ORICO WS400RU3

ORICO 4 Bay RAID External Hard Drive Enclosure User Manual

Model: WS400RU3

1. Introduction

This manual provides comprehensive instructions for the installation, configuration, and operation of your ORICO 4 Bay RAID External Hard Drive Enclosure (Model: WS400RU3). Please read this manual thoroughly before use to ensure proper functionality and data integrity.

Figure 1: ORICO 4 Bay RAID External Hard Drive Enclosure

2. Product Overview

Key Features:

- **High Capacity Support:** Accommodates up to four 3.5-inch SATA hard disks, with a maximum total capacity of 80TB (4x20TB).
- **RAID Functionality:** Supports RAID 0, RAID 1, RAID 3, RAID 5, RAID 10, JBOD, CLONE, and Normal modes for flexible data management and protection.
- **Efficient Heat Dissipation:** Features an aluminum alloy casing, an 80mm cooling fan, and honeycomb ventilation holes for optimal thermal performance.
- **Secure Drive Installation:** Includes separate ABS mounting brackets for 2.5-inch/3.5-inch HDDs/SSDs, utilizing screw mounting for enhanced stability and vibration reduction.
- **Fast Data Transfer:** Equipped with USB 3.0 interface, providing data transfer rates up to 5Gbps.
- **Multi-Protection System:** Incorporates safeguards against over-voltage, over-current, overheating, short-circuits, and leakage.
- **Auto Sleep Mode:** Features a 10-minute automatic sleep mode to conserve energy and extend drive lifespan.
- **Broad Compatibility:** Compatible with Windows XP / Vista / 7 / 8, Mac OS X 10.2 and higher, and Linux operating systems.

What's in the Box:

- 1x ORICO 4 Bay RAID Hard Drive Enclosure
- 1x 1M USB 3.0 Type-A Data Cable
- 1x 12V Power Adapter
- 1x Set of Screws
- 1x User Manual

Figure 2: Centralized Storage Capability

3. Setup and Installation

3.1 Hard Drive Installation

1. **Prepare the Enclosure:** Unscrew and remove the front panel of the enclosure.
2. **Install 3.5-inch HDD:** Slide a 3.5-inch SATA HDD into an empty drive bay. Ensure it is firmly seated. Secure the drive using the provided screws through the enclosure's side panels.
3. **Install 2.5-inch HDD/SSD (with bracket):** Attach your 2.5-inch SATA HDD or SSD to the provided ABS

mounting bracket using screws. Then, slide the bracket with the attached drive into an empty drive bay. Secure the bracket using the provided screws.

4. **Close the Enclosure:** Once all drives are installed, reattach the front panel and secure it with screws.

Figure 3: DIY Hard Drive Installation

3.2 Connecting to Your Computer

1. Connect the 12V power adapter to the enclosure's power input and then to a power outlet.
2. Connect the USB 3.0 data cable from the enclosure's USB 3.0 Type-B port to an available USB 3.0 Type-A port on your computer.

3. Power on the enclosure using the power button. The LED indicators for each drive will illuminate.

Figure 4: Independent Power Supply and Device Compatibility

3.3 Video Guide: Hard Drive Installation

For a visual guide on installing hard drives with screws, please refer to the video below:

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Video 1: How to DIY Install with Screw -WS Series. This video demonstrates the process of installing hard drives into the ORICO WS series enclosure using screws for secure mounting.

4. RAID Configuration

WARNING: Always back up all data before changing RAID modes, as this process typically erases all data on the drives.

The ORICO WS400RU3 supports various RAID modes to suit different needs for capacity, performance, and data redundancy. You can configure RAID either via software or manually using the physical switches.

