

1-3 & 1-7 PCIe Duplicator and Sanitizer

**User Manual
v A.01**

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Product Disclaimer

The manufacturer is not accountable for any incidental or consequential damages, including, but not limited to property harm, loss of time or data from use of any product, or any other damages attributable to product malfunction or failure of including without limitation, those attributed to reliance of the materials provided, costs of product replacement, loss of use, data or profits, delays or business interruptions, any principle of legal responsibility arising from or in reference to the use, overall performance, delays in servicing, or lack of ability to render service of any our product. We make every effort to ensure proper function of all products. However, the customer is responsible to verify that the output of product meets the customer's quality requirement. The customer further acknowledges that improper use of our products, software program, and/or hardware issues can cause loss of data, defective formatting, or unreliable 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 are subject to change without notice or obligation.

Warranty

The manufacturer 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 are available for the life of the product as defined by the manufacturer.

All warranties are specific to market region and will be defined per market region in which the product was purchased.

Piracy Statement

The manufacturer accepts no responsibility for copyright infringement or misuse of any our equipment. Copying any form 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 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 is updating.
- Use only approved and 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 common for the machine to heat up during operation.
- While in use, do not move the duplicator or remove HDDs.
- Static electricity may cause duplication error. Please pay attention to the duplicator's environment while operating equipment. Utilize electricity elimination equipment to reduce chance of shock during operation.

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

It is a standalone PCIe M.2 duplicator. It is designed as high-level FPGA closed platform which is totally different from computer system and provides safe duplication without virus infection. Unlike PC-based system, it can start each single task immediately after the previous task is complete, no need to wait nor restart system.

The duplicator is specially designed for professional use. The smart Quick Copy (System and Files) mode supports FAT16/32/exFAT, 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 swap device easily during operation to reduce time and effort while repairing.

Product Features

Ultra-high Copy Speed

Dedicated bandwidth for each port. Enables 1-7 duplication at 12.0 GB/min.

Operation Type

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

Hot-swapping Supported

Support hot swapping of devices.

Controller Design

Embedded controller is designed to support capacities up-to 18TB. Continuous improvement for the product means it supports latest market-available devices.

Protocols Supported

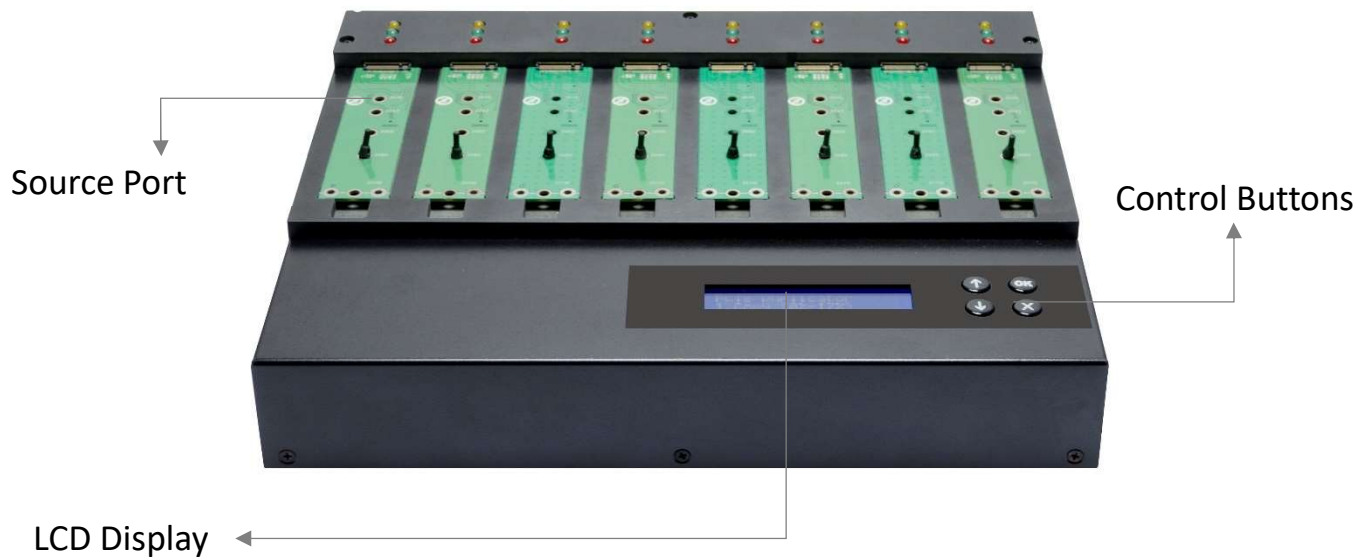
Supports Native NVMe, Native AHCI, and SATA protocol.

