Vanguard IIIS Series

User's Guide

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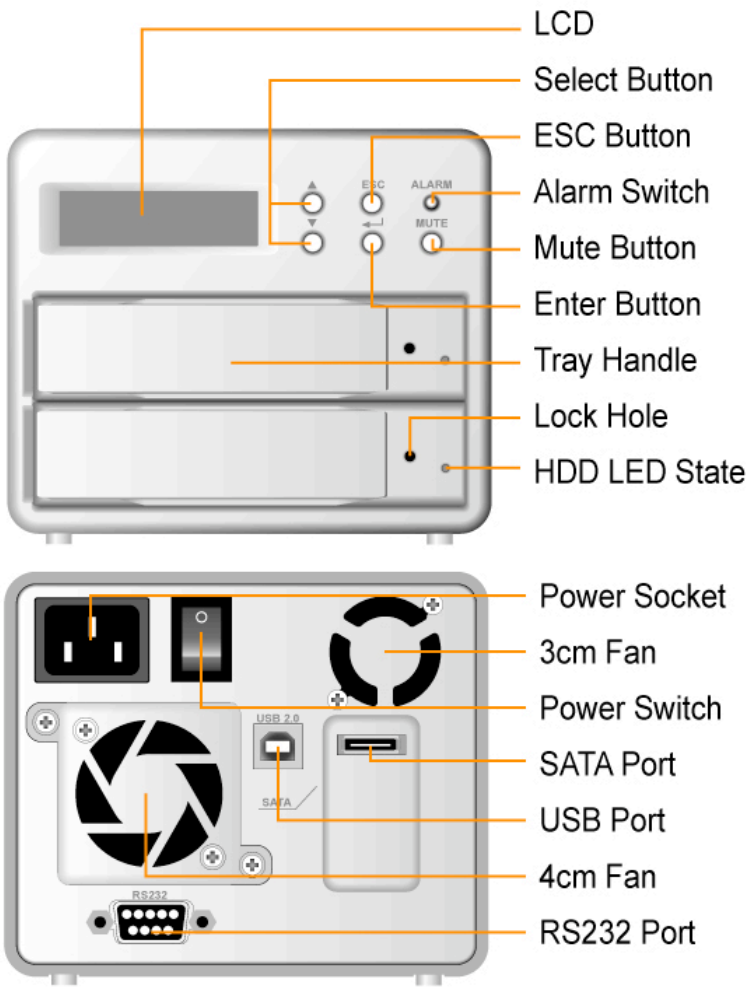
Version: 1.1

Table of Content

Chapter 1
Product Introduction

NitroAV's Vanguard IIIS supports either SATA and USB 2.0 interfaces while providing users an affordable and safe external RAID subsystem.

Whether you are using the Vanguard IIIS in the studio, at home or in the office, it supports RAID 1 function, through mirroring operation, it is able to ensure safety and reliability of data storage. The RAID 1 function also offers timed backup. The Vanguard IIIS also supports RAID 0 function, which combines the storage space of 2 hard-disks which offers the fastest transfer rates.



1-1 Functions and Features

NitroAV Vanguard IIIS is a RAID system designed specifically for the best feature, price and performance –ratio for all users that need fast redundant storage. 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/MacOSX 10.3 and above/Linux Core 2.4 and above

Supports hot swap function
It is not necessary 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 the 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 replacing 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. This is an separate feature but based off RAID 1 settings.

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 host interface while increasing transfer rate up to 56 MB/sec (USB 2.0) or ~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 or RAID 1
Hard-Disk interface	3.5" Hard-Disk SATA 1.5 GHz (Support SATA II)
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 (Windows)
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/ MacOSX +10.3 or above and 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