4.1 Available RAID Modes

RAID Mode	Minimum Disks	Description
RAID 0	2	Striping. Offers maximum performance and capacity by combining drives, but no redundancy. Data loss on one drive means total data loss.
RAID 1	2	Mirroring. Provides full data redundancy by duplicating data across drives. Capacity is limited to the size of the smallest drive.
RAID 3	3	Striping with dedicated parity. Offers good performance for large sequential reads and writes, with single drive redundancy.
RAID 5	3	Striping with distributed parity. Balances performance, capacity, and redundancy. Can withstand the loss of one drive.
RAID 10	4	Striping and Mirroring. Combines RAID 1 and RAID 0 for high performance and excellent redundancy. Can withstand multiple drive failures, but requires more drives.
JBOD (Just a Bunch Of Disks)	1	Treats each drive as an independent disk. No striping or mirroring.
CLONE	2	Creates an exact copy of one drive onto another.
Normal (Clear-RAID)	1	Each drive is recognized as a separate, individual disk.

Figure 5: Multiple RAID Modes Overview

4.2 Setting RAID Mode

There are two primary methods for configuring RAID on the WS400RU3:

1. **Software Operation:** The ORICO HW RAID Manager tool allows for customization of hard disk storage modes. This software can be downloaded from the official ORICO website. Note that the software management tool may not be compatible with Mac OS 11 or above, and Linux systems.
2. **Manual Operation:** The enclosure features physical array switches on the back panel. To set a RAID mode manually:

- Power off the enclosure.
- Adjust the DIP switches on the back panel to the desired RAID configuration (refer to the diagram on the enclosure or the full user manual for specific switch settings).
- Press and hold the 'SET' button (often recessed, requiring a paperclip or similar tool).
- While holding the 'SET' button, power on the enclosure.
- Continue holding the 'SET' button for approximately 6 seconds, then release. The new RAID mode will be applied.

