



URreach

Mini Series M.2/SSD NVMe SATA Duplicator

User Manual

V1.0



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Product Disclaimer

U-Reach is not accountable for any incidental or consequential damages, which includes, but is not constrained to property harm, loss of time or data from use of a U-Reach product, or any other damages attributable to product malfunction or failure (including without limitation, those attributable to: (1) reliance of 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) of any U-Reach product. U-Reach makes every effort to ensure proper operation of all products. However, the customer is responsible to affirm that out of the U-Reach product meets the customer's quality requirement. The customer further acknowledges that fallacious operation of U-Reach product and/or software program, or hardware issues, can cause loss of data, defective formatting, or data loading. U-Reach 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.

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.

Piracy Statement

U-Reach accepts no responsibility for copyright infringement or misuse of any U-Reach 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.

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 U-Reach 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 a socket.
- Never turn off the power while the firmware is updating.
- 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 discharge.
- 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.
- Do not turn off the machine during firmware update.

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

Mini M.2 Series is the world's first standalone duplicator supports NVMe , AHCI and SATA protocol. It automatically detects device signal, and supports ultra-high speed duplication.

Mini M.2 Series 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 highly increases the production efficiency. Furthermore, the innovative interface design can help you easily swap M.2 socket to reduce time and effort while repairing.

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

Product Features

Operation Type

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

Controller Design

Embedded controller is designed to support capacities over 18TB+. Constant improvement supports latest market-available devices.

Protocols Supported

Supports Native NVMe, Native AHCI, and SATA protocol.

Automatically detect different signal of each port. Easy to copy from SATA to NVMe M.2 and vice versa.

Read-Only Source Port

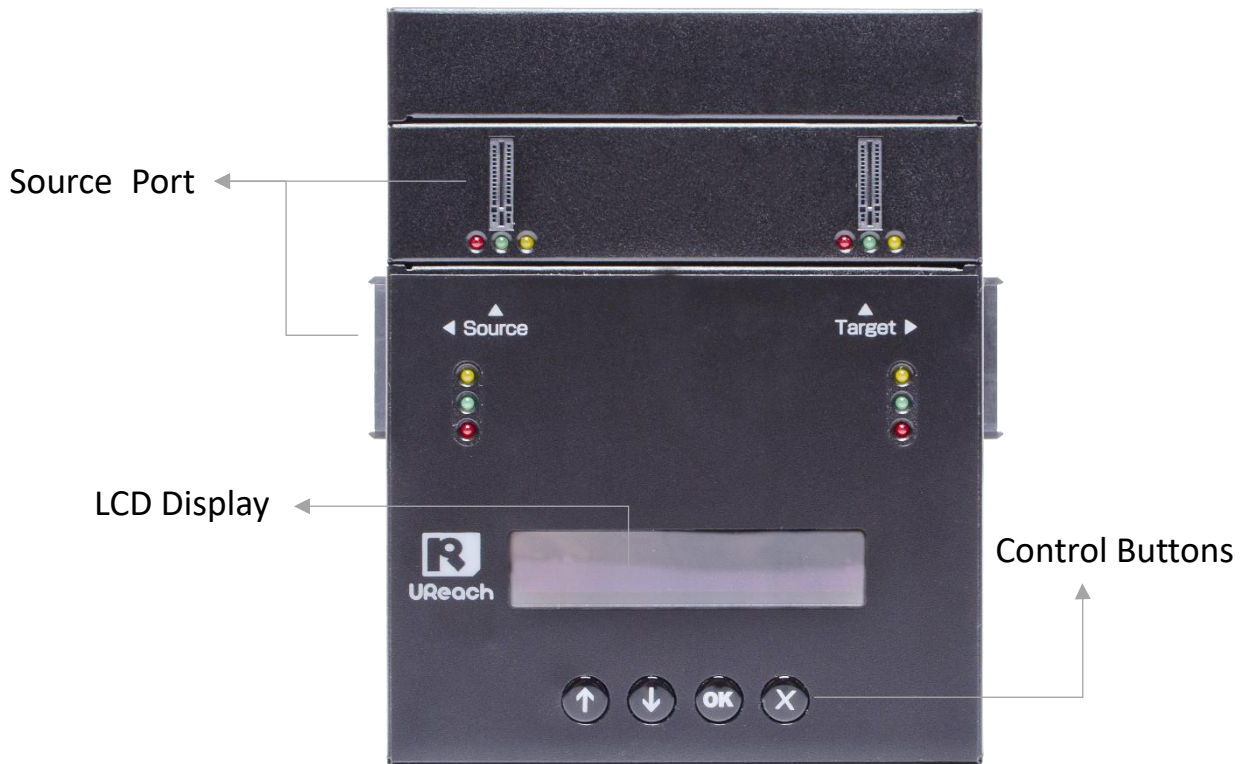
There is no option to disable this built-in feature, and it is integrated with all U-Reach duplicators.

