MSI S78-440K090-P83

MSI SPATIUM M450 PCIe 4.0 NVMe M.2 500GB SSD User Manual

Model: S78-440K090-P83

Brand: MSI



1. Introduction

The MSI SPATIUM M450 PCIe Gen4 NVMe M.2 SSD delivers blazing speeds and incredible performance, designed to elevate your system's capabilities. Optimized for the PCIe Gen4 interface, this SSD offers rapid data transfer and significantly reduced game load times. It incorporates the latest 3D NAND flash technology, providing dense storage in a compact M.2 form factor.

Key Features:

- **PCIe Gen4x4 Interface:** Complies with the NVMe 1.4 standard for high-speed data transfer.
- **Exceptional Performance:** Achieves sequential read speeds up to 3600MB/s and write speeds up to 3000MB/s.
- **High Endurance:** Rated for up to 600 TBW (Terabytes Written), ensuring long-term reliability.

- **Advanced Data Protection:** Features built-in data security and error-correction capabilities.
- **Versatile Compatibility:** Suitable for installation in both desktop and notebook systems.



The MSI SPATIUM M450 SSD and its retail packaging.

2. Setup and Installation

Installing the MSI SPATIUM M450 SSD is a straightforward process, compatible with most modern desktop and laptop motherboards that support M.2 NVMe drives. Always ensure your system is powered off and unplugged before beginning installation.

Prerequisites:

- A compatible motherboard with an available M.2 slot (PCIe Gen4x4 recommended for full performance).
- A small Phillips head screwdriver.
- An anti-static wrist strap (recommended to prevent static discharge).

Installation Steps:

1. **Prepare Your System:** Power down your computer completely and disconnect all cables. Open your computer case or laptop chassis to access the motherboard.
2. **Locate M.2 Slot:** Identify the M.2 slot on your motherboard. It is typically labeled and may have a pre-installed standoff screw.
3. **Insert the SSD:** Gently slide the MSI SPATIUM M450 SSD into the M.2 slot at a slight angle (approximately 30 degrees) until the gold contacts are fully seated.
4. **Secure the SSD:** Press the SSD down until it is parallel with the motherboard. Secure it with the M.2 screw provided with your motherboard or the SSD.

5. **Close System:** Reassemble your computer case or laptop chassis and reconnect all cables.
6. **Initialize and Format:** Power on your computer. You may need to initialize the new SSD in Disk Management (Windows) or Disk Utility (macOS) and format it before use. Refer to your operating system's documentation for detailed steps.



Front view of the SSD.



Back view of the SSD.

For a visual guide on installation, you can refer to general M.2 NVMe SSD installation tutorials available online. The process typically involves inserting the drive into the M.2 slot and securing it with a screw.

3. Operating the SSD

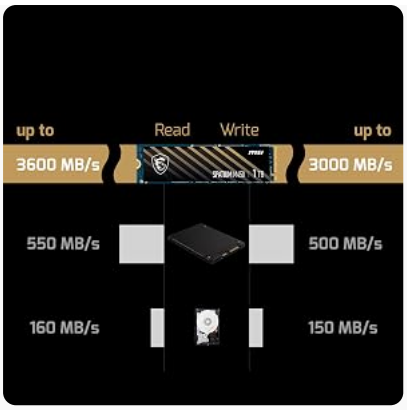
Once installed and formatted, the MSI SPATIUM M450 SSD operates as a high-speed storage device for your system. Its performance is optimized for the PCIe Gen4 interface, providing significant improvements over traditional SATA SSDs and HDDs.

Performance:

The SPATIUM M450 is designed to deliver sequential read speeds of up to 3600 MB/s and sequential write speeds of up to 3000 MB/s. Actual performance may vary depending on your system configuration, workload, and other factors. These speeds are ideal for demanding applications, large file transfers, and reducing game load times.



Advertised Read and Write Speeds.



Speed comparison with other storage types.

3D NAND Technology:

The SPATIUM M450 utilizes advanced 3D NAND flash technology. This allows for higher storage density and improved performance compared to traditional 2D NAND, contributing to the drive's compact design and efficient operation.

