GIGABYTE B650 AORUS ELITE AX V2

GIGABYTE B650 AORUS ELITE AX V2 Motherboard User Manual

Comprehensive guide for installation, operation, and maintenance.

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1. Introduction

This user manual provides detailed instructions for the installation, configuration, and maintenance of your GIGABYTE B650 AORUS ELITE AX V2 Motherboard. Designed for AMD AM5 Socket processors, this motherboard offers robust performance and advanced features for gaming and professional applications. Please read this manual thoroughly before beginning installation to ensure proper setup and operation.



Figure 1.1: GIGABYTE B650 AORUS ELITE AX V2 Motherboard and Retail Packaging. This image displays the motherboard alongside its retail box, highlighting the product's branding and initial presentation.

2. Safety Information

Observe the following safety guidelines to prevent damage to the motherboard and ensure personal safety:

- Always disconnect the power cord from the wall outlet before installing or removing any components.
- Wear an anti-static wrist strap or frequently touch a grounded metal object to discharge static electricity before handling the motherboard or other components.
- Handle the motherboard by its edges to avoid touching sensitive components.
- Ensure proper ventilation within your PC case to prevent overheating.
- Do not expose the motherboard to moisture or extreme temperatures.

3. Package Contents

Verify that all items are present in the package before proceeding with installation. Contents may vary slightly by region.

- GIGABYTE B650 AORUS ELITE AX V2 Motherboard
- SATA Data Cables
- Wi-Fi Antenna
- M.2 Screw Package
- User Manual / Quick Installation Guide
- Driver CD/USB (if included)

4. Setup and Installation

4.1 Pre-Installation Checks

Before installing the motherboard, ensure compatibility with your chosen CPU, RAM, and power supply. Refer to GIGABYTE's official website for the latest CPU support list and QVL (Qualified Vendor List) for memory modules.

4.2 Motherboard Layout



Figure 4.1: Top-down view of the GIGABYTE B650 AORUS ELITE AX V2 Motherboard. This image provides a clear overhead perspective, showing the layout of major components such as the CPU socket, DDR5 DIMM slots, PCIe slots, and M.2 sockets.

4.3 Component Installation

1. **CPU Installation:**

   Carefully open the CPU socket lever. Align the triangular mark on the CPU with the mark on the socket. Gently

place the CPU into the socket without forcing it. Close the lever to secure the CPU.

2. **CPU Cooler Installation:**

   Install your CPU cooler according to its manufacturer's instructions. Ensure proper thermal paste application and secure mounting.

3. **Memory (RAM) Installation:**

   Open the clips on both ends of the DDR5 DIMM slots. Align the notch on the memory module with the key in the slot. Press down firmly on both ends until the clips snap into place. For dual-channel operation, refer to the motherboard manual for recommended slot configurations.

4. **M.2 SSD Installation:**

   The motherboard features multiple M.2 sockets, including one PCIe 5.0 x4 and two PCIe 4.0 x4. Locate the desired M.2 socket. Remove the M.2 Thermal Guard if present. Insert the M.2 SSD into the slot at an angle, then gently push it down and secure it with the EZ-Latch screwless quick release mechanism or a screw.

5. **Graphics Card (GPU) Installation:**

   Open the latch on the PCIe x16 slot. Align your graphics card with the slot and press down firmly until it clicks into place. The EZ-Latch feature simplifies removal.

6. **Power Supply Connections:**

   Connect the 24-pin ATX main power connector and the 8-pin (or 4+4-pin) CPU power connector from your power supply to the corresponding ports on the motherboard.

7. **Front Panel Connections:**

   Connect the power button, reset button, HDD LED, power LED, and USB/audio headers from your PC case to the appropriate pins on the motherboard. Refer to the motherboard manual for exact pin layouts.

8. **SATA Device Connections:**

   Connect SATA data cables from your storage drives (HDDs/SSDs) to the SATA ports on the motherboard. Connect power cables from your power supply to the drives.

4.4 Rear I/O Panel



Figure 4.2: Rear I/O Panel of the GIGABYTE B650 AORUS ELITE AX V2 Motherboard. This image details the various ports available for external connectivity, including USB, HDMI, DisplayPort, LAN, and audio jacks, along with the Wi-Fi antenna connectors and Q-Flash Plus button.

The integrated I/O shield provides a variety of ports for external devices:

- USB Ports (various types, including USB-C 10Gb/s)
- HDMI Port
- DisplayPort
- 2.5GbE LAN Port
- Wi-Fi Antenna Connectors
- Audio Jacks

- Q-Flash Plus Button

5. Operating Your Motherboard

5.1 Initial Boot and BIOS/UEFI Setup

After assembling your system, connect a monitor, keyboard, and mouse. Power on the system. Press the **DEL** key repeatedly during startup to enter the BIOS/UEFI setup utility. Here you can configure boot order, system time, fan curves (Smart Fan 6), and other advanced settings.

