

RAID

4-BAY RAID ENCLOSURE

For 3.5" SATA I / II HARD DRIVE



HFR2-SU3S2



www.mediasonic.ca

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Windows 2000 / Windows XP (32 / 64 bit) / Windows Vista(32 / 64 bit)

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Online forum

<http://forum.mediasonic.ca/>

03.17.11
Version:1.2

OVERVIEW

DIAGRAM of HFR2-SU3S2 FRONT PANEL

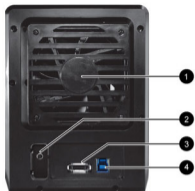


DESCRIPTION

LED INDICATION

- | | |
|------------------|--|
| 1. Blue | Power on |
| Orange | Sleep mode |
| 2. Rebuild | |
| 3. HDD error | When any of HDD1~HDD4 has error, HDD error is on. |
| 4. RAID 0 | Spanning Mode / BIG |
| 5. RAID 0 | Striping Mode |
| 6. RAID 1 | |
| 7. RAID 3 | |
| 8. RAID 5 | |
| 9. RAID 10 | |
| 10. Power button | It needs to be pressed for 3 seconds to power off. |
| | This design prevents accidental power off. |
| 11. eSATA | in use / access |
| 12. USB | in use / access |
-
- | | |
|-----------------------------------|---------|
| 13.-16. HDD1 / HDD2 / HDD3 / HDD4 | |
| Blue | active |
| Purple | access |
| Red | rebuild |
-
- | | |
|------------------------------|---|
| 17. Smart Fan automatic mode | |
| 18. Smart Fan manual mode | |
| 19. Fan speed | level 1 |
| 20. Fan speed | level 2 |
| 21. Fan speed | level 3 |
| 22. Mode | RAID mode button needs to be pressed for 3 seconds to switch the device's mode. This design will prevent accidental execution of this function. |
| 23. Fan button | Controls auto & manual modes and fan speed from level 1 to level 3. |
| 24. HDD1 error | |
| 25. HDD2 error | |
| 26. HDD3 error | |
| 27. HDD4 error | |

REAR



DESCRIPTION

1. Fan
2. RAID Confirmation button
3. eSATA port
4. USB port

SIDE



DESCRIPTION

1. DC Jack
2. DC Power



HDD HANDLE



FRONT COVER



METAL FRAME

SELF-ASSEMBLY

Quick installation guide

- A. Please use the provided handles to secure the 4 HDDs with screws.



- B. Press the circular depression to open the cover.



- C. Press down the rib to detach the metal frame and remove it.



- D. Take the transport paper board out of the device.



- E. Slide 4 HDDs into the chassis and make sure they are securely installed in order from up to down.



- F. Adjust the metal frame that was removed in Step C. Please make sure the bottom of the frame stays inside the track before closing the cover.



- G. Connect the power supply to the device, plug in either USB or eSATA cable in the rear panel and power on the device.

SETUP

RAID mode setup

First install the HDD from up to down in the enclosure. Power on the device, press RAID button for 3 seconds until LED flashes. Press it again, select the RAID mode you want to use and press the Confirmation Button on the rear panel till the device shuts down. Power the device on again and the RAID mode setup is completed.

Figure-1

● : Supported ○ : N/A

| No. of HDDs | 2xHDD | 3xHDD | 4xHDD |
|--------------------|-------|-------|-------|
| RAID MODE | | | |
| RAID 0 (Spanning) | ● | ● | ● |
| RAID 0 (Striping) | ● | ● | ● |
| RAID 1 (Mirroring) | ● | ○ | ○ |
| RAID 3 | ○ | ● | ● |
| RAID 5 | ○ | ● | ● |
| RAID 10 | ○ | ○ | ● |



RAID Mode Confirmation button

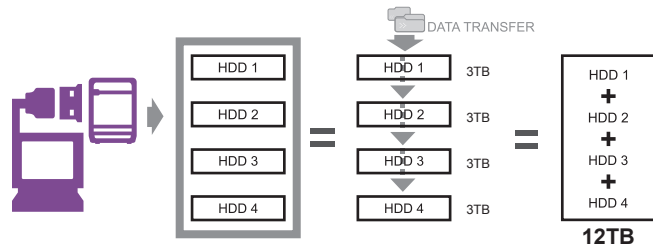
RAID 0

Spanning
(BIG) JBOD

+ 0 SPN

Spanning concatenates multiple hard drives as a single large volume; resulting in a seamless expansion of virtual volumes beyond the physical limitations of separately connected hard drives. The data is written from HDD1 to HDD4.

