



10 Bay RAID External Hard Drive Enclosure for 2.5/3.5 SATA HDD/SSD

PRODUCT INSTRUCTION

Model: 810RU



【Quality Assurance】 Cenmate provides lifetime technical support. If you have any questions about the product, please don't hesitate to contact us, reply and solve your problem within 24 hours.

Technical Support Contact:
cenmate23@outlook.com

Hard drives making noise during operation, it is not caused by fans.

We have tested the decibel level of noise with and without the fan---nearly no difference in decibels.

The noise is generated by the hard drive.

Qusetion

Q1: Why can't I find the hard drive and display the disc letter after connecting new hard drive to the computer?

A1: After the new hard drive is connected to the computer, it must be formatted before the system can be recognised and used.

Method of operation: First, right-click 'Computer', then click 'Management', open into the 'Disk Management', find the new hard drive, right-click 'Initialisation 'Select 'MBR (hard drive capacity less than or equal to 2TB)' or 'GPT (greater than 2TB)', then 'New Simple Volume', the default next step to format the partition. Formatting is completed after the hard drive can be used normally, showing the new disc symbols.

Q2: The hard drive appears in RAW format in Disk Management due to improper extraction or power failure. What should I do?

A2: Recovery through the chkdsk command; operation method: administrator identity run cmd input CHKDSK:/f enter (here the i is the disc letter of the disk), scanning and repair is complete reboot can be displayed.

Q3: The hard drive is dynamically invalid in Disk Management since it was previously removed from an old computer?

A3: This is due to your system. Reinstall the hard drive into the original computer motherboard, and then backed up the data format; If your old computer has been scrapped or can't get into the system, you can download a dynamic disk conversion software to convert directly to a basic disk.

Q4: Hard drive just shows up but no disc letter?

A4: Inside Disc Management, right-click on the Disc Partition section and select Change Disc Path and Name to add a disc name for use.

Q5: It automatically disconnects during transmission

A5: It may be problems of usb interface on computer, usb cable, computer usb driver, hard drive, or hard drive cabinet. You need to contact our technicians to check the problems one by one.

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Be sure to save a good backup of your data before setting up RAID, which will format your hard drive after setting up RAID.

1. Features

1.1 Overview

- External RAID case with 10 bays for 2.5" and 3.5" SATA HDDs
- Support RAID Modes: RAID 00, RAID 0 x2, Spanning (Big), Spanning x2, RAID 5 x2, RAID 50, JBOD (Clean, individual drive mode)
- External interfaces: eSATA and USB3.0
- Aluminum case, excellent heat dissipation
- Hot swappable trays, flexible and safe
- LED indications for power, HDD activity and rebuild

1.2 SATA features

- Port Multiplier Functionality
- MAX 3Gbps
- Hot-Swap support in CLEAN mode
- Supports Native Command Queue (NCQ)
- Supports Port Multiplier Aware and non-Port Multiplier Aware Host in RAID mode
- Supports Spread Spectrum Clocking
- Supports BIST and Loopback Mode
- Supports 48-bit LBA addressing

1.3 USB features

- Compatible with USB Super Speed, High Speed and Full Speed
- Compatible with OHCI/UHCI/EHCI hosts
- Supports Mass Storage Class

2. Specifications

- Tool free installation

Tool less installation for 3.5 inch Hard Drive.

- Plug and Play

Supports standard 2.5/3.5 inch SATA HDDs and SSDs.

- High Speed data transfer

USB 3.0 or eSATA Connection

- Aluminum Case

High-quality aluminum material with better heat dissipation

- Quiet cooling fan

Low speed cooling fan excellent heat dissipation

- RAID Level

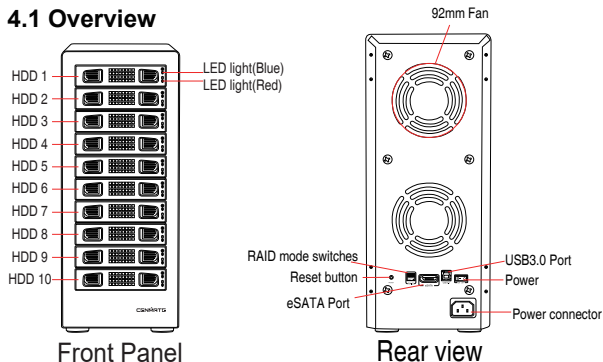
Support RAID 0 / RAID 0 x2/ RAID 50/ RAID 5 x2/ Spanning / Spanning x2 / JBOD

