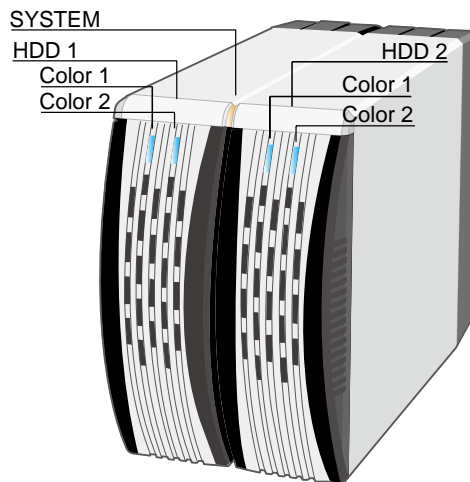
## SAFE REMOVAL OF THE RAID SYSTEM

Safe removal of the RAID System from the host controller requires the steps. First, you would need to eject the device from your host controller. Next, press the “off” button on the RAID System if necessary.



Most current USB host controllers handle USB devices as external devices; thus, it is highly recommended that the RAID System be safely removed from the host if you use USB interface. However if you use eSATA interface, the host, depending on the eSATA controller, may handle external eSATA HDD devices as internal HDD devices, if so, safe removal of the RAID System from the host is unnecessary.

## LED INDICATORS



### SYSTEM LED x 1

Indicators	Color
Power on	Orange
Power off	None

### HDD LED x 2

Indicators		RAID Mode	Color 1	Color 2
Disk error		Stripe, Span, Mirror	Blink Green	Blink Blue
Disk error		JBOD	None	None
Data access		Stripe, Span, Mirror, JBOD	Green	Flash Blue
Disk rebuild	Source HDD	Mirror	Green	Blue
	Target HDD	Mirror	Blink Green	Blue



The difference between a flashing LED and a blinking LED is that flashing refers to the read/write activity, and blinking refers to slow but regular pulses.

## REBUILD

In Mirror mode, if one of the HDDs fails and is replaced with a functional HDD, the RAID System will automatically rebuild the target HDD (the new functional HDD) with data from the source HDD (the remaining functional HDD) sector by sector. After the rebuild is complete, data in both HDDs will be identical. The use of two identical HDDs from the same manufacturer, having the same capacity and RPM is highly recommended.



When the chipset is processing the Rebuild task, if data is accessed during this period, the speed of data access is around 2 ~ 3 MB/sec; thus, access of the HDD during a Rebuild is not recommended.

### **ONLINE REBUILD**

In most cases, Rebuild refers to “Online Rebuild”, meaning the rebuild is initiated when the RAID System is connected to the host. When the Online Rebuild is initiated, the RAID System cannot rebuild if it is not connected to the host.



For the eSATA/USB 2.0 model, it only supports Online Rebuild.

### **REBUILD EXISTING DATA TO A BACKUP HDD**

Due to the Rebuild behavior, the first HDD inserted into one of the HDD trays and recognized by the RAID System becomes the source HDD. To rebuild existing data from a source HDD to a backup HDD (target HDD), the source HDD must first be inserted into one of the two drive bays. After the host detects the source HDD (in 10 to 15 seconds), and the RAID System indicates the target HDD tray is empty via the LED disk error light, the target HDD should then be inserted in the other HDD tray. The RAID System will then recognize the target HDD, the disk error LED will stop, and the rebuild process will begin automatically. These actions ensure that the RAID System recognizes the correct source and target HDDs and to prevent the source data from being overwritten.



The Rebuild Speed of the eSATA/USB 2.0 Model is 100 GB per hour or 28.4 MB per second, approximately.

## HOT SWAP

Hot Swap here refers to HDD Hard Disk (Hard Disk Hot Swap), not True Hot Swap.

The eSATA/USB 2.0 model supports HDD Hot Swap in JBOD or Mirror. However, since it refers to Hard Disk Hot Swap, it is not recommended to perform Hot Swapping when the HDD is transferring data. When one HDD is Hot Swapped, the system will reset while interrupting data transfer and causing data loss.



HDD Hot Swap (Hard Disk Hot Swap) refers to the ability to add or remove a device from the host computer without powering off the device; the system automatically recognizes the change after the hot swapping is done. True Hot Swap refers to the ability to add or remove a device from the host computer when the data is still accessing.

## EXTERNAL BOOTUP

### PC

The External Bootup with different interface:

OS \ Interfaces	USB 2.0	eSATA
Windows	No	Yes
DOS	Yes	Yes
Linux	No	Yes

### MAC

The External Bootup varies with different platform and interfaces:

Platform \ Interfaces	USB 2.0	eSATA	
		Mac driver built-in	No driver built-in
Power Mac G3 or older models	No	No	No
Power PC CPU	No	Yes	No
Intel-based CPU	Yes	Yes	No



If the computer does not come with eSATA interface and an optional eSATA card is added, choosing the card that comes with the built-in driver in the operation system is highly recommended. Please refer to the Troubleshooting section on our website for more information.

