



# MOBILESTOR MS2UT | MS2UB



QUICK INSTALLATION GUIDE v1.0

**Preface**

Thank you for purchasing the Sans Digital MobileSTOR MS2UT/MS2UB RAID system. In this document you will find information regarding installation and use of the MobileSTOR MS2UT/MS2UB RAID system. Please read this manual carefully before using the MobileSTOR MS2UT/MS2UB RAID system in order to achieve the best performance.

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Sans Digital, located in Santa Fe Springs, CA is a provider of high capacity, multi-functional advanced storage solutions. These advanced storage solutions can be used for home offices, small and medium-sized businesses, video editing, data backup, surveillance systems, and other various industries. Our products provide great solutions for companies and individuals across the world that need effective and reliable data storage.

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## Cautions



Carefully read the manual before using and keep the manual for future reference.



Do not place any liquid around the system



Use three wires electrical socket or extension cord for the unit.



Avoid sharing extension sockets with other high voltage electronic products such as Blow dryer, microwave, or air Conditioner, etc.



Avoid high heat and moisture area.

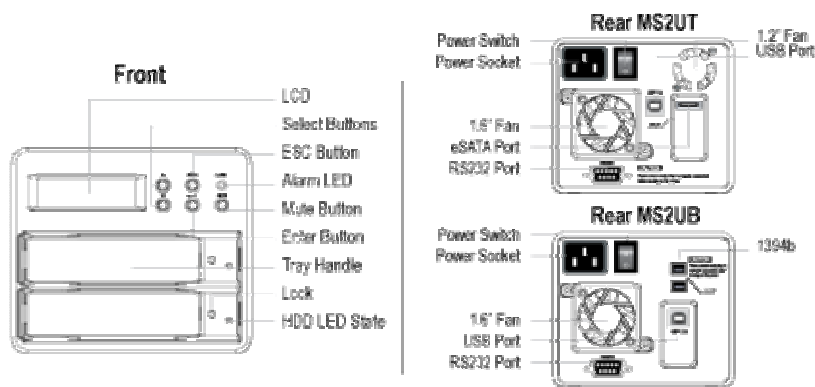


Avoid area with eletro magnetic.

## Chapter 1 Product Introduction

MOBILESTOR MS2UT/MS2UB is a RAID subsystem supporting eSATA & USB 2.0 (MS2UT) or Firewire & USB 2.0 (MS2UB) host interfaces while providing users an affordable and safe external RAID 0 or RAID 1 subsystem.

With RAID 0 support, both of the Hard Drive inside of the unit will work as a group to combine the sizes and the performance together. On the other hand, RAID 1 will allow data protection to prevent Hard Drive defective by real-time mirror copying the information on one Hard Drive to the other.



### 1-1 Functions and Features

The MS2UT is a RAID system designed specifically for the user in mind. It is the most cost effective choice; you can expand storage at your discretion while ensuring the safety and integrity of stored data.

#### - Plug & Play Removable Tray Module Design

The hot-swappable tray design allows instant access to the device after each swap, so the hard disk can be removed or installed at any given time which provides instant access to newly replaced hard disk.

#### - Independent operation system design

MS2UT provide HARDWARE RAID function. No software is required.

**- No driver needed**

No need to install additional drivers and is compatible with Windows/Mac/Linux operating system. OS Supported: Windows ME/2000/XP/Server2003, Mac 10 and above, Linux Core 2.4 and above.

**- Supports hot swap function**

There is no need to turn off the system power when changing a failed Hard Drive.

**- Simple and easy operation with the use of an LCD control panel**

Using the buttons located on the front of the unit next to the LCD, you can set the RAID mode and schedule a backup. The status of cooling fans and temperature is also displayed on LCD for easy management.

**- Auto rebuilding data online**

After changing the hard drive, the MS2UT automatically performs a reconstruction of data in RAID 1. The process is done automatically without any interruption.

**- Automatically schedules backups to prevent potential virus attack.**

You can automatic schedule backups, by pressing a button to set the preferred days, periodic system data backup, to prevent a system failure from any virus attack.