3. System Requirements

- Windows 2000/ Me/ XP /Vista/ 7/ 8/ 8.1/10 above, Mac OS 9.1/10. above
- The fan requires a USB or ESATA cable to be connected before it will work

4. Product Appearance

4.1 Overview



5. Package Contents

- 10 bay 810RU RAID Enclosure
- USB 3.0 Cable ; eSATA Cable
- Mounting screws and driver
- Power Cable
- User Manual

6. Getting Started

6.1 HDD installation

1. Unlock the HDD trays lock and remove the HDD trays from the 10-BAY RAID Enclosure (Fig.1).

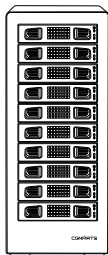


Fig.1

2. Place the HDD into the HDD trays (Fig. 2).

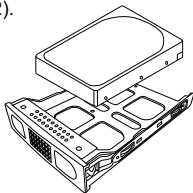


Fig.2

3. Use the mounting screws to securely attach the HDD to the trays (Fig. 3).

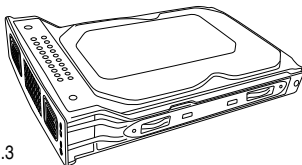


Fig.3

4. Slide the HDD trays back into the 10-BAY RAID Enclosure (Fig. 4).

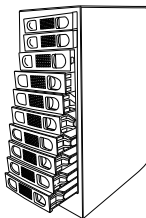


Fig.4

5. Slide the hard drive tray back into the slot to complete the HDD installation (Fig.5)

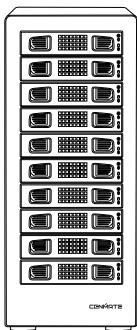


Fig.5

When the 10-bay enclosure being used, there is at least one hard drive must be inserted into HDD1-HDD5, same as HDD6-HDD10. 2 HDDs is minimum quantity to be inserted.

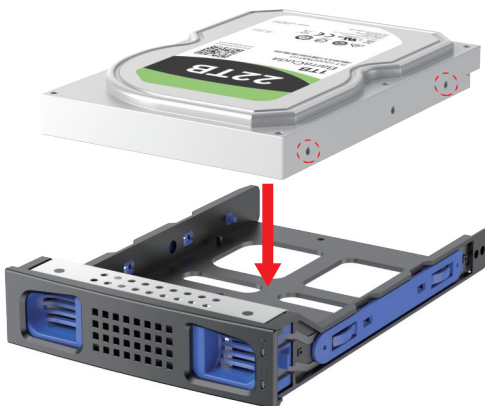
3.5' HDD Installation

①



Pull up the blue clasp on both sides of the bracket.

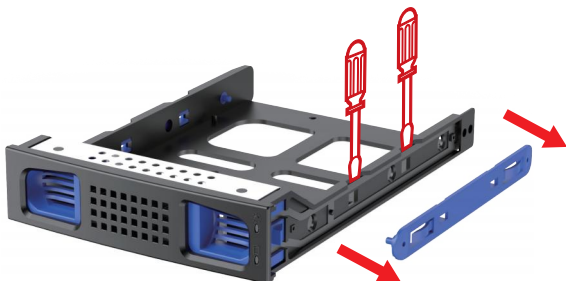
②



Put hard drive gently, snap the carabiner pins into the 3.5 HDD side screw holes.

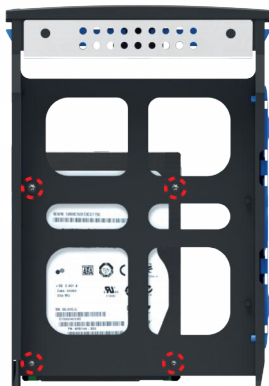
2.5' HDD/SSD Installation

①



Remove blue clasp on the side by screwdriver.

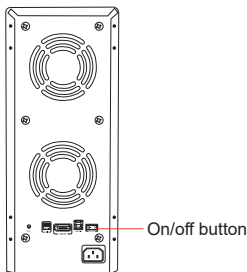
②



Use screws to secure the 2.5' HDD/SSD in the corresponding holes.

6.2 Power on/off

Press the power button to switch on the device.
Press again to power it off.



7. Configuration

7.1 Two Ways Host Connection

1. eSATA-Host

This installation guide assumes that you have already connected the 10-BAY RAID

2. USB-Host

When using USB port connect to your pc, the USB port should be USB2.0 or 3.0.

