XtendLan

XL-RAID-SATA-USB
User's Guide

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Chapter 1
Product Introduction

XL-RAID-SATA-USB is able to simultaneously support SATA 1 and USB 2.0 interfaces while providing users an affordable and safe external RAID subsystem.

Regardless for usage at home or office, because it is equipped to support RAID 0 function, it is able to combine the storage space of 2 hard-disks so to avoid the need to support multiple backups and offers the fastest transfer efficiency; in the meantime, it also supports RAID 1 function, through mirroring operation, it is able to ensure safety and reliability of data storage.
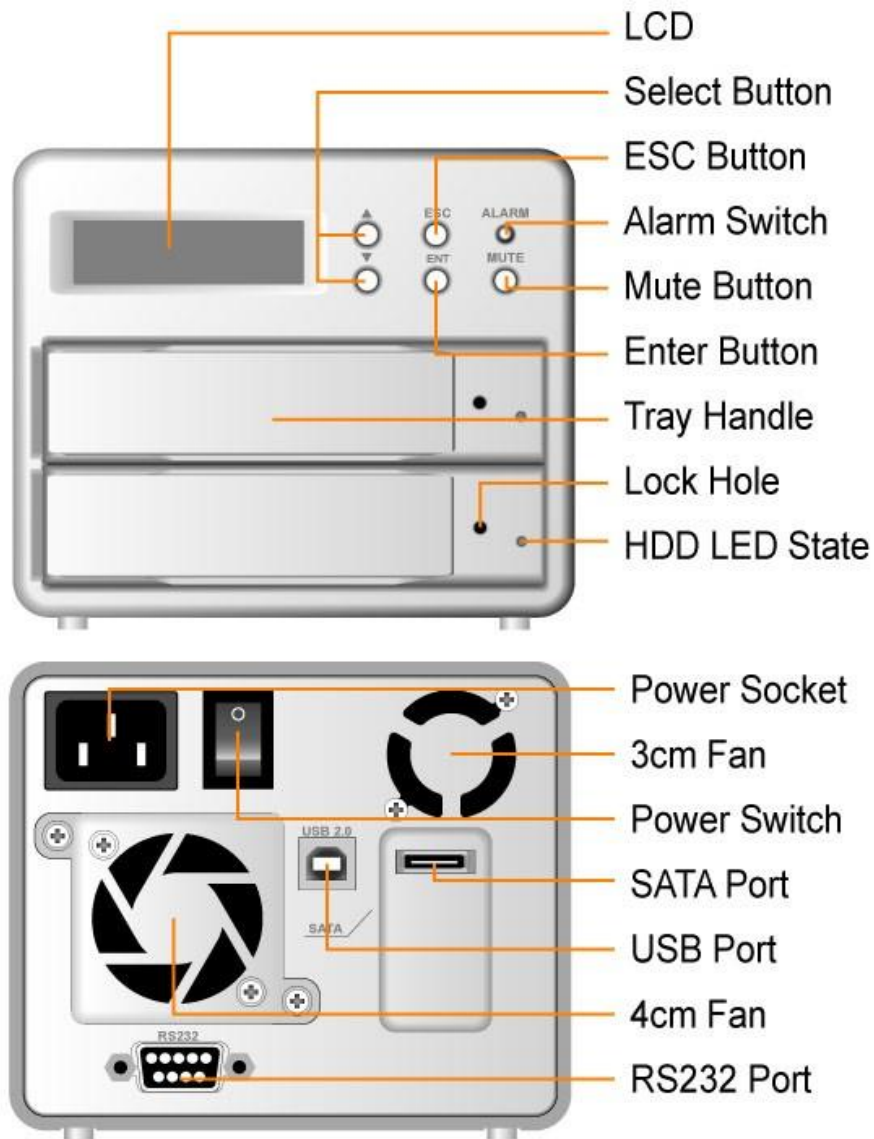
1-1 Functions and Features

XL-RAID-SATA-USB is a RAID system designed specifically for the user. It is your 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 design of swappable tray allows instant access to device after each swap, so hard-disk could be removed or installed at any give time which means easy maintenance.

Independent operation system design
It can be identified as a separate hard-disk, there is no need to install driver, instant access when device is turn on.

No required driver
No need to install additional driver yet is compatible and operational when using Windows/Mac/Linux operating system. i.e. Windows 2000/XP/Server2003/Mac 10 and above/Linux Core 2.4 and above

Supports hot swap function
There is not necessary need to turn off the system power when changing failed hard-disk online.

Simple and easy operation with the use of LCD control panel
Using buttons on the right of LCD, it is able to set up RAID mode and schedule backup. The status of cooling fans and temperature is also displayed on LCD for easy management

Auto rebuilding data online
After change of hard-disk, system automatically performs reconstruction of data, no need to set up any command.

Automatically schedules backups to prevent potential virus attack.
User is able to program, within tolerable range, by press of button to set up preferred days of automatic schedule backup, periodic backup system data, an to prevent system failure from virus attack.

GUI Monitoring Software

It offers Window-based RAIDGuide GUI software, get connected to the system through RS232 port for monitoring RAID system status at client's end. In case of failures, you could be notified with e-mail to ensure total protection.

Compatibility with SATA /USB 2.0 transfer interface

Supporting a variety of transfer interface while increasing transfer rate up to 56 MB/sec (USB 2.0) ~150 MB/sec (SATA), effectively improve system efficiency.

1-2 Product Specifications

|	
Host interface	USB 2.0 + SATA
Host transfer rate	USB 2.0(56MB/Sec)/ SATA (150MB/Sec)
RAID Level	RAID 0 / RAID 1
Hard-Disk interface	3.5" Hard-Disk SATA 1.5 GHz
Support large capacity hard-disk	RAID 0 supports up to 1000GB and above, RAID 1 supports up to 500 GB and above
Swappable hard-disk tray design	Supports hot swap capable hard-disk tray at 2 sets
Automatic data reconstruction	Yes
Monitoring software	RAIDGuide GUI software
System detector	Failure sensors for hard-disk, Temperature failure and cooling fan detectors
Controller display	LCD screen with blue backlight/control panel
Warning notification	Buzzer
Cooling fans module	3 cm cooling fan at 1 set ; 4 cm cooling fan at 1 set;
Operation system requirement	Windows 2000/XP/Server 2003/MAC 10 or above Linux Core 2.4 or above
Operating temperature	0℃ to 40℃
Power supply	75 watts, Input voltage: 90-240V
Safety certification	CE/FCC
Exterior material	Aluminum case
Dimension	122W x 205D x105H
Weight (kg)	2 kgs.

