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ASUS PRIME Z690M-PLUS D4

ASUS Prime Z690M-Plus D4 Motherboard User Manual

Model: PRIME Z690M-PLUS D4

1. INTRODUCTION

This manual provides detailed instructions for the installation, configuration, and operation of your ASUS Prime Z690M-Plus D4 microATX motherboard. Designed for Intel LGA 1700 processors (12th Gen), this motherboard offers advanced features and robust performance for your computing needs. Please read this manual thoroughly before proceeding with installation.

2. SAFETY INFORMATION

Observe the following safety precautions to prevent damage to the motherboard and injury to yourself:

- Always disconnect the power cord from the wall outlet before touching any component.
- Use an anti-static wrist strap or discharge static electricity by touching a grounded metal object before handling 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.

3. PACKAGE CONTENTS

Verify that all items are present in your motherboard package. If any item is damaged or missing, contact your retailer.

What's in the Box

Exclusive PRIME Z690M-PLUS D4 Bundle

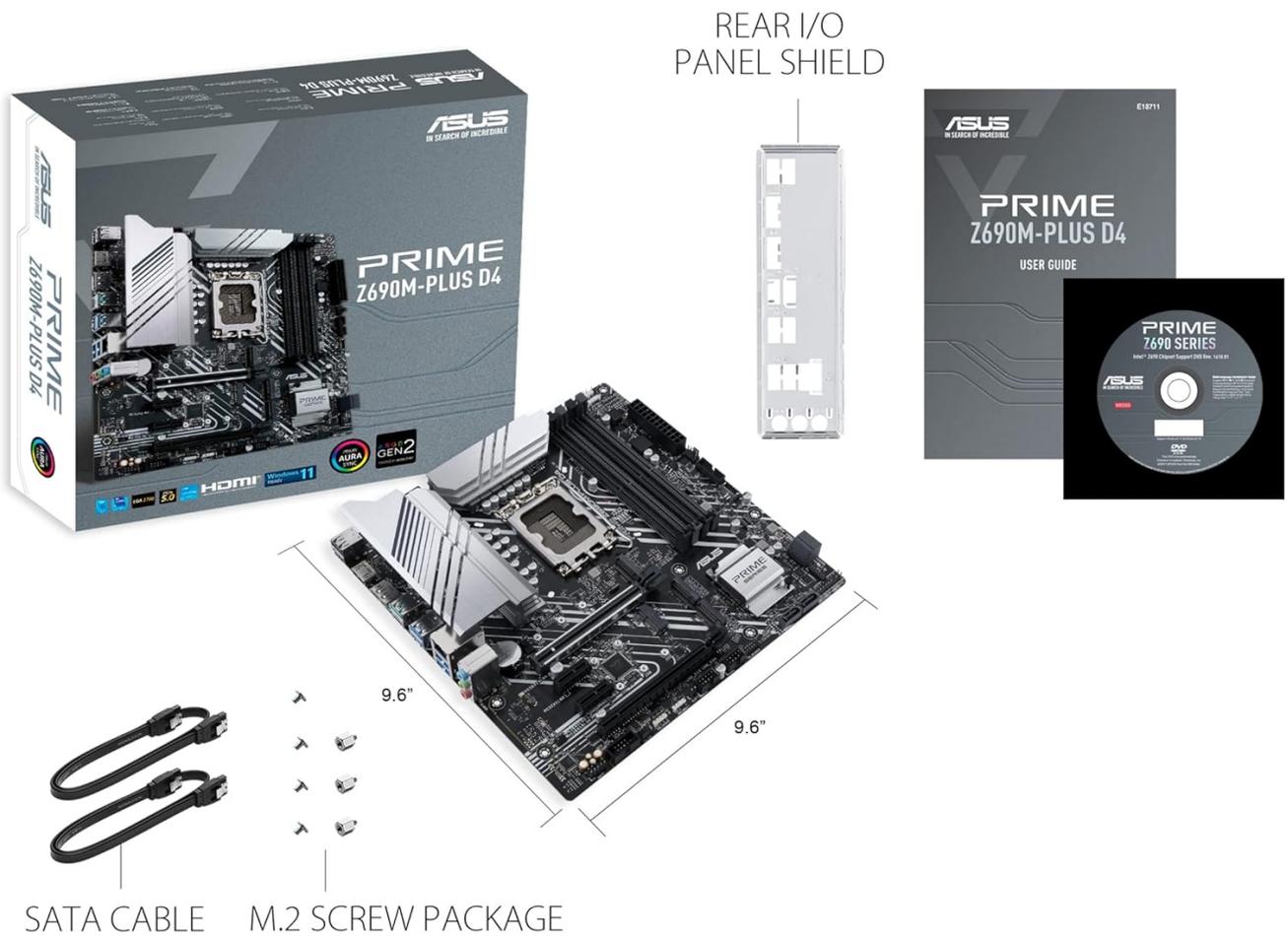


Image: Contents of the ASUS Prime Z690M-Plus D4 motherboard box, including the motherboard, I/O shield, user guide, driver DVD, SATA cables, and M.2 screw package.

- ASUS Prime Z690M-Plus D4 Motherboard
- Rear I/O Panel Shield
- User Guide
- Support DVD (Drivers and Utilities)
- SATA 6Gb/s Cables
