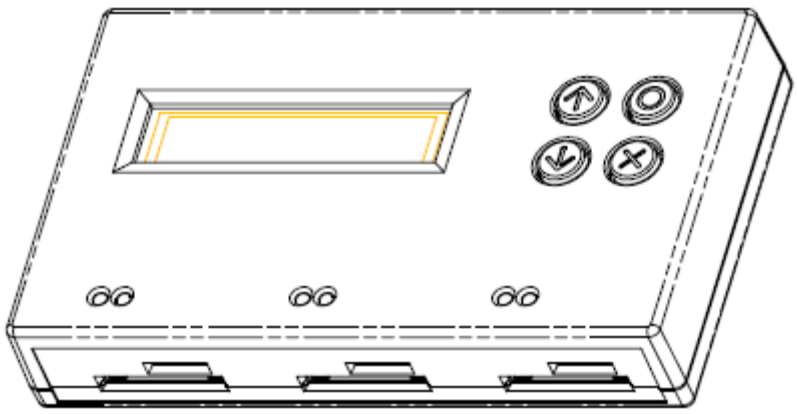
Carry Flash
Mini Duplicator

U-Reach

Carry Flash Series

SD/ Micro SD Duplicator- SD312N

User Guide vA.02



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v A.02.2

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U-Reach 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 U-Reach 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 U-Reach product. U-Reach makes every effort to ensure proper function of all products. However, the customer is responsible to verify that the output of U-Reach product meets the customer's quality requirement. The customer further acknowledges that improper use of U-Reach products, software program, and/or hardware issues can cause loss of data, defective formatting, or unreliable 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 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.

Piracy Statement

U-Reach accepts no responsibility for copyright infringement or misuse of any U-Reach 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 noncompliance 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.
- 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 to heat up during operation.
- While in use, do not move the duplicator or remove devices.
- Static electricity may cause duplication error. Please pay attention to the duplicator's environment and operator's equipment. Purchasing static electricity elimination equipment to avoid static electricity shock while in high static electricity areas.

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.

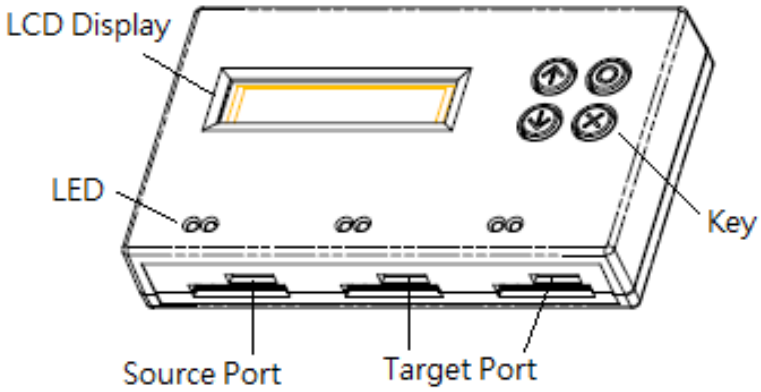
Caution	Refers to procedures that need to be adhered to or precautions.

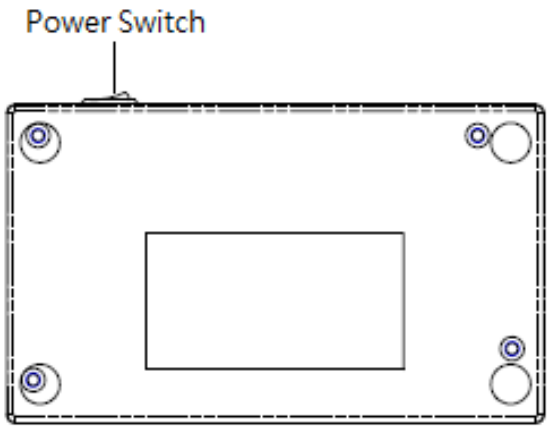
Introduction

1. Features

- Ultra-high transmission speed.
- Real multitask processing capability. Whether copy, compare, media check or format, each feature is independently executed. Each flash slot has an independent processing unit.
- Powerful H3/H5/H6 for speed and flash quality check.
- Non-PC based, with no risk of virus infection.
- One touch copy. Real time information will be displayed on the LCD screen.
- Supports Synchronous and Asynchronous Copy/Compare/Erase/Format/Media Check/Speed Check. The status of each flash media can be viewed during copy operation by pressing the↑↓keys.
- Ultra-high speed bit-for-bit hardware comparison.
- Various copy speed selection is available for assorted flash media quality.
- Special speed selection function to filter out qualified flash media during quality control process.
- Small footprint design allows portability.

2. Appearance





Function Table

*Below functions and features subject to change without notice.