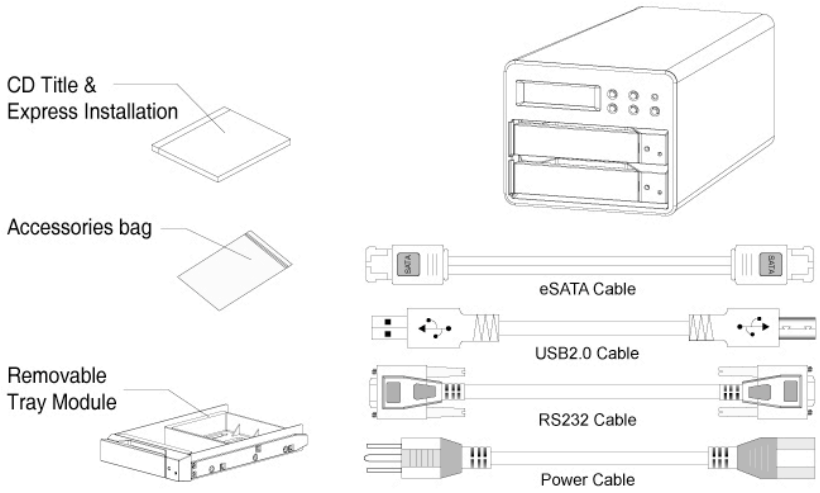
2-1 Package content

When you open the box, please refer to the following list of included items and accessories. In case any of the content is missing or damaged, please contact your dealer or place of purchase..

NitroAV Vanguard IIIS : included accessories are as follow:

Item Description	Quantity
Vanguard IIIS	1 unit
eSATA cable	1 pc
USB Cable	1 pc
RS232 Cable	1 pc
Swappable tray	2 pcs
Key	4 pcs
Accessory bag	1 pack
(Included 12 pcs #6-32 screws and 8 pcs M3x4 screws)	
Power cord	1 pc

RAIDGuide GUI (Downloadable) – No CD in packaging.



2-2 System requirement

※ Hardware requirement

1. PC, MAC & Linux supported operating system that supports USB 2.0 & SATA interface.

2. Hard-disk supports SATA 1.5 GHz transfer interface but will Support SATA II drives but at SATA levels.

3. When using Pentium processor use a minimum of 64 MB memory and at least 10 MB available on hard-disk.

※ Operation requirement

USB 2.0:	MacOSX 10.3 and above
	Windows 2000/XP/Server 2003
	Linux Core 2.4 and above
SATA :	MacOSX 10.3 and above
	Windows 2000/XP/Server 2003

2-3 Environmental requirement and notices

1. Vanguard IIIS allows users the flexibility to select different spec'ed and size storage devices. However for best performance and reliability we recommend using identical hard drives.

2. Please make sure the 2 hard disks you intend to use are in perfect condition and high quality. Do not use hard drives that have know bad sectors or remapped. By avoiding used or of unknown origin hard drives you save yourself a lot of work and pains of device failures.

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

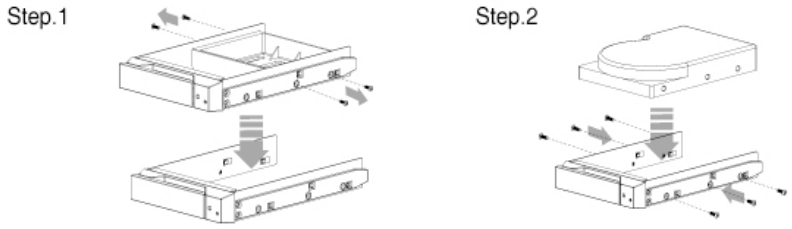
transfer are desired, the system must provide SATA connection port.

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 erase all your data, so be sure to know which RAID setting you intend to stay with.

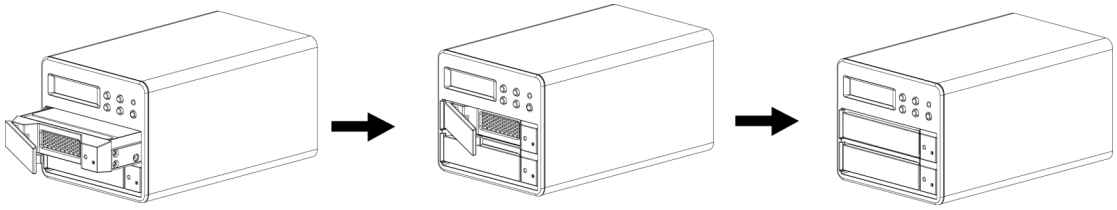
5. There is no data backup function with RAID 0, it allows the combination of 2 hard-disks to become one hard-disk of larger storage capacity and offers better efficiency in transfer. Nevertheless, as long as one of the 2 hard-disk fails, it will cause damage on data stored in both hard-disks.

