GIGABYTE X870E AORUS PRO

GIGABYTE X870E AORUS PRO Motherboard User Manual

Model: X870E AORUS PRO

