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ORICO X50

ORICO X50 Thunderbolt 5 M.2 NVMe SSD Enclosure User Manual

Model: X50

Introduction

This manual provides comprehensive instructions for the ORICO X50 Thunderbolt 5 M.2 NVMe SSD Enclosure. This device is engineered for high-speed external data storage, offering compatibility with the latest Thunderbolt 5 standard, as well as backward compatibility with Thunderbolt 4/3 and USB4 ports. It supports 2280 M.2 NVMe SSDs up to 8TB, making it suitable for demanding tasks such as 4K/8K video editing and 3D rendering.

What's in the Box

The package for your ORICO X50 enclosure includes the following components:

- 1 x 80Gbps M.2 Enclosure
- 1 x USB Cable (Thunderbolt 5 compatible)
- 1 x User Manual
- 1 x Thermal Pad
- 1 x Screwdriver

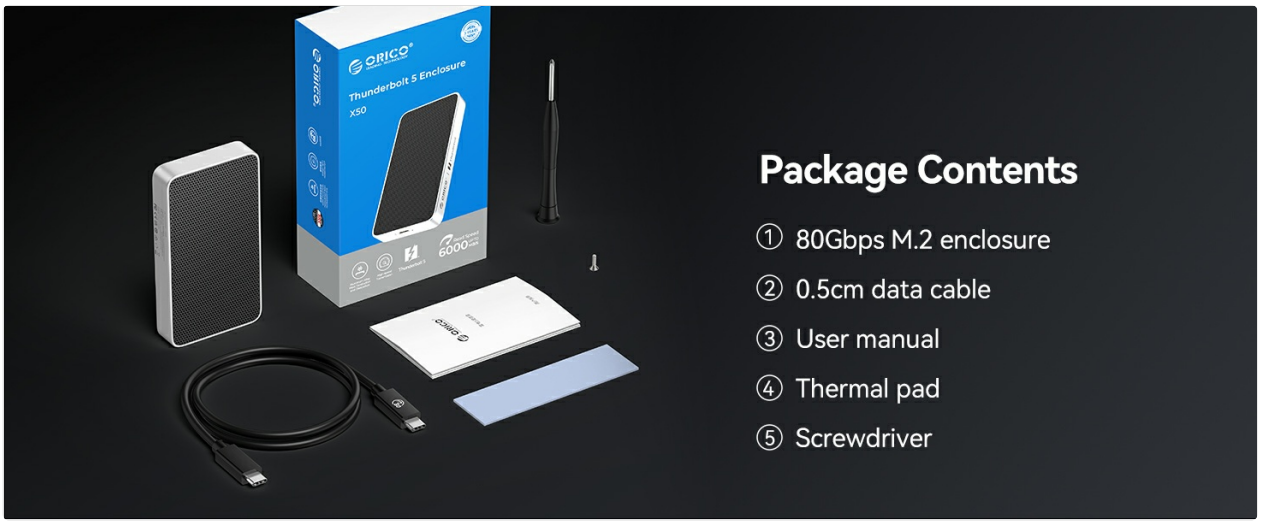


Figure 1: Contents of the ORICO X50 package, including the enclosure, cable, manual, thermal pad, and screwdriver.

Specifications

Feature	Detail
Model	X50
Connectivity Technology	Thunderbolt 5, Thunderbolt 4/3, USB4
Transmission Rate (Theoretical)	Read: 6000MB/s, Write: 5800MB/s (80Gbps bandwidth)
SSD Compatibility	M-Key/(M&B) Key NVMe 2280 SSD (PCIe 4.0 x4 recommended). *Not compatible with M.2 SATA SSDs or PCIe 5.0 SSDs.*
Max Digital Storage Capacity	Up to 8 TB
Material	Aluminum Alloy
Cooling System	Fanless (Finned aluminum chassis, thermal grease, hydrogel coating)
Dimensions	6.1 x 3.82 x 1.77 inches (approximate)
Item Weight	10.2 ounces
Supported Operating Systems	Windows, macOS, Linux

Setup: SSD Installation Guide

Follow these steps to install your M.2 NVMe SSD into the ORICO X50 enclosure:

1. **Remove the Back Cover:** Use the provided screwdriver to loosen the screw on the back of the enclosure. Carefully slide off the back cover.

