



Mini SAS Series

SAS-MS118

1-1 Duplicator and Sanitizer

User Manual

V A.02

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Product Disclaimer

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Specifications and features subject to change without notice or obligation.

Warranty

U-Reach 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 U-Reach.

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

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Before You Start

Important Notice

- Carefully read the entire manual before operating.
- Make sure the source device is correct and functioning.
- Equal capacity of source and target is recommended for guaranteed data consistency.
- Using the Copy+Compare function provides the most flawless duplication.
- Damage incurred due to non-compliance with our operating instructions will void the warranty.
- Store the equipment safely when not in use and keep out of the reach of children.
- Please turn off duplicator before replacing sockets.
- Never turn off the power while the firmware updates.
- Use only approved, stable power sources.
- The power supply has overload protection. When it is overloaded and shutdown, please unplug the power cord for 2 minutes for discharging.
- Use product only in a clean, dry, dust-free, and ventilated area. Liquids or foreign debris can severely damage your duplicator.
- It is typical for the machine to heat up during operation.
- While in use, do not move the duplicator or remove SSDs.
- Static electricity may cause duplication error. Please pay attention to the duplicator's environment while operating equipment. Purchasing electricity elimination equipment helps avoid shock.
- Devices will operate at high-temperatures during selected tasks.
- Wear protective gloves to prevent burns when handling devices.
Ensure machine and operator are properly grounded to prevent ESD.

Notice Symbols

Special items, procedures, or notes to be observed prior to use:

Note

Refers to related duplicator operations, special details, tips, or suggestions for operational effectiveness.

Caution

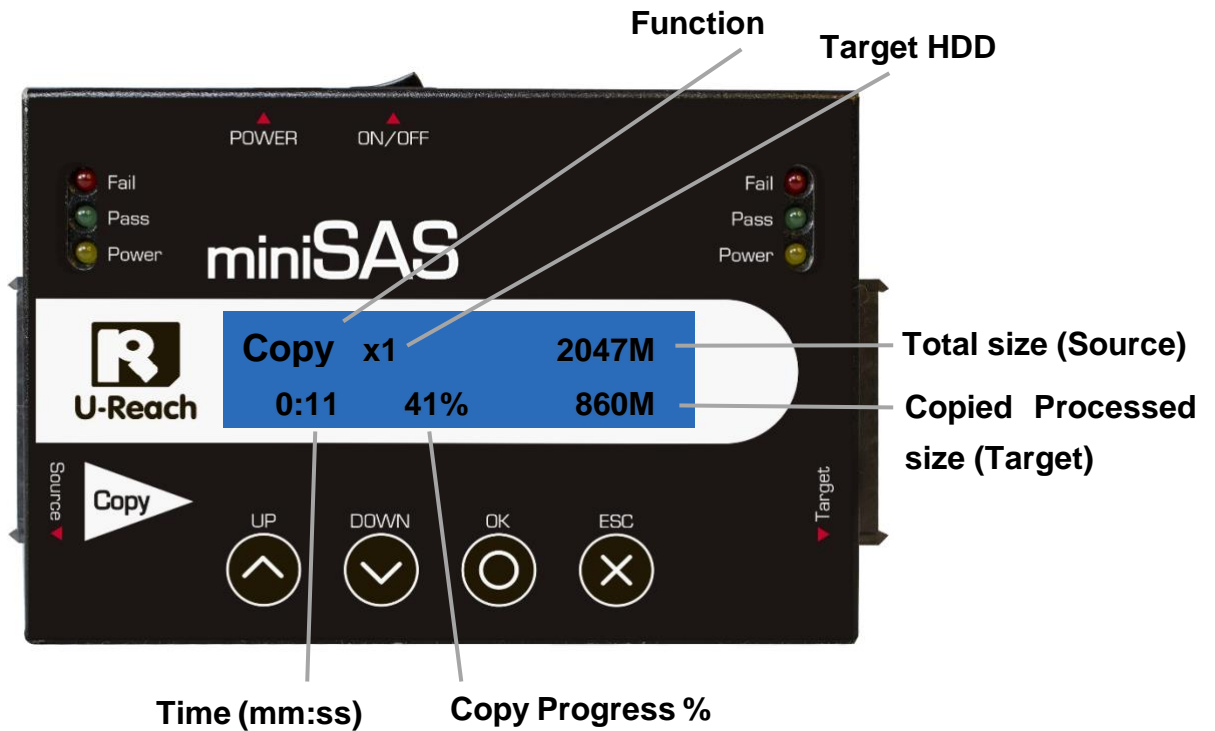
Refers to procedures that need to be adhered to or precautions.

