

ANOLY®

MU 1200

SATA Hard Disk

Duplicator & Eraser

User Manual

V1.0



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1. Product Disclaimer

The manufacturer is not accountable for any incidental or consequential damages, which includes, but not constrained to property harm, loss of time or data from use of a The manufacturer product, or any other damages attributable to product malfunction or failure of (including without limitation, those attributable to: (1) reliance at the materials provided, (2) costs of product replacement, (3) loss of use, data or profits, (4) delays or business interruptions, (5) and any principle of legal responsibility, arising out of or in reference to the use or overall performance (or from delays in servicing or lack of ability to render service on any) our product). The manufacturer makes every effort to ensure proper operation of all products. However, the customer is responsible to affirm that out of our product meets the customer's quality requirement. The customer further acknowledges that fallacious operation of our product and/or software program, or hardware issues, can cause loss of data, defective formatting, or data loading. The manufacturer will make efforts to resolve or repair any issues recognized by customer either within the warranty period or on a time and materials basis.

Specifications and features subject to change without notice or obligation.

2. Warranty

The manufacturer provides a basic one-year parts and labor warranty for all of its products (excluding cables, adapters, and other consumable items). An optional extended warranty is also available for an added cost. Telephone and email support is available for the life of the product as defined by the manufacturer.

All warranties will be restricted and defined by the market region that customers purchased from.

3. Piracy Statement

The manufacturer accepts no responsibility for copyright infringement or misuse of our equipment. Copying all forms of data: audio, video, or software without the permission of the copyright holder is illegal. It is the sole responsibility of the user to ensure that the legal copyrights of the copyright owners are respected.

4. Notice & Reminder

Important Notice

- Read the complete operation instructions carefully, contributes to a better operation.
- Make sure the source device is correct and workable.
- To guarantee data consistency, we highly recommend the capacity of source and targets should be the same.
- It is strongly suggested to use "Copy+Compare" to achieve a perfect duplication.

5. Safety Precautions

- The warranty will expire if damage is incurred resulting from non-compliance with these operating instructions.
- Store the equipment safely when not in use and keep out of the reach of children/infants.
- Please turn off the power before replacing the socket.
- Never turn off the power while processing the firmware update.
- Use only approved power sources.
- The product is only suitable for operation in dry, dust free, clean environment. Do not allow liquids or foreign objects to enter. Failure to do so may severely damage your duplicator.

6. Preparation Tips before You Start

- Make sure to use stable power supply.
- Please use in a clean & dry environment.
- Please keep the environment well ventilated.
- When the duplicator operates, it is normal for the machine to heat up.
- Please do not move the duplicator during operation to ensure better operation.
- Please do not remove HDDs during operation to avoid damage.
- Please use power supply of its original manufacturer to ensure working safety.
- Static electricity may cause duplication error. Please pay attention to the duplicator environment and operators' equipment. It is recommended to purchase static electricity elimination equipment to avoid static electricity shock when in high static electricity environment.

7. Notice Symbols

Special items, procedures, or notes should be noticed by users before operation.

- **Note:**

Note	Refers to related operations on the duplicator, special details, tips to know, suggestions or more effective operation.
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- **Caution:**

Caution	Refers to operations that need to be followed or to be cautious to avoid mistakes.
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8. Product Overview

The MU Series is an ultra-high speed duplicator, and each SATA port is independent. That's why no matter how many targets running, it has the same performance of transmission speed, far beyond PC-based duplicators.

The MU series HDD duplicator is specially designed for professional use. The smart Quick Copy (System and Files) mode supports FAT16/32/64, NTFS(Windows), ext2/3/4(Linux), HFS/HFS+/HFSX (Mac) formats and can copy only data contained area, which therefore highly increases the production efficiency. Furthermore, the innovated design of interface can help you easily swap HDDs during operation, reduce the time and effort while repairing.

Complies with the U.S. Department of Defense's erasing standard (DoD5220.22 M) and Secure Erase (NIST800-88). It is important to make sure the data inside the disregarded HDD will not be retrieved and can be safely transferred.

9. Product Features

Operation Type

Standalone, FPGA based operation (Non-PC based system design).

Patented Daisy Chain Technology

Dedicated bandwidth enables high-volume duplications without speed degradation.

Auto Power Control System

Protect the HDD from getting damaged during hot removal from the duplicator.

Clear & Independent LED Light Indication

Show the job result on each port, no more confusion about working status.

Quick Copy Mode

Support FAT16/32/64, ext2/3/4, NTFS, HFS/HFS+/HFSX, GPT, and Dynamic HDD format. It will only copy the data and system area, which can highly enhance the copying efficiency.