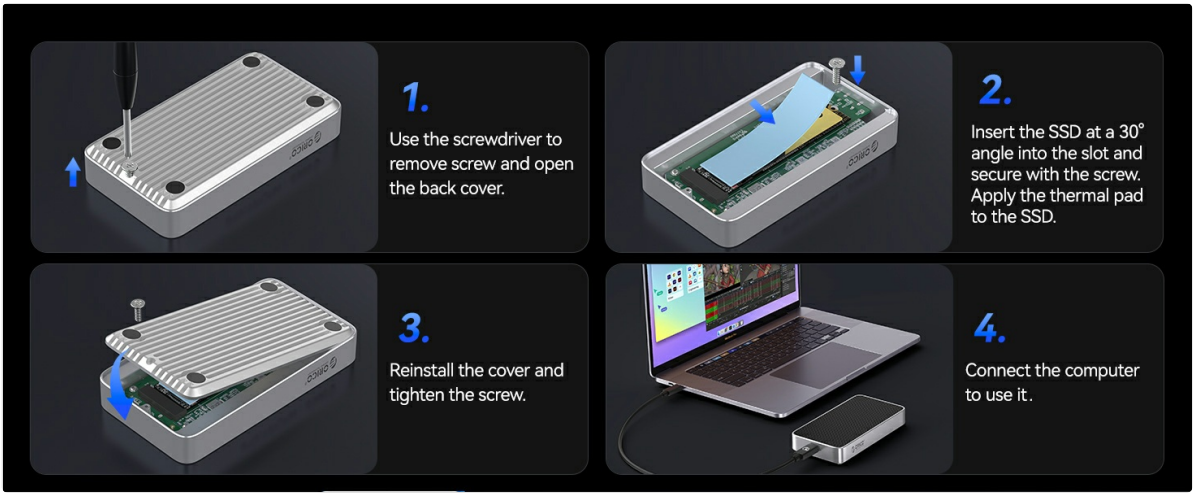


Figure 2: Use the screwdriver to remove the back cover.

2. **Insert the SSD:** Gently insert your M.2 NVMe SSD into the internal slot at a 30-degree angle. Push down to align it with the mounting hole and secure it with the small screw provided.

Figure 3: The internal view of the enclosure showing the M.2 SSD slot and mounting screw.

Note: Ensure your SSD is a 2280 M-Key or M&B-Key NVMe/PCIe type. M.2 SATA SSDs and PCIe 5.0 SSDs are not supported.

