MSI PRO B660M-E DDR4 (7D46-003R)

MSI PRO B660M-E DDR4 Motherboard User Manual

Model: PRO B660M-E DDR4 (7D46-003R) | Brand: MSI

1. Introduction

The MSI PRO B660M-E DDR4 is a Micro-ATX motherboard designed for value-oriented systems, supporting 12th Generation Intel Core processors with the LGA 1700 socket. It features optimized Intel B660 chipset functionalities, including a primary PCI-e 4.0 x16 graphics card slot with Steel Armor, enhanced DDR4 memory support up to 4600+ MHz (OC), and an M.2 Gen3 storage slot. This motherboard ensures reliable power delivery with its fully digital power VRM platform and Core Boost architecture, complemented by passive and active cooling solutions. Connectivity options include Intel 1G LAN, USB 3.2 Gen 1 Type-A (5 Gb/s), 4K/60Hz display support, and HD 7.1 Audio.



Figure 1.1: MSI PRO B660M-E DDR4 Motherboard and its retail packaging.

2. Safety Information

Please read the following safety guidelines carefully before installing or using the motherboard:

- Always disconnect the power cord from the wall outlet before touching any component.
- Wear an anti-static wrist strap to prevent electrostatic discharge (ESD) damage to components.
- Handle components by their edges to avoid touching sensitive parts.
- Ensure proper ventilation in your PC case to prevent overheating.
- Keep the motherboard away from moisture and extreme temperatures.
- Refer to the official MSI website for the latest drivers and BIOS updates.

3. Package Contents

Verify that all items are present in your package:

- MSI PRO B660M-E DDR4 Motherboard
- I/O Shield
- 2 x SATA Cables
- M.2 Clip
- User Manual (this document)
- Driver CD/USB (may vary by region)