Module Design

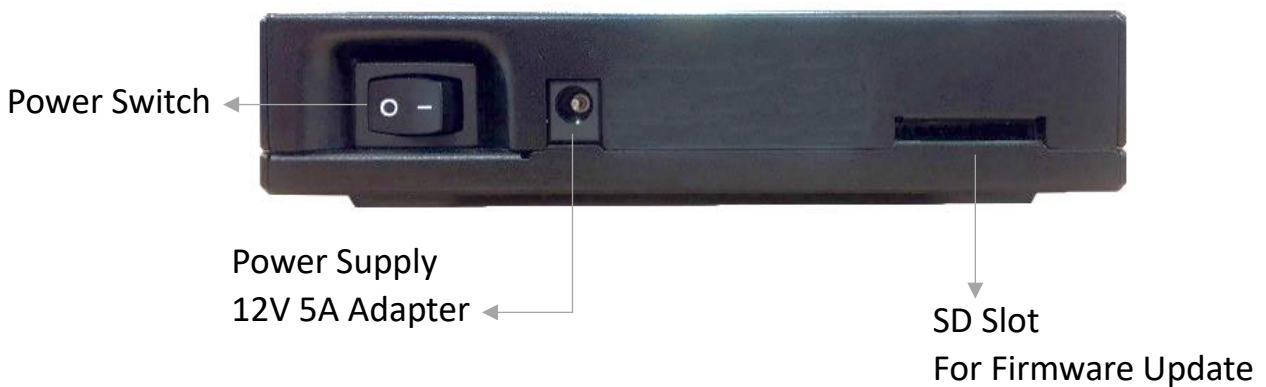
Modular M.2 ports effectively reduce downtime and is are cost-effective for long term ownership.