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 dealers or authorized agents.

XL-RAID-SATA-USB included accessories are as follow:

Item Description	Quantity
Mainframe	1 unit
eSATA cable	1 pc
USB Cable	1 pc
RS232 Cable	1 pc
Swappable tray	2 pcs
Express installation	1 sheet
Key	4 pcs
Accessory bag	1 pack

   (Included 12 pcs #6-32 screws and 8 pcs M3x4 screws)

Power cord	1 pc
RAIDGuide GUI Monitoring software CD	1 pc
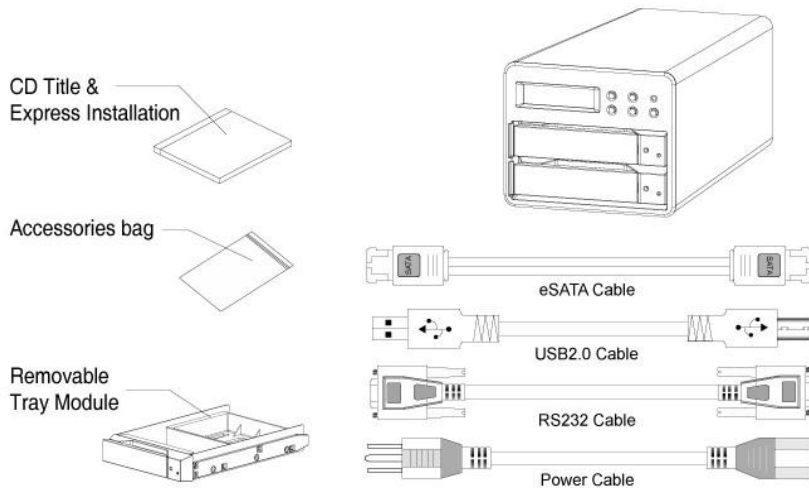
2-2 System requirement

※ Hardware requirement

1. PC or MAC operating system which supports USB 2.0 or SATA transmission interface.

2. Hard-disk supports SATA 1.5 GHz transfer interface

3. Pentium processor including a minimum 64 MB memory and at least 10 MB available on hard-disk.

※ Operation requirement

USB 2.0:　　　　Mac 10 and above
　　　　　　　　Windows 2000/XP/Server 2003
　　　　　　　　Linux Core 2.4 and above

SATA　:　　　　Mac 10 and above
　　　　　　　　Windows 2000/XP/Server 2003

2-3 Environment requirement and notices

1. RAID allows user to use hard-disks of different specification and storage space in this device. However, if better performance and convenience of selecting hard-disks are desired, it is advisable to use hard-disks of the same specification and same brand.

2. Please make sure the 2 hard-disks been used on this device is of perfect condition in quality, for example no bad track existed on the disk, to avoid possible device failures or lost of all data in the machines when one of the hard-disks fails.

3. SATA interface is much faster than USB 2.0 at RAID 0 mode in terms of data transfer, average transfer rate could reach 100 MB/sec. If faster speed and better efficiency in data transfer are desired, the system must provide SATA connection port.

4. Please decide on whether to select RAID 0 or RAID 1 (Default Parameter) prior to using this device. After this device is used, reprogramming RAID will cause damage on the data stored in hard-disk.

5. There is no data backup function with RAID 0, it allows the combination of 2 hard-disks to become one hard-disk of larger storage capacity and offers better efficiency in transfer. Nevertheless, as long as one of the 2 hard-disk fails, it will cause damage on data stored in both hard-disks.

2-4 How to install hard-disk in swappable tray

1. Place hard-disk in the frame of movable tray, and align the 4 screw positions, then use #6-32 screws to fasten and secure it into position.
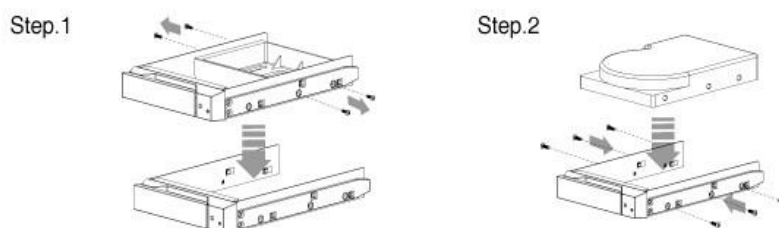
2. When assembly is done, gently push it along the sliding track into the hard-disk compartment of RAID, and then close the tray, as illustrated below.
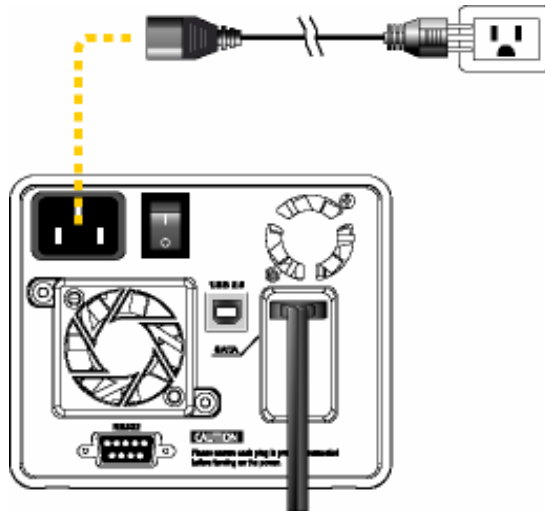
2-5 How to connect RAID to computer system

