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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

active
access
rebuild

17. Smart Fan autom	iatic mode
18. Smart Fan manu	al 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	

REAR



DESCRIPTION

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

SIDE







HDD HANDLE

FRONT COVER

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.

: Supported O: N/A	Fi	gure-1	
No. of HDDs RAID MODE	2xHDD	3xHDD	4xHDD
RAID 0 (Spanning)	•	•	•
RAID 0 (Striping)	•	•	•
RAID 1 (Mirroring)	•	0	0
RAID 3	0	•	•
RAID 5	0	•	•
RAID 10	0	0	•

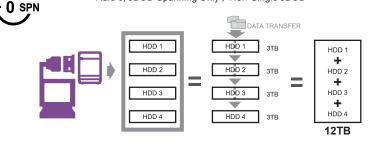


⁻ RAID Mode Confirmation button

RAID 0

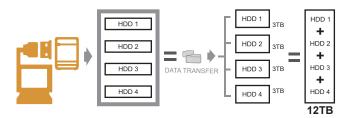
Spanning (BIG) JBOD Spanning concatenates multiple hard drives as a single large volume; resulting in a seamless expansion of virtual volumes beyond the physical limitations of separately connected hard drives. The data are written frim HDD1 to HDD4.

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



RAID 0

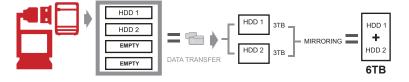
 Striping
 Striping is a method of concatenating multiple hard drives into one logical storage unit. It is the automated process of writing data across .multiple drives simultaneously. Striping is used to increase the performance of disk reads. The multiple hard drives will write data in "column" effect.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



RAID 1



Mirroring 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 rebuild.



RAID 3

Striped set

with dedicated parity 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

+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.

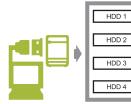
with distributed parity Upon drive failure, any subsequent reads can be calculated from the distributed parity

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.



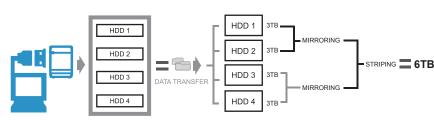


RAID 10

Mirroring + Striping

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





LED Display Status

MODE	LED Display

RAID 0 Spanning (BIG)

+ 0 SPN

Blue / Active



Purple / Transferring Data



LED Display Status

MODE LED Display

RAID 0 Striping When any of HDD1 ~ HDD4 is recognized by the PC, HDD1 ~ HDD4 blue / active is on.



Blue / Active



Purple / Transferring Data



LED Display Status

MODE	LED Display

RAID 1



Blue / Active



When any of HDD1 ~ HDD4 is recognized by the PC.

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

RAID 3

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



Blue / Active



LED Display

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

IVI	U	υ	

RAID 5 Striped set When any of HDD1 ~ HDD4 is recognized by the PC, HDD1 ~ HDD4 blue / active is on.

with distributed parity



Blue / Active



LED Display

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



HDD1 ~ HDD4 blue / active is on.

When any of HDD1 ~ HDD4 is recognized by the PC,

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.

	0	Type the name of a program, folder, docum Internet resource, and Windows will open it	ent, or for you.
	Open:	diskingnit.msc	~
2		OK Carcel	Browse

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.

Tisk Meneger		ottorn.					50	×
Ne Adam Vie								
ED (55						
Volume	Layout	1,98	File System	Sata	Capacity	Free Space		
State (C)	Partition	Baik	ATPS	reality	31.84 GB	14.50 (2)	65	
	Partition	Back Back	ATES	Healthy K	40.04-68	31.23-68 22.31-68	63%. 65%	
10,00	Partition	Back	ATPS	reality	34.18 68	28.38.68	43%	
					_			
Official B	-	_	_					-
Denk 1+1-01-02	2,0,02,	10		MA 81	100-0	See.		
Online	And in case	1.00		and to	(many)			
Charles 1	2145.01 (8		_	_	_			
	ize Disk							
		-	Select or	e or more i	disks to ini	tielize.		
Prope	ercies		Disks:					
Help		_						
nep			✓ Disk	1				
_	_	_						
							C.	OK Cance

2. Create new partition and format disk.

File Action V								
+ → 📧 [200 🕄 🖬 🕷	\$						
Volume	Layout	Туре	File System	Status	Capacity	Free Space	% Free	
Constantino)	Partition	Basic	NTPS	Healthy	31.84 G8	14.50 GB	45 %	
Contra (* 1)	Partition	Basic	NTPS	Healthy	48.84 G8	31.23 GB	63 %	
- (1) (C)	Partition	Basic	NTPS	Healthy (5		22.31 GB	65 %	
(() مر د	Partition	Basic	NTFS	Healthy	34.18 GB	28.38 GB	83 %	
@Disk 0			-					_
	MP_3P_013 In 31 (01971) Reality Content	111	1 80 a	fada (P3) 1. (+ (2107) fadiy	Bata (D 1.1-0 Vality	10 1075		
Poisk 0 Basic 149.05 GB Online Poisk 1 Basic	Teachy Sciences		ann y	esi di limi Nativ	reality			2
Bask 149.05 GB Online	2046.00 GB Unalicitated	E			ew Partition.			
Besk 149.05 GB Online Online Disk 1 Besk 2049.00 GB	2048.00 68				operties			

