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ASUS PRIME B660M-A D4

ASUS Prime B660M-A D4 mATX Motherboard Instruction Manual

Model: PRIME B660M-A D4

1. Introduction

The ASUS Prime B660M-A D4 motherboard is designed to support 12th Gen Intel Core, Pentium Gold, and Celeron Processors with an LGA 1700 socket. It features a robust power design, comprehensive cooling solutions, and intelligent tuning options, making it suitable for daily users and PC builders. This manual provides essential information for installing, operating, and maintaining your motherboard.



Figure 1.1: Top-down view of the ASUS Prime B660M-A D4 Motherboard, highlighting the LGA 1700 socket, DDR4 DIMM slots, PCIe slots, and M.2 heatsinks.

2. Key Features

- **Intel LGA 1700 Socket:** Ready for 12th Gen Intel Core, Pentium Gold, and Celeron Processors.
- **Ultrafast Connectivity:** Features PCIe 4.0, Intel 1 Gb Ethernet, rear USB 3.2 Gen 2 Type-A, and front USB 3.2 Gen 1 Type-A and Type-C ports.
- **ASUS OptiMem II:** Optimized trace routing and ground layer optimizations to preserve signal integrity for improved

memory overclocking.

- **Comprehensive Cooling:** Equipped with VRM heatsink, M.2 heatsink, PCH heatsink, hybrid fan headers, and Fan Xpert 2+ for efficient thermal management.

3. Package Contents

Verify that all items are present in your motherboard package:

- ASUS Prime B660M-A D4 Motherboard
- User Guide / Manual
- Support DVD (for drivers and utilities)
- I/O Shield (Faceplate)
- SATA Data Cables
- M.2 Screws and Standoffs
- M.2 Sticky Pads (for single-sided M.2 drives)



Figure 3.1: Contents included in the ASUS Prime B660M-A D4 motherboard package, showing the motherboard, manual, support DVD, I/O shield, and various accessories.

4. Setup and Installation

Before beginning installation, ensure your workspace is static-free. Refer to the detailed user manual for specific instructions and diagrams.

4.1. CPU Installation

1. Locate the LGA 1700 socket on the motherboard.

2. Open the CPU retention arm and protective cover.
3. Carefully align your 12th Gen Intel CPU with the socket, ensuring the triangular markers match.
4. Gently place the CPU into the socket without forcing it.
5. Close the retention arm and protective cover.

4.2. RAM (DDR4) Installation

1. Identify the four DDR4 DIMM slots. For dual-channel configuration with two modules, install them into the gray slots first (typically A2 and B2).
2. Open the clips on both ends of the DIMM slot.
3. Align the notch on the RAM module with the notch in the DIMM slot.
4. Press down firmly on both ends of the RAM module until the clips snap into place.

4.3. Storage (M.2 and SATA) Installation

1. **M.2 SSD:** Locate the M.2 slots (with heatsinks). Remove the heatsink, insert the M.2 SSD at an angle, then push it down and secure it with the provided screw/standoff. Reattach the heatsink.
2. **SATA Drives:** Connect SATA data cables from your SSDs/HDDs to the SATA ports on the motherboard.

4.4. Graphics Card (GPU) Installation

1. Locate the primary PCIe 4.0 x16 slot.
2. Open the retention clip at the end of the slot.
3. Align your GPU with the slot and press down firmly until it clicks into place.
4. Secure the GPU to your PC case with screws.
5. Connect any necessary PCIe power cables from your power supply to the GPU.

4.5. Connecting Peripherals and Front Panel

1. Connect the 24-pin ATX power connector and the 8-pin CPU power connector from your power supply to the motherboard.
2. Connect front panel headers (Power SW, Reset SW, HDD LED, Power LED) to their respective pins on the motherboard. Refer to the user manual for exact pin layouts.
3. Connect USB 3.2 Gen 1 and USB 3.2 Gen 2 Type-C front panel headers if your case supports them.
4. Connect fan headers (CPU_FAN, CHA_FAN) to your CPU cooler and case fans.
5. Install the I/O shield into your PC case before installing the motherboard.