**- GUI Monitoring Software**

Included in the package is a Window-based RAIDGuide GUI software. You can connect to the computer through an RS232 port in order to monitor the RAID system status from a remote location. In case of failures, you can be notified by the software via e-mail for remote notification.

**- Compatibility with eSATA & USB 2.0 (MS2UT) or Firewire & USB 2.0 transfer interface**

Supports USB 2.0 for up to 480Mbps or eSATA up to 3.0 Gbps. (MS2UT)  
Supports USB 2.0 for up to 480Mbps or Firewire 800

## 1-2 Product Specifications

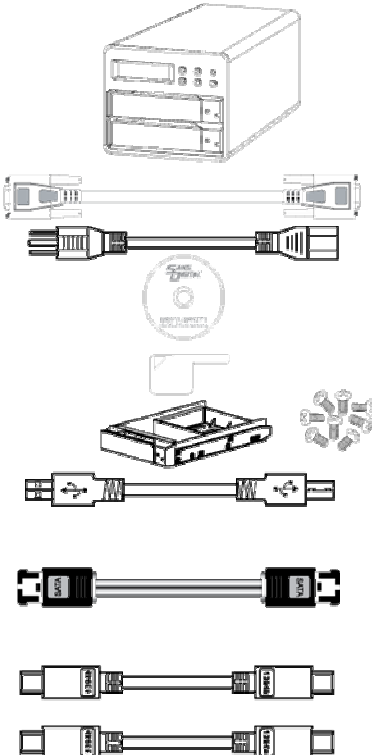
Host interface	USB 2.0 + eSATA
RAID Level	RAID 0 / RAID 1
Hard drive interface	3.5" Hard drive SATA
Supports large capacity hard drive	RAID 0 supports up to 1TB RAID 1 supports up to 500 GB
Swappable hard drive tray design	Supports 2 hot-swappable trays
Automatic data reconstruction	Yes
Monitoring software	32-bits and 64-bits RAIDGuide GUI software (Windows only)
Failure detector	Failure sensors for hard drive Temperature failure detector Cooling fan failure detector
Controller display	LCD screen with blue backlight & 4 button control
Panel Warning notification	Buzzer
Cooling fans module	1.2" cooling fan x 1 (MS2UT only) 1.6" cooling fan x 1 (MS2UT & MS2UB)
Operation system requirements	Windows 2000/XP/Server 2003 MAC 10 or above Linux Core 2.4 or above
Operating temperature	0 °C to 40 °C
Power supply	75 watts, Input voltage: 90-240V
Safety certification	CE/FCC
Exterior material	Aluminum case
Dimension	4.8"W x 7.9"D x 4"H
Weight (lbs)	4.4lbs

## Chapter 2 Hardware Installation

### 2-1 Package content

When you open the box of this product, please refer to the following list of included accessories. In case any of the content is missing or damaged, please contact your point of purchases.

MOBILESTOR MS2UT/MS2UB included accessories are as follow:

<p><b>Included</b></p> <p>MS2UT/MS2UB.....1</p> <p>RS232 Cable.....1</p> <p>Power Cord.....1</p> <p>Manual.....1</p> <p>HD Tray Keys.....2</p> <p>Removable Tray Modules(Screws Included).....2</p> <p>USB 2.0 Cable.....1</p> <p><b>MS2UT Only</b></p> <p>eSATA Cable .....1</p> <p><b>MS2UB Only</b></p> <p>1394b Cable.....1</p> <p>1394b to 1394a Cable.....1</p>	
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## 2-2 System requirement

### ※ Hardware requirement

1. PC or MAC operating system which supports USB 2.0 or eSATA Ports for MS2UT. Firewire 400 or 800 connector for MS2UB.
2. Hard drive which supports SATA transfer interface