- Raid 0, JBOD Spanning Only, Non-Single JBOD

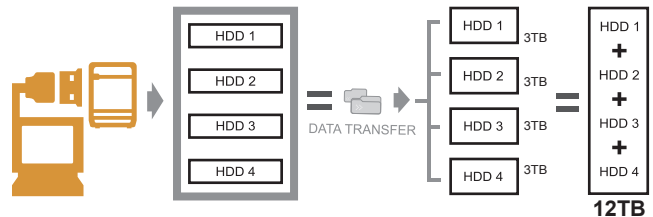


RAID 0

Striping

+ 0 STR

Striping is a method of concatenating multiple hard drives into one logical storage unit. It is the automated process of writing data across multiple drives simultaneously. Striping is used to increase the performance of disk reads. The multiple hard drives will write data in "column" effect. If one drive in a striped set fails, all of the data in the stripe set is lost.

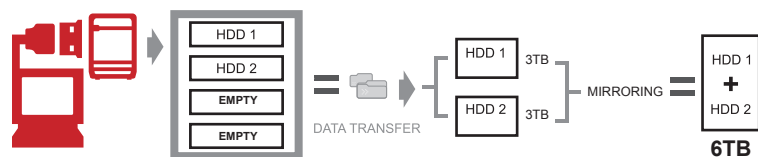


RAID 1

Mirroring

+ 1

Mirroring is the automated process of writing data to multiple drives simultaneously. Mirroring is used to provide redundancy. If one drive fails, the redundant drive(s) will continue to store the data and provide access to it. The failed drive can then be replaced and the drive set can be rebuilt.

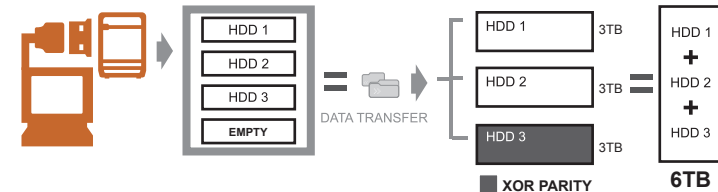


RAID 3

Striped set
with dedicated parity

+ 3

This mechanism provides an improved performance and fault tolerance similar to RAID 5 but with a dedicated parity disk rather than rotated parity stripes. The single parity disk is a bottle-neck for writing since every write requires updating the parity data. One minor benefit is the dedicated parity disk allows the parity drive to fail and operation will continue without parity or performance penalty.

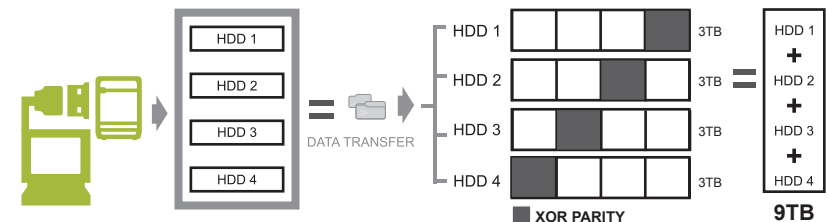


RAID 5

Striped set
with distributed parity

+ 5

Distributed parity requires all drives but one to be present to operate; drive failure requires replacement, but the array is not destroyed by a single drive failure. Upon drive failure, any subsequent reads can be calculated from the distributed parity such that the drive failure is masked from the end user. The array will have data loss in the event of a second drive failure and is vulnerable until the data that was on the failed drive is rebuilt onto a replacement drive.

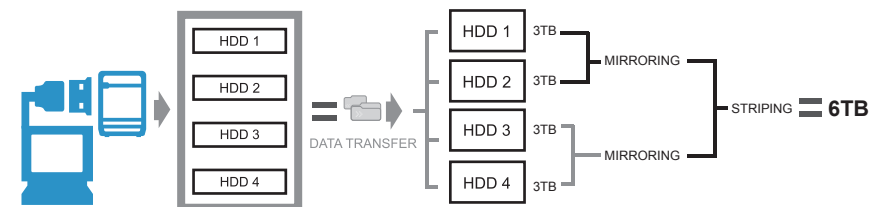


RAID 10

Mirroring + Striping

RAID 10 is mirrored(Raid 1) sets in a striped(Raid 0) set.

+ 10



LED Display Status

MODE

LED Display

RAID 0 Spanning (BIG)



Blue / Active

When any of HDD1 ~ HDD4 is recognized by the PC,
HDD1 ~ HDD4 blue / active is on.