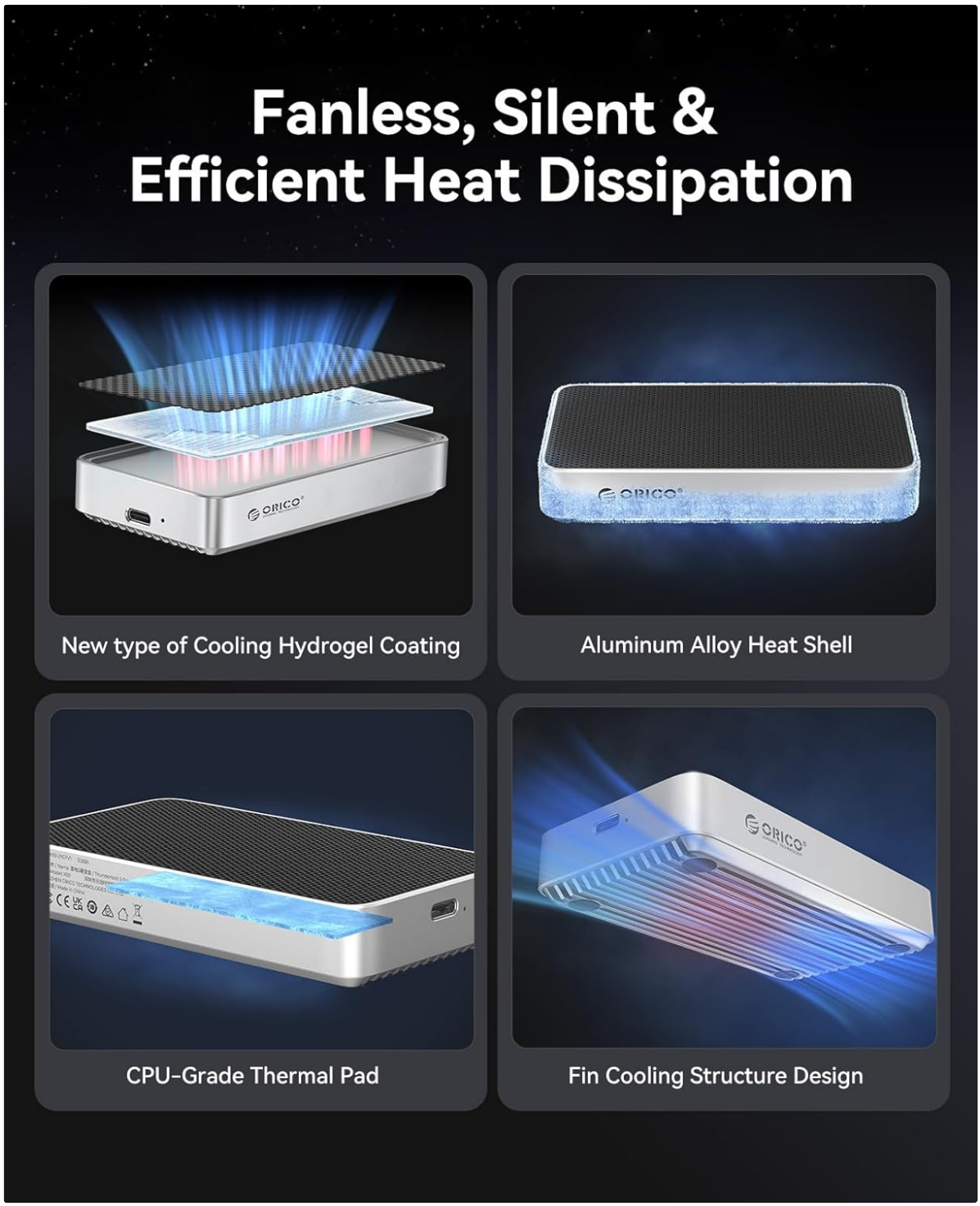


Figure 4: Diagram illustrating compatible M.2 NVMe SSD types (M-Key and M&B-Key 2280).

3. **Apply Thermal Pad:** Peel off the protective films from both sides of the thermal pad. Carefully place the thermal pad onto the installed SSD, ensuring it covers the main chips for efficient heat transfer to the enclosure's aluminum body.

Figure 5: The thermal pad helps dissipate heat from the SSD to the enclosure.

4. **Reinstall the Cover:** Slide the back cover back into place, ensuring it aligns correctly. Tighten the screw to secure the cover.

Figure 6: The ORICO X50 enclosure ready for connection after SSD installation.

Operating Instructions

Connecting to Your Computer

Connect the ORICO X50 enclosure to your computer using the provided Thunderbolt 5 compatible USB-C cable. The enclosure is designed to work seamlessly with Thunderbolt 5, Thunderbolt 4/3, and USB4 ports.

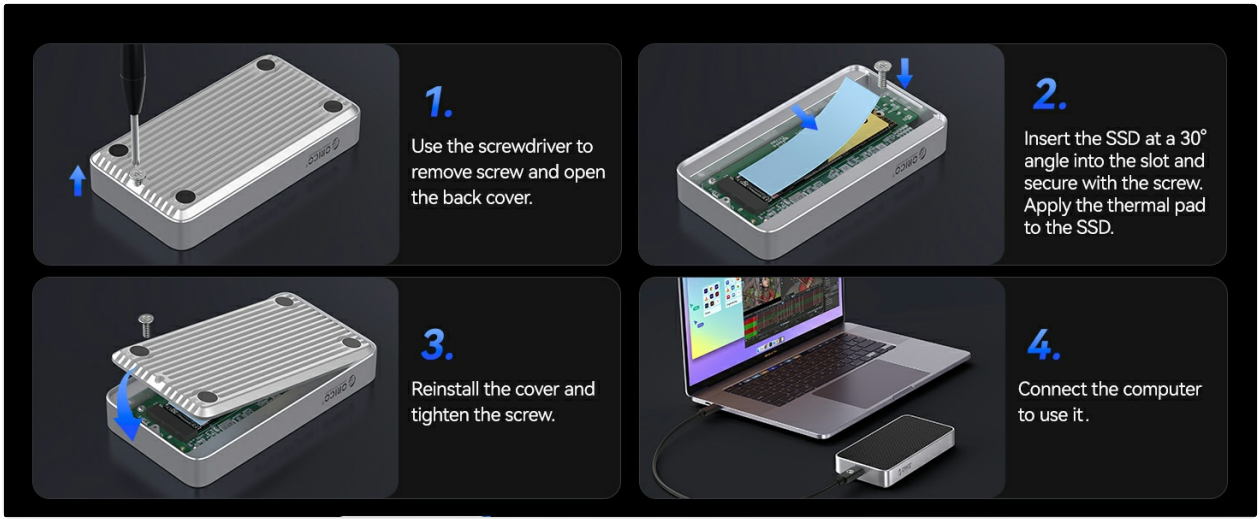


Figure 7: Connect the enclosure to your computer using the USB-C cable.