Product Overview

A. System Overview



B. LCD Configuration



Function Table

Function	Item & Description	
1. Copy	Copies source device to connected target device(s). Refer to function 6.1 Copy Area for 4 different copy modes.	
2. Compare	Verifies target device(s) bit by bit to the master device.	
3. Copy +Compare	Automates copy and compare by first duplicating and then verifying all the data, bit by bit.	
4. Erase	4.1 Quick Erase Erases the index table only.	
	4.2 Full Erase Erases the entire device capacity. Complies 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 7-Pass Erase Erases device(s) 7 times complying with DoD 5220.22-M(ECE) Standards.	
	4.6 Secure Erase Erases the non-loadable areas complying with NIST 800-88 Standards.	
	4.7 Enhanced Secure Erase Erases devices that support this feature.	
	4.8 Block Erase Performs Secure Erase for SAS HDD.	
	4.9 Overwrite Performs Enhanced Secure Erase for SAS HDD.	
5. Utility	5.1 Show Disk info Displays connected device(s) detail information.	
	5.2 Update system	5.2.1 Update BIOS Updates system firmware from source port.

		5.2.2 Create Update HDD Formats HDD with a 2GB FAT partition for the operator to save the new firmware.	
	5.3 System Info Displays information of the duplicator system, including controller model number and firmware version.		
	5.4 Read Speed Performs a full reading speed test on the desired, connected device(s).		
	5.5 Write Speed Performs a full writing speed test on the desired, connected device(s).		
	5.6 Unlock HDD Unlocks the HDD that has not completed Secure Erase so that the HDD can continue to be used.		
6. Setup	6.1 Copy Area (Copy Modes)	6.1.1 System and Files Copies only data and skips empty spaces. Supports only NTFS, FAT16/32/64, HFS/HFS+/HFSX, and EXT2/3/4/LVM.	
		6.1.2 All Partitions Copies all partitions and data, unallocated partitions not included.	
		6.1.3 Whole HDD Copies all data and partitions including proprietary formats.	
		6.1.4 Percentage (%) Copies the defined capacity percentage that operators set. (0%-99%)	
		6.1.5 Deep Analysis Scanning the entire source HDD first, only copy the blocks with data.	
	6.2 Copy GPT Backup Area Enable this function to copy the end GPT format.		
	6.3 Copy HPA Mode	Do Not Copy HPA	Keep Target HPA Does not copy HPA data, but keeps target device's original HPA setting.
	Clear Target HPA Does not copy HPA data and clears target device's HPA setting.		

		Setting Target HPA Copies HPA setting from source device to target.
		Copy and Setting Copies HPA setting and data from source device to target.
6.4 Skip Bad Sectors Sets the number of bad sectors to skip. (0-65535 or unlimited)		
6.5 Erase Master Allows user to erase the source port or not.		
6.6 Unknow Format	Copy Unknown Copies unknown formats.	
	Skip Unknown Skips unknown formats.	
6.7 Erase Pattern	One Byte Writes a random character per byte.	
	Big Random Data Writes a set of random characters into a set area.	
6.8 Clear HPA at Erase	Clear HPA Setting Clears HPA setting during erase.	
	Keep HPA Setting Keeps original HPA setting during erase.	
6.9 Language Selects preferred language. English or Japanese		
6.10 Delete Disk Signature After Copy	No	
	Yes Do not copy the disk signature onto target devices.	
6.11 Restore Default Restores system back to factory defaults.		