1. Given that all power are turned off, connect either one of the USB 2.0 or eSATA transmission cable in the box to the corresponding connection port on the back of RAID, and connect the other end to the corresponding connection port on the computer.
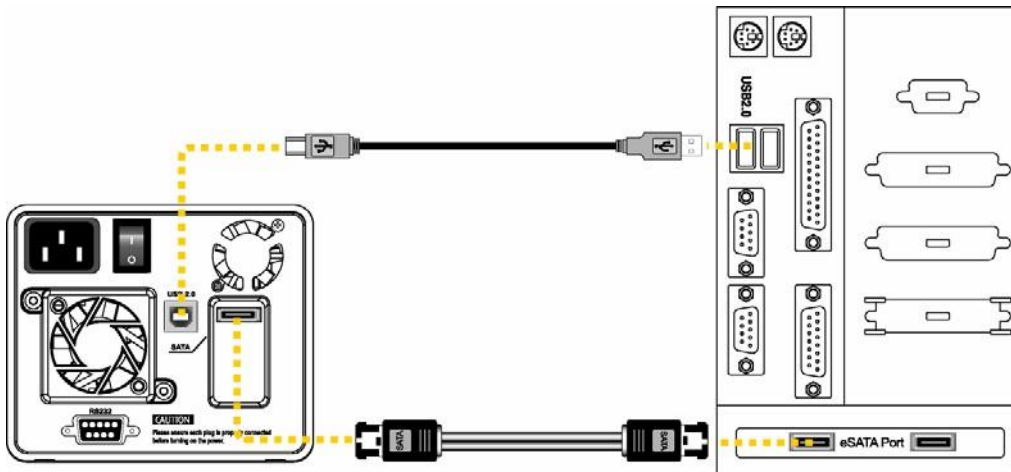
2. Connect the power cord in the box to the power jack of RAID.

3. Turn on the power of RAID (power switch is on the back of the unit)
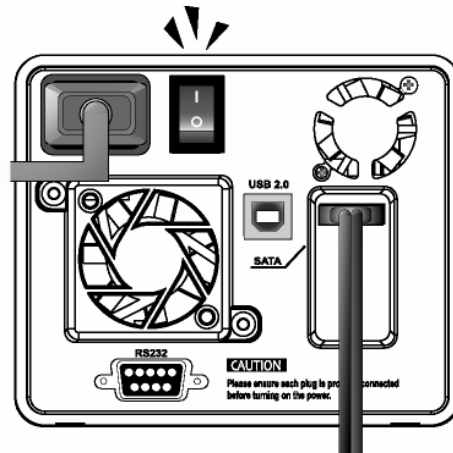
4.Make sure the primary disk and the second disk are ready which will be indicated by the "OK" message on LCD screen, before turning on the power of computer system, please refer to illustration below.

Pri HDD : OK
Sec HDD : OK
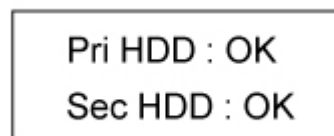
Caution: Prior to connecting USB 2.0 or eSATA transmission cable to computer, confirm in advance whether the mechanism supporting USB 2.0 or eSATA on

computer's main board is ready on the control panel.

If the computer system is not equipped with this device, it is available for purchased from Raidon.
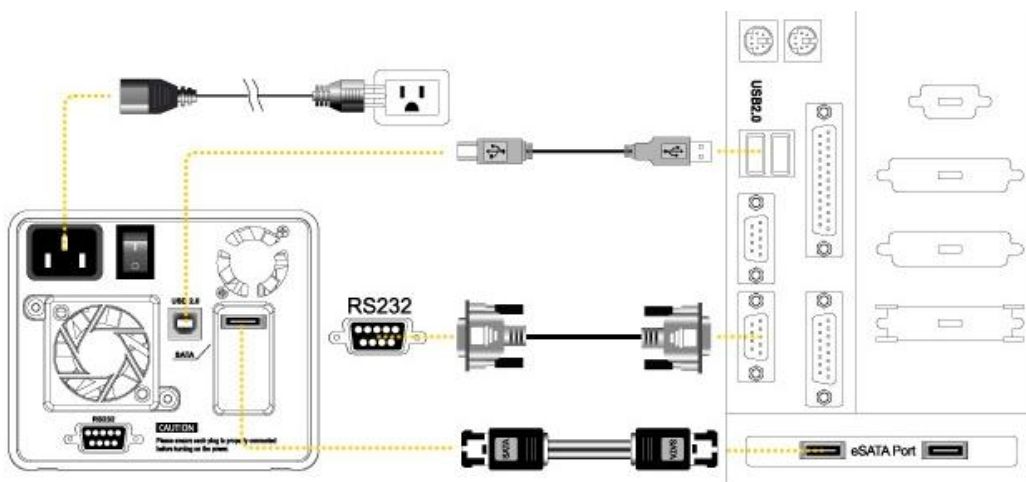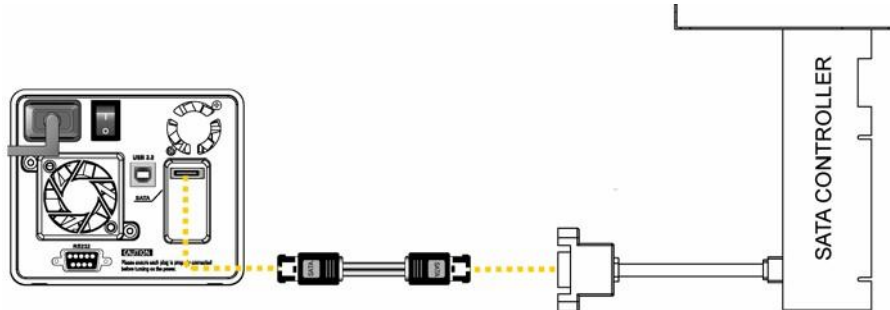
Chapter 3
Operation Guide

3-1 RAID Level set up

1. RAID is capable of supporting RAID 1 mode or RAID 0 mode with RAID Subsystem. Once RAID Level has been set up, any future changes might cause damage of the stored data during the rebuilding process. Prior to confirming RAID level, please consider each option's respective application as whether the priority is data safety (RAID 1) or storage space expansion capability (RAID 0)

2. RAID Level could be set up by press of buttons on the front panel. RAID'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.