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<tr><td>2. Compare</td><td colspan="2">Compares the data bit by bit between the source and all other copied flash medias.</td></tr>
<tr><td>3. Copy&Compare</td><td colspan="2">First copies then compares the copied flash media with the source immediately after the copy has finished.</td></tr>
<tr><td>4. Capacity Check</td><td colspan="2">Checks the real capacity of the flash.</td></tr>
<tr><td rowspan="2">5. Information</td><td colspan="2">5.1 SD Card Info.
Shows flash’s information of data; file format, content size, and capacity.</td></tr>
<tr><td colspan="2">5.2 System Info.
Shows information about the duplicator system, including machine model number and software version.</td></tr>
<tr><td rowspan="8">6. Utility</td><td rowspan="6">6.1 Do Format</td><td>6.1.1 Auto Format
Auto formats media to be FAT16 or 32.</td></tr>
<tr><td>6.1.2 FAT16 Format
Formats media to be FAT16.</td></tr>
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Formats media to be FAT32.</td></tr>
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Formats media to be exFAT.</td></tr>
<tr><td>6.1.5 Set FAT 16 Cluster Size
Sets the size of FAT16 Cluster.</td></tr>
<tr><td>6.1.6 Set FAT 32 Cluster Size
Sets the size of FAT 32 Cluster.</td></tr>
<tr><td colspan="2">6.2 Measure Speed
Measures the flash reading and writing speed. This function will damage the format and content.</td></tr>
<tr><td>6.3 Media check</td><td>6.3.1 H3 Safe
Checks the quality of flash by reading it. This safe check will not change flash’s content and format.</td></tr>
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		6.3.2 H5 RW Checks the quality of flash by reading and writing. This function will change flash's content and format.
		6.3.3 H6 SafeRW Checks the quality of flash by writing and reading its empty space. This function will not change flash's content and format.
		6.3.4 Setup Range % Sets the checking range of flash from 1%~100%.
		6.3.5 Setup Range MB Sets the checking range of flash from 1MB~9000MB.
		6.3.6 Set Error Limit Sets the tolerance range of error when checking the flash. (by unit of Sector/KB/MB)
	6.4 Quick Erase Erases the content of flash media. It will keep the FAT format.	
	6.5 Full Erase Erases the flash data completely bit by bit including format and content, takes more time.	
	6.6 DoD Erase Erases flash three times complying with USA Department of Defense standard (DoD 5220.22-M).	
	6.7 System Update Updates system firmware via the flash media.	
	6.8 Calc. Checksum Calculates the Checksum value of the flash media in the source port.	
7. Setup	7.1 Start-up Menu Selects which function is shown first when the system is turned on.	
	7.2 Copy Area	7.2.1 System and Files Sets to automatically analyze the format of source data and only copy the data area.(Available for FAT16/32/exFAT, NTFS, Linux (ext2/ext3/ext4))

		7.2.2 Whole Media Sets to copy the whole content of flash including the empty space.
	7.3 Button Sound Chooses whether or not to hear a beep when a button is pressed.	
	7.4 Target Tolerance Sets the tolerance % of capacity gap between the source and target. The default setting is “No limit”.	
	7.5 Asynchronous Sets Asynchronous function. “Enable” to enable Asynchronous function, “Disable” to disable the function.	
	7.6 Check Before Copy Sets whether or not to check the flash media before copy.	
	7.7 Power Off Time Between Copy&Compare Sets the power-off time between Copy and Compare when executing “Copy&Compare” function.	
	7.8 Auto Start After Fill Device Sets whether or not to immediately start “copy/compare” tasks once targets are connected.	
	7.9 Language Sets system language interface i.e. English, Japanese.	
	7.10 Select Speed Selects the speed of data transmission among “Fastest”, “Faster”, “Normal”, “Slower”, and “Slowest”.	
	7.11 Purge Before Copy Cleans out target device’s data and format first, and then runs the “Copy” process.	
	7.12 Monitor Device After Copy Allows user to set a device status check after duplication.	
	7.13 Set to Default Restores settings to original manufacturer settings.	

Function 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.

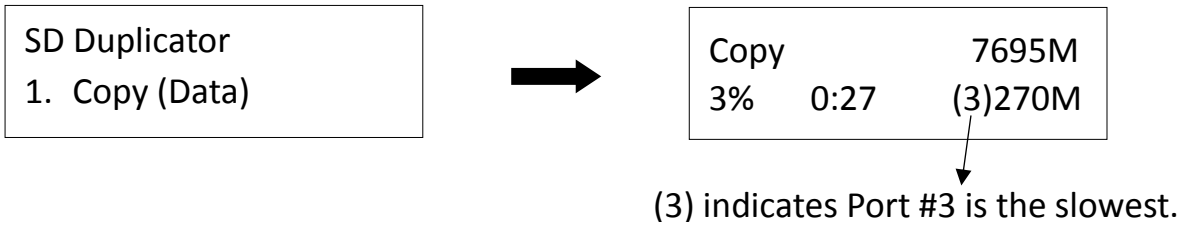
Step 2: Insert source and target devices.