## **eSATA PCI EXPRESS CARD INSTALLATION**

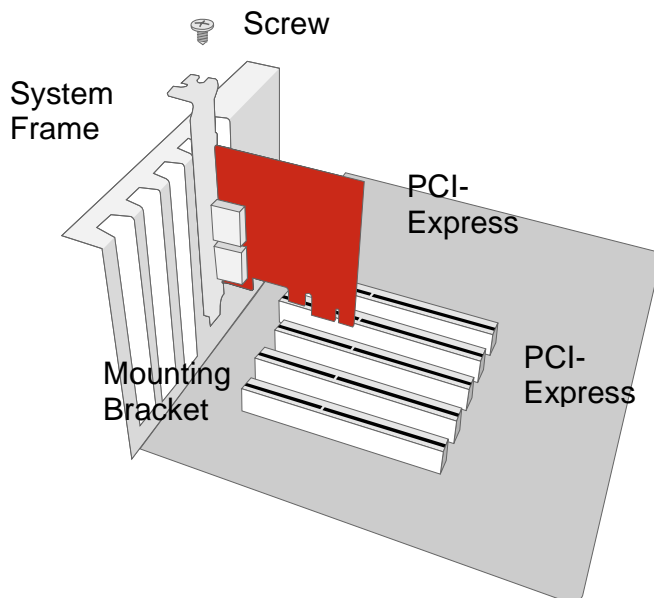
Complete the steps provided in this section to install the eSATA PCI Express Card to use with the eSATA/USB 2.0 RAID System. The eSATA PCI Express Card provides a host computer with two Windows and Mac compatible eSATA ports.

### **SYSTEM REQUIREMENTS**

- ◆ Windows 2000 with Service Pack 4 or later
- ◆ Windows XP with Service Pack 2 or later
- ◆ Windows 2003 with Service Pack 1 or later
- ◆ Mac OS 10.4.x or later
- ◆ An available PCI-Express slot
- ◆ CD-ROM or DVD-ROM drive

### **HARDWARE INSTALLATION**

1. Power “off” and unplug your computer.
2. Remove the housing of your computer and locate an available PCI-Express slot on your motherboard.
3. Insert the card in the available PCI-Express slot. Ensure that the card is firmly seated in the slot.
4. Replace the housing of your computer.





## ***DRIVER INSTALLATION***

In the Windows system, the “Add New Hardware Wizard” will open automatically. Insert the installation CD included in the package, navigate to and open the installation file. Follow the provided prompts to complete the driver installation.

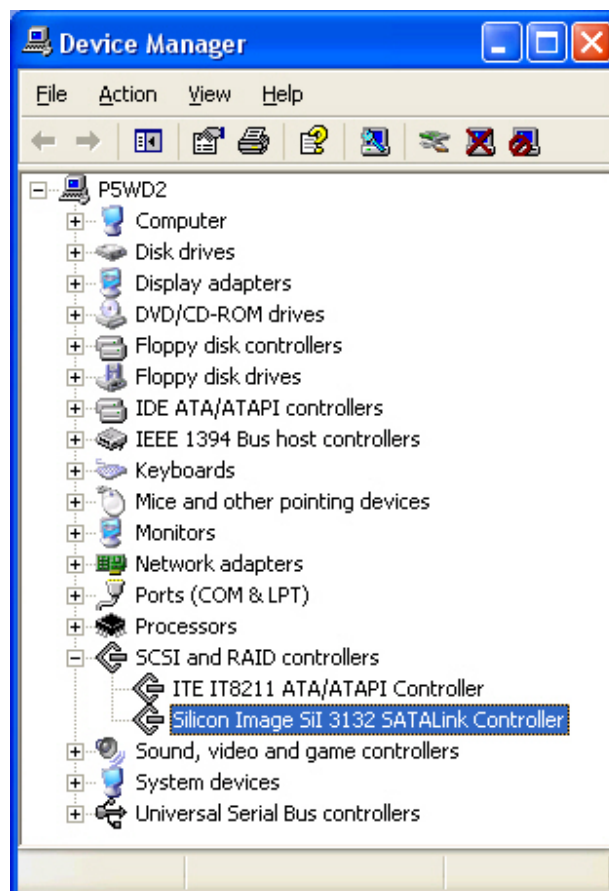
For Mac OS, insert the installation CD and locate the Mac driver installation file. Follow the provided prompts to complete the driver installation.

## ***VERIFY DRIVER INSTALLATION***

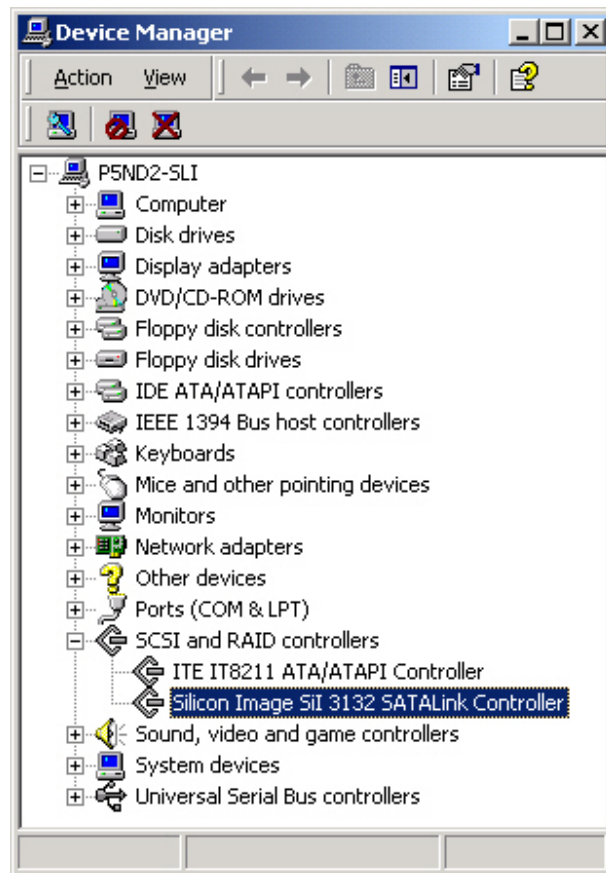
### **Windows OS:**

1. Right click the **My Computer** icon on your desktop and choose **Manage** from the pop-up menu.
2. Double click **Device Manager**.
3. Double-click SCSI and RAID controllers.
4. Verify that the **Sil 3132 SATALink Controller** appears, as shown below.