4 Kinds of Copy Areas

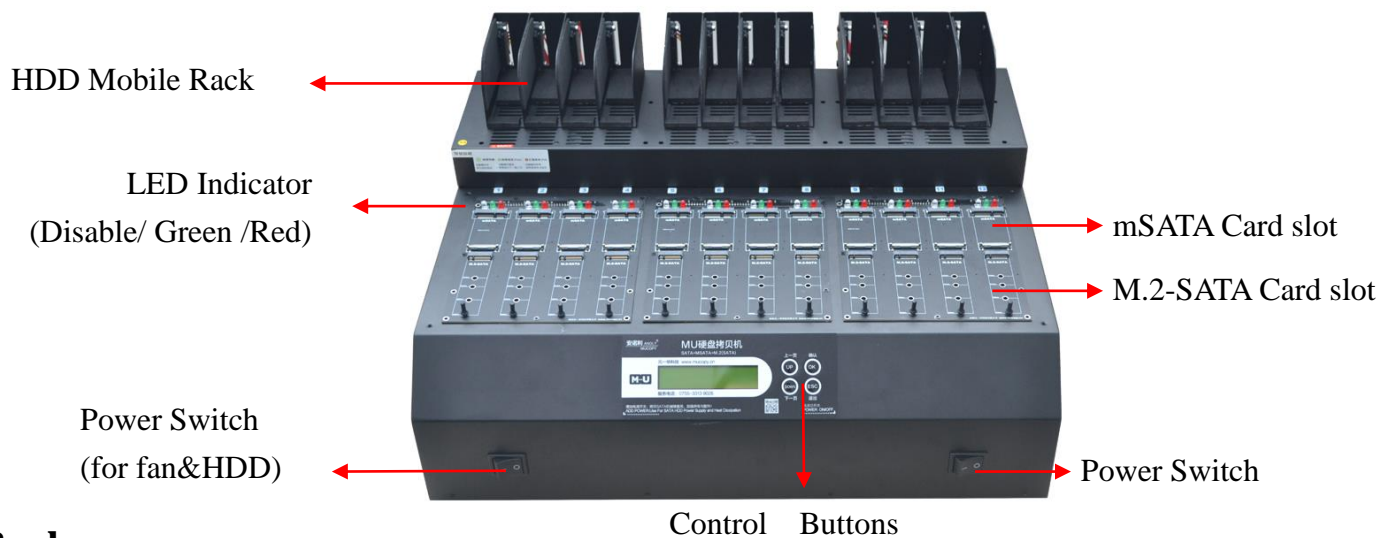
Four copy modes to meet different requirements: Systems and Files, All Partition, Whole HDD, and Percentage Copy.

4 Kinds of Erase Methods

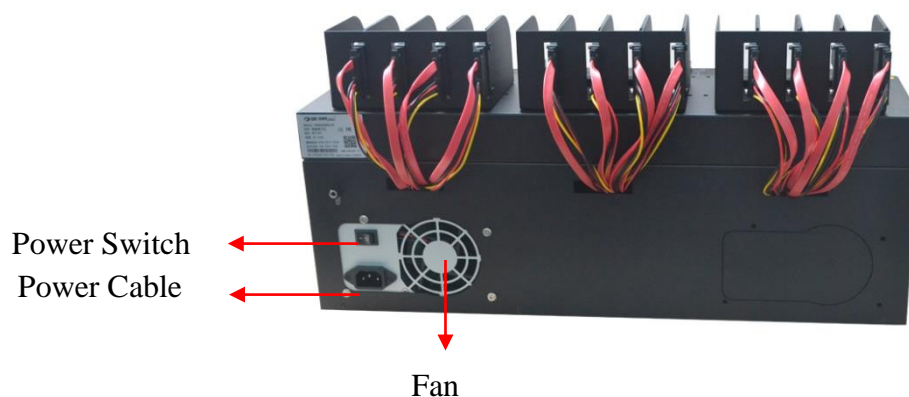
Quick Erase, Full Erase, DoD Erase and Secure Erase.

10.Hardware Overview

Front



Back



LCD Configuration



11.Function Table

Function	Description	
1. Copy	Copy data from source devices to targets. (There are four copy modes for selection at function 6.1)	
2. Compare	Compares the source and targets to ensure copy accuracy.	
3. Copy + Compare	Automatically launches compare function after copy is completed.	
4. Erase It is capable to enable/disable erase of source HDD at function 6.6.2	4.1 Quick Erase Erases device(s)' index table.	
	4.2 Full Erase Erases entire device(s), complying with NIST 800-88 Standards.	
	4.3 DoD Erase Erases device(s), complying with DoD 5220.22-M Standards.	
	4.4 DoD EraseComp Erases device(s), complying with DoD 5220.22-M Standards and verifies complete erasure.	
	4.5 Secure Erase Erases the non-loadable areas complying with NIST 800-88 Standards.	
5. Utility	5.1 Show Disk Info Displays basic information including device model and capacity.	
	5.2UpdateSystem	5.2.1 Update BIOS Updates system firmware by any device at the source port.
		5.2.2 Create Update HDD Prepares by formatting the device to a 2GB FAT partition to accept firmware file.
	5.3 System Info. Displays system information such as controller, model number, software version, etc.	
6. Setup	6.1 Copy Area Setup copy mode.	System and Files Copies data and skips empty space. Only supports standard formats.
		All Partitions Copies all partitions and data besides unallocated partition.
		Whole HDD Copies all source data, bit-by-bit.
		Percentage (%) Sets percentage of source capacity to copy.

6. Setup	6.2 Skip Error Skips bad sectors during Copy/Compare.	
	6.3 Minimum Speed Allows user to disable or set minimum threshold speed.	
	6.4 Check Source Minimum Speed Allows user to enable or disable the source speed check.	
	6.5 Language Sets preferred language: English or Chinese.	
	6.6 Advanced Setup	6.6.1 Unknown Format Allows user to copy or skip unknown format(s).
		6.6.2 Erase Master Allows user to erase the source port or not.
		6.6.3 Erase Pattern Sets whether to overwrite data in one-byte or Big random data.
		6.6.4 Wait HDD Time The time tolerance for HDD initialize. Able to set from 3 to 30 seconds
		6.6.5 Lock Key After keys are locked, only “OK/ESC” buttons will function. (System reboot is required).
		6.6.6 Transfer Rate Allows user to select from UDMA2 to 7.
		6.6.7 Stop Motor Time Sets device power down buffer time when tasks are finished.
	6.7 Restore Default Reinstates manufacturer settings.	