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 WARNING: Do not over tighten.

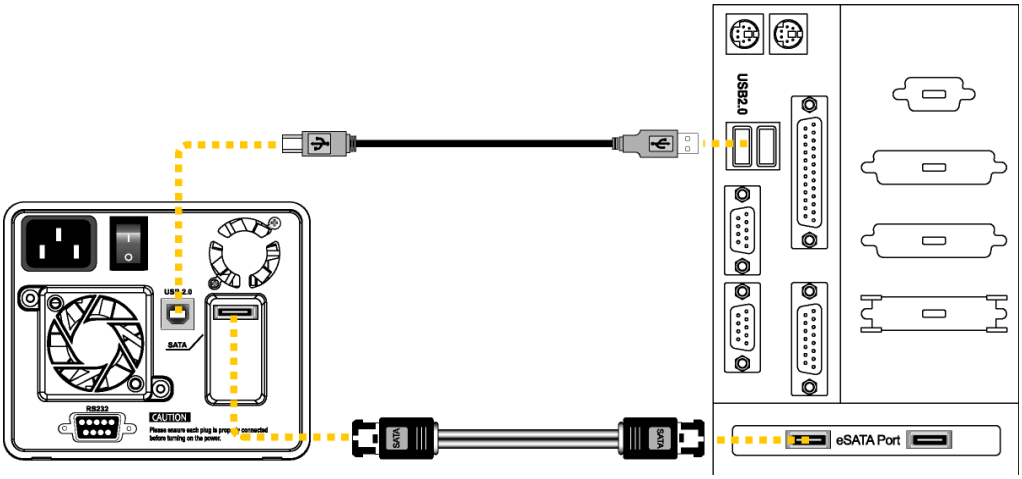


2. When assembly is done, gently push it along the sliding track into the hard-disk compartment of VANGUARD IIIS, and then close the tray, as illustrated below.

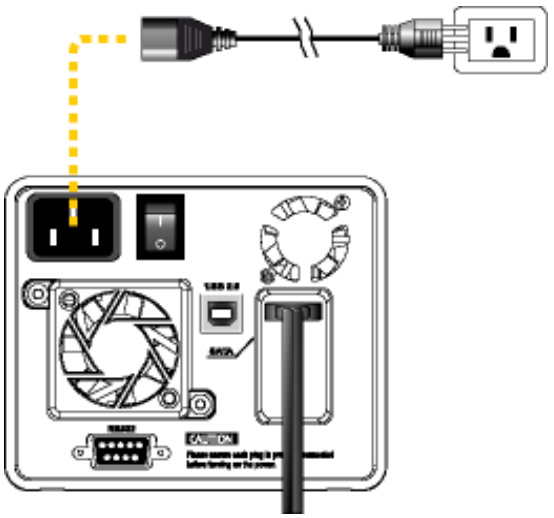


2-5 How to connect Vanguard IIIS to computer system

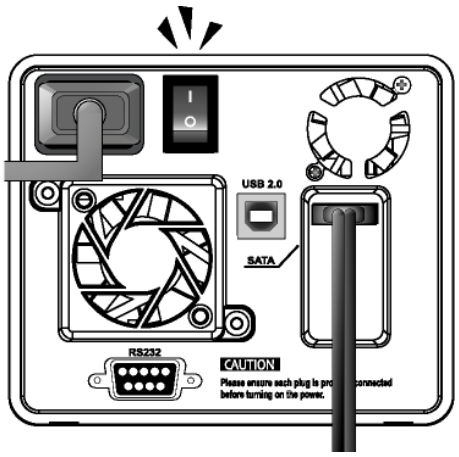
1. Given that all power is turned off, connect either one of the USB 2.0 or eSATA transmission cable in the box to the corresponding connection port on the back of Vanguard IIIS, and connect the other end to the corresponding connection port on the computer. **To avoid damage to the Vanguard IIIS, do not plug both SATA or USB into the Vanguard IIIS – Choose one.**



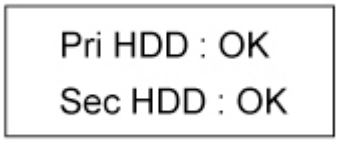
2. Connect the power cord in the box to the power jack of Vanguard IIIS.