7.2 Changing Host Connection

The 10-BAY RAID Enclosure supports either USB or eSATA host connections, but only one port can be connected at the same time.

To switch from one host connection to the other, the computer and 10-BAY RAID Enclosure should both be powered off in order to avoid data loss. Power off the computer first, then power off the 10-BAY RAID Enclosure. When power on, power on the RAID Enclosure first, then the computer.

7.3 Disconnecting an USB device

USB 3.0 external devices provide support for Plug and Play connection so that the 10-BAY RAID Enclosure can be connected and disconnected while the computer is running.

To prevent data loss or other failures, we recommend the following procedures.

when disconnecting your USB 3.0 from your host computer system: Before shut down your PC, remove the 10-BAY RAID Enclosure from your system's hardware. Double-clicking the symbol in the task bar. A menu will open up. Select the 10-BAY RAID Enclosure to securely remove it. Power off the device.

7.4 HDD Hot Plug

The hard drives support hot-plug features, however, we hot-plug the hard drives only when there are failure or no data access.

Data may be lost when accessing the hard disc.

8. Setting the RAID Mode

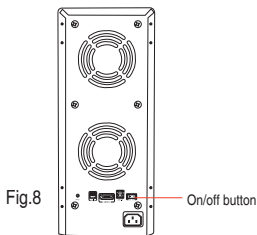
To setup the RAID mode for the first time, make sure that the hard disk drives are installed, setting the RAID mode switches on unit and hold the setup button. Power on the 10-BAY Enclosure while the setup button is held, and continues to hold for 5 to 10s.

Notes

Creating new virtual volumes will destroy any existing data saved on the hard drives! Back up your data before setup or change RAID mode!

8.1 PM10/NORMAL/JBOD/CLEAN MODE

1. Switch off the device (Fig. 8)

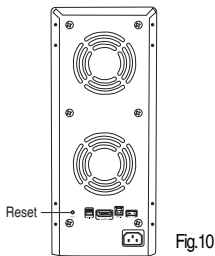


2. Toggle the RAID mode switch to clean mode according to the following diagram (Fig. 9):

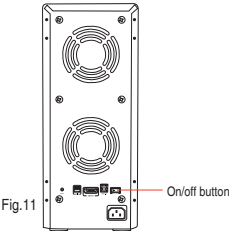


Fig 9

3. Press and hold the Reset button (Fig. 10).



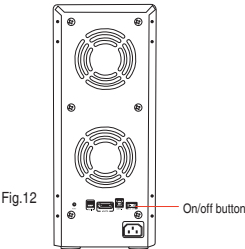
4. Switch on the 10 bay RAID Enclosure with the Reset button held, and then release the reset button after the unit is on for 5s to complete the configuration (Fig.11).



Warning :
For all other RAID mode, CLEAN Mode should be OFF

8.2 RAID modes

1. Switch off the device (Fig.12)



2. Toggle the RAID mode switches to the desired RAID mode according to the following diagram (Fig.13):

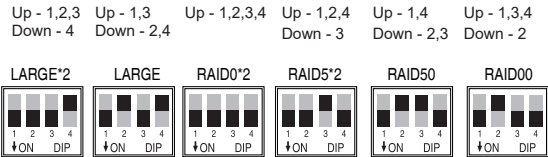
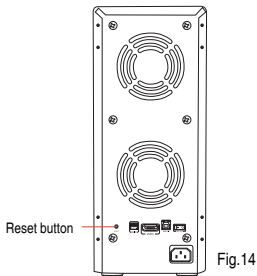
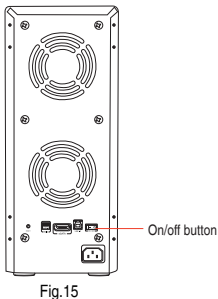


Fig.13

3. Press and hold the Reset button(Fig. 14).



4. Switch on the 10 bay RAID Enclosure with the Reset button held, and then release the reset button after the unit is on for 5s to complete the RAID mode configuration (Fig.15).



NOTE

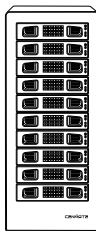
- Need at least two hdds. The two HDDs are insert into position 1 and 6.
- If change the RAID mode, must change to "Normal" mode first, then set to other RAID mode.

9. Rebuilding a Redundant Drive

The 10-BAY RAID Enclosure protect against data loss due to drive failure in R50 mode. The following example illustrates the procedure of rebuilding a failure drive.

