NV-BM Series – Slim Version NVMe Duplicator and Sanitizer

User Manual
V1.1

Index Table

Product Disclaimer

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Specifications and features are subject to change without notice or obligation.

Warranty

U-Reach provides a basic one-year parts and labor warranty for all its products, excluding cables, adapters, and other consumable items. An extended warranty may be purchased. Telephone and email support is available for the life of the product as defined by U-Reach.

All warranties are specific to market region and will be defined per market region in which the product was 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 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 the socket.
- Never turn off the power while the firmware updating.
- Use only approved, stable power sources.
- 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 and devices to heat up during operation.
- While in use, do not move the duplicator or remove the devices.
- Static electricity may cause duplication error. Please pay attention to the duplicator's environment and while operating equipment. Purchasing electricity elimination equipment helps avoid electrical static shocks.

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

The NV-BMS4 is the world's first standalone PCIe M.2 duplicator. It boasts an ultra, high-speed duplication with independent bandwidth per each port. A technology far beyond PC-based duplicators, it possesses the same ultra-high transmission and consistent performance, either from a 1-target through a 300-target production.

The 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 highly increases the production efficiency. Furthermore, the innovative interface design can help you easily swap devices during operation to reduce time and effort while repairing.

Product Features

Operation Type
Standalone, 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 protocol.

Bandwidth Performance
Speed transfers of up to 10.2GB/min. (170MB/sec.) and dedicated bandwidth enables high volume replications without speed degradation.
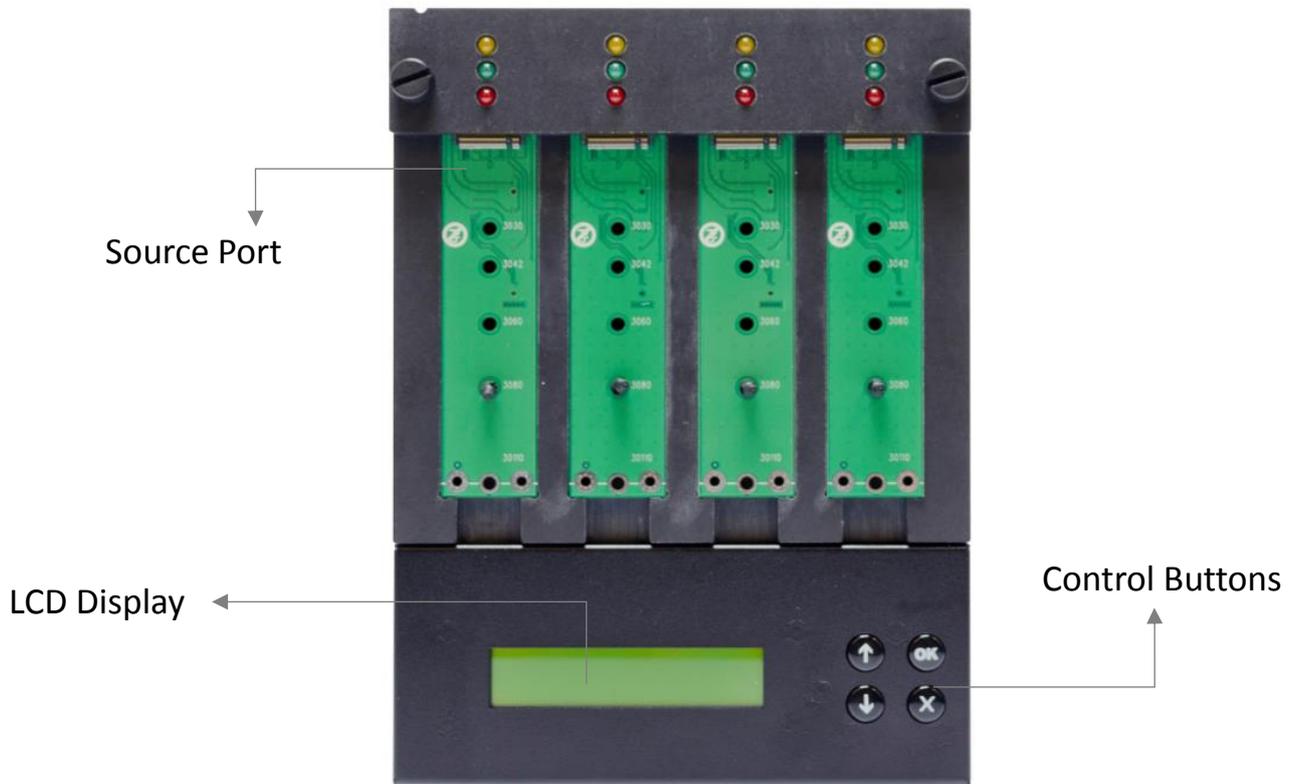
Read-Only Source Port
There are no options to disable this built-in feature and is integrated with all U-Reach duplicators.