Purple / Transferring Data



LED Display Status

MODE

LED Display

RAID 0 Striping



Blue / Active

When any of HDD1 ~ HDD4 is recognized by the PC,
HDD1 ~ HDD4 blue / active is on.



Purple / Transferring Data



LED Display Status

MODE

LED Display

RAID 1 Mirroring



Blue / Active

When any of HDD1 ~ HDD4 is recognized by the PC, HDD1 ~ HDD4 blue / active is on.



Purple / Transferring Data



Red / Rebuild



When the data is being rebuilt, LED of rebuild, HDD error and HDD (1-4, depends on which HDD is being rebuilt) error will be on.

LED Display Status

MODE

LED Display

RAID 3 Striped set with dedicated parity



Blue / Active

When any of HDD1 ~ HDD4 is recognized by the PC, HDD1 ~ HDD4 blue / active is on.



Purple / Transferring Data



Red / Rebuild



When the data is being rebuilt, LED of rebuild, HDD error and HDD (1-4, depends on which HDD is being rebuilt) error will be on.

LED Display Status

MODE

LED Display

RAID 5

Striped set
with distributed parity



Blue / Active

When any of HDD1 ~ HDD4 is recognized by the PC,
HDD1 ~ HDD4 blue / active is on.



Purple / Transferring Data



Red / Rebuild



When the data is being rebuilt, LED
of rebuild, HDD error and HDD
(1-4, depends on which HDD
is being rebuilt) error will be on.

LED Display Status

MODE

LED Display

RAID 10

Mirroring + Striping



Blue / Active

When any of HDD1 ~ HDD4 is recognized by the PC,
HDD1 ~ HDD4 blue / active is on.



Purple / Transferring Data



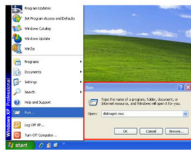
Red / Rebuild



When the data is being rebuilt, LED
of rebuild, HDD error and HDD
(1-4, depends on which HDD
is being rebuilt) error will be on.

INITIALIZATION

Windows XP (32 / 64 bit)

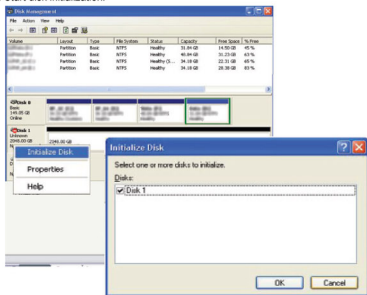


If the HDD is uninitialized, you may have to initialize it by doing steps as followed: At first click "Start", "Execute" at your PC and key in "diskmgmt.msc". After that please press "RETURN" key.

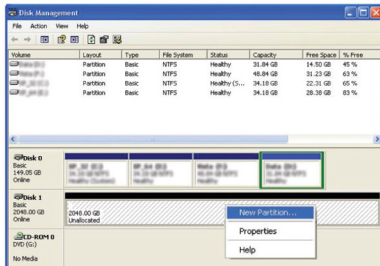
Windows XP (32 / 62 bit) only support MBR.

Under Windows XP, the HDD total volume shall not be more than 2,048GB, otherwise the device won't be recognized.

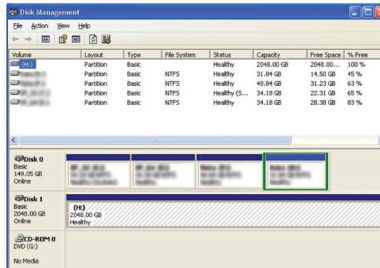
1. Start disk initialization.



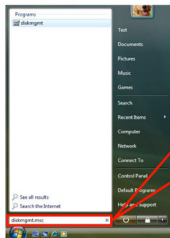
2. Create new partition and format disk.



3. Disk format completed.



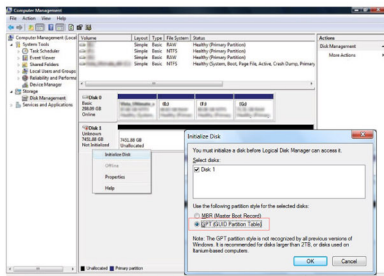
Windows Vista (32 / 64 bit)



If the HDD is uninitialized, you may have to initialize it by doing steps as followed: At first click "Start", "Execute" at your PC and key in "diskmgmt. msc". After that please press "RETURN" key.