***Above functions and features subject to change without notice.**

Function Introduction

1. Copy

The copy function copies data from source HDD to target HDD. You can set following settings before copy. (You can check more detail in "6. Setup".)

- I. Set Copy Area of Source HDD → 6.1 Copy Area
- II. Set Copy Unknown Format Area → 6.6.1 Unknown Format

➤ Start to copy

Step 1: Prepare Source & Targets

Prepare a source HDD and target HDDs.

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

Caution

Various adapters are required to copy devices with different interfaces, e.g. eSATA, mSATA, M.2 SATA (NGFF) and etc.

Step 2: Connect Source & Targets

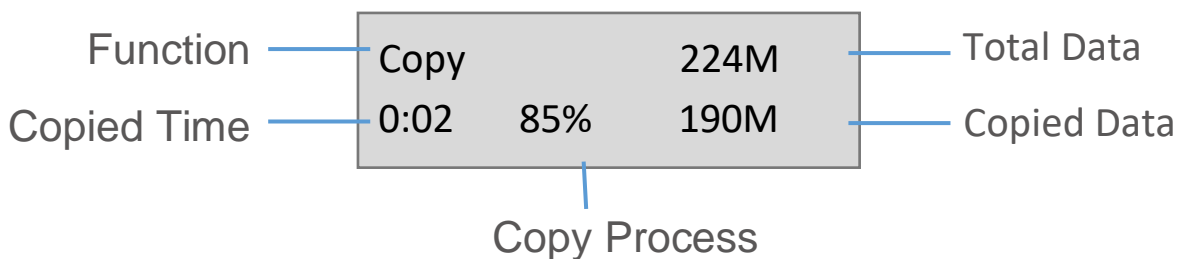
Connect source HDD to source port, target HDDs to Target ports.

Step 3: Enter Function "1.Copy"

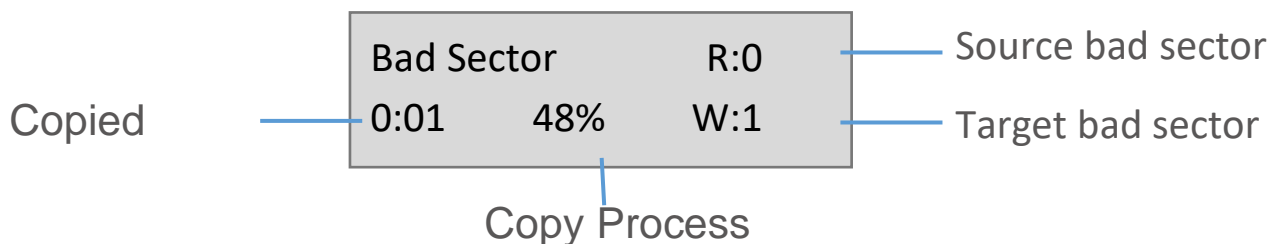
Use ▲ ▼ to select "1.Copy", and then press "OK". Duplication will start.

The information below shows on the LCD during duplication.

Copy Process



(if there is any bad sector)



Step 4: Completion!

The copy result (Pass/Fail), total copy time and bad sectors will show on LCD.

Copy result

Pass

Pass 0:05
No Bad Sector!

Total copy time

Fail

Fail 0:05
Bad Sector R0 W1

Note

The default setting of error counter is 0. If users want to adjust the accepted error sectors of the HDD, they can set "Skip Bad Sectors".

2. Compare

Proceed to verify device.

Caution

The user is responsible for verifying the targets' quality. Please pick a few completed targets for testing in a mass production environment for QC.

3. Copy+Compare

The Copy+Compare function makes copies first and then compares copied HDDs with source HDD to confirm the accuracy.

Note

It is recommended to execute Compare after Copy to confirm the accuracy. Users can use the function "3. Copy+Compare".

