KanguruClone 11 M.2 NVMe Pro SSD Duplicator

User Manual

Model no.:
KCLONE-11NVME

Notices and Information

Please be aware of the following points before using your KanguruClone

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FCC Compliance Statements

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the Distance between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Table of Contents

1. INTRODUCTION

Congratulations on your purchase of the KanguruClone 11-Target M.2 NVMe Pro SSD Duplicator from Kanguru Solutions.

The KanguruClone 11M.2 NVMe Pro SSD Duplicator is a high speed, stand-alone PCIe M.2 SSD duplicator that can simultaneously create up to eleven copies with ultra fast copy speeds of up to 18GB/min and a full touch screen interface.

Features
- √ Supports all standard M.2 NVMe SSDs. Capacity and brand independent.
- √ Full-color 7" touch screen
- √ Up to 18GB/min transfer rates
- √ One-year Standard Warranty: one-year parts and 90 day labor warranty.
- √ Clones any operating system: including Window, Linux and Mac.
- √ Multiple modes of operation:
  - ○ **Full -** Access all sectors.
  - ○ **Brief -** Access only sectors containing data. Compatible with major file systems.
  - ○ **Resize -** Master and Target drives with different capacities.
  - ○ **Ratio -** Access a defined percentge of the Master.
  - ○ **Image -** Access disk image files.
- √ Copy from SATA to NVMe (with adapter)
- √ Powerful erase and disk wipe features (compliant with DoD 5220.22-M)
- √ Detailed and downloadable system logs

1.1 Package Contents

If any of the following items are missing, please call Kanguru Solutions' Tech Support department at: (508) 376-4245, extension 2 and replacement parts will be shipped to you ASAP.

- KanguruClone 11 M.2 NVMe Duplicator
- Power Cable
- SATA adapter and cable

1.2   Specifications

KanguruClone 11 M.2 NVMe SSD Pro	
Interface	12x M.2 M-keyed
Drive Support	PCIe M.2 / NVMe SSD
Display	Full-color 7" touch screen
Dimensions	42" x 36" x 12"
Weight	16.5 lbs
Voltage	100-240V ~2A, 60W
Operating Temperature	41ºF ~ 122ºF
Relative Humidity	15% ~ 90%

1.3   M.2 SSD Compatibility

KanguruClone M.2 NVMe SSD Pro Duplicators support PCIe M.2 SSDs, commonly known as NVMe SSDs. SATA M.2 SSDs are NOT supported.

Both SATA M.2 and PCIe M.2 SSDs use a similar physical connector. It is easy to confuse the two, so you should always check your SSDs' technical specifications to verify that they are either PCIe M.2 or NVMe before using them with the duplicator.

Alternatively, you can visually identify whether an M.2 SSD is SATA or PCIe by inspecting the physical connector. M.2 SSDs are "keyed" to prevent the connector from being inserted into an incompatible socket.

- Supported PCIe M.2 / NVMe SSDs are M-keyed
- Unsupported M.2 SSATA SSDs are B+M-keyed
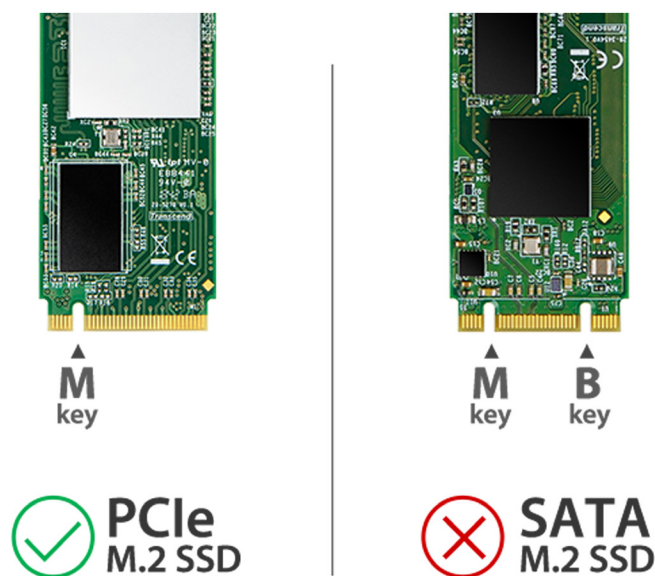
Note: If you need to duplicate M.2 SATA SSDs, please contact Kanguru sales and inquire about M.2 SATA adapters.

