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GIGABYTE G440E1TB

GIGABYTE 1TB M.2 Solid State Drive Gen4 4000E User Manual

Model: G440E1TB

PCIe Gen 4.0 x4/NVMe 1.4

1. Introduction

The GIGABYTE Gen4 4000E SSD is a high-performance solid-state drive designed for modern computing needs. It features a PCIe 4.0 x4 interface and adheres to the NVMe 1.4 specification, providing fast data transfer speeds suitable for gaming, content creation, and handling large files.

This SSD incorporates Host Memory Buffer (HMB) technology, which utilizes the Direct Memory Access (DMA) of PCI Express to allow the SSD to use a portion of the system's DRAM, optimizing performance without requiring dedicated DRAM on the drive itself. Support for TRIM, S.M.A.R.T, and Over-Provisioning ensures data integrity, longevity, and consistent performance.



Figure 1.1: GIGABYTE Gen4 4000E SSD (Top View)
This image displays the GIGABYTE Gen4 4000E SSD from a top-down perspective, highlighting its compact M.2 form factor and the labeling that includes the brand name, model, and regulatory compliance marks.

Key Features:

- PCIe 4.0x4, NVMe 1.4 interface for high-speed data transfer.
- Sequential Read Speed: up to 3,500 MB/s.
- Sequential Write Speed: up to 1,800 MB/s.
- HMB (Host Memory Buffer) supported for optimized performance.

- TRIM and S.M.A.R.T supported for data management and health monitoring.

2. What's in the Box

Upon opening the product packaging, please verify that all the following items are included:

- GIGABYTE Gen4 4000E SSD
- Setup Guide
- Warranty Card



Figure 2.1: Product and Packaging
This image shows the GIGABYTE Gen4 4000E SSD alongside its retail packaging, illustrating the compact size of the drive relative to its box.

3. Setup and Installation

This section provides general guidelines for installing your GIGABYTE Gen4 4000E M.2 SSD. Specific steps may vary depending on your motherboard or system configuration. Always refer to your system's motherboard manual for detailed instructions.

Safety Precautions:

- Always power off your computer and disconnect the power cord before opening the case.
- Discharge any static electricity by touching a grounded metal object (e.g., the computer chassis) before handling components.
- Handle the SSD by its edges to avoid touching the gold connectors or components.

Installation Steps:

1. **Locate M.2 Slot:** Identify an available M.2 slot on your motherboard. Ensure it supports PCIe Gen4 x4 NVMe SSDs. Most modern motherboards have multiple M.2 slots; some may be covered by heatsinks.
2. **Remove Standoff Screw:** If present, remove the small screw and standoff from the M.2 slot. This standoff will be used to secure the SSD.
3. **Insert SSD:** Gently insert the GIGABYTE Gen4 4000E SSD into the M.2 slot at a 30-degree angle. The notch on the SSD should align with the key in the slot. Push firmly but gently until the SSD is fully seated.
4. **Secure SSD:** Once seated, push the SSD down until it is parallel with the motherboard. Secure it with the standoff screw you removed earlier. If your motherboard uses a tool-less latch mechanism, engage it to secure the SSD.
5. **Close Case and Power On:** Reassemble your computer case and reconnect the power cord. Power on your system.
6. **Initialize and Format:**
    - For Windows: Right-click on the Start button, select "Disk Management". You should see the new SSD listed as "Unallocated Space". Right-click on it, select "Initialize Disk", choose GPT (GUID Partition Table), then create a "New Simple Volume" and follow the wizard to format it.
    - For other operating systems, refer to their respective disk management utilities.



Figure 3.1: GIGABYTE Gen4 4000E SSD (Angled View)
This image provides an angled view of the GIGABYTE Gen4 4000E SSD, illustrating its slim profile and the M.2 interface connector, which is crucial for proper installation into a compatible slot.

4. Operating Your SSD

Once installed and formatted, your GIGABYTE Gen4 4000E SSD operates like any other storage device. For optimal performance and monitoring, consider the following:

Host Memory Buffer (HMB):

The HMB feature allows the SSD to utilize a portion of your system's DRAM for caching, improving performance, especially for read/write operations. This is automatically managed by the NVMe controller and your operating system.

GIGABYTE SSD Tool Box:

GIGABYTE provides a dedicated software utility called the "SSD Tool Box". This tool allows users to:

- View SSD status, including model name and firmware version.
- Monitor health conditions and sensor temperatures.
- Perform Secure Erase to permanently clear all data from the drive.