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



Note	• Before duplication, select the data area at "7.2 Copy area" • Press ↑↓ together for 5 seconds to stop operation on the slowest device. • Press "ESC" for 5 seconds to stop all the copy jobs.

Caution	It is recommended to reboot the machine after manually stopping the copy.

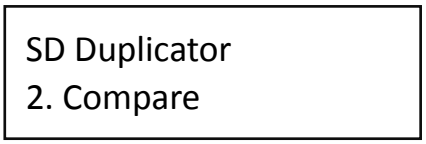
Step 4: Copy Completed!

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

Note	• If flash card is removed during copy process, the system will stop immediately, and red light will illuminate to notify user the copy has failed. Removing the flash card during copy is strongly discouraged as it will damage the flash card. • Backup the data on target flash cards before starting the copying process as any pre-existing data will be lost once copy is complete.

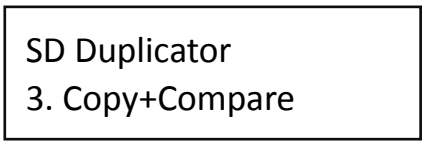
2. Compare

The compare function checks the accuracy of copy result. Scroll to select "2. Compare", then press "OK" to start the verification process.



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. Capacity Check

This function can quickly check the real capacity if it's claimed.

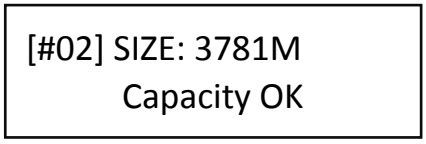
❶ Plug in flash media, select function [4. Capacity Check], then press "OK".

It will take about 3 seconds to determine the exact capacity.

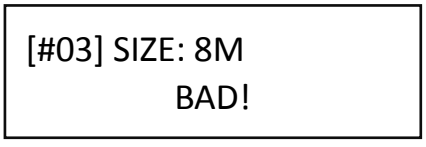
❷ System will show the checking result by use of Green/Red LED light.

❸ Use the ↑↓ buttons to check the status of each slot.

Green Light: Capacity OK



Red Light: Error



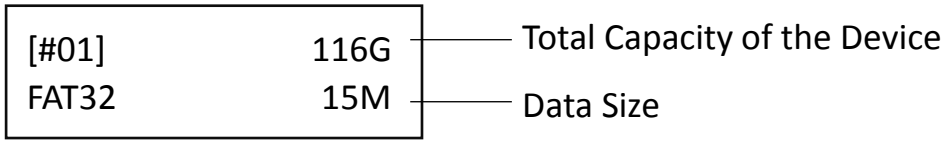
Note	• This function supports asynchronous operation; you can continually plug and unplug flash media without having to push any buttons. • The function may alter the data content and format of flash. • To protect source data, the system will not run a “Capacity Check” on the master device. • When the red error light illuminates, you can use the ↑↓to view error information.

5. Information

5.1 SD Card Info.

This setting displays the flash media’s basic information such as file format, content size, and total capacity.

Use the ↑↓buttons to view the information of each flash media, source included.

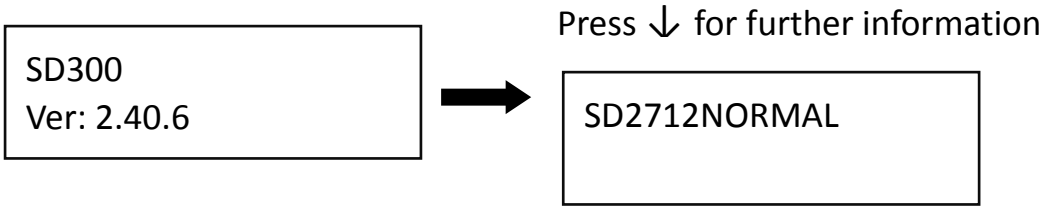


Note	Using this function will not delete the flash media content or format.

Note	The source port will not perform any formatting because this function will delete the flash media’s data.

5.2 System Info.

This function displays system information such as model number and software version.



6. Utility

6.1 Do Format

6.1.1 Auto Format

This function formats flash into FAT. Plug in the flash media and press "OK". The system will automatically detect its capacity, then format the media per its capacity.

- If the flash media format is already FAT16 or FAT32, the format function won't alter its original format.
- If the original flash media is not FAT format, i.e. NTFS, Linux or FAT multi-partition. The system will format per flash's capacity. If capacity is above 2GB, the system will format the flash to FAT32 and below 2GB, the system will format the flash to FAT16.

Capacity < 2GB	Format FAT16
Capacity > 2GB	Format FAT32

6.1.2 FAT16 Format

Sets the FAT16 format.

6.1.3 FAT32 Format

Sets the FAT32 format.

6.1.4 exFAT Format

Sets the exFAT format.

6.1.5 Set FAT16 Cluster Size

Sets the FAT16 cluster size.

