DataTale SMART 4-Bay RAID System

Smart and user-friendly data management experience

User's Manual

USB
eSATA
FireWire 400
FireWire 800

Please go onto Data Watch's website at http://www.data-tale.com for the latest version of user manual.

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GENERAL INFORMATION

COPYRIGHT

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 the latest version of User Manual & Technical Support, please go to our website at www.data-tale.com or www.datawatchtech.com.

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PRECAUTIONS FOR THE RAID SYSTEM

- **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.**

- Installation of RAID MASTER software in the host computer is required for proper operation.

- 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 unit or other connected devices, including the host computer. **Always** place the RAID Unit on a smooth surface and avoid all dramatic movement, vibration and percussion.

- Do **NOT** allow water to enter the RAID Unit.

- 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. Disassembling the RAID Unit's inner parts will expose you to dangerous voltages or other hazards.

- Do **NOT** block the ventilation. Proper airflow is required to ensure reliable operation and to prevent overheating.

- Do **unplug** the RAID Unit from the electrical outlet when not in use to provide an ecological friendly environment.

- **Use only** the power supply cable provided with the RAID Unit.

INTRODUCTION

Thank you for purchasing the DataTale SMART 4-bay RAID System. The DataTale SMART 4-bay RAID System with LCM panel and RAID MASTER (Graphic User Interface) provides massive storage capacity and advanced RAID configuration options in a desktop storage device. The LCM and RAID MASTER allow easy configuration of RAID Modes: JBOD (None RAID), RAID 0 (Striping), RAID 1 (Mirroring), Span, Clone, RAID 5, RAID 1+0, and optional HotSpare.

The installation instructions in this manual apply to the following models:

- RC-M4SP (SATA-USB 2.0/3.0)
- RC-M4DJ (SATA-eSATA/USB 2.0 combo)
- RC-M4QJ (SATA-eSATA/USB 2.0/FireWire 400/FireWire 800 combo)

 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.

FEATURES

- Supports current SATA II compliant hard drives, fully backward compatible with SATA 1.0 and SATA 1.0a compliant hard drives
- Connects flexibly via USB 2.0/3.0, eSATA, IEEE 1394a, and IEEE 1394b ports (depends upon model)
- Provides JBOD (None RAID), RAID 0 (Striping), RAID 1 (Mirroring), Span, Clone, RAID 5, RAID 1+0, and optional HotSpare for effective storage management
- Supports Automatic Rebuild in Raid 1+HotSpare, Clone+HotSpare, and RAID 5+HotSpare.
- Configures RAID modes easily using LCM or RAID MASTER, no IT expertise required
- Monitors system status via LED indicators, LCM, or RAID MASTER
- Prevents over-tightened hard drives with auto-limiting segmented screws
- Features a trayless function with the SmartGuider* and user-friendly design enables effortless hard drive hot-swapping
- Dissipates heat efficiently with aluminum housing
- Maximizes airflow with silent fans and mechanical designs
- Supports hot-plug and hard drive hot-swap
- Supports both online and offline rebuild

 SmartGuider* is a trayless device that utilizes the simplicity of a handle and screws. The integrated handle is attached to the hard drive with auto-limiting segmented screws. Then, the entire setup can be slide into the unit by aligning the screws with the specially designed guides. This enables flexibility in removal and insertion of the hard drives with ease.

SYSTEM REQUIREMENT

To use the DataTale SMART 4-bay RAID System, the minimum system configuration in the host computer require the following:

PC

- 1GHz or faster CPU
- 512MB of RAM
- Microsoft Windows 2000, XP, 2003, Vista, 2008, 7 or higher
- One available USB, eSATA, IEEE 1394a, or IEEE 1394b port (depends upon model)

MAC

- Macintosh PowerPC or Intel processors
- 512MB of RAM
- Mac OS X 10.4 or higher
- One available USB, eSATA, IEEE 1394a, or IEEE 1394b port (depends upon model)

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

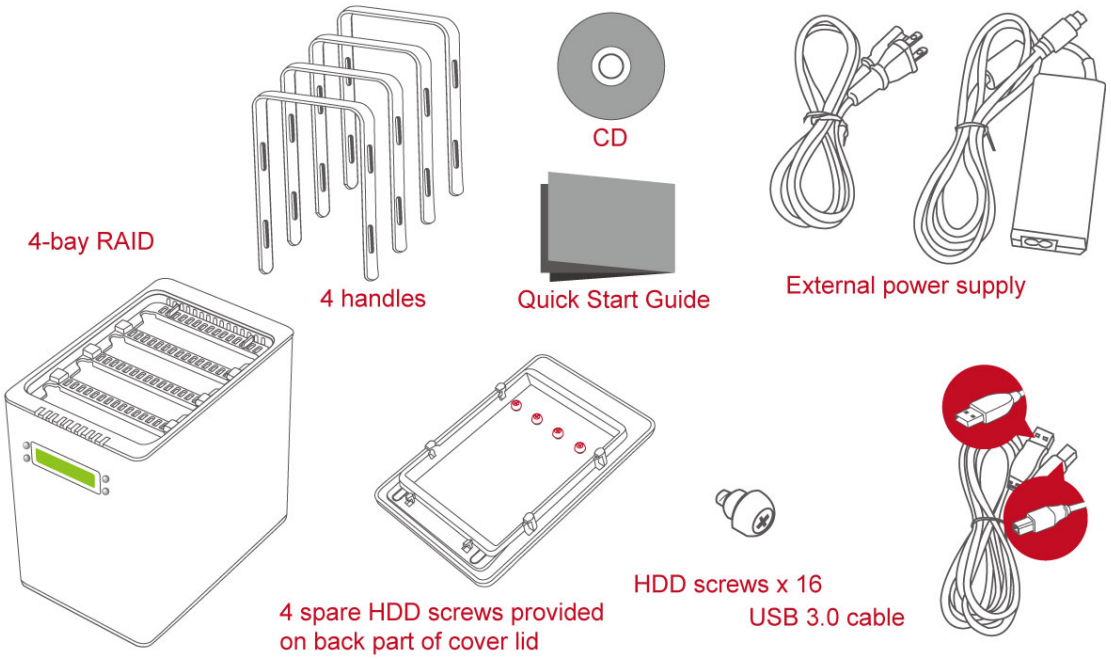
 Any loss, corruption, or destruction of data is the sole responsibility of the user of the RAID System. Under no circumstances will the manufacturer be held liable for the recovery or restoration of any data.

OPTIONAL ACCESSORIES

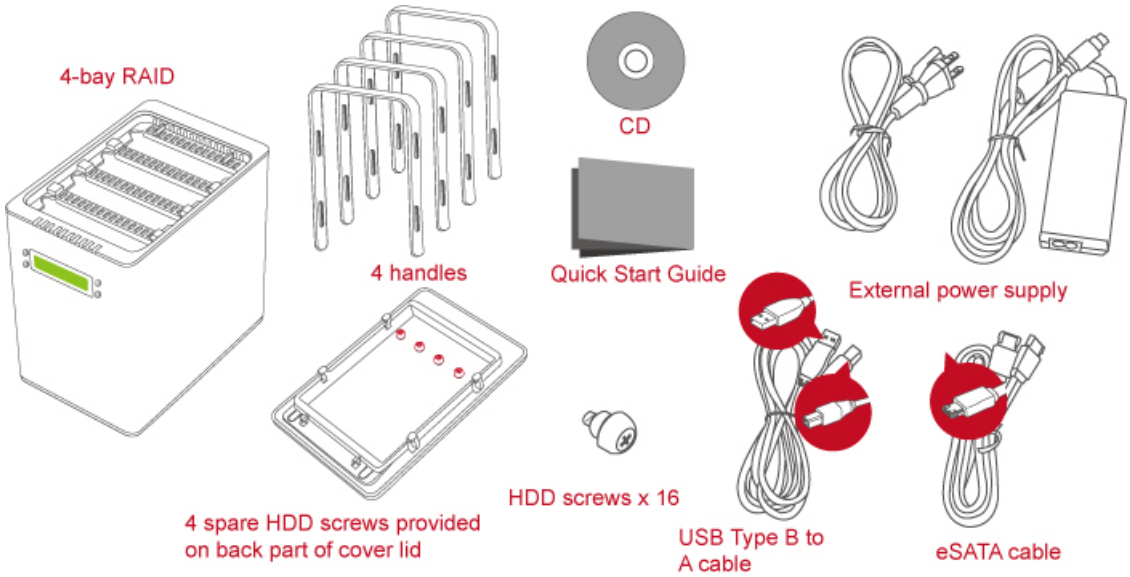
- eSATA PCI, PCI-X, or PCI-Express Card

PACKAGE CONTENTS

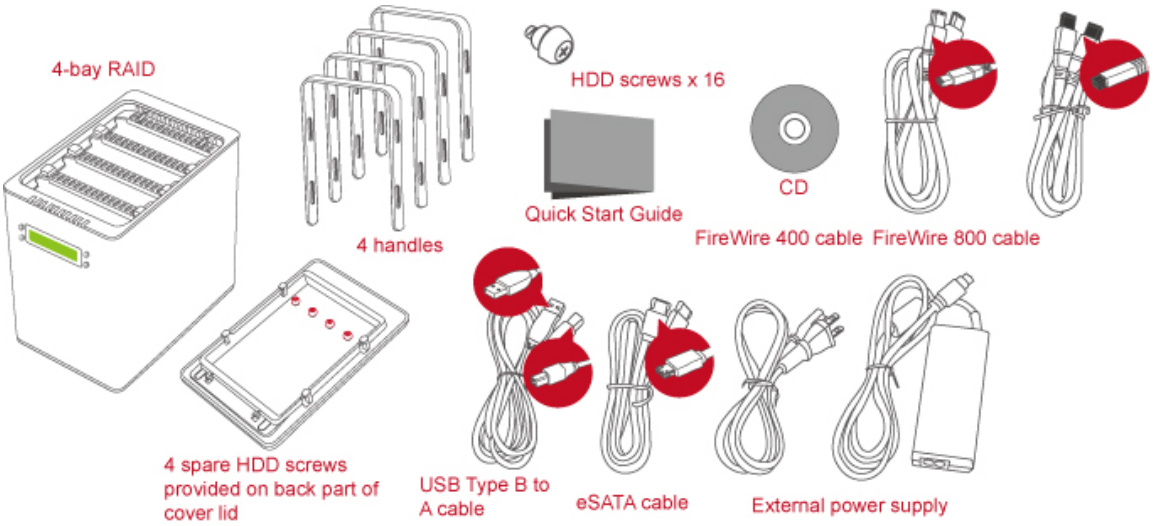
RC-M4SP (SATA-USB 2.0/3.0)



RC-M4DJ (SATA-eSATA/USB 2.0 Combo)



RC-M4QJ (SATA-eSATA/USB 2.0/FireWire 400/FireWire 800 combo)

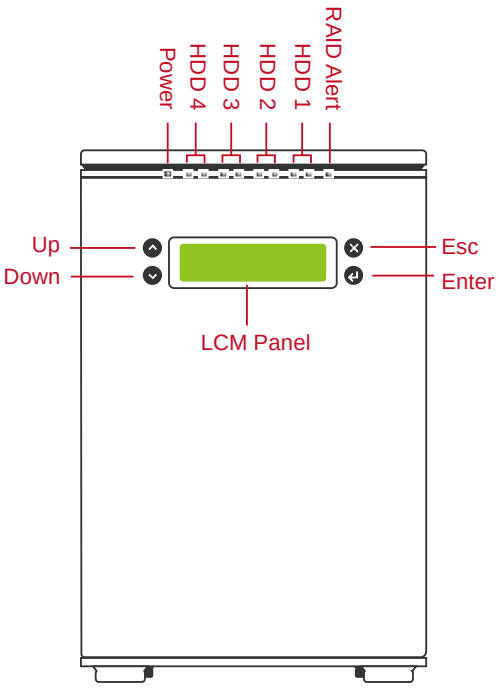


Please keep all package contents and packaging material in the event that the product must be returned.

SYSTEM UNIT VIEWS

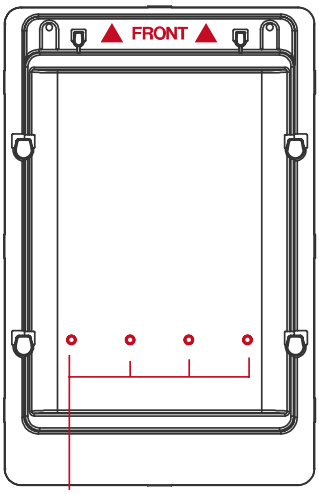
FRONT VIEW

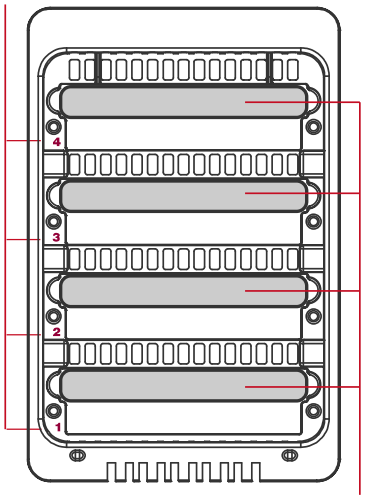
The status indication of each LED indicator is listed under the LED INDICATORS section.



TOP & COVER VIEWS (Exposed)

HDD Slots
(indicate HDD 1 through HDD 4)



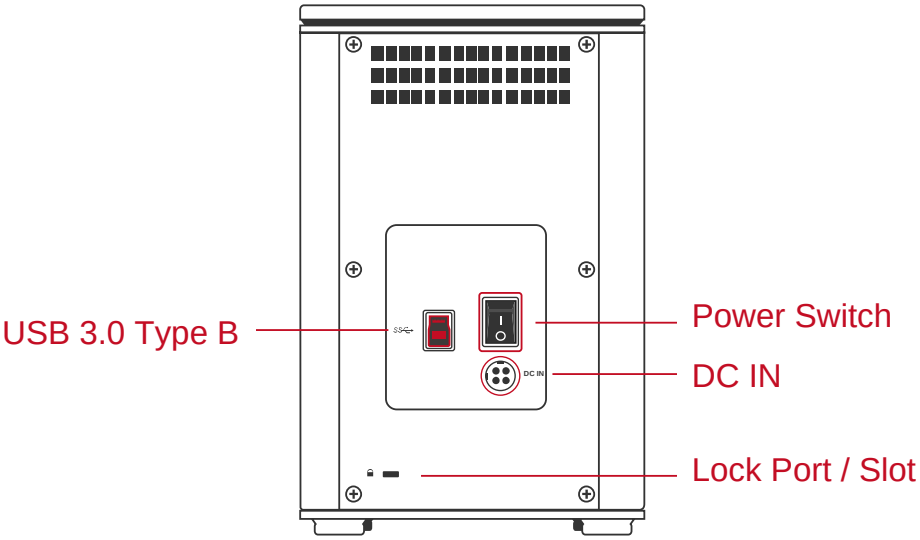


4 Spare HDD Screws

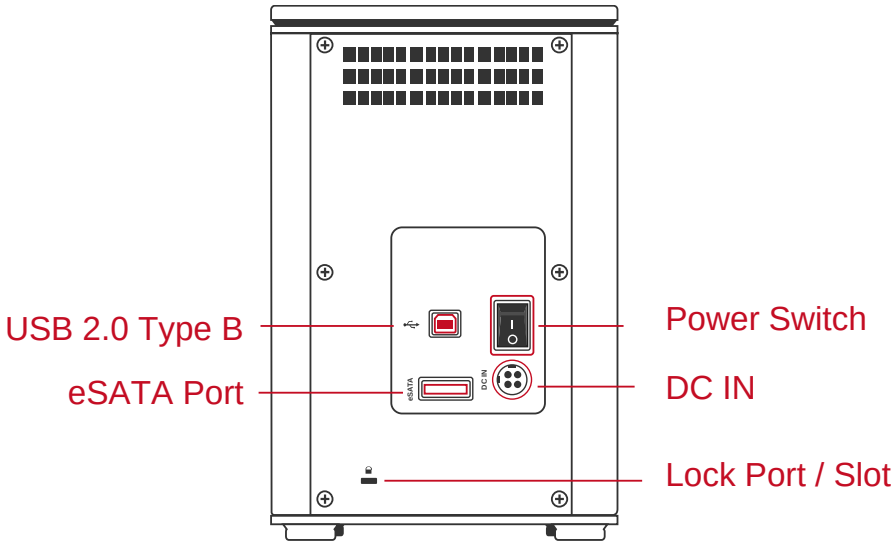
Handles

REAR VIEW

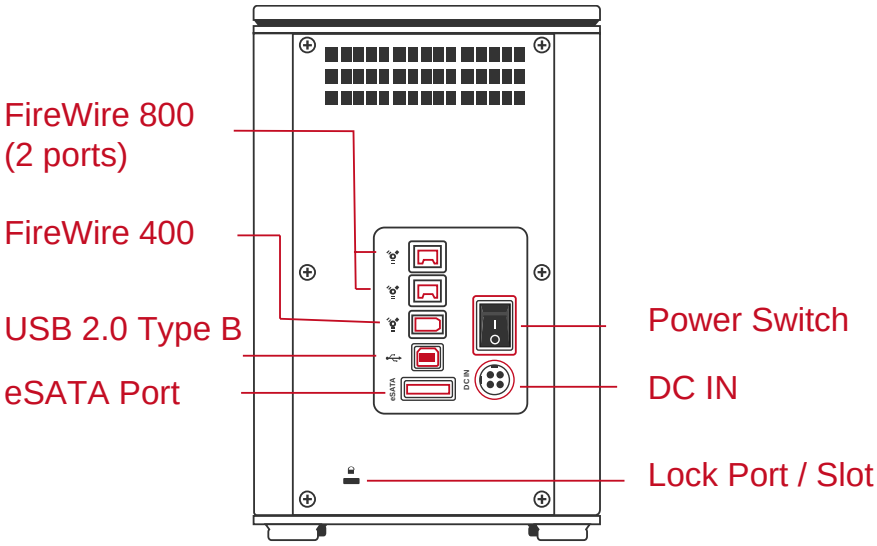
RC-M4SP (SATA-USB 2.0/3.0)