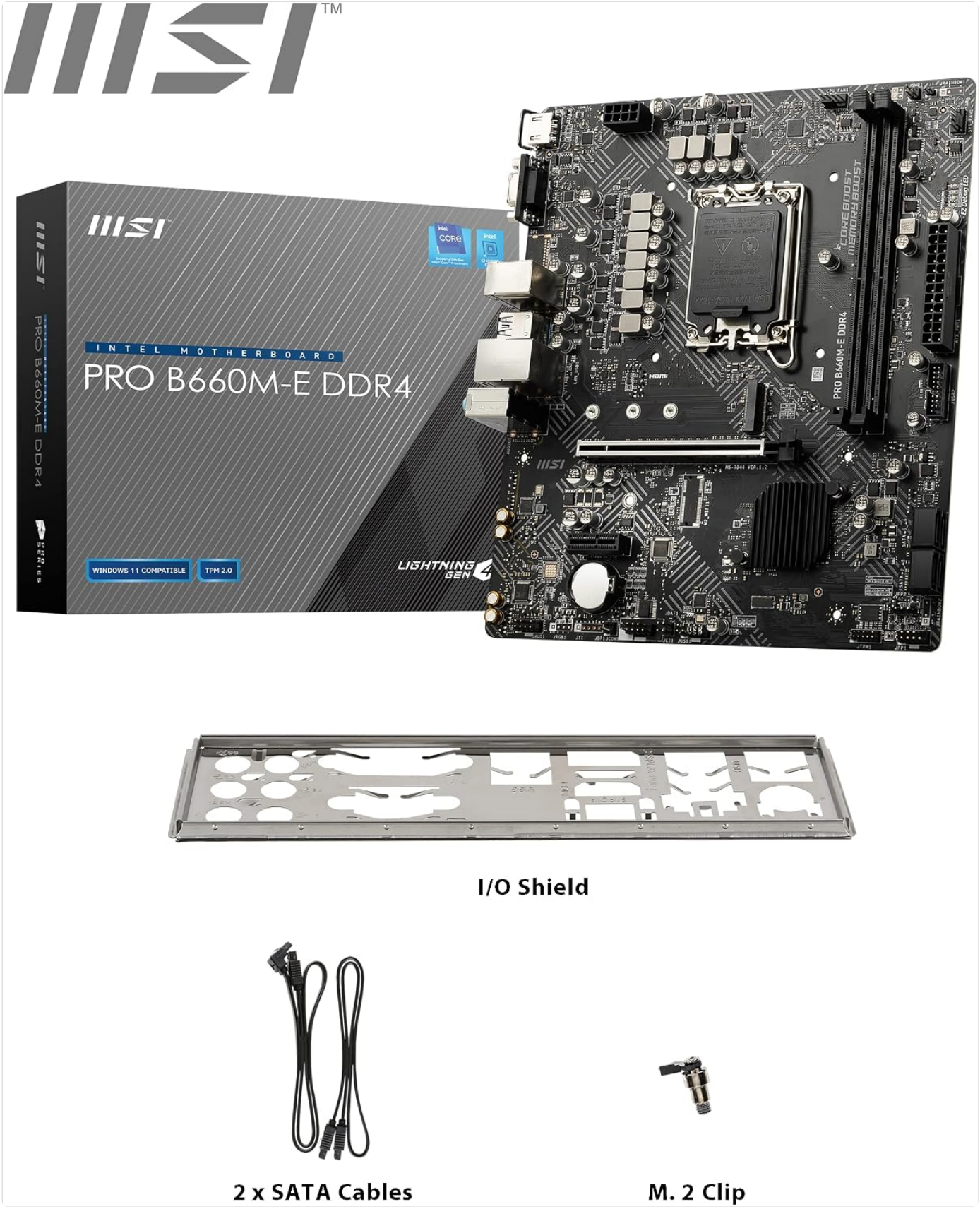


Figure 3.1: Included accessories: I/O Shield, SATA Cables, and M.2 Clip.

4. Setup and Installation

4.1 Motherboard Layout

Familiarize yourself with the key components and connectors on the motherboard.