Modular Port Design
Modular ports effectively reduce downtime and is cost effective for long term ownership.
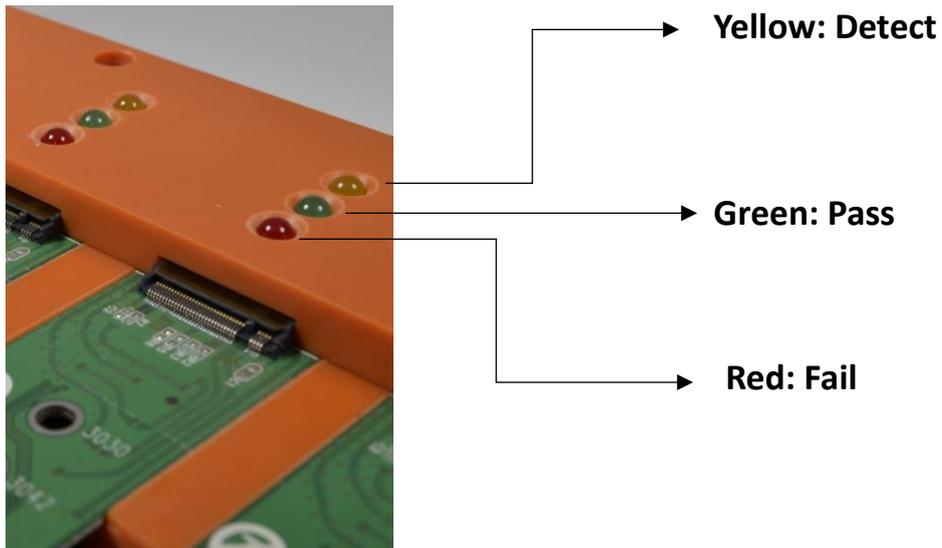
Hardware Overview