RC-M4DJ (SATA-eSATA/USB 2.0 combo)



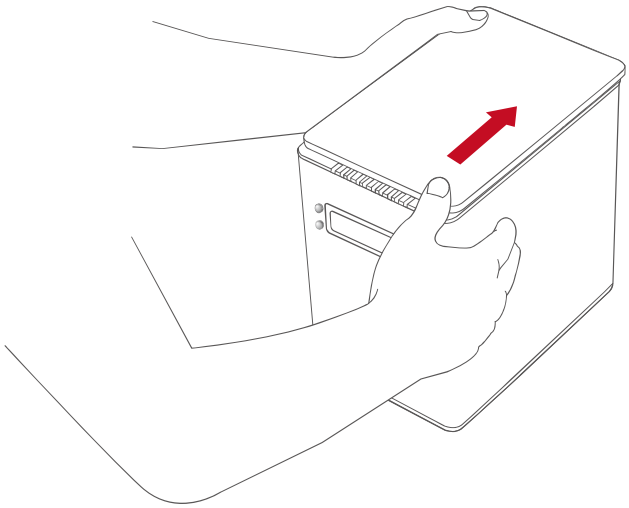
RC-M4QJ (SATA-eSATA/USB 2.0/FireWire 400/FireWire 800 combo)



INSERTING/REPLACING THE HARD DRIVES IN THE RAID SYSTEM

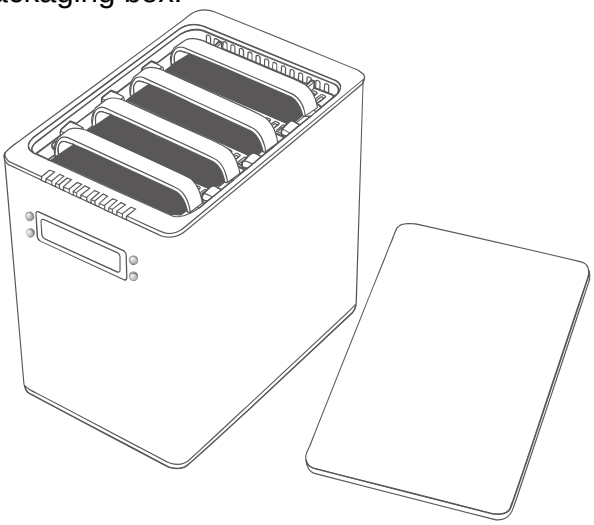
To assemble the RAID System, please follow the steps listed in the instructions below:

1. Place the RAID System with its front view facing you. Position one hand on the front edge and one on the back edge of the top lid. Simultaneously, push the lid in the direction away from you, front to back, using your thumbs.



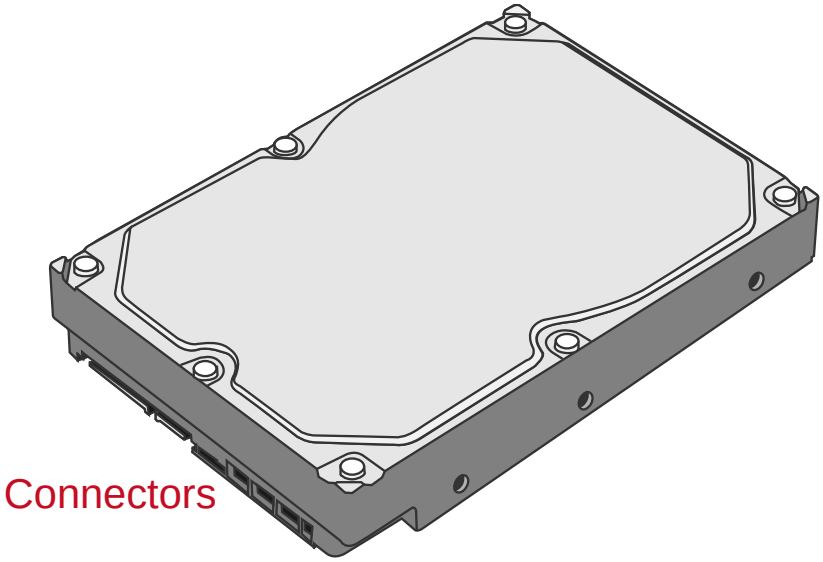
A “click” sound would indicate the release of the top lid security clasp.

2. Lift the top lid up to remove and expose the top view (or hard drive slots). Take out the handles from the enclosure itself and locate the hard drive screws in the packaging box.

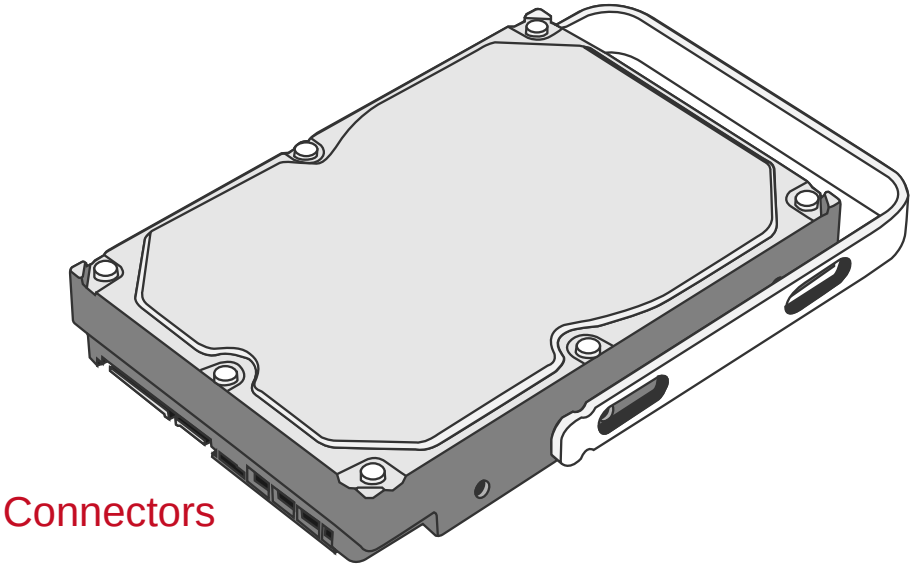


FASTEN THE HANDLES ONTO THE HARD DRIVES

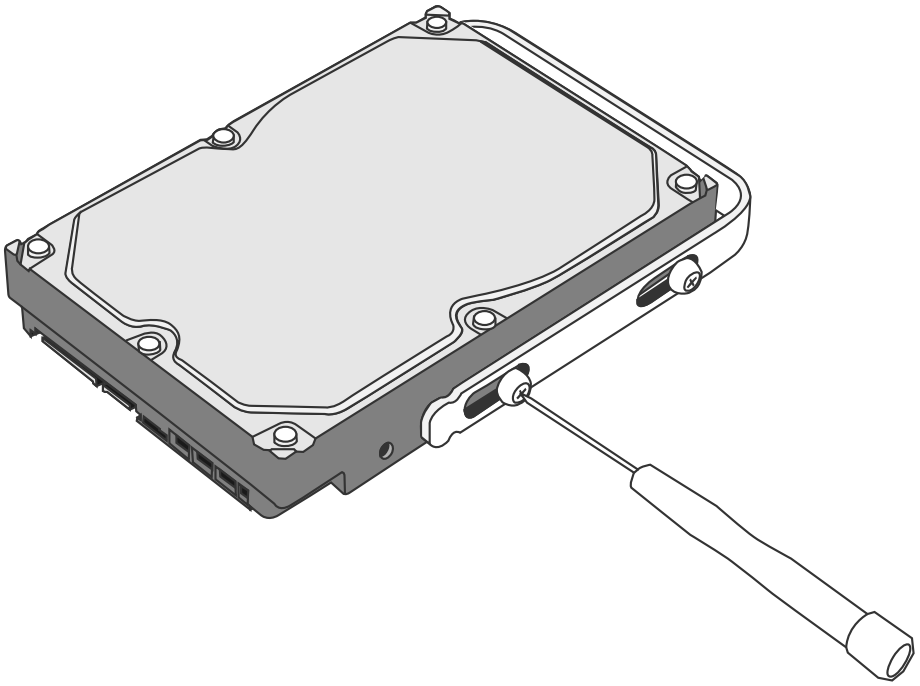
3. Place the hard drive with the metal cover side facing up and ensure that the interface connectors are oriented toward your left side.



4. Position the handle to the hard drive end, which is facing away from the interface connectors, and align it with the screw hole openings.

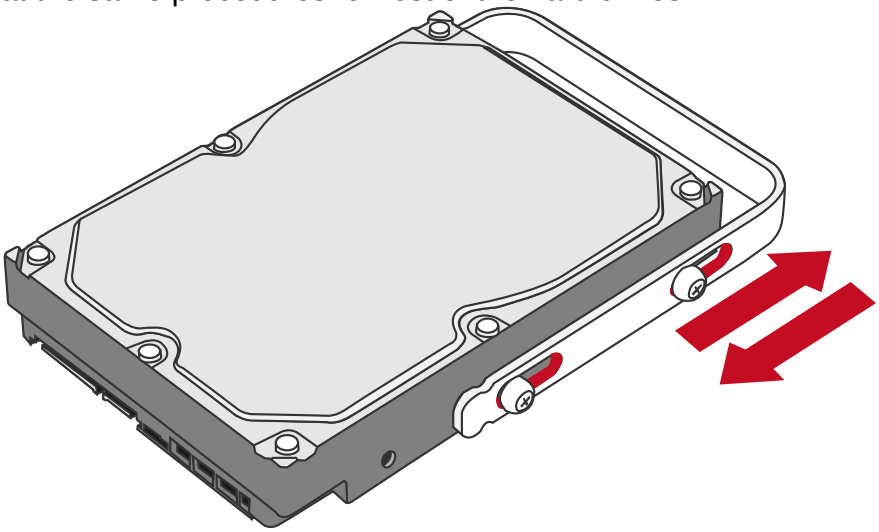


5. Fasten the handle onto the hard drive by inserting and tightening the screws on both ends of the handle.



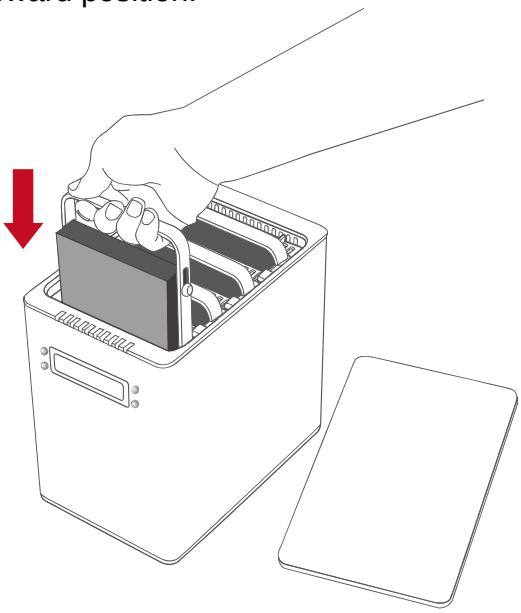
6. Finally, test sliding the handle to make sure that the holes glide smoothly on the screw guides.

   Repeat the same procedures for rest of the hard drives.



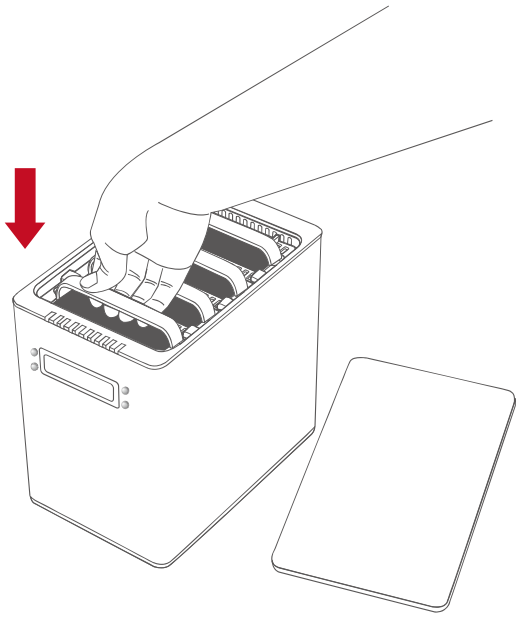
The auto-limiting segmented screws are designed to prevent the hard drives or/and the handles from damages due to over-tightening. Furthermore, this design makes the handle slide easily without any tightness.

9. Hold the hard drive with the metal cover side facing you and the handle attached on the upward position.



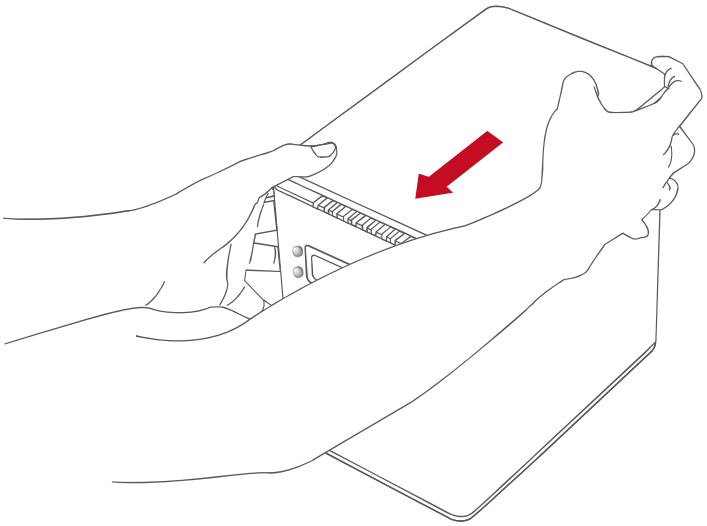
When inserting the hard drive on its reverse side, the SmartGuider* System won't be able to align and the hard drive cannot be inserted.

10. Align the handle with the guide rails and slide the hard drive into the indicated slot. Firmly push downward until a "thump" sound is heard. Repeat the same procedures for the rest of hard drives.



In most cases, you would need to firmly push the trays to a close until a "thump" sound is heard.

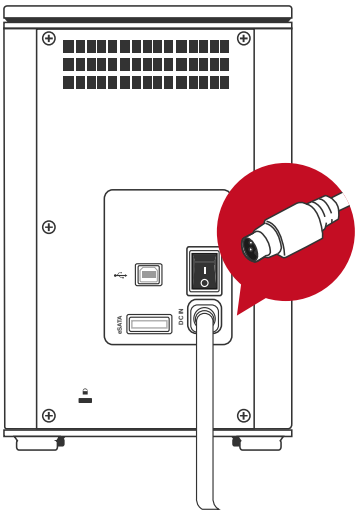
11. Place RAID System with its front view facing you and the top lid on. Position one hand on the front edge and one on the back edge of the top lid. Simultaneously, push the lid firmly downward and toward you, back to front.



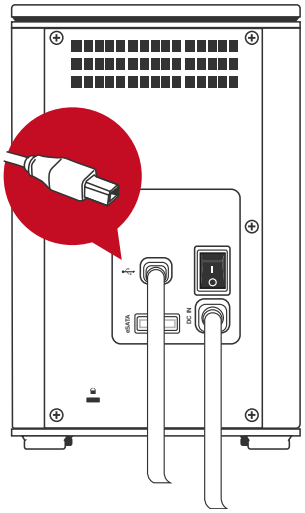
A “click” sound would indicate grasp of the top lid security clasp.