Cable-free Hardware Design

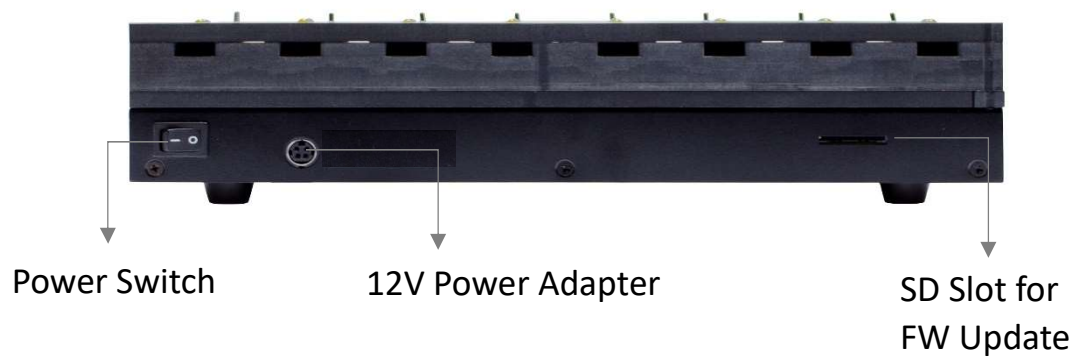
Modularly designed ports effectively reduce downtime and is cost effective for long term ownership.