2. GETTING TO KNOW YOUR DUPLICATOR

2.1 Hardware Setup

1. Place the KanguruClone where there is proper ventilation. Avoid using the KanguruClone in environments with high temperatures.

2. Make sure that sufficient power is supplied to the KanguruClone. Incorrect power will cause faulty operation. It is highly recommended that you use a UPS (uninterruptible power supply) with the KanguruClone.

3. You are now ready to begin using your KanguruClone. To begin, turn on the unit by flipping the power switch located on the back panel and pressing the Power On button on the front of the duplicator..

Things to remember

- Make sure that sufficient power is supplied to the KanguruClone. Incorrect power will cause faulty operation. It is highly recommended that you use a UPS (uninterruptible power supply) with the KanguruClone.

- The KanguruClone is powered by an internal power adapter that is controlled by a rocker switch located at the rear of the duplicator.

- KanguruClone M.2 NVMe Duplicators support PCIe M.2 SSDs, commonly known as NVMe SSDs.

- SATA M.2 SSDs are NOT supported.

- 2.5" and 3.5" SATA HDDs and SSDs can be connected as a Master using the provided adapter (see section 2.4 Connecting a SATA Drive as a Master on page 10).

- The KanguruClone supplies power to all drives during a session. There is no need to connect an external power source to the drives.

    Note: the drives are not powered until you start a copy operation.

- It is OK to connect and disconnect Master or Target drives while the KanguruClone is powered on. However, do NOT connect or disconnect drives while any operation is running or is in progress. The green LED light will blink to indicate that the unit is cloning or operating.

- Connect all Master and Target drives <u>before</u> you execute an operation.

- The Source Port is labeled "S". Target Ports are labled 1-11

2.2   Parts and Appearance

2.2.1   Front View

On/Off Button

Touchscreen

USB2.0 Port

One-Touch Push Button

2.2.2   Side View

Port Numbers / LED Indicators

PCIe M.2 Socket

Locking Pin

2.2.3   Rear View

Power Cable Plug

Ventilation Fans

Power Rocker Switch

2.3   Connecting NVMe Drives

The KanguruClone 11 M.2 NVMe SSD Pro Duplicator supports PCIe M.2 / NVMe SSDs. The duplicator only supports drives that run on the PCIe protocol, SATA M.2 SSDs are not supported.

For more information about identifying what type of M.2 SSDs are supported, please see section 1.3 M.2 SSD Compatibility on page 5.

To connect an NVMe SSD:

1. Slide all Locking Pins away from the M.2 Sockets.
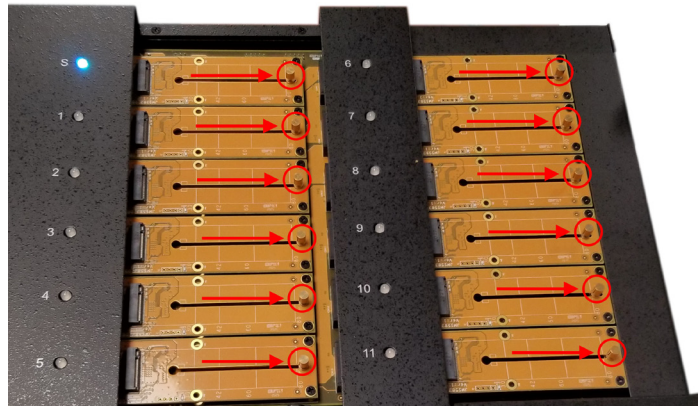
2. Align the M.2 SSD to the Socket with the M-key notch positioned to the right.
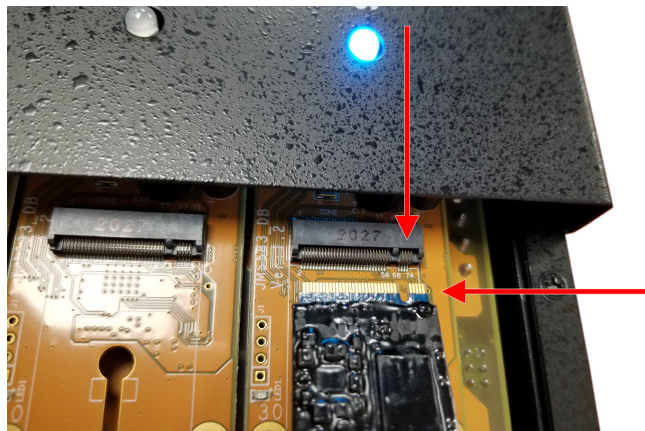
3. Insert the SSD into the M.2 socket at about a 30º angle.