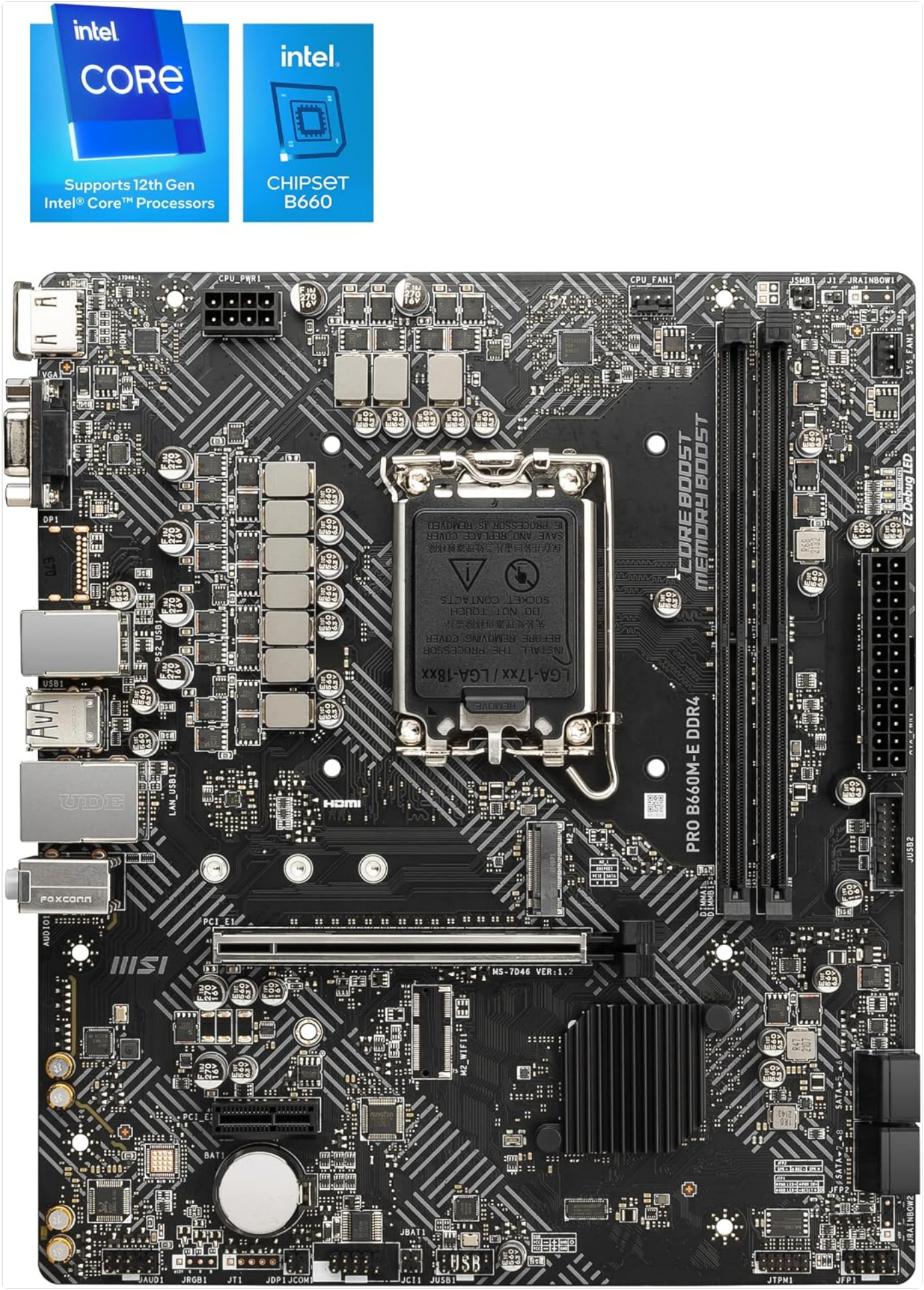


Figure 4.1: Overview of the motherboard layout, highlighting the LGA 1700 CPU socket and Intel B660 chipset.