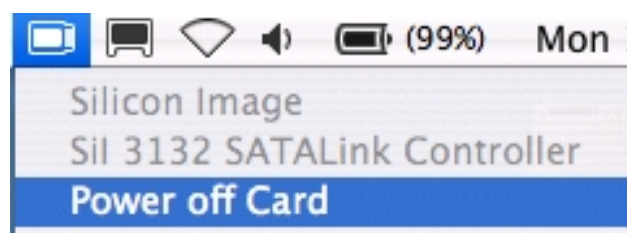
### **Windows 2003 and XP:**



## Windows 2000:



## Mac OS:



If a driver installation failure error message appears after restarting the computer, follow the recommendations provided in the error message.



Please refer to User's Manual for eSATA Host Card on our website.

## **USB 2.0/FIREWIRE 800 2-BAY RAID SYSTEM**

### **SYSTEM REQUIREMENTS**

#### **PC**

- ◆ 266MHz or faster CPU (Microsoft Vista requires a minimum 800MHz CPU)
- ◆ 64MB of RAM (Microsoft Vista requires a minimum 512MB of RAM)
- ◆ Microsoft Windows 2000, XP, 2003, or Vista
- ◆ One available USB 2.0 or IEEE 1394b (FireWire 800) port

#### **MAC**

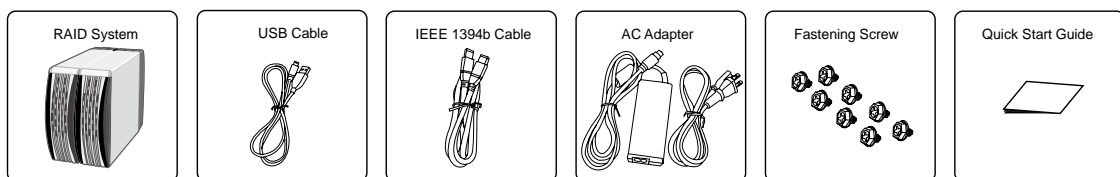
- ◆ PowerPC or Intel Core Duo processor
- ◆ 64MB of RAM (Mac OS X 10.4 requires 256MB of RAM)
- ◆ Mac OS 10.2 or higher (PowerPC) or Mac OS X 10.4 (Intel)
- ◆ One available USB 2.0 or IEEE 1394b (FireWire 800) port



SATA compatible hard drive is required for the RAID System. Once the HDDs are formatted, the actual available storage capacity can vary depending on selected operating environment (normally 5-10 % less).

### **PACKAGE CONTENTS**

- ◆ 2-bay RAID System
- ◆ USB Type A to mini-B Cable
- ◆ IEEE 1394b (FireWire 800) Cable
- ◆ AC Adapter
- ◆ Fastening Screws x 8
- ◆ Quick Start Guide

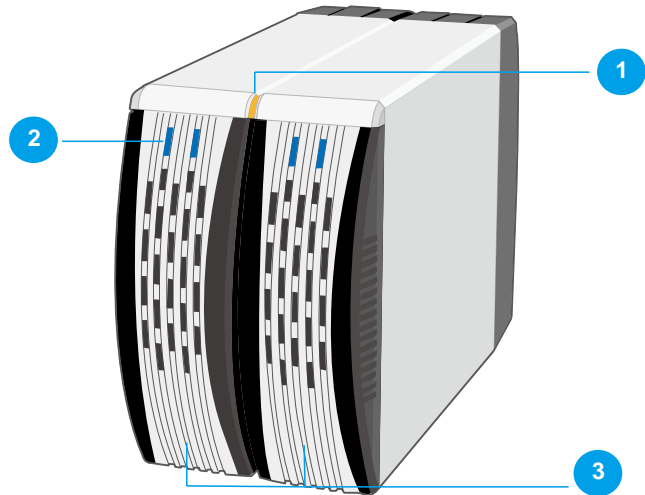


Please keep all package contents and packaging material in the event that the product must be returned.