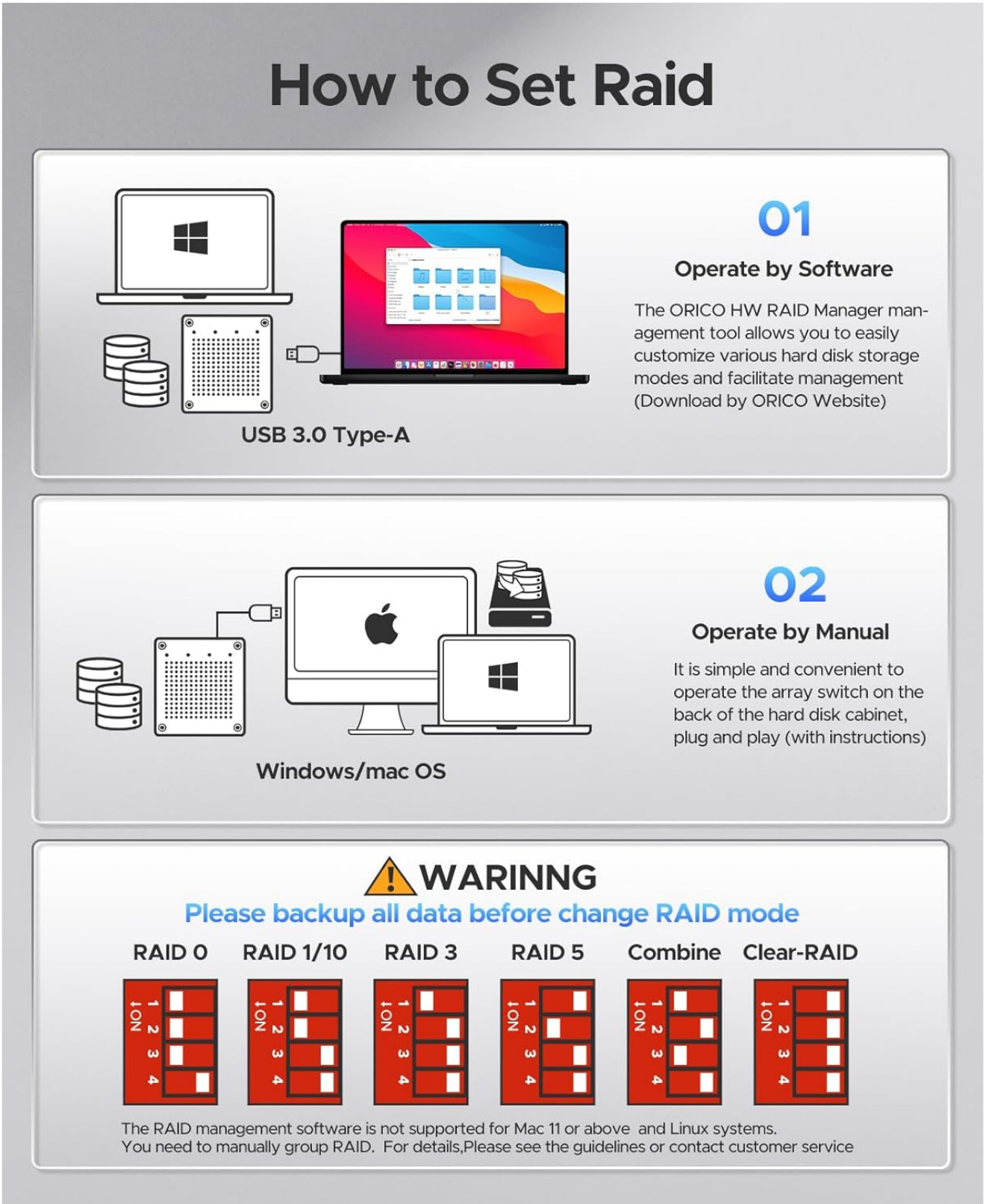

Figure 6: How to Set RAID

5. Operating Instructions

5.1 Initializing and Formatting Hard Drives

After installing the hard drives and configuring the RAID mode (if applicable), the drives will need to be initialized and formatted by your operating system before they can be used. The process varies slightly depending on your OS:

- **Windows:** Access Disk Management (Right-click 'This PC' -> 'Manage' -> 'Disk Management'). Locate the newly installed disk(s), initialize them (MBR or GPT), create new simple volumes, and format them (NTFS is common for Windows).
- **macOS:** Open Disk Utility (Applications -> Utilities -> Disk Utility). Select the disk, click 'Erase', choose a format (e.g., APFS or Mac OS Extended), and a scheme (e.g., GUID Partition Map).
- **Linux:** Use disk management tools like GParted or command-line utilities (e.g., `fdisk`, `mkfs`) to partition and format the drives.

5.2 Video Guide: Hard Drive Formatting

For detailed steps on how to format hard drives in Windows, Mac, and Linux, please watch the video below:

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Video 2: How to format Hard Drive when operating Windows/Mac/Linux. This video provides a step-by-step demonstration of formatting hard drives across different operating systems.

5.3 Data Transfer

Once formatted, your drives are ready for data transfer. The USB 3.0 interface supports speeds up to 5Gbps, allowing for quick transfer of large files.

Figure 7: 5Gbps Data Transfer Speed

6. Maintenance

- **Cleaning:** Use a soft, dry cloth to clean the exterior of the enclosure. Avoid liquid cleaners or abrasive materials.
- **Ventilation:** Ensure the enclosure's honeycomb ventilation holes are not obstructed to maintain optimal airflow and prevent overheating. The built-in fan assists in heat dissipation.
- **Firmware Updates:** Periodically check the ORICO official website for any available firmware updates for your model to ensure optimal performance and compatibility.

- **Auto Sleep Mode:** The 10-minute auto sleep mode helps reduce power consumption and prolong drive life. Ensure your system settings do not interfere with this feature if you wish to utilize it.