- Front View

Source Port

LCD Display

Control Buttons

- Back View

Power Switch

Power Input
12VDC 9A Power Adapter

SD Slot for
FW Update

- LED Status

Yellow: Detect

Green: Pass

Red: Fail

- LCD Configuration

Function

Number of Target Device

Total Size

Up

Confirm/OK

```
Copy x2        298G
 0:04 1%   (2)17.2G
```

Slowest Port

Down

Cancel/Back

Time Elapsed and Copy Progress

Processed Copy Size

- Package

Duplicator
1pcs

Power Adapter
1pcs

Power Cord
1pcs

User Manual
1pcs
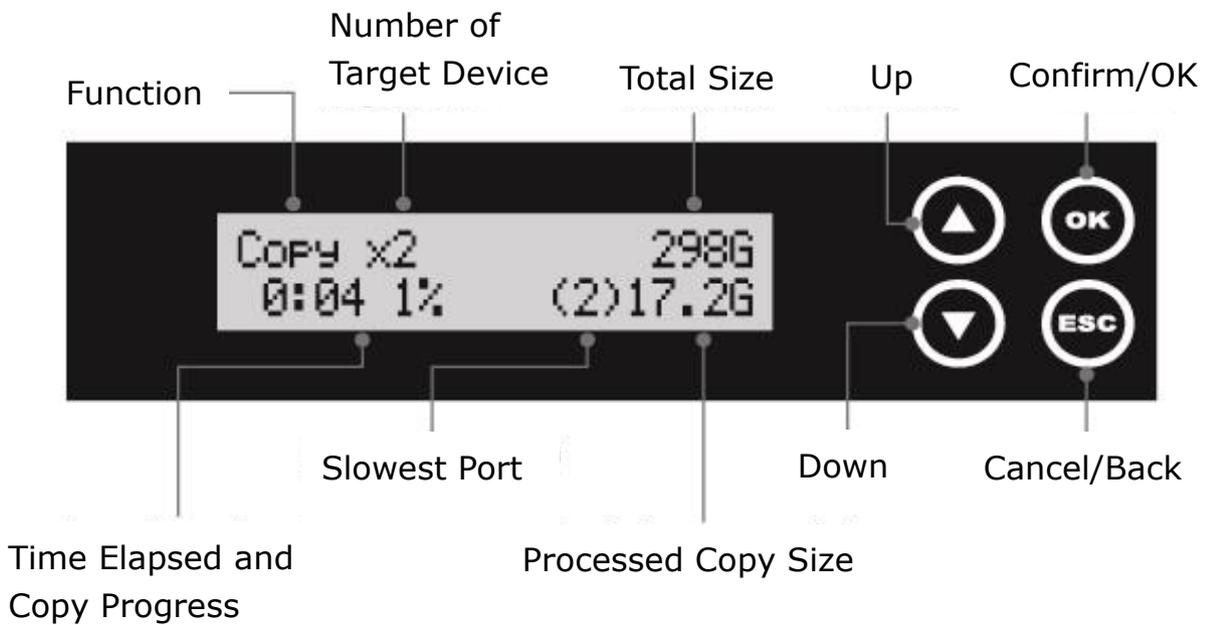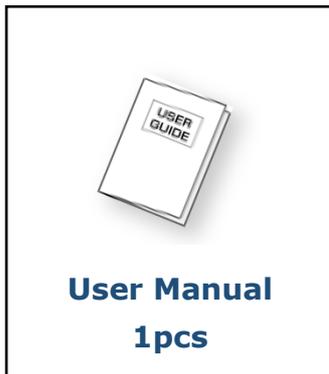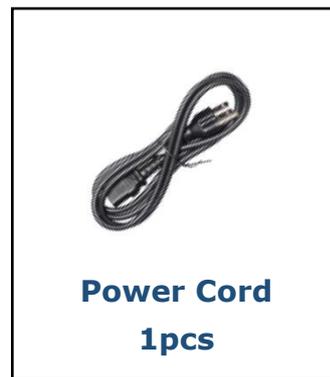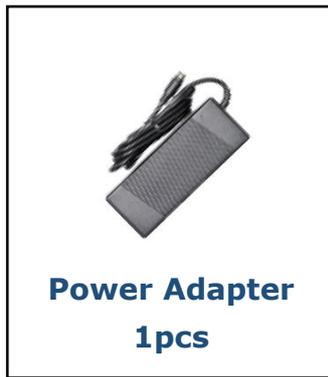
Functions Table

Functions	Descriptions		
1. Copy	Copies data from source device to targets. (There are four copy modes in function "6.1 Copy Area")		
2. Compare	Verifies the targets to the source device 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 (FAT Format Only).		
	4.2 Full Erase Erases entire device(s) complying with NIST 800-88 Standards.		
	4.3 Secure Erase Erases the non-loadable areas complying with NIST 800-88 Standards.		
5. Utility	**5.1 Show Disk 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.		
	5.4 Read Speed Calculate the device's read speed by reading.		
	5.5 Write Speed Calculate the device's write speed by reading. This function will change the device's content and format.		
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 are 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 Skip Bad Sectors
	Skips source bad sectors.
	6.3 Erase Master
	Allows user to erase the source port or not.
	6.4 Language
	Sets preferred language: English or Japanese.
	6.5 Restore Defaults
	Reinstates manufacturer settings.

Functions Description

1. Copy

Step 1: Prepare source and target devices.

Note	Recommendation: Target device(s)' capacity must be equal to or larger than the source device capacity.

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 active/connected targets will be displayed on LCD. Press "OK" to start.