### ※ Operation requirement

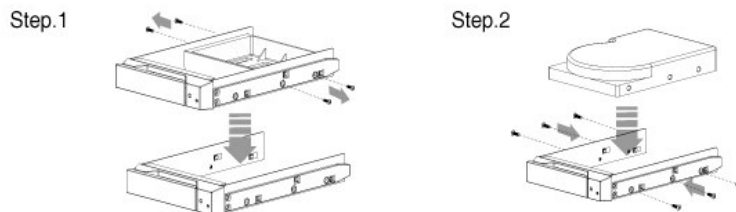
USB 2.0:	Mac 10 and above Windows 2000/XP/Server 2003 Linux Kernel 2.4 and above
eSATA :	Mac 10 and above Windows 2000/XP/Server 2003 Linux Kernel 2.6 and above
Firewire:	Mac 10 and above Windows 2000/XP/Server 2003 Linux Kernel 2.6 and above

## 2-3 Environment requirement and notices

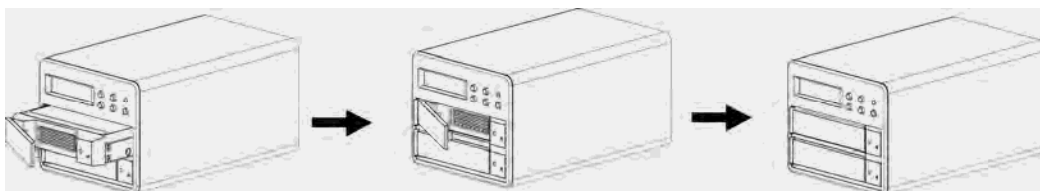
1. The MS2UT/MS2UB allows user to use hard drives of different specification and storage space in this device. However, the same model, brands and sizes hard drives will yield better performance.
2. Please make sure the 2 hard drives is new and free of defects to avoid possible device failures or lost of all data in the unit when the hard drives fails again.
3. eSATA and Firewire host interface is much faster than USB 2.0 at RAID 0 mode in terms of data transfer. The average transfer rate could reach over 100 MB/s in eSATA and 70 MB/s in Firewire. Therefore eSATA and Firewire connections port is recommended to achieve higher performance.
4. Please decide on whether to select RAID 0 or RAID 1 before use. The change of the RAID level will result in loss of data.

## 2-4 How to install hard drive in swappable tray

1. Place hard drive in the frame of movable tray, and align the 4 screw positions, then use screws to fasten and secure it into position.



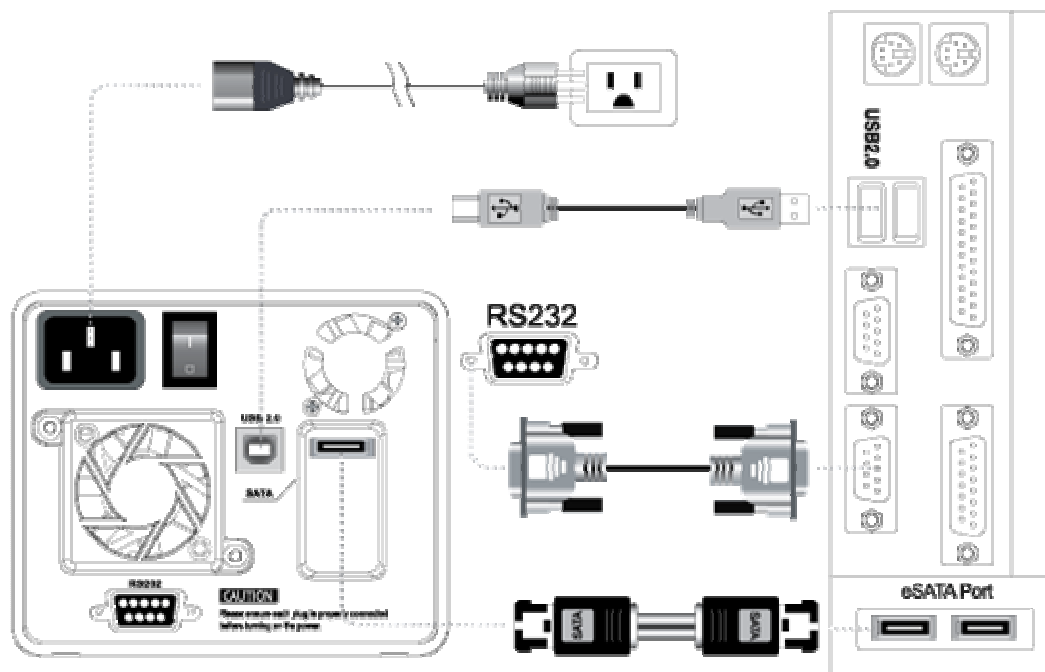
2. When assembly is done, gently push it along the sliding track into the hard drive compartment of MS2UT/MS2UB, and then close the tray, as illustrated below.