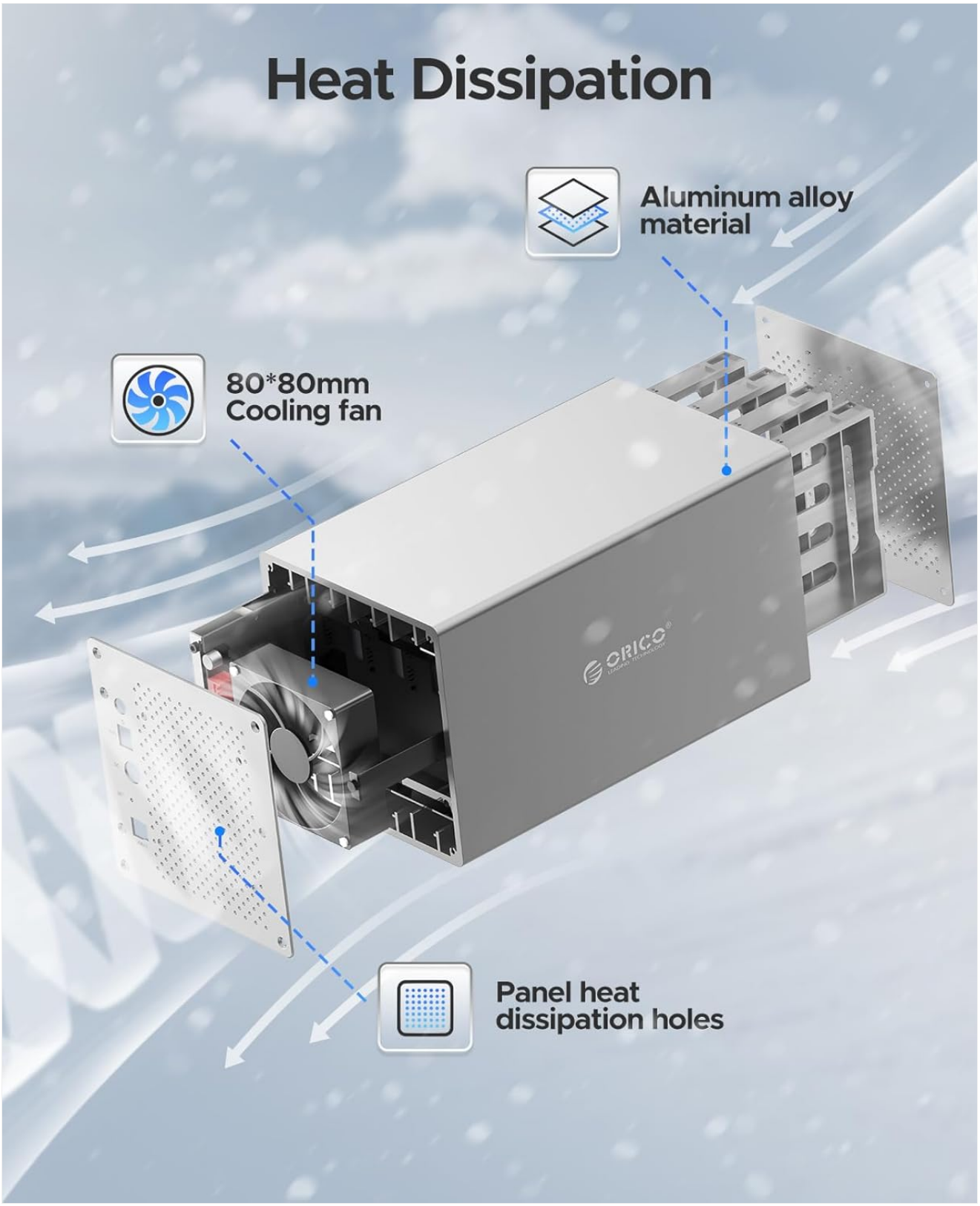

Figure 8: Heat Dissipation Design

7. Troubleshooting

- **Drive Not Recognized:**
  - Ensure all cables (power and USB) are securely connected.
  - Verify the enclosure is powered on.

- Check Disk Management (Windows) or Disk Utility (macOS) to see if the drive appears as uninitialized or unformatted. If so, initialize and format it.
- Try connecting the enclosure to a different USB port or computer.
- Ensure hard drives are properly seated in their bays and secured.