Hardware Overview

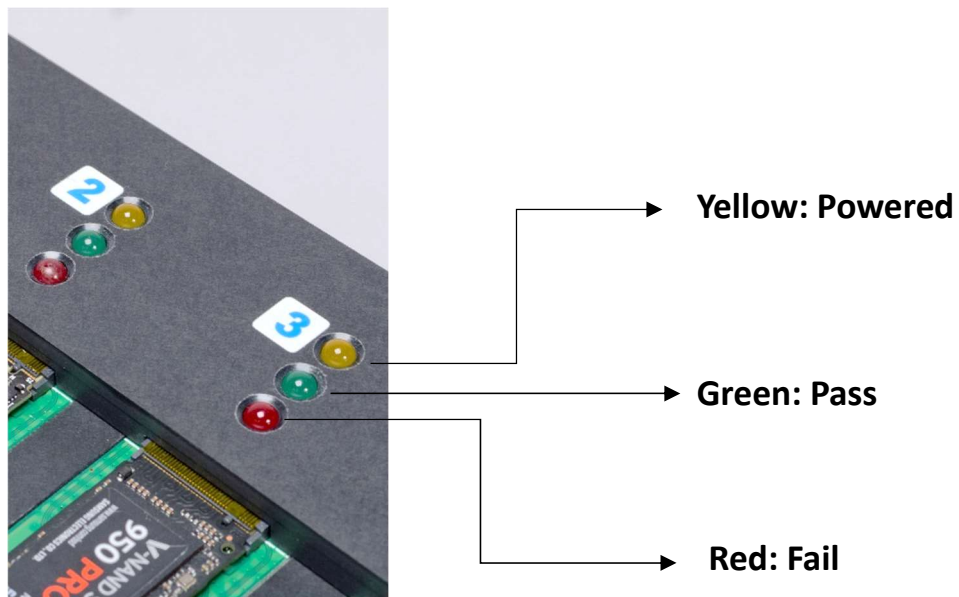
- Front View



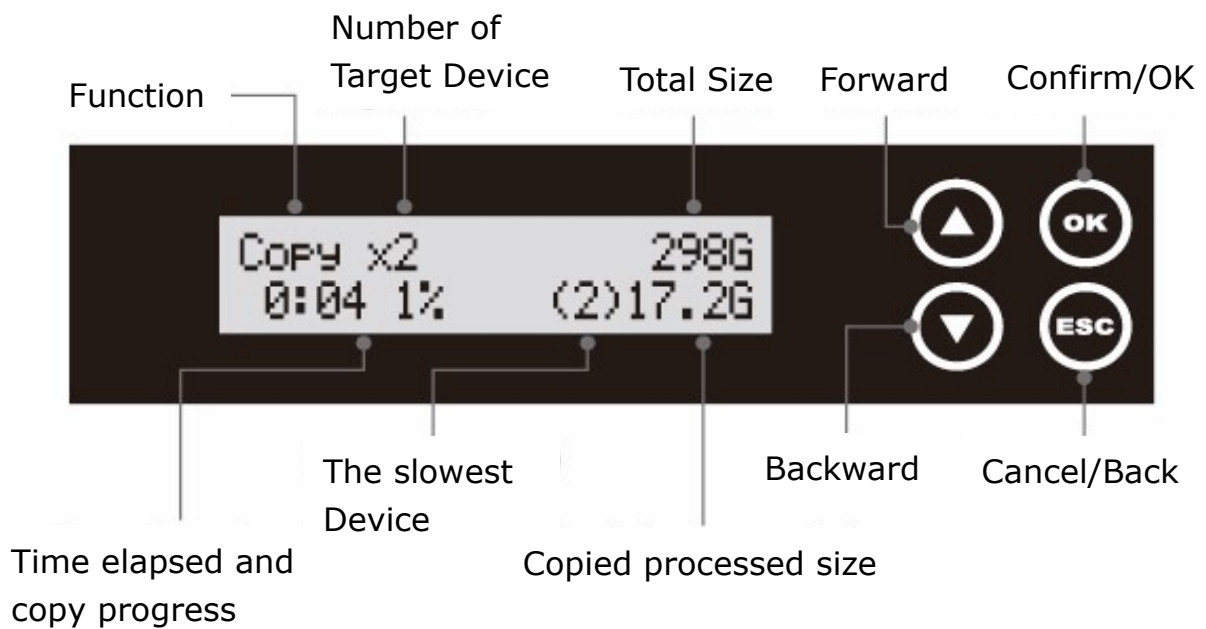
- Back View



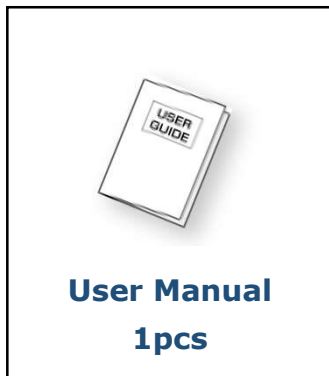
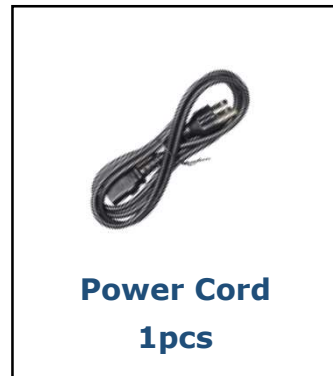
- LED Status



- LCD Configuration



- Package



Functions Table

Functions	Descriptions	
1. Copy	Copies data from source device to targets. (There are four copy modes in function "6.2 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 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 such as device model, name, capacity, etc.	
	5.2 Update System Updates system firmware at the rear SD port.	5.2.1 Update BIOS Updates system firmware through the USB 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.	
	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.	
	5.6 Calc. CRC64 Calculates the CRC64 value of the source device.	

6. Setup	6.1 Start-up Menu Sets default function to display after equipment initialization.	
	6.2 Copy Area	System and Files Copies data and skips empty space. Only supports standard formats.
		All Partitions Copies all partitions and data. Unallocated partitions are not included.
		Whole Device Copies all source data, bit-by-bit.
		Percentage (%) Sets percentage of source capacity to copy.
	6.3 Copy GPT Backup Area Enable this function to copy the end GPT format.	
	6.4 Skip Bad Sectors Skips source bad sectors.	
	6.5 Language Sets preferred language: English or Japanese.	
	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 Sets device power-up buffer time when tasks are initiated.
		6.6.5 Lock Key After keys are locked, only “OK/ESC” buttons will function. (System reboot is required)
		6.6.6 Stop Motor Time Sets device power down buffer time when tasks are completed.
		6.6.7 Boot Password Sets password for bootup.

		6.6.8 Delete Disk Signature After Copy	No
			Yes Do not copy the disk signature onto target devices.
	6.7 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 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.

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 stop 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 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, then 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 3 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 DoD Erase

This function will erase all data per DoD 5220.22-M Standards on the connected device(s).

Scroll to select "4.3 DoD Erase", then press "OK" to start the erasing process.

4.4 DoD EraseComp

This function will erase all data per DoD 5220.22-M Standards, then compare erasure of the connected device(s).

Scroll to select "4.4 DoD EraseComp", then press "OK" to start the erasing and verifying process.

4.5 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, 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

There are 2 system update methods.

① Through SD slot.

Step 1: Prepare a SD card for update.

Connect a SD card to PC. Download the latest firmware provided from supplier's 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 "5.2.1 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. The supplier will not be held responsible for any damages.

② Through Source Port

Step 1: Prepare a device for update.

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

Step2: Download Firmware.

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

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

Step3: 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.

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.

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.

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.

5.5 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.