- M.2 Screw Package

4. PRODUCT OVERVIEW

The ASUS Prime Z690M-Plus D4 motherboard features a robust design for optimal performance and stability.

4.1. Motherboard Layout

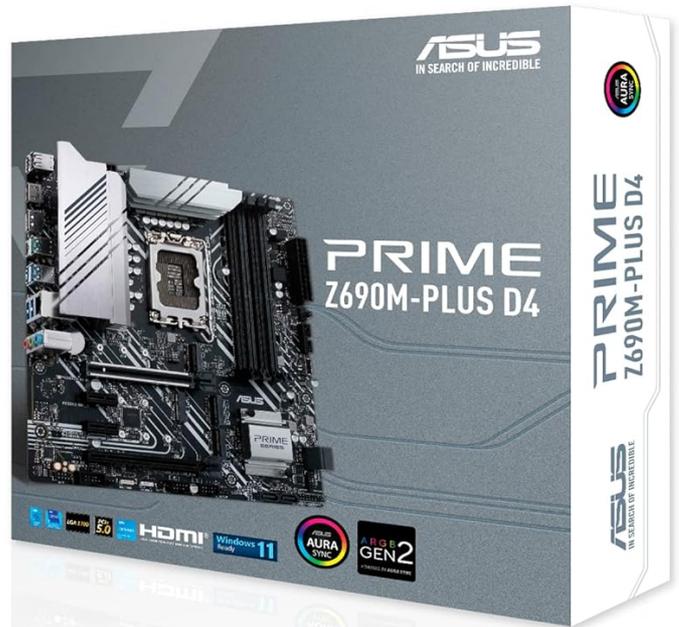


Image: The ASUS Prime Z690M-Plus D4 motherboard alongside its retail packaging. Key components and connectors are strategically placed for efficient system building.



Image: Detailed view of the motherboard highlighting various components such as the CPU socket, DIMM slots, PCIe slots, and M.2 slots.

4.2. Key Features

- **Intel LGA 1700 Socket:** Supports 12th Gen Intel Core processors.
- **Enhanced Power Solution:** Features 10+1 DrMOS power stages, ProCool sockets, alloy chokes, and durable capacitors for stable power delivery.
- **Comprehensive Cooling:** Includes a large VRM heatsink, flexible M.2 heatsink, PCH heatsink, and multiple

hybrid fan headers with Fan Xpert 4 control.

- **Next-Gen Connectivity:** Equipped with PCIe 5.0, Intel 1 Gb Ethernet, USB 3.2 Gen2x2 Type-C, front panel USB 3.2 Gen 1 Type-C connector, and Thunderbolt 4 header support.
- **Boosted Memory Performance:** ASUS OptiMem II trace layout enables higher memory frequencies (up to 5333MHz OC) with lower voltages.
- **PC DIY Friendly:** Features PCIe 5.0 SafeSlot and Q-LED Code for easier assembly and troubleshooting.

4.3. Power Delivery and Cooling

The motherboard's power design ensures stable operation for high-performance components.