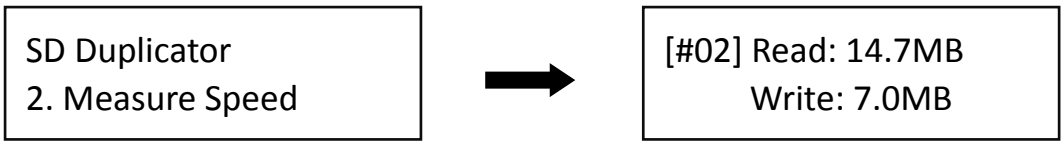
6.1.6 Set FAT32 Cluster Size

Sets the FAT32 cluster size.

6.2 Measure Speed

This function measures the "read" and "write" flash media speed.

❶ Plug flash media into the slot, select function [3. Measure Speed], then press "OK" to start this function.



❷ Use the ↑ ↓ keys to view the exact "Read" and "Write" flash media speed on each port.

Note	• To protect source data, the system will not execute “Measure Speed” on the master device. • The function may alter the format and data content of flash.

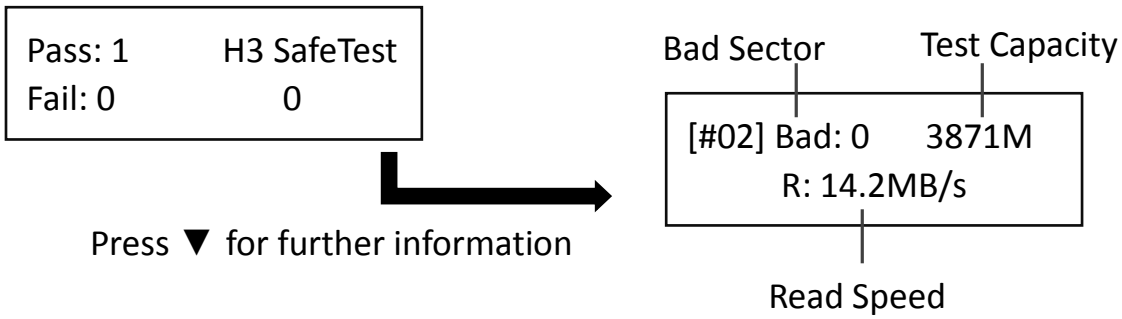
6.3 Media Check

Note	• Functions mentioned with “Overwrite” will change the content and format of flash media, please do not execute this function if there is important data stored in it. • You can set the checking area in [6.3 Media Check >> Setup Range (% or MB)]. • To protect source data, the system default setting will not execute this function on the master device.

6.3.1 H3 Safe

This function reads the flash media to assess its quality. After executing this function, the flash’s bad sector quantity and reading speed will be displayed.

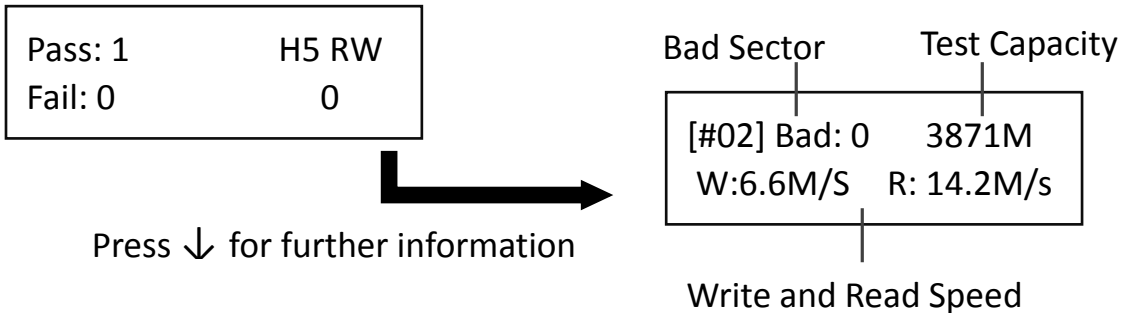
Use the ↑ ↓ buttons to view the status of each port.



Note	This function will not alter the content or format.

6.3.2 H5 Test

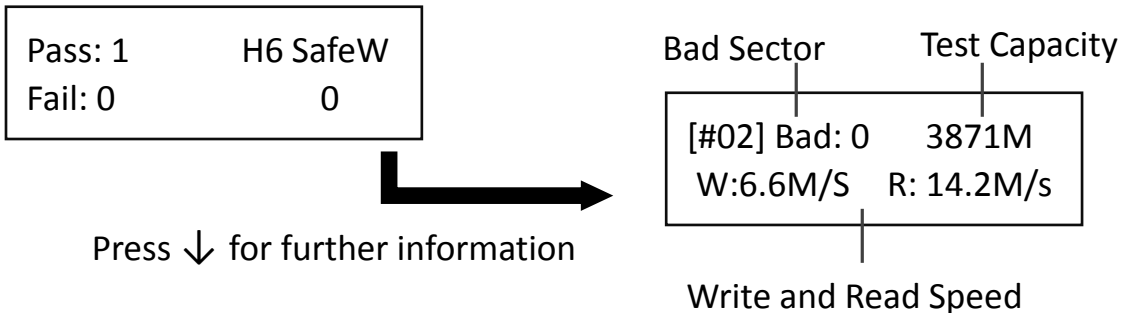
This function performs a read and write test to determine the flash's quality. The flash's original data will be erased during this test. Use the ↑↓ buttons to view the status of each port.



