

Samsung MZ-77Q1T0B

Samsung 870 QVO SATA III SSD 1TB User Manual

Model: MZ-77Q1T0B

[Introduction](#)

[Setup](#)

[Operating](#)

[Maintenance](#)

[Troubleshooting](#)

[Specifications](#)

[Warranty & Support](#)

1. INTRODUCTION

This manual provides essential information for the installation, operation, and maintenance of your Samsung 870 QVO SATA III SSD 1TB. The 870 QVO series offers enhanced performance and reliability for desktop PCs and laptops, utilizing Samsung's advanced QLC NAND technology.

1.1 What's in the Box

- Samsung 870 QVO SATA III SSD 1TB (MZ-77Q1T0B)

Note: Additional accessories such as SATA cables or mounting screws may be sold separately.



Figure 1.1: Top view of the Samsung 870 QVO SATA III SSD 1TB.

2. SETUP AND INSTALLATION

The Samsung 870 QVO SSD is designed for easy installation in desktop PCs and laptops that support a standard 2.5-inch SATA form factor.

2.1 Physical Installation

1. **Power Off System:** Ensure your computer is completely powered off and disconnected from the power source.
2. **Open Chassis:** Open your computer case (desktop) or access the drive bay (laptop) according to your system's manufacturer guidelines.
3. **Mount SSD:** Secure the 870 QVO SSD into an available 2.5-inch drive bay using appropriate screws or mounting brackets.
4. **Connect Cables:** Connect a SATA data cable from the SSD to an available SATA port on your motherboard. Connect a SATA power cable from your power supply unit to the SSD.
5. **Close Chassis:** Close your computer case or secure the drive bay cover.

Boost capacity

The 870 QVO is now available in 1, 2, 4 and 8TB. The 8TB model is by far the largest client SATA SSD. Upgrade to the latest in SATA SSD technology to thrive in today's digital world.

* 1GB=1,000,000,000 bytes by IDEMA. A certain portion of capacity may be used for system file and maintenance use, so the actual capacity may differ from what is indicated on the product label.



Figure 2.1: Visual representation of SSD installation in a laptop and desktop.

2.2 Initial Drive Setup (Operating System)

After physical installation, the SSD needs to be initialized and formatted by your operating system before use. If you are migrating an existing operating system, use Samsung Magician software's Data Migration tool.

1. **Boot System:** Power on your computer.
2. **Access Disk Management:**
 - **Windows:** Right-click on 'This PC' or 'My Computer', select 'Manage', then 'Disk Management'.
 - **macOS:** Go to 'Applications' > 'Utilities' > 'Disk Utility'.
 - **Linux:** Use a disk utility like GParted or the `fdisk`/`parted` command-line tools.
3. **Initialize Disk:** Locate the new SSD. You may be prompted to initialize the disk (MBR or GPT). GPT is recommended for modern systems.
4. **Create Partition:** Create a new simple volume (Windows) or partition (macOS/Linux) on the SSD.
5. **Format Drive:** Format the partition with a suitable file system (e.g., NTFS for Windows, APFS for macOS, Ext4 for Linux).

3. OPERATING THE SSD

Once installed and formatted, your Samsung 870 QVO SSD operates like any other storage drive. For optimal performance and management, Samsung provides the Magician software.

3.1 Samsung Magician Software

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

- **Drive Health Check:** Monitor the drive's health status and temperature.
- **Performance Benchmark:** Measure the sequential and random read/write speeds.
- **Performance Optimization:** Optimize the SSD for maximum performance.
- **Firmware Update:** Easily update the SSD's firmware to the latest version.
- **Secure Erase:** Permanently delete data from the SSD.
- **Data Migration:** Clone your existing drive to the new SSD.

Download the latest version of Samsung Magician from the official Samsung website: [Samsung SSD Tools & Software](#)

Upgrade with ease

Upgrading to 870 QVO is now easier than ever for anyone with a desktop PC or laptop that supports a standard 2.5-inch SATA form factor. Simply plug in the 870 QVO into a SATA slot and let the updated migration software take care of the rest.



Figure 3.1: Samsung Magician software interface for SSD management.

4. MAINTENANCE

Proper maintenance ensures the longevity and optimal performance of your SSD.

4.1 Firmware Updates

Regularly check for and install firmware updates using the Samsung Magician software. Firmware updates can improve performance, enhance compatibility, and fix potential issues.

4.2 TRIM Support

Ensure that TRIM is enabled on your operating system. TRIM helps the SSD manage its data blocks more efficiently, preventing performance degradation over time. Modern operating systems typically enable TRIM by default for SSDs.