Enhanced Power Delivery and Cooling

Featuring 10+1 DrMOS, VRM and Multiple Fan Headers

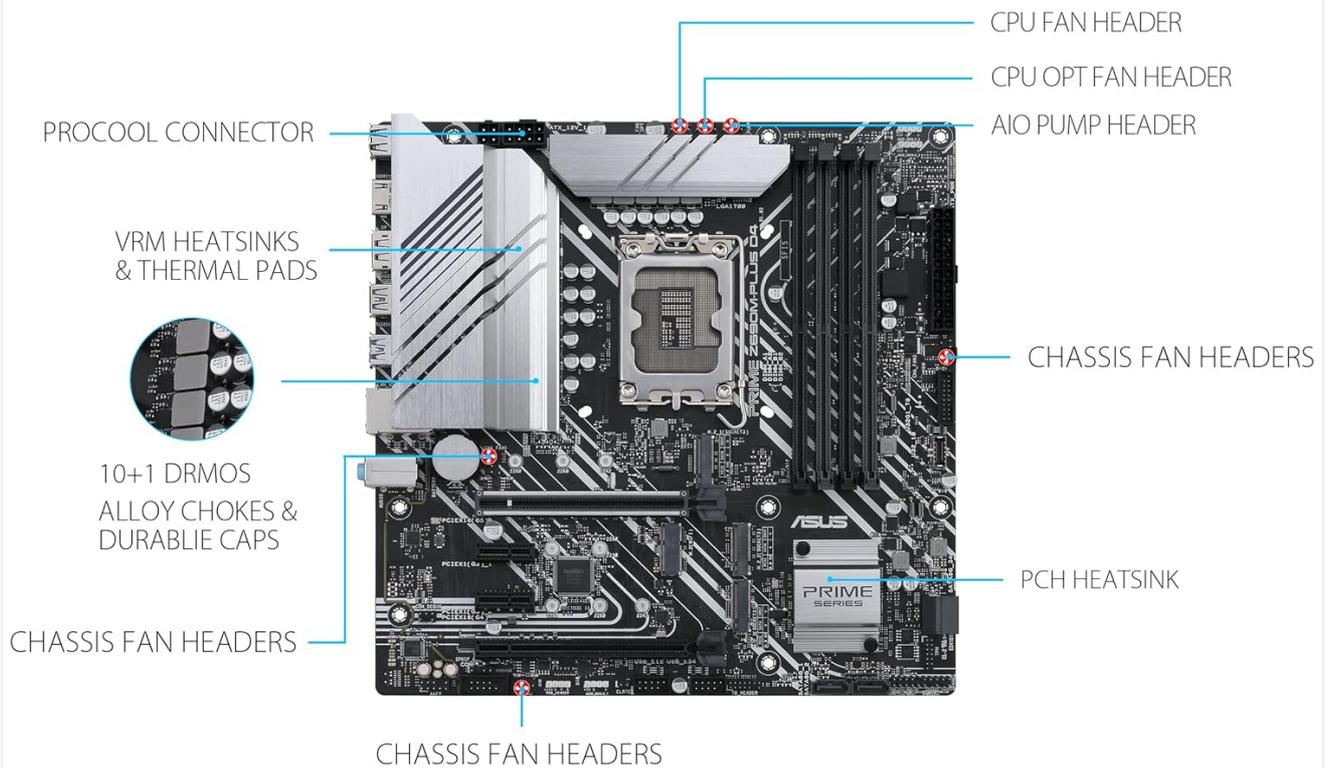


Image: Close-up view of the VRM heatsinks, ProCool connector, and various fan headers on the motherboard, illustrating the enhanced power delivery and cooling features.

4.4. Memory and Storage

Supports up to 128GB of DDR4 memory and multiple M.2 storage devices.