Initial Setup and Formatting

Upon first connection, the newly installed SSD may need to be initialized and formatted by your operating system before use.

- **For macOS:**
    a. Open *Disk Utility* (Applications > Utilities > Disk Utility).
    b. In the Disk Utility sidebar, click the "View" button and select "Show All Devices".
    c. Select the external ORICO X50 drive (usually listed under "External").
    d. Click the "Erase" button in the toolbar.
    e. Provide a name for the drive. For "Format", choose **APFS** for Mac-only use or **ExFAT** for compatibility with both macOS and Windows. For "Scheme", select **GUID Partition Map**.
    f. Click "Erase" to format the drive.
- **For Windows:**
    a. Right-click the Start button and select *Disk Management*.
    b. Locate the unallocated space corresponding to your ORICO X50 SSD.
    c. Right-click the unallocated space and select "New Simple Volume". Follow the wizard to assign a drive letter and format the drive. Choose **NTFS** for Windows-only use or **ExFAT** for compatibility with both Windows and macOS.
- **For Linux:**
    a. Use a disk utility tool like *GParted* or the command line (e.g.,fdisk, mkfs) to partition and format the drive. Common formats include **Ext4** for Linux-only or **ExFAT** for cross-platform compatibility.

Figure 8: The ORICO X50 is compatible with Windows, macOS, and Linux systems.

Data Transfer

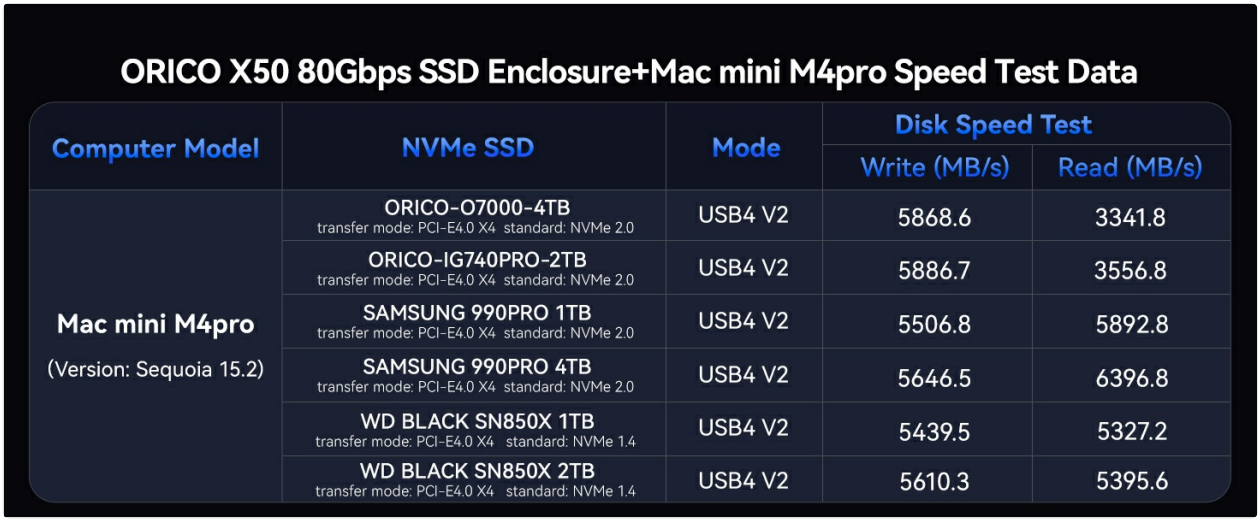
Once formatted, the SSD will appear as a mounted external drive on your system. You can now drag and drop files, copy, paste, or use it as a target for backups and other storage needs.

Performance

The ORICO X50 enclosure is designed to deliver exceptional performance, especially with Thunderbolt 5 compatible systems.

