

PD3500
User Manual

Introduction

English

Thank you for purchasing STARDOM products. This manual will introduce the PD3500 Series. Before using your PD3500, please read this manual thoroughly. Although all information contained in this user manual has been carefully verified before publishing, however, the actual product specification will be based on the time of delivery from STARDOM. Any updates to the product specifications or relevant information may be found on www.stardom.com.tw. Products are subject to change without prior notifications.

If you have any questions regarding the products of STARDOM, or you would like to know the latest product information, user manual update, or firmware update, please contact your local supplier or visit www.stardom.com.tw for further information.

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1. Package Contents and Product Views

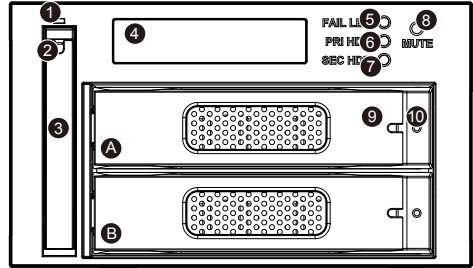
Open the package and you should find the following:

PD3500
PD3500 × 1 (with removable drive tray enclosed)
Internal RS232 Cable × 1
External RS232 Cable × 1
SATA Cable × 2
CD-Rom × 1
Accessories Kit bag
User Manual

Please make sure that the contents listed above are not damaged or missing. If you should find damages or missing contents, please contact your supplier immediately.

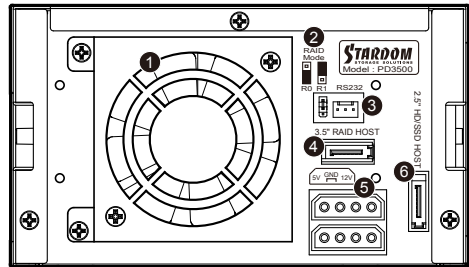
Front View

1. 2.5" HDD status indicator LED
2. 2.5" HDD tray ejector opening
3. 2.5" HDD tray ejector handle
4. LCD Display
5. LED of failure Alarm
6. Pri. HDD status indicator
7. Sec. HDD status indicator
8. Mute Button
9. Removable drive tray
10. HDD tray ejector opening
- Ⓐ primary HDD
- Ⓑ secondary HDD



Rear View

1. Cooling fan
2. RAID mode switch
3. RS232C Port
4. SATA Port
5. Power socket
6. SATA Port



Note :

1. LED of Pri / Sec HDD which near LCD display will flash yellow when the data is accessed from the hard drive.
2. LED of Pri / Sec HDD on the HDD tray will flash blue when the data is accessed from the hard drive.
3. LED of failure alarm will light red when HD failed, temperature is higher than 60 °C or fan fails
4. Press "Mute Button" to turn on mute function, to shut off the buzzer alarm, just press the button again.

2. Operating Information

Operating Temperature : 0 ~ 40 °C (32 ~ 104 °F)

Storage Temperature : -10 ~ 70 °C (14 ~ 158 °F)

Line Voltage : 100 ~ 240V AC

3. Hardware Requirements and Precautions

1. Computers or servers with SATA I, SATA II and SATA III
2. Hard drive with SATA I & SATA II and SATA III
3. Only one interface connection may be used at once per computer system.

4. You are strongly advised to set the storage mode (the default is the Independent mode) before using the PD3500.
5. The product allows the user to simultaneously utilize two hard drives manufactured by different companies. However, if the user expects better efficiency, we strongly recommend the users to use hard drives manufactured by the same manufacturer.
6. Please make sure that the two hard drives are free from bad blocks or defects prior to installation in order to avoid system crashes or data loss.
7. The actual storage capacity of PD3500 series recognized by the system may differ from the total capacity stated on the hard drives combined once the drives have been formatted.
8. Whenever turning off or unplugging the PD3500 series from your computer system becomes necessary, always remember to safely remove it from your operating system before powering off the device.
9. It is highly recommended for users to back up important data contained within the PD3500 unit on a regular basis or whenever the user feels necessary to a remote or a separate storage device. Stardom will not be responsible for any lost of data caused during the use of the unit or the recovery of the data lost.
10. PD3500 complies with standard RAID Level 1 and RAID Level 0 definitions.