Caution

Before doing this function, please make sure that there is no important data on the SSD/HDD to prevent the important data from being erased.

5.6 Calc. CRC64

This function will count the CRC64 value for the source port. The CRC64 value is an easy way to double check the source data is correct.

Caution

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

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 Start-up Menu

This function allows user to select the default function to display after equipment initialization.

Scroll to select "6.1 Start-up Menu", then press "OK." Next, scroll through the available menus for startup.

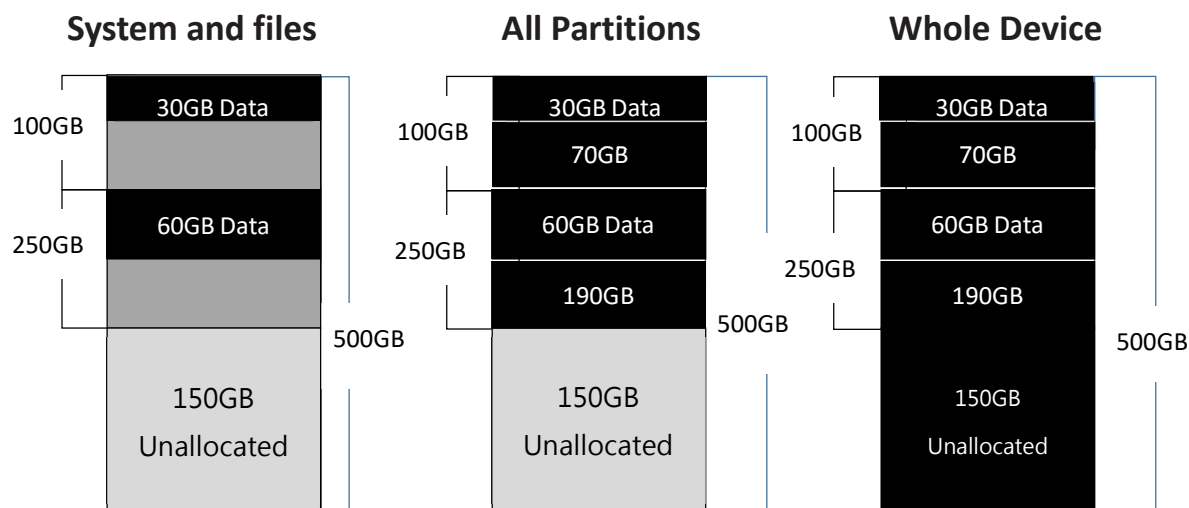
6.2 Copy Area

There are 4 submenu modes.

Scroll to select "6.2 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.



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:

- 6.2 Copy Modes
- 6.3 Copy GPT Back Area
- 6.4 Skip Bad Sectors
- 6.6.1 Unknown Format
- 6.6.4 Wait HDD Time
- 6.6.6 Stop Motor Time

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

① System and Files

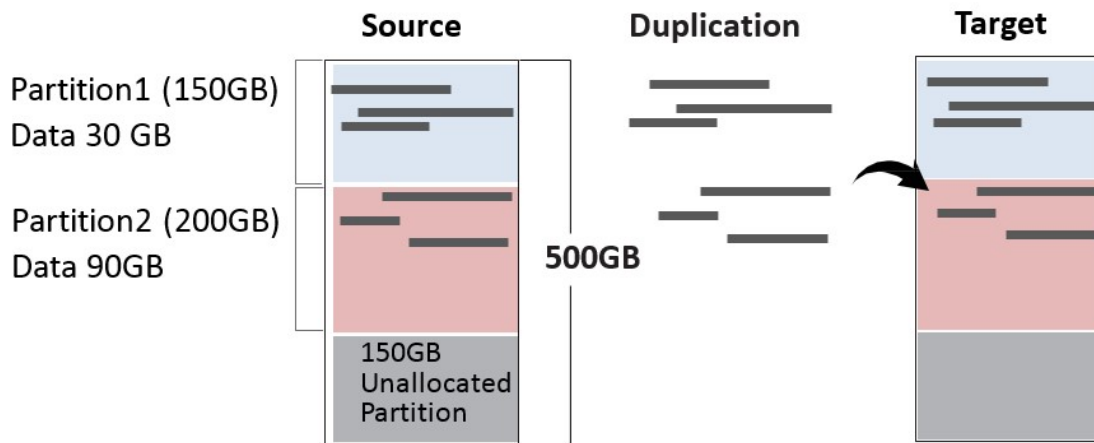
Copies data and skips empty space. Only supports standard formats.

Scroll to select "6.2 Copy Area > 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/exFAT, NTFS, EXT2/EXT3/EXT4, and HFS/HFS+/HFSX are supported in this copy mode.