Note	The flash device will be formatted at FAT 16/32 once testing is completed.

6.3.3 H6 Test

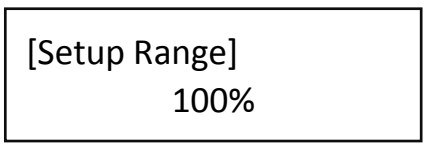
This function performs a read and write test on the empty space to determine the flash's quality. The flash's original data will not be erased during this test. Use the ↑↓ buttons to view the status of each port.



Note	• This function supports FAT16/32 format only. • This function will NOT alter the flash's content.

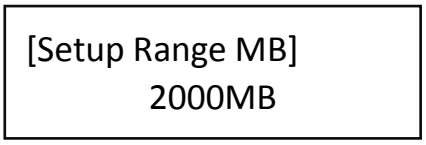
6.3.4 Setup Range %

This function sets the quality check capacity range. Use the ↑↓ buttons to set the range from 1 to 100%. The higher the percentage, the longer it takes.



6.3.5 Setup Range MB

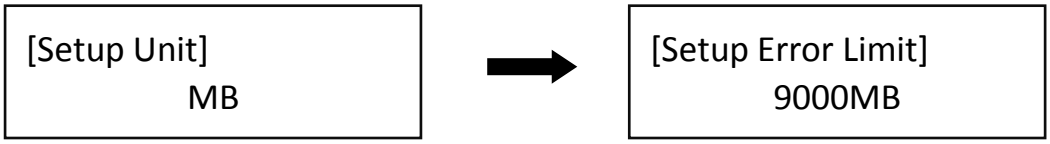
This function sets the quality check capacity range in MB. Use the ↑↓ buttons to set the range from 1MB to 9000MB.



Note	The duplicator will abide by whichever was set last if both Range% and Range MB are set.

6.3.6 Setup Error Limit

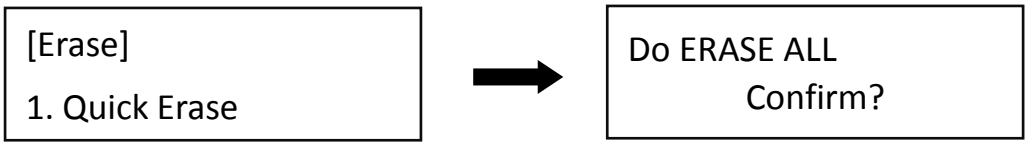
This function sets the error tolerance range while checking the flash. Use the ↑↓ buttons to set the error limit value. Select units to use (Sector, MB or KB), then select the value.



6.4 Quick Erase

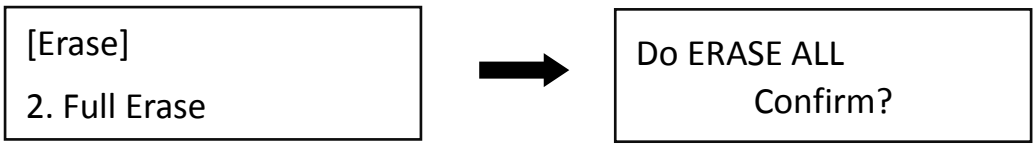
This function erases flash data while keeping the format if the original flash format is FAT16/32. Use the ↑↓buttons to view status, progress, and information.

Note	Quick erase function will erase only FAT 16/32 formatted devices.