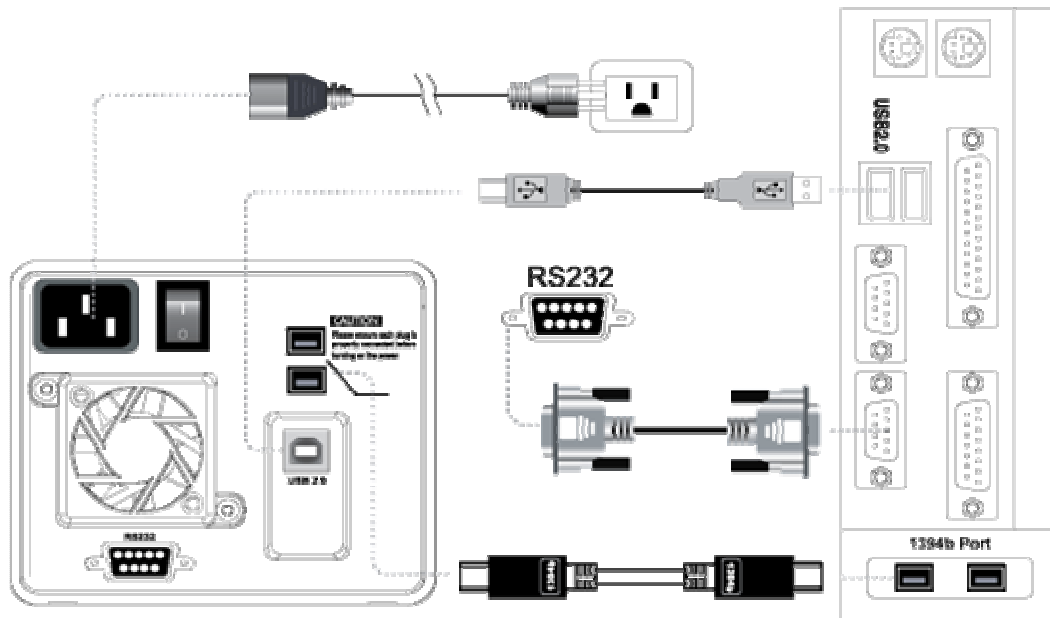
## 2-5 How to connect MS2UT/MS2UB to computer system

1. Given that all power are turned off, connect either one of the USB 2.0 or eSATA (MS2UT) or Firewire (MS2UB) cable in the box to the corresponding connection port on the back of MS2UT/MS2UB, and connect the other end to the corresponding connection port on the computer. Finally, connect the power cable to the unit and the power outlet.

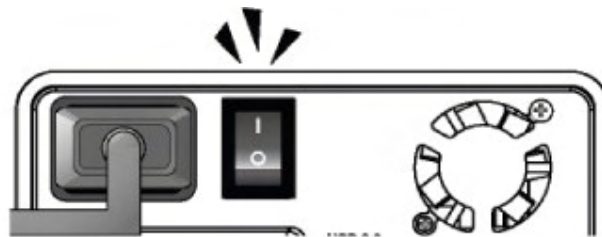
### Connecting the MS2UT to your Computer



## Connecting the MS2UB to your Computer



2. Turn on the power of MS2UT/MS2UB (power switch is on the back of the unit)



3. Make sure the primary disk and the second disk are ready which will be indicated by the "OK" message on LCD screen, before turning on the power of computer, please refer to illustration below.

Pri HDD : OK  
Sec HDD : OK

**Caution:** Caution: Prior to connecting USB 2.0 or eSATA or Firewire cable to computer, confirm in advance whether your computer system is supporting USB 2.0 or eSATA or Firewire.