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

Function   Total Data

```
Copy          40.0G

      3 ready
```

```
Copy x3          40G

 1:38   25%  (4) 10.3G
```

Copied Time & %   Slowest Port   Copied Data

Note	Press ▲▼ together for 5 seconds to abort operation on the slowest device.

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 active/connected targets will be displayed on the LCD. Press "OK" to start.

3. Copy+Compare

Sequentially automates from Function 1. Copy and then Function 2. Compare.
Scroll to select "3. Copy+Compare", then press "OK" to start the automated duplication and verification process.

4. Erase

There are 3 submenu modes.

Caution	Please backup 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 2 submenus.

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 Secure Erase

This function erases the non-loadable areas complying with NIST 800-88 Standards.
Scroll to select "4.3 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 select "5. Utility", then press "OK" to view the submenus.

5.1 Show Disk Info

This function will display basic information such as device model, name, capacity, and 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 Update System

Step 1: Prepare a SD card for update.

Connect a SD card to 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.

```
[Update System]
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, and etc. Scroll to select "5.3 System Info", then press "OK" to view the connected device(s). Then scroll through to view all information.

5.4 Read Speed

This function will calculate the read speed of the selected device. The device's original data will not be modified after checking. Scroll to select "5.4 Read Speed", then press "OK" to select the device, and then press "OK" to proceed.

5.3 Write Speed

This function will calculate the write speed of the selected device. The device's original data will be modified after checking. Scroll to select "5.5 Write Speed", then press "OK" to select the device, and then press "OK" to proceed.

6. Setup

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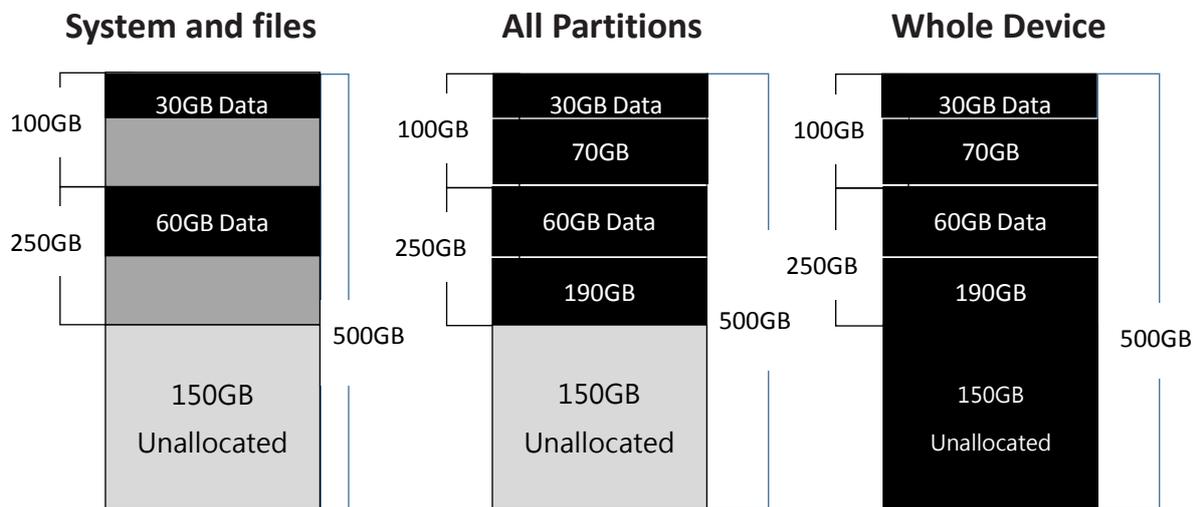
6.1 Copy Area

There are 4 submenu modes.
Scroll to select "6.1 Copy Modes", 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.

	System and files		**All Partitions**		**Whole Device**	

<table>
<tr><td>**System and files**</td><td>**All Partitions**</td><td>**Whole Device**</td></tr>
</table>

System and files   **All Partitions**   **Whole Device**

100GB	30GB Data	100GB	30GB Data	100GB	30GB Data
			70GB		70GB
250GB	60GB Data	250GB	60GB Data	250GB	60GB Data
			190GB		190GB
500GB	150GB Unallocated	500GB	150GB Unallocated	500GB	150GB Unallocated

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