Hardware Overview

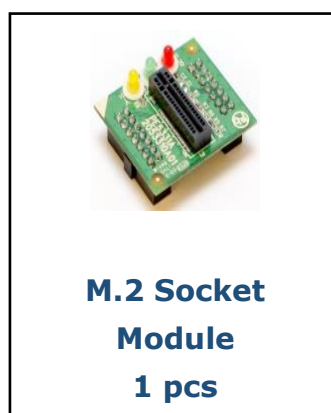
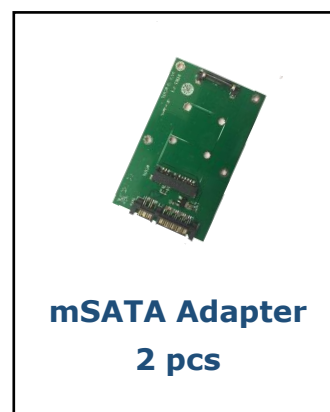
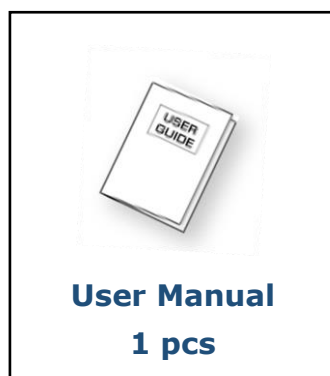
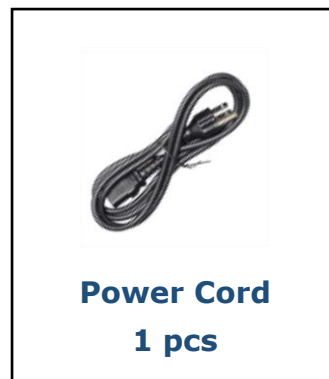
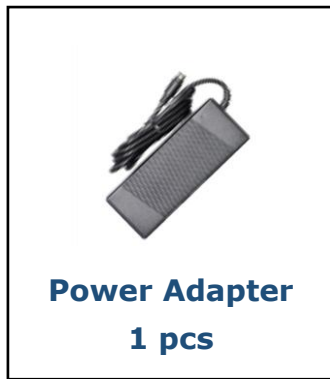
- Front View



- Back View



• Package



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- Optional



**M.2 Socket
Module**



mSATA Adapter



**IDE to SATA
Adapter 2 pcs**

Functions Table

Functions	Descriptions		
1. Copy	Copies data from source device to targets. (There are four copy modes in function "6.1 Copy Area")		
2. Compare	Compares the source and targets to ensure copy accuracy.		
3. Copy + Compare	Automatically launches compare function after copy is completed.		
4. Erase	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 Secure Erase Erases the non-loadable areas complying with NIST 800-88 Standards.		
5. Utility	5.1 Device Info Displays basic information such as device model, name, capacity, etc.		
	5.2 System Update Updates system firmware at the rear SD port.		
	5.3 System Info Displays system information such as controller, model number, software version, etc.		
6. Setup	6.1 Copy Modes	6.1.1 System and Files Copies data and skips empty space. Only supports standard formats.	
		6.1.2 All Partitions Copies all partitions and data, unallocated partitions not included.	
		6.1.3 Whole Device Copies all source data, bit-by-bit.	
		6.1.4 Percentage (%) Sets percentage of source capacity to copy.	
	6.2 Copy HPA Area	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.

	<p>Setting Target HPA Copies HPA setting from source device to target.</p>
	<p>Copy and Setting Copies HPA setting and data from source device to target.</p>
<p>6.3 Skip Bad Sectors Skips source bad sectors.</p>	
<p>6.4 Clear HPA at ERASE</p>	<p>Clear HPA Setting Clears HPA setting during erase.</p>
	<p>Keep HPA Setting Keeps original HPA setting during erase.</p>
<p>6.5 Language Sets preferred language: English or Japanese.</p>	
<p>6.6 Restore Defaults Reinstates manufacturer settings.</p>	

Functions Description

1. Copy

Step 1: Prepare source and target devices.

Note

- 1. Recommendation: Target device(s)' capacity must be equal to or larger than the source device capacity.
- 2. The Mini M.2 accepts only one source and one target for each operation. If both M.2 and SATA port have device, it will detect SATA port first.

Step 2: Connect source and target devices.

Step 3: Proceed to copy.

Scroll to select "1. Copy", then press "OK" to start the duplication process.

Note

The number of working/connected targets will be displayed on LCD. Press "OK" to start.

The following information below states what is displayed on the LCD during duplication.

```
Copy      40.0G
          3ready
```

Function	Total Data
Copy x3	40G
1:38 25%	(4) 10.3G
Copied Time & %	Slowest Port Copied Data

Note

Press "ESC" for 5 seconds to stop operation.

Step 4: Copy Completed!

The quantity of passed or failed target device(s) and the copied duration will be displayed on the LCD after duplication completes.

2. Compare

Scroll to select "2. Compare", then press "OK" to start the verification process.