If the computer system is not equipped with this device, it is available for sale in Sans Digital's website ([www.sansdigital.com](http://www.sansdigital.com)) or our authorized dealers.

## Chapter 3

### MS2UT/MS2UB Operation Guide

#### 3-1 RAID Level set up

1. MS2UT/MS2UB is able to support RAID 1 mode or RAID 0 mode. Once RAID Level has been set up, any future changes will erase the data stored in the unit during the rebuilding process.
2. RAID Level could be set up by press of buttons on the front panel. MS2UT/MS2UB's default value is RAID 1. If RAID 0 is preferred, change could be made by pressing the buttons on the front LCD control panel and follow the instruction displayed on the screen.

#### Steps for installation of two new hard drives

1. It is recommended to use 2 hard drives with same model, brands and sizes to achieve better performance.
2. After all power have been turned off, place the 2 new hard drives in the swappable tray of MS2UT/MS2UB, since the system has been internally programmed to RAID 1, there is no need for further set up.
3. Using the buttons in the system's control panel, assign appropriate drive to the completed RAID hard drive, then perform formatting and partition with disk management software.
4. It is optional to install other software as required. (RAIDGuide software)
5. If the 2 hard drives used are of different storage capacity, MS2UT/MS2UB will use the smaller capacity hard drive due to RAID 0 configuration.

#### Steps for installing a data-existing hard drive and a new hard drive

In the event of installing one new hard drive along with a used hard drive, it is recommended to use the same models, brands and sizes for both hard drives.

When the both hard drives are ready, MS2UT/MS2UB will perform automatic data rebuilding, i.e. duplicates the data to the newer hard drive.

1. When all power are turned off, first place the data existed hard drive in the tray and insert it into the first HDD position of MS2UT/MS2UB.
2. Power on MS2UT/MS2UB. LED indicator of “ALARM” will light up and the buzzer will on; On the LCD, it will display Pri HDD: OK Sec HDD: OFF”.
3. At this time, insert the new hard drive into the second HDD position of MS2UT/MS2UB. In about 10 to 15 seconds, MS2UT/MS2UB will automatically perform data rebuilding and the progress can be seen on LCD screen.
4. It will take about 20 minutes to perform the data rebuilding depend on sizes of the hard drive.

### § Setting up RAID 0

Turn off the power of computer and install 2 pcs of hard disks into carries of MS2UT/MS2UB. If the RAID 0 mode already had been set up and then restart turn on the power of computer, it will show capacity of 2 hard drives combines under device manager.

Please format and partition the unit under the computer before use.

#### Notices:

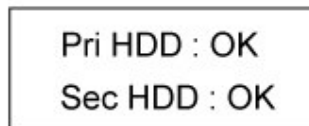
1. In case it is necessary to turn off the power of MS2UT/MS2UB or disconnect its cable, please safety remove the hardware under the computer OS or turn of the computer.
2. Data will be lost if one of the hard drive fail under RAID 0 mode.
3. The unit only support either RAID 0 or RAID 1.
4. In case you wan to switch mode from RAID 0 to RAID 1, make sure the data is backed up. Data will be lost during the mode conversions.
5. If the hard drives sizes is different in the unit. The smaller sizes will be use. The total sizes of RAID 0 will be the smaller sizes multiply by 2.

### 3-2 How to Change RAID mode

The button on the LCD panel introducing as below:

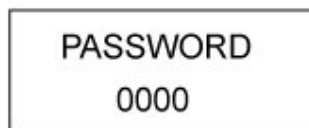
- “▲” button      “Forward” button to change the options forward
- “▼” button      “Backward” button to change the options backward
- “←” button      To confirm the option
- “ESC” button    To cancel the option

1. LCD screen displays status of “Pri HDD: OK & Sec HDD: OK”



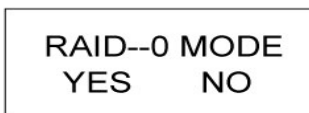
Pri HDD : OK  
Sec HDD : OK

2. Press “←” button
3. LCD screen prompts to enter password “0000”  
(The default password is “0000”)



PASSWORD  
0000

4. Press “←” button for 4 times to select each digit, and enters the next screen.
5. Press “▼” button twice, when the message “CHANGE RAIDMODE RAID -0” is displayed on screen. Press “←” button.
6. Press “←” button to confirm when the message “RAID- 0 MODE YES NO” appears on LCD screen, or press “ESC” to quit.