[Copy Mode]
System & Files



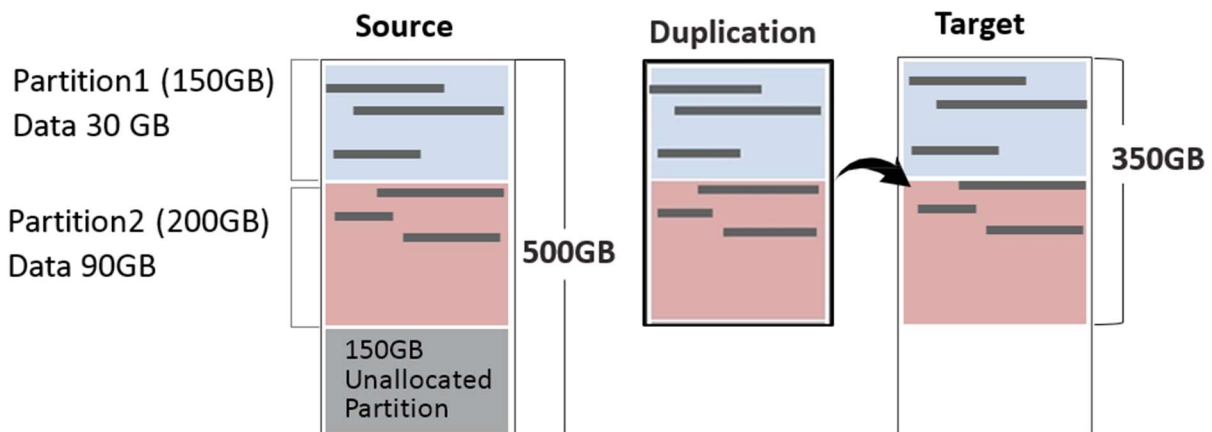
Only 120G data area will be copied.

② All Partitions

Copy or skip HPA, DCO, unknown partitions, modified formats, etc. defined by settings. Scroll to select "6.2 Copy Area > 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.

[Copy Mode]
ALL Partitions



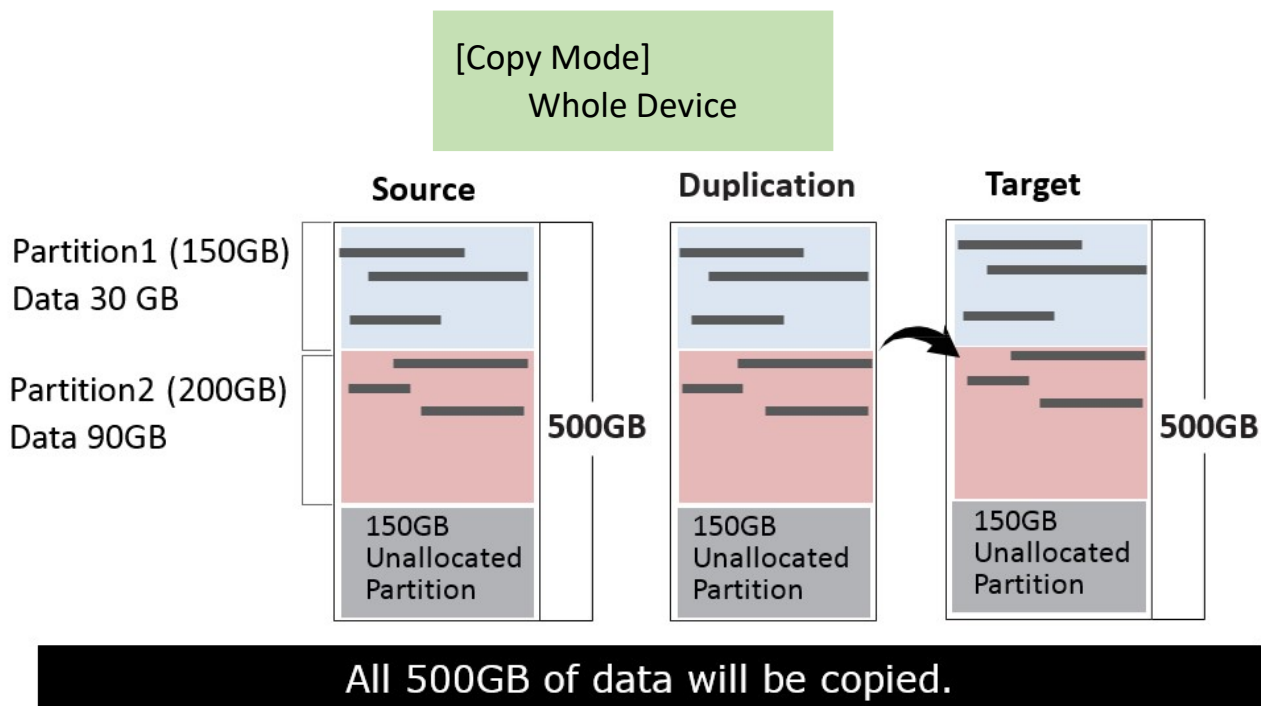
350GB of all Partitions along with its contents will be copied.