5.2 Driver Installation

Once the operating system is installed, install the necessary drivers for the motherboard's components. These typically include chipset drivers, LAN drivers, Wi-Fi drivers, audio drivers, and any specific utility drivers. Drivers can be found on the GIGABYTE support website for your specific model.

5.3 GIGABYTE Software Utilities

GIGABYTE provides various software utilities to enhance your experience, such as GIGABYTE Control Center (GCC) for system monitoring, RGB Fusion for lighting control, and other tools for performance tuning. Download these from the official GIGABYTE website.

6. Maintenance

6.1 Cleaning

Regularly clean your PC to prevent dust buildup, which can lead to overheating and component failure. Use compressed air to remove dust from fans, heatsinks, and internal components. Ensure the system is powered off and unplugged before cleaning.

6.2 BIOS Updates

GIGABYTE periodically releases BIOS updates to improve stability, add new CPU support, or fix bugs. You can update the BIOS using the Q-Flash or Q-Flash Plus utility. Always download the correct BIOS version for your motherboard model from the official GIGABYTE website. Refer to the GIGABYTE website for detailed instructions on BIOS updating.

6.3 Driver and Software Updates

Keep your drivers and GIGABYTE software utilities updated to ensure optimal performance and compatibility. Check the GIGABYTE support website regularly for the latest versions.

7. Troubleshooting

This section provides solutions to common issues you might encounter.

7.1 No Power / No POST (Power-On Self-Test)

- Ensure all power cables (24-pin ATX, 8-pin CPU) are securely connected.
- Verify the power supply is switched on and functioning correctly.
- Reseat RAM modules. Try booting with only one RAM stick.
- Reseat the graphics card.
- Clear CMOS by shorting the CLR_CMOS pins or removing the CMOS battery for a few minutes.

7.2 No Display Output

- Ensure your monitor is connected to the graphics card (if dedicated) or the motherboard's integrated graphics port (if CPU has integrated graphics).
- Check display cable connections.
- Test with a different monitor or cable.

7.3 System Instability / Crashes

- Check CPU and GPU temperatures. Ensure adequate cooling.
- Verify RAM stability using memory diagnostic tools.
- Update drivers and BIOS to the latest versions.
- Ensure power supply wattage is sufficient for all components.

7.4 Q-Flash Plus Feature

The Q-Flash Plus feature allows you to update the BIOS without installing the CPU, memory, or graphics card. This is useful for supporting newer CPUs that might not be recognized by an older BIOS version. To use Q-Flash Plus:

1. Download the latest BIOS file from the GIGABYTE website and rename it to GIGABYTE.bin.
2. Copy the renamed BIOS file to the root directory of a FAT32 formatted USB flash drive.
3. Insert the USB flash drive into the designated Q-Flash Plus USB port on the motherboard's rear I/O panel.
4. Connect the 24-pin ATX power connector and the 8-pin CPU power connector to the motherboard.
5. Press the Q-Flash Plus button. The QFLED will flash, indicating the BIOS update process has started. Wait until the QFLED stops flashing, which signifies the completion of the update.

8. Specifications

Key specifications for the GIGABYTE B650 AORUS ELITE AX V2 Motherboard:

Feature	Detail
CPU Socket	Socket AM5
Compatible Processors	AMD Ryzen 7000/8000/9000 Series Processors
Chipset	AMD B650
RAM Memory Technology	DDR5 (4 DIMM slots)
Memory Clock Speed	Up to 8000 MHz (OC)
Storage	1x PCIe 5.0 x4 M.2, 2x PCIe 4.0 x4 M.2, SATA 6Gb/s ports
LAN	2.5GbE LAN
Wireless Connectivity	Wi-Fi 6E
USB Ports	USB-C Front 20Gb/s, Rear USB-C 10Gb/s, various USB-A ports
Video Outputs	HDMI, DisplayPort
Form Factor	ATX

Dimensions	9.61 x 12.01 x 1.38 inches
Item Weight	4.41 pounds

9. Warranty and Support

9.1 Warranty Information

GIGABYTE motherboards come with a limited warranty. The duration and terms of the warranty may vary by region and retailer. Please retain your proof of purchase for warranty claims. For detailed warranty information, visit the official GIGABYTE website or contact your local distributor.

9.2 Technical Support

For technical assistance, driver downloads, BIOS updates, and FAQs, please visit the official GIGABYTE support website:
https://www.gigabyte.com/support
You may also contact GIGABYTE customer service directly through their website for further assistance.

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