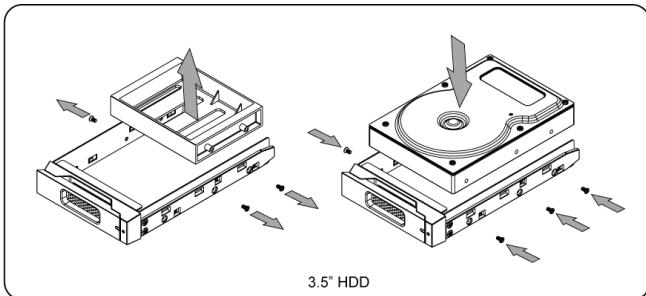
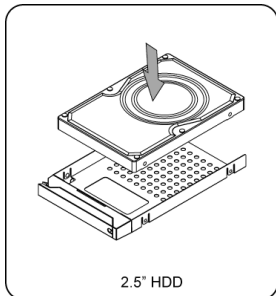
⚠ Note :

Once the drive mode configuration has been completed, re-configuration using the same hard drives to set the drive mode will result in complete data loss. If you must change the drive mode, make sure to backup all data prior to the mode change.

4. Hardware Installation Procedure

Please follow the instructions below to complete the hardware installation.

- Step 1 Open the package and take out the product making sure that all the enclosed contents are not damaged or missing. Should you find damages or missing contents, please contact your supplier immediately.
- Step 2 Place the system on a stable surface. Ensure that it is well ventilated without blockage to the vent and kept away from areas near water and damage prone areas.
- Step 3 Use the key included in the accessory kit and inserted into the key access opening to eject the removable drive tray latch and extract the removable drive tray.
- Step 4 Mount your hard drives onto the removable drive tray and secure it with the screws included in the accessory kit to avoid any damage to the hard drive due to accidental movements.



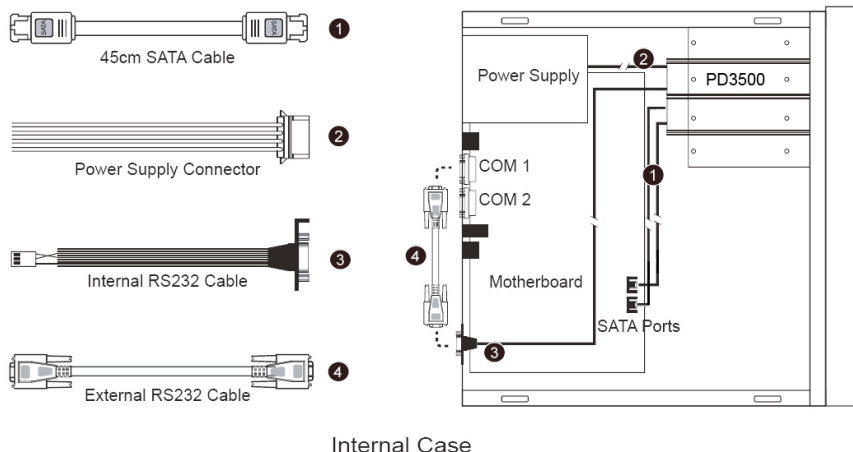
Step 5 When the hard drive installation has been completed, insert the hard drive tray into the system horizontally and secure the latch into place.

Step 6 Use the preferred cable included to connect your computer to the relative interface connection on the PD3500 unit.

When your computer has booted, your operating system should recognize the hard drive(s) automatically. After the hard drive(s) has been successfully recognized, please follow the hard drive formatting instructions given by the operating system. Once the formatting of the hard drive(s) has been completed, the hard drive will be ready for use.

5. Connecting to computer

1. Connect DC12V&5V power cables and SATA cables to PD3500.
2. Connect SATA cable to SATA port on the motherboard.



※ Note :

1. RS232 Port and RS232 Cable: Provides hardware status monitoring to industrial control system or IPC via RS232.
2. We do not recommend users to disassemble the device without proper instructions and authorization. The manufacture warranty will not cover the damages caused by unauthorized disassembling.
3. To prevent the device from malfunction, please make sure the device is connected with a direct and dedicated power connection of a stable power input.

6. Setting the Hard Drive Array Mode

Please select the RAID mode with the jumper located at the back panel. The original default is RAID 1, still there are three pins at the back panel for RAID mode selection: RAID 0 mode by setting the jumper on the bottom of the two pins. RAID 1 mode by setting the jumper on the top of the two pins.

1. RAID 1 Mode

- a). Place two new hard drives into PD3500 and strongly suggest you to use two identical hard drives to get the equal capacity. If the capacity is different, PD3500 is downward to the small hard drive capacity.

b). Under RAID 1 mode, two hard drives has the identical information as one to mirror to the other one, therefore each of the hard drive failed is still able to function normally. When you replace the failed hard disk to the new one the system automatically rebuilding the data to the newly place hard disk.