4. Erase

Please choose the appropriate erase method when you like to dispose or re-use the HDDs. You can set the following settings before erasing:

(You can check more detail in "6. Setup".)

- I. Set Erase mode
- II. Set Erase Master → 6.5 Erase Master
- III. Set Erase Pattern → 6.7 Erase Pattern

Caution

It will erase the data in the HDD, please make sure you back up all important data before using this function.

➤ Start to erase

Step 1: Prepare HDDs

Prepare HDDs for disposal.

Step 2: Place HDDs

Insert HDDs for disposal into target ports.

Note

Function "Erase Master" is to determine erase source HDD or not.

Step 3: Enter function "4. Erase"

Use ▲ ▼ to select the mode of erasing method, and then press "OK". Data Erase will proceed.

Note

During erasing, press ▲ ▼ to view the status of each port. Press "OK" to see the details for each port.

There are several erase methods:

- (1) Quick Erase (2) Full Erase (3) DoD Erase (4) 7-Pass Erase
- (5) Secure Erase (6) Enhanced Secure Erase (7) Block Erase
- (8) Overwrite

4.1 Quick Erase

This function will erase the index table from the connected device(s). It is the quickest way to erase the HDD.

4.2 Full Erase

This function will erase the whole sectors on the connected device(s). It will take longer than quick erase. Complies with NIST800-88 Standards.

4.3 DoD Erase

This function complies with the U.S.A. Department of Defense (DoD5220.22-M) standard to fully erase the HDD three times bit by bit to overwrite HDD data and guarantees data will not be 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.

4.4 DoD Erase & Compare

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

4.5 7-Pass Erase

This mode is a DOD 7-pass and complies with the DoD5220.22-M (ECE) standard. It fully erases the HDD 7 times bit by bit to overwrite HDD data and guarantees data is not recoverable. The 7-Pass Erase mode spends 7 times longer than full erase mode.

4.6 Secure Erase

This function sends an ATA Secure Erase command. It overwrites every single track on the hard drive with "00". Even HPA/DCO or other hidden data areas can be erased all together.

Caution

If Secure Erase process is interrupted, the device will be locked. Please execute again and wait until it finishes.

4.7 Enhanced Secure Erase

This function erases devices that supports this feature.

Scroll to select "4.7 Enhanced Secure Erase", then press "OK" to start the erasing process.

4.8 Block Erase

Performs Secure Erase for SAS HDD.

4.9 Overwrite

Performs Enhanced Secure Erase for SAS HDD.

5. Utility

5.1 Show Disk Info.

This function will show HDD's S.M.A.R.T information. After selecting the port, press ▼ to check detail information.

■ Model Number

Show HDD's model number.

■ Version of Firmware

Show HDD's firmware version.

■ Serial Number

Show the serial number of HDD.

■ Device Power Cycle

Show the count of HDD's turning on and off.

■ Power-on Hours

Show the total power-on hours of HDD.

■ Reallocation Event Count

Show the count of reallocating events.

When the HDD fails to save data, it will need to redefine the location to store data. Therefore, a higher count of reallocation events represents more errors.

■ Off-Line Scan Uncorrectable Sector Count

Show the sector volume that is uncorrectable when scanned offline. The more the uncorrectable sector volume is, the more serious the HDD's damage.

■ Seek Error Rate

Show the error rate of searching for data. It can represent the damage rate of data stored in the HDD.

■ Temperature

Show the temperature of HDD.

5.2 Update System

Step 1: Create an Update HDD

Connect a SDD/HDD to the duplicator. Select function "5.2 Create Update HDD".

Step 2: Format BIOS HDD

Click "OK" to format the BIOS hard disk. One FAT, 2GB partition will be formatted on the HDD. Creating such a partition reduces searching time, and speeds up the firmware update.

Caution The data saved in this HDD will be erased.

Step 3: Download Firmware

Connect the BIOS HDD to a PC. Download the latest firmware and save it to the HDD. Unzip BIOS and save it to the root directory.

Step 4: Enter "Update BIOS"

Connect the BIOS HDD to the source port. Enter function "5.2.1 Update BIOS". Update will take about a minute to complete.