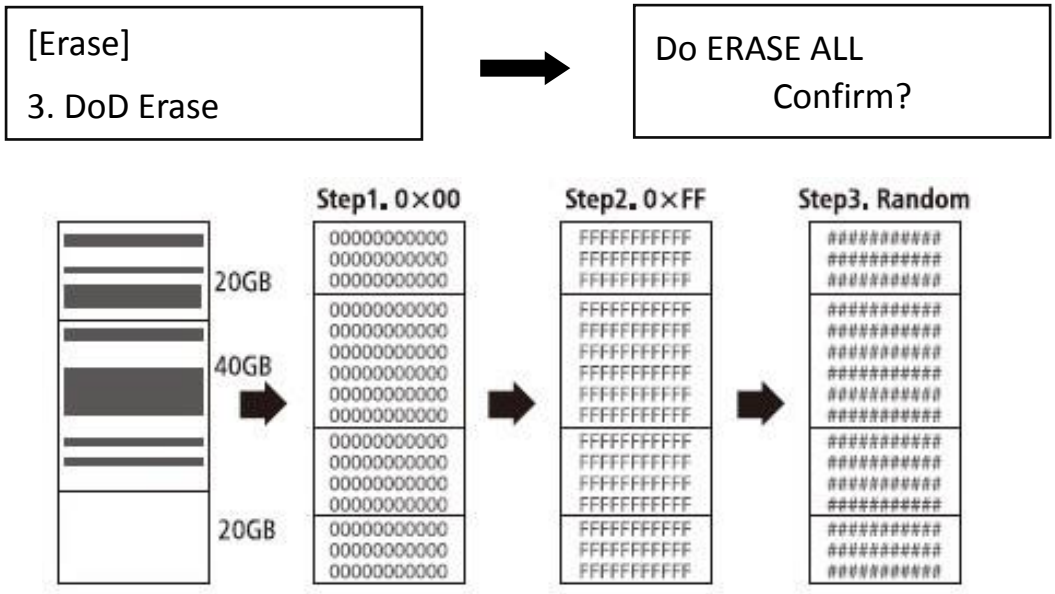
6.5 Full Erase

Completely erases the entire flash media, including format and content. This task takes longer. Pressing “ESC” during this process will abandon the task, but the original format and content will no longer be readable.



6.6 DoD Erase

DoD Erase complies with the U.S.A. Department of Defense (DoD 5220) standards by erasing the flash three times, which guarantees that data is completely scrubbed.



Note	Use the ↑↓ buttons to view the status of each port during erase.

6.7 System Update

Step 1: Prepare a SD Card for update.

Connect a SD Card to PC. Download the latest firmware, unzip the BIOS firmware, then save it to the root directory in the Flash drive.

Note	The format must be: FAT16 or FAT32.

Step 2: Proceed to update firmware.

Connect the SD Card to the source port of the duplicator. Scroll to select "6.7 System Update", 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. U-Reach will not be held responsible for any damages.

6.8 Calc. Checksum

This function will count the Checksum value for the source port. The checksum 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.

7. Setup

7.1 Start-up Menu

Sets which function is displayed powered on. The default setting is "1. Copy".

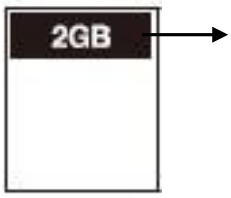
[Start-up Menu]
1. Copy

7.2 Copy Area

❶ Copy Area: System and Files

Also known as "Quick Copy". The source's format is automatically analyzed and if it's recognizable, such as, FAT 16/32/exFAT, NTFS, or Linux ext. 2/3/4, the system will copy the data only, rather than the entire flash.

[Copy Area]
System and Files



Copies 2GB data only.

Note	If the file format is not recognized, the whole flash card, including empty space, will be copied even if you specify copy area in "System and Files".

❷ Copy Area: Whole Media

The system will copy the whole flash card, including empty space and format. This function is useful when users want to copy the whole flash or have a flash source with an unknown format. "Whole media" copies take a bit longer to complete.

[Copy Area]
Whole Media

8GB → Copies total 8GB area.

7.3 Button Sound

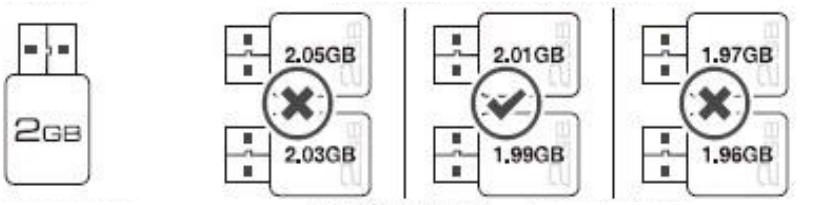
Controls whether to hear a sound when a button is pressed.

[Button Sound]
ON

7.4 Target Tolerance

This function sets the capacities tolerance range between the source and target flash. If the capacity is outside the tolerance range, the copy will fail.
For example, if the target tolerance is set to "±1%", targets whose capacities are 2.02GB or more and 1.98GB or less will not be copied.

Source **Target tolerance setting: ± 1%**



Real Capacity 2GB 2.02GB (2GB +1%) 1.98GB (2GB – 1%)

7.5 Asynchronous

Users can activate Asynchronous copy by selecting “Enable” or deactivating it by selecting “Disable” For Asynchronous copy to run, the source’s data must be smaller than the system’s buffer memory and set to “Enable”. However, if set to “Disable”, regardless of content size, synchronous copy will be performed.

The conditions of executing “Asynchronous Copy”		
	DISABLE Asynchronous Copy	**ENABLE** Asynchronous Copy
Data > Buffer	✗	✗
Data < Buffer	✗	✓

Note	The buffer memory may vary depending on product model.