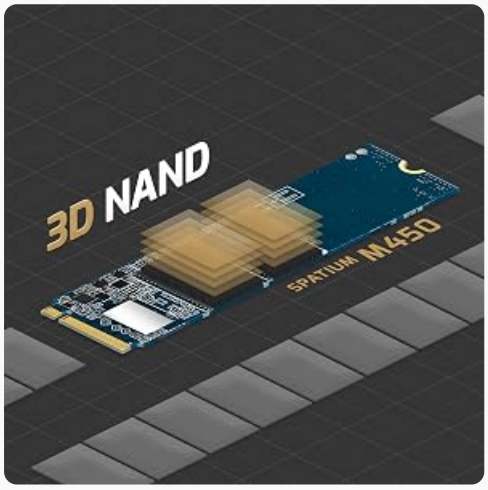


Illustration of 3D NAND technology.

4. Maintenance

Solid State Drives generally require less maintenance than traditional hard disk drives. However, proper care can extend the lifespan and maintain optimal performance of your MSI SPATIUM M450 SSD.

Data Integrity and Longevity:

- **TRIM Support:** Ensure your operating system has TRIM enabled. TRIM helps the SSD manage data blocks more efficiently, preventing performance degradation over time. Modern operating systems typically enable this by default.
- **S.M.A.R.T. Monitoring:** The drive supports S.M.A.R.T. (Self-Monitoring, Analysis, and Reporting Technology), which allows you to monitor the health and performance of the SSD. Utilize compatible software to check S.M.A.R.T. status periodically.
- **LDPC ECC:** Low-Density Parity-Check Error-Correcting Code helps to detect and correct data errors, enhancing data reliability.
- **E2E Data Protection:** End-to-End Data Protection ensures data integrity throughout the entire data path

within the SSD.



Built-in data security and error-correction capabilities.

Software Utility:

MSI may provide or recommend software utilities, such as Actiphy, to help manage and optimize your SSD. These tools can offer features like drive cloning, data backup, and performance monitoring. Check the official MSI website for available software downloads.



Actiphy software for SSD management.

5. Troubleshooting

If you encounter issues with your MSI SPATIUM M450 SSD, consider the following common troubleshooting steps:

- **SSD Not Detected:**
  - Ensure the SSD is properly seated in the M.2 slot.
  - Check your motherboard's BIOS/UEFI settings to confirm the M.2 slot is enabled and the drive is recognized.
  - Verify that your motherboard's M.2 slot supports NVMe PCIe SSDs.
- **Slow Performance:**

- Confirm your M.2 slot is operating at PCIe Gen4 speeds (if supported by your motherboard and CPU).
- Ensure TRIM is enabled in your operating system.
- Check for updated motherboard BIOS/UEFI and chipset drivers.
- Monitor SSD temperature; excessive heat can throttle performance.

- **Data Corruption/Errors:**
  - Run a disk check utility (e.g., `chkdsk` on Windows).
  - Update SSD firmware if available from the MSI website.
  - Ensure proper system shutdown to prevent data loss.

If these steps do not resolve your issue, please contact MSI customer support for further assistance.

6. Specifications

Detailed technical specifications for the MSI SPATIUM M450 PCIe 4.0 NVMe M.2 500GB SSD:

Attribute	Detail
Brand	MSI
Model Number	S78-440K090-P83
Digital Storage Capacity	500 GB
Hard Drive Interface	NVMe
Connectivity Technology	PCIe Gen4x4
Sequential Read Speed	Up to 3600 MB/s
Sequential Write Speed	Up to 3000 MB/s
TBW (Terabytes Written)	Up to 600 TBW
Flash Memory Type	3D NAND
Form Factor	M.2 2280
Hardware Platform	PC, Laptop
Item Weight	1.41 ounces
Product Dimensions	3.2 x 0.87 x 0.09 inches
First Available Date	March 8, 2022

7. Warranty and Support

Warranty Information:

MSI stands by the quality and reliability of the SPATIUM M450 SSD with a **5-Year comprehensive warranty**. This warranty covers defects in materials and workmanship under normal use conditions. Please retain your proof of purchase for warranty claims.



5-Year comprehensive warranty.

Customer Support:

If you need assistance, have questions, or are not satisfied with your product, MSI support is available to help and assist. For technical support, warranty claims, or general inquiries, please visit the official MSI support website or contact their customer service directly.