③ Whole Device

Copies all source data, bit-by-bit.

Scroll to select "6.2 Copy Area > Whole Device", then press "OK" to save the copy method.

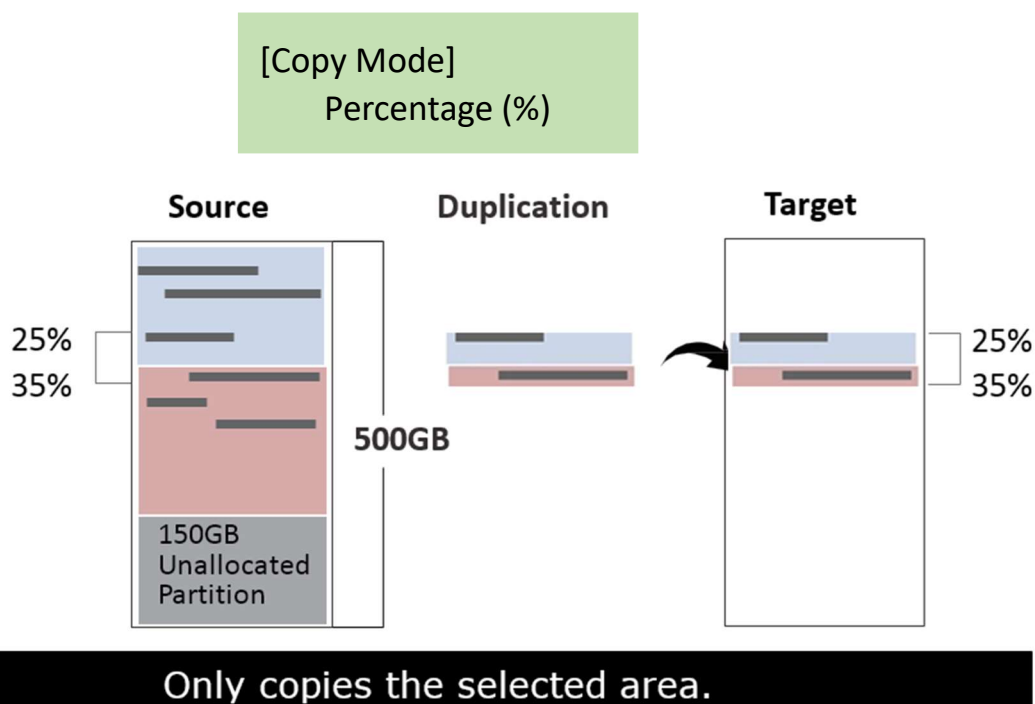
Copies the whole source device, irrespective of content, format, partition or empty space. This mode does not analyze the data.



④ Percentage (%)

Select percentage of source capacity to copy.

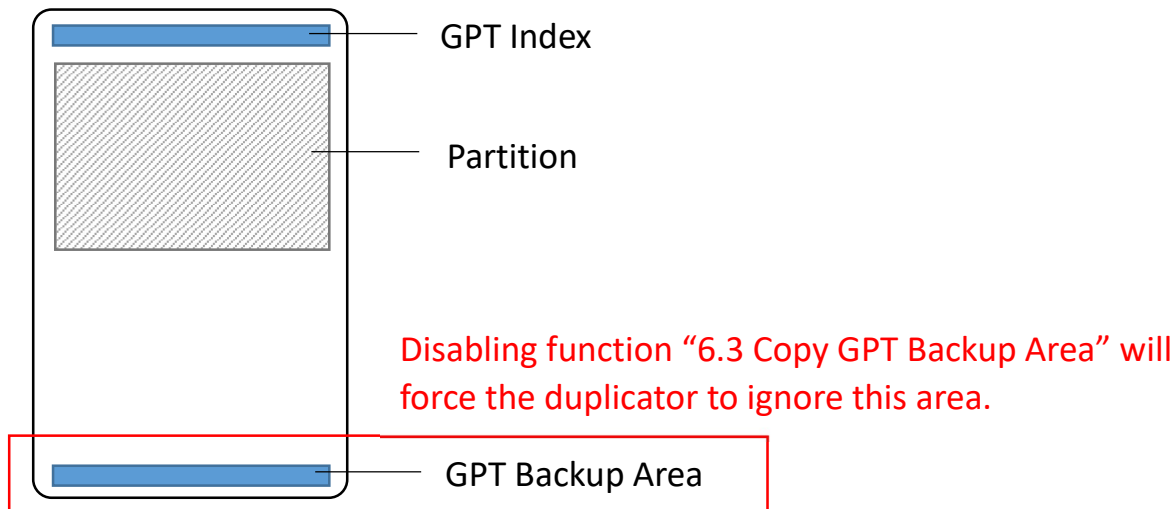
Scroll to select "6.2 Copy Area > Percentage", then press "OK" to save the copy method.