## USB 2.0/FIREWIRE 800 2-BAY RAID SYSTEM VIEWS

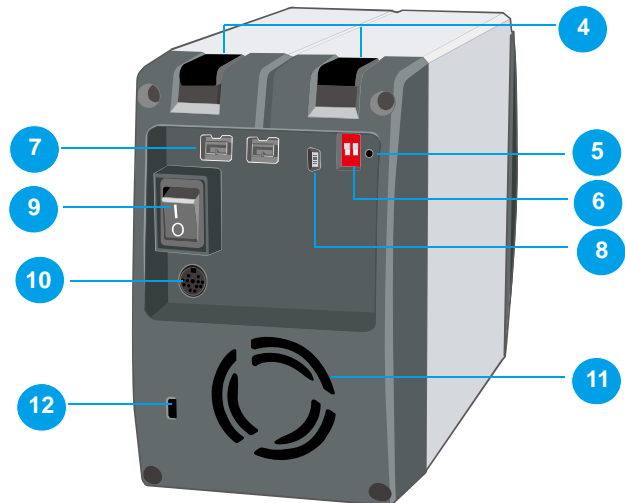
### FRONT VIEW

1. System LED Indicator
2. HDD LED Indicator
3. HDD Trays



### REAR VIEW

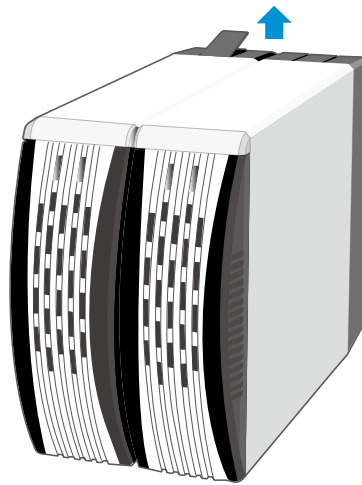
4. Quick HDD release levers
5. Reset Button
6. Mode Switch
7. FireWire 800 Ports
8. USB Port
9. Power Switch
10. DC IN
11. Fan
12. Lock Port



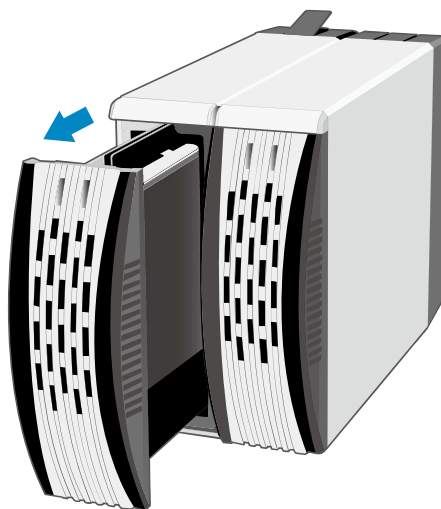
## INSTALLING/REPLACING THE HARD DRIVES IN THE RAID SYSTEM

When the HDD is not installed, simply slide the tray out of the drive bay without using the lever and be cautious when lifting the RAID System with the trays inside. When the HDD is installed, after lifting the level, the tray should easily be released from the drive bay.

1. Lift the quick HDD release lever to release the selected HDD tray from the desired drive bay.



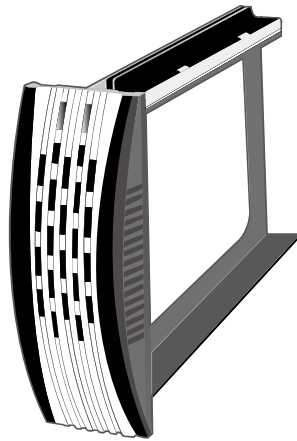
2. Slide the HDD tray out of the drive bay.



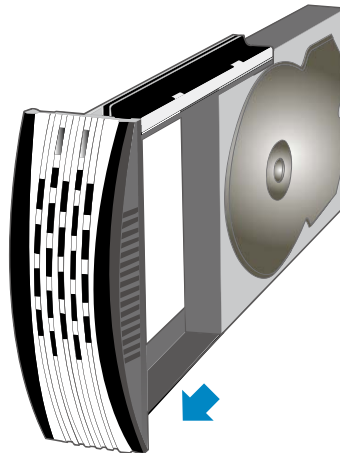


Due to the design tolerance of the SATA HDD connector, however, the HDD tray may not always be released from the drive bay easily, or may not be released at all. If this occurs, carefully slide the HDD tray out of the drive bay after lifting the quick HDD release lever.

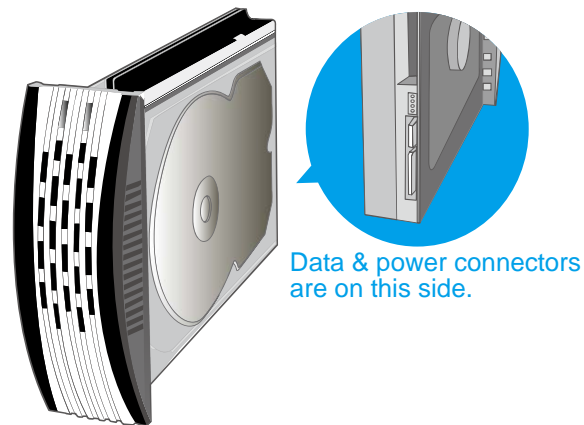
3. When removed, the HDD tray appears as shown below.



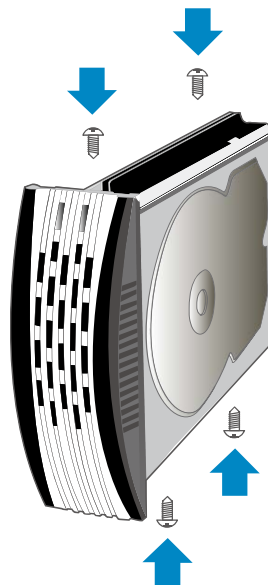
4. Carefully slide the HDD into the drive tray.