RAID--0 MODE  
YES    NO

- The system will display the message “DATA WILL LOSE YES NO”. Press “←” button to confirm or press “ESC” to cancel.

DATA WILL LOSE YES NO
--------------------------

- The message “RESET SYSTEM YES NO” will be displayed. Press “←” button to confirm or press “ESC” to cancel.

RESET SYSTEM YES NO
------------------------

- The unit will reboot itself and signal by a buzzer.
- To switch RAID 0 to RAID 1, please follow above steps 1 to 9. However, you will see the message “RAID- 1 MODE YES NO” appears on LCD screen. (Steps 6). Press “←” button to confirm or press “ESC” to cancel.

### 3-3 How to set up Schedule Backup

Schedule Backup can be set so that the data is not mirror copy at real-time.

#### How to use Schedule Backup

The user can program on selected period of times (1 to 30 days), scheduled time arrives, and the system will automatically back up data.

- Screen displays “Pri HDD: OK & Sec HDD: OK”

Pri HDD : OK Sec HDD : OK
------------------------------

2. Press “ ← ” button
3. Screen prompts to enter password.  
(The default password is “0000”)

PASSWORD 0000
------------------

4. To execute, press “ ← ” button for 4 times to confirm the password digit, and “ ← ” the next screen.
5. The message “SCHEDULE BACKUP YES NO” is displayed on screen. Press “ ← ” button to confirm or press “ESC” to cancel.

SCHEDULE	BACKUP
YES	NO

6. The “SCHEDULE BACKUP TIME 1->30 (DAYS) 00” messenger will appear.

SCHEDUL BACKUP TIME1->30(DAYS)00
-------------------------------------

7. Please use “ ▼ ” or “ ▲ ” button to adjust the days. Press “ ← ” button to confirm.

ARE YOU SURE YES NO
------------------------

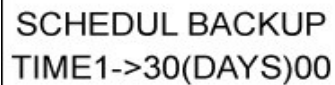
8. “SET BACKUP TIME 1->30 (DAYS) 01” will appear and the days of your backup schedule is ready.
9. If the date is set to 0, the real-time RAID 1 setup will be used. The unit will restart to confirm the setting.

**Notes:**

1. The schedule backup is not RAID 1. A hard drive failure will result in data lost. Only the last backup data will be found.
2. The schedule backup will rebuild the data in a scheduled time

**How to change the function from Schedule Backup to RAID 1 mode**

1. Go to the "SCHEDULE BACKUP" mode on the LCD screen. (Steps 1~6 on previous sections.
2. Adjust the day to "00"



SCHEDUL BACKUP  
TIME1->30(DAYS)00

3. Restart the MS2UT/MS2UB unit.

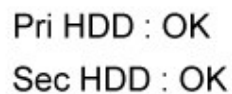
**Notes:**

1. Restart the unit will ensure the setting is talking effects.
2. To change from RAID 0 to RAID 1, please go to section 3-2.

**3-4 How to change password**

MS2UT/MS2UB features password function to protect unauthorized changes. The lost of password will disable the ability of the setting change.

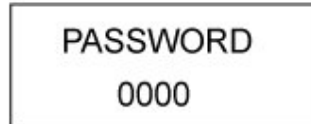
1. Screen displays "Pri HDD: OK & Sec HDD: OK"



Pri HDD : OK  
Sec HDD : OK

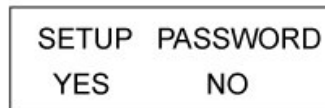
2. Press " ← " button

3. Screen prompts to enter password.  
(The default password is "0000")




A rectangular box containing the text "PASSWORD" on the top line and "0000" on the bottom line.

4. To execute, press "←" button for 4 times to confirm the password digit, and "←" the next screen.
5. Press "▼" button, when the message "SETUP PASSWORD YES NO" is displayed on screen. Press "←" button.