Factory default value
・Operation mode Switch   RAID 1

§ Setting up RAID 1

・Operation mode is set at RAID 1 (default)

※1. Steps for installation of two new hard-disks
1.It is advisable to use 2 exactly the same hard-disks to achieve better performance.

2. After all power have been turned off, place the 2 new hard-disks in the swappable tray of RAID, since the system has been internally programmed to RAID 1, there is no need for new set up.

3. Using operation tool in the system's control panel, assign appropriate drive to the completed RAID hard-disk, then perform formatting and partition with disk management software.

4. It is acceptable to install other software as required. (i.e. RAIDGuide monitoring software)

5. If the 2 hard-disks used are of different storage capacity, RAID will automatically

detect storage capacity, in case one's capacity is larger than the other, then it will base on the smaller one to assign storage space. This method enables the computer to support the smallest hard-disk detected by RAID.

※2. Steps for installing a new hard-disk and a used one.

In the event of installing one new hard-disk along with a used hard-disk, it is advisable to select the new hard-disk to be same as the other in terms of brand, specification, size and storage capacity. If this is not possible, the new one must be of a more updated specification as well as larger in storage capacity than the old one.

When the swappable hard-disks (including the new one) are in position, RAID is capable of performing automatic formatting and **data rebuilding** function, and duplicates the data to the hard-disk that will be assigned as new.

When all power are turned off, first place the already used hard-disk in swappable tray then assemble and insert it into the first HDD position of RAID.

2. At the time power of RAID is turned on, LED indicator of "ALARM" will glow in orange and the buzzer will sound; on the LCD, it will display Pri HDD: OK Sec HDD: OFF".

3. At this time, insert the new hard-disk into the second HDD position of RAID, in about 10 to 15 seconds, RAID will automatically perform data rebuilding and the progress could be seen on LCD screen.

4. Under the condition that PC is not saving or reading data with RAID, it takes about 20 minutes for a 40GB hard-disk and so forth.

§ Setting up RAID 0

In the event you'd like to install one new hard-disk and one already used hard-disk, it is advisable to select the new hard-disk to be the same as the used one in terms of brand, size, and storage capacity.

·Operation mode button   RAID 0

1. RAID 0 will automatically detect the hard-disk with the smaller storage capacity of the two, if one is larger than the other in terms of capacity, it will assign storage space base on the hard-disk with smaller capacity, and combine the storage space of the two to become storage capacity of one hard-disk.
  (In other words, the smaller capacity multiplies by 2 to be considered one programmable logic array.)

2. RAID 0 does not offer fault tolerance capability for data.

3. RAID 0 and RAID 1 can not be used simultaneously, only one could be selected   .

4. Prior to selecting RAID 0, please do not turn on the power unless you have placed hard-disk in swappable tray of RAID, and secure it into position.

5. Attention! In case you wan to switch operation mode from RAID 0 to RAID 1, please backup date and remove it in advance, otherwise, the original date will be lost.

Notices:

1. In case it is necessary to turn off the power of RAID or disconnect its USB 2.0 connection cable, please stop the usage or exit of above items in the computer system. (Hardware icons are displayed at the lower right-hand corner on Windows desktop.)

2. During RAID 0 operation mode, in the event of one hard-disk fails, the all data will be lost.
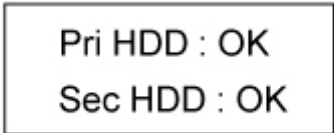
3-2 How to Change and set up RAID mode

Depending on user's requirement, RAID offers the option of RAID 0 and RAID 1. Prior to selecting appropriate RAID level, please consider each option's respective application as whether the priority is data safety (RAID 1) or storage space expansion capability (RAID 0).

※ If the system's default value is RAID 1

1. LCD displays status of "Pri HDD ok & Sec HDD ok"
(Disk ready on the primary deck: OK; Disk ready on the secondary deck: OK)

```
Pri HDD : OK
Sec HDD : OK
```

2. Press "ENT" button once

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

```
PASSWORD
   0000
```
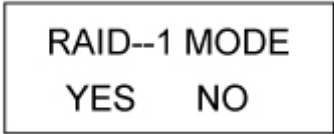
4. To execute, press "ENT" button for 4 times (means agreeing with the password being "0000"), and enters the next screen.

5. Press "▼" button twice, when the message "CHANGE RAIDMODE RAID -1" is displayed on screen., press "ENT " button once.
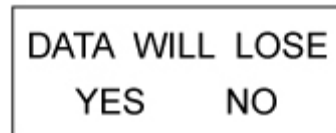
6. When the message "RAID- 1 MODE YES NO" appears on LCD screen,

```
RAID--1 MODE
 YES    NO
```

7.If RAID 1 is desired to be switched to RAID 0 operation mode, press "ENT "button once.

8. Then, the system will display the message "DATA WILL LOSE YES   NO", if you agree, press " ENT" button once.

```
DATA WILL LOSE
  YES     NO
```

9. On the next screen, the message "RESET SYSTEM YES   NO" will be displayed, if you agree, press " ENT" button once.

```
RESET  SYSTEM
  YES     NO
```
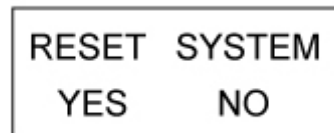
10. And, you will hear the sound of a buzzer which means the system is following your instruction to update RAID mode and perform data reconstruction.

In case you wish to switch RAID 0 to RAID 1, please follow above steps, when the screen prompts you "RAID- 0 MODE YES NO", please press "ENT" button once, then follow the above steps to continue, and the system will update RAID mode and perform data reconstruction.

※**The button on the LCD panel introducing as below:**

 "▼" button: It appoints that it the sames as "down" function when you want to enter to "next page" page or adjst the paramete.