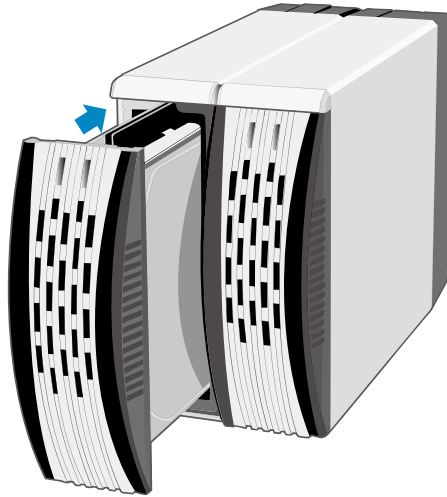
5. Ensure that the interface connectors are oriented toward the rear of the drive tray.



6. Locate the screws included in the package. Ensure that the screw guides on the side of the HDD are aligned with the openings on the side of the drive tray. Fasten the HDD to the drive tray by inserting and tightening the screws.

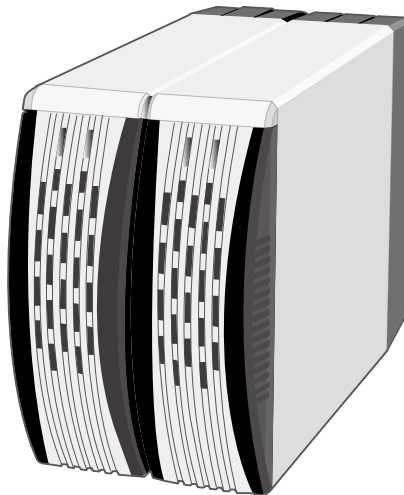


7. Align the drive tray with the guide rails and slide it into the drive bay. Ensure that the tray is completely inserted and that the interface connectors are properly seated.



In most cases, you would need to firmly push the trays to a close until a “click” sound is heard.

8. Now, the RAID System is ready for connection to a host.





## SETTING THE RAID MODE

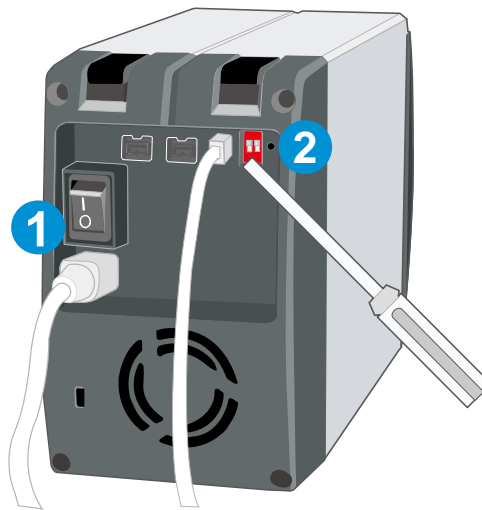
Deleting the current partition prior to changing RAID modes is highly recommended.

For the USB 2.0/FireWire 800 model, alternatively, after deleting the current partition and turning “off” the power switch, set the new RAID mode and power the RAID system “on” again. The RAID system can then be used with the updated RAID mode.

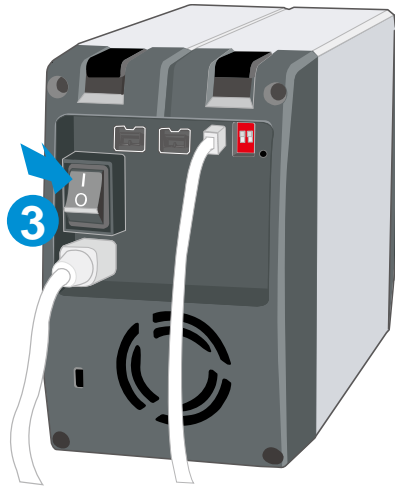


Pressing the reset button is not required.

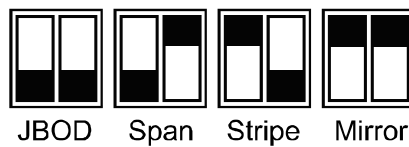
1. Power “off” the RAID System.
2. Use a small, flat-blade screwdriver to select the RAID Mode.




3. After setting the new RAID mode, power the RAID System “on”.



### USB 2.0/FireWire 800 RAID Modes:

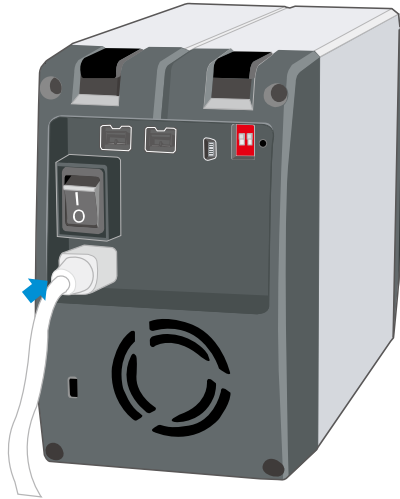


 Changing the RAID Mode deletes all data stored on the device. If you have saved data in the drives, backup all data before changing the RAID Mode.

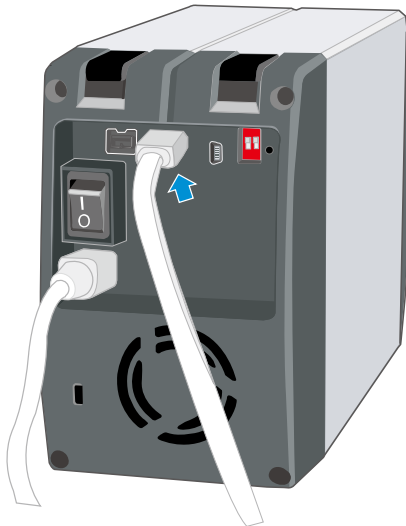
## CONNECTING THE RAID SYSTEM TO A COMPUTER

Complete the following steps to connect the RAID System to a host computer.