Note

The number of working/connected targets will be displayed on the LCD. Press "OK" to start.

3. Copy+Compare

Sequentially automates from Function 1, Copy to Function 2, Compare.

Scroll to select "3. Copy+Compare", then press "OK" to start the automated duplication and verification process.

4. Erase

There are 2 submenu modes.

Caution

Please back up all important data before using this function.

Step 1: Connect device(s) for sanitizing.

Step 2: Enter function "4. Erase"

Scroll to select "4. Erase", then press "OK" to view the 4 submenus.

Caution

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

4.1 Quick Erase

This function will erase the index table from the connected device(s).

Scroll to select "4.1 Quick Erase", then press "OK" to start the erasing process.

4.2 Full Erase

This function will erase all data per NIST 800-88 Standards to the connected device(s).

Scroll to select "4.2 Full Erase", then press "OK" to start the erasing process.

4.3 DoD Erase

This function will erase all data per DoD 5220.22-M Standards of the connected device(s). Scroll to select "4.3 DoD Erase", then press "OK" to start the erasing process.

4.4 Secure Erase

This function erases the non-loadable areas complying with NIST 800-88 Standards. Scroll to select "4.4 Secure Erase ", then press "OK" to start the erasing process.

5. Utility

This menu will reveal submenus related to device information, system information and updates.

Scroll to "5. Utility", then press "OK" to view the submenus.

5.1 Device Info

This function will display basic information such as device model, name, capacity, etc... Scroll to select "5.1 Device Info", then press "OK" to view the connected device(s). Then through to view connected device(s) by port number order.

5.2 System Update

Step 1: Prepare a SD card for update.

Connect a SD card to a PC. Download the latest firmware provided from U-Reach technical support, unzip the BIOS firmware, and save it to the root directory in the device.

Note The device's format must be: FAT16 or FAT32.

Step 2: Proceed to update firmware

Connect the SD card to the back of the duplicator. Scroll to select "5.2 Update BIOS", then press "OK" to start the firmware update process.

[System Update]
1.Update BIOS

Note Ensure that the SD card does not have any bad sectors.

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. When the update completes, a message will display on the LCD and ask to turn off the machine for 5 seconds. U-Reach will not be held responsible for any damages.

5.3 System Info

This function will display basic information such as device model, name, capacity, etc... Scroll to select "5.3 System Info", then press "OK" to view the connected device(s). Then scroll through to view all information.

6. Setup

This menu will reveal submenus related to copy area, skip bad sector, and setting language. Scroll to select "6. Utility", then press "OK" to view the submenus.

