GIGABYTE Z790M AORUS ELITE AX ICE

GIGABYTE Z790M AORUS Elite AX ICE Motherboard

Instruction Manual

Model: Z790M AORUS ELITE AX ICE

Introduction

The GIGABYTE Z790M AORUS Elite AX ICE is an M-ATX motherboard designed to support 14th and 13th Gen Intel Core Processors, offering unparalleled performance for high-end computing and gaming systems. This motherboard integrates advanced features for robust power delivery, efficient thermal management, and cutting-edge connectivity.

Key features include:

- Intel LGA 1700 Socket for 14th and 13th Gen Intel Core Series Processors.
- Dual Channel DDR5 compatibility for high-speed memory.
- Twin 12+1+1 Phases Digital VRM Solution for commanding power design.
- Advanced Thermal Design with M.2 Thermal Guard and 6-Layer PCB.
- Next-Gen Connectivity: Triple PCIe 4.0 x4 M.2 slots and USB 3.2 Gen 2x2 Type-C.
- EZ-Latch Plus for quick and screwless M.2 installation.
- Fast Networking with 2.5GbE LAN and Intel WiFi 6E.
- Fine Tuning Features: Smart Fan 6 and Q-Flash Plus for convenient BIOS updates.

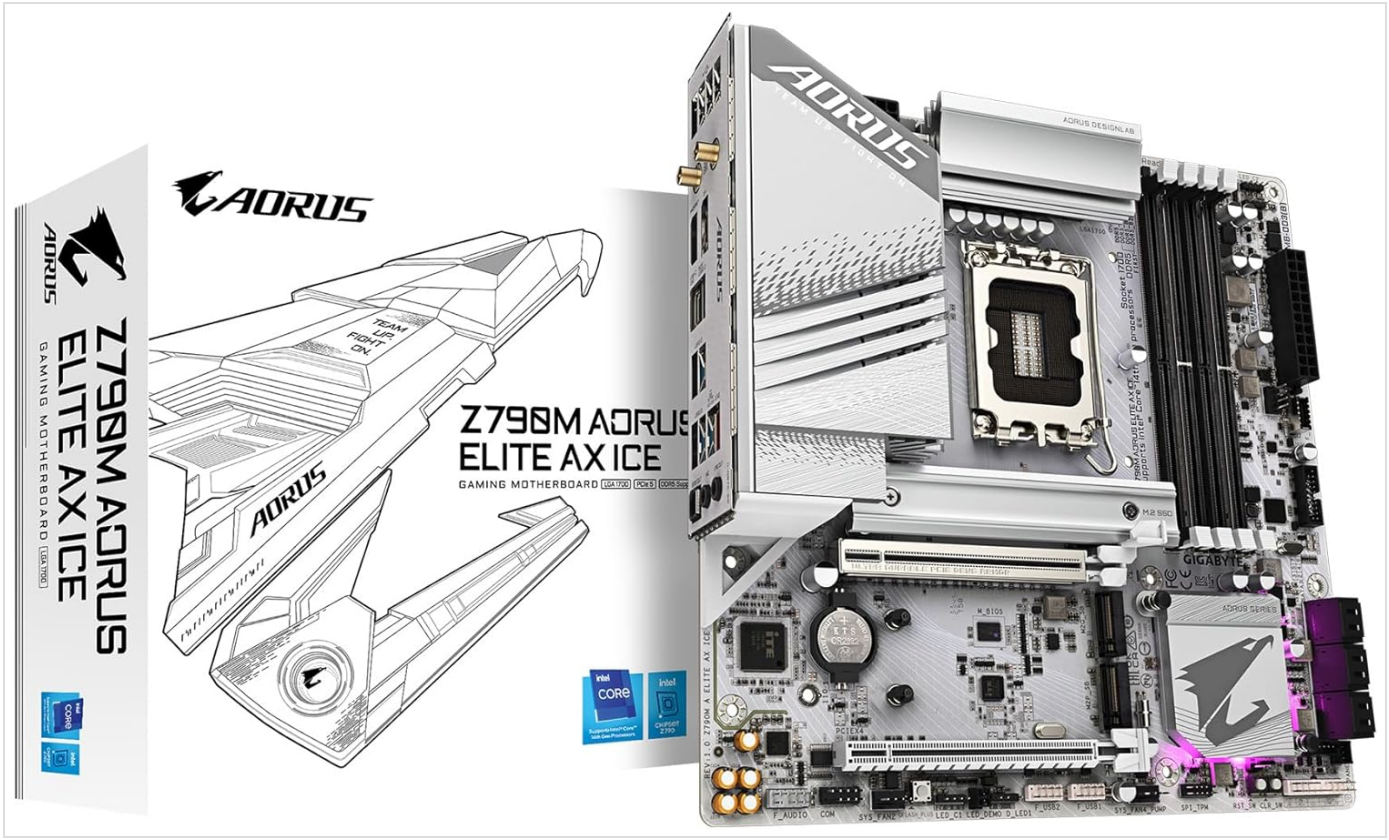


Figure 1: GIGABYTE Z790M AORUS Elite AX ICE Motherboard and its retail packaging.

Setup Guide

Follow these steps for proper installation and initial setup of your motherboard.

1. Physical Installation

Ensure your system is powered off and unplugged before beginning installation. Use an anti-static wrist strap to prevent electrostatic discharge.

1.1 CPU Installation (LGA 1700 Socket)

1. Carefully open the CPU socket retention arm and load plate.
2. Align the triangular mark on your Intel LGA 1700 processor with the mark on the socket. Gently place the CPU into the socket without forcing it.