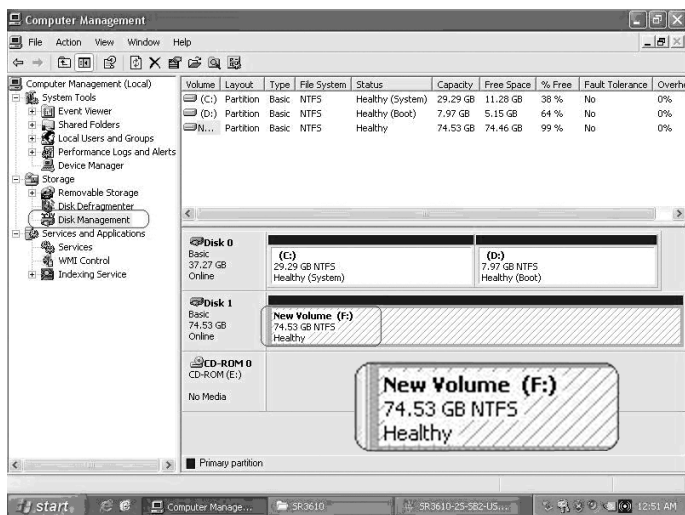
2. RAID 0 Mode

- a). Place two new hard drives into PD3500 and strongly suggest you to use two identical hard drives to get the equal capacity. If the capacity is different, PD3500 is downward to the small hard drive capacity.
- b). Under RAID 0 mode, capacity is add up to a one big volume, also with the feature of faster read/write performance efficient.

7. Computer Set Up

When the hardware setup for PD3500 is complete, you are now ready to turn the machine on.

1. After the hardware installation is complete, the PD3500 will be treated as one single hard drive. Set the hard drive to AUTO in the computer's BIOS. When the computer is turned on, the system will retrieve the following information:
2. In PD3500, the installed hard drive can be detected by the Device Manager of Computer Management for Windows.
3. Customers can choose to format the hard drive by using the Disk Management tool of the operating system before using the PD3500.



At this point, the installation process is completely finished. The user can freely retrieve and save data to PD3500 just like retrieving and saving data to a regular hard drive. If the user experiences any abnormality during the operation, please refer to the trouble shooting Q&A section in Appendix.

8. Hard Disk status on LCD screen

1. Normal hard drives

Pri HDD : OK
Sec HDD : OK

2. Primary hard drive is failure, but secondary hard drive is normal

Pri HDD : Failed
Sec HDD : OK

3. Primary hard drive storage capacity larger than secondary hard drive

Wrong Capacity
PRI>SEC

4. Secondary hard drive storage capacity larger than primary hard drive

Wrong Capacity
SEC>PRI

5. Rebuilding

Rebuilding ...
Pri->Sec XXX%

Rebuilding ...
Sec->Pri XXX%

6. Overheat

Pri HDD : OK
Sec HDD : OK T

7. Fan failure

Pri HDD : OK F
Sec HDD : OK

9. Data Rebuilding Operation

The hard drive Hot Swap and Auto Rebuilding functions are available. (The Hot Swap & Auto Rebuilding functions are applicable in)

1. Off-line Back up When the data is stored within PD3500, the user can remove one of the hard drives from PD3500 as back up drive for data such as system operation file, secured files, seldom modified files or image and music files. The user can periodically insert the hard drive back into PD3500 to execute automatic backup to protect the system from being hit by computer virus or to avoid risk of having both hard drives failing at the same time.
2. During the Hard drive Failure When one of the two hard drives fails in the PD3500 system, the system will alarm the hard drive failure message both on the LCD display screen and in the monitoring software. The user can remove the failed hard drive from the system while the system is still in operation without shutting down the machine. If the failed hard drive is replaced shortly,

the system will automatically execute the Auto Rebuilding function without affecting the system operation and without any operation command from the user.

3. The LCD Display Message During Hot Swap and Auto Rebuilding When the PD3500 detects a hard drive missing or a hard drive failure, the Buzzer will go off and the LCD display screen will display the following messages:

Pri HDD : OK
Sec HDD : Fail

Pri HDD : Fail
Sec HDD : OK

4. After removing the failed hard drive and replacing with a new hard drive, if the hard drive is properly installed, the LCD display screen will display the following messages:

Pri HDD : OK
Sec HDD : OK

5. After few seconds of installing the new hard drive, the LCD display screen will display the data rebuilding progress:

Pri->Sec represents that the data in the original hard drive (primary hard drive) is copied to the new hard drive (secondary hard drive). XXX % represents the rebuilding completion percentage.