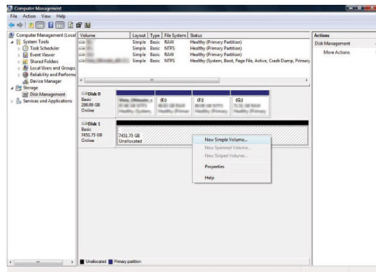
diskmgmt.msc

1. Start disk initialization.

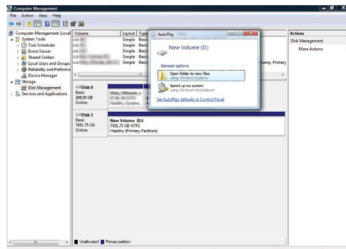


Note: Please enable GPT if the total capacity is more than 2TB and enable MBR if the total capacity is less than 2TB.

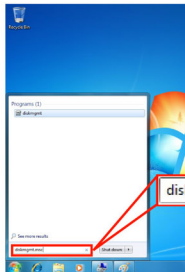
2. Create new partition and format disk.



3. Disk format completed.

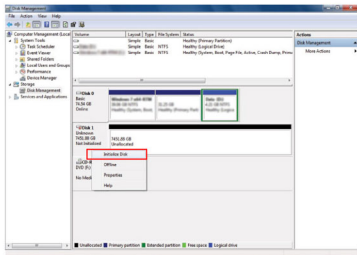


Windows 7 (32 / 64 bit)

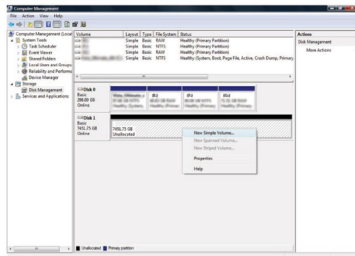


If the HDD is uninitialized, you may have to initialize it by doing steps as followed: At first click "Start", "Execute" at your PC and key in "diskmgmt. msc". After that please press "RETURN" key.

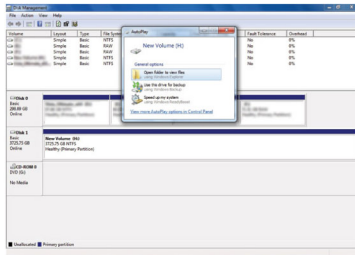
1. Start disk initialization.



2. Create new partition and format disk.



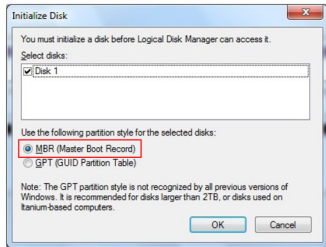
3. HDD format completed



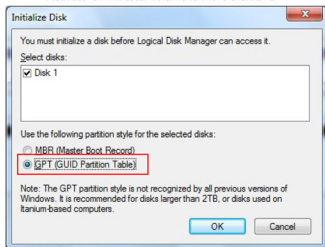
Start disk initialization.

Note: Please enable GPT if the total capacity is more than 2TB and enable MBR if the total capacity is less than 2TB.

Activate MBR if total volume is less than 2TB

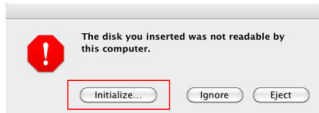


Activate GPT if total volume is more than 2TB



Macintosh O.S. 10.X

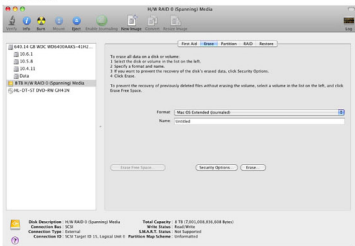
1. HDD Initialize...



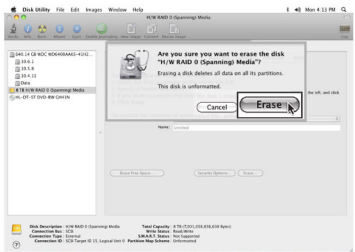
or 2. Click Disk Utility icon.