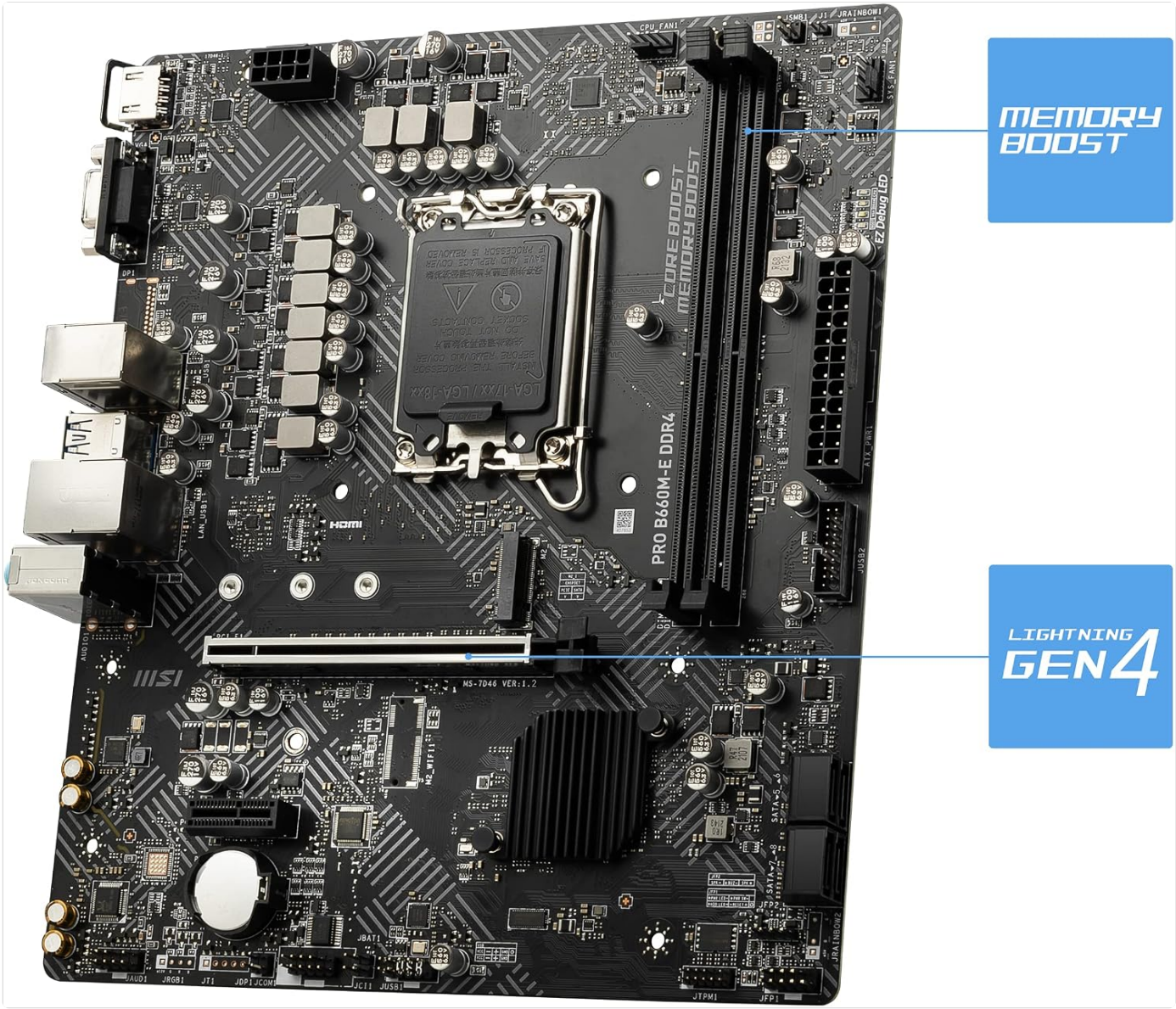


Figure 4.2: Close-up view illustrating the Memory Boost DDR4 slots and the Lightning Gen4 PCIe slot.

4.2 CPU Installation

This motherboard supports 12th Generation Intel Core, Pentium Gold, and Celeron processors with an LGA 1700 socket.

1. Open the CPU socket lever.
2. Carefully align the CPU with the socket, ensuring the triangular mark on the CPU matches the mark on the socket.
3. Gently place the CPU into the socket without forcing it.
4. Close the socket lever to secure the CPU.
5. Install the CPU cooler according to its manufacturer's instructions.

4.3 RAM Installation

The motherboard features 2 x DDR4 DIMM slots with Memory Boost technology, supporting up to 64GB of DDR4 memory at speeds up to 4600+ MHz (OC).

1. Open the clips at both ends of the DIMM slot.
2. Align the notch on the DDR4 memory module with the key in the DIMM slot.
3. Insert the memory module firmly into the slot until the clips snap into place.
4. Ensure both clips are fully closed.



Figure 4.3: Memory Boost DDR4 slots supporting high-speed RAM.

4.4 Storage Installation (M.2 & SATA)

The motherboard includes 1 x M.2 Gen3 x4 32 Gb/s slot and multiple SATA 6Gb/s ports for storage devices.

M.2 SSD Installation:

1. Locate the M.2 slot on the motherboard.
2. Remove the M.2 screw or stand-off.
3. Insert the M.2 SSD into the slot at a 30-degree angle.
4. Press down the M.2 SSD and secure it with the M.2 clip or screw.



Figure 4.4: M.2 Gen3 slot for high-speed NVMe SSDs.

SATA Device Installation:

1. Connect one end of the SATA data cable to a SATA port on the motherboard.
2. Connect the other end of the SATA data cable to your SATA HDD/SSD.
3. Connect a SATA power cable from your power supply unit (PSU) to the HDD/SSD.

4.5 PCIe Card Installation

The motherboard features a PCIe 4.0 x16 slot with Steel Armor for graphics cards and additional PCIe 3.0 x1 slots for expansion cards.

1. Open the latch on the PCIe slot.
2. Align your graphics card or expansion card with the slot.
3. Press down firmly until the card is seated and the latch snaps into place.

4. Secure the card with a screw to the PC case.



Figure 4.5: PCIe 4.0 x16 slot with Steel Armor for enhanced durability.

4.6 Connecting Peripherals and Power

Connect your display, USB devices, audio devices, and network cable to the rear I/O panel. Ensure all power connectors are securely attached.

- **Rear I/O Panel:** Connect your monitor to the HDMI or VGA port. Use the USB 2.0 and USB 3.2 Gen 1 ports for peripherals. Connect your network cable to the Intel 1G LAN port. Use the audio jacks for speakers/headphones and microphone.
- **Internal Headers:** Connect front panel USB ports, audio jacks, and case fans to the corresponding headers on the motherboard.
- **Power Connections:** Connect the 24-pin ATX power connector and the 8-pin (or 4-pin) CPU power connector from your PSU to the motherboard.