3. Close the load plate and secure it with the retention arm.



Figure 2: Top-down view of the motherboard, highlighting the LGA 1700 CPU socket and DDR5 memory slots.

1.2 RAM Installation (DDR5)

1. Locate the four DDR5 DIMM slots on the motherboard. For dual-channel operation, refer to the motherboard manual for recommended slot population (typically slots A2 and B2 first).
2. Open the clips at both ends of the DIMM slot.
3. Align the notch on the DDR5 memory module with the key in the DIMM slot.
4. Press down firmly on both ends of the memory module until the clips snap into place.

1.3 M.2 SSD Installation (EZ-Latch Plus)

1. Identify the M.2 slots, often covered by heatsinks. This motherboard features three PCIe 4.0 x4 M.2 slots.
2. For M.2 SSDs, utilize the EZ-Latch Plus mechanism for screwless installation. Simply align the M.2 SSD with the slot and push it down until it clicks into place with the latch.
3. If applicable, remove the protective film from the M.2 Thermal Guard and place it over the installed M.2 SSD, securing it to the motherboard.

1.4 PCIe Card Installation

1. Locate the PCIe 5.0 x16 slot for your graphics card and other PCIe slots for expansion cards.
2. Remove the corresponding slot cover from your PC case.
3. Align the PCIe card with the slot and press down firmly until it is fully seated. Secure the card with the case's retention mechanism.

1.5 Power Connections

1. Connect the 24-pin ATX main power connector from your power supply to the motherboard.
2. Connect the 8-pin (or 4+4-pin) ATX 12V CPU power connector(s) to the motherboard.
3. Connect any necessary SATA power cables for storage drives.

2. Connectivity

Connect your peripherals and network cables to the rear I/O panel and internal headers.

