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Samsung Electronics MZ-V5P256BW

Samsung 950 PRO 256GB SSD User Manual

Model: MZ-V5P256BW

Brand: Samsung Electronics

1. Introduction

This user manual provides comprehensive instructions for the installation, operation, maintenance, and troubleshooting of your Samsung 950 PRO 256GB SSD (MZ-V5P256BW). The Samsung 950 PRO is a high-performance internal solid-state drive designed for intensive workloads, offering enhanced bandwidth through its NVMe interface. It is presented in a compact M.2 form factor, making it ideal for consumer professionals using high-end PCs and workstations.

Key features include:

- Storage Capacity: 256 GB
- Form Factor: NVMe M.2
- Interface: PCIe 3.0 x4 (up to 32Gb/s) NVMe 1.1
- Sequential Read Speed (Up To): 2,200 MB/sec
- Sequential Write Speed (Up To): 900 MB/sec

2. Product Overview

The Samsung 950 PRO SSD utilizes V-NAND technology to deliver exceptional speed and reliability. Its M.2 form factor allows for direct integration into compatible motherboards, reducing cable clutter and improving airflow within your system. The NVMe (Non-Volatile Memory Express) interface provides a significant performance boost over traditional SATA SSDs by leveraging the PCIe bus.



Figure 2.1: Front view of the Samsung 950 PRO 256GB M.2 NVMe SSD. This image displays the compact M.2 form factor, highlighting the V-NAND SSD 950 PRO branding, 256GB capacity, and NVM Express interface. Key identifiers like P/N, Model, and S/N are visible on the label.

The drive's compact design and advanced technology make it suitable for high-performance computing tasks, including

gaming, video editing, and data analysis.

3. Setup and Installation

Before beginning installation, ensure your system is compatible with an NVMe M.2 SSD. This typically requires a motherboard with an M.2 slot supporting PCIe NVMe. Refer to your motherboard's manual for specific compatibility details.

3.1 Physical Installation

1. **Power Off and Ground:** Turn off your computer and disconnect it from the power source. Ground yourself to prevent electrostatic discharge.
2. **Locate M.2 Slot:** Identify the M.2 slot on your motherboard. If using an adapter card, insert the Samsung 950 PRO SSD into the adapter card first.
3. **Insert SSD:** Gently insert the Samsung 950 PRO SSD into the M.2 slot at a slight angle. Press down on the SSD until it is level and secure it with the provided screw (if applicable, typically with the motherboard or adapter).



Figure 3.1: Close-up view of the Samsung 950 PRO SSD, showing the M.2 connector pins and the main components. This image helps in identifying the correct orientation for installation into a compatible slot.

3.2 BIOS Configuration

After physical installation, you may need to adjust BIOS settings. Restart your computer and enter the BIOS/UEFI setup (usually by pressing Del, F2, or F10 during boot-up).

- **PCIe Slot Configuration:** Ensure the PCIe slot used for the M.2 SSD (or adapter) is configured correctly (e.g., x4 mode if applicable).
- **Boot Mode:** For NVMe SSDs, it is generally recommended to use UEFI boot mode. You may need to disable CSM (Compatibility Support Module) and set Secure Boot to "Other OS" or similar, then clear Secure Boot keys.
- **Verify Detection:** Confirm that the BIOS detects the Samsung M.2 drive.
- **Save and Exit:** Save your BIOS settings and exit.

3.3 Operating System Installation/Migration

For optimal performance, it is recommended to install your operating system directly onto the 950 PRO SSD. If migrating an existing OS, use Samsung's official migration software or a reputable third-party tool.

1. **Format SSD:** In Windows, open Disk Management (Control Panel > System and Security > Administrative Tools > Computer Management > Disk Management). Initialize the SSD as GPT and format it with NTFS. Create a single partition.
2. **Install NVMe Driver:** Download and install the latest Samsung NVMe driver from the official Samsung website (www.samsung.com/ssd). Verify its installation in Device Manager under "Storage Controllers."

3. **OS Installation:** If performing a fresh OS install, boot from your OS installation media (e.g., USB drive) and select the Samsung 950 PRO as the installation target.
4. **Boot Order:** After OS installation, ensure your BIOS boot order prioritizes the Samsung 950 PRO SSD.

4. Operating Instructions

Once installed, your Samsung 950 PRO SSD will function as a primary storage device. For optimal performance and management, utilize the Samsung Magician software.