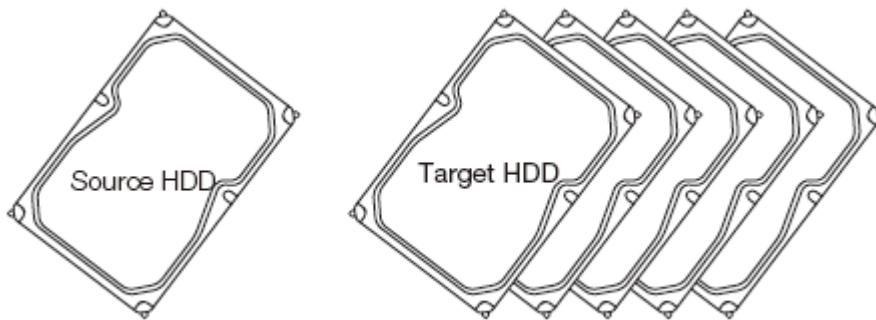
*Above functions and features subject to change without notice.

12.Start to Copy

Step 1: Prepare Source & Targets

Prepare a source HDD\SDD and target HDDs\SDDs.

(It's strongly recommended the source and target are the same capacity.)



Step 2: Place Source & Targets

Place source HDD at source port, target HDDs to other ports.

Step 3: Enter Function "1.Copy"

Use UP DOWN to select "1.Copy", and then press <OK>. Duplication will start to proceed.

Note

1. If the user set "6.6.4 Wait HDD Time" at 3-30 seconds, the machine will start duplicating automatically after HDDs initialize.
2. If the user set "6.6.4 Wait HDD Time" at "wait key to start," need to press <OK> to start duplication.

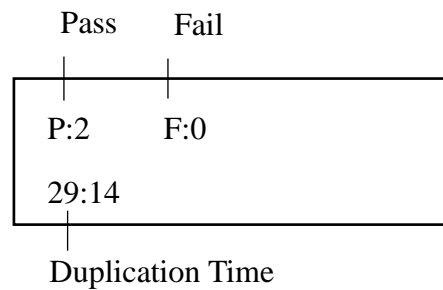
The information below shows on LCD during duplication.

Copy	298G
2 ready	

Function	Total Data
Copy x2	76.6G
7:44 33%	25.4G
Copied Time & %	Copied Data

Step 4: Completion!

Quantity of copy Pass/Fail, duplication time, and checksum value will show on LCD after duplication completes. During process of duplication, every port captures in real-time message shown on LCD.

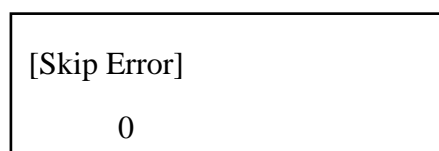


Note The result will show light in red(fail) or green(pass).

Caution User is responsible for verification of targets' quality. Testing a few completed targets in a mass production environment for quality control is recommended.

How to skip bad sectors?

Enter function "6.Setup→6.2 Skip Error", you can set the number of bad sectors that you accept to skip during Copy / Compare process. If the HDD is very critical for content correctness, it is strongly recommended to keep the skip error to be "0".



13.Setup before Copy/Compare

I. Set Copy Area of Source HDD

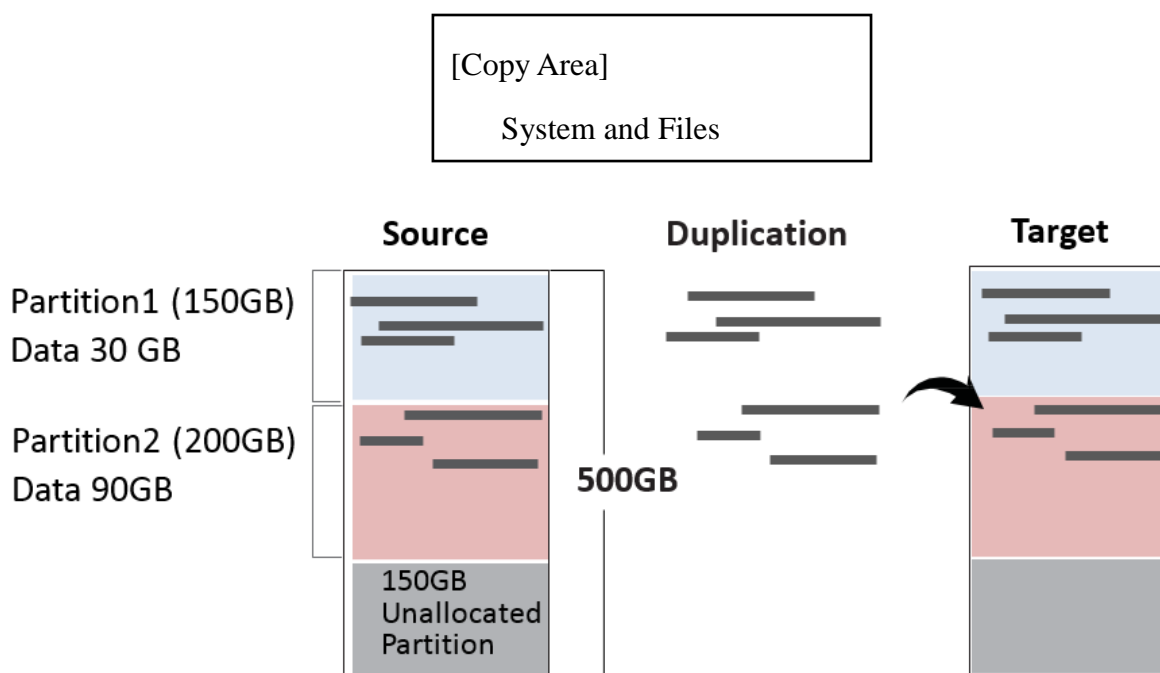
Appropriate copy area can greatly reduce operation time and have better efficiency. There are four copy modes with different copy areas, please go to function "Copy Area".