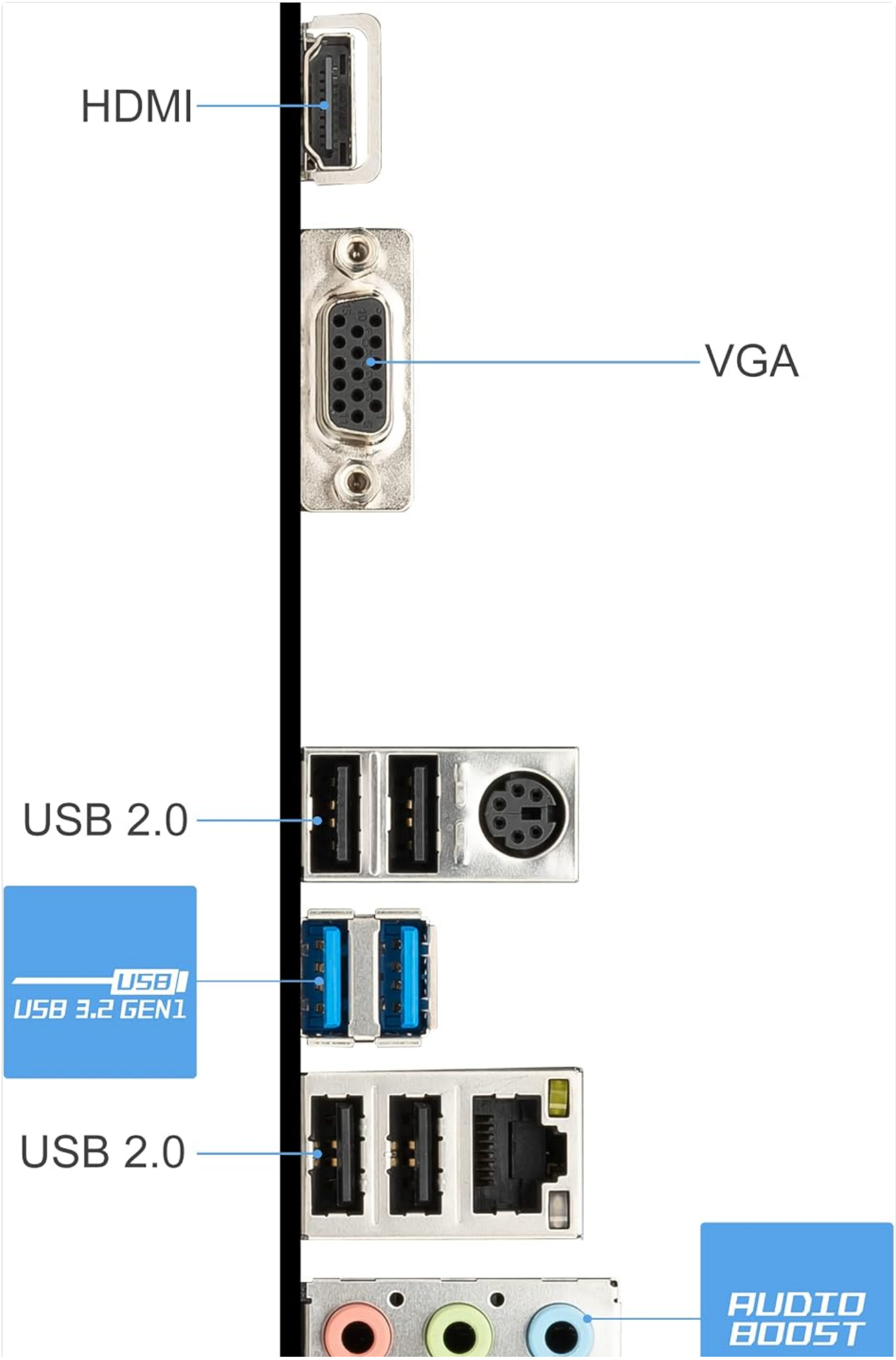

HDMI
VGA
USB 2.0
USB
USB 3.2 GEN1
USB 2.0
AUDIO
BOOST



Figure 4.6: Rear I/O Panel with various connectivity options including HDMI, VGA, USB, LAN, and Audio Boost.

5. Operating Instructions

5.1 First Boot and BIOS/UEFI Configuration

After assembling your system, connect a monitor, keyboard, and mouse. Power on the system.

1. Press the **DEL** key repeatedly during startup to enter the BIOS/UEFI setup utility.
2. In the BIOS/UEFI, you can configure boot order, system time, enable/disable integrated peripherals, and adjust performance settings.
3. Save changes and exit the BIOS/UEFI to proceed with operating system installation.