5. Operating the Motherboard (BIOS/UEFI)

The ASUS Prime B660M-A D4 features a UEFI BIOS Utility with both EZ Mode and Advanced Mode, providing comprehensive control over your system settings.

5.1. Accessing BIOS/UEFI

To enter the BIOS/UEFI setup, power on your computer and repeatedly press the `DEL` or `F2` key during the Power-On Self-Test (POST) until the BIOS screen appears.

5.2. EZ Mode

EZ Mode provides a simplified interface for basic system monitoring and quick adjustments. Here you can view:

- CPU Temperature and Core Voltage
- Motherboard Temperature
- DRAM Status and Memory Frequency
- Storage Information (NVMe, SATA)
- Boot Priority settings
- Fan Profile and Speed Control (Q-Fan Control)
- XMP (Extreme Memory Profile) enablement/disablement for optimized RAM performance.

5.3. Advanced Mode

For more granular control and advanced configurations, switch to Advanced Mode (usually by pressing `F7`). Key sections include:

- **Main:** BIOS information, processor details, system language, date, and time.
- **AI Tweaker:** Overclocking settings for CPU and RAM, including DRAM Frequency, Performance Core Ratio, Efficient Core Ratio, and various voltage adjustments.
- **Advanced:** CPU Configuration, PCH Configuration, USB Configuration, NVMe Configuration, Onboard Devices Configuration, and more.
- **Monitor:** Detailed temperature, fan speed, and voltage monitoring.
- **Boot:** Secure Boot, Boot Configuration, and Boot Option Priorities.
- **Tool:** ASUS Armoury Crate settings.
- **Exit:** Save changes and exit, discard changes and exit, or restore defaults.

6. Maintenance

- **Keep Clean:** Regularly clean your PC case and motherboard components from dust using compressed air. Ensure fans are free of obstructions.
- **BIOS Updates:** Periodically check the ASUS support website for BIOS/UEFI updates. Updates can improve stability, performance, and add support for new hardware. Follow ASUS's instructions carefully when updating the BIOS.
- **Driver Updates:** Keep your motherboard drivers (chipset, LAN, audio, etc.) updated for optimal performance and compatibility.

7. Troubleshooting

- **No Display/Boot Issues:**
  - Ensure all power cables (24-pin ATX, 8-pin CPU, GPU PCIe) are securely connected.
  - Reseat RAM modules. Try booting with only one RAM stick.
  - Check CPU installation and ensure the cooler is properly seated.
  - Clear CMOS (refer to your user manual for the specific jumper or button location).
- **XMP Profile Instability:** If enabling XMP causes system instability or failure to boot, try manually setting RAM timings and voltage, or update your BIOS.
- **Driver Issues:** If experiencing network, audio, or other peripheral issues, ensure you have installed the latest drivers from the ASUS support website.
- **Slow Performance:** Verify that M.2 SSDs are installed in PCIe 4.0 slots for maximum speed. Check CPU and GPU temperatures to ensure no thermal throttling.

8. Specifications

Brand	ASUS
Model Name	PRIME B660M-A D4
CPU Socket	LGA 1700
Compatible Processors	12th Gen Intel Core, Pentium Gold, Celeron Processors
RAM Memory Technology	DDR4
Memory Clock Speed	2133 MHz (Supports up to 5333MHz+ via overclocking)
Chipset Type	Intel B660
Graphics Interface	1 x PCIe 4.0 x16 slot
Storage Interface	2 x M.2 slots (PCIe 4.0), 4 x SATA 6Gb/s ports
USB Ports (Rear)	2 x USB 3.2 Gen 2 Type-A, 4 x USB 3.2 Gen 1 Type-A, 2 x USB 2.0
USB Ports (Front)	1 x USB 3.2 Gen 1 Type-C, 1 x USB 3.2 Gen 1 Type-A, 2 x USB 2.0
LAN	Intel 1Gb Ethernet
Video Output	2 x HDMI, 1 x DisplayPort
Form Factor	mATX
Dimensions	9.21 x 9.6 x 3 inches
Item Weight	2.2 pounds

9. Warranty and Support

For warranty information, technical support, and driver downloads, please visit the official ASUS support website. You can also find FAQs and troubleshooting guides there.
ASUS Support Website: www.asus.com/support/

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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Question

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