❶ System and Files: (Quick Copy data area only)

Copies data and skips empty space. Only supports standardized formats.

Scroll to select "System and Files", then press "OK" to save the copy method.

Allows user to copy source device's System and Files, instead of the entire device. The system will analyze the source device and identify the data area to copy. If the source device's data is within the target device's capacity, the copy will be processed. FAT16/32/64, NTFS, EXT2/EXT3/EXT4, and HFS/HFS+/HFSX are supported in this copy mode.



Only 120G data area will be copied.

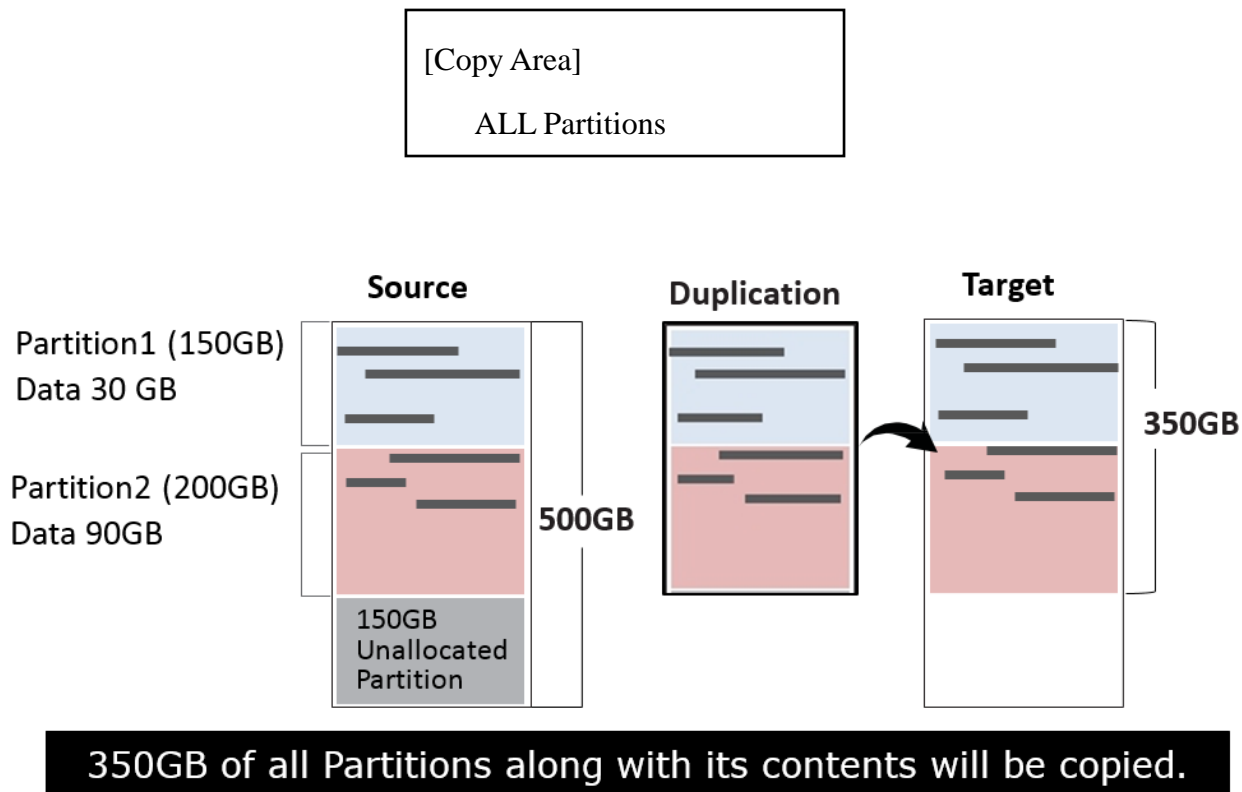
Note Sets whether users prefer to copy unknown format or not at "6.6 Advanced Setup >> 6.6.1 Unknown Format." Unknown format includes all forms of modified and proprietary data and partitions.
"6.6.1 Unknown Format" only works with "6.1 Copy Area >> System and Files."

② ALL Partitions

Copies all partitions and data. The unallocated partition is not included.

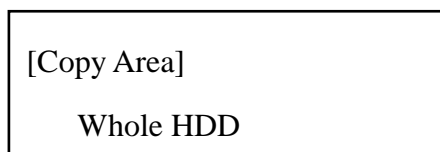
Scroll to select "All Partitions", then press "OK" to save the copy method.