4.3 Over-Provisioning

While the 870 QVO is designed for high endurance, you can optionally configure over-provisioning using Samsung Magician. This reserves a portion of the drive for the SSD controller's internal operations, potentially extending lifespan and improving sustained performance, especially under heavy workloads.



Sequential Reads
Up to **560 MB/s**

Sequential Writes
Up to **530 MB/s**

Enhanced in every way

With an expanded SATA interface limit of 560/530 MB/s sequential speeds, the 870 QVO improves random access speed and sustained performance. Intelligent TurboWrite accelerates write speeds and maintains long-term high performance with a larger variable buffer.

* Performance may vary based on SSD's firmware version and system hardware & configuration.
* Random performance improved up to 13% in QD1 Random read for 870 QVO vs. 860 QVO.
* Sustained write performance improved up to 21% for 870 QVO vs. 860 QVO.
* Test system configuration : Intel® Core i7-7700k CPU@4.20GHz, DDR4 1200MHz, 32GB, OS - Windows 10 Pro 64bit, Chipset - ASUS-PRIME-Z270-A.

5. TROUBLESHOOTING

If you encounter issues with your Samsung 870 QVO SSD, refer to the following common solutions.

5.1 Drive Not Detected

- **Check Connections:** Ensure both the SATA data and power cables are securely connected to the SSD and the motherboard/power supply.
- **BIOS/UEFI Settings:** Verify that the SATA port the SSD is connected to is enabled in your system's BIOS/UEFI settings. Ensure the SATA mode is set to AHCI for optimal SSD performance.
- **Initialize and Format:** If it's a new installation, ensure the drive has been initialized and formatted in Disk Management (Windows) or Disk Utility (macOS/Linux). Refer to Section 2.2.
- **Try Different Port/Cable:** Test the SSD with a different SATA data cable, power cable, or SATA port on your motherboard.

5.2 Slow Performance

- **TRIM Enabled:** Confirm that TRIM is enabled for your SSD.
- **SATA Mode:** Ensure your SATA controller is set to AHCI mode in BIOS/UEFI.
- **Firmware Update:** Update the SSD firmware using Samsung Magician.
- **Over-Provisioning:** Consider enabling over-provisioning via Samsung Magician for sustained performance under heavy loads.
- **System Resources:** Ensure your system has sufficient RAM and CPU resources, as these can impact overall storage performance.

5.3 Other Issues

For persistent issues or problems not covered here, please consult the Samsung support website or contact their customer service.

6. SPECIFICATIONS

Key technical specifications for the Samsung 870 QVO SATA III SSD 1TB (MZ-77Q1T0B).



Figure 6.1: The 870 QVO offers enhanced performance with high sequential read/write speeds.

Feature	Detail
Model Name	MZ-77Q1T0B
Capacity	1 TB
Interface	SATA III (6 Gb/s)
Form Factor	2.5-inch
Sequential Read Speed	Up to 560 MB/s
Sequential Write Speed	Up to 530 MB/s
TBW (Total Bytes Written)	360 TBW (for 1TB model)
NAND Type	Samsung V-NAND 4-bit MLC (QLC)
Controller	Samsung MKX Controller
Cache Memory	1 GB Low Power DDR4 SDRAM
Encryption	AES 256-bit Full Disk Encryption (FDE)
Dimensions (LxWxH)	3.94 x 2.76 x 0.27 inches
Weight	3.2 ounces
Operating Temperature	0°C to 70°C (32°F to 158°F)
Power Consumption	Average: 2.2 W, Maximum: 4.0 W (Burst)

7. WARRANTY AND SUPPORT

Samsung provides comprehensive support for its products.

7.1 Limited Warranty

The Samsung 870 QVO SSD 1TB (MZ-77Q1T0B) comes with a limited 3-year warranty or up to 360 TBW (Total Bytes Written), whichever comes first. For detailed warranty terms and conditions, please refer to the warranty statement included in the product packaging or visit the official Samsung website.

7.2 Data Recovery Plans

Optional data recovery plans are available for purchase to protect your valuable data. These plans are separate from the standard product warranty and offer services for data retrieval in case of drive failure. Options include:

- 2-Year Data Recovery Plan
- 3-Year Data Recovery Plan

For more information on these plans, please check with your retailer or Samsung's official channels.

7.3 Customer Support

For technical assistance, product inquiries, or warranty claims, please visit the official Samsung support website or contact their customer service department. You will typically need your product model number (MZ-77Q1T0B) and proof of purchase.

Official Samsung Support: <https://www.samsung.com/us/support/>

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