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. U-Reach will not be held responsible for any damages.

5.3 System Info.

This function shows information about the duplicator including model name and firmware version.

5.4 Read Speed

Measures the reading speed of the HDD by reading the whole HDD.

5.5 Write Speed

Measures the writing speed of the HDD by writing the whole HDD.

5.6 Unlock HDD

Unlocks the HDD that has not completed Secure Erase so that the HDD can continue to be used.

6. Setup

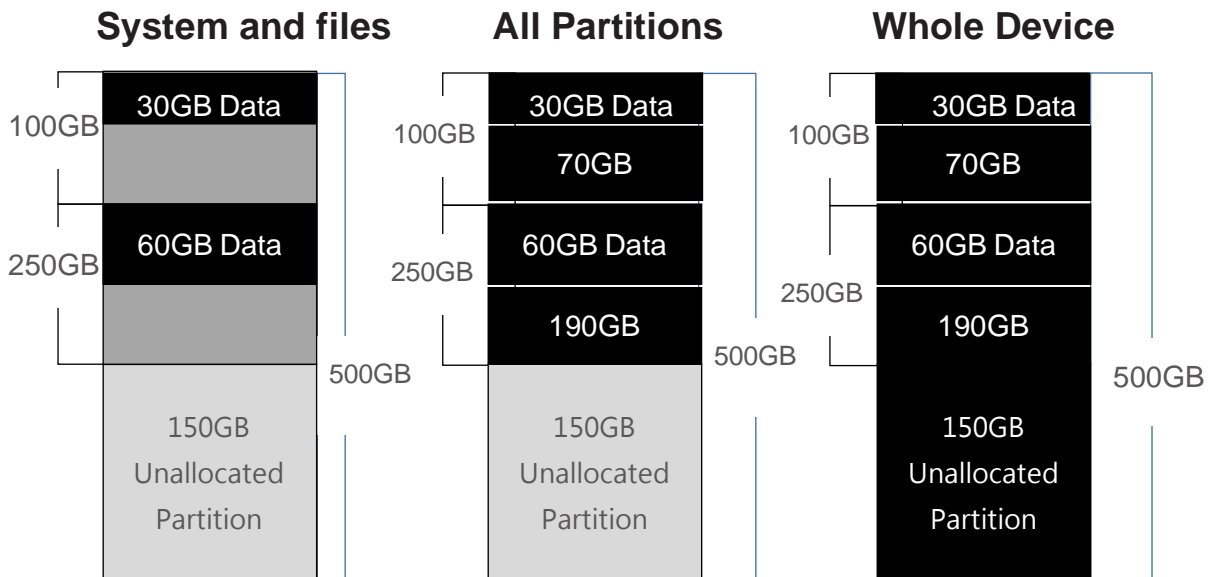
6.1 Copy Area

There are 5 submenu modes.

Scroll to select "6.1 Copy Area", then press "OK." Then scroll through to select one of the four copy methods.

- Selecting the Proper Copy Modes

Example: There are two defined partitions in a 500GB device. The charts below illustrate what portion would be duplicated.



This function will analyze and copy only data and skip empty spaces.