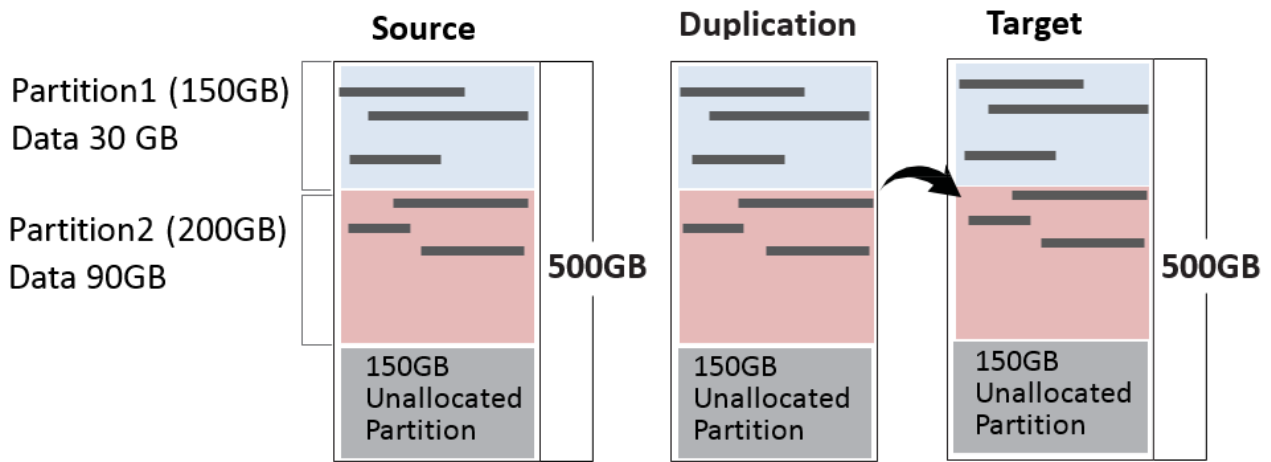
The target device's capacity must be equal to or larger than the source device's capacity.



③ Whole HDD

Copies the whole source HDD, no matter of the content, format, partition or empty space. This mode does not analyze the data.

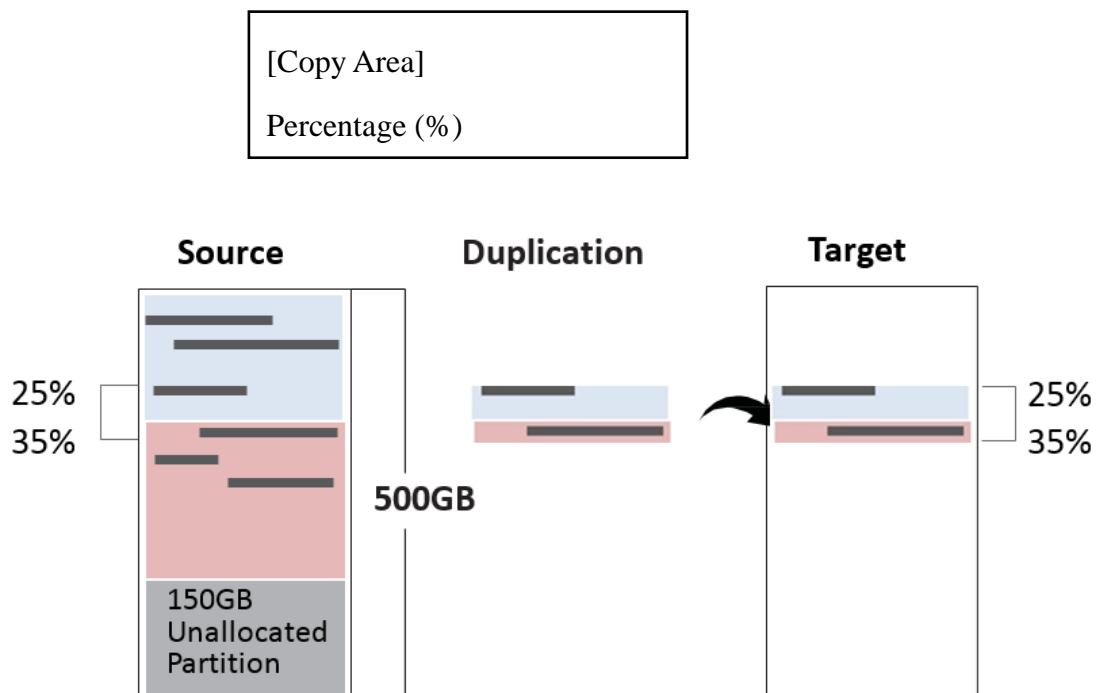




All 500GB of data will be copied.

④ Percentage (%)

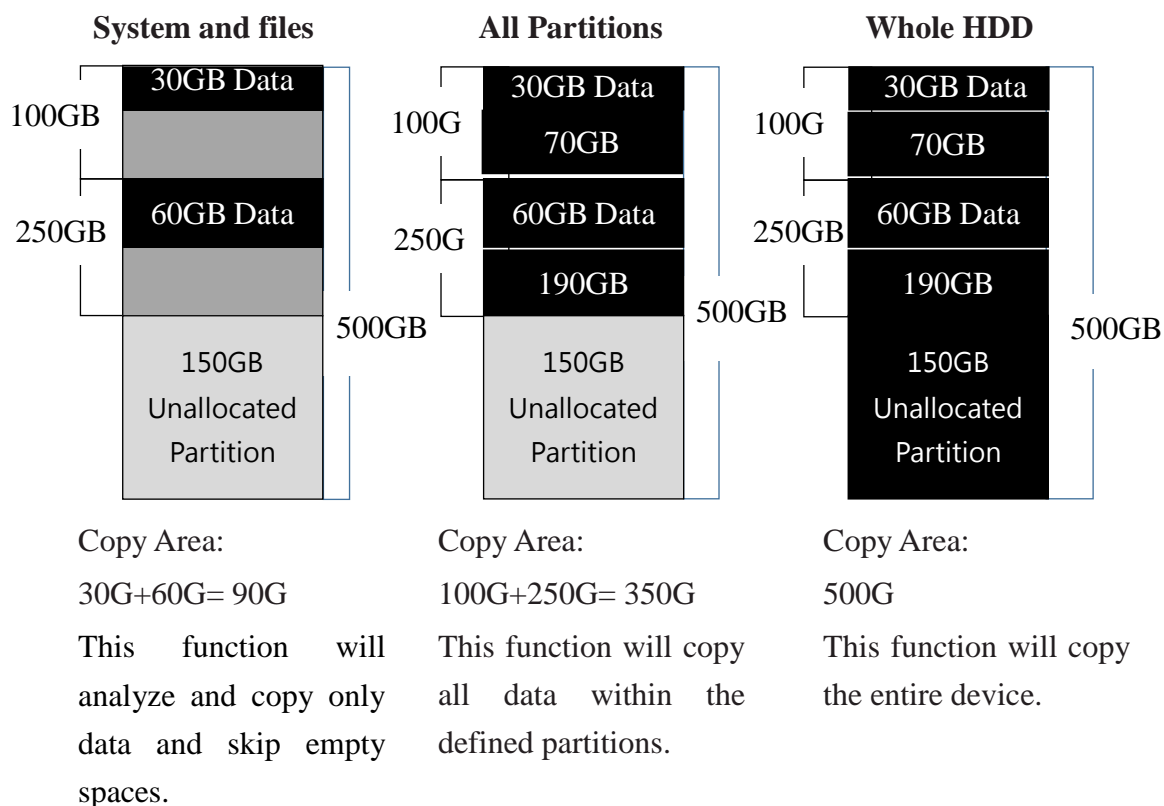
Copy the selected percentage range of source HDD.