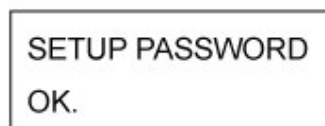
A rectangular box containing the text "SETUP PASSWORD" on the top line, "YES" on the bottom left, and "NO" on the bottom right.

6. Please use "▼" or "▲" button to set up the digit of password.
7. When the digit is selected, Press "←" button. Repeat the process until the all four digit is selected.
8. The following message will display:  
"PASSWORD:8000 YES&NO".  
In above example, 8000 is the new password



A rectangular box containing the text "PASSWORD : 8000" on the top line, "YES" on the bottom left, and "NO" on the bottom right.

9. Press "←" button to confirm, or press "ESC" to cancel.
10. The new password will be set as the following screen will display:  
"SETUP PASSWORD OK."



A rectangular box containing the text "SETUP PASSWORD" on the top line and "OK." on the bottom line.

### **3-5 Format and Partition when using Windows operating system.**

Make sure the RAID level is selected and connect the unit to your computer.

1. Connect power cord to power jack on the back of MS2UT/MS2UB.
2. Connect USB 2.0 or eSATA or Firewire cable to the computer
3. Turn on the power of MS2UT/MS2UB.
4. Turn on the computer
5. The unit will display until "Disk Management" under the Control Panel.
6. Partition and format the hard drive using "Disk Management"

Detail instruction of partition and format can be find under our web site, [www.sansdigital.com](http://www.sansdigital.com), product support sections.


### **3-6 Format when using Macintosh operating system**

Make sure the RAID level is selected and connect the unit to your Macintosh.

1. Connect power cord to power jack on the back of MS2UT/MS2UB.
2. Connect USB 2.0 or eSATA or Firewire cable to the computer
3. Turn on the power of MS2UT/MS2UB.
4. Turn on the Macintosh Computer.
5. Go to Spotlight, located on the upper right hand corner on your screen
6. Type "Disk Utility". Open Disk Utility by clicking the result located under the search results.
7. Select the hard drive in the left hand column and click on the Erase tab.

8. In the Volume Format drop-down menu, select the files system, and name your drive.
9. Once the format is selected and named the drive, click on Erase.
10. Confirm the operation by clicking “Erase” The Erase process will begin and format the hard drive.

### 3-7 Error Message on the screen

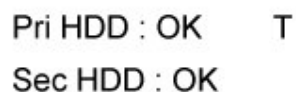


Pri HDD : Fail  
Sec HDD : OK

1. There are 3 status messages that could be displayed for hard drive information

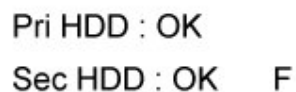
**OK**     Hard drive is ready  
**OFF**    Hard drive not installed  
**FAIL**    Invalid hard drive, or hard drive is defective

2. When MS2UT/MS2UB is overheat, “T” will be displayed on the upper right-hand corner of screen.



Pri HDD : OK     T  
Sec HDD : OK

3. When cooling fan is not functioning, “F” will be displayed on the lower right-hand corner of screen.



Pri HDD : OK  
Sec HDD : OK     F

4. When MS2UT/MS2UB is not able to detect first or second hard drive, the buzzer will sound, and screen will display follow message as shown in illustration.

Pri HDD : Fail  
Sec HDD : OK

Pri HDD : OK  
Sec HDD : Fail

### 3-8 Replacing a new Hard Drive

MS2UT/MS2UB support hot-swappable feature so that the unit does not need to power off when replacing a hard drive.

1. When you insert a new hard drive to replace the current hard drive in the swappable tray, the buzzer will sound and screen will display an error message as follow:

Pri HDD : OK  
Sec HDD : Fail

2. The ready message will display when the replacement hard drive is detected.

Pri HDD : OK  
Sec HDD : OK

3. The auto-rebuild process will begin.

Rebuilding.....  
Pri->Sec xxx%

4. When data is completed, the ready message will show again.

Pri HDD : OK  
Sec HDD : OK