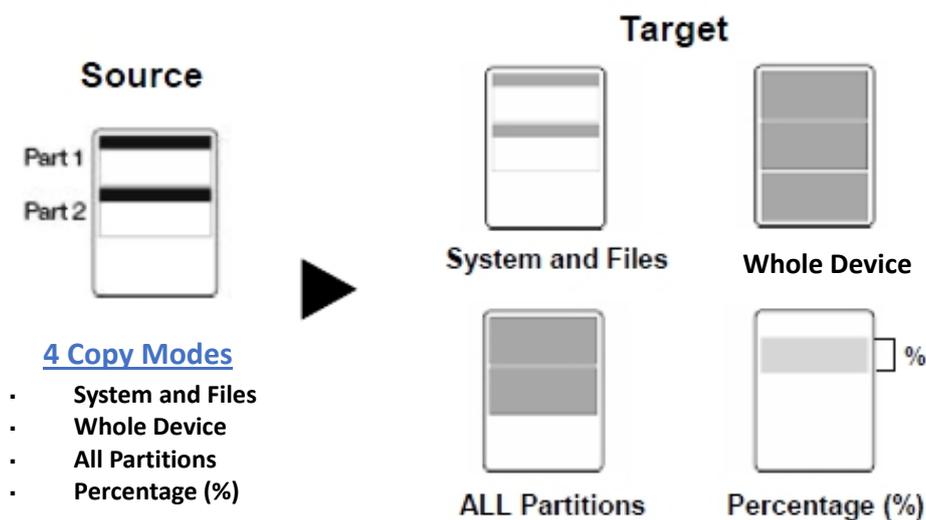This function will copy all data within the defined partitions.

This function will copy the entire device.

● Copy and Compare Preparations

Please consider the following settings before proceeding with copy:
- 6.1 Copy Modes
- 6.2 Skip Bad Sectors

Using appropriate copy modes can greatly reduce operation time and increase efficiency. There are four copy modes with different copy methods.

Source

Part 1
Part 2

4 Copy Modes
- System and Files
- Whole Device
- All Partitions
- Percentage (%)

Target

System and Files   Whole Device

ALL Partitions   Percentage (%)

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.
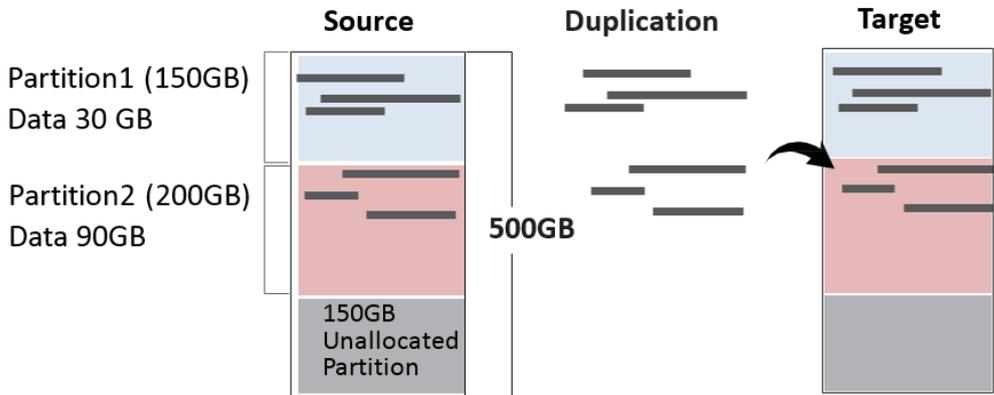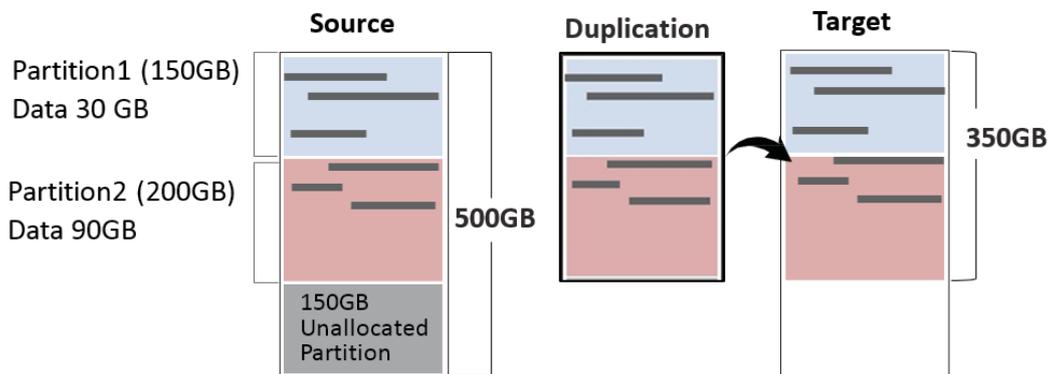

6.1.2 All Partitions

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.

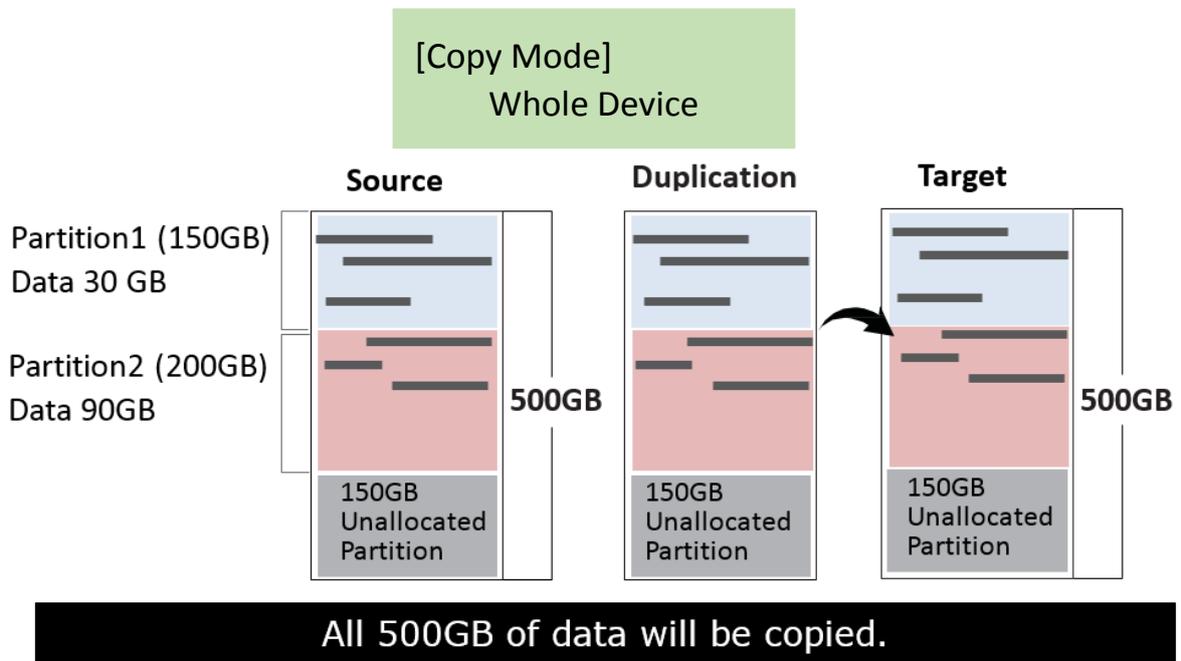The target device's capacity must be equal to or larger than the source device's capacity.

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.

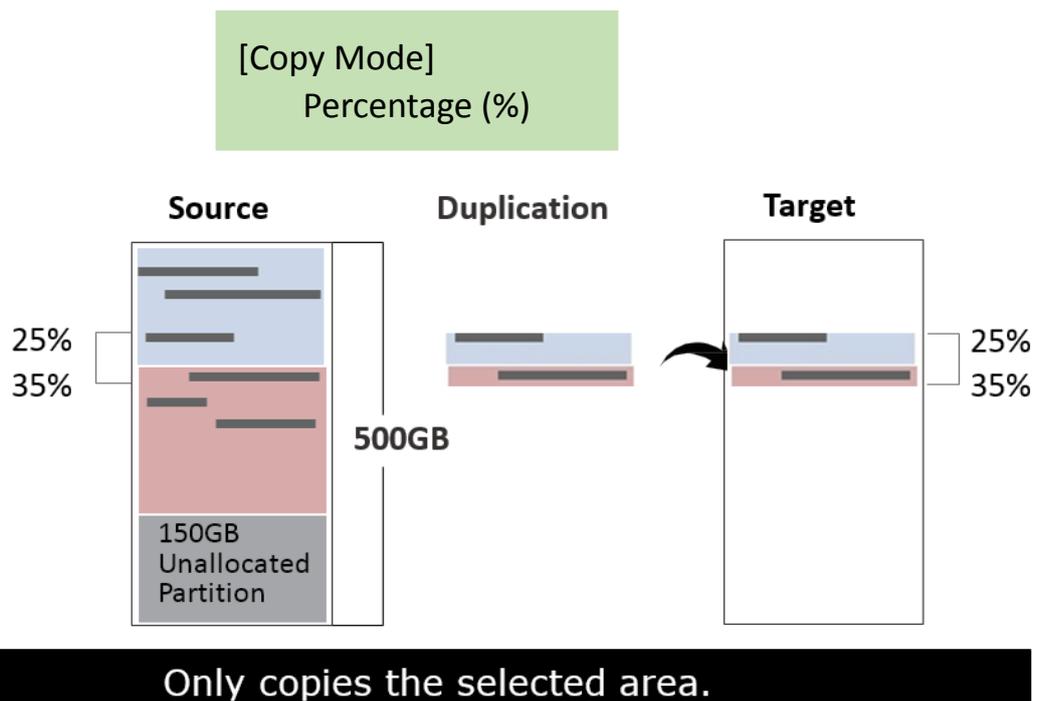Copies the whole source device, irrespective of content, format, partition or empty space. This mode does not analyze the data.

6.1.4 Percentage (%)

Select percentage of source capacity to copy.
Scroll to select "6.1.4 Percentage", then press "OK" to save the copy method.

6.2 Skip Bad Sectors

Scroll to select "6.2 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.