4. Push the back of the SSD down so that the drive sits parallel with the duplicator. There should be a few mm space between the drive and the duplicator.

5. Slide the Locking Pin into the notch at the back of the SSD.

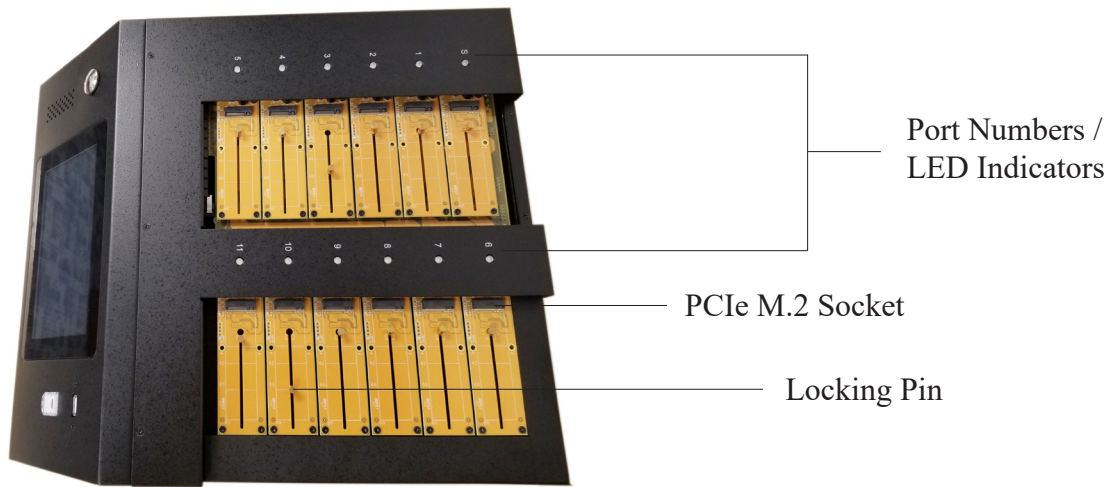6. Repeat this until all of your drives are connected.

WARNING! It is OK to connect and disconnect Master or Target drives while the KanguruClone is powered on. However, do NOT connect or disconnect drives while any operation is running or is in progress. The LED will next to the drive will blink to indicate that it is in use.

2.4   Connecting a SATA Drive as a Master

Users upgrading their computer hardware often need to make a duplicate of their SATA HDD or SSD on a high-performance NVMe drive. The KanguruClone 11 M.2 NVMe SSD Pro supports NVMe natively, but can be retrofitted with a SATA adapter in order to support a SATA Master.

Follow these steps to install the provided SATA adapter in your KanguruClone 11 M.2 NVME Duplicator:

1. Power off the duplicator and uplug the power cable. **WARNING! Attempting these steps while the duplicator is powered on could result in permanent damage.**

2. Locate and remove the 8x screws that attach the top panel to the main housing.

3. Remove the top panel and remove the 2x screws that attach the Source port board.

4. Pull the Source port board away from the socket to disconnect it.

5. Replace the Source port baord with the SATA adapter board. Fasten the SATA adapter board using the two screws that were removed in step 3.
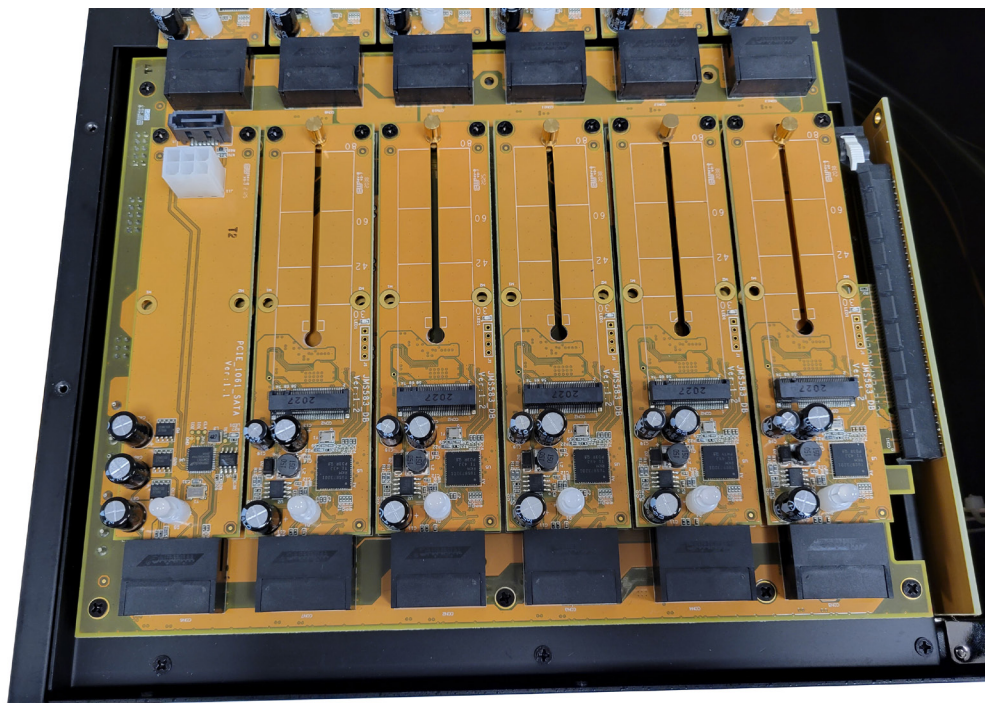
6. Replace the top panel and fasten it using the 8x screws that were removed in step 2.