Build For Every Productivity

4 X DIMM 128GB DDR4, 3 X M.2 slots
and PCIe 5.0 X 16 Slot

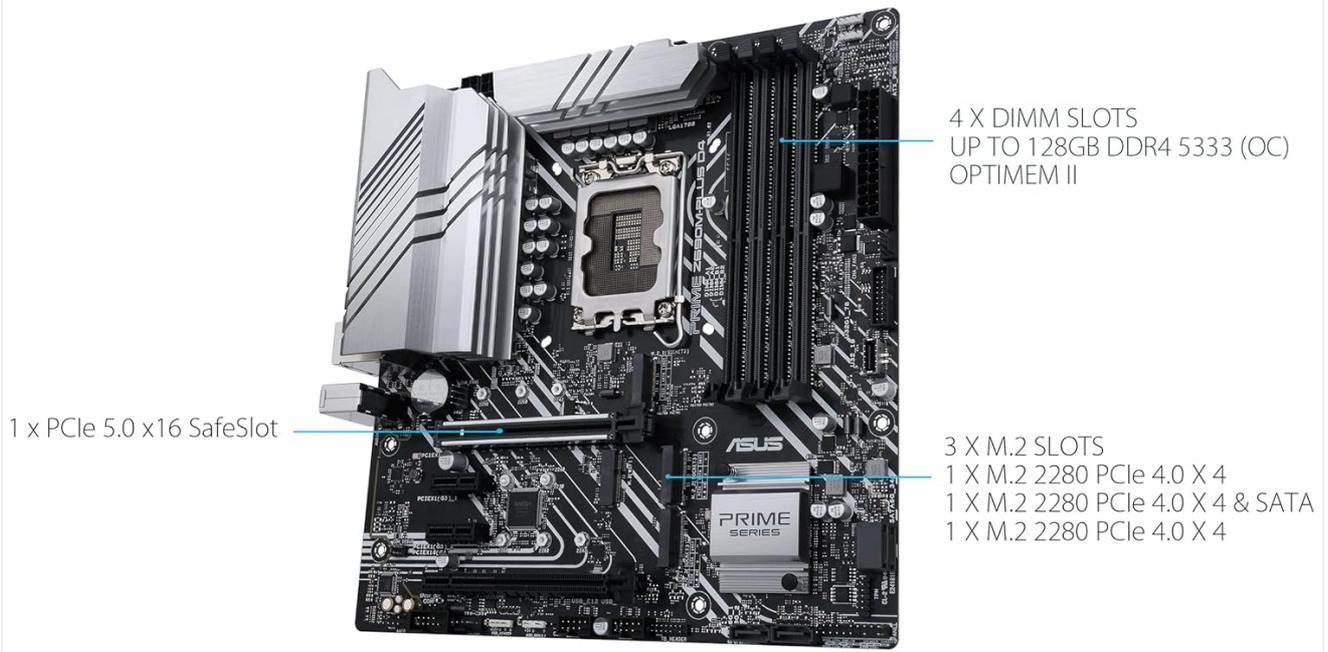


Image: Overview of the four DIMM slots for DDR4 memory and three M.2 slots for high-speed storage, along with the PCIe 5.0 x16 SafeSlot.

- 4 x DIMM slots, supporting up to 128GB DDR4 5333(OC) MHz.
- 3 x M.2 slots:
 - 1 x M.2 2280 PCIe 4.0 x4
 - 1 x M.2 2280 PCIe 4.0 x4 & SATA
 - 1 x M.2 2280 PCIe 4.0 x4

4.5. Rear I/O Ports

The rear panel provides a variety of connectivity options.

Future Proof Connectivity

Intel® 1G Ethernet, Thunderbolt 4 Header,
USB 3.2 Gen 2X2 Type-C®, Front panel USB 3.2 Gen 1 Type-C®