- **Next-Gen 80Gbps Speed:** Experience theoretical speeds up to 6000MB/s read and 5800MB/s write. This allows for rapid transfer of large files, such as 6GB in seconds.
- **Massive Capacity:** Supports M.2 NVMe SSDs up to 8TB, providing ample space for all your projects and data.

Figure 9: The ORICO X50 offers a significant speed increase over previous USB standards.



ORICO X50 80Gbps SSD Enclosure+Mac mini M4pro Speed Test Data

Computer Model	NVMe SSD	Mode	Disk Speed Test	
			Write (MB/s)	Read (MB/s)
Mac mini M4pro (Version: Sequoia 15.2)	ORICO-O7000-4TB transfer mode: PCI-E4.0 X4 standard: NVMe 2.0	USB4 V2	5868.6	3341.8
	ORICO-IG740PRO-2TB transfer mode: PCI-E4.0 X4 standard: NVMe 2.0	USB4 V2	5886.7	3556.8
	SAMSUNG 990PRO 1TB transfer mode: PCI-E4.0 X4 standard: NVMe 2.0	USB4 V2	5506.8	5892.8
	SAMSUNG 990PRO 4TB transfer mode: PCI-E4.0 X4 standard: NVMe 2.0	USB4 V2	5646.5	6396.8
	WD BLACK SN850X 1TB transfer mode: PCI-E4.0 X4 standard: NVMe 1.4	USB4 V2	5439.5	5327.2
	WD BLACK SN850X 2TB transfer mode: PCI-E4.0 X4 standard: NVMe 1.4	USB4 V2	5610.3	5395.6

Figure 10: Example speed test results with various NVMe SSDs on a Mac mini M4 Pro.

Ideal Use Cases

The high performance of the ORICO X50 makes it suitable for:

- **4K/8K Video Editing:** Seamlessly edit high-resolution video files directly from the external SSD.
- **3D Modeling and Rendering:** Accelerate workflows for complex 3D projects.
- **VR/AR Content Development:** Handle large assets and rapid iterations with ease.
- **High-Speed Data Backup:** Perform quick and efficient backups of critical data.