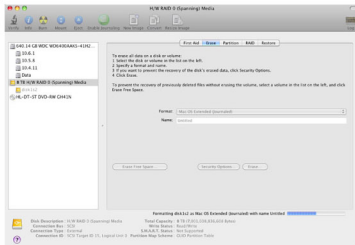
3. Click Erase



4. Click Erase



5. HDD format in process



6. Format completed



REFERENCES

1. Changing the RAID mode will cause data lost.
2. Please refer to the instructions when switching the RAID mode, otherwise the execution might fail.
3. Interface of USB / eSATA can not be used at the same time.
4. When using RAID function, HDDs with the same brand, model and capacity is strongly recommended.
5. When using RAID function, more than one HDD partition is not recommended.
6. Under Windows Vista / 7, users can enable GPT when initializing HDD with a total capacity of more than 2TB.
7. Older OS may not recognize the device if you use a different operation system than Windows Vista / 7. For more detailed information about GTP, please visit:
http://www.microsoft.com/whdc/device/storage/GPT_FAQ.mspx
8. If users enable MBR by mistake, in order to clean the partition table, you have to switch to another RAID mode and do the RAID mode switch all over again referring to Setup. Then go back to the RAID mode you want, repeat the previous actions and enable GPT when initializing HDD.
9. For Macintosh users: the total capacity of more than 2TB could be recognized only for the operation system is 10.4.11 Tiger or later.
10. Do not connect the device to the SATA on board port of the motherboard.
Either use SATA to eSATA PCI-Express or SATA to eSATA PCI add-on card, otherwise the PC (Windows / Macintosh) may not recognize the device.
11. In RAID 1, HDD1 and HDD2 must be installed, otherwise the PC (Windows / Macintosh) can not recognize the device.
12. Rebuild time is based on the capacity, e.g. it takes about 1 hour for 200GB.
13. When the USB / eSATA cable is plugged out, the device goes to sleeping mode automatically.

14. To take the HDD out from the device, slightly press down the handle of the tray and pull it out.
15. Setting up motherboard's power management in S3 is recommended.
(For more details, please refer to the user guide of motherboard BIOS setting).
16. If the device takes too long to initialize, please check if the HDD is securely installed or update the eSATA host driver version.
17. If the transfer rate is not normal, please check if the setting of SATA disk jumper is 1.5 or 3.0Gbps .
18. If there is noise with the fan, power off the device, unscrew the fan, take out the cover , clean the fan and assemble it back.
19. If the noise is still present, you can change the fan with another identical fan of size 80x80x20mm referring to Figure-2.

Figure-2

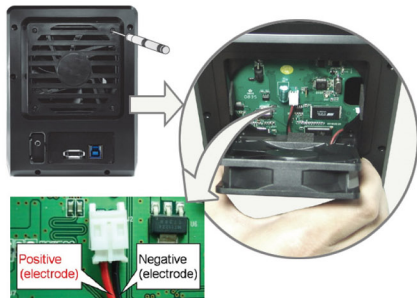


Figure-3



20. If you have forgotten to attach the metal frame before you closed the cover, simply press down the rib and the cover will slowly release and open outwards. Please do not attempt to pull the cover with something sharp. (Figure-3)
21. If the fan stops working, do not dismantle it. Please send back to the retail store immediately.
22. Temperature 0 ~ 60 °C
Humidity 90 % RH
23. Smart fan controlled by the built-in thermal sensor and it comes with 2 modes (auto / manual) and 3 levels of speed:
Level 1: higher than 55 °C 2,500rpm ~ 3,500rpm
Level 2: 45 °C ~ 54 °C 1,800rpm ~ 2,500rpm
Level 3 : below 45 °C 1,200rpm ~ 1,800rpm
24. Operation System:
Windows 2000 / XP (32/64bit)
(with MBR enabled, supports total capacity up to 2TB)
Vista (32/64bit) / Windows 7 (32/64bit)
(with MBR / GPT enabled, supports total capacity more than 2TB)
Macintosh 10.X or later
25. Support USB transfer speeds of Low speed (1.5Mbps), Full speed (12Mbps), High Speed (480Mbps), Super Speed (5Gbps), eSATA transfer speed (1.5~3.0Gbps)

26. The chart below tells you that the device still functions when one HDD has error.

| RAID MODE | |
|-----------|--|
| RAID 1 | When one HDD has error, the device still functions well but you may have to replace it with a new one immediately. |
| RAID 3 | |
| RAID 5 | |

RAID 10

1. When one HDD has error, the device still functions well but you may have to replace it with a new one immediately.
2. The chart below tells you that the device still functions when two HDDs have error.

● : HDD installed

| RAID MODE | | RAID10 If 2 hard disks are down at the same time, can I get the data back? | | | | | |
|------------------|--|---|--------|--------|--------|--------|--------|
| Error status | | Error1 | Error2 | Error3 | Error4 | Error5 | Error6 |
| HDD No. | | | | | | | |
| HDD 1 | | Error | Error | ● | ● | Error | ● |
| HDD 2 | | Error | ● | Error | Error | ● | ● |
| HDD 3 | | ● | ● | ● | Error | Error | Error |
| HDD 4 | | ● | Error | Error | ● | ● | Error |
| Status of device | | NG | OK | OK | OK | OK | NG |