7.6 Check Before Copy

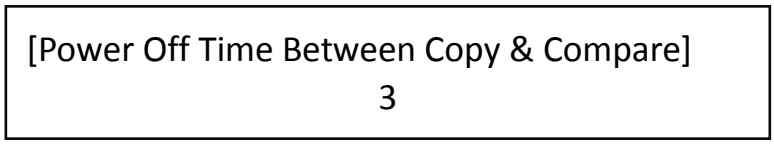
This setting checks if the target devices’ are capable for read and write.

[Check Before Copy]
Do Not Check

Note	This function will modify the flash media’s content.

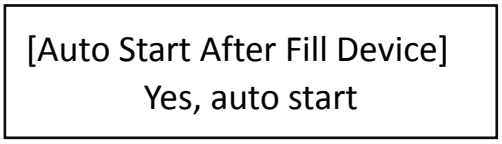
7.7 Power Off Time Between Copy+Compare

The use of this setting is highly advised as it prevents data loss due to unstable flash. Users can set the time gap of power supply between copy and compare. The time gap can be set from 0 to 15 seconds. The default is "3".



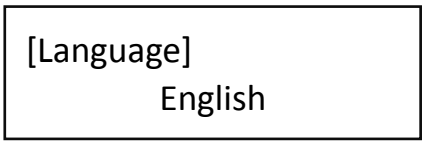
7.8 Auto Start After Fill Device

Sets auto start of copy/compare task upon insertion of all targets. Users can also choose to confirm tasks first by pressing “Ok”.



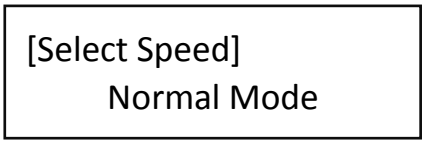
7.9 Language

Sets the system’s language. (English or Japanese)



7.10 Select Speed

There are 5 transmission speed options:

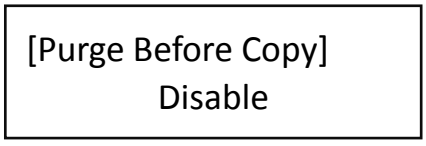


- Slowest Mode
- Slower Mode
- Normal Mode (Default)
- Faster Mode
- Fastest Mode

Use a good quality flash media that supports a faster mode. If unsure about the flash quality or notice a high copy/compare failure rate, use a slower transmission speed. The default setting is “Normal Mode”.

7.11 Purge Before Copy

This setting clears out the target devices’ content and format before copying.

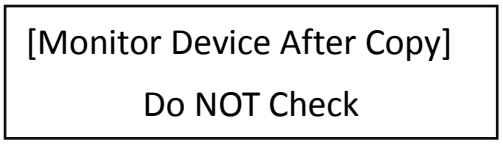


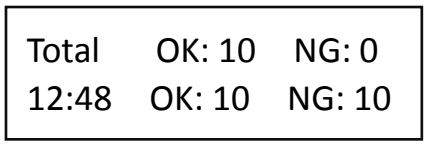
Note	This function will erase the flash media’s data and format.

7.12 Monitor Device After Copy

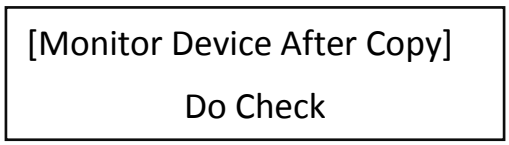
Allows user to set a device status check after duplication. The settings could show different results because each device has various settings.

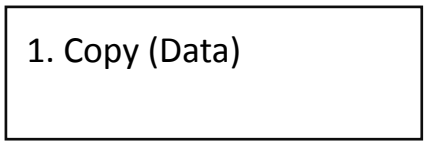
For example, if a device is set to power off automatically after “complete” command, then user must set “Do NOT Check” to make sure the LCD keeps the copy result for reference.





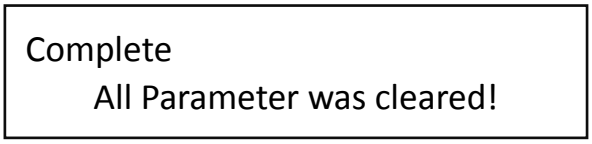
In this case, if set at “Do Check”, the copied device will power off automatically after Copy job completes and the LCD will back to the previous job.





7.13 Set to Default

Restores original default settings.



Q&A

Q1: Can the flash duplicator copy any kind of file format, i.e. NTFS?

A: Yes, our flash duplicator supports the most common formats such as: FAT 16/32, NTFS, Linux (ext2, ext3, ext4), etc. Additionally, if you want to copy other formats, you can use the "Whole Area" function to copy whole flash media without formatting issues.

Q2: How do we know the data is correct after copy?

A: Use the [2. Compare] function to ensure duplication accuracy.

Q3: What should I do if I encounter a copy fail?

A:

❶ Double check that source capacity is not larger than the target capacity. [5.1 SD Card info] function allows you to view the source and target's data size and capacity.
❷ Ensure that your source flash media isn't corrupt.
❸ If the flash quality is poor, copy results may be affected, to remedy this:
(1) [6.3 Media Check] will check both source and target's quality.
(2) Use "Select Speed" to slow down the copy speed.