7. Attach the provided SATA cable to the SATA adapter board.

You are now able to connect a SATA HDD or SSD to the Source port for duplication.

3. GENERAL OPERATION

All operation of the KanguruClone 11 M.2 NVMe SSD Pro is done using the touch-screen display.

All the main functions and configurations can be accessed through the Main Menu.
- **Copy :** Copy the data from the drive connected to the Source Position to all other drives.
- **Compare :** Compare data on the drive connected to the Source Position to all other drives.
- **Resize :** Resize Copy is used specifically when copying drives that are of different capacities.
- **Load :** Capture an image of a Master drive to a Storage Center drive.
- **Erase :** Erase all data on connected Target drives.
- **Format :** Tap to format all connected Target drives. You can select the file system the drives are formatted in via the Setup menu (see section 6.4 Format on page 20)
- **Setup :** Tap to access the Settings Menu.

Source Position - Designate the Source port. A blue LED indicates the Source port. By default the Source position is set to NVMe1.

Cpy/Cmp Mode - Configure how data is accessed during Copy and Compare operations.
- **Full :** Accss all sectors, sector by sector. Supports all major OS formats and file systems.
- **Brief :** Access only sectors that contain data, skipping blank sectors.
- **Image :** Access image files stored on a Storage Center drive.
- **Ratio :** Copy a defined percentage of the Master drive.

Erase Mode - Select the Erase mode.
- **Custom :** Perform a customized erase.
- **Quick :** Perform a erase that zeroes out the partition table.
- **Full :** Perform an erase that zeroes all sectors on the drive.
- **Wipe :** Perform a multi-pass erase.

One-Touch Function - The bottom-left of the screen displays the function that is performed by the One-Touch Push Button. By default, this is set to the last function your ran. You change the function of the One-Touch Push Button via the Setup menu (see section 6.5 Option on page 20).
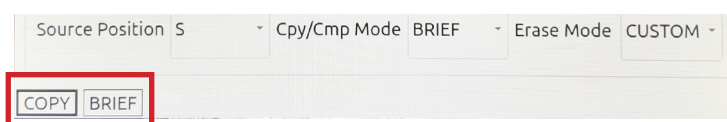
4. COPY AND COMPARE MODES

The KanguruClone can copy data from a Master drive to Target drives in one of five modes: FULL, BRIEF, RATIO, RESIZE, and IMAGE.

After a copy has been performed, you can manually run a Compare operation to check the data on the Master drive against the data on the Target drives, to ensure that the all data was copied successfully. **Note:** Comparing drives that have been copied using RESIZE mode will often fail.

4.1 Full

FULL mode mode copies/compares drives sector by sector from the Source to the Target(s), and supports all OS formats (DOS/Windows/Mac/Linux) and file systems.

This mode is the slowest copy mode but the most compatible with the highest rate of success.

4.2 Brief

Brief mode copies/compares only the sectors that contain data, skipping any blank sectors (including information hidden in sub channels).

This is the typically the fastest copy mode, but only supports specific file systems.
Brief mode supports the following file systems: FAT12/16/32/64, exFAT, NTFS, HFS, HPFS, EXT1/2/3/4, XFS, GPT, LVM, UFS, HPA, RIEF

4.3 Ratio

The Ratio mode allows you to copy or compare a defined percentage of the Master drive.