CONNECTING THE RAID SYSTEM TO A COMPUTER

1. Connect the AC/DC power adapter.

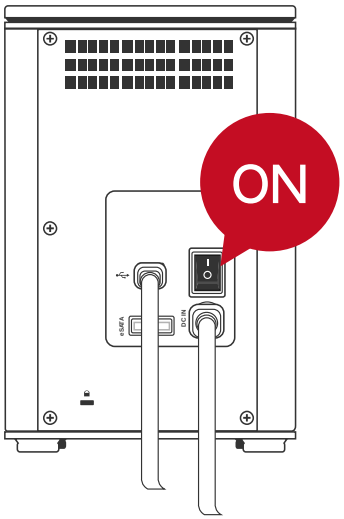


2. Insert both ends of the USB, eSATA or FireWire cable(s) into the corresponding port of the RAID System and the host.

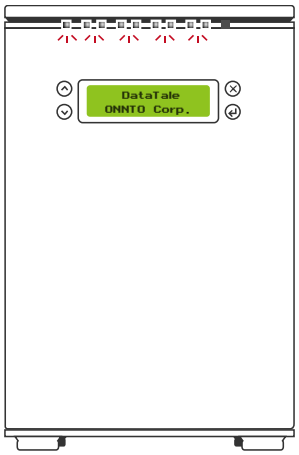


The RAID System should only be connected to a host computer via one interface. Connection of the system to a computer via two or more interfaces simultaneously is not recommended, especially when doing data transfer.

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



4. When connected, the Power LED light will become steadily green, and the Hard Drive LED lights will become white and blink about 15 seconds. If the hard drives are inside the RAID System, the Hard Drive LED lights will remain steadily white; and the LCM Panel will show “Initializing…”, then “DataTale ONNTO Corp.”. If there are no hard drives inside the RAID System, the Hard Drive LED lights will turn off after blinking; and the LCM Panel will only show “DataTale ONNTO Corp.”.



5. You are now ready to begin using your RAID System!

Due to compatibility issues, if you use the eSATA interface to do the data transfer, the Silicon Image eSATA host controller is highly recommended.

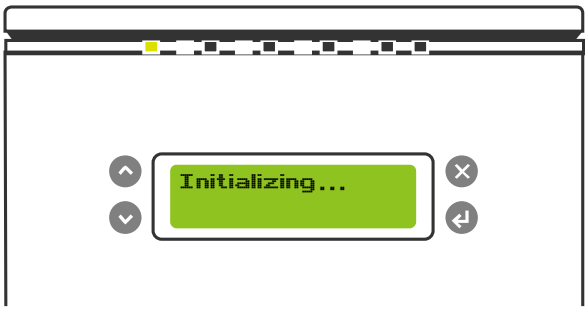
LCM

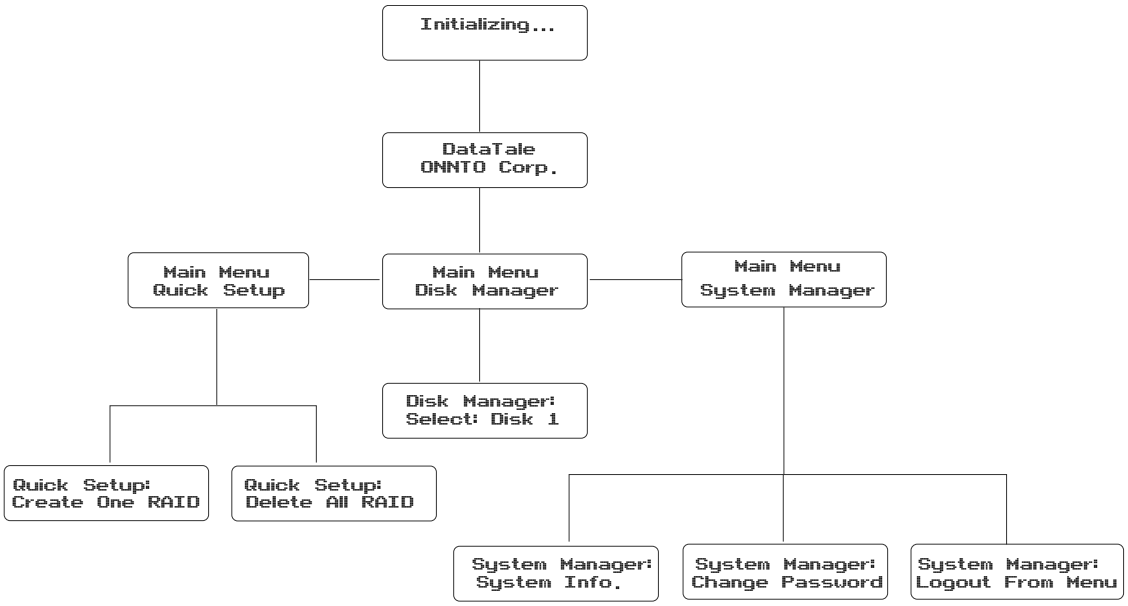
The LCM on the DataTale 4-bay Smart RAID System will display basic information for the inserted hard drives, RAID System itself, and basic RAID function operations.

LCM BUTTONS

BUTTON	MEANING
X	Esc or “No”
↵	Enter or “Yes”
^	Up (Arrow)
v	Down (Arrow)

BASIC MENU





MAIN MENU DESCRIPTIONS

- **Quick Setup:** Enables general basic set up functions.
- **Disk Manager:** Provides basic information of specified hard drive.
- **System Manager:** Supplies basic RAID System information, and password or access capabilities.

SUB MENU DESCRIPTIONS

QUICK SETUP

- **Create One RAID**: To assign and create the RAID System's inserted hard drives into a preferred RAID Mode. Also to set up a RAID Mode Password for this particular RAID mode's hard drives.
- **Delete All RAID**: To delete the current RAID Mode setup in the RAID System's inserted hard drives.

DISK MANAGER

- **Select Disk**: To retrieve detailed information regarding the selected disk such as model, serial number, firmware version, total capacity, capacity not used, and disk status.

SYSTEM MANAGER

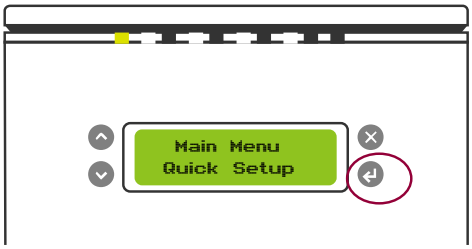
- **System Info**: To retrieve detailed information regarding the RAID System such as firmware version and control number.
- **Change Password**: To set up or change the password for access to the LCM operations only. This is not the same as the RAID Mode Password set up via the RAID MASTER and LCM (Create One RAID).
- **Logout From Menu**: To esc or exit from the menu.


Complete "LCM Process Tree Guideline" is provided under "APPENDIX" section.

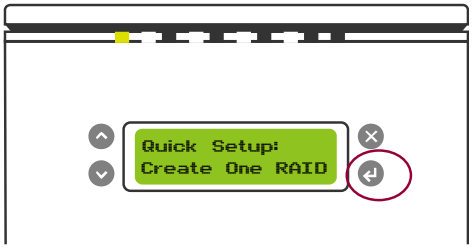
RAID CONFIGURATION

To assign and create the RAID System's inserted hard drives into a preferred RAID Mode, using the LCM only, please follow the steps listed in the instructions provided below:

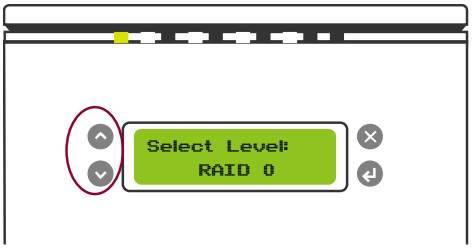
1. Turn 'On' the RAID System. After "initializing", it will display "DataTale ONNTO Corp.". Under Main Menu, press Down Button (∨) to select 'Quick Setup' and press Enter (↵).



2. Select 'Create One RAID' and press Enter (↵).

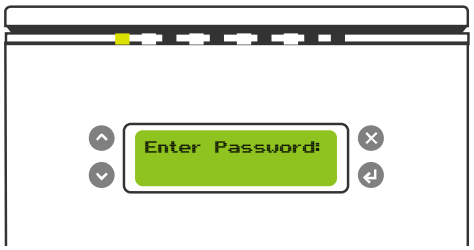


3. Use the Up (∧) and Down Buttons (∨) to select which RAID Mode to use.



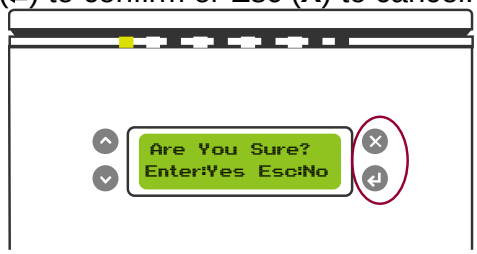
If not enough hard drives are inserted inside the RAID System, then it will display "Disk Not Enough, Cannot Create!"

4. Enter the ‘password’. This password is the same one for RAID MASTER. Not the individual password for the LCM operation itself.



If a ‘password’ has not been created yet, please enter a new one. If prefer not to enter a password, simply leave it blank and press Enter (↵). Please refer to the RAID MODE PASSWORD section under “Q&A”.

5. After verifying the ‘password’, it will display “Are You Sure? Enter: Yes Esc: No”. Press Enter (↵) to confirm or Esc (**X**) to cancel.



6. Then, the RAID System will begin processing the preferred RAID Mode and display “Waiting System Re-initialize…”. Once completed, the RAID System is ready for usage under the chosen RAID Mode!

For rest of the LCM functions, please use the provided buttons to operate. They are very intuitive and easy to follow.

RAID MASTER

The RAID MASTER is a newly-designed GUI Software specifically for our DataTale SMART 4-bay Smart RAID System. The drivers of the RAID MASTER for both PC and Mac are provided via CD or our website. It provides a more convenient yet modern way to manage your RAID System.

 The RAID System can still be managed using the basic LCM provided.

INSTALLATION

To install the RAID MASTER via CD, please insert the provided CD in the package. To install the RAID MASTER via online, please download the appropriate driver from our website at www.data-tale.com or www.datawatchtech.com before beginning the installation process.

INSTALLATION FOR MAC

Please follow the steps listed in the instructions provided below:

1. If using the installation CD, please copy the driver for MAC to your Desktop. Double click the driver to decompress. Then, open the folder stating “RAID MASTER MAC_vx.xx.xx”.

2. Once opened, please double click on the “RAID MASTER” to open the program.

 Due to MAC’s OS, installation and un-installation of RAID MASTER is unnecessary. Simply open the folder containing the program and double click to start.

INSTALLATION FOR PC

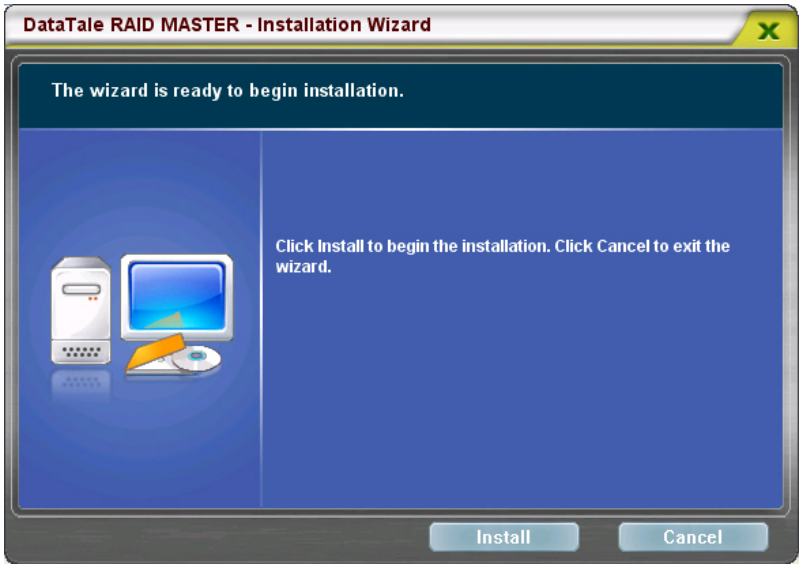
Please follow the steps listed in the instructions provided below:

1. If using the installation CD, please copy the driver for Windows to your Desktop. Double click the driver to decompress. Then, open the folder stating “RAID MASTER Windows_vx.xx.xx”.

2. Once opened, please double click on the icon stating “Setup.exe” to begin set up.

Due to WINDOWS OS, installation and un-installation is necessary to operate the RAID MASTER. When there’s a newer version of RAID MASTER, the previous version needs to be un-install first before installing the new version of the software.

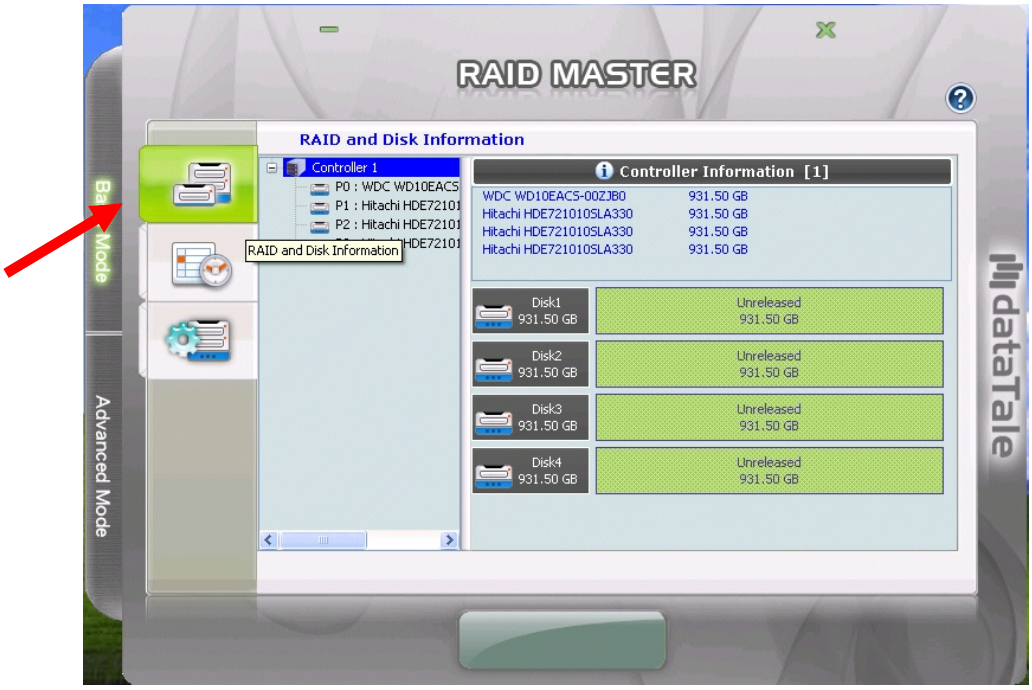
3. Once clicked, this image stating “DataTale RAID MASTER-Installation Wizard” should appear. Click on “Install” to continue.



4. Then, this image stating “The Installation Wizard has successfully installed the driver” should appear. If choose to launch the RAID MASTER immediately after installation, click on the icon stating “Launch the application right now”. If not, then make sure the icon is not “checked”. Once decided, click on “Finish” to finish the installation.

5. Once the installation is completed, the RAID MASTER Menu page should appear.

BASIC MODE MENU



 **RAID AND DISK INFORMATION:** Provides the basic information for the RAID System itself once the RAID System is connected to the host. For example, the Controller information, serial number for each inserted hard drives, what kind of RAID format is assigned for each inserted hard drives, and much more.

