## GIGABYTE Z390 AORUS ULTRA

# GIGABYTE Z390 AORUS ULTRA Motherboard User Manual

Brand: **GIGABYTE** | Model: **Z390 AORUS ULTRA**

## 1. Introduction

This manual provides detailed instructions for the installation, operation, maintenance, and troubleshooting of your GIGABYTE Z390 AORUS ULTRA motherboard. Designed for 9th and 8th Generation Intel Core processors, this motherboard offers advanced features for high-performance computing and gaming. Please read this manual thoroughly before beginning installation to ensure proper setup and optimal performance.




*Figure 1: GIGABYTE Z390 AORUS ULTRA Motherboard and retail packaging.*

## 2. Setup and Installation

Before installing any components, ensure your system is powered off and unplugged from the wall outlet. Always handle components with care and consider using an anti-static wrist strap.

### 2.1. CPU Installation

The GIGABYTE Z390 AORUS ULTRA supports Intel LGA1151 socket processors. Carefully align the CPU with the socket, ensuring the gold triangle on the CPU matches the triangle on the socket. Lower the load plate and secure the retention lever.




*Figure 2: Top-down view of the motherboard, showing the CPU socket and M.2 slots.*

## 2.2. RAM Installation

This motherboard features four DDR4 DIMM slots, supporting dual-channel non-ECC unbuffered memory. For optimal performance, install memory modules in matching pairs into the recommended slots as per the motherboard's manual (typically slots A2 and B2 first).

- Open the retention clips on the DIMM slots.
- Align the memory module's notch with the key in the DIMM slot.
- Press down firmly on both ends of the module until the clips snap into place.

## 2.3. M.2 SSD Installation

The Z390 AORUS ULTRA includes three ultra-fast NVMe PCIe Gen3 x4 M.2 slots, each equipped with a triple thermal guard for improved heat dissipation. To install an M.2 SSD:

1. Locate an available M.2 slot and remove the thermal guard screw.
2. Carefully insert the M.2 SSD into the slot at an angle.
3. Gently push down the SSD and secure it with the provided screw.
4. Reattach the thermal guard, ensuring it makes proper contact with the SSD.

## 2.4. Power Connections

Connect the 24-pin ATX main power connector and the 8-pin CPU power connector from your power supply to the corresponding ports on the motherboard. Ensure all connections are secure.

## 2.5. Front Panel and Peripheral Connections

Connect your case's front panel headers (power button, reset button, HDD LED, power LED) to the corresponding pins on the motherboard. Also, connect USB 2.0, USB 3.0, and the front USB 3.1 Gen 1 Type-C headers if your case supports them.

### 2.6. Rear I/O Panel Connections

The integrated I/O shield simplifies installation. Connect your peripherals to the appropriate ports on the rear I/O panel, including USB devices, display outputs (HDMI), audio jacks, and the Intel Gigabit LAN port. Ensure the Wi-Fi antennas are securely attached for wireless connectivity.




*Figure 3: Detailed view of the rear I/O panel, showing various connectivity options.*

## 3. Operating Your Motherboard

### 3.1. BIOS/UEFI Overview

The BIOS (Basic Input/Output System) or UEFI (Unified Extensible Firmware Interface) is the first software your computer runs when it starts. It initializes hardware components and loads the operating system. To enter the BIOS setup, press the `DEL` key during the POST (Power-On Self-Test) sequence. Here you can configure system settings, boot order, and enable/disable various features.

### 3.2. RGB Fusion Lighting Control

The motherboard features GIGABYTE RGB Fusion with multi-zone LED light show design, supporting addressable LED and RGB LED strips. You can customize the lighting effects and colors using the GIGABYTE RGB Fusion software,

available for download from the official GIGABYTE website.

### 3.3. Smart Fan 5

Smart Fan 5 allows users to interchange their fan headers to reflect different thermal sensors at different locations on the motherboard. This feature provides precise control over fan speeds to optimize cooling and minimize noise. Configure fan curves and temperature thresholds via the BIOS or GIGABYTE's SIV (System Information Viewer) software.