The Master drive is divided in 1000 units. You must define the beginning and ending percentages before using this operation. To define the percentages:

1. Tap the **Setup** to enter the Setup Menu

2. Tap on the 'Ratio' tab at the top of the screen.

3. Define the Ratio Head and Tail percentages by tapping the up and down buttons, or by tapping in the field and manually typing in the defined value.

4.4 Resize

Resize copy is used to copy between Master and Target drives of different capacities. When duplicating in Resize mode, Target drives should all be the same capacity.

Resize copy supports the following file systems: FAT, FAT32, NTFS. If the Source is not formatted as a supported file system then the duplicator will automatically switch to Disk mode.

Comparing drives after a Resize copy will usually fail.

4.5   Load

Load function allows you to store disk image files to a Storage Center drive.

A Storage Center drive is an NVMe drive that has been formatted to store image files of Master drives, providing a convenient way to archive and load commonly used Master drives as images files.

4.5.1   Create a Storage Center Drive

To turn a normal NVMe drive into a Storage Center drive, you only need to format it as NTFS.

Once the format has completed successfully, this drive can now be used as a Storage Center drive. You can capture and load Master image files to and from the Storage Center drive.

4.5.2   Capture a Master Drive as an Image File

You can use the duplicator to capture an image file of a Master drive onto a Storage Center drive.

To capture an image file of a Master drive on the Storage Center drive:
1. Connect the Storage Center drive to the Source port.
2. Connect the Master drive to the #11 Target port.
3. Tap **LOAD**.
4. Select whether to create a **Full** or **Brief** image file.
5. Set the Image File name, confirm the Master (From Device) and Storage Center (To Device) position and tap **OK** to begin.

Once complete, an image file of the Master drive is saved on the Storage Center drive. You can view a list of image files saved on the Storage Center drive by tapping the "S" tab and then tapping the **Mount button**
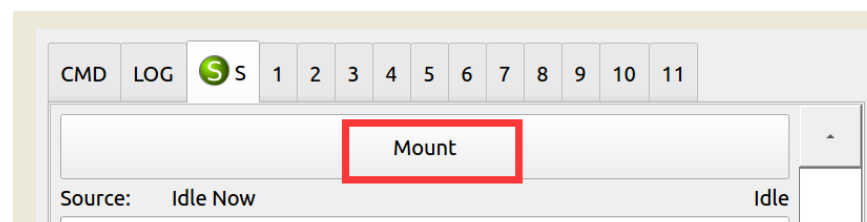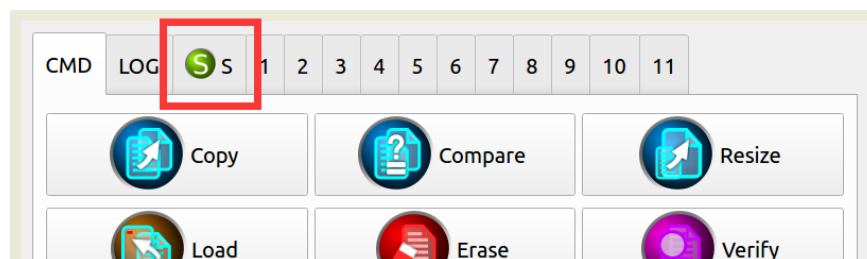
4.5.3   Copy or Compare From an Image File