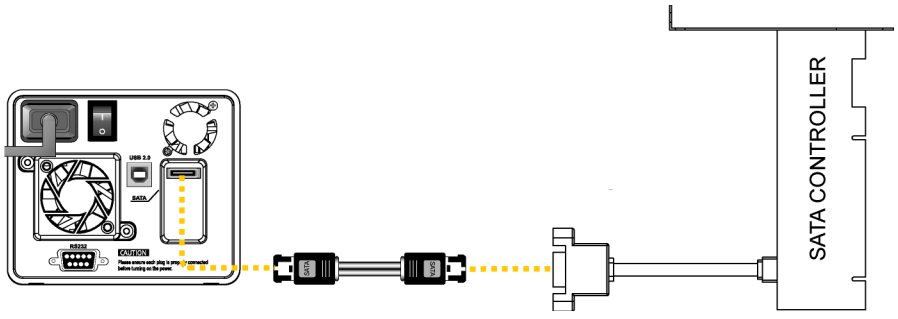
3. Turn on the power of Vanguard IIIS (power switch is on the back of the unit)



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.



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 interface, they are available for purchased from a NitroAV.com Partner.



Chapter 3
NitroAV Vanguard IIIS Operation Guide

3-1 RAID Level set up

1. Vanguard IIIS is capable of supporting RAID 1 mode or RAID 0 mode. Once RAID Level has been set up, any future changes will cause loss 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. Vanguard IIIS 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 identical 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 Vanguard IIIS, 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, Vanguard IIIS 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 Vanguard IIIS.

□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, Vanguard IIIS 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 Vanguard IIIS.

2. At the time power of Vanguard IIIS 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 VANGUARD IIIS, in about 10 to 15 seconds, Vanguard IIIS will automatically perform data rebuilding and the progress could be seen on LCD screen.

4. Under the condition that the computer is not saving or reading data with Vanguard IIIS, 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 Vanguard IIIS, 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 Vanguard IIIS 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.)

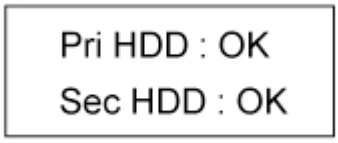
2. During RAID 0 operation mode, in the event of one hard-disk fails, the all data will be lost.

3-2 How to Change and set up RAID mode

Depending on user's requirement, Vanguard IIIS 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)



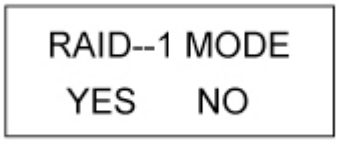
2. Press " ↵ " button once

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

4. To execute, press "↵ " 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 "↵ " button once.

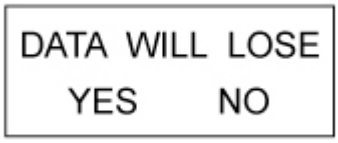
6. When the message "RAID- 1 MODE YES NO" appears on LCD screen,



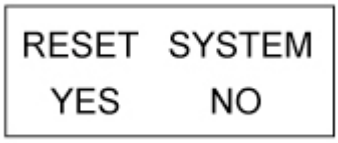
7.If RAID 1 is desired to be switched to RAID 0 operation mode, press "↵ "button

once.

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



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



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 ” ↵ ” 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.

” ↵ ” 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.