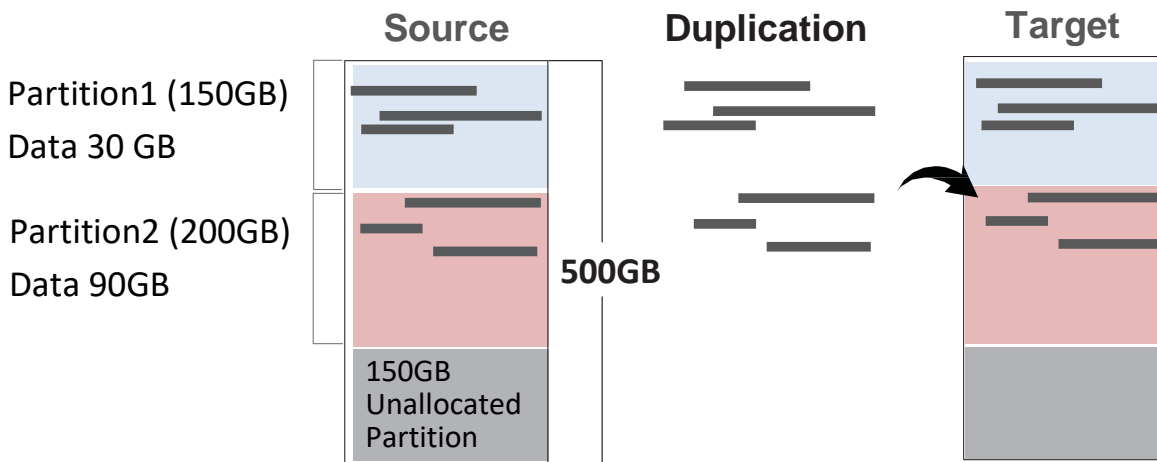
This function will copy all data within the defined partitions.

This function will copy the entire device.

6.1.1 System and Files (Quick Copy data area only)

This setting will copy source HDD's System and Files instead of the whole HDD. The system will analyze the source HDD and identify the data area to copy. As

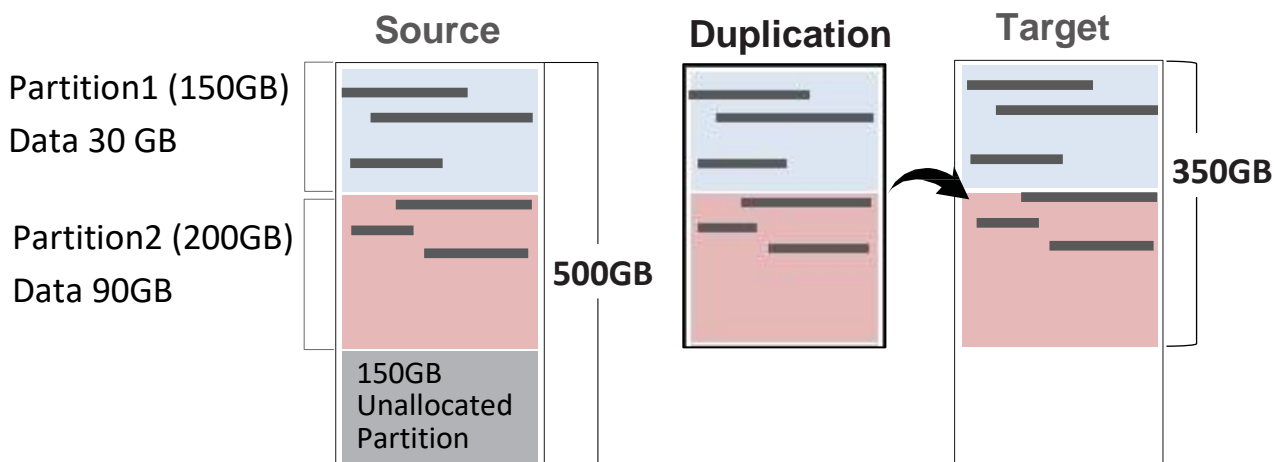
long as the source HDD's data is within the target HDD's space, the copy will be processed. FAT16/32/64, NTFS, ext2/3/4, HFS/HFS+/HFSX are supported for this copy mode.



Only 120G data area will be copied.