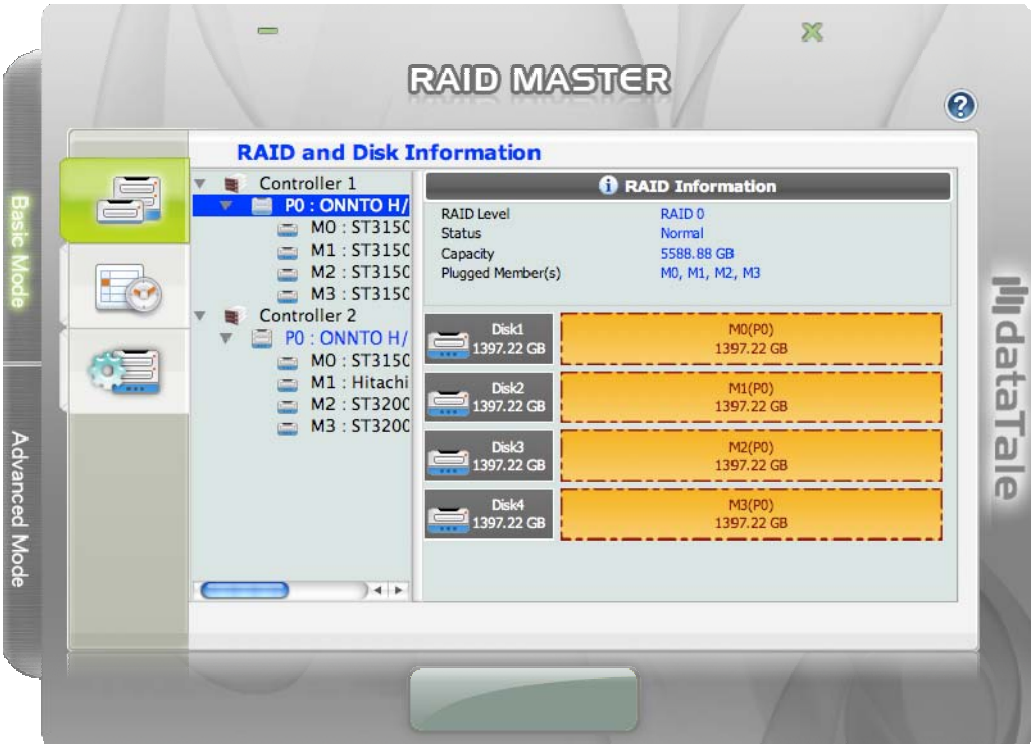
 **EVENT LOG:** Records all process completed for the RAID System and can be saved to a text format file.

 **BASIC RAID CONFIGURATION:**

- Provides the basic RAID Mode setup and configuration.
- Give a place to insert and apply a password to protect any changes done on the RAID System.
- Shows what type of RAID Mode is setup at the moment for the inserted hard drives.

RAID AND DISK INFORMATION

To retrieve the basic information for the RAID System, please connect the RAID System to the host and open the RAID MASTER. Once connected, click on the first sub-menu icon (top) and two types of information will appear:



1. The connected RAID System(s) information with brand model and serial numbers for each inserted hard drives. Because the RAID MASTER can manage more than “one unit of the RAID System”, each RAID System connected to the host computer will reflect as “Controller” and in numbering order “Controller 1, Controller 2, …” respectively.

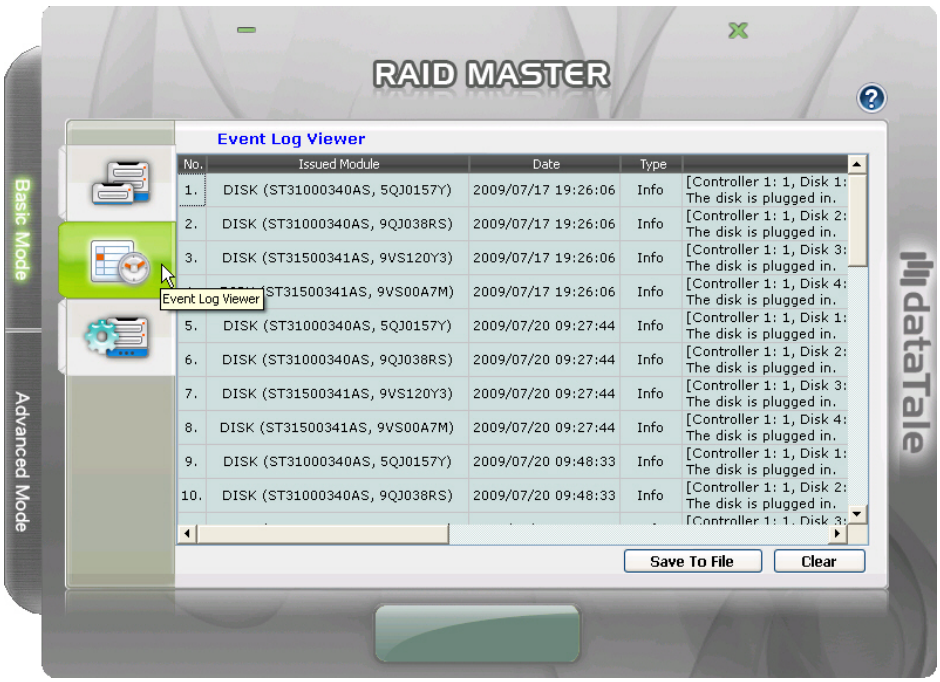
Due to chipset configuration, the Controller List will reflect the hard drives as “M0, M1, M2, and M3” for “hard drives 1, 2, 3, 4”, respectively.

2. The type of RAID Mode is assigned and available storage capacity for each inserted hard drives.

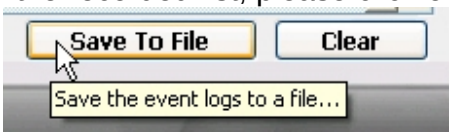
EVENT LOG

To keep a copy of all the recorded process and status for the RAID System, please complete using the following steps:

1. Click on the second sub-menu icon (middle). Once clicked, a list of process recording should appear as the “Event Log Viewer”. Each row should provide information such as: number of each event listing the oldest one first, issued module chosen and completed, date and time for the action, type of information provided for user, and memo note for each type.

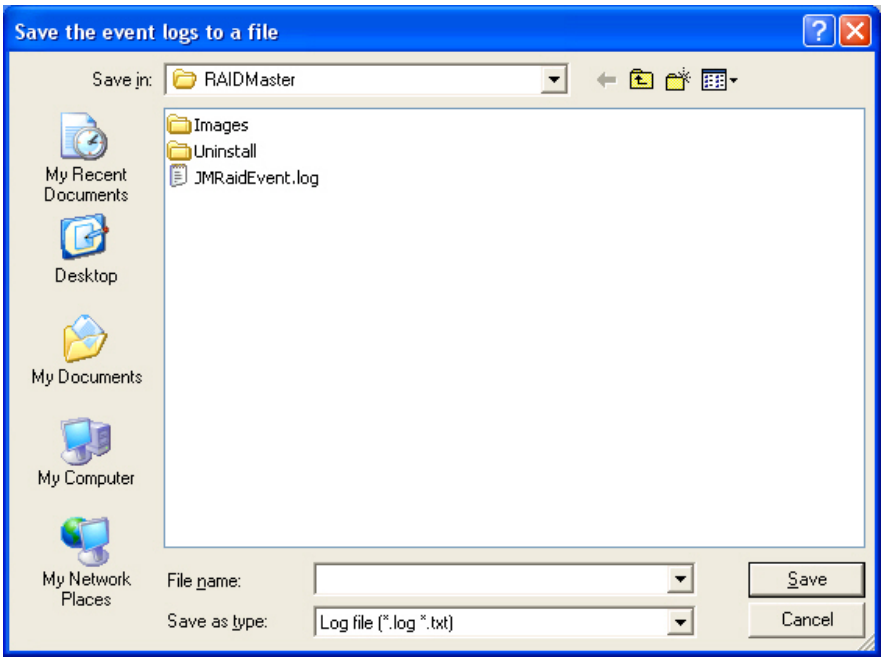


2. To save a copy of the recorded list, please click on the icon “Save To File”.



The “Clear” icon will erase all previous event logs permanently.

3. Once clicked, the box stating “Save the event logs to a file” should appear. Once appeared, please type in the file name and file type preferred, and select the location to save the file. Then, click on the “Save” icon.



4. Once saved, it will appear as a text format file (.txt).

This file is important to save and provide essential information for our service team, especially when there’s something wrong with the RAID System and it needs service.

BASIC RAID CONFIGURATION

SET UP RAID MODE

To setup the RAID System under the Basic Mode, please complete using the following steps:

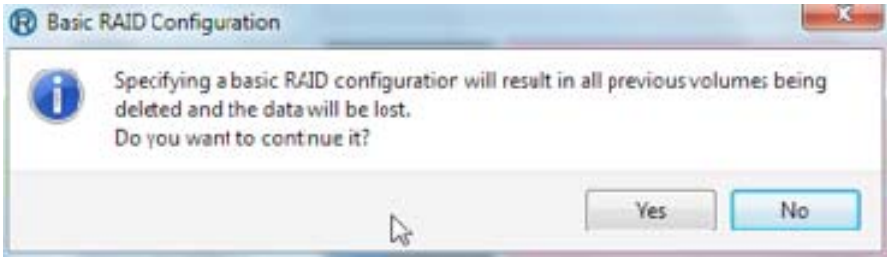
1. Please click on the third sub-menu icon (bottom). Once clicked, a list of RAID Mode options and basic information of the inserted hard drives should appear as the “Basic RAID Configuration”.

2. Select the preferred RAID Mode option on the list. Once selected, the RAID MASTER will automatically update the information on the right side for the inserted hard drives if are assigned the chosen RAID Mode. If decided to insert a password for change protection, please place it inside the password box.
   Then, click on the “Apply” icon to begin.

Please review the RAID MODE PASSWORD section under “Q&As” for more information.

Please review the RAID Mode options under “Glossory” to choose the best suitable RAID Mode for your needs and desire. If the number of inserted hard drives does not qualify for a particular RAID Mode, the option to choose that RAID Mode will not be available (faint image).

3. Once selected, the RAID MASTER will give an alert popup window stating “specifying a basic RAID confirmation will result in all previous volumes being deleted and the data will be lost”. Click on “Yes” icon to confirm.



4. Once selected, the RAID MASTER will begin processing the chosen RAID Mode onto the inserted hard drives. A popup window will appear reflecting status.

5. Once the process is completed, the same popup window will reflect the process-recording note for the “Event Log Viewer”. Click on the “OK” icon to confirm.

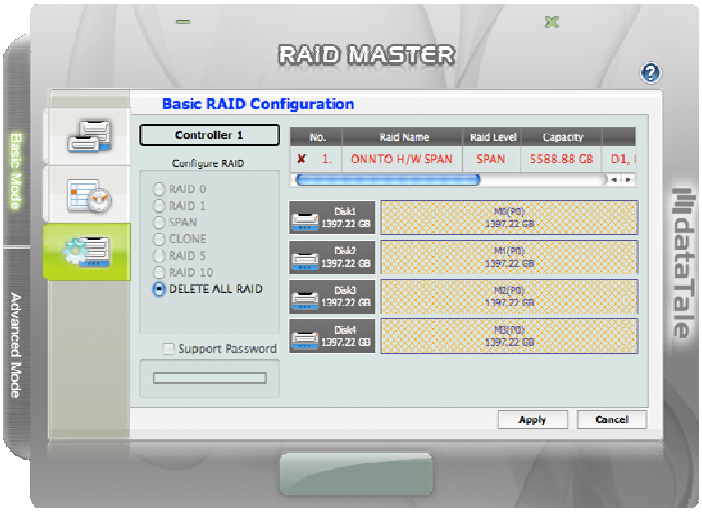
6. The inserted hard drives will reflect the assigned RAID Mode and show the basic information for them. The RAID System is now ready to be used under the preferred RAID Mode!

CHANGING OR DELETING AN ALREADY ASSIGNED RAID MODE

To change the current assigned RAID Mode for the inserted hard drives for the RAID System under the Basic Mode, the previous RAID Mode must be deleted first. Please complete using the following steps:

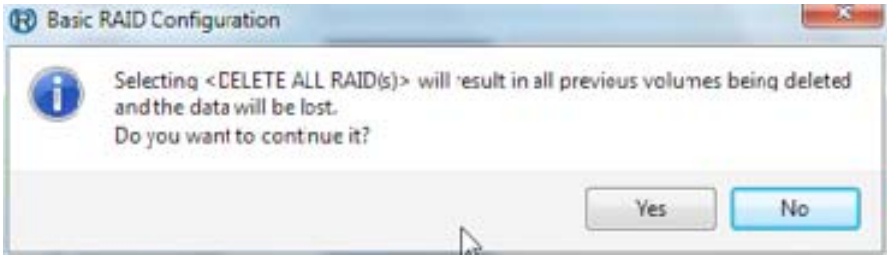
Changing the RAID Mode deletes all data stored on the hard drives. If you have saved data in the drives, backup all data before changing the RAID Mode.

1. Please click on the third sub-menu icon (bottom). Once clicked, the current assigned RAID Mode basic information should appear for the inserted hard drives and the option to “DELETE ALL RAID” under the list of RAID Mode options.
   Select the “DELETE ALL RAID” on the list. Once selected, the “Apply” icon will light up and click on it to begin.



If a password was already set up for the previously assigned RAID Mode, it needs to be input now inside the password box. If it is not correct or not inputted, then a popup window reflecting error will appear.

2. Once selected, the RAID MASTER will begin running the previous RAID Mode from the inserted hard drives. A popup window will appear giving a warning and asking for confirmation. Click on “Yes” to continue.

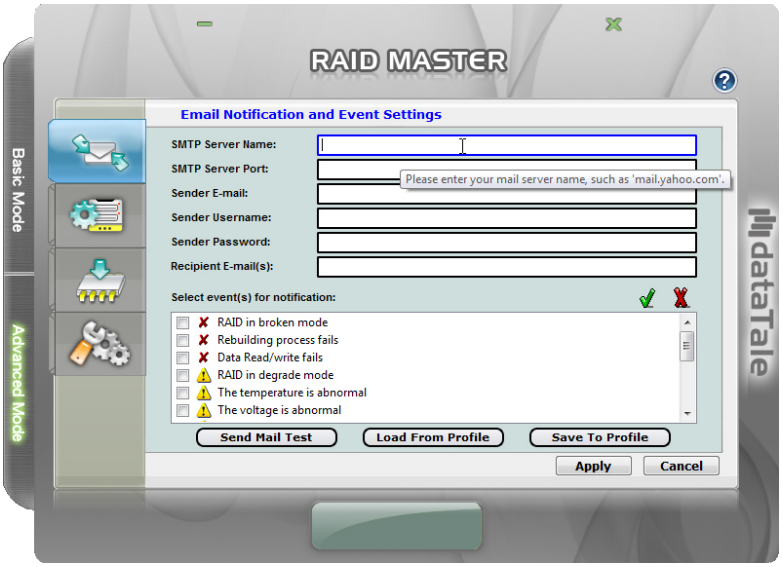


3. Once confirmed, the RAID MASTER will begin deleting the previous RAID Mode from the inserted hard drives. A popup window will appear reflecting status.

4. Once the process is completed, the same popup window will reflect the process-recording note for the “Event Log Viewer”. Click on the “OK” icon to confirm.

5. The inserted hard drives will now reflect as “unreleased” and the current basic information for them are available. The RAID System is now ready to be re-assigned and formatted for a new RAID Mode!

ADVANCED MODE MENU



 **EMAIL NOTIFICATION & EVENT SETTINGS:** Available to set up Email Notification (such as in event of errors, alerts, and changes to the RAID System) and Event Settings based on preference.

 **ADVANCE RAID CONFIGURATION:** Similar to Basic RAID configuration with additional options.

- Select which hard drives and their storage capacities
- Perform a combination of RAID Modes at same time. For example, creating two sets of RAID 1 or have a combination set of RAID 0 and RAID 1.
- Assign an additional hard drive as the spare and will perform automatic rebuild when another hard drive already in a RAID Mode setup fails (for RAID 1, CLONE, and RAID 5 only.)

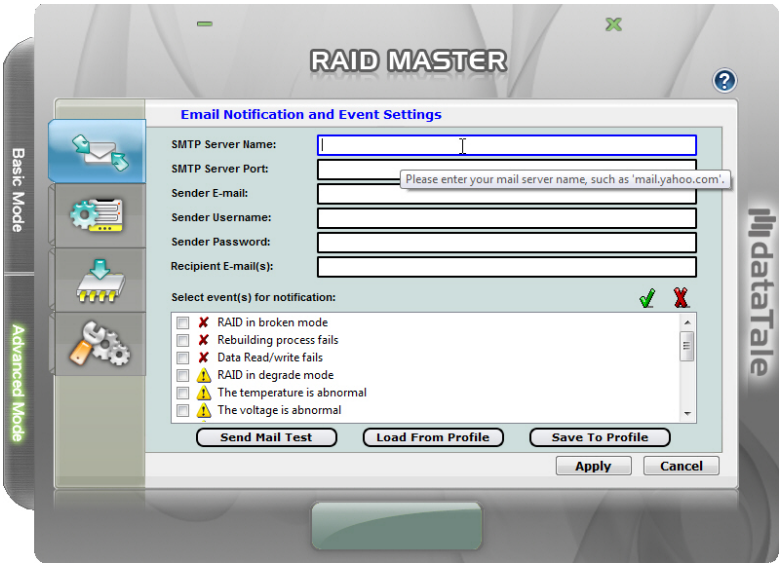
 **FIRMWARE INFORMATION:** Provides Controller's firmware information such as product name, firmware version, manufacturer, and flash number. Also, gives an option to update the firmware when necessary.