 "▲" button: It appoints that it the sames as "up" function when you want to enter to "forward" or adjust the parameter.

 " ENT " button: It appoints that it the same as "enter"function when you want to enter the new parameter into the system.

3－3 How to schedule Backup

Design Idea:

The two hard-disks simultaneously backup data on line when user using the RAID 1 mode．To avoid both hard-disk data including the virus which are been attacked at the same time.

Please using the Schedule Backup operation under RAID, the data of primary RAID disk will rebuild to the second RAID disk at the appoint time.

It does not need to backup data anytime and store them to the RAID subsystem, otherwise it can save the system processing time to ensure the data get more safety and reliability.

How to use schedule Backup

To allow user to program the days (1 to 30 days) on their own, As scheduled time arrives, the system will automatically back up data．

1. Screen displays "Pri　HDD　ok &Sec HDD　ok"

(Disk ready on the primary deck :OK ; Disk ready on the secondary deck:OK)

```
Pri HDD : OK
Sec HDD : OK
```

2. Please press " ENT" button once

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

```
PASSWORD
   0000
```

4. To execute, press " ENT" button for 4 times, and enters the next screen.

5. When the message " SCHEDULE BACKUP YES NO" is displayed on screen, if you agree, please press " ENT" button once

```
SCHEDULE   BACKUP
   YES        NO
```

6. The next screen appears with "SCHEDULE BACKUP TIME 0->30 (DAYS) 00"

```
SCHEDULE   BACKUP
TIME0->30(DAYS)00
```

7. Please use "▼"or "▲"button to adjust the 10th digit of the days of your desired backup schedule.

8. If the 10th digit of the days is done, press " ENT" button once.

9. Next is to adjust the last digit of the days of your desired backup schedule, please use ▼"or "▲"button to adjust and follow the same step as for the 10th digit.

10. If the last digit of the days is done, press " ENT" button once.

Drawback:

1.If backup is not done instantly, in case of hard-disk failure, the data from the time of last backup will be lost.

Please take care using the RAID 1 mode or **Schedule Backu**p，and consider the setting days of the Schedule Backup before user decide to any operation.

2.The schedule backup that it is really not to appoint other device as rebuilding data to the internal RAID system,but to rebuild the data in the RAID system by itself at regular time.

※**How to Change the function from Schedule backup to RAID 1 mode**

1. Please enter to the "SCHEDULE BACKUP" operation mode on the LCD screen again.

2. Please adjust the time days to become "00" and make sure them input the system under Schedule backup operation mode. (As The next screen appears with "SCHEDULE BACKUP TIME 0->30 (DAYS) 00", please following the service manual chapter 3-3)

```
SCHEDULE   BACKUP
TIME0->30(DAYS)00
```

2.If you finish the above steps, please restart the power of RAID to ensure the days parameters are embedded then RAID 1 will be enabled.

Notice.

1.   The parameters had been embedded under RAID, please should be restart the Power to ensure the setting is enable.
2.   Complete the above procedure and restart the power, the system will become the RAID 1 mode. If you want to change from RAID 1 to RAID 0, please refer to the service manual chapter 3-2)

3－4 Steps for changing password

In order to avoid involuntary modification of parameters, RAID features personal pass word function so that data is better protected by the manager. But please be aware, once pass word is changed, the new pass word must be written down, if it is lost, it will create difficulties for the manager.

1. Screen displays "Pri   HDD   ok &Sec HDD   ok"

    (Disk ready on the primary deck: OK; Disk ready on the secondary deck: OK)

```
Pri HDD : OK
Sec HDD : OK
```

2. Press " ENT" button once

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

```
┌─────────────────────┐
│     PASSWORD        │
│       0000          │
└─────────────────────┘
```

4. To execute, press "ENT" button for 4 times, and enters the next screen.

5. Please use "▼"or "▲" button to select various functions

6. When the message " SETUP   PASSWORD   YES&NO" appears on screen, if you agree, press "ENT" button once

```
┌─────────────────────┐
│  SETUP  PASSWORD    │
│    YES     NO       │
└─────────────────────┘
```

7. Please use "▼"or "▲" button to set up the 1st, 2nd, 3rd and 4th digit of pass word.

8. After a selection of each digit is made, press button once

9. Press "▼"or "▲" button to continue the selection of remaining digits of pass word.

10. After change is done, screen will display following message "PASSWORD:8000 YES&NO".
   (Password: 8000, the digits could be selected at user's discretion, not permanent)

```
┌─────────────────────┐
│  PASSWORD : 8000    │
│   YES      NO       │
└─────────────────────┘
```

11. Press "ENT" button once, screen will display "SETUP PASSWORD   OK."

```
┌─────────────────────┐
│  SETUP PASSWORD     │
│  OK.                │
└─────────────────────┘
```