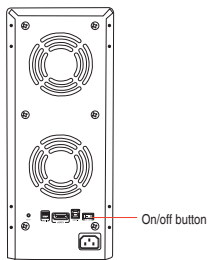
1. This example is based on drive 2 failure.If drive 2 fails, please remove it from the device (Fig.16).

Fig.16



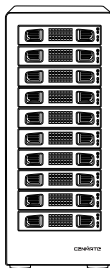
2. Switch off the device (Fig.17)

Fig.17



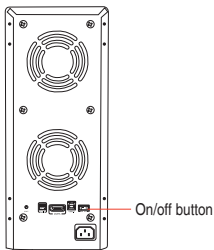
3. Replace the defective HDD with a hard disk drive of the same capacity or bigger (Fig.18)

Fig.18



4. Power on the device (Fig.19).

Fig.19



5. The 10-BAY RAID Enclosure will start rebuilding the RAID volume automatically (rebuild speed: approximately 200 GB/hour, depend on data usage).

10. Troubleshooting

1. Device is not recognized

Make sure all cables have been properly connected. For the USB 3.0 controller the latest drivers and the newest firmware must be installed. USB 3.0 controller may also need to power on based on the controller design.

2. Cannot copy or read in operating system

Make sure the device is properly partition and format in operating system.

3. Transfer speed is slow

Make sure the RAID enclosure is connected to USB 3.0 port. Additional power may needed on the add-on USB 3.0 controller card

RAID Mode Switching Method

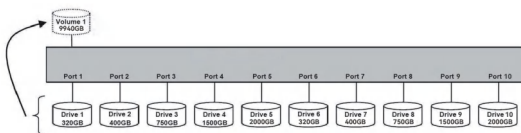
Disconnect the power, use screwdriver to toggle the paddle to the corresponding mode, press and hold the reset button, turn on the power, hold it for ten seconds, the raid mode will be successfully switched.

11. Appendix

11.1 LARGE mode (Spanning)

Function :

The LARGE mode concatenates a series of physical hard drives into a single large volume, creating a seamless expansion of virtual volumes beyond the physical limitations of singularly connected hard drives.



Notes

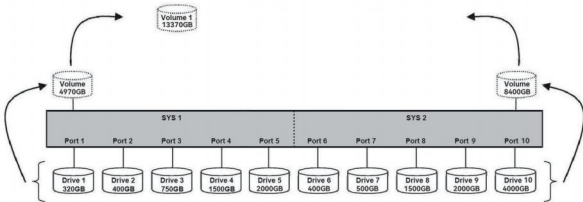
The hard drives 1 to 10 are concatenated into a single virtual volume in the Figure above, the storage capacity is sum of hard drives 1 to 10. It is also possible to create a LARGE volume using only a single hard disk drive connected to Port 1. However, it is not possible to expand an existing LARGE volume by adding another hard disk drive and still preserve any existing data on that volume.

11.2 RAID00 mode

Function :

In RAID00 mode the data is spread across all hard disks.

Example 1

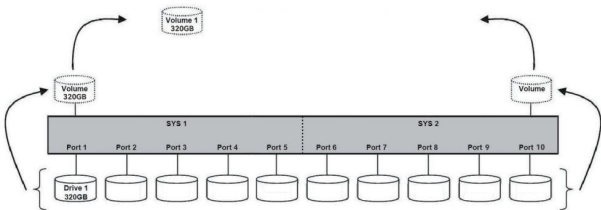


Advantage/disadvantage :

RAID00 mode provides the highest data speed but no data redundancy. RAID00 mode accelerates hard disk drive operating speed by using many disks simultaneously.

To implement the RAID00 mode, the 10-BAY RAID enclosure creates two single virtual volumes (SYS1 and SYS2) that are striped across all hard drives of SYS1 and SYS2, with a storage capacity that is four times of the smallest drive. SYS1 and SYS2 are then striped again across both virtual volumes. The storage capacity is twice the capacity of the smallest virtual

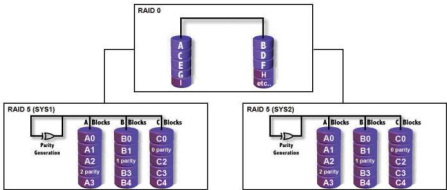
Example 2



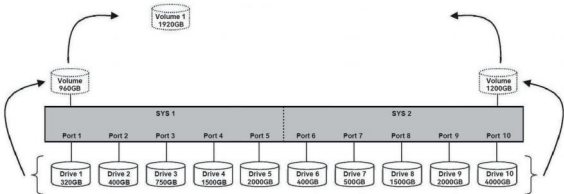
11.3 RAID50 mode

Function :

The R50 mode adds fault tolerance to drive striping by including parity information with the data. R50 mode dedicates the equivalent of one drive for storing parity stripes. The data and parity information is arranged on the drive array so that parity is written to all drives (SYS1 and 2). The following example illustrates how the parity is rotated from drive to drive.