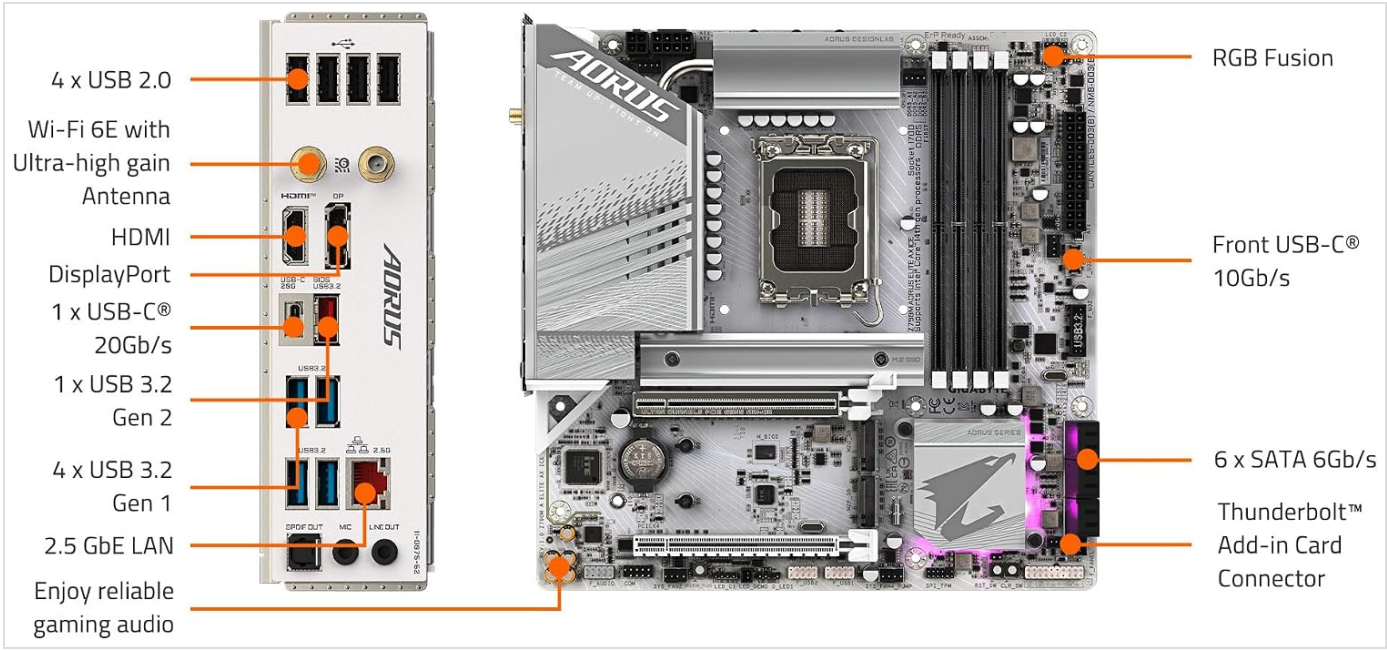


Figure 3: Detailed layout of the motherboard, indicating various ports and connectors for easy identification.

- **Wi-Fi 6E Antenna:** Connect the included Wi-Fi 6E antenna to the designated ports on the rear I/O panel for optimal wireless performance.
- **2.5GbE LAN:** Connect an Ethernet cable to the 2.5GbE LAN port for high-speed wired network access.
- **USB Ports:** Utilize the various USB 2.0, USB 3.2 Gen 1, USB 3.2 Gen 2, and USB 3.2 Gen 2x2 Type-C ports for connecting peripherals.
- **Audio Jacks:** Connect your speakers or headphones to the audio jacks on the rear I/O panel.
- **Display Outputs:** If using integrated graphics, connect your monitor to the HDMI or DisplayPort outputs.