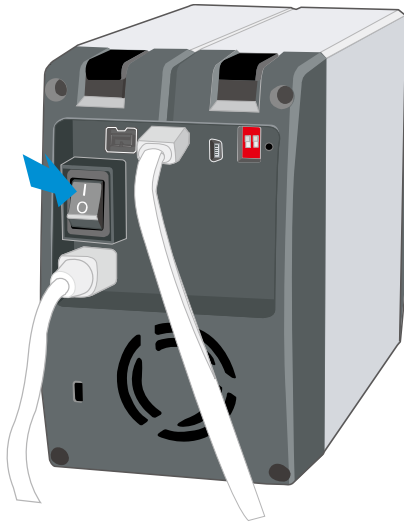
1. Connect the AC/DC power adapter.



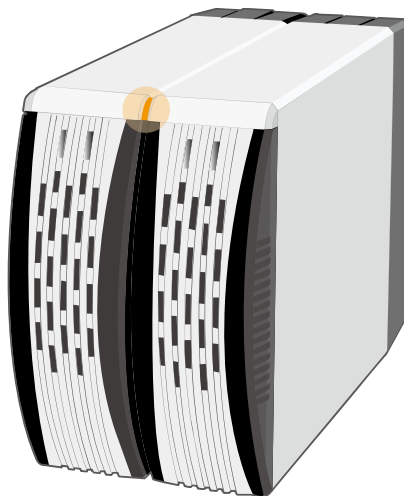
2. Insert both ends of the USB 2.0 or FireWire 800 cable into the corresponding port of the RAID System and the host.




3. Turn the power switch to the “on” position.



4. When connected, the System LED lights will become steadily orange.



 The RAID System should only be connected to a host computer via one interface. Connection of the system to a computer via two or more interfaces simultaneously is not recommended.

You are now ready to begin using your RAID System!

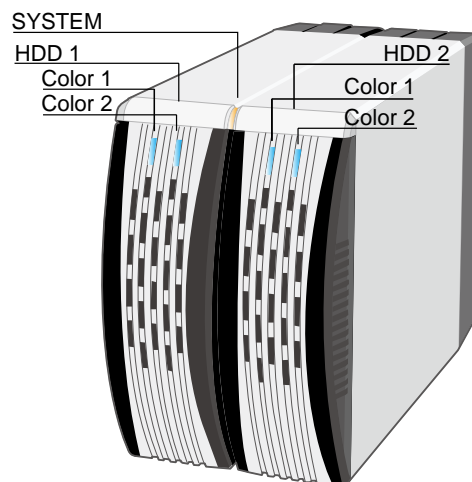
## SAFE REMOVAL OF THE RAID SYSTEM

Safe removal of the RAID System from the host controller requires the steps. First, you would need to eject the device from your host controller. Next, press the “off” button on the RAID System if necessary.



Most current USB and 1394b host controllers handle USB and 1394b devices as external devices; thus, it is highly recommended that the RAID System be safely removed from the host.

## LED INDICATORS



### SYSTEM LED x 1

Indicators	Color
Power on	Orange
Power off	None

### HDD LED x 2

Indicators		RAID Mode	Color 1	Color 2
Disk error		Stripe, Span, Mirror, JBOD	Red	None
Data access		Stripe, Span, Mirror, JBOD	None	Flash Blue
Disk rebuild	Source HDD	Mirror	None	Blink Blue
	Target HDD	Mirror	Red	Blink Blue



The difference between a flashing LED and a blinking LED is that flashing refers to the read/write activity, and blinking refers to slow but regular pulses.

## REBUILD

In Mirror mode, if one of the HDDs fails and is replaced with a functional HDD, the RAID System will automatically rebuild the target HDD (the new functional HDD) with data from the source HDD (the remaining functional HDD) sector by sector. After the rebuild is complete, data in both HDDs will be identical. The use of two identical HDDs from the same manufacturer, having the same capacity and RPM is highly recommended.



When the chipset is processing the Rebuild task, if data is accessed during this period, the speed of data access is around 2 ~ 3 MB/sec; thus, access of the HDD during a Rebuild is not recommended.

### ONLINE REBUILD

In most cases, Rebuild refers to “Online Rebuild”, meaning the rebuild is initiated when the RAID System is connected to the host. When the Online Rebuild is initiated, the RAID System cannot rebuild if it is not connected to the host.

### OFFLINE REBUILD

Due to the chipset, some systems also support an Offline Rebuild function. After an Offline Rebuild is activated and the RAID System rebuild begins, even if the RAID System loses connection to the host, the rebuild continues. If the RAID System is powered off, the RAID System will retain the rebuild status in memory. When the RAID System is powered “on” again, the rebuild process will resume from the previous status.



The USB 2.0/FireWire 800 Model supports both Online Rebuild and Offline Rebuild.

### REBUILD EXISTING DATA TO A BACKUP HDD

Due to the Rebuild behavior, the first HDD inserted into one of the HDD trays and recognized by the RAID System becomes the source HDD. To rebuild existing data from a source HDD to a backup HDD (target HDD), the source HDD must first be inserted into one of the two drive bays. After the host detects the source HDD (in 10 to 15 seconds), and the RAID System indicates the target HDD tray is empty via the LED disk error light, the target HDD should then be inserted in the other HDD tray. The RAID System will then recognize the target HDD, the disk error LED will stop, and the rebuild process will begin automatically. These actions ensure that the RAID System recognizes the correct source and target HDDs and to prevent the source data from being overwritten.