After you have captured an image file on the Storage Center drive:
1. Connect the Storage Center drive to the Source port. Connect any Target drives.
2. Tap the "S" tab
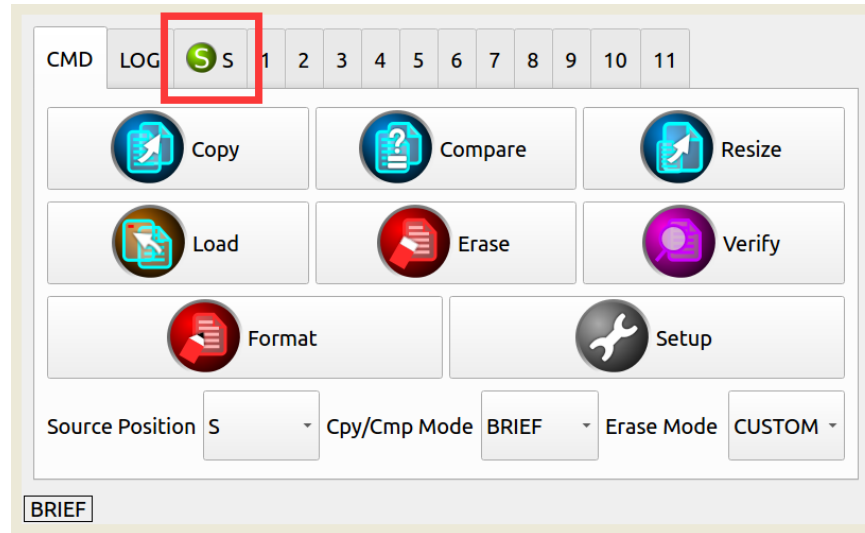
3. Tap the **Mount button** to display a list of all image files saved on the Storage Center drive.
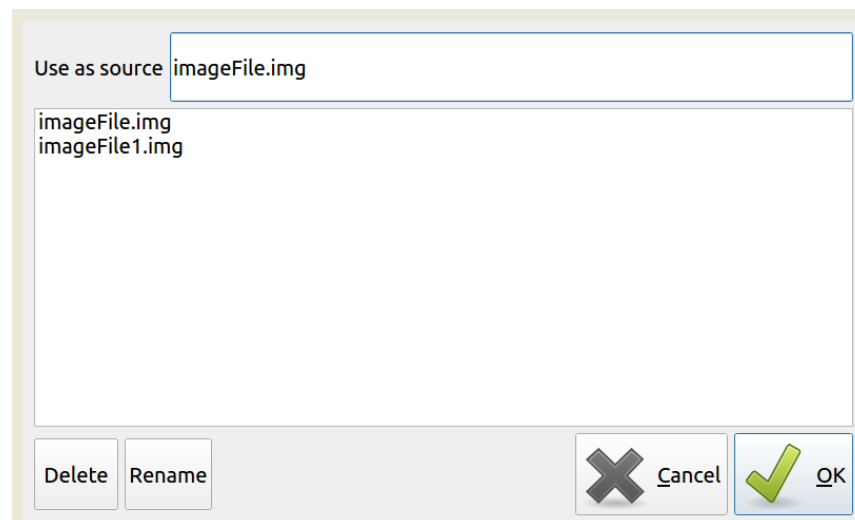
4. Select an image file and then tap **OK**.

5. When you go back to the Main Menu, you will see the image file selected appear in the lower-left corner:

6. Set **Cpy/Cmp Mode** is set to "Image".
7. Tap **Copy** or **Compare** to begin the process.

5. OTHER OPERATIONS

Besides the Copy and Compare modes, the KanguruClone Hard Drive Duplicator has several additional operations that are incredibly useful, including ERASE and VERIFY. The following chapter will cover these operations.

5.1   Erase

To erase drives connected to the duplicator:
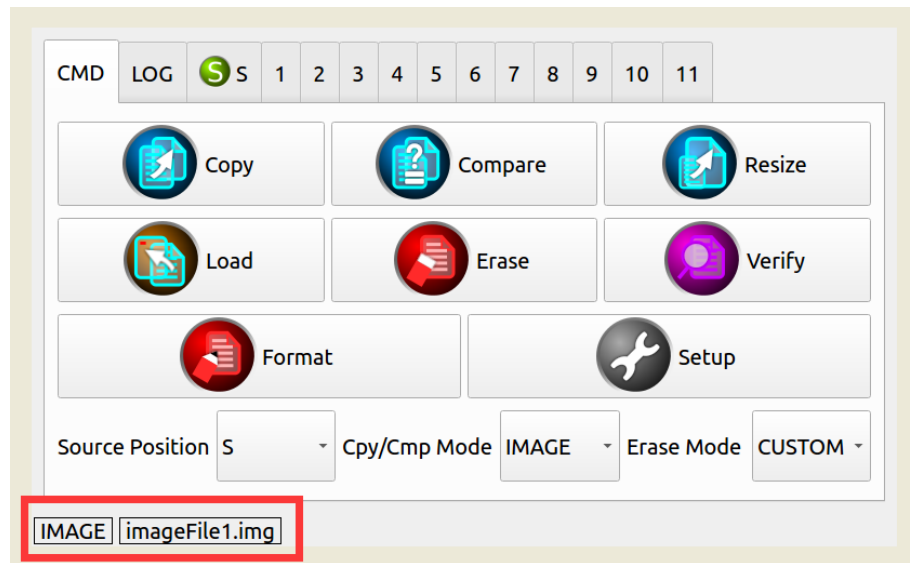1. Connect the drives to be erased to the duplicator. Note: By default, the Erase operation is not performed on the drive connected to the Source port. This behavior can be changed in the Settings menu (see section 6.5 Option Settings on page 17)
2. From the Main menu, configure the **Erase Mode**.
3. Tap **ERASE** .