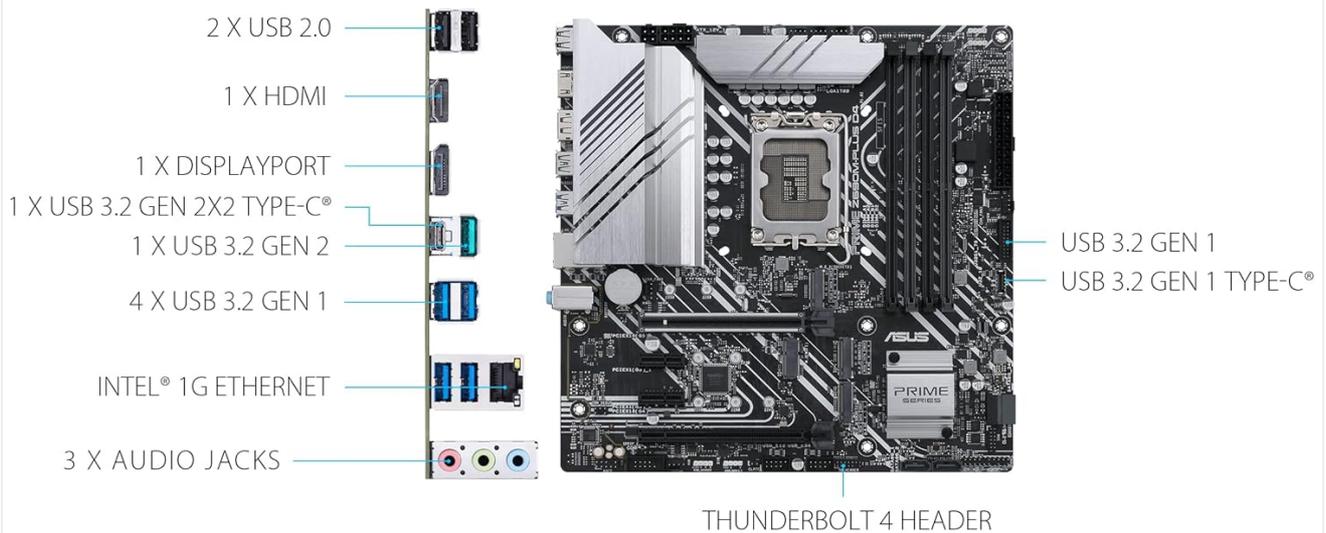


Image: Diagram showing the rear input/output panel with labeled ports including USB 2.0, HDMI, DisplayPort, USB 3.2 Gen 2x2 Type-C, USB 3.2 Gen 2, USB 3.2 Gen 1, Intel 1G Ethernet, and audio jacks.

- 2 x USB 2.0 ports
- 1 x HDMI port
- 1 x DisplayPort
- 1 x USB 3.2 Gen 2x2 Type-C port
- 1 x USB 3.2 Gen 2 port
- 4 x USB 3.2 Gen 1 ports
- 1 x Intel 1 Gb Ethernet port
- 3 x Audio Jacks

5. SETUP AND INSTALLATION

Follow these general steps for installing your motherboard and components. Refer to the detailed user guide for specific diagrams and instructions.

1. **Prepare the Case:** Install the I/O shield into your PC case.
2. **Install the Motherboard:** Carefully place the motherboard into the case, aligning it with the standoffs. Secure it with screws.
3. **Install the CPU:** Open the CPU socket lever, align the CPU with the socket (triangle indicator), gently place it, and close the lever.
4. **Install the CPU Cooler:** Mount your CPU cooler according to its manufacturer's instructions.
5. **Install Memory (RAM):** Open the DIMM slot clips, align the memory modules, and press them firmly until the

clips snap into place.

6. **Install M.2 SSDs:** Insert M.2 SSDs into the M.2 slots and secure them with the provided screws or retention mechanisms.
7. **Install Graphics Card (GPU):** Insert your graphics card into the PCIe 5.0 x16 slot and secure it.
8. **Connect Power Cables:** Connect the 24-pin ATX power connector and the 8-pin CPU power connector from your power supply to the motherboard. Connect power to other components as needed.
9. **Connect Front Panel Cables:** Connect the power button, reset button, USB ports, and audio jacks from your case to the corresponding headers on the motherboard.
10. **Connect SATA Devices:** If using SATA drives, connect them to the SATA ports on the motherboard and to your power supply.

6. OPERATING SYSTEM AND DRIVERS

After hardware installation, install your operating system and necessary drivers.

- **BIOS/UEFI Setup:** Power on your system and press the **Del** or **F2** key during startup to enter the BIOS/UEFI setup utility. Here you can configure boot order, system settings, and overclocking options.
- **Operating System Installation:** Install your preferred operating system (e.g., Windows 11, Linux) from a bootable USB drive or DVD.
- **Driver Installation:** After OS installation, install all necessary drivers from the provided support DVD or download the latest versions from the ASUS support website. Key drivers include chipset, LAN, audio, and graphics drivers.