4.1 Samsung Magician Software

Samsung Magician is a utility designed to help users manage and optimize their Samsung SSDs. It provides features such as:

- **Performance Benchmark:** Measure the read/write speeds of your SSD.
- **Drive Health Check:** Monitor the health and temperature of your SSD.
- **Firmware Update:** Easily update your SSD's firmware for improved performance and stability.
- **Over Provisioning:** Allocate extra space for background operations to extend SSD lifespan and maintain performance.
- **Secure Erase:** Completely and securely erase all data on the SSD.

Download the latest version of Samsung Magician from the official Samsung website.

4.2 General Usage Tips

- Avoid filling the SSD to its maximum capacity, as this can degrade performance. Leave some free space for optimal operation.
- Do not defragment your SSD. SSDs do not benefit from defragmentation, and it can reduce their lifespan.
- Ensure your operating system's TRIM command is enabled. This helps the SSD manage data efficiently and maintain performance over time.

5. Maintenance

Regular maintenance helps ensure the longevity and optimal performance of your Samsung 950 PRO SSD.

- **Firmware Updates:** Periodically check for and install firmware updates using the Samsung Magician software. Firmware updates can improve performance, stability, and compatibility.
- **Driver Updates:** Keep your NVMe drivers updated. Check the Samsung website for the latest drivers.
- **Health Monitoring:** Use Samsung Magician to regularly monitor the health and estimated remaining lifespan of your SSD.
- **System Optimization:** Ensure your operating system is configured for SSD use (e.g., TRIM enabled, defragmentation disabled).

6. Troubleshooting

If you encounter issues with your Samsung 950 PRO SSD, refer to the following common troubleshooting steps:

Problem	Possible Cause	Solution

Problem	Possible Cause	Solution
SSD not detected by BIOS/OS	Incorrect physical installation, BIOS settings, or missing drivers.	Ensure the SSD is fully seated in the M.2 slot. Check BIOS settings: verify M.2 slot is enabled, PCIe configuration is correct, and boot mode is UEFI. Install the Samsung NVMe driver.
Slow performance	Outdated drivers/firmware, SSD nearly full, or incorrect OS settings.	Update SSD firmware and NVMe drivers using Samsung Magician. Ensure sufficient free space on the SSD (at least 10-15%). Verify TRIM is enabled in your operating system.
Operating System boot errors	Incorrect boot order, corrupted OS installation, or Secure Boot issues.	Check BIOS boot order to ensure the SSD is prioritized. If migrating OS, ensure the migration process completed successfully. For Windows 10, try using the "Repair your computer" option from installation media to fix boot issues (e.g., Master Boot Record repair).

For further assistance, consult the Samsung support website or contact customer service.

7. Specifications

Feature	Detail
Digital Storage Capacity	256 GB
Hard Disk Interface	NVMe
Connectivity Technology	PCIe
Form Factor	M.2
Sequential Read Speed (Up To)	2,200 MB/sec
Sequential Write Speed (Up To)	900 MB/sec
Operating System Compatibility	Windows 10, 8.1 (32, 64bit)
Item Weight	0.32 ounces
Product Dimensions (LxWxH)	3.16 x 0.09 x 0.87 inches
Manufacturer	Samsung Memory
Date First Available	October 22, 2015

8. Official Product Video

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Video 8.1: "samsung NVMe effect" - This official video from Samsung illustrates the performance and capabilities of NVMe technology, showcasing how it sparks new possibilities in computing. It highlights the speed and efficiency of the Samsung V-NAND SSD.

9. Warranty and Support

The Samsung 950 PRO 256GB SSD comes with a **5-year limited warranty**. For detailed warranty information and product support, please visit the official Samsung SSD website or the Samsung Store on Amazon.

- **Samsung SSD Website:** For the most up-to-date information, drivers, firmware, and support resources, visit www.samsung.com/ssd.
- **Samsung Store on Amazon:** Explore other Samsung products and find support at the official Amazon store: Samsung Store.



Figure 9.1: Packaging of the Samsung 950 PRO SSD, clearly indicating the "5 YEAR LIMITED WARRANTY" and directing users to samsung.com/ssd for more information.

When contacting support, please have your product model number (MZ-V5P256BW) and serial number ready.

Ask a question about this manual

Ask about setup, troubleshooting, compatibility, parts, safety, or missing instructions. Manuals+ will review the question and use this page's manual context to help answer it.

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Anonymous

Email

you@example.com

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Question

Example: How do I reset this device or fix this error?

Details

Model number, symptoms, what you tried, or the section of the manual you are using.

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