Only copies the selected area.

How to select the proper copy area?

Example: There are two partitions in one 500G HDD. The charts below illustrate what portion would be duplicated.



II. Set Tolerance of Bad Track

Select function "6.2 Skip Error" to set the number of error that you accept to skip during tasks process. If the HDD is very critical for content correctness, it is strongly recommended to keep the Skip Error to be "0". Set bad sectors from 0 to 65535 or unlimited.

[Skip Error]

0

Note

The settings of "Skip Error" will count both Source and Target HDDs. If any HDD reach the error tolerance, it will become Fail.

Caution

It is recommended to execute Compare after Copy to confirm the accuracy.
It is recommended to copy data by function "3.Copy+Compare".

III. Auto Skip Lower-Speed HDDs

Enter function "6.3 Minimum Speed" to setup minimum required speed of target HDDs. The system will isolate any HDD which cannot reach the minimum required speed. Users can choose "Don't care" or set the speed value among 10/20/40/60~300MB/second. This setting enables to speed up copying and select HDD speed higher than the setting.

[Minimum Speed] 100MB/Second

IV. Auto Skip Lower-Speed Source

Enter function "6.4 Check Source Minimum Speed". This setting enables to setup whether to check "source minimum speed" when run speed-checking task. Select "Yes" to include source HDD or select "No" to skip source checking. This function enables to speed up copying speed and setup minimum speed for source HDD.

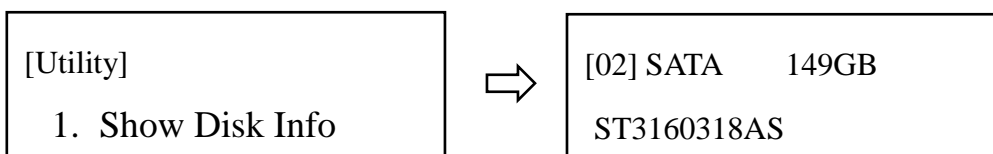
[Check Source Minimum Speed] No

14. Troubleshooting When Duplication Fails

- Check if too many bad tracks on HDDs can cause duplication failures.
Check the setting of function "6.2 Skip Error".

- Make sure all HDDs are properly and firmly connected.

Go to "5.1 Show Disk Info" and press UP DOWN to check HDD info.

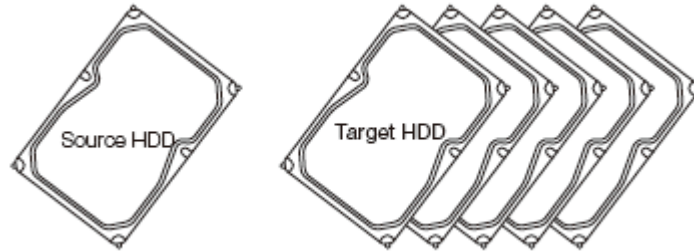


- Make sure the capacity of source HDD is smaller than target.

15. Confirm Accuracy by Comparison

Step 1: Prepare Source and Targets

Prepare the source HDD and target HDDs to compare after duplication is completed.



Step 2: Place Source and Targets

Place the source HDD to source port, target HDDs to rest of the ports.

Step 3: Enter "2.Compare"

Note It is recommended to execute Compare and Copy to confirm the accuracy.

Use UP DOWN to select "2.Compare" then press <OK>. Data compare will proceed.

Caution User is responsible for verification of targets' quality. Testing a few completed targets in a mass production environment for quality control is recommended.

16. Data Sanitization

Caution

1. It will erase the data in HDD, please make sure you backup all important data before using this function.
2. To cancel operation of any erasing mode, press <ESC> key and hold continuously for 3 seconds to exit any erasing tasks.

Step 1: Prepare HDDs

Prepare HDDs for disposal.

Step 2: Place HDDs

Insert HDDs for disposal into target ports.

Note Source Port is disabled for erasing. Go to "6.6.2 Erase Master" to enable source port erasing.

Step 3: Enter function "4. Erase"

Use UP DOWN to select the mode of erasing method, and then press <OK>. Data Erase will proceed.

Note	During erasing, press UP DOWN to view the status of each port. Press <OK> to see the write speed of each port.
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Caution	User is responsible for verification of targets' quality. Testing a few completed targets in a mass production environment for quality control is recommended.
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17.Setting of Erase Function

There are several erase methods:

Quick Erase, Full Erase, DoD Erase, DoD Erase & Compare, and Secure Erase.

I. Quick Erase

The function will ONLY erase the index of the HDD. It is the quickest way to erase HDD.