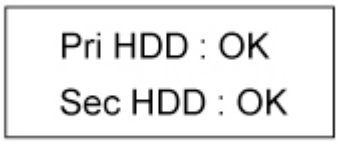
Using the Schedule Backup operation with the VANGUARD IIIS, the data of primary RAID disk will rebuild to the second RAID disk at the appoint time. It does not need to backup data anytime and store them to the RAID subsystem, otherwise it can save the system processing time to ensure the data get more 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”

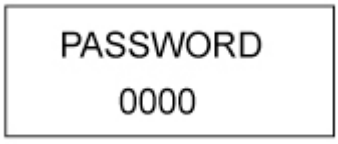
(Disk ready on the primary deck :OK ; Disk ready on the secondary deck:OK)



2. Please press ” ↵ ” button once

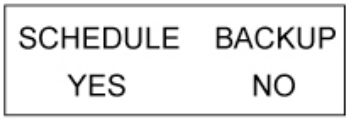
3. Screen prompts to enter password “0000”

(The default password is “0000”)

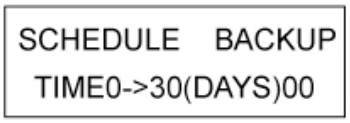


4. To execute, press ” ↵ ” button for 4 times, and enters the next screen.

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



6. The next screen appears with ”SCHEDULE BACKUP TIME 0->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 ” ↵ ”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 ” ↵ ”button once.

Drawback:

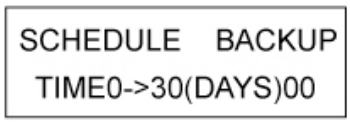
1.If backup is not done instantly, in case of hard-disk failure, the data from the time of last backup will be lost.

Please take care using the RAID 1 mode or **Schedule Backup**，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)



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

Notice.

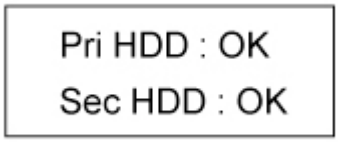
1. The parameters had been embedded under Vanguard IIIS, please should be restart the Power to ensure the setting is enable.
2. Complete the above procedure and restart the power, the system will become the RAID 1 mode. If you want to change from RAID 1 to RAID 0, please refer to the service manual chapter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

3－4 Steps for changing password

In order to avoid involuntary modification of parameters, VANGUARD IIIS 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)



2. Press ” ↵ ” button once

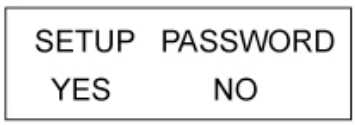
3. Screen prompts to enter password “0000”

(The default password is “0000”)

4. To execute, press ” ↵ ” 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 ” ↵ ” button once



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)

11. Press ” ↵ ” button once, screen will display “SETUP PASSWORD OK.”

3-6 Operation Guide when using Windows operating system.

If VANGUARD IIIS 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 VANGUARD IIIS.

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 VANGUARD IIIS 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 VANGUARD IIIS 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 VANGUARD IIIS 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 VANGUARD IIIS

4. Turn on the power of VANGUARD IIIS 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 VANGUARD IIIS 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)

(※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)

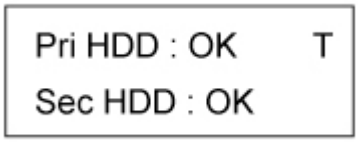
- Information displayed for detecting main hard-disk: OK
- Information displayed for not able to detect second hard-disk: FAIL

(As shown in illustration)

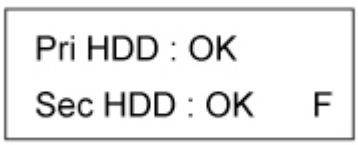
- Information displayed for not able to detect main hard-disk and second hard-disk: FAIL

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

- When VANGUARD IIIS is overheating, “T” will be displayed on the upper right-hand corner of screen (As shown in illustration)



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



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

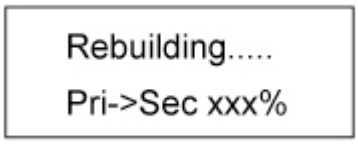
(Illustration 1)

(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.

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.



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


Pri HDD : OK
Sec HDD : OK