5.2 Driver Installation

For optimal performance and stability, install the necessary drivers for your motherboard components.

- Insert the provided driver CD/USB (if applicable) or download the latest drivers from the official MSI website (www.msi.com).
- Install chipset drivers, LAN drivers, audio drivers, and any other relevant drivers.
- Restart your system after installing drivers.

5.3 Operating System Installation

This motherboard supports Windows 10 and Windows 11.

1. Prepare a bootable USB drive with your desired operating system.
2. Boot from the USB drive (configure boot order in BIOS/UEFI if necessary).
3. Follow the on-screen instructions to install the operating system.

6. Maintenance

6.1 Cleaning

Regular cleaning helps maintain optimal performance and extends the lifespan of your motherboard.

- Ensure the system is powered off and unplugged before cleaning.
- Use compressed air to remove dust from fans, heatsinks, and other components.
- Use a soft, lint-free cloth lightly dampened with isopropyl alcohol for stubborn grime on non-electrical surfaces.
- Avoid using water or harsh chemicals.



Figure 6.1: The motherboard features intelligent cooling solutions for stable operation.

6.2 BIOS Updates

Updating the BIOS can improve compatibility, stability, and performance. Refer to the MSI website for instructions and the latest BIOS versions.

- Download the correct BIOS file for your specific motherboard model from MSI's official website.
- Follow the provided instructions carefully, typically involving a USB flash drive and the BIOS's built-in M-Flash utility.
- Do not interrupt the BIOS update process.

6.3 Driver Updates

Keep your drivers updated to ensure optimal performance and compatibility with new software and hardware.

- Periodically check the MSI website for updated chipset, LAN, audio, and other drivers.
- For graphics card drivers, visit the manufacturer's website (e.g., NVIDIA, AMD).

7. Troubleshooting

This section provides solutions to common issues you might encounter.

Problem	Possible Cause	Solution
System does not power on.	Loose power cables, faulty PSU, incorrect front panel connections.	Check all power connections (24-pin ATX, 8-pin CPU). Ensure front panel power switch is correctly connected. Test PSU if possible.
No display output.	Graphics card not seated, monitor cable loose, incorrect display output selected.	Reseat graphics card. Check monitor cable connection. Ensure monitor is on correct input. Try integrated graphics if available.
System reboots unexpectedly.	Overheating, unstable power, faulty RAM.	Check CPU/GPU temperatures. Ensure adequate cooling. Test RAM modules individually.
Operating system not found.	Incorrect boot order, unformatted drive, faulty storage device.	Check boot order in BIOS/UEFI. Ensure storage drive is properly connected and formatted.

Problem	Possible Cause	Solution
USB devices not recognized.	Outdated USB drivers, faulty port, device incompatibility.	Install latest chipset and USB drivers. Try different USB ports. Test device on another PC.

8. Specifications

Feature	Detail
Brand	MSI
Model Name	PRO B660M-E DDR4
Model Number	7D46-003R
Form Factor	Micro ATX
CPU Socket	LGA 1700
Compatible Processors	Intel® Core™ 12th Gen, Pentium® Gold, and Celeron®
Chipset	Intel B660
RAM Technology	DDR4
Max Memory Capacity	64 GB
Memory Clock Speed	Up to 4600 MHz (OC)
PCIe Slots	1 x PCIe 4.0 x16 (Steel Armor), 1 x PCIe 3.0 x1
M.2 Slots	1 x M.2 Gen3 x4 32 Gb/s
LAN	Intel 1G LAN
USB Ports	Total 12 (various USB 2.0, USB 3.2 Gen 1)
Video Output	HDMI, VGA (4K/60Hz support)
Audio	HD 7.1 Audio (Audio Boost)
Compatible OS	Windows 10, Windows 11

9. Warranty and Support

MSI provides warranty coverage for its products. Please refer to the official MSI website or your regional distributor for specific warranty terms and conditions.

- **Online Support:** Visit the MSI support page for FAQs, driver downloads, and technical assistance: www.msi.com/support
- **Contact Information:** For direct support, refer to the contact details provided on the MSI website for your region.
- **Product Registration:** Register your product on the MSI website to receive updates and support.

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