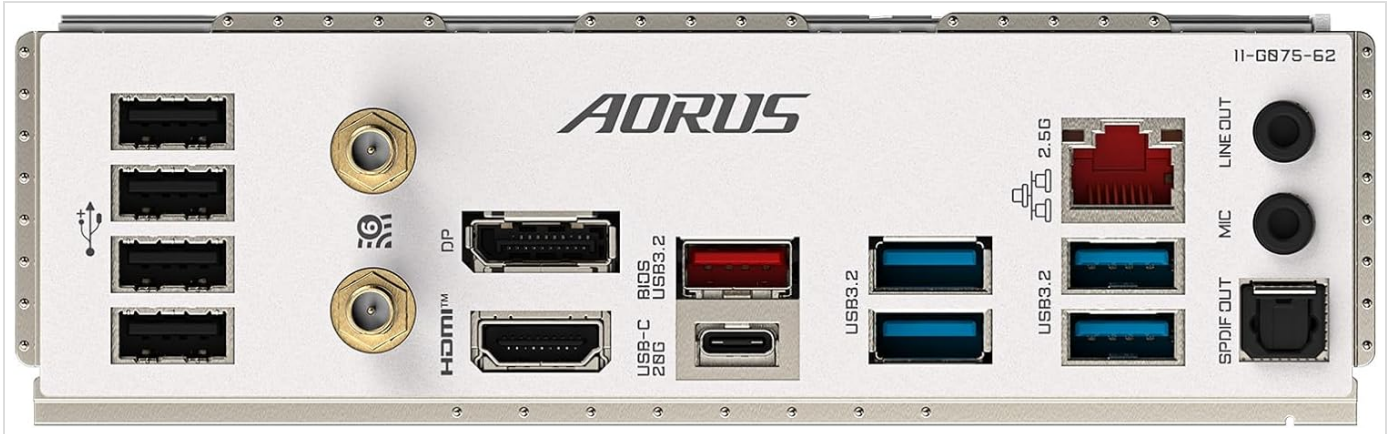


Figure 4: The rear I/O panel, showing the various connectivity options including USB, LAN, Wi-Fi antenna ports, and audio jacks.

3. BIOS/UEFI Setup

After physical installation, you may need to configure the BIOS/UEFI settings.

- **Accessing BIOS:** During system boot-up, repeatedly press the DEL key to enter the BIOS Setup Utility.
- **Q-Flash Plus:** This feature allows you to update the BIOS without installing the CPU, memory, or graphics card. Refer to the GIGABYTE website for detailed instructions on using Q-Flash Plus.
- **Initial Configuration:** Set the correct boot order, enable XMP for DDR5 memory, and configure any other necessary system settings.

Operating Instructions

Once your system is assembled and initial BIOS settings are configured, proceed with operating system installation and driver setup.

1. System Boot-up and OS Installation

Power on your system. If all components are correctly installed, the system should boot to the BIOS or prompt for operating system installation. Follow your operating system's instructions for installation.

2. Driver Installation

For optimal performance and stability, install the latest drivers for your motherboard components. GIGABYTE provides a utility called **GIGABYTE Control Center** which can assist in installing and updating necessary drivers and utilities.

- Install Chipset Drivers.
- Install LAN Drivers for wired network connectivity.
- Install Wi-Fi and Bluetooth Drivers for wireless connectivity.
- Install Audio Drivers for sound functionality.
- Install any other relevant drivers for integrated components.

3. Performance Optimization

The Z790M AORUS Elite AX ICE motherboard is designed for peak performance. Consider the following for optimization:

- **DDR5 Overclocking:** This motherboard supports DDR5 memory overclocking up to 7600 MT/s. Enable XMP (Extreme Memory Profile) in the BIOS to achieve advertised memory speeds.
- **Smart Fan 6:** Utilize the Smart Fan 6 utility to fine-tune fan curves and optimize cooling performance for your system components, ensuring stable operation under load.
- **Thermal Management:** The advanced thermal design, including M.2 Thermal Guard and a 6-layer PCB, helps dissipate heat effectively. Ensure proper airflow within your PC case.

[redacted]

Video 1: An official product overview video from GIGABYTE, showcasing the key features and design of the Z790M AORUS Elite AX ICE Motherboard.

Maintenance

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

1. Cleaning

- Periodically clean dust from the motherboard and other internal components using compressed air. Ensure the

system is powered off and unplugged before cleaning.