 **RAID SETTINGS:** Allow set up of RAID Standby Timer Settings and RAID Rebuild Priority Settings based on preference.

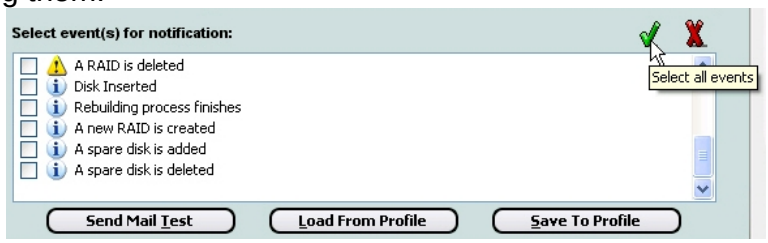
EMAIL NOTIFICATION & EVENT SETTINGS

To set up the Email Notification and the Event Settings based on preference, please complete using the following steps:

1. Enter all the necessary information.
   - **SMTP Server Name:** Enter the address of the mail server.
   - **SMTP Server Port:** Enter the mail server's port number.
   - **Sender E-mail:** Enter the sender's E-mail address for this server.
   - **Sender Username:** Enter the sender's username for this server.
   - **Sender Password:** Enter the sender's password for this server. The password will be authenticated by the specified mail server when sending an E-mail.
   - **Recipient E-mail(s):** Enter the E-mail address(es) of persons to receive a notification email. Must enter ";" between E-mail addresses for multiple recipients.

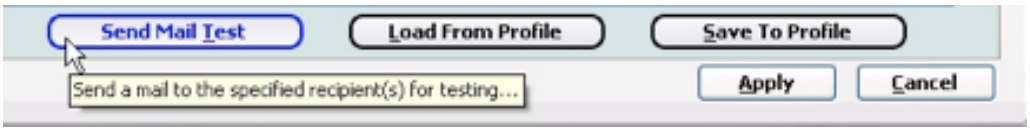


2. Select the preferred settings for the Event Settings by checking or un-checking them.

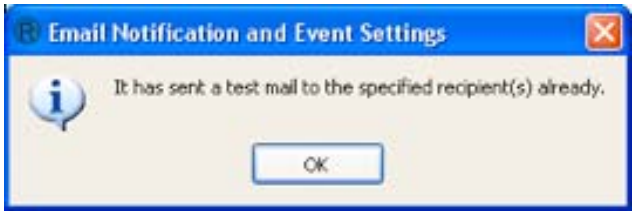


To clear the previous settings, click on the "X" icon.

3. To send a test E-mail to the recipient(s)' E-mail accounts before confirming, click on the "Send Mail Test" icon on the bottom.

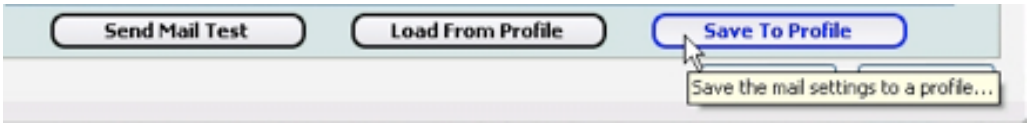


If a test E-mail has been sent already, a popup window reflecting status will appear and state "It has sent a test mail to the specified recipient(s) already".

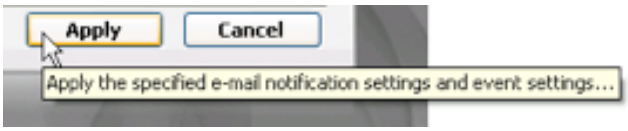


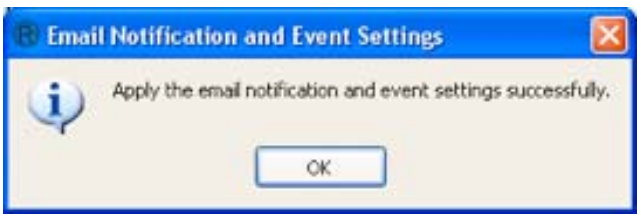
4. To load user's information from a previously-saved profile, click on the "Load From Profile" icon.

5. To save the current profile onto the host, click on "Save To Profile" icon.



6. Finally, click on "Apply" icon to confirm the Event Notification and Event Settings preferences. A popup window will appear to reflect status by stating "Apply the email notification and event settings successfully".





ADVANCE RAID CONFIGURATION

SET UP RAID MODE

To setup the RAID System under the Advance Mode, please complete using the following steps:

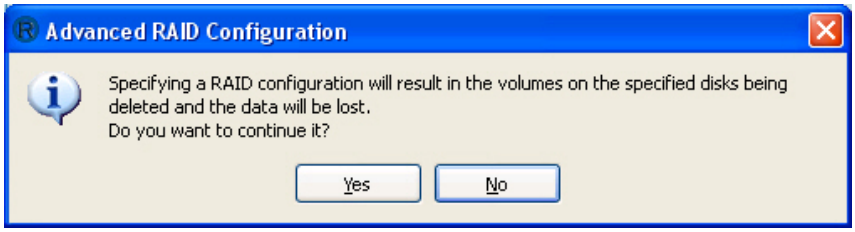
1. Please click on the second sub-menu icon (second top). The general information of the inserted hard drives should appear as the “Advance RAID Configuration”.
   Then, click on “Create RAID” under “Configure RAID” box.

2. Under the “Create RAID” box, click and choose the preferred RAID Mode under “Select a RAID type” option list. Once selected, the RAID MASTER will automatically update the information on the right side for the inserted hard drives if are assigned the chosen RAID Mode. Then, click on the “Apply” icon to begin.

Please review the RAID Mode options under “Glossory” to choose the best suitable RAID Mode for your needs and desire. If the number of inserted hard drives does not qualify for a particular RAID Mode, the option to choose that RAID Mode will not be available (faint image). Under Advance Mode, more than one set of RAID Modes can be performing at the same time Modes at same time. For example, to create two sets of RAID 1 or to have a combination set of RAID 0 and RAID 1. Please make sure the number of hard drives match with its selected RAID Mode.

If decides to insert a password for change protection, please place it inside the password box. If decides to only use certain hard drives, check or uncheck the hard drives to use based on preference. If decides to adjust the hard drives’ storage capacities, click on the hard drive you would like to adjust and move the slide guide bar on the bottom of all hard drives from right to left.

3. Once selected, the RAID MASTER will give an alert popup window stating “specifying an RAID configuration will result in all previous volumes being deleted and the data will be lost”. Click on “Yes” icon to confirm.



4. Once selected, begin processing the chosen RAID Mode onto the inserted hard drives. A popup window will appear reflecting status.

5. Once the process is completed, the same popup window will reflect the process-recording note for the “Event Log Viewer”. Click on the “OK” icon to confirm.

6. The inserted hard drives will reflect the assigned RAID Mode and show the basic information for them. The RAID System is now ready to be used under the selected RAID Mode!

CHANGING OR DELETING AN ALREADY ASSIGNED RAID MODE

To change the current assigned RAID Mode for the inserted hard drives for the RAID System under the Advance Mode, the previous RAID Mode must be deleted first. Please complete using the following steps:

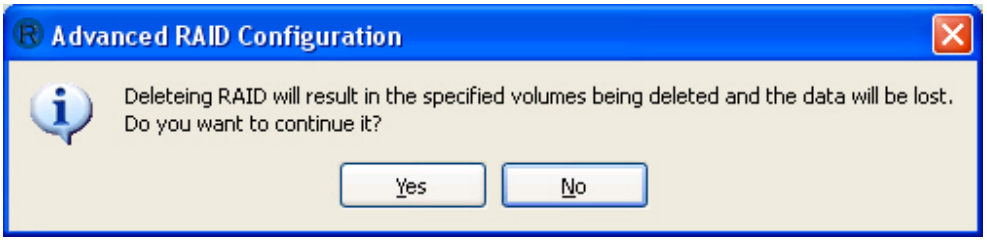
Changing the RAID Mode deletes all data stored on the hard drives. If you have saved data in the drives, backup all data before changing the RAID Mode.

1. Please click on the second sub-menu icon (second top). Once clicked, the current assigned RAID Mode basic information should appear for the

inserted hard drives. Click on the “DELETE RAID” option under the list of RAID Mode options and check or uncheck the hard drives to be deleted. Once selected, the “Apply” icon will light up and click on it to begin.

If a password was already set for the previously assigned RAID Mode, it needs to be input now inside the password box. If it is not correct or not inputted, then a popup window reflecting error will appear.

2. Once selected, the RAID MASTER will begin to run and delete the RAID Mode from the inserted hard drives. A popup window will appear giving a warning and asking for confirmation. Click on “Yes” to continue.



3. Once confirmed, the RAID MASTER will begin deleting the previous RAID Mode from the inserted hard drives. A popup window will appear reflecting status.

4. Once the process is completed, the same popup window will reflect the process-recording note for the “Event Log Viewer”. Click on the “OK” icon to confirm.

5. The inserted hard drives will now reflect as “unreleased” and the current basic information for them are available. The RAID System is now ready to be re-assigned and formatted for a new RAID Mode!

ADDING OR CHANGING A SPARE

To add a new Spare hard drive or change the current assigned Spare hard drive for the RAID System under the Advance Mode, please complete using the following steps:

1. Under the “Configure RAID” box, click the “Add Spare” icon and choose the assigned RAID Mode under “Select a RAID to add spare disk(s)” option list. Once selected, the RAID MASTER will automatically update the information on the right side for the inserted hard drives for the assigned RAID Mode. If had previously inserted a password for change protection, please place it inside the password box. The unused hard drive will be highlighted in a different color.

Only an automatic rebuilt can be setup for a Spare under RAID 1, CLONE, RAID 5 modes.

2. Once selected, the available hard drive will show up individually. Check the preferred hard drive as a Spare. Then, click on “Apply” icon to confirm.

3. The RAID MASTER will show up an alert popup window stating, “This configuration will add the selected spare disk(s) to the specified RAID. The spare disk(s) just act as the backup disk and will be used to rebuild the data when a member disk of the RAID is damaged or unplugged. Do you want to do the configuration?” Click on the “Yes” icon to confirm.

4. Once confirmed, a popup window showing status will appear.

5. Once completed, a popup window stating “…has added a spare disk” will appear. Click on the “OK” icon to confirm.

DELETING A SPARE

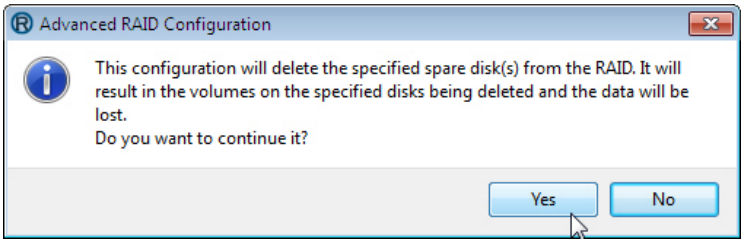
To delete the current assigned Spare hard drive for the RAID System under the Advance Mode, please complete using the following steps:

1. Under the “Configure RAID” box, click the “Delete Spare” icon and choose the assigned RAID Mode under “Select a RAID to delete spare disk(s)” option list. Once selected, the RAID MASTER will automatically update

the information on the right side for the inserted hard drives for the assigned RAID Mode. If had previously inserted a password for change protection, please place it inside the password box. The previously assigned Spare hard drive will be labeled “Spare”. Check the Spare hard drive.

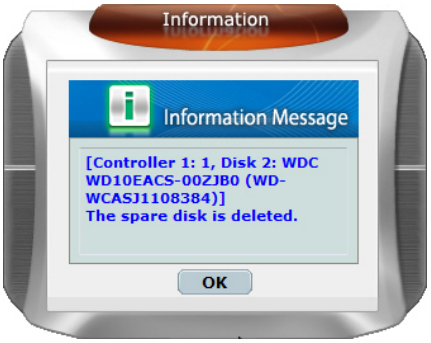
2. Once selected, the Spare hard drive will show up individually. Check the assigned Spare hard drive to delete. Then, click on “Apply” icon to confirm.

3. The RAID MASTER will show up an alert popup window stating “This configuration will delete the specified spare disk(s) from the RAID. It will result in the volumes on the specified disks being deleted and the data will be lost. Do you want to continue it”. Click on the “Yes” icon to confirm.



4. Once confirmed, a popup window showing status will appear.

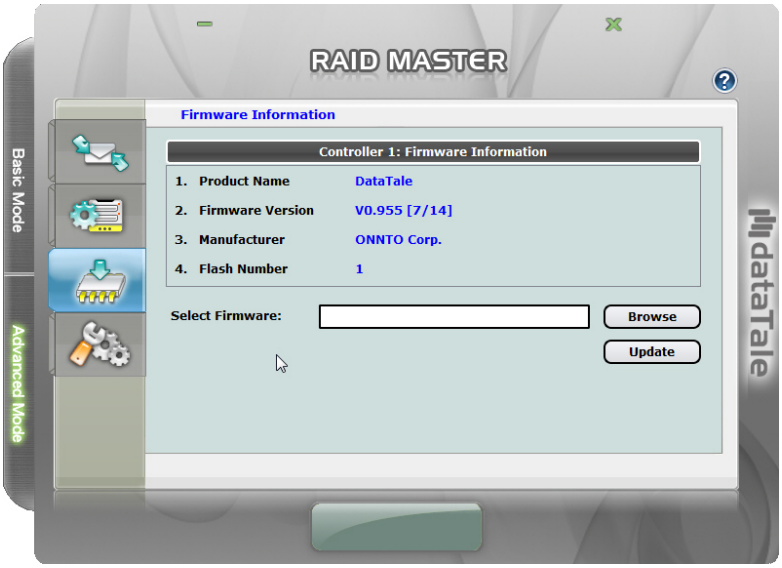
5. Once completed, a popup window stating "…The spare disk is deleted" will appear. Click on the "OK" icon to confirm.



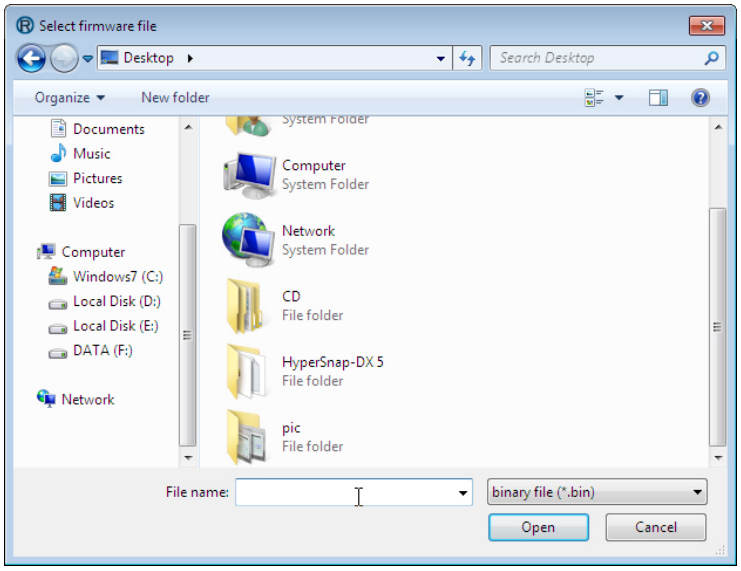
FIRMWARE INFORMATION

The Controller 1 Firmware Information will show the product name, the firmware version, the manufacturer, and the flash number. To update the firmware when necessary, please complete using the following steps:

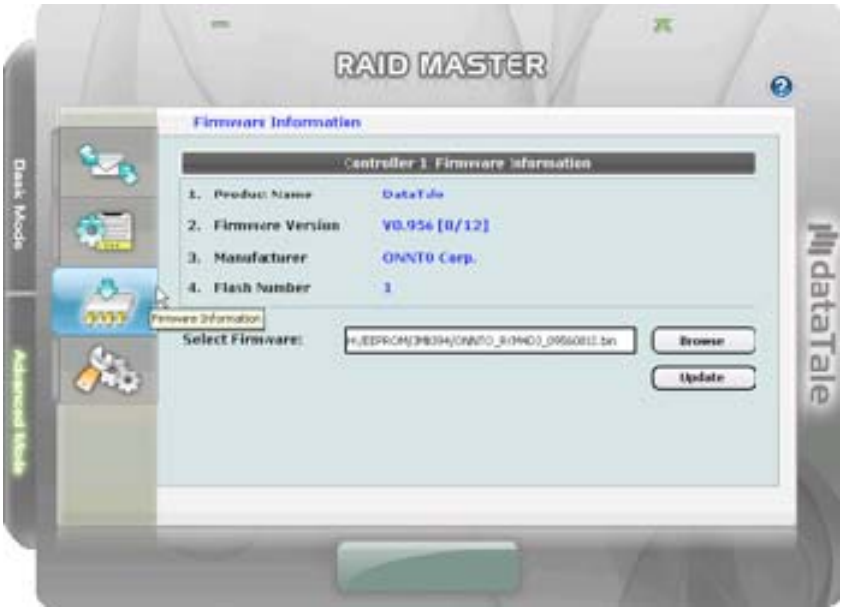
1. Under the third sub-menu (third from top), select to go into the Controller 1: Firmware Information. Click on the “Browse” icon to find the firmware update.