Advantage/disadvantage :



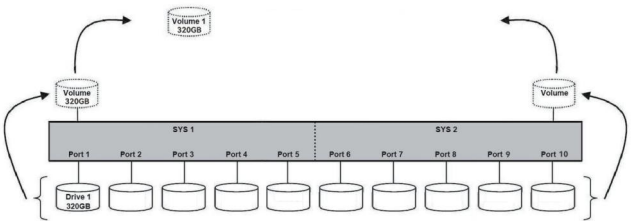
The R50 mode uses less capacity for protection compare to RAID 1 / mirroring and is the preferred method to reduce the cost per megabyte for larger installations. In exchange for low overhead necessary to implement protection, the R50 mode degrades performance for all write operations. The parity calculations for R50 mode may result in write performance. The resulting storage capacity of the virtual R50 volume will be “n minus 2” where (n=number of disks) of the smallest drive capacity.

If one drive fails, the virtual R50 volume is still usable, but it is in a vulnerable state because additional drives failure will have data lost. When the defective drive is replaced, the enclosure begins a rebuild process immediately to restore data redundancy. During this procedure the LED indications will notify you that a rebuild is in progress.

Notes

Although the volume remains available during the rebuild process, the volume is in degrade and possible data loss if more drives fail. Host access takes higher priority over the rebuild process to allow data backup and continues usage. If you continue to use the virtual R5 volume during the rebuild, the rebuild process will take a longer time to complete. The host data transfer performance will also be affected

The R50 mode can also be implemented using a single disk :



After the RAID, the hard drive is quite initially bought back, need to be initialized, after formatting, the partition can be used normally.

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When this crossed-out wheeled bin symbol is attached to a product, it means the product is covered by the European Directive 2002/96/EC.

Please be informed about the local separate collection system for electrical and electronic products.

Please act according to your local rules and do not dispose of your old products with your normal household waste. The correct disposal of your old product will help prevent potential negative consequences to the environment and human health.

Technical Support Contact: cenmate23@outlook.com

Disposal of your old product

Your product is designed and manufactured with high quality materials and components, which can be recycled and reused.



Note: When using this product, please first confirm that the hard drive loaded into this product is normal, otherwise it will lead to not out of the drive, such as loading more than one hard drive, it will only show one, can not confirm which one is bad, please load a hard drive, power on, out of the drive a, confirm that it is normal, turn off, and then load the second, in the power on, out of the drive two, to confirm that it is normal, and so on, one by one to load, until you find the The problematic hard drive. For example, if there is a problem with one of the 8 hard drives, only one drive will come out.

【10 Raid Modes】

This external raid enclosure supports CLONE, LARGE/ LARGE*2, NORMAL, RAID0*2, RAID5*2, RAID50, RAID00. NOTE:When replacing RAID, you need to go back to NORMAL/PM10 and set the desired RAID mode.Designing RAID may result in data loss. Raid Mode Switching Method Disconnect the power, use a screwdriver, toggle the paddle to the corresponding mode, press and hold the reset button, turn on the power, hold reset for ten seconds, the raid mode will be successfully switched.

MODE		PM10	LARGE*2	LARGE	RAID0*2	RAID5*2	RAID50	RAID00									
HDD1	465.76GB	465.76GB	2328.58GB	8848.88GB	2328.58GB	1862.87GB	1862.69GB	2328.38GB									
HDD2	465.76GB	465.76GB															
HDD3	465.76GB	465.76GB			1164.22GB	931.37GB											
HDD4	465.76GB	465.76GB															
HDD5	465.76GB	465.76GB	6520.33GB		1164.22GB				931.37GB								
HDD6	465.76GB	465.76GB															
HDD7	232.88GB	232.88GB															
HDD8	232.88GB	232.88GB															
HDD9	3726.01GB	3726.01GB	6520.33GB														
HDD10	1863.01GB	1863.01GB															

Connected Hard Drives

Hard drive displayed on the computer