Rebuilding ...
Pri->Sec XXX%

Rebuilding ...
Sec->Pri XXX%

6. When the rebuilding is fully completed, the LCD display screen will again display the following messages:

Pri HDD : OK
Sec HDD : OK

7. When PD3500 is overheating, "T" will be displayed on the lower right-hand corner of screen (As shown in illustration)

Pri HDD : OK
Sec HDD : OK T

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

Pri HDD : OK	F
Sec HDD : OK	

9. If the temperature is higher than the default setting (a preset number, typically 65°C or 149°F), LCD shows T:

Pri HDD : OK	
Sec HDD : OK	T

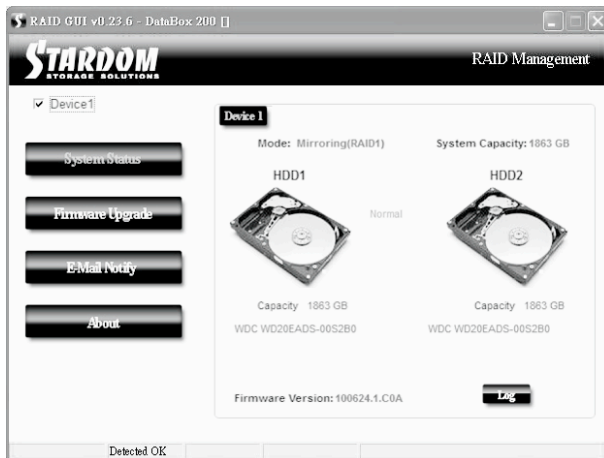
10. GUI Monitoring Software and Firmware Update

You can install GUI software to monitor RAID status. This can be done by installing software from CD-ROM.

※ The HDD1 equals to Pri HDD and HDD2 equals to Sec HDD.

1. RAID Information

This GUI will auto detects the connected PD3500 and reveals relative information accordingly.



2. Firmware Upgrade

You may update the firmware via this GUI, simply click on “Load” button to locate the firmware file to proceed. After update is finished, you may restart the power properly to operate with newly updated firmware.



※Caution : Any Random firmware updates may cause device in malfunction, it is strongly suggested not to update device firmware if device is operating properly. To prevent device malfunctioning from your firmware updates, please contact STARDOM.

3. E-Mail Notify

Configuring an e-mail address for notification of drive malfunctioning or being removed.

3-1 Setup

- 1). Insert "Outgoing" SMTP and e-mail name and address.
- 2). If it is passwords required, select the option "SMTP Login Authentication" and insert the passwords.

The screenshot shows the "STARDOM RAID Management" window. On the left, there are buttons for "System Status", "Firmware Upgrade", "E-Mail Notify", and "About". The "E-Mail Notify" button is highlighted. The main area has three tabs: "Setup", "HDD Fail", and "Device Removed". The "Setup" tab is active, showing the "E-Mail Setup" section. It includes fields for "Port" (set to 25), "E-Mail Host (SMTP)", "Local Information" (Name: xxx, E-Mail Address: xxx@raidon.xxx.xx), and "Time Out" (Connect E-mail Host checkbox). There is also an "SMTP Login Authentication" checkbox. "Ok" and "Ignore" buttons are at the bottom right. A status bar at the bottom says "Detected OK".

- 3). When the configuration completed, click on the "OK" button to save.

※ Device must be connected in operational states during configurations to take effects.

3-2 HDD Fail / Device Removed

- 1). Insert the e-mail address of the receiver for notification and click on "+" to add the inserted e-mail address onto the notifying list. (Maximum up to 10 e-mail addresses)

The screenshot shows the "STARDOM RAID Management" window with the "E-Mail Edit" tab active. It displays a list of "E-Mail Address" with one entry: "xxx@raidon.xxx.xx". To the right, there are fields for "Subject" and "Contents". Below these fields, a note says "Auto Add : Hard Disk Fail info. and system info. in front of E-Mail contents." "Ok" and "Ignore" buttons are at the bottom right. The status bar at the bottom says "Detected OK".

- 2). Insert the error message and descriptions from the columns of "Subject" and "Contents".