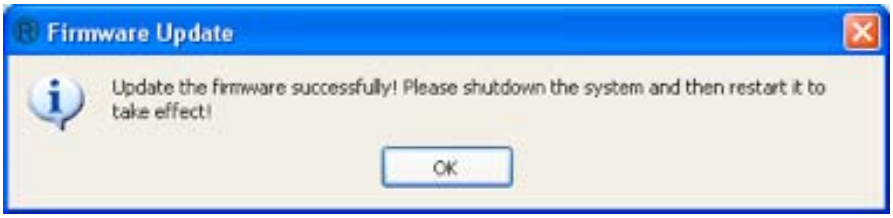
2. Find the new firmware version on the host.



3. After finding the firmware update, click on the “Update” icon to update the new firmware version.



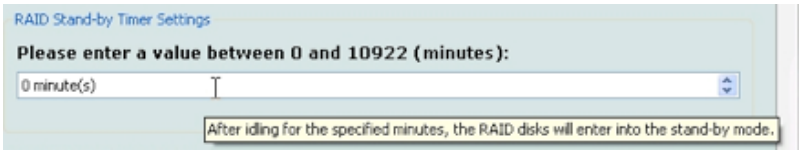
4. Once updated, a popup window will appear to reflect status by stating “Update the firmware successfully! Please shutdown the system and then restart it to take effect!”



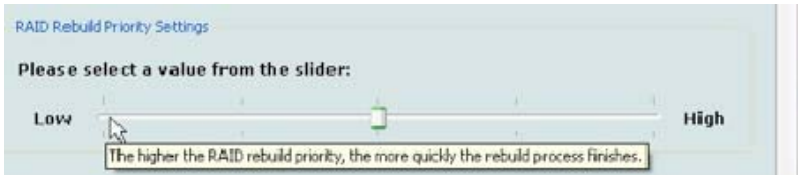
RAID SETTINGS

To setup the RAID Standby Timer Settings and RAID Rebuild Priority Settings, please complete using the following steps:

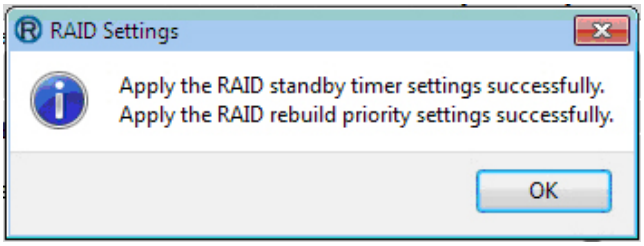
1. Under the last sub-menu (bottom), select to go into the RAID Settings. Write in the amount of minutes preferred under “Please enter a value between 0 and 10922 (minutes)” for RAID Stand-by Timer Settings. Once set, after idling for the specified minutes, the RAID disks will enter into the stand-by mode.



2. Adjust the slider bar under “Please select a value from the slider” by going left or right. Left side indicate “low” and right side indicate “high” for speed of rebuilding and will affect the speed of data transfer based on set preference. The higher the RAID Rebuild Priority, the quicker the rebuild speed, and the slower the data access and transfer speed.



3. After entering preferences, click on the “Apply” icon to begin the process. Once completed, a popup window stating “Apply the RAID standby timer settings successfully. Apply the RAID rebuild priority settings successfully” will appear to confirm. Click on the “Ok” icon to re-confirm.



NUMBER OF DISKS SUPPORTING EACH RAID MODE

RAID Modes	Number of Disk in RAID
RAID 0 (Striping)	2 to 4
RAID 1 (Mirroring)	2
Span	2 to 4
Clone	2 to 4
RAID 5	3 or 4
RAID 1+0	4
JBOD	1 to 4

CONNECTING MULTIPLE DEVICES

When using FireWire 400/800, you can “Daisy chain” and connect other computer hardware or digital devices to your Unit (such as digital video camera, another hard drive, DVD writer, and much more). However, you must use the same interface in order for the “Daisy Chain” to work. The computer will not recognize different interfaces if they are all used at the same time. If a mix of connections is used, the resulting speed will be limited to the lowest one available. If an USB or eSATA connector is connected to the host, the Unit cannot be “daisy chained”.

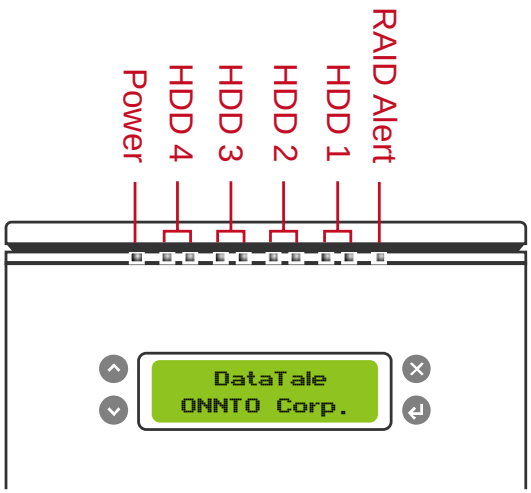
SAFE REMOVAL OF THE RAID SYSTEM

Safe removal of the RAID System from the host controller is highly recommended, especially when switching interfaces. In order to safely remove your RAID System from the host controller, you would need to eject the device on your host controller system.

 If using a MAC System, safe removal of the RAID System from the host for all interfaces is necessary.

 If using a PC System, safe removal of the RAID System from the host depends on the interface. Most current USB and FireWire host controllers handle USB and FireWire devices as external devices; thus, it is highly recommended that the RAID System be safely removed from the host if you are using either one of the interfaces. However, if you are using the eSATA interface, safe removal of the RAID System from the host is unnecessary because most hosts do not support it.

LED INDICATORS



POWER LED x 1

Indicators	Color
Power on	Green
Power off	None

RAID ALERT LED x 1

Indicators	Color
Healthy	None
Rebuild	Blink Red
Broken or Degrade	Red
Fan Error	Flash Red

HDD LED x 8

There are 2 LEDs for each HDD slot. The left LED indicates "Connection/Access" and the right one indicates "Health".

The Connection/Access LED is only one-color (white). When the hard drive is connected, the white LED will be on. When hard drive is healthy and not being accessed, white LED color will be on. When the hard drive is being accessed, the white LED will flash.

The Health LED is only one color (red). The red color is for Health condition of the hard drive. When the hard drive is not healthy, the red LED will be on.

<table>
<tr><th colspan="2" rowspan="2">Indicator</th><th colspan="2">HDD (1, 2, 3, 4)</th><th rowspan="2">RAID mode</th></tr>
<tr><th>Left (Connection/Access)</th><th>Right (Health)</th></tr>
<tr><td colspan="2">Disk Not Detected</td><td>None</td><td>None</td><td>All modes</td></tr>
<tr><td colspan="2">Disk Detected</td><td>White</td><td>None</td><td>All modes</td></tr>
<tr><td colspan="2">Disk Not Healthy</td><td>White</td><td>Red</td><td>All modes</td></tr>
<tr><td colspan="2">Data Access</td><td>Flash White</td><td>None</td><td>All modes</td></tr>
<tr><td rowspan="3">Disk Rebuild</td><td>Source Disk</td><td>Flash White</td><td>None</td><td rowspan="3">RAID 1, RAID 5, RAID 1+0, Clone</td></tr>
<tr><td>Target Disk</td><td>Flash White</td><td>Blink Red</td></tr>
<tr><td>RAID Alert</td><td colspan="2">Blink Red</td></tr>
</table>

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.

EXTERNAL BOOTUP

External Bootup may be required if the user has two different operating systems set up in both the host computer and the RAID System.

PC

The External Bootup with different interface:

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

MAC

The External Bootup varies with different platform and interfaces:

Platform \ Interfaces		USB	FireWire	eSATA	
				Mac driver Built-in	No driver Built-in
Power PC CPU (G4 or Later)		No	No	Yes	No
Intel-based CPU	**CoreDuo**	Yes	No	Yes	No
	Core2Duo Or Later	Yes	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.

DISK VOLUME OVER 2TB

The 2+TB hard drive support is determined by the chipset used in the device and the operating system itself. The RAID System supports and recognizes 2+TB hard drives, but the actual 2+TB support will vary depending on the different operating systems used.

OS		USB	FireWire	eSATA
Windows	Windows 2000, XP, or older	No	No	No
	Windows XP 64-bit, Windows 2003 32-bit/64-bit (SP1 and SP2)	Yes	No	Yes
	Windows Vista, Windows 2008 32-bit/64-bit	Yes	Yes	Yes
Linux	Linux 32-bit/64-bit	Yes*	No	Yes*
Mac	Mac OS 9/10.1/10.2	No	No	No
	Mac OS 10.3/10.4/10.5/10.6/10.7	Yes	Yes	Yes

* Depends on the Linux version. Please see the chart below:

Linux OS	USB	eSATA
Linux Fedora Core 8 / 32-bit	No	Yes
Linux Fedora Core 8 / 64-bit	No	Yes
Linux Fedora 10 / 64-bit	Yes	Yes

 If the OS does not support over 2TB, you can still use the RAID System with the Advance Mode to adjust the Hard Drive Storage Size to fit your host's OS. Please see RAID MASTER: ADJUST HARD DRIVE STORAGE SIZE section under "Q&As".

BACKUP KIT

The Deluxe Backup Kit is perfect for mobile professionals and power users who frequently share large files between different locations, need multiple duplications for further usage, or simply need more space capacity! The Deluxe Backup Kit includes a SMART DataTale 4-Bay RAID System and a DataTale Portable 3.5-inch HDD Enclosure. Due to the SmartGuider, one can backup with speed using the RAID System and make modifications using the Portable while on travel using the Backup Kit: under JBOD, Mirror, or Clone modes. Any of the hard drives can be taken out to perform necessary data modification with our compact DataTale Portable 3.5" HDD Enclosure (single drive) at another location.

Under JBOD mode: Any hard drive taken from the RAID System can be modified inside the Portable Enclosure and placed back into the RAID System as an individual hard drive.

Under Mirror or Clone modes: After revising the extracted hard drive from the RAID System using the Portable Enclosure, the revised version can be Mirrored or Cloned onto the other (1 to 3) hard drive(s) in the RAID System for secure protection or for others to access, such as clients or team members!

Please review the "How to Backup a Modified Hard Drive" section below for Mirror and Clone modes.

HOW TO BACKUP A MODIFIED HARD DRIVE

To backup a modified hard drive, please follow the steps listed in the instructions below:

Follow the steps below carefully to prevent data loss.

1. First, extract one of Mirrored or Cloned disks to perform the necessary data modification with Portable Enclosure.

   It is highly recommended to physically label or identify the taken out hard drive as “Modified Disk” or “Source Disk”.

2. Next, delete the RAID mode in the remaining disk(s) inside the RAID System via RAID MASTER or LCM Panel. Please refer to the “LCM” or “Advance Mode Menu” sections for more details.

3. Then, a popup window will appear stating, “…: Deleting RAID will result in the specified volumes being deleted and the data will be lost. Do you want to continue it?” Press the “Yes” icon to continue deleting the RAID mode.

4. The Information Message will appear to reflect the deleting request.

5. Now, the RAID MASTER will reflect the Target Disk as “Unreleased“, which is now a new hard drive without any data inside.

6. Finally, insert the Modified hard drive into the RAID System. Re-assign the new “unreleased” hard drive(s) that the RAID mode has already been deleted before via Advanced Mode Menu of the RAID MASTER as “Spare”. Once completed, the RAID System will begin Automatic Rebuild. Please refer to the “Adding or Changing a Spare” section for more details.

GLOSSORY

LCM DISPLAY OF STATUS

IDLE SCREEN DISPLAY	DEFINITION
DataTale ONNTO Corp.	**If RAID is normal.**
RAID Rebuilding Disk… …% …	**If RAID is rebuilding.**
RAID Set … is in Broken Mode	**If RAID is broken or non-functioning. The data inside the RAID is lost and cannot be recovered.**
RAID Set … is in Degrade Mode	**If RAID is degrade or non-functioning. The data inside the RAID is in danger, and need to replace the hard drive if necessary.**
DISK … Detects as a Bad Disk!	**If one or more of the hard drives are broken or non-functioning.**
FAN … Fail! Status Abnormal.	**If one of the fans are broken or non-functioning.**

 Press “Enter” or “Esc” after the Idle Screen Display to continue or to find out more information.

RAID MASTER POPUP WINDOWS OF STATUS

REBUILDING

BROKEN

DEGRADE (IN DANGER)

RAID 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.

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

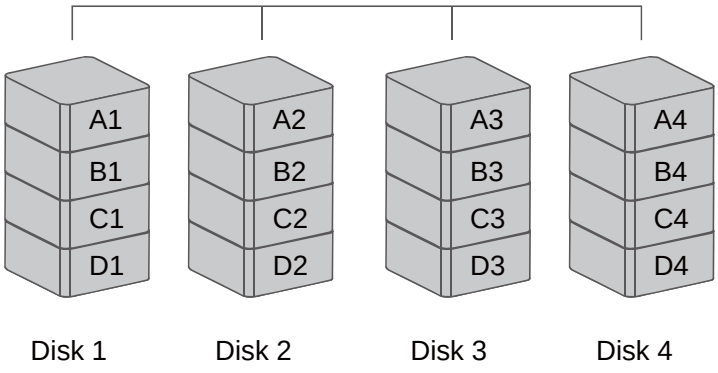
Using identical hard drive(s) with the same capacity and RPM, and from the same manufacturer are highly recommended for best capacity utilization.

RAID 0 (STRIPING)

RAID 0 (Striping) 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. Although Striping is an easily implemented, simple configuration, Striping should never be used for mission critical applications. The speed of operation is excellent in comparison to other RAID modes.

RAID 0



When you choose to insert only two hard drives, there is not limitation on the order of hard drive insertion or the slot number. Under Basic Setup Menu, if inserted all four hard drives, all will be assigned as the same mode.

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

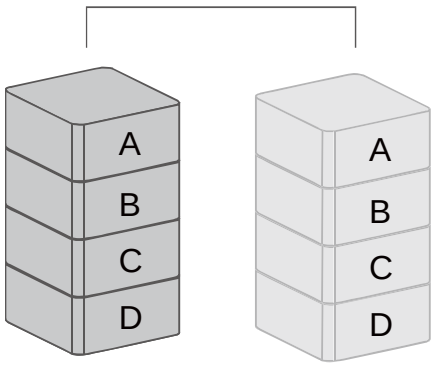
RAID 1 (MIRRORING)

RAID 1 (Mirroring) 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.

To rebuild, the Target hard drive should be added as the “Spare”. After the RAID System recognizes the target hard drive, the rebuild process will begin when the hard drive LED starts blinking.

Under Mirroring mode, only 2 hard drives are allowed without limitations on the slot location. However, the rest of the hard drive slots are free to perform under other RAID Modes (requiring 1 or 2 hard drives) using the Advance Mode Menu.

RAID 1



Disk 1 Disk 2

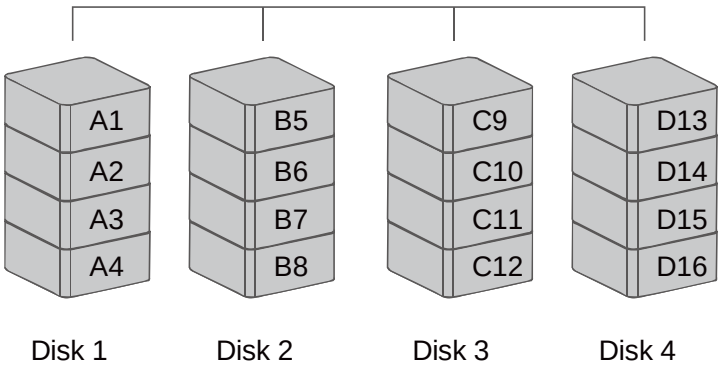
In Mirroring mode, if one of the disks fails, either source or backup, the data is still available. However, if the source disk fails during the rebuild process, the data in both disks will be lost.