[Erase] 1. Quick Erase

II. Full Erase (Entire HDD Area)

The function will erase the whole sectors on the target HDD. It will take longer time than quick erase. Complies with NIST800-88 Standards.

[Erase] 2. Full Erase

III. DoD Erase (DoD5220.22 M)

This is to comply with the U.S.A. Department of Defense (DoD5220) standard to fully erase the HDD three times bit-by-bit to overwrite HDD data and guarantees data not recoverable. This DoD erase method will erase HDD over each sector three times: the first time with zeros (0x00), second time with FF(0xFF) and the third time with random characters.

[Erase] 3. DoD Erase

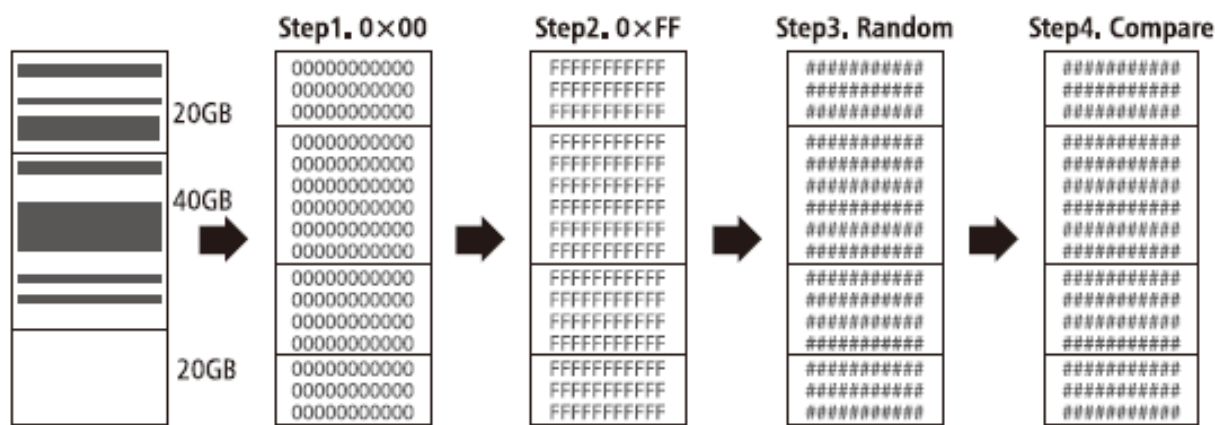
IV. DoD Erase & Compare (DoD5220.22 M)

Besides DoD erase 3 times, this function will also execute comparison to make sure the random bit is correctly written.

[Erase]

4. DoD EraseComp

DoD EraseComp Method:



Note

1. The erasing duration of DoD Erase mode is 3 times longer than full erase mode.

2. The duration of DoD EraseComp is 4 times longer than full erase mode.

V. Secure Erase

This function sends an ATA Secure Erase command. It overwrites every single track on the hard drive. Even HPA/DCO or other data area which are not able to load, can be erased all together. Complies with NIST800-88 Standards.

[Erase]

5. Secure Erase

Secure Erase

Complete31:53

How to select erase pattern?

The erasing settings enable to select overwrite data pattern at “6.6.3 Erase Pattern”. It will affect the following erase mode: (1) Quick erase (2) Full erase (3) 3rd loop overwrite method of DoD erase.

Settings	LCD Display	Example
❶ One byte – Overwrite by one fixed data	<div>[Erase Pattern] ONE Byte</div>	<div>3737373737 3737373737 3737373737 3737373737 3737373737 3737373737 3737373737 3737373737</div>
❷ Big random data – Overwrite by random data	<div>[Erase Pattern] Big Random Data</div>	<div>26AE891DFA 74519D55C1 E6621457EA 48AAB68901 DD51473DB AA9A828BE1 55713C4850 9CBFFA1457</div>

18.Other Settings

I. How to lock duplicator’s operation buton?

Enter function "6.6.5 Lock Key," select “Do Lock Key,” and then reboot the system to activate the setting.

**Only UP DOWN buttons are disabled.

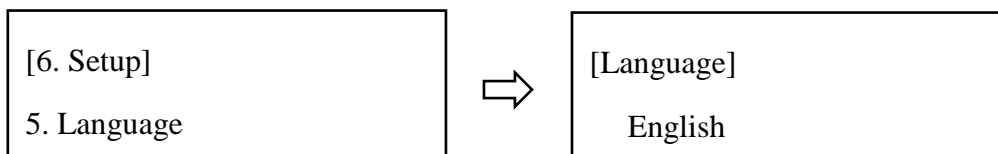
[Lock Key]
Do Lock Key

**To unlock keys, press “UP DOWN OK ESC” simultaneously for 5 seconds. The screen will show "UNLOCK KEY" and return to the main menu.

UNLOCK KEY !!

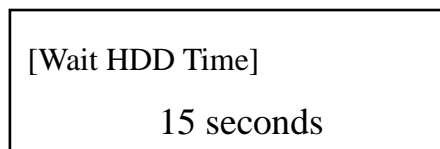
II. How to change interface language?

Enter function "6.5 Language" to change. Select preferred language, English or Chinese.



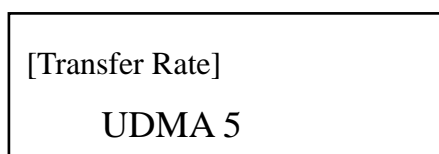
III. How to setup motor starting time on the machine?

Enter function "6.4.4 Wait HDD Time" to set device power up buffer time prior to copy. The time range is from 3 to 30 seconds. The default is 15 seconds.