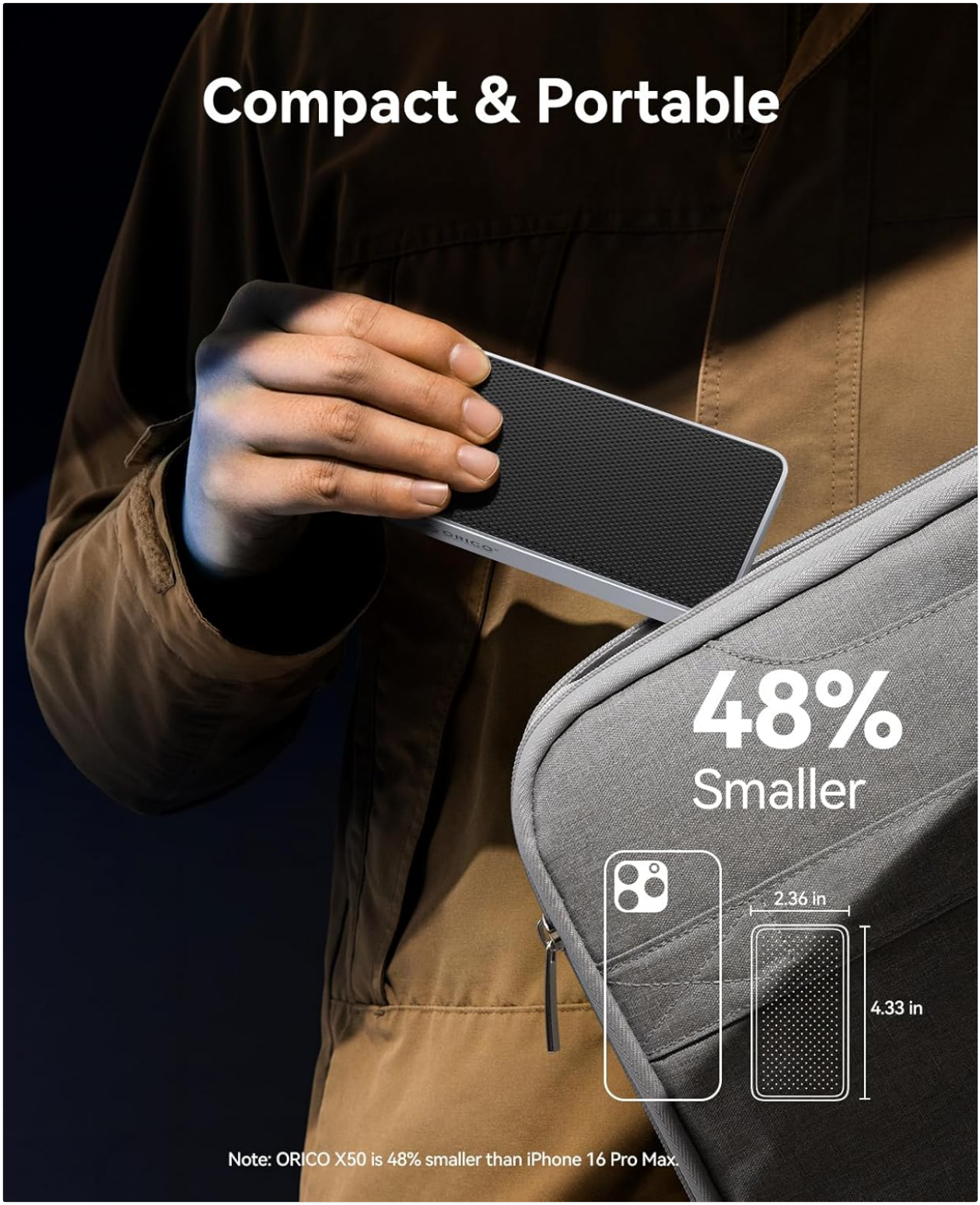


Figure 11: The ORICO X50 is ideal for professionals in video editing, 3D modeling, and VR/AR development.

Maintenance

Fanless Cooling System

The ORICO X50 features an advanced fanless cooling design to maintain optimal operating temperatures without noise. This system includes:

- A finned aluminum chassis for increased heat dissipation surface area.
- Integrated thermal grease and a hydrogel coating to efficiently transfer heat from the SSD.

This design ensures reliability and sustained performance during long, intensive workloads by preventing

thermal throttling.

Figure 12: Components of the silent and efficient cooling system.

General Care

- Keep the enclosure clean and free from dust. Use a soft, dry cloth for cleaning.
- Avoid exposing the device to extreme temperatures, direct sunlight, or high humidity.
- Always safely eject the drive from your operating system before disconnecting the cable to prevent data corruption or loss.

Troubleshooting

Common Issues and Solutions

- **Drive Not Recognized:**
  - Ensure the SSD is correctly installed and secured within the enclosure.
  - Check that the Thunderbolt 5 cable is securely connected to both the enclosure and your computer.
  - Try connecting to a different USB-C/Thunderbolt port on your computer.
  - Test the enclosure with another computer to rule out system-specific issues.
  - If it's a new SSD, ensure it has been initialized and formatted (refer to "Initial Setup and Formatting" section).
- **Slow Speeds:**
  - Verify that your computer's port and the cable you are using support Thunderbolt 5 (80Gbps) or USB4 speeds.
  - Ensure you are using a high-performance PCIe 4.0 x4 NVMe SSD. Older or slower SSDs will not achieve maximum speeds.
  - For Thunderbolt 3 users: Some systems may default to USB speeds (~10Gbps). For full Thunderbolt 3 performance, a dedicated Thunderbolt 3/4 enclosure might be recommended, or ensure your system's Thunderbolt settings are optimized.
  - Close any background applications that might be consuming significant system resources or disk I/O.
- **Connection Drops (Mac users):**
  - Ensure your macOS is updated to the latest version.
  - Try using a different Thunderbolt 5 cable.
  - Connect the enclosure to a different Thunderbolt port on your Mac.
- **Overheating:**
  - While the enclosure is designed for efficient fanless cooling, prolonged heavy use (e.g., continuous large file transfers, 4K/8K video editing) may cause the aluminum body to become warm. This is normal and indicates effective heat dissipation.
  - Ensure the enclosure is placed on a flat surface with adequate airflow around it. Avoid covering it.

Warranty and Support

The ORICO X50 Thunderbolt 5 M.2 NVMe SSD Enclosure is backed by a**3-year limited warranty** from the date of purchase. This warranty covers manufacturing defects and ensures reliable operation under normal use conditions.
For technical support, product registration, or to initiate a warranty claim, please utilize the following contact information:

- **Official Website:** www.orico.com.cn
- **Customer Service Hotline:** 400-6696298
- **Email Support:** support@orico.com.cn

Please retain your proof of purchase for warranty validation.