It is highly recommended to download and install the latest version of the SSD Tool Box from the official GIGABYTE website for comprehensive management of your SSD. A link to the download page can typically be found on the product support page for your specific model.

5. Maintenance and Optimization

To ensure the longevity and sustained performance of your GIGABYTE Gen4 4000E SSD, regular maintenance practices are recommended:

TRIM Functionality:

TRIM is an ATA command that helps the operating system inform the SSD which data blocks are no longer in use and can be wiped. This prevents performance degradation over time. Ensure TRIM is enabled in your operating system (it is usually enabled by default in modern OS versions like Windows 7 and later, macOS, and Linux).

S.M.A.R.T. Monitoring:

Self-Monitoring, Analysis, and Reporting Technology (S.M.A.R.T.) allows the SSD to monitor its own health and report potential issues. Use the GIGABYTE SSD Tool Box or other third-party utilities to regularly check the S.M.A.R.T. status of your drive. This can help predict potential failures and allow you to back up data before a problem occurs.

Over-Provisioning:

The GIGABYTE Gen4 4000E SSD supports Over-Provisioning, which reserves a small percentage of the SSD's total capacity for internal management tasks, such as wear leveling and garbage collection. This improves performance and extends the lifespan of the drive. This feature is managed internally by the SSD's firmware and does not typically require user intervention.

Firmware Updates:

Periodically check the GIGABYTE website for firmware updates for your SSD model. Firmware updates can improve performance, enhance compatibility, and fix bugs.

Secure Erase:

If you need to securely wipe all data from your SSD, use the Secure Erase function available in the GIGABYTE SSD Tool Box. This operation permanently deletes all data and restores the SSD to its factory default performance state. **Warning: This process is irreversible and will erase all data on the drive.**

6. Troubleshooting

If you encounter issues with your GIGABYTE Gen4 4000E 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 ensure the M.2 slot is enabled and configured correctly (e.g., NVMe mode).
  - Try the SSD in a different M.2 slot if available, or on another compatible system to rule out motherboard issues.
  - Update your motherboard's BIOS/UEFI to the latest version.
- **Slow Performance:**
  - Verify that the SSD is installed in a PCIe Gen4 x4 slot. Using a Gen3 slot will limit performance.
  - Ensure your operating system has TRIM enabled.
  - Check the SSD's health and temperature using the GIGABYTE SSD Tool Box. Overheating can cause performance throttling.
  - Ensure your system drivers (chipset, NVMe controller) are up to date.
  - Avoid filling the SSD to near full capacity; leaving some free space (e.g., 10-15%) can help maintain performance.

- **Data Corruption or Instability:**
  - Run a disk check utility (e.g., `chkdsk` on Windows) to identify and repair file system errors.
  - Check S.M.A.R.T. data for any warning signs of impending failure.
  - Ensure your power supply is stable and adequate for your system.

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

7. Technical Specifications

Feature	Description
Model Number	G440E1TB
Digital Storage Capacity	1024 GB (1TB)
Hard Disk Interface	PCIe Gen4 x4, NVMe 1.4
Sequential Read Speed	Up to 3,500 MB/s
Sequential Write Speed	Up to 1,800 MB/s
Form Factor	M.2 2280
Compatible Devices	Desktop, Gaming Console, Laptop
Installation Type	Internal Hard Drive
Item Weight	1.06 ounces
Product Dimensions (LxWxH)	5.91 x 5.91 x 7.87 inches
Manufacturer	GIGABYTE
ASIN	B0DPB5X91B

8. Warranty and Support

Warranty Information:

Your GIGABYTE Gen4 4000E SSD comes with a limited warranty. Please refer to the included "WARRANTY CARD" for specific terms, conditions, and duration of the warranty. Retain your proof of purchase for warranty claims.
For details on GIGABYTE's warranty policy, please visit the official GIGABYTE website or contact their customer service.

Customer Support:

For technical assistance, product inquiries, or warranty claims, please contact GIGABYTE customer support through their official channels. You can typically find support contact information, FAQs, and driver/firmware downloads on the GIGABYTE website.
The GIGABYTE Store on Amazon may also provide links to official support resources.
Remember to utilize the GIGABYTE SSD Tool Box for drive monitoring and maintenance, which can often resolve minor issues and provide valuable diagnostic information.

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