The Rebuild Speed of the USB 2.0/FireWire 800 Model is 100 GB per hour or 28.4 MB per second, approximately.

## HOT SWAP

Hot Swap here refers to HDD Hot Swap (Hard Disk Hot Swap), not True Hot Swap.

The USB 2.0/FireWire 800 model does not support HDD Hot Swap in JBOD or Mirror. It is also not recommended to perform Hot Swapping in Span or Stripe modes. Ensure that the RAID System is powered "off" before replacing the HDDs.



HDD Hot Swap (Hard Disk Hot Swap) refers to the ability to add or remove a device from the host computer without powering off the device; the system automatically recognizes the change after the hot swapping is done. True Hot Swap refers to the ability to add or remove a device from the host computer when the data is still accessing.

## EXTERNAL BOOTUP

### PC

The External Bootup with different interface:

OS \ Interfaces	USB 2.0	IEEE 1394b
Windows	No	No
DOS	Yes	No
Linux	No	No

### MAC

The External Bootup varies by different platforms and interface:

Platform \ Interfaces	USB 2.0	FireWire 800
Power Mac G3 or older models	No	No
Power PC CPU	No	Yes
Intel-based CPU	Yes	Yes



Please review the Troubleshooting section on our website for more information.

## **RAID SYSTEM and MODES**

A Redundant Array of Independent (or Inexpensive) Disks (RAID) is a system that utilizes multiple hard drives to share or replicate data among the disks. The benefit, depending on the selected RAID Mode (combinations of disks), is one or more of increased data integrity, fault-tolerance, throughput or capacity when compared to single drives.

### **JBOD**

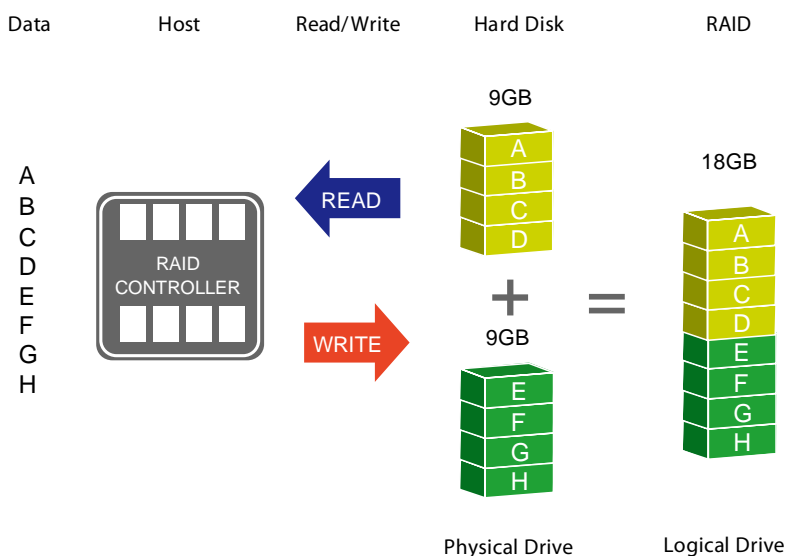
Just a Bunch of Disks (JBOD) refers to a group of hard drives. In JBOD, the number of logical drives is equal to the number of physical drives. This mode allows the RAID System to operate as a multi-disk storage enclosure, but provides no data redundancy.



In JBOD mode, if one disk in the RAID System fails, all data in that disk will be lost. However, the data in the second disk is still accessible.

### **SPANNING**

Spanning provides another maximum capacity solution. Spanning combines multiple hard drives into a single logical unit. Unlike Striping, Spanning writes data to the first physical drive until it reaches full capacity. When the first disk reaches full capacity, data is written to the second physical disk. Spanning provides the maximum possible storage capacity but does not increase performance.



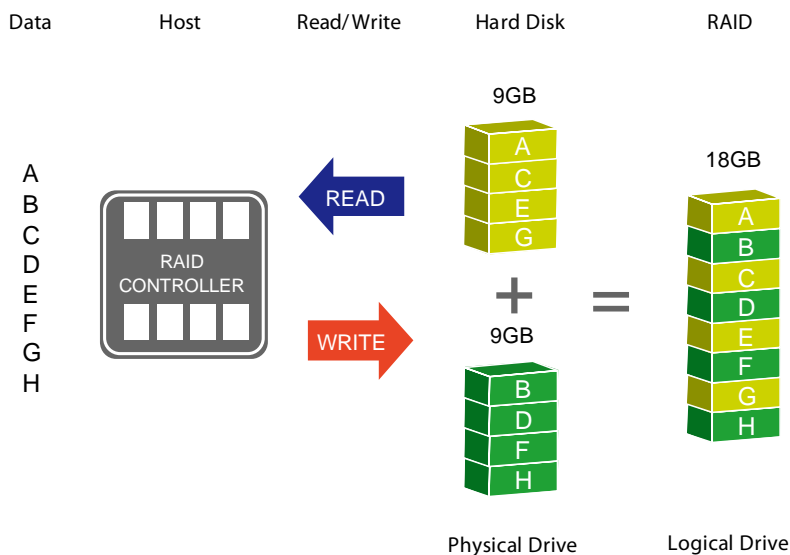
In Spanning mode, if one disk in the RAID System fails, all data in that disk will be lost. However, the data in the second disk is still accessible.