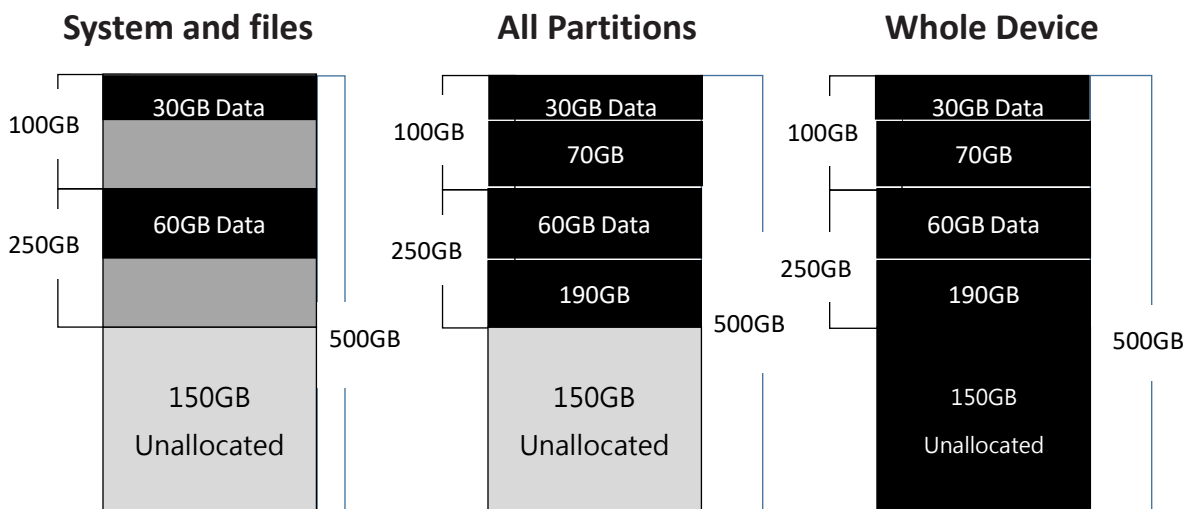
6.1 Copy Area

There are 4 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.

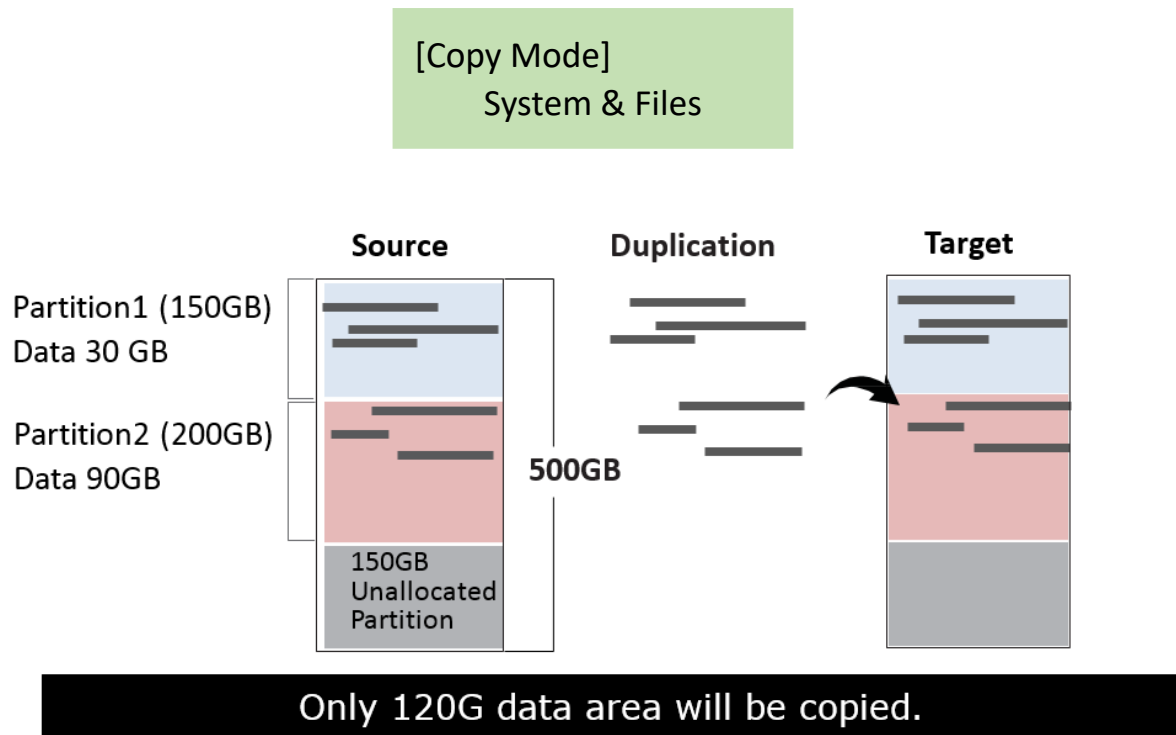
This function will copy the entire device.

6.1.1 System and Files

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

Scroll to select "6.1.1 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.