6.1.2 ALL Partitions

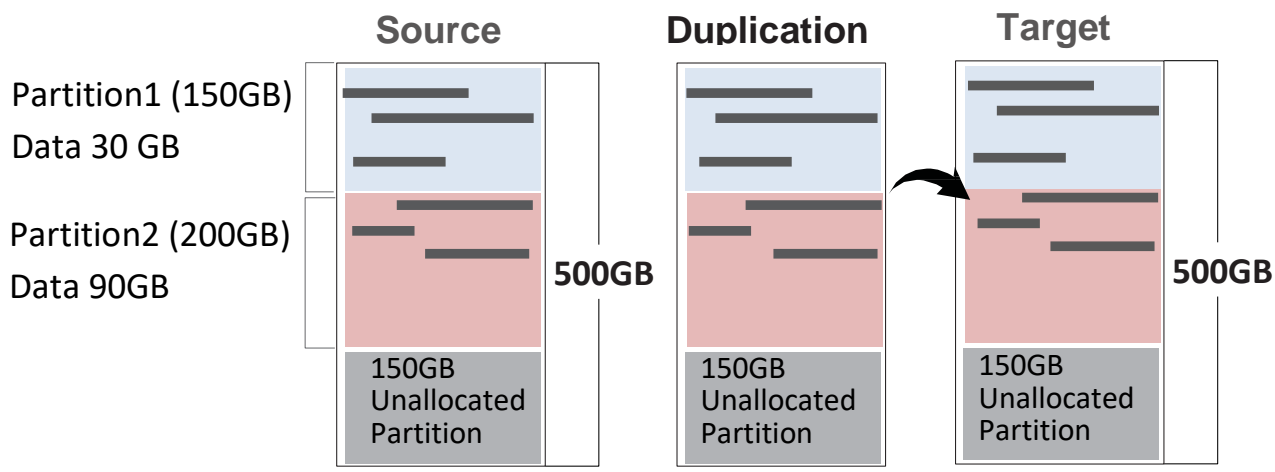
Copies all of the partitions bit by bit whether or not there is existing data. The capacity of target HDDs must be bigger than the partitions' required capacity.



350GB of all Partitions along with its contents will be copied.

6.1.3 Whole HDD

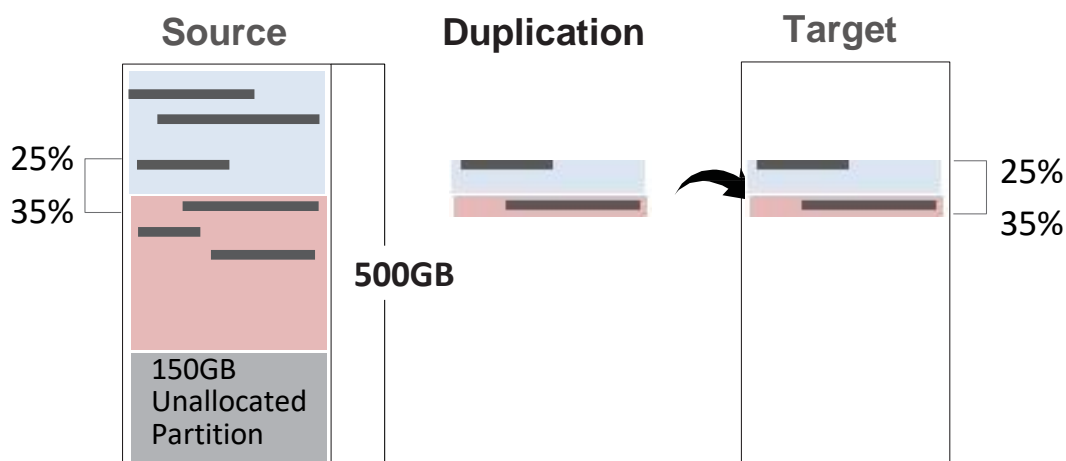
Copies the whole source HDD, no matter the content, format, partition or empty space. This mode does not analyze the data.



All 500GB of data will be copied.

6.1.4 Percentage (%)

Defines the selected percentage range of source HDD.