3). When the configuration completed, click on the “OK” button to save.

※ Device must be connected in operational states during configurations to take effects.

4. About Indicates GUI Management Software version



11. Frequently Asked Questions

Unstable system after connecting PD3500

- Q1. After installing PD3500, we are unable to start the computer or the computer can not locate PD3500 upon startup.
- A : 1. Please check whether the readings on the PD3500 LCD display screen appear normal.
2. Please check whether the SATA Cable connection cables are properly connected to the computer system and whether SATA drives are functioning normally.
3. If everything is functioning properly but the user still can not start the computer system, then the problem might be the system incompatibility. If such incompatibility takes place, please contact our technical support department.
- Q2. When the PD3500 is in use, the computer system is functioning normally but the PD3500 access speed is abnormal.
- A : Please first check whether the PD3500 is in the progress of executing data auto-rebuild.
1. Please examine if the length of the connection cables, SATA cable that connect the drives to the computer system is too long and whether the specification these cables complies with the requirements.
2. If both the lengths and specification of the cables are checked out ok, please turn off PD3500 and remove the hard drive from PD3500. Test the hard drive directly with the computer system since it might be the bad sectors in the hard drive that are causing the longer than normal system down time.

Hard Drive Failure

- Q1. Under the mirror mode (RAID 1), what will be the system's total storage capacity when adding a brand new hard drive?
- A : 1. The total storage capacity for PD3500 is determined by the storage capacity of the primary hard drive installed during the initial usage.
2. The storage capacity will not increase after initial installation even when place a brand new hard drive with larger storage capacity.
- Q2. Why does the error message appear when I installed the second hard drive?
- A : 1. The storage capacity of the second hard drive must be larger than the first hard drive. Otherwise, PD3500 can not rebuild the new hard drive and the LCD display screen will display "Wrong Capacity".
2. The LCD display screen might display rebuilding error messages such as Pri(s)->Sec(s) or Sec(s)->Pri(s). The term (s) signifies that both hard drives are treated as original hard drive. The user must determine which hard drive will be the original hard drive prior installing the hard drives into PD3500. Once the original hard drive is designated and installed in PD3500, the user can place in the second hard drive by taking advantage of PD3500's Auto Rebuilding function.
- Q3. My hard drive is obviously operating properly but why is it shown as failed in the PD3500 display?
- A : PD3500 uses more strict requirements and standards to examine the bad sectors in the hard drive. The user can first overwrite the bad sector on a PC before placing the hard drive into PD3500.

About Auto Rebuilding Function

- Q1. What will happen if we turn off the computer's power while PD3500 is still executing data auto rebuilding?
- A : Under the mirror mode (RAID 1), if the power is out of the auto rebuilding process, the controller will remember when completion percentage of the auto rebuilding process and resume the rebuilding process when the power is back on.
- Q2. Is it possible to lose any part of the data during the data auto rebuilding?
- A : The data auto rebuilding function will copy data from one sector to another sector. Technically speaking, the data will not be lost during the auto rebuilding process. However, if the original hard drive is detected with bad sectors during the rebuilding process, PD3500 will make hypothetical duplication instead of treat the bad sectors as hard drive failure. Therefore, the data stored in the bad sectors could potentially be lost during rebuilding.
- Q3. Under the mirror mode (RAID 1), why does the computer slows down during the data rebuilding process? Or why does the data rebuilding process slows down when the data is being processed?
- A : If the PD3500 system is executing data rebuilding simultaneously while the computer system is saving the data, the auto rebuilding process and the saving process will take longer than normal time. This is because the PD3500 must divide it's resource between the normal system operation and the data rebuilding process. However, the priority for the PD3500 is to maintain the proper system operations. Therefore, the data rebuilding speed will be extremely slow until the system finished with the data saving operations.

Other Possible Situations

- Q1. The Buzzer will not stop when the PD3500 is in operation.
- A : Please check whether the readings on the LCD display are normal or if there is a hard drive failure. Please also pay attention to any other symbols displayed in the LCD display. For example, if the "F" symbol is displayed, this means that there is a cooling fan failure. If the "T" symbol is displayed, this means that the system is overheated.
- Q2. How to turn on and off the Buzzer?
- A : 1. The manufacture default setting for the Buzzer in PD3500 is Buzzer On. This type of host adapters cannot reach the transfer performance speed beyond 135 MB/s.
2. The user can use any pointed materials to push the bottom on the front dash board to turn on and off the Buzzer.