3－5 How to change Firmware

Please connect the RS232 cable to RS232 port of PC, and use the included disk to install RAIDGuide software. When installation is completed, RAID drive must be detected by the control panel as well. Go to program list to run RAIDGuide and open corresponding windows. From the tools menu at upper screen, select "Advance" then RAID System 1 Setting. Multiple-function window appears, select RS232 UPGRADE button, click "Confirm" to execute updating Firmware.
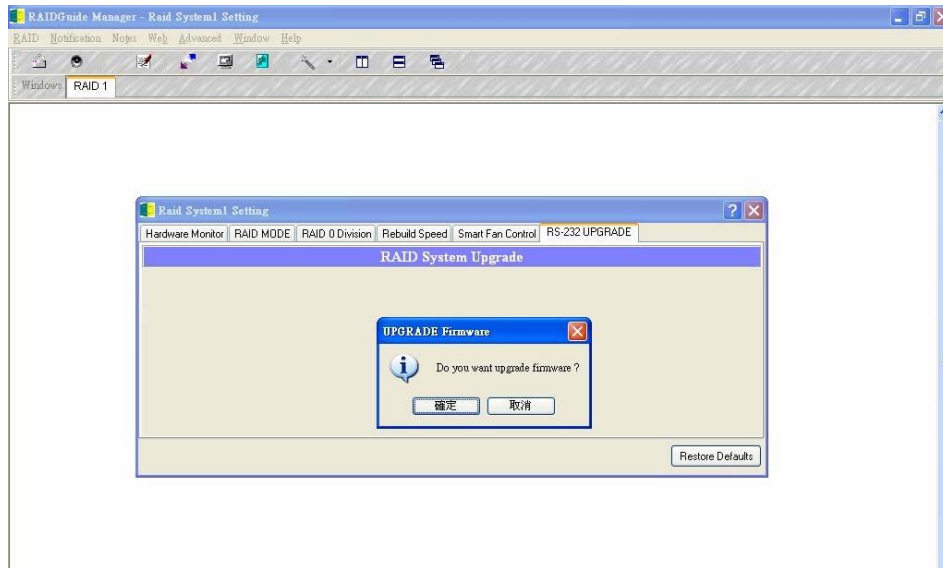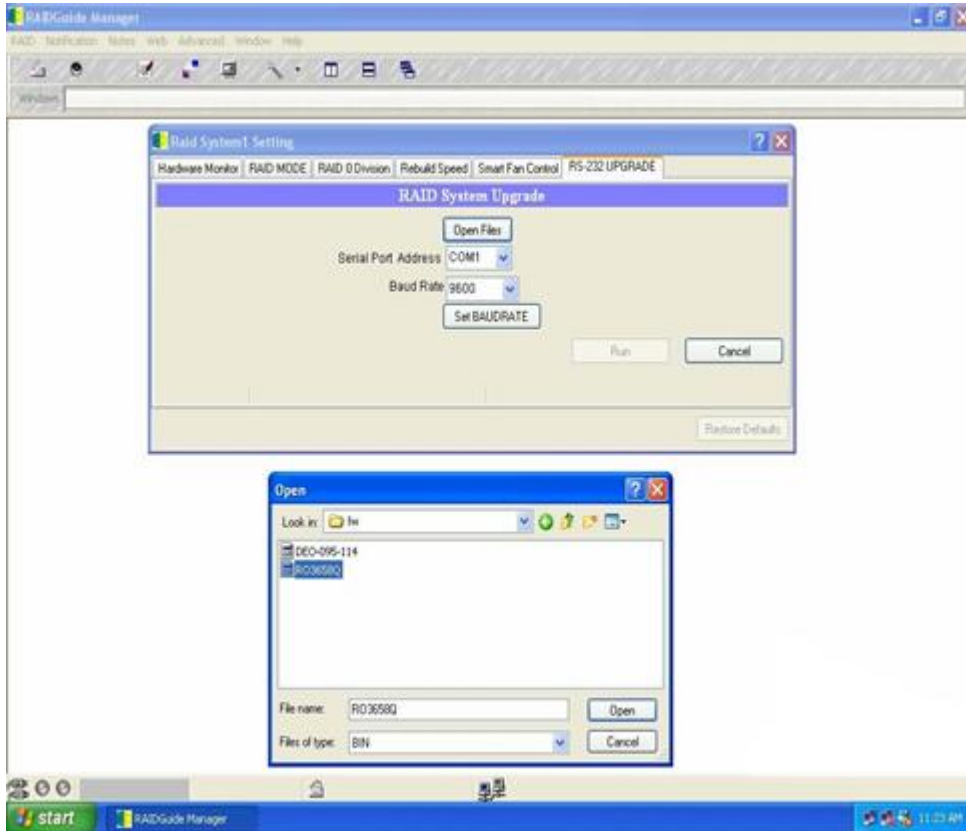