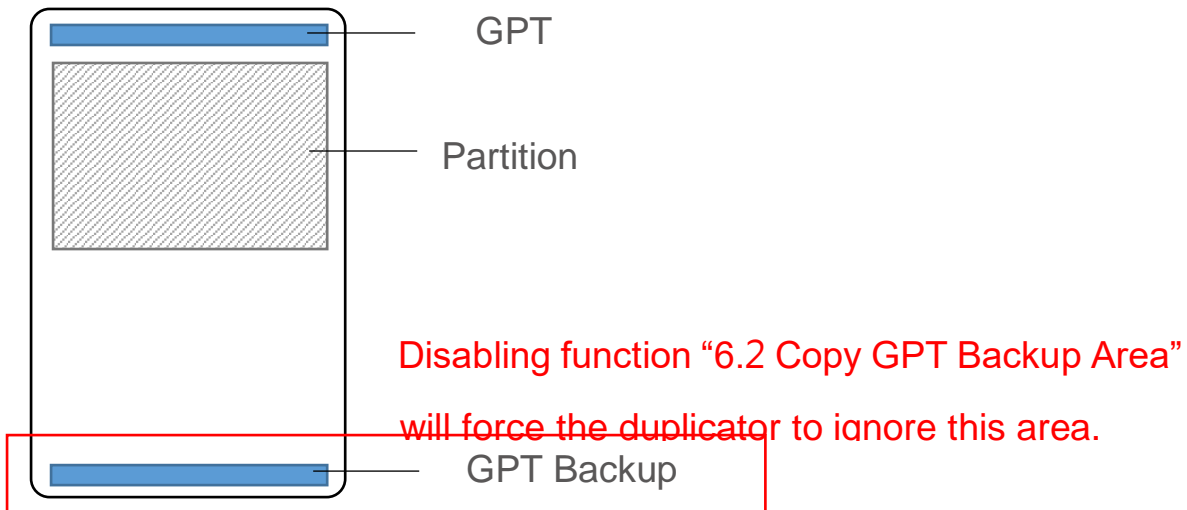


Only copies the selected area.

6.2 Copy GPT Backup Area

Disabling this function allows the duplicator to copy from big capacity device to small capacity device(s).

Caution The partition size of the source HDD must be smaller than target capacity.



Caution

If function is disabled, the target HDD will reconstruct the GPT Backup Area by Windows system. It may require the HDD to restart in order to work.

6.3 Copy HPA Mode

This menu contains submenus related to HPA Copy Modes.

■ Do Not Copy HPA

Do not copy source device's HPA data and setting.

- No, keep HPA

Does not copy HPA data, but keeps target device 's original HPA setting.

- No, Clear HPA

Does not copy HPA data and clears target device's HPA setting.

■ No, Setting HPA

Do not copy the source device's HPA data but set the targets' HPA to be the same as the source HDD.

■ Copy and Setting

Copy source HPA data and set to the target.

6.4 Skip Bad Sectors

This function sets the number of errors you would like to skip during copy / compare / erase process. The default is 0. You can choose 0-65535 or unlimited.

6.5 Erase Master

Setting to Enable allows erasure of source HDD. Please make sure this setting is correct before executing DoD erase. The default setting is "Disable".

6.6 Unknown Format

This function allows you to select whether or not to copy the unknown format areas. This function will only affect Quick Copy.

■ Copy Unknown

Copy all the unknown areas if device cannot identify the format during copy.

■ Skip Unknown

Skip the unknown areas if device cannot identify the format during copy.

6.7 Erase Pattern

Enable to select overwrite data pattern mode during erase.

■ ONE Byte

[00] or a fixed character will be written into every byte.

■ Big Random Data

A random character to be written into every byte.

It will show [4M] while erase.

6.8 Clear HPA at Erase

■ Clear HPA Setting

Erase the existing HPA in the connected target device(s).

■ Keep HPA Setting

Retain all HPA in connected device(s) while erasing all non-HPA areas.

6.9 Language

Select preferred language. You can select English or Japanese.

6.10 Delete Disk Signature After Copy

Set at “Yes” means do not copy the disk signature part.

This function is for Windows only. Windows will only recognize one device if you connect two or more with the same disk signature.

Caution

“Compare” function will always Fail if “Delete Disk Signature After Copy” is set at “Yes.”

6.11 Restore Default

Select to go back to the manufacturer's default setting.

*Specifications subject to change without notice.