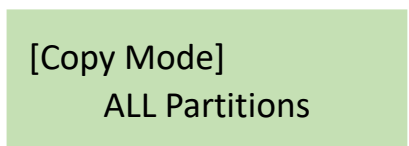


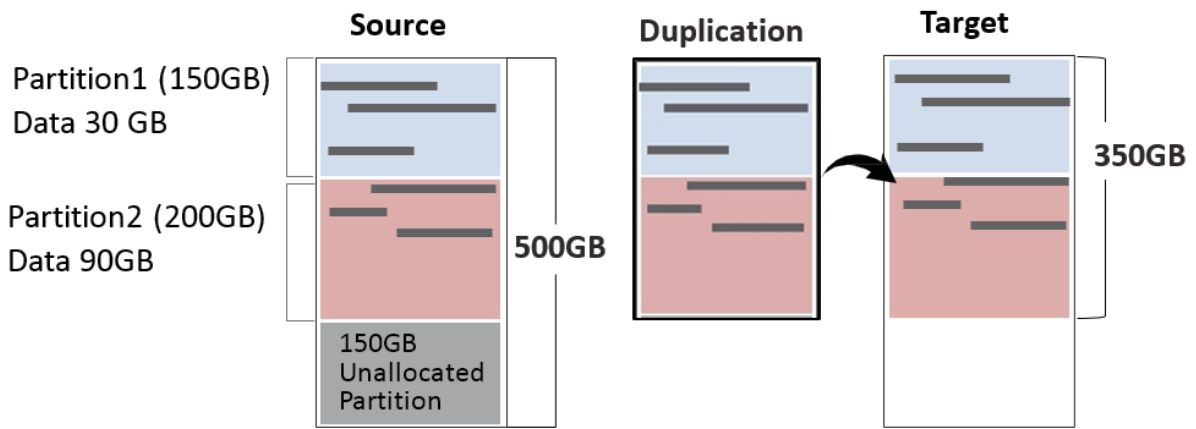
6.1.2 All Partitions

Copy or skip HPA, DCO, unknown partitions, modified formats, etc. defined by settings.

Scroll to select "6.1.2 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.





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

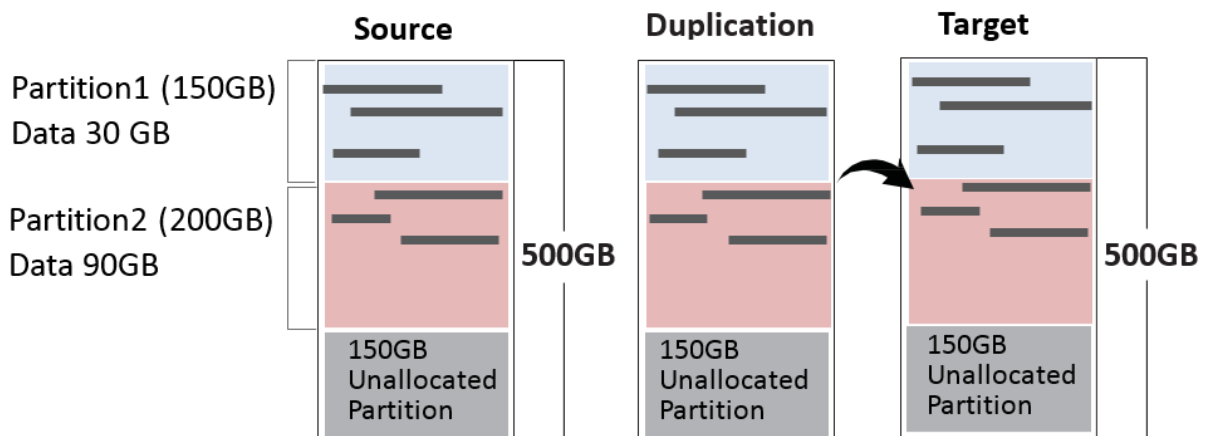
6.1.3 Whole Device

Copies all source data, bit-by-bit.