7. MAINTENANCE

Regular maintenance helps ensure the longevity and optimal performance of your motherboard.

- **Dust Removal:** Periodically clean dust from the motherboard and components using compressed air. Ensure the system is powered off and unplugged.
- **BIOS Updates:** Check the ASUS support website for the latest BIOS updates. BIOS updates can improve stability, compatibility, and performance. Follow ASUS's instructions carefully when updating the BIOS.
- **Driver Updates:** Keep your drivers updated to ensure compatibility and optimal performance with new software and hardware.

8. TROUBLESHOOTING

If you encounter issues, refer to these common troubleshooting steps.

8.1. Q-LED Indicators

The motherboard features Q-LED indicators that provide visual cues for system status during boot-up.



Image: Diagram illustrating the behavior of Q-LED indicators for different boot statuses: No DRAM Detected (fast blinking), No VGA Detected (slow blinking), No Boot Device Detected (very slow blinking), and Installation Completed (solid light).

- **No DRAM Detected:** Fast blinking (4 Hz / 0.25s). Check memory module installation and try one module at a time.
- **No VGA Detected:** Slow blinking (1/2 Hz / 2s). Ensure your graphics card is properly seated and connected to power, and your monitor is connected.
- **No Boot Device Detected:** Very slow blinking (1/8 Hz / 8s). Check SATA/M.2 connections for your boot drive and verify boot order in BIOS.
- **Installation Completed:** Solid light. Indicates successful POST and system boot.

8.2. General Troubleshooting Tips

- **No Power:** Ensure all power cables (24-pin ATX, 8-pin CPU) are securely connected. Check power supply functionality.
- **No Display:** Verify monitor connection, try a different display cable or monitor. If using a dedicated GPU, ensure it's properly seated and powered.
- **System Instability:** Ensure all components are compatible. Check for overheating. Update BIOS and drivers.
- **BIOS Reset:** If system fails to boot after BIOS changes, clear CMOS by shorting the CLRRTC pins or removing the CMOS battery for a few minutes.

9. SPECIFICATIONS

Detailed technical specifications for the ASUS Prime Z690M-Plus D4 motherboard.

| Feature | Specification |
|-----------------------|--|
| Brand | ASUS |
| Model Name | PRIME Z690M-PLUS D4 |
| CPU Socket | LGA 1700 |
| Chipset Type | Intel Z690 |
| Compatible Processors | Intel 12th Gen Core, Pentium Gold, Celeron |
| RAM Memory Technology | DDR4 |
| Memory Speed | Up to 5333 MHz (OC) |

| Feature | Specification |
|-------------------|---|
| Max RAM Supported | 128 GB |
| PCIe Slots | 1 x PCIe 5.0 x16, 1 x PCIe 3.0 x16 (x4 mode), 2 x PCIe 3.0 x1 |
| M.2 Slots | 3 x M.2 slots (PCIe 4.0 x4, one with SATA support) |
| SATA Ports | 4 x SATA 6Gb/s ports |
| Ethernet | Intel 1Gb Ethernet |
| USB Ports (Rear) | 1 x USB 3.2 Gen 2x2 Type-C, 1 x USB 3.2 Gen 2, 4 x USB 3.2 Gen 1, 2 x USB 2.0 |
| Video Outputs | 1 x HDMI, 1 x DisplayPort |
| Audio | Realtek 7.1 Surround Sound High Definition Audio CODEC |
| Form Factor | microATX |
| Dimensions | 11 x 10.5 x 2.75 inches (approx.) |
| Platform | Windows 11 Ready |

10. WARRANTY AND SUPPORT

ASUS provides a limited warranty for this product. For detailed warranty terms and conditions, please refer to the warranty card included in your package or visit the official ASUS support website.

For technical support, driver downloads, and BIOS updates, please visit the ASUS support website:

[ASUS Official Support Website](#)

When contacting support, please have your motherboard model (PRIME Z690M-PLUS D4) and serial number ready.