6.3 Copy GPT Backup Area

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

Note 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.

6.4 Skip Bad Sectors

Scroll to select "6.4 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.

6.5 Language

Select English or Japanese.

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

6.6 Advanced Setup

6.6.1 Unknown Format

This function only works with "6.2 Copy Area >> System and Files."

Scroll to select "6.6.1 Unknown Format", then press "OK".

Unknown format includes all forms of modified and proprietary data and partitions.

① Copy Unknown

Copy unknown format(s).

Scroll to select "6.6.1 Unknown Format >> Copy Unknown", then press "OK" to save this setting.

② Skip Unknown

Skip unknown format(s).

Scroll to select "6.6.1 Unknown Format >> Skip Unknown", then press "OK" to save this setting.

6.6.2 Erase Master

This function allows user to enable or disable the source port for sanitization.

Scroll to select "6.6.2 Erase Master", then press "OK." Then scroll through to select one of two settings.

① Disabled

Devices connected to source port cannot be erased.

Scroll to select "6.6.2 Erase Master >> Disabled", then press "OK" to save this setting.

② Enabled

Devices connected to source port can be erased.

Scroll to select "6.6.2 Erase Master >> Enabled", then press "OK" to save this setting.

6.6.3 Erase Pattern

Scroll to select "6.6.3 Erase Pattern", then press "OK". Then scroll through to select one of two settings.

① One Byte

Random character written per byte.

Scroll to select "6.6.3 Erase Pattern >> One Byte", then press "OK" to save this setting.

② Big Random Data

Random character written in a set of area.

Scroll to select "6.6.3 Erase Pattern >> Big Random Data", then press "OK" to save this setting.

6.6.4 Wait HDD Time

Sets device power up buffer time prior to copy, erase, etc...

Scroll to select "6.6.4 Wait HDD Time", then press "OK" to set buffer time "from 5 to 99 seconds" or "wait key to start." The default is 30 seconds.

6.6.5 Lock Key

This function allows users to enable or disable the 4 control panel buttons.
Scroll to select "6.6.5 Lock Key", then press "OK" to access available settings.

① Disabled

Scroll to select "6.6.5 Lock Key >> Do NOT Lock Key", then press "OK" to save this setting.

② Enabled

Scroll to select "6.6.5 Lock Key >> Do Lock Key", press "OK," then reboot the system to activate the setting.

****Only ▲ ▼ buttons are disabled.**

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

[Lock Key]
Do Lock Key

UNLOCK KEY ! !

6.6.6 Stop Motor Time

Sets device power down buffer time when tasks are completed.

Scroll to select "6.6.6 Stop Motor Time", then press "OK" to set buffer time from 1 to 20 seconds. The default is 3 seconds.

6.6.7 Boot Password

Sets password for bootup.

Scroll to select "6.6.7 Boot Password", press "OK," and select the password by "▲, ▼ and OK."

6.6.8 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 "6.6.8 Delete Disk Signature After Copy" is set at "Yes."

6.7 Restore Defaults

Restores all setting to manufacture defaults.

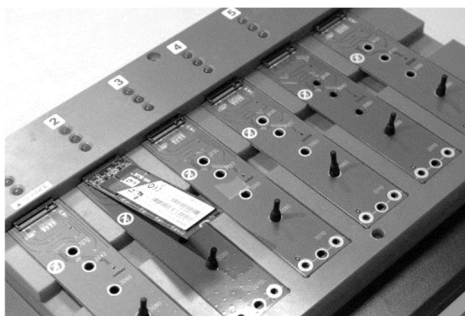
Scroll to select "6.7 Restore Defaults", then press "OK" to restore settings back to manufacture defaults.