## STRIPING

Striping (RAID 0) is a performance-oriented, non-redundant data mapping technique. It combines multiple hard drives into a single logical unit. Instead of seeing several different hard drives, the operating system sees only one large drive. Striping splits data evenly across two or more disks simultaneously, dramatically increasing performance.

Striping can be implemented in disks of differing sizes, but the storage space added to the array by each disk is limited to the size of the smallest disk. For example, if a 220 GB disk is striped with a 200 GB disk, the size of the array will be 400 GB. Striping is typically used for high performance applications, such as, video editing, video playback, and 3D multimedia design. Although Striping is an easily implemented, simple configuration, Striping should never be used for mission critical applications.

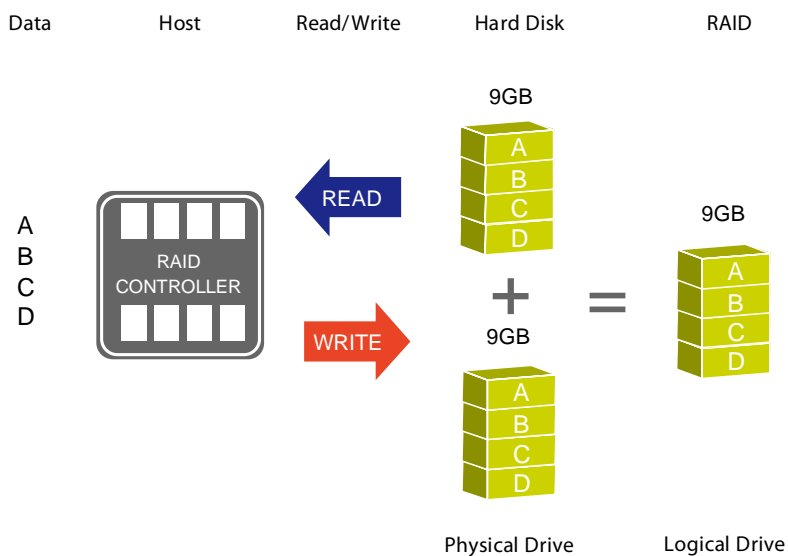


In Striping mode, if one disk in the RAID System fails, all data in both installed disks will be lost.

## MIRRORING

Mirroring (RAID 1) consists of at least two drives storing duplicate copies of the same data. In this mode, the data is simultaneously written to two disks. Thus, the storage capacity of a two-disk array is combined into a single disk and the capacity is limited to the size of the smallest disk. In Mirroring mode, identical HDDs of the same capacity and RPM from the same manufacturer are highly recommended for best capacity utilization.

Mirroring offers the highest level of data protection. Mirroring is typically used in mission-critical systems, such as payroll, accounting, and ERP databases.



In Mirroring mode, if one disk in the array fails, the data in the backup disk is still available.

## **APPENDIX: SPECIFICATIONS**

<b>MODEL</b>	<b>USB 2.0 2-Bay RAID System</b>	<b>eSATA / USB 2.0 2-Bay RAID System</b>	<b>USB 2.0 / FIREWIRE 800 2-Bay RAID System</b>
<b>Connector</b>	USB 2.0 x 1	USB 2.0 x 1 eSATA x 1	USB 2.0 x 1 IEEE 1394b x 2
<b>HDD Support</b>	3.5" SATA HDD <i>*Identical HDD recommended: Same manufacturer, capacity and RPM</i>		
<b>RAID Level</b>	Striping (RAID 0), Spanning, Mirroring (RAID 1), JBOD		
<b>Data Transfer Speed</b>	<b>USB 2.0:</b> up to 480Mb/sec	<b>eSATA:</b> up to 3000Mb/sec <b>USB 2.0:</b> up to 480Mb/sec	<b>USB 2.0:</b> up to 480Mb/sec <b>1394b:</b> up to 800Mb/sec
<b>System Material</b>	Aluminum case with plastic front and rear panels		
<b>LED</b>	Power On / Power Off / Access / Rebuild / Error		
<b>Power Supply</b>	<b>Input:</b> AC 90-264V; <b>Output:</b> DC +12V/2A, +5V/2A <b>Peak current:</b> +12V/4A, +5V/3A		
<b>Fan</b>	40 x 40 x 10 mm		
<b>Dimension</b>	220 x 85 x 130 mm		
<b>Weight (Without HDD)</b>	915g	920g	920g
<b>Package Content</b>	<ul style="list-style-type: none"> <li>◆ 2-bay RAID System</li> <li>◆ USB Type A to mini-B Cable</li> <li>◆ AC Adapter</li> <li>◆ Fastening Screws x 8</li> <li>◆ Quick Start Guide</li> </ul>	<ul style="list-style-type: none"> <li>◆ 2-bay RAID System</li> <li>◆ USB Type B to A Cable</li> <li>◆ eSATA Cable</li> <li>◆ AC Adapter</li> <li>◆ Fastening Screws x 8</li> <li>◆ Quick Start Guide</li> </ul>	<ul style="list-style-type: none"> <li>◆ 2-bay RAID System</li> <li>◆ USB Type A to mini-B Cable</li> <li>◆ IEEE 1394b (FireWire 800) Cable</li> <li>◆ AC Adapter</li> <li>◆ Fastening Screws x 8</li> <li>◆ Quick Start Guide</li> </ul>