3. Disk format completed.

	lew Help							
	3 8 3 8							
Volume	Layout	Type	File System	Status	Capacity	Free Space		
🚍 (H:)	Partition	Bask		Healthy	2048.00 GB	2048.00	100 %	
Contraction in the	Partition	Basic	NTFS	Healthy	31.84 GB	14.50 GB	45 %	
Contraction of the	Partition	Basic	NTFS	Healthy	48.84 GB	31.23 GB	63 %	
	Partition	Basic	NTFS	Healthy (5	34.18 GB	22.31 GB	65 %	
10 (mil) 1	Partition	Basic	NTES	Healthy	34.18 GB	28.38 GB	83 %	
@Disk 0	-							
-	1.0.00	E.	25.	10 SL.,	100.00	la,		
Poisk 0 Basic 149.05 GB	()tt) 2018.00 GB Healthy	E	ya.	2.IL-	12.7			
Basic 149.05 GB Online Chine Chine Basic 2048.00 GB	2048.00 G8			2,8-	12.7			

Windows Vista (32 / 64 bit)

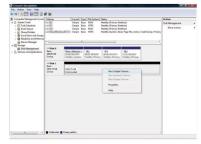


1. Start disk initialization.



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)



1. Start disk initialization.

C Test Scheduler E Grent Verver Senet Folden E Local Users and Groups Senet Folden Senet Folden	Talana Ca	Layoud Type Nie System Simple Resi: Simple Resi: NTF1	Salar Holity (himay Fatilion) Helity Gasia (him		Actions Disk Management	
		Sergie Beis NTF3 Sergie Beis NTF3	Healthy (Lagrat Drint) Healthy (Lydew, Bool, Page File, Active, Co	uh Dump, Prim	More Actions	,
	Elitita o Besic TR.SI GB Colina	Windows 7 ald BTW Role (2 1071) Teality (System, Boot,	nay fuel	`		
	Gillion 1 Unincoun 7452.38 GB Nationalized	1452,85 GB Unaffocated		_		
	LICE-R C	aka Duk Ine patisa p				

2. Create new partition and format disk.



3.HDD format completed

Tolary De Co De CO			New Volume (H)	Fash Tolesson No No No No No No	0xelead 05 05 05 05 05	
Cirthia 9 Easi 295.89 GB Cosine Cirthia 1 Baic Sy25.75 GB Cosine	New Yolawe (H) 1123/3 (H NTS Pleastly Printery Partice	Ĺ	ang terdentikou Special piny syden ang terdena hardete nan Jata Pin, sylian in	Ni 11 miles Falls, Frank, Na		
Lico-nom e DVD (G) No Media						

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 vo	olume is less	than 2TE
--------------------------	---------------	----------

Select disks:				
Disk 1				
Jse the follo	wing partition	style for the se	elected disks:	
MBR (M	aster Boot Re	cord)		
O GPT (GL	IID Partition 1	Table)		
Mindows. It i		tyle is not reco led for disks la		

Activate GPT if total volume is more than 2TB

nitialize Disk	
You must initialize a disk before Logical Disk Manag	er can access it.
Select disks:	
Disk 1	
Use the following partition style for the selected disk	6
MBR (Master Boot Record)	
GPT (GUID Partition Table)	
Note: The GPT partition style is not recognized by a Windows. It is recommended for disks larger than 2 Itanium-based computers.	
	OK Cancel

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

		for he from factors MD factors	
640.14 GEWDC WD6400AAX3-41H2 10.6.1 10.5.8 10.4.11 D0.4.11 D0.4.13	To ensue all data on a disk or solu 1. Select the disk or volume in the 2. Specify a format and same. 3. If you mant to present the record 4. Clock Store.		
B TE H/W RAID & Spanning) Media	To prevent the recovery of previo Grane free Spece.	oly deleted files without enoung the volume, select a volume in the list on th	e left, and cla
	Format		
	Name		
	Constituting		

6. Format completed



REFERENCES

- 1. Changing the RAID mode will cause data lost.
- 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.
- 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.
- Under Windows Vista / 7, users can enable GPT when initializing HDD with a total capacity of more than 2TB.
- 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
- 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.
- 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.
- 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.
- 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.
- When the USB / eSATA cable is plugged out, the device goes to sleeping mode automatically.

- To take the HDD out from the device, slightly press down the handle of the tray and pull it out.
- Setting up motherboard's power management in S3 is recommended. (For more details, please refer to the user guide of motherboard BIOS setting).
- 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 .
- 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.
- 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	
RAID 3	When one HDD has error, the device still functions well
RAID 5	but you may have to replace it with a new one immediately.

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 HDD No.	Error1	Error2	Error3	Error4	Error5	Error6	
HDD 1	Error	Error	•	•	Error	•	
HDD 2	Error	•	Error	Error	•	•	
HDD 3	•	•	•	Error	Error	Error	
HDD 4	•	Error	Error	•	•	Error	
Status of device	NG	ОК	ОК	ОК	ОК	NG	