How to plug in M.2 SSD

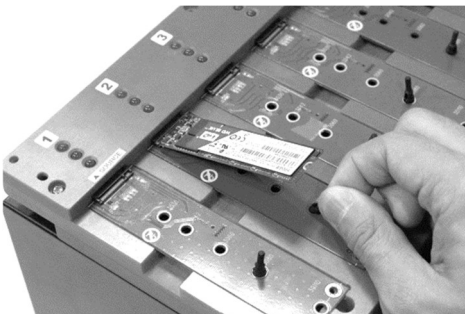
Step 1: Align M.2 SSD to connecting port.



Step 2: Insert M.2 SSD at an angle to connecting port.



Step 3: Pull back the rubber standoff.



Step 4: Place M.2 SSD securely all the way down and release the rubber standoff.



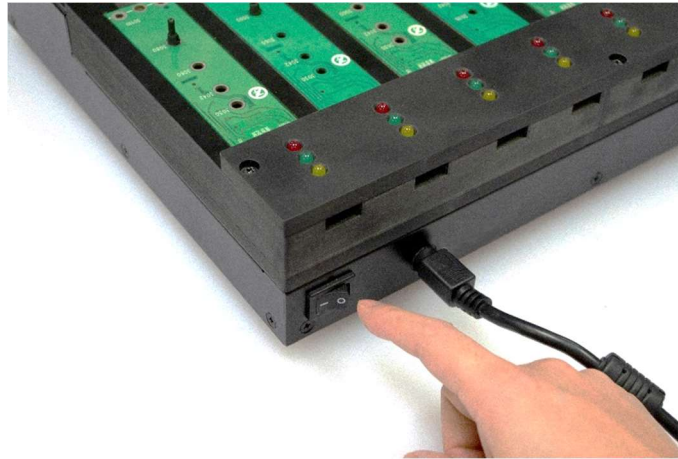
Maintenance Guide

5 Steps to replace M.2 socket(s)

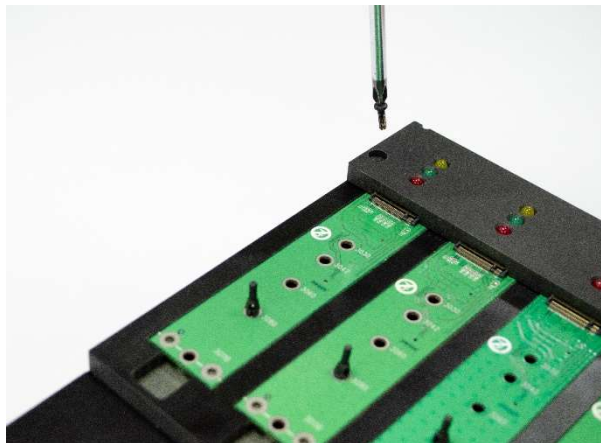
Step 1: Turn off power.

Caution

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



Step 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.

Step 3: Remove the cover plate.



Step 4: Replace the socket(s).



Step 5: Replace and secure the cover plate.



Specifications

Product Name	PCIe Duplicator and Sanitizer	
Targets & Bandwidth Performance	1-3: 9.0 GB/min 1-7: 12.0 GB/min <i>*Actual performance is dependent on Device transfer speeds*</i>	
Supported Capacity	Supports the latest market available capacity. Designed support capability up-to 18TB.	
LCD Display	Monochrome LCD	
LEDs	3 LED Indicators per Port: Yellow (Power), Green (Pass), Red (Fail)	
Control Panel	4 push buttons (UP, DOWN, OK, ESC)	
Compatible Device	Directly compatible with: PCIe M.2(NGFF) M Key & B+M Key.	
Copy Modes	System and Files, All Partitions, Whole HDD, Percentage	
Sanitization Modes	Quick Erase, Full Erase (NIST 800-88), DoD Erase (DoD 5220.22-M), Secure Erase (NIST 800-88).	
Supported OS	All (Windows, MAC, Linux, RAID, etc.)	
Supported Format	Quick copy (System and Files): FAT16/32/exFAT, NTFS, Linux (Ext2/3/4), Mac (HFS/HFS+/HFSX), GPT, Dynamic	
	All Partitions/ Whole HDD/ Percentage Copy: Supports all formats.	
Power Requirements	12V Power Adapter	
Temperature	Working	5°C ~ 45°C (41°F ~ 113°F)
	Storage	-20°C ~85°C (-4°F ~ 185°F)
Humidity	Working	20% ~ 80%, non-condensing
	Storage	5% to 95%, non-condensing
Dimensions	1-3: 185 x 270 x 70 mm 1-7: 262 x 331 x 80 mm	
Weight	1-3: 2.4 kg 1-7: 4.1 kg	

Specifications are subject to change without notice.