It is NOT recommended to do **hot swap** for the source disk during the rebuild process because the data in both disks will be lost.

SPAN

Spanning provides another maximum capacity solution, which some call it as “Large”. 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.

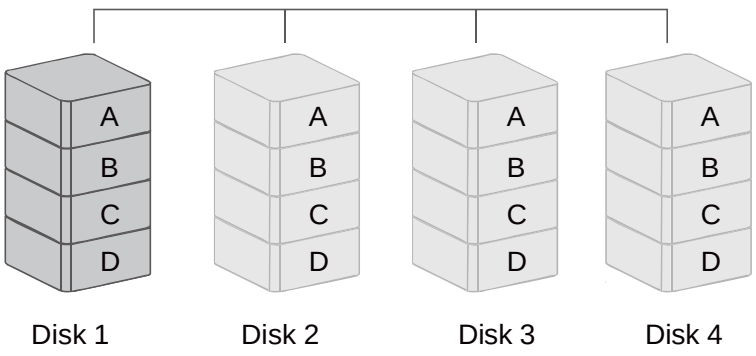
SPAN



CLONE

CLONE consists of at least two drives storing duplicate copies of the same data. In this mode, the data is simultaneously written to two or more disks. Thus, the storage capacity of the disk array is limited to the size of the smallest disk.

CLONE

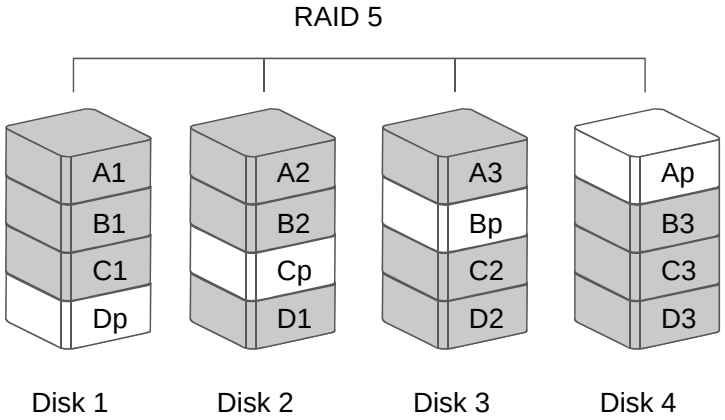


The difference between Clone and RAID1 in our SMART RAID System is that Clone can perform with more than 2 disks at a time, when Mirror can only perform with 2 disks.

RAID 5

RAID 5 uses block-level striping with parity data distributed across all member disks. It is also called Parity RAID. Every time a block is written to a disk in a RAID 5 disk array, a parity block is generated within the same stripe. A block is composed of many consecutive sectors on a disk. A series of blocks (a block from each of the disks in an array) is collectively called a "stripe". The parity information inside the parity block is not the identical copy of the source data. It is generated via parity calculation. RAID 5 mode provides decent data protection and fault tolerance. The speed of operation is average in comparison to other RAID modes.

The number of disks supported by RAID 5 is 3 or 4. The storage capacity will become all disks in total but minus 1. The capacity is limited to the size of the smallest disks.



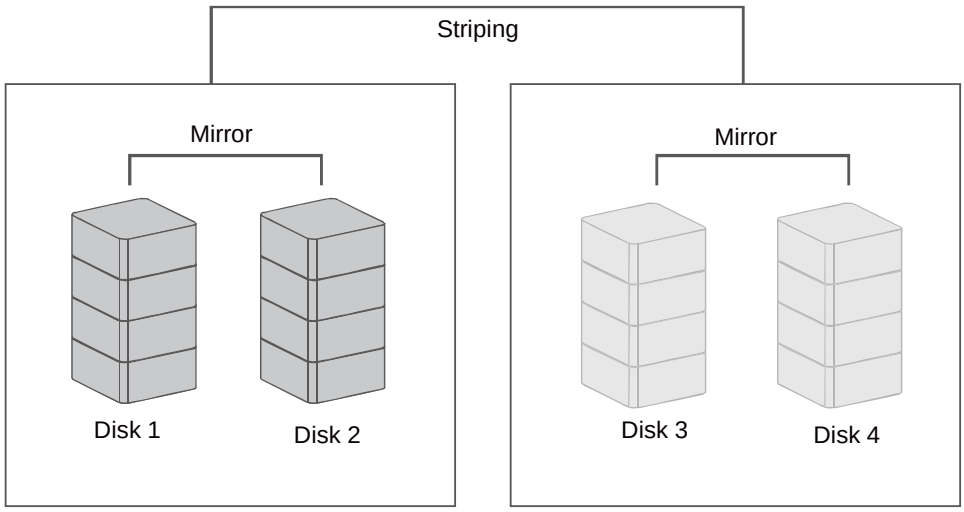
If one of the disks fails, the data can be reconstructed through parity calculation once the broken disk is replaced with a new one.

RAID 1+0

In RAID 1+0, the data is first mirrored and then striped. Under this RAID Mode, it provides another way to achieve higher performance and data security, while increasing complexity.

The key difference between RAID 0+1 and RAID 1+0 is that RAID 1+0 creates a striped set from a series of mirrored drives. In a failed disk situation, RAID 1+0 performs better because all the remaining disks can continue to be used. The array can sustain multiple drive losses as long as none of the mirror set loses all of its drives.

RAID 1+0



RAID 1+0 requires a minimum of 4 drives in an array. If one of the drives defects, the identical backup data is available offhand.

JBOD (None RAID)

Just a Bunch of Disks (JBOD) or None RAID refer 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.

Under the RAID MASTER, JBOD Mode is not listed as an option and the hard drives can be operated as JBOD simply in its original “unreleased” format.

HOT SWAP

Hard Drive Hot Swap refers to the ability to add or remove a device from the host computer without powering off the device; the system will automatically recognizes the change after the Hot Swapping is completed.

Under Striping, Span and JBOD modes, it is not recommended to perform Hot Swapping when the hard drive is transferring data. Any attempt to do so may result in complete loss of all data.

Under RAID 1, Clone, RAID 5, or RAID 1+0, any attempt of Hot Swapping may terminate the data transfer when using the USB 2.0 connection. Please resume the data transfer without Hot Swapping.

HOTSPARE (MANUAL OR AUTOMATIC REBUILD)

REBUILD

In RAID 1, CLONE, and RAID 5 modes, if one of the hard drives fails and is replaced with a functional hard drive, it needs to be assigned under Advanced Mode Menu as the “Spare” before the RAID System will rebuild the Target Disk (the new functional hard drive or HotSpare) with data from the Source Disk (the remaining functional hard drive) sector by sector. In RAID 1, CLONE, and RAID 5 modes, if one of the hard drives fails and is already setup as combination with HotSpare, the RAID System will automatically rebuild the Target Disk (the new functional hard drive or HotSpare) with data from the Source Disk (the remaining functional hard drive) sector by sector. After the rebuild is completed, data in the new hard drive will replace the damaged or non-functioning hard drive. The use of identical hard drives from the same manufacturer, having the same capacity and RPM is highly recommended.

Under the RAID MASTER, popup window notifications will appear accordingly:

1. One of the hard drives has failed or is non-functioning.

2. A new hard drive has been inserted and the RAID System is in rebuilding state.

The rebuilding state status will reflect on the bottom of the RAID MASTER Menu.

The Rebuild Speed of the USB 2.0 Model is 200 GB per hour or 56.88 MB per second, approximately. When the chipset is processing the Rebuild task, if data is accessed during this period, the speed of data access is depends on priority setting under Advanced Mode Menu; thus, access of the hard drive during a Rebuild is not recommended.

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.

Under USB 2.0 connection, a warning notice indicating that the device has not been safely removed when the hard drive is replaced may interrupt the rebuilding process. Please ignore the warning and continue the rebuilding process.

eSATA PCI EXPRESS CARD INSTALLATION

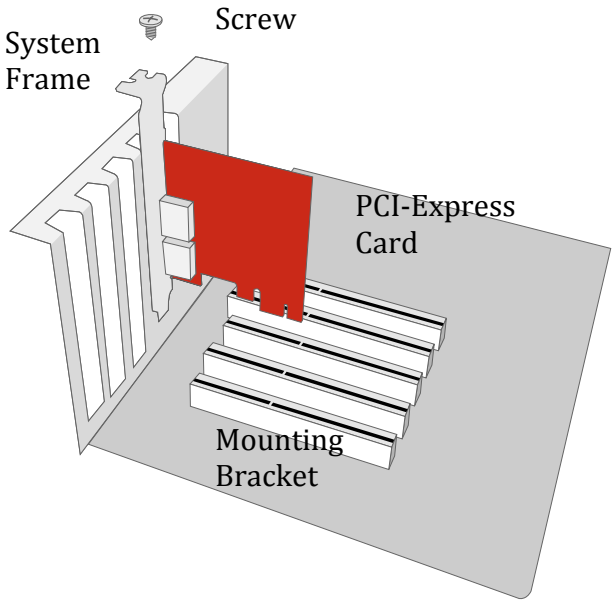
Complete the steps provided in this section to install the eSATA PCI Express Card to use with the RAID System. The eSATA PCI Express Card provides a host computer with two Windows and Mac compatible eSATA ports.

SYSTEM REQUIREMENTS

- Windows 2000 or later 32-bit/64-bit OS
- 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

Follow the provided prompts to complete the driver installation.

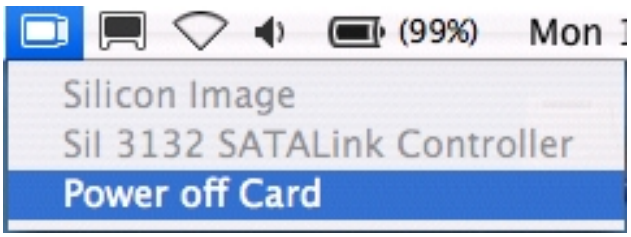
For the Windows system, the “Add New Hardware Wizard” will open automatically. Insert the installation CD included in the package, navigate to and open the installation file.

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

Please refer to User’s Manual under eSATA Host Card section on our website.

VERIFY DRIVER INSTALLATION

MAC OS

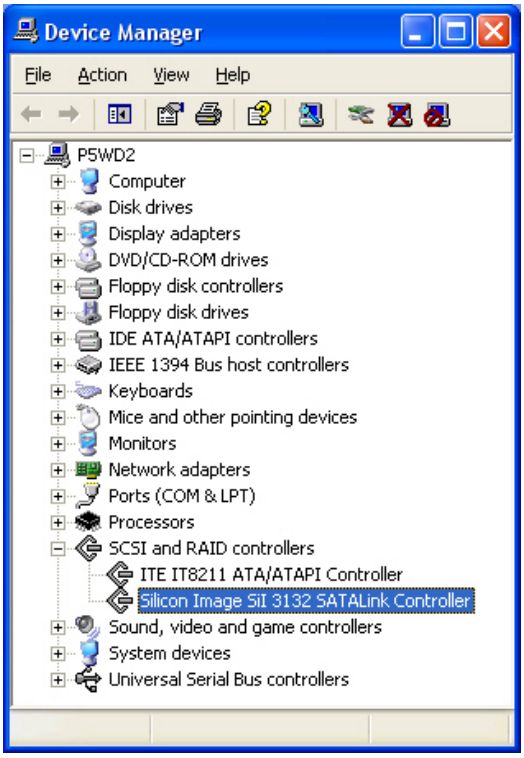


If a driver installation failure error message appears after restarting the computer, follow the recommendations provided in the error message.

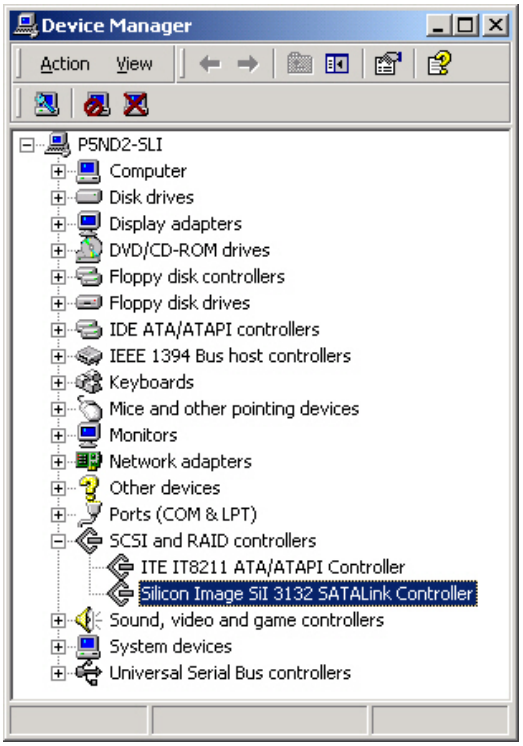
WINDOWS OS

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



Q&As

GENERAL

Q: How do I choose the proper RAID mode for my RAID System based on the tasks I need to perform?

A: Since the RAID System is a "Mass Storage" device, which means its size capacity is sufficient for data management, the different RAID mode settings can help you administer the enormous data storage from the hard drives combination. It is highly recommended to choose the RAID mode based on what is the essential factor to complete your task. The most common three factors are size capacity, speed, and data protection. For example, if using the RAID System to simply watch films for enjoyment, the RAID 0 mode is perfect because it can maintain decent speed and still have a large storage capacity. However, if the work requires you to process large files and to have a high volume of data access such as for a graphic designer or film editor, it'll be more efficient to choose RAID 5 or RAID 5+HotSpare modes. Both modes provide the ability to do hard drive hot-swap without affecting the data itself, and have a higher data protection level. Lastly, if the work requires instant and continuous backup of data such as for a writer or editor, then RAID 1+0 would be the best choice since it can provide both high data protection and speed with less storage capacity.

HARD DRIVE CAPACITY

Q: All my hard drives are at least 1TB or above, will the RAID System be able to support the gigantic storage capacity?

A: Yes, the RAID System will be able to support any hard drives over 1TB size capacity. However, most older host systems cannot support over 2TB of total capacity, only Mac OS 10.3 and newer, and PC Windows Vista or newer. In addition, based on the host system you have, there may be limitations on the port connections when the storage size is over 2TB. Please see the chart below.

OS		USB	FireWire	eSATA
Windows	Windows 2000, XP, or older	No	No	No
	Windows XP 64-bit, Windows 2003 32-bit/64-bit (SP1 and SP2)	Yes	No	Yes
	Windows 7, Vista, Windows 2008 32-bit/64-bit	Yes	Yes	Yes
Linux	Linux 32-bit/64-bit	Yes*	No	Yes*
Mac	Mac OS 9/10.1/10.2	No	No	No
	Mac OS 10.3/10.4/10.5/10.6/10.7	Yes	Yes	Yes

* Depends on the Linux version. Please see the chart below:

Linux OS	USB	eSATA
Linux Fedora Core 8 / 32-bit	No	Yes
Linux Fedora Core 8 / 64-bit	No	Yes
Linux Fedora 10 / 64-bit	Yes	Yes

Q: I would like to format my hard drives with the FAT (a.k.a. File Allocation Table) format, which can be read and written by both Mac and PC. Is there any limitation on its capacity?
A: Yes, please check the table below for reference.

File System	NTFS	FAT32	FAT (Format by Win2000 / WinXP)	FAT16
Capacity Limitation	Vista: 16384TB XP: 2TB	Windows: 32GB Mac: 2TB	4GB	2GB

Q: How do I increase my RAID mode's storage capacity without losing data?
A: When you create or rebuild a RAID, the maximum capacity provided is based on the smallest volume of hard drive already available. Please backup the stored data first before you swap out all the existing hard drives and replace them with larger storage capacity ones because the RAID System will regard the new hard drives as a new set of RAID.

DISCREPANCY IN REPORTED & ACTUAL SIZE CAPACITY

Q: If I have a 750GB hard drive, why does the RAID System only recognized the hard drive available space as to be less than 750GB?
A: Many customers are confused by their host systems when it reports a discrepancy between reported capacity and actual capacity. Several factors can come into play when your host system views and reports the capacity of a hard drive. There are actually two different numbering systems used to express units of storage capacity:

> **Binary**, which says that a kilobyte is equal to 1024 bytes; and
> **Decimal**, which says that a kilobyte is equal to 1000 bytes.

Most commonly used to display storage capacity is in Decimal. The surprising fact is that even though it seems like you will have more bytes under Binary, the Decimal calculation system actually presents a greater storage capacity. More description on capacity issues can be found at the Seagate website under FAQs.
http://www.seagate.com/ww/v/index.jsp?locale=en-US&name=Storage_Capacity_Measurement_Standards_-_Seagate_Technology&vgnextoid=9493781e73d5d010VgnVCM100000dd04090aRCRD

RAID 1+0

Q: Normally when operating under the RAID 1+0 mode, two hard drives are allowed to fail without losing the data. Is there any special restrictions or limitations for the RAID System?
A: As long as the two failed disks are not in the special combination of hard drive slots nos. 1&2 or 3&4, the data can be rebuild once the failed disks are replace with new ones.