### 3.4. Network Connectivity

The motherboard includes Intel Gigabit LAN with cFosSpeed for wired network connections, offering optimized network traffic management. For wireless connectivity, the onboard Intel CNVi 802.11AC 2x2 Wave 2 Wi-Fi provides high-speed wireless access. Ensure the included Wi-Fi antennas are connected for optimal signal strength.

### 3.5. USB DAC-UP 2

The USB DAC-UP 2 ports offer adjustable voltage, providing cleaner and more stable power delivery to sensitive USB devices such as external DACs or VR headsets. This helps to minimize noise and improve signal quality for connected peripherals.

### 3.6. Product Overview Video

For a visual overview of the GIGABYTE Z390 AORUS series motherboard features, please watch the video below:

Your browser does not support the video tag.

*Video 1: Overview of GIGABYTE Z390 AORUS Master Motherboard features. This video highlights key design elements and functionalities applicable to the Z390 AORUS Ultra.*

## 4. Maintenance

### 4.1. BIOS Updates

Regularly check the GIGABYTE official website for the latest BIOS updates. Updating your BIOS can improve system stability, add support for new hardware, and fix bugs. Follow the instructions provided by GIGABYTE carefully when performing a BIOS update.

### 4.2. Driver Installation and Updates

After installing your operating system, install all necessary drivers from the GIGABYTE support DVD or website. Keep your drivers updated to ensure optimal performance and compatibility with your hardware and software.

### 4.3. Cleaning

Periodically clean your motherboard and PC components to prevent dust buildup, which can lead to overheating and performance issues. Use compressed air to remove dust from heatsinks, fans, and other components. Ensure the system is powered off and unplugged before cleaning.

## 5. Troubleshooting

If you encounter issues with your GIGABYTE Z390 AORUS ULTRA motherboard, consider the following common troubleshooting steps:

- **No POST/No Display:** Ensure all power cables (24-pin ATX, 8-pin CPU) are securely connected. Verify that the

CPU, RAM, and graphics card are properly seated. Try booting with only one RAM stick.

- **System Instability/Crashes:** Check for overheating. Ensure drivers are up to date. Test memory modules individually. Reset BIOS settings to default.
- **Peripheral Not Detected:** Try different USB ports. Ensure drivers for the peripheral are installed. Check BIOS settings for USB port enablement.
- **Network Connectivity Issues:** Verify Ethernet cable connection or Wi-Fi antenna connection. Check network adapter drivers. Reset network settings in your operating system.
- **Clear CMOS:** If the system is unstable after making BIOS changes, locate the 'Clear CMOS' button or jumper on the motherboard (or rear I/O panel) and follow the manual's instructions to reset BIOS settings to default.

For more detailed troubleshooting, refer to the official GIGABYTE user manual or contact GIGABYTE technical support.

## 6. Specifications

| Feature | Detail |
|---|---|
| Processor Support | 9th and 8th Intel Core processors (LGA1151) |
| Chipset | Intel Z390 |
| RAM | Dual Channel Non ECC Unbuffered DDR4, 4 DIMMs |
| Memory Speed | Up to 4400 MHz (OC) |
| Storage | Triple ultra-fast NVMe PCIe Gen3 x4 M.2 with triple thermal guards |
| LAN | Intel Gigabit LAN with cFosSpeed |
| Wireless | Intel CNVi 802.11AC 2x2 Wave 2 Wi-Fi |
| Audio | ALC1220 VB enhance 114dB(Rear)/110dB(Front) SNR with WIMA audio capacitors |
| USB Ports | USB 3.1 Gen 1 Type-C Header, USB DAC UP 2 (Adjustable Voltage) |
| Form Factor | ATX (305mm x 244mm) |
| Operating System Support | Windows 10 64-bit |

## 7. Warranty and Support

For detailed warranty information, technical support, and the latest drivers and BIOS updates, please visit the official GIGABYTE website. You can also download the complete user manual in PDF format for more in-depth information.

- Official GIGABYTE Website: www.gigabyte.com
- Product Support Page: GIGABYTE Z390 AORUS ULTRA Support (*Note: Link is illustrative, actual link may vary*)
- Download User Manual (PDF): GIGABYTE Z390 AORUS ULTRA User Manual PDF

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**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