Scroll to select "6.1.3 Whole Device", then press "OK" to save the copy method.

Copies the whole source device, irrespective of content, format, partition or empty space. This mode does not analyze the data.

[Copy Mode]
 Whole Device

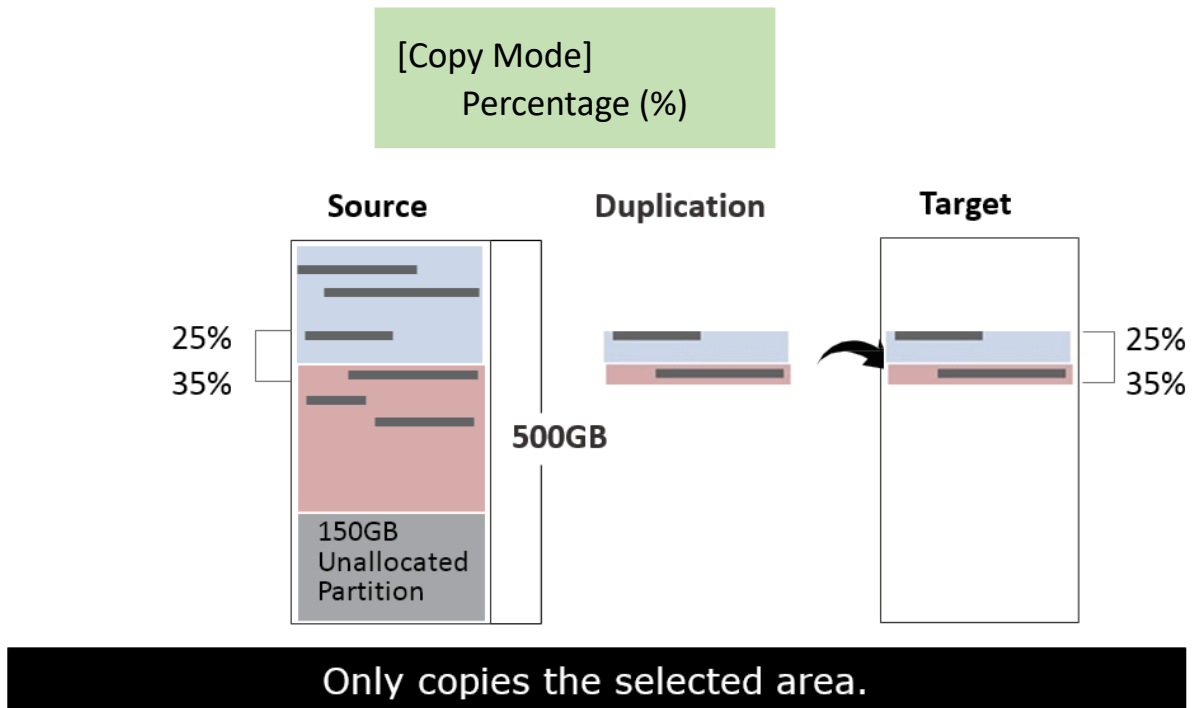


All 500GB of data will be copied.

6.1.4 Percentage (%)

Select percentage of source capacity to copy.

Scroll to select "6.1.4 Percentage", set the upper and lower %, then press "OK" to save the copy method.



6.2 Copy HPA Area

This menu contains submenus related to HPA Copy Modes

Scroll to select "6.2 Copy HPA Area", then press "OK" to view the submenus.

6.2.1 Do Not Copy HPA

This menu contains submenu settings from which users can select.

Scroll to select "6.7.6 Copy HPA Area >> Do Not Copy HPA", then press "OK" view submenu settings.

- Keep Target HPA

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

Scroll to select "Keep Target HPA", then press "OK" to save this setting.

- Clear Target HPA

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

Scroll to select "Clear Target HPA", then press "OK" to save this setting.

6.2.2 Setting Target HPA

Copies HPA setting from source device to target.