REBUILD

Q: Does the RAID System have to be connected to the host computer when it is in rebuild mode?
A: No, it does not have to be. The RAID System can support offline rebuild, which means it can perform the rebuild function without being connected to a host computer.

Q: I replaced a hard drive with the new one when the RAID System is rebuilding and a warning notice of "the device is not safely removed" pops out. What should I do?
A: This only occurs when the RAID System is connected under the USB 2.0 interface. Please ignore the warning and continue the rebuilding process.

Q: I replaced a bad hard drive with a new one, but the Automatic Rebuild is not triggered by itself. Why is that?
A: You have to go to RAID MASTER to assign the new hard drive as a "Spare" under the Advanced Mode Menu. Once it is assigned, the Rebuild process should start. Please refer to "Adding or Changing a Spare" and "Deleting a Spare" under "Advanced RAID Configuration" section for more information. If the "Add Spare" feature is not available for this particular new hard drive, it is possible that this hard drive have already been configured with another RAID (broken or degraded). First, go to "Deleting a Spare" under "Advanced RAID Configuration" section to erase the previous RAID configuration in this new hard drive. Then, the "Add Spare" feature will become available and simply follow the steps specified in "Adding or Changing a Spare" under "Advanced RAID Configuration" section.

RAID MODE PASSWORD

Q: What is the RAID Mode password for? I tend to forget the password I create so can I choose not to create one?
A: The purpose of the password is to protect the "changes" done for the system under the RAID MASTER or LCM for the RAID Mode setup, not for the data itself. User can choose to or not to set up a password based on preference. The password is limited to 8 digits maximum. It is highly recommended to use numbers only because the same password would need to be inserted in the LCM if the RAID MASTER software is not available and each alphabet letter is represented by its placement in the alphabet (i.e. 1 for "A", 11 for "K", 26 for "Z"), chosen by clicking the button that many times.

Q: What if I forgot my RAID Mode password?
A: If the password is forgotten, then the hard drives need to be reformatted individually under a Low Level Format (which needs to be performed under the BIOS of the host, not the OS itself).

RAID MASTER: USER NAME OR PASSWORD ERROR

Q: What happens if a popup window stating “unexpected reply from SMTP server: … Error: Authentication failed: Authentication failure"?

A: It means that the entered Email Notification server information is not correct. Please double check the entered information to see if they’re correct, especially user name and password.

RAID MASTER: FAILED RAID

Q: How will the RAID MASTER alert me if one or more of the hard drives have failed?

A: A popup window will appear as alert indicating which hard drives have failed. After clicking “OK” to confirm the alert, select the sub-menu “RAID and Disk Information” under Basic Mode Menu for more detailed information.

RAID MASTER: ADJUST HARD DRIVE STORAGE SIZE

Q: Can the hard drive storage size be adjusted using the RAID MASTER?
A: Yes, the hard drive storage size can be adjusted to better fit your host OS. Some older OS can only function the RAID System under a particular size limitation (please see “Hard Drive Capacity” for more detailed information). A sliding guide will appear under the hard drives image once selected. Adjust it from right to left based on your desired storage capacity.

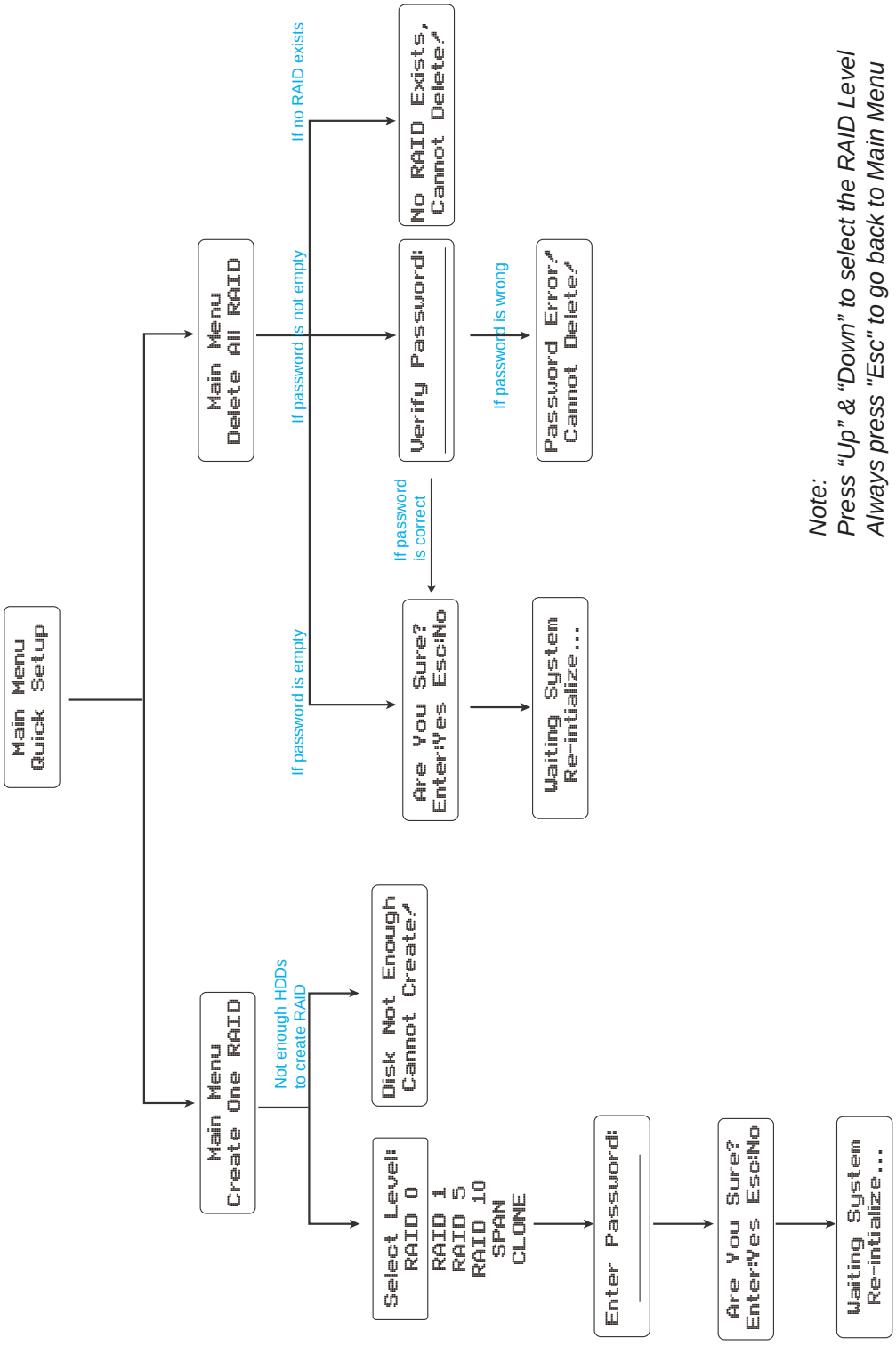
APPENDIX

SPECIFICATIONS

Model Name	RC-M4SP	RC-M4DJ	RC-M4QJ
Connector	USB 2.0/3.0 x 1	eSATA x 1, USB 2.0 x 1,	eSATA x 1, USB 2.0 x 1, 1394a x 1, 1394b x 2
Hard Drive Support	3.5” SATA hard drive* *Identical hard drive recommended – same manufacturer, capacity and RPM		
RAID Level	JBOD (None RAID), RAID 0 (Striping), RAID 1 (Mirroring), Span, Clone, RAID 5, RAID 10 (1+0), and optional HotSpare		
Data Transfer Speed	USB 2.0: Up to 480Mbit/sec USB 3.0: Up to 5Gbit/sec	eSATA: up to 3Gbit/sec USB 2.0: up to 480Mbit/sec	eSATA: up to 3Gbit/sec USB 2.0: up to 480Mbit/sec 1394a: up to 400Mbit/sec 1394b: up to 800Mbit/sec
System Material	Aluminum case with plastic parts		
LED Indicators	Power / Connection / Health / Access / Rebuild / RAID Alert		
Power Supply	Input: AC 100~240V, Output: DC +12V/7.5A, with Peak current: 12A	Input: AC 100~240V, Output: DC +12V/5A, with Peak current: 9A	Input: AC 100~240V, Output: DC +12V/7.5A, with Peak current: 12A
FAN	Dimension: 80 x 80 x 10 mm x 2 Speed: 1900 R.P.M +-10% Noise: 17.13 dB(A) max		
Dimension	210 (L) x 138 (W) x 213 (H) mm		
Weight (without hard drive)	2.3 KGS		
Certification	CE, FCC, ErP		

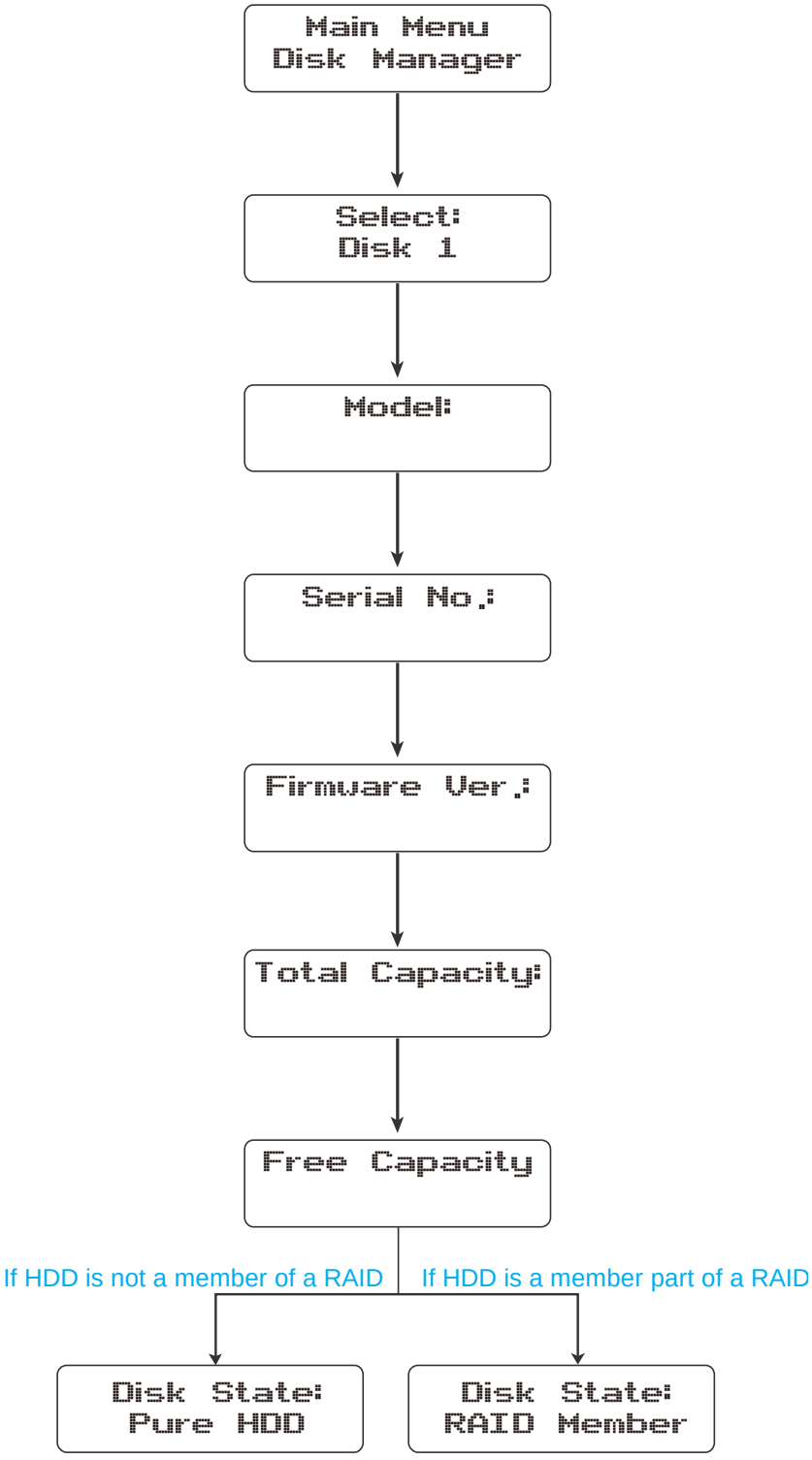
LCM PROCESS TREE

QUICK SETUP

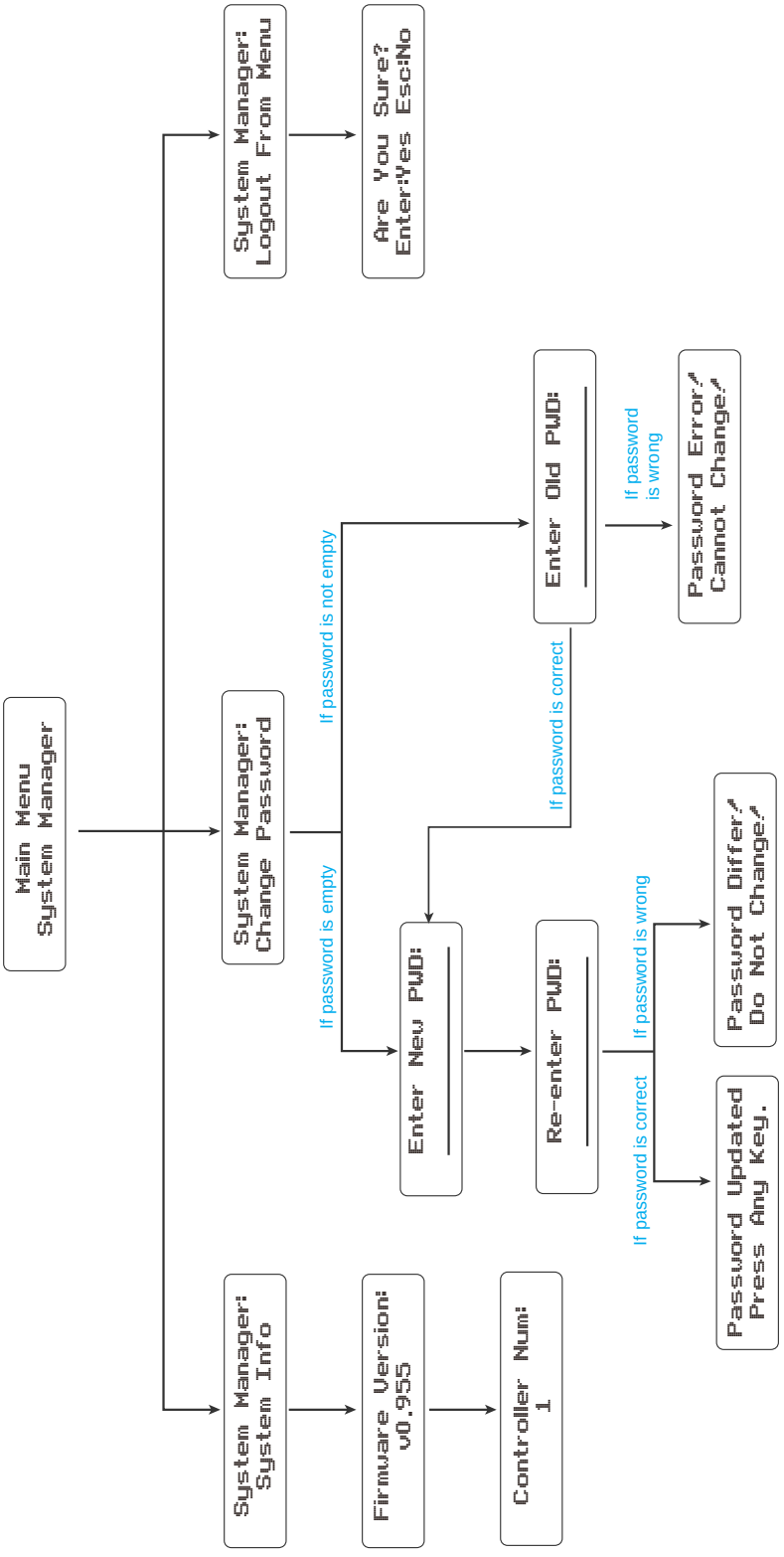


Note:
Press "Up" & "Down" to select the RAID Level
Always press "Esc" to go back to Main Menu

DISK MANAGER



SYSTEM MANAGER



Note:
Always press "Esc" to go back to Main Menu