5.1.1   Erase Modes

The KanguruClone duplicator supports multiple Erase modes that you can use depending on how securely you need the data erased.
- **CUSTOM** - Performs a custom erase based on settings defined in the Settings menu (see section 6.4 Erase Settings on page 17)
- QUICK - Overwrite the partition table. This is the quickest erase mode, but least secure.
- **FULL** - Overwrite all sectors. This is a slower erase mode but more secure.
- **WIPE** - Perform a multi-pass erase. This is the slowest erase mode, but most secure.
  - **Pass 1**: Overwrite all addressable locations with binary zeroes.
  - **Pass 2:** Overwrite all addressable locations with binary ones.
  - **Pass 3:** Overwrite all addressable locations with a random bit pattern.
 - Verify the final overwrite pass.

5.2   Verify

Verify checks all ports and verifies that all connected devices can be read. To verify all drives connected to the duplicator:

1. Connect the drives to the duplicator.
2. From the Main menu, tap **Verify** .

6. SETTINGS

The Settings menu can be accessed by tapping the **Setup icon** in the Main menu.

You can access the following functions at anytime from the bottom of the screen.
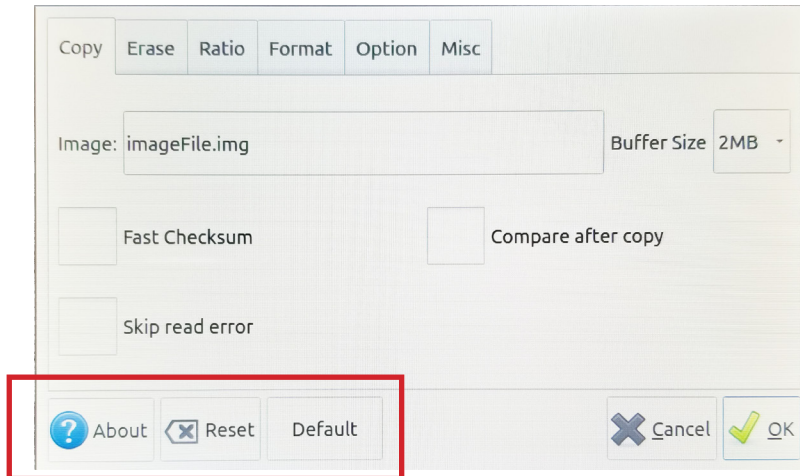
- **About :** View information about your Duplicator, including firmware version and the LGPL license.

- **Reset :** Reset the configuration of the current Settings tab to the factory default.

- **Default :** Revert all settings to the factory defaults.

6.1 Copy

- **Image :** Enter a file name for saved image files.

- **Buffer Size :** Change the size of the buffer cache. A larger buffer ensures solid performance and reliable data transfers.

- **Fast Checksum :** Configure whether the system checks for a matching CRC32 between the Master and Target drives. When enabled, the duplicator will automatically check the hash of the Master against the Target drives after a copy completes.

- **Compare after copy** : After a Copy completes, the duplicator will automatically compare the data on the Master to the Targets.

- **Skip read error :** The duplicator will automatically skip any bad sectors encountered when reading the Master and write a zero in its place on the Target.

6.2   Erase

- **Write 0:** Overwrite all addressable locations with binary zeroes.
- **Write 1:** Overwrite all addressable locations with binary ones.
- **Write Random Pattern:** Overwrite all addressable locations with a random bit pattern.

- **Compare:** Automatically compare data on connected drives after an erase is performed.
- **Verify:** Verify the final overwrite pass after an erase is performed.

- **Buffer Size :** Change the size of the buffer cache. A larger buffer ensures solid performance.
- **Repeat :** Select the number of cycles an erase function is performed.

6.3   Ratio

The Master drive is divided in 1000 units. You must set the beginning and ending percentages before performing Ratio Copy or Compare.
- **Ratio head** : Define the ratio head start and end boundaries.
- **Ratio tail** : Define the ratio tail start and end boundaries.

6.4   Format

- **File System :** Select a file system to format SSDs in when performing a Format. EXT4, NTFS or FAT.

6.5   Option

- **Save Log** : Allow system logs to be saved in the duplicator's flash memory.

- **Capacity Check** : Check the capacity of Target drives are at least equal to or larger in capacity than the Master drive.