Scroll to select "6.2 HPA Copy Modes >> Copy HPA Settings", then press "OK" to save this setting.

6.2.3 Copy and Setting

Copies HPA setting and data from source device to target.

Scroll to select "6.2 HPA Copy Modes >> Copy All HPA", then press "OK" to save this setting.

Caution HPA function "Copy and Setting" may change the original parameter of target devices. To reset it, user must set "6.4 Clear HPA at Erase >> Clear HPA Setting" and then execute "4. Erase."

6.3 Skip Bad Sectors

Scroll to select "6.3 Skip Bad Sectors", then press "OK" to scroll through the available values for skipping bad sectors. If the device data is critical and needs to be a full clone, it is recommended to set "Skip Bad Sectors" at "0." Bad sectors can be set as unlimited or at a value from 0 to 65,535.

[Skip Bad Sectors]
1000

Caution The "Copy+Compare" function is advised for enhanced copy accuracy.

6.4 Clear HPA at Erase

Sets to clear HPA setting during erase.

Scroll to select "6.4 Clear HPA at Erase", then press "OK" to save this setting.

6.4.1 Release

Clears HPA setting and data during erase.

Scroll to select "6.4 Clear HPA at Erase >> Release", then press "OK" to save this setting.

6.4.2 No Release

Keeps original HPA setting and data during erase.

Scroll to select "6.4 Clear HPA at Erase >> No Release", then press "OK" to save this setting.

6.5 Language

Select English or Japanese.

Scroll to select "6.5 Language", then press "OK." Then scroll through select the desired language.

6.6 Restore Defaults

Restores all setting to manufacture defaults.

Scroll to select "6.6 Restore Defaults", then press "OK" to restore settings back to manufacturer defaults.

Maintenance Guide

Steps to replace M.2 socket(s)

- 1 Turn off power

Caution

For your safety, please turn off the power before inspecting or replacing the socket.



- 2 Remove the faceplate screws.



Caution

Please use extreme caution while using a screwdriver to remove the screws as it can easily slip and damage the surrounding area.

- 3 Remove the cover plate.



- 4 Replace the socket(s).



- 5 Replace and secure the cover plate.



Specifications

■ Specifications

Bandwidth Performance	Up to 24GB/min(NVS200) *Actual performance is dependent on device transfer speeds*
Supported Formats	Quick Copy (System and Files): FAT16/32/64 , NTFS, Linux(Ext2/Ext3/Ext4), Mac(HFS/HFS+/HFSX) Whole Device Copy: All formats, including proprietary formats.
Supported Capacity	Over 18TB+.
Supported OS	All (Windows, Mac, Linux, and other proprietary systems)
Operation Mode	Standalone, FPGA-based Operation

■ Functions

Copy Modes	Quick Copy (System and Files) / All Partitions / Whole Device / Percentage Copy
Sanitization Modes	Quick Erase, Full Erase (NIST 800-88), DoD Erase, Secure Erase
Others	Bit-by-bit Comparison, Count of Bad Sector, Skip Bad Sectors.

■ Compatibilities

Compatible Device	SATA and M.2(NGFF) M Key & B+M Key.
Compatible Signal	NVMe, AHCI, SATA
Others	Supports GPT, MBR, and Advanced Formats.

■ Hardware Specifications

LCD Display	2x20 Backlit Monochrome LCD Display	
LEDs	3 LED Indicators per Port: Yellow (Power), Green (Pass), Red (Fail)	
Control Panel	4 Push Buttons (▲, ▼, OK, ESC)	
Power Requirements	12V 5A Power Adaptor	
Temperature	Working: 5°C ~ 45°C	Storage: -20°C ~ 85°C
Humidity	Working: 20% ~ 80%	Storage: 5% ~ 95%
Physical Dimensions	180mm X 156mm X 34mm	
Product Weight	800g	

**Specifications subject to change without notice.

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