- Pay attention to heatsinks and fan blades to prevent dust buildup, which can impede cooling.

2. BIOS and Driver Updates

- Regularly check the official GIGABYTE website for the latest BIOS updates. BIOS updates can improve system stability, compatibility, and performance.
- Keep your device drivers updated. Updated drivers can resolve compatibility issues and enhance hardware performance. The GIGABYTE Control Center can assist with this.

Troubleshooting

This section provides solutions to common issues you might encounter.

1. System Does Not Boot or Power On

- **Check Power Connections:** Ensure all power cables (24-pin ATX, 8-pin CPU) are securely connected to the motherboard and power supply.
- **Verify Components:** Confirm that the CPU, RAM, and graphics card (if dedicated) are properly seated in their respective slots.
- **Clear CMOS:** Try clearing the CMOS (Complementary Metal-Oxide-Semiconductor) by either removing the CMOS battery for a few minutes or using the dedicated CMOS clear jumper/button on the motherboard.
- **Q-Flash Plus:** If the issue is BIOS-related, use Q-Flash Plus to update the BIOS to the latest version.

2. Memory (RAM) Issues

- **Reseat RAM:** Remove and re-install the DDR5 memory modules to ensure they are properly seated.
- **Test Individual Modules:** If you have multiple RAM sticks, test them one by one in a single slot to identify a faulty module.
- **Check QVL:** Refer to the Qualified Vendor List (QVL) on the GIGABYTE website for compatible memory modules.

3. No Display Output

- **Check Monitor Connection:** Ensure the display cable is securely connected to both the graphics card (or motherboard if using integrated graphics) and the monitor.
- **Reseat Graphics Card:** If using a dedicated graphics card, ensure it is fully seated in its PCIe slot and any necessary power cables are connected.
- **Test with Integrated Graphics:** If your CPU has integrated graphics, remove the dedicated graphics card and test with the motherboard's display outputs.

4. Network Connectivity Problems

- **Wired LAN:** Verify the Ethernet cable is connected and the LAN driver is installed. Check router/modem status.
- **Wi-Fi 6E:** Ensure the Wi-Fi antenna is properly connected and the Wi-Fi driver is installed. Check Wi-Fi network settings in your operating system.

Specifications

Feature	Detail
Brand	GIGABYTE

Feature	Detail
Model Name	Z790M AORUS ELITE AX ICE
CPU Socket	LGA 1700
Compatible Processors	14th and 13th Gen Intel Core Series Processors
RAM Memory Technology	DDR5
Memory Clock Speed	Up to 7600 MHz (OC)
Memory Storage Capacity (Max)	128 GB
Chipset Type	Intel Z790
Product Dimensions	10.43 x 21.26 x 0.43 inches
Item Weight	3.31 pounds
Networking	Intel Wi-Fi 6E, 2.5GbE LAN
USB Ports	USB 3.2 Gen 2x2 Type-C, USB 3.2 Gen 2, USB 3.2 Gen 1, USB 2.0
M.2 Slots	3 x PCIe 4.0 x4 M.2
PCIe Slots	PCIe 5.0 support

Warranty and Support

GIGABYTE products are built with quality and reliability in mind. For detailed warranty information, please refer to the warranty card included with your product or visit the official GIGABYTE website.

For technical support, driver downloads, BIOS updates, and product information, please visit the official GIGABYTE support page:

GIGABYTE Support Website

Always ensure you are downloading software and drivers from the official manufacturer's website to avoid potential security risks.

© 2024 GIGABYTE. All rights reserved.

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.

Name

Anonymous

Email

you@example.com

After a successful submission, we securely hash the supplied account or form email before sending it to Microsoft Advertising for conversion attribution. Privacy details.

Question

Example: How do I reset this device or fix this error?

Details

Model number, symptoms, what you tried, or the section of the manual you are using.

Submit question