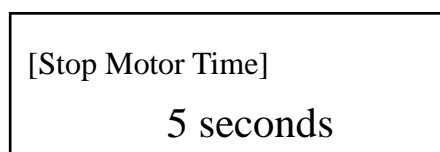
IV. How to setup HDD transfer rate on the machine?

Enter function "6.6.8 Transfer Rate." Select proper transfer rate from UDMA 2~7. The default is UDMA 5.



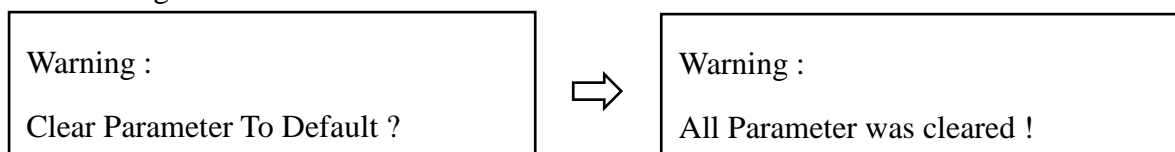
V. How to setup motor stopping time on the machine?

Enter function "6.6.7 Stop Motor Time" to set device power down buffer time when tasks are finished. The time range is from 1 to 20 seconds. The default is 5 seconds.



VI. How to restore all settings back to factory default?

Enter function "6.7 Restore Default" and press <OK>. The system will clear all parameter back to the original factory default settings.



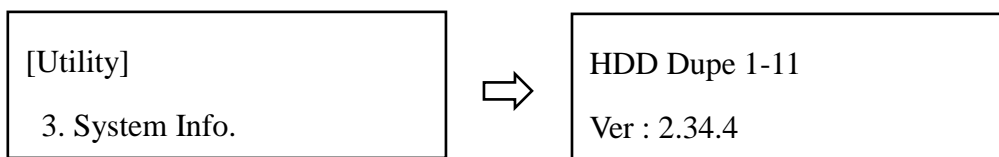
19.Check Info.

I. How to check device information?

Enter function "5.1 Show Disk Info" and press <OK>, the basic information including device model and capacity shown on the screen.

II. How to check the system firmware version?

Enter function "5.3 System Info" and press <OK>, the firmware version shown on the screen. Press DOWN can see more details.

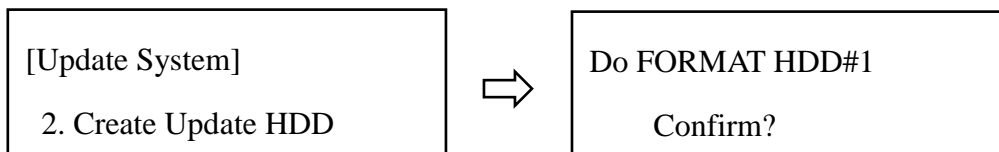


20.BIOS Update

● Through Source Port

Step 1: Prepare a device for update.

Connect a device to the source port. Scroll to select "5.2.2 Create BIOS Format", then press "OK" to start the format process. This will format the device to a 2GB FAT32 Partition.

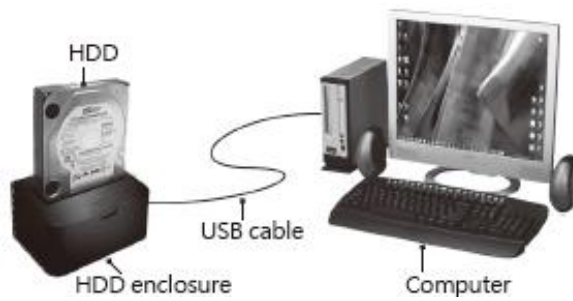


Caution The data saved in this HDD will be erased.

Step 2: Download Firmware.

Connect this device to PC. Download the latest firmware provided by Anoly technical support, unzip the BIOS firmware, then save it to the root directory in the device.

Caution Ensure that the device does not have any bad sectors.



Step 3: Proceed to update firmware.

Connect this device to the source port. Scroll to select "5.2.1 Update BIOS", then press "OK" to start the firmware update process.

[Update System]

1. Update BIOS

Caution	The firmware update process may take longer than 5 minutes. Please do not disrupt power or process during BIOS update. If interrupted, the system will become useless. The manufacturer will not be held responsible for any damages.
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21.Specification Table

Series	MU1200 SATA+MSATA+M.2(SATA) HDD\SSD Duplicator	
Compatible HDD Interface	Interface without adapter: 2.5"/3.5"SATA HDD,SSD, SATA HDD, NGFF(M.2)	
OS	OS supported: All (Windows, Linux, RAID, other stand-alone systems)	
Operation Type	Stand-alone operation	
Display	Backlight monochrome LCD display	
Status LED	LED(Red/ Green) on each slot Green (Pass), and Red (Fail)	
Keys	4 push keys (UP/ Up, DOWN/ Down, OK/ Confirm, ESC/ Exit)	
Copy Function	Quick Copy (System & Files area): Support FAT16/32/64, NTFS, Linux (EXT2/ EXT3/ EXT4), Mac (HFS/HFS+/HFSX), GPT, Dynamic	
	ALL Partitions/ Whole HDD/ Percentage Copy: support all formats/ System and File	
Compare	High speed bit-by-bit data comparison	
Erase	Quick Erase, Full Erase, DoD Erase, DoD Erase & Compare, and Secure Erase.	
Temperature	Working temperature	5°C~45°C (41°F~113°F)
	Storage temperature	-20°C~85°C (-4°F~185°F)
Humidity	Working humidity: 20%~80%; Storage humidity: 5%~95%	
Certification	FCC, CE, RoHS	

*Specifications subject to change without notice