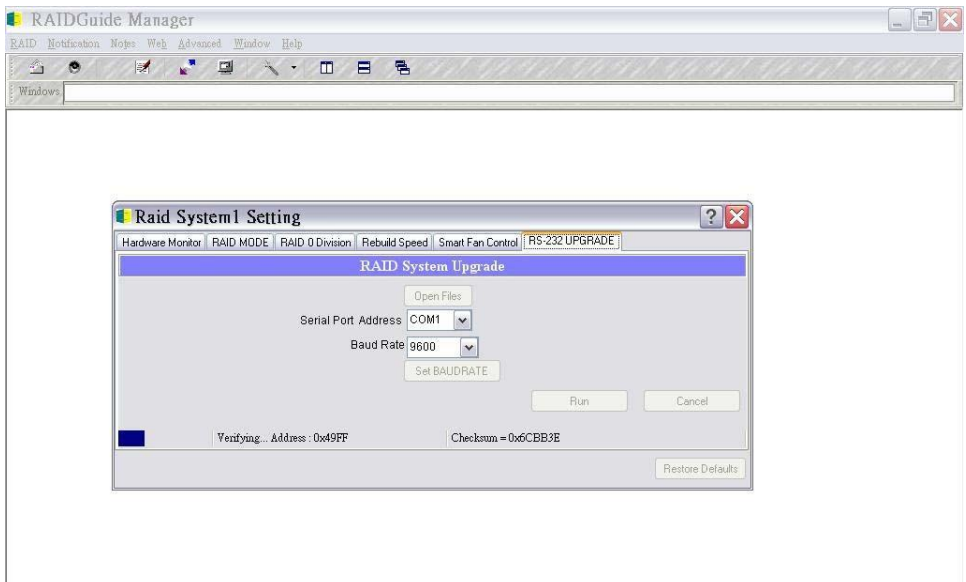Select Baud Rate:9600   Serial port address:com1
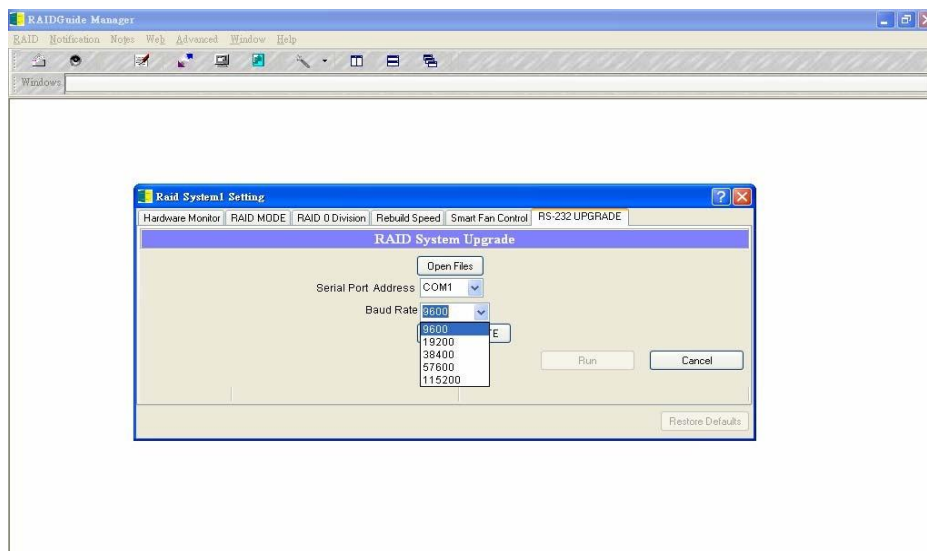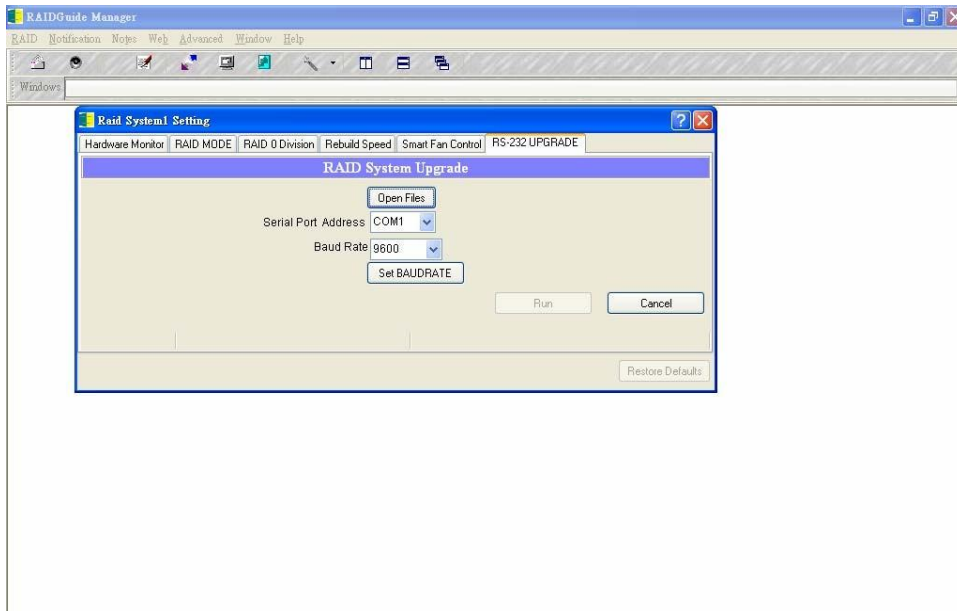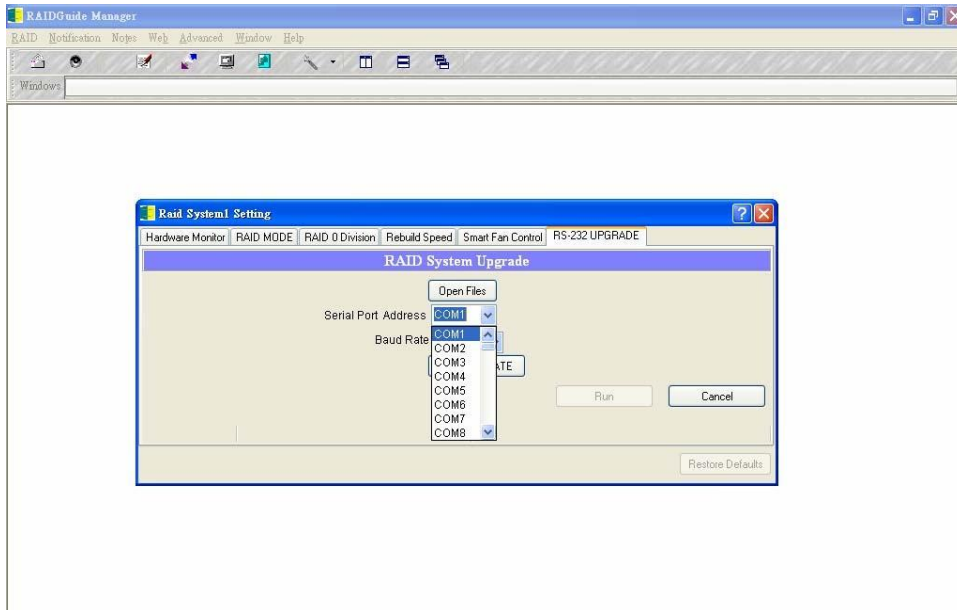
At the end, activate "Open Files" button to open the location of Firmware. Specify correct file path for updated Firmware, when finish, execute "Run"

It means the system is executing and will display following information
"Verifying….Address: xxxxx" which means Firmware is been updated..