<div style="background-color:#cfe2b0; text-align:center;">

[Skip Bad Sectors]
1000

</div>

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

6.3 Erase Master

This function allows user to enable or disable the source port for sanitization.
Scroll to select "6.3 Erase Master", then press "OK." Then scroll through to
select one of the two settings.

6.4 Language

Select English or Japanese.
Scroll to select "6.3 Language", then press "OK." Then scroll through select the desired language.

6.5 Restore Defaults

Restores all setting to manufacture defaults.
Scroll to select "6.4 Restore Defaults", then press "OK" to restore settings back to manufacture defaults.

How to plug in M.2 SSD

❶ **Align M.2 SSD to connecting port.**

❷ **Insert M.2 SSD at an angle to connecting port.**

❸ **Pull back the rubber standoff.**

❹ **Place M.2 SSD securely all the way down and release the rubber standoff.**

Maintenance Guide

Steps to replace M.2 socket(s)

❶ Turn off power

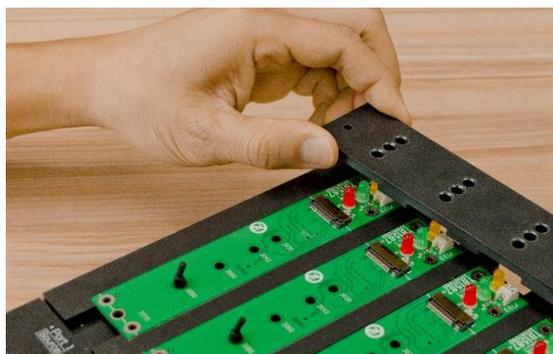| Caution	For your safety, please turn off the power before inspecting or replacing the socket.

❷ Use a flat head screw driver or your fingers to 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.

❸ Remove the cover plate.

❹   Replace the socket(s).

❺   Replace and secure the cover plate.

Specifications are subject to change without notice.