- **Erase Source Port** : Allow the drive connected at the Source position to be erased.

- **Push Button Function** : Select what function the One-Touch Push Button performs when pressed.

6.6 Misc

- **Machine Name :** Give your duplicator a unique name

- **Update Firmware :** Update your duplicator's firmware to the latest version. Please contact Kanguru Technical Support or visit our support site at support.kanguru.com to check if there is a newer firmware version for your duplicator.

- **Set Date Time** : Set the system date and time. This information is useful when saving log files.

- **Power Wait :** Set the amount of time the system waits between powering on the connected drives and executing a function. Setting this too low may cause some drives to be not recognized by the duplicator before a function begins.

- **Retry :** Set the number of times that the duplicator retries sending general error handling commands when it encounters an error before failing.

- **Mute** - Move the slider position left/right to adjust the system volume

7. FAQ

Q: Is the duplicator able to copy SATA M.2?
A: No, the KanguruClone M.2 NVMe Duplicator only supports PCIe M.2 natively. Please contact Kanguru sales to inquire about options for duplicating SATA M.2.

Q: Do all Target drives have to be the same capacity?
A: If you select Full copy or Brief copy, the Target drives must have at least the same capacity as the Master hard drive.

Q: Can I clone a smaller capacity Master drive to larger capacity Target drives?
A: Yes, use the "RESIZE COPY" operation to clone a smaller capacity Master to larger capacity Targets. However, all Targets must be the same capacity.

Q: Can I clone to Targets of various brands simultaneously?
A: Yes, the machine is able to clone hard drives of different brands.

Q: How does the duplicator handle multiple partitions on the Master drive?
A: The machine will auto-detect partitions on the Master drive and copy them. You are unable to select a specific partition(s) to copy.

Q: How does the duplicator handle multiple partitions of varying formats on the Master drive?
A: The machine will analyze the file system of the Master drive before it begins cloning.

Q: Can the duplicator clone operating systems such as UNIX and OS/2?
A: Yes, use the Full copy mode to copy any operating system.

Q: Can the duplicator defragment a partition?
A: No, defragmentation is not recommended on solid state drives.

Q: Can the duplicator copy encrypted drives?
A: The KanguruClone is able to copy software encrypted drives through Full copy. The duplicate drives will also be encrypted.

8. WARRANTY INFORMATION

This product carries a 1 year* limited warranty on the power supply, controller, and all internal components. The warranty does not cover any Power cables. Kanguru Solutions is not responsible for any damages incurred in the shipping process. Any claims for loss or damage must be made to carrier directly. Claims for shipping errors should be reported to Kanguru Solutions within three (3) working days of receipt of merchandise. Please refer to the RMA Procedure section of this manual if your duplicator needs servicing.

Kanguru Solutions does not offer money back returns on its duplicator product lines due to the unique nature of the product. All units will be fully supported under manufacturer's and/or extended warranty plans.

9. TECHNICAL SUPPORT

If you experience any problems using your Kanguru product or have any technical questions regarding any of our products, please call our tech support department. Our tech support is free and available Monday thru Friday, 9am to 5pm EST.

<div align="center">

Call 1-508-376-4245
Or visit our website at www.Kanguru.com

</div>

RMA Procedure

All Duplicators being serviced MUST BE PACKED IN THE ORIGINAL PACKAGING. If you do not have your original packaging, you can purchase replacement packaging for $25.00 from Kanguru's Tech Support Department. Kanguru Solution's warranty will not be honored in the event that a duplicator is received improperly packaged, altered, or physically damaged.

STEP ONE: Call for a RMA Number: 508-376-4245
Duplicators will not be accepted for repair without a valid RMA number. RMA numbers are valid for 30 days upon assignment. Any return without a valid RMA number will be returned to the customer at their expense.

STEP TWO: Ship and Insure your Duplicator
Kanguru Solutions strongly recommends you fully insure the duplicator for shipping. Kanguru Solutions is not responsible for if the package is lost or damaged in transit. We suggest using a shipping company that utilizes a "tracking" feature to verify "proof of delivery." The customer is responsible for shipping charges when returning a product. Shipping back to the customer is covered by Kanguru Solutions during the first 90 days of purchase. After 90 days of purchase the customer is responsible for shipping both ways.

Clip and Use this Label to Ship Your Return

Kanguru Solutions
Tech. Support Dept.
1360 Main St.
Millis, MA 02054

RMA#

KANGURU