When updating is completed, system will display completion information which
means successful operation.
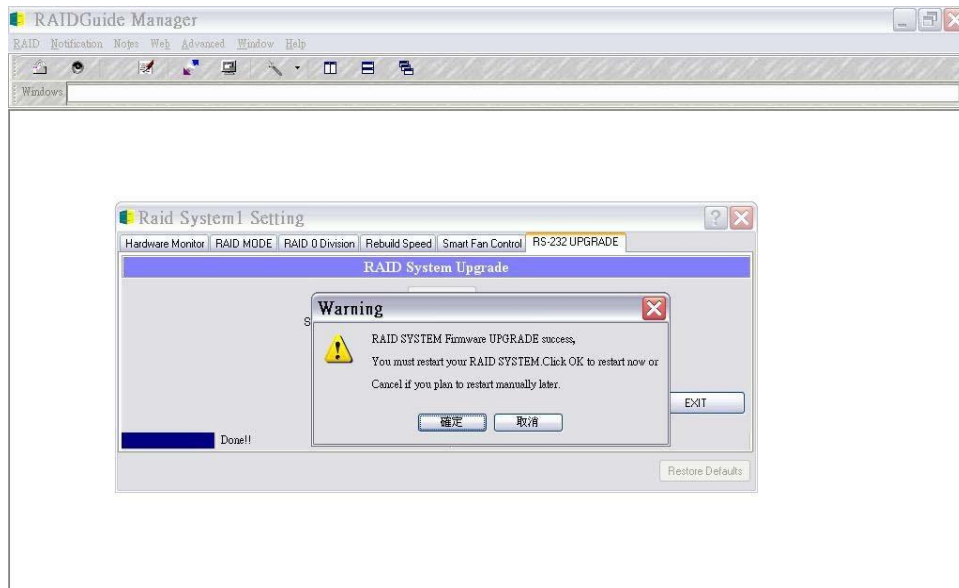
3-6 Operation Guide when using Windows operating system.

If RAID hardware installation has been completed, you can turn on the power again and connect this device to PC.

1. Please connect power cord to power jack on the back of RAID.

2. Connect USB 2.0 or SATA cable to the connection port of Windows operating platform that supports this device.

3. Turn on the power of RAID and confirm whether the display on computer screen is normal.

4. In a few seconds, system will automatically detect this device.

5. Verify and confirm whether the icon of this device is listed in the task bar of Windows desktop.

When RAID and USB 2.0 or SATA device is ready and your set up to specify the RAID operation mode is done, perform partition and formatting procedures on the hard-disk using disk management tool in control panel of operating system before it

could be used.

If you use SATA/USB 2.0 device but your system does not support SATA/USB 2.0 transfer port, SATA/USB 2.0 interface PCI controller card is available for purchased from us.

3-7 Operational guide when using Macintosh operating system

If RAID hardware installation has been completed, you can turn on the power again and connect this device to Macintosh.

1. Connect USB 2.0 cable to Macintosh operating platform that supports this device. For examples, MAC G3, G4, G5, iBook

2. In case you'd like to connect SATA cable to Macintosh operating platform, SATA interface PCI control card required.

3. Please connect power cord to power jack in the back of RAID

4. Turn on the power of RAID and confirm whether the display on computer screen is normal.

5. Turn on the power of Macintosh platform

6. Given that installation of driver for USB 2.0/SATA has been completed for Macintosh platform,

7.Turn on the power of Macintosh platform

8. And confirm RAID and USB 2.0 or SATA device are ready, till operational.

Steps to perform partition and formatting on RAID drive are as follow:

Formatting (just like formatting function of PC)
9-1 Point cursor at tools menu on desktop, and select disk tools utility, disk tools window will appear including several options (i.e. Repair tool/Delete/RAID/Reinstallation)

9-2 If RAID drive is ready, RAID drive information will appear on the left window

9-3 In case diskette and various folders need to be deleted, please select RAID drive icon, specify a format and name, the click delete once. The message "deleting disk will erase all data in this folder, are you sure to delete "XXX" disk? Delete or Cancel" will be displayed, to delete, click Delete once.

Partition

9-4 Select Partition disk and folder framework, click folder displayed in framework and specify the name, format and size of folder, the message "partitioning disk will erase all data in this folder, are you sure to partition XXXXXX disk? Delete or Cancel" will be displayed, then click partition once.

3-8 HDD status on LCD screen

Possible reasons for invalid hard-disk:

1. Malfunction

2. Not able to recognize, could be compatibility issue, or partial damage tracks

- Message displayed for not able to detect main hard-disk: FAIL

- Display for second hard-disk detected: OK
(As shown in illustration)

```
Pri HDD : Fail
Sec HDD : OK
```

(※There are 3 status messages that could be displayed for hard-disk information
1.OK→ HDD 2. Ready 3.FAIL
OK→ Hard-disk ready；OFF→ Hard-disk not installed；HDD FAIL→ Invalid hard-disk)

- Information displayed for detecting main hard-disk: OK
- Information displayed for not able to detect second hard-disk: FAIL
 (As shown in illustration)

```
Pri HDD : OK
Sec HDD : Fail
```

- Information displayed for not able to detect main hard-disk and second hard-disk:
FAIL

```
Pri HDD : Fail
Sec HDD : Fail
```

Information displayed for successful detection of main hard-disk and second
hard-disk: OK   (As shown in illustration)

```
Pri HDD : OK
Sec HDD : OK
```

- When RAID is overheating, "T" will be displayed on the upper right-hand
corner of screen   (As shown in illustration)

```
Pri HDD : OK       T
Sec HDD : OK
```

- When cooling fan module is not functional, "F" will be displayed on the lower
right-hand corner of screen.   (As shown in illustration)

```
Pri HDD : OK
Sec HDD : OK     F
```

When RAID is not able to detect first or second hard-disk, the buzzer will sound,
and screen will display follow message as shown in illustration.

```
Pri HDD : Fail
Sec HDD : OK
```

(Illustration 1)

```
Pri HDD : OK
Sec HDD : Fail
```

(Illustration 2)

LCD display for changing hard-disk:

When you insert a new hard-disk into or replace the current hard-disk in the second swappable tray, system will deem this as a damaging operation, the buzzer will sound and screen will display an error message.

```
Pri HDD : OK
Sec HDD : Fail
```

In a few seconds, a correct message will be displayed on screen, and follow by another message indicating automatic reconstruction of data is in progress, as show in illustration.

```
Pri HDD : OK
Sec HDD : OK
```

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

When data is completed, hard-disk will be detected automatically, and a correct message will be displayed.

```
Pri HDD : OK
Sec HDD : OK
```