Q4: Why is the copy speed so slow?

A: U-Reach SD Card duplicator can reach high transmission rate, but speed depends on actual flash quality and models/series. If you find the copy speed is slow, double check flash quality. You can use function, "Measure Speed" to check the flash speed.

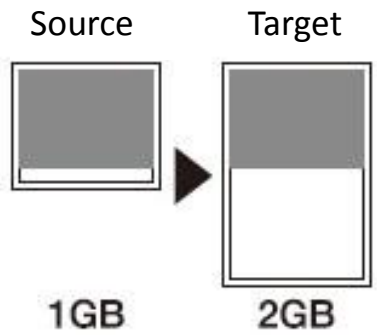
Q5: Is it possible to use a 1GB source copy to 2 GB targets (source capacity less than target)?

A: Yes, copying from 1GB to 2GB is doable, but the target becomes 1GB when read on PC. After duplication, the target's FAT table will be identical to the source. You can restore its real capacity by re-formatting the device.

Q6: Is it possible to copy when there is a big difference between Source and Target's capacity? For example, a 2GB source copy to 1GB targets?

A: Yes, but the source data must be within the capacity of the target devices. However, due to capacity discrepancy, errors and lost data may occur. Using flash medias with the same capacity is strongly recommended.

❶ If Source capacity is SMALLER than the target, for example 1GB to 2GB:
Example:



Copy OK

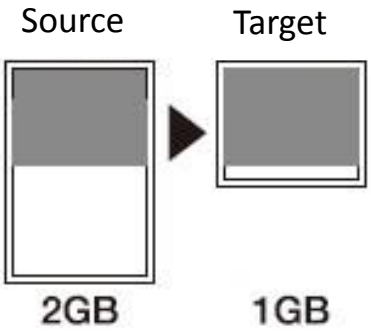
Warning:

The 2GB target WILL BECOME 1GB WHEN READ ON PC. You can reset its 2GB capacity by reformatting the device.

Caution	When there is a big difference between target and source's capacity, such as 1GB to 4GB or 1GB to 2GB, there is a risk of target capacity, compatibility and format errors. It is strongly recommended that target and source be in close range of capacity.

❷ If source capacity is LARGER than the target, for example 2GB copy to 1GB:
▸There are two results as shown in illustrations (1) and (2)

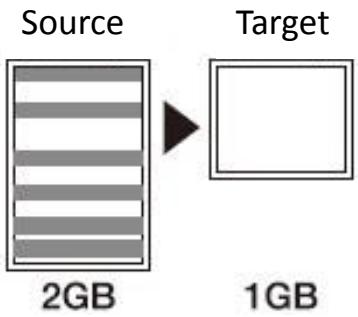
(1) When a content is within the target flash media's capacity.



Copy OK

Because the data is within the 1GB area.

(2) When the content is outside the target flash media's capacity.



Can't Copy

Because the data is outside of the 1GB area.

Caution	The copy will fail because the data was stored beyond the 1GB area. The duplicator will copy the data as is which means the location remains intact.

Specification

Model	SD312N	
Specifications	Capacity	Designed support up to 2TB
	Operation Type	Standalone, FPGA based operation (Non-PC based)
	Supported Languages	English or Japanese
	LCD Display	Backlit Monochrome LCD Display
	LEDs	2 LED Indicators per Port (1 Red/ 1 Green)
	Control Panel	4 Push Buttons (↑, ↓, ◯:"OK" & X:"ESC")
Features	Copy Modes	Quick Copy (Systems & Files Copy)
		Whole Media Copy
		Asynchronous Duplication
	Compare Function	Bit-by-bit data comparison from the source device to target device(s).
	Diagnostic Modes	H3 Test: Read Only (Entire capacity)
		H5 Test: Overwrites and Reads (Entire capacity)
		H6 Test: Overwrites and Reads (Only empty sectors/spaces)
	Sanitization Modes	Quick Erase, Full Erase, and DoD Erase
	Format Functions	Formats device to FAT16 or FAT32
Compatibilities	Supported Formats	Quick Copy: FAT16/32/exFAT, Windows (NTFS), and Linux (Ext2/Ext3/Ext4)
		Whole Media Copy: All Formats, including proprietary formats
	Supported O/S	All (Windows, Mac, Linux, and other standalone systems)
Hardware Specifications	Power Supply	5V 2A
	Working Temperature	5°C ~ 45°C (41°F ~ 113°F)
	Storage Temperature	-20°C ~85°C (-4°F ~ 185°F)
	Working Humidity	20% ~ 80%
	Storage Humidity	5% ~ 95%
	Product Dimensions	13.5 x 8 x 2.5 (cm)
	Weight	160 g
	Certifications	FCC, CE, RoHS

**Specifications are subject to change without notice.*