- **RAID Configuration Issues:**
  - If manually setting RAID, ensure the DIP switches are correctly set for the desired mode and the 'SET' button procedure is followed precisely.
  - Remember to back up data before changing RAID modes, as this will erase existing data.
  - For software-based RAID, ensure the ORICO HW RAID Manager is installed and up-to-date.
- **Slow Data Transfer:**
  - Ensure you are using a USB 3.0 port on your computer. Connecting to a USB 2.0 port will result in slower speeds.
  - Check the quality of the USB cable. Use the provided cable or a high-quality USB 3.0 cable.
  - Performance can be affected by the speed of the installed hard drives and the RAID mode selected.
- **Overheating:**
  - Ensure the enclosure is placed in a well-ventilated area.
  - Check that the cooling fan is operating and that the honeycomb ventilation holes are not blocked.

8. Specifications

Feature	Specification
Model Number	WS400RU3
Material	Aluminum
Drive Bays	4 Bays
Max Capacity	80 TB (4 x 20TB)
Compatible Drive Types	2.5-inch / 3.5-inch SATA HDD/SSD
RAID Modes	RAID 0, RAID 1, RAID 3, RAID 5, RAID 10, JBOD, CLONE, Normal
Hardware Interface	USB 3.0 Type A, USB 3.0 Type B
Data Transfer Rate	Up to 5 Gbps (USB 3.0)
Power Supply	12V 6.5A External Power Adapter
Cooling System	80mm Cooling Fan, Honeycomb Ventilation
Compatible OS	Windows XP / Vista / 7 / 8, Mac OS X 10.2+, Linux
Product Dimensions	9.45 x 5.51 x 5.12 inches (240 x 140 x 130 mm)
Item Weight	6.85 pounds (3.11 kg)

9. Safety Information

- Use only the provided power adapter. Using an incorrect adapter may damage the device and void the warranty.
- Avoid exposing the enclosure to water, moisture, or extreme temperatures.
- Do not open the enclosure or attempt to repair it yourself. Refer to qualified service personnel.
- Handle hard drives with care to prevent damage.
- Ensure proper ventilation around the enclosure to prevent overheating.
- Keep the device away from strong magnetic fields.

10. Warranty and Support

ORICO products typically come with a limited warranty. For specific warranty terms, duration, and support options, please refer to the warranty card included with your product or visit the official ORICO website. You can also contact ORICO customer service for technical assistance or product inquiries.
ORICO Official Website: www.oricotech.com

Related Documents - WS400RU3

	ORICO RAID Enclosure User Guide: Software and Manual Operation A guide to operating the ORICO 4 Bay RAID Hard Drive Enclosure, covering software management via USB 3.2 Gen 1 and manual operation through the device's array switch. Includes information on RAID modes and system compatibility.
	ORICO 3529RU3/3549RU3/3559RU3 RAID Hard Drive Enclosure User Manual Comprehensive user manual for ORICO 3529RU3, 3549RU3, and 3559RU3 external RAID hard drive enclosures. Covers features, specifications, installation, RAID configurations (RAID 0, 1, 3, 5, 10, SPAN, Clone, PM/Normal), software management with ORICO HW RAID Manager, and troubleshooting.
	How to Operate Offline Clone - ORICO Hard Drive Docking Station Guide on how to operate the offline clone function of the ORICO Dual Bay Hard Drive Docking Station. Includes step-by-step instructions and troubleshooting for drive letter assignment.
	ORICO 35RU3 Series External Hard Drive RAID Enclosure User Manual User manual for the ORICO 35RU3 Series 2.5 & 3.5 Inch External Hard Drive RAID Enclosure, detailing product features, specifications, installation, RAID configuration using hardware switches and software, formatting, and troubleshooting.

	[ORICO 6638US3-C / 6648US3-C Multi-Bay HDD Docking Station User Manual] Comprehensive user manual for the ORICO 6638US3-C and 6648US3-C multi-bay HDD docking stations. Covers product overview, features, specifications, quick start guide, offline cloning instructions, troubleshooting tips, Windows drive initialization and formatting, safe device removal procedures, important notices, and company declarations.
	[ORICO RAID Enclosure Setup and Management Guide] Learn how to set up, change, and manage RAID modes on ORICO hard drive enclosures. This guide covers drive replacement, adding new drives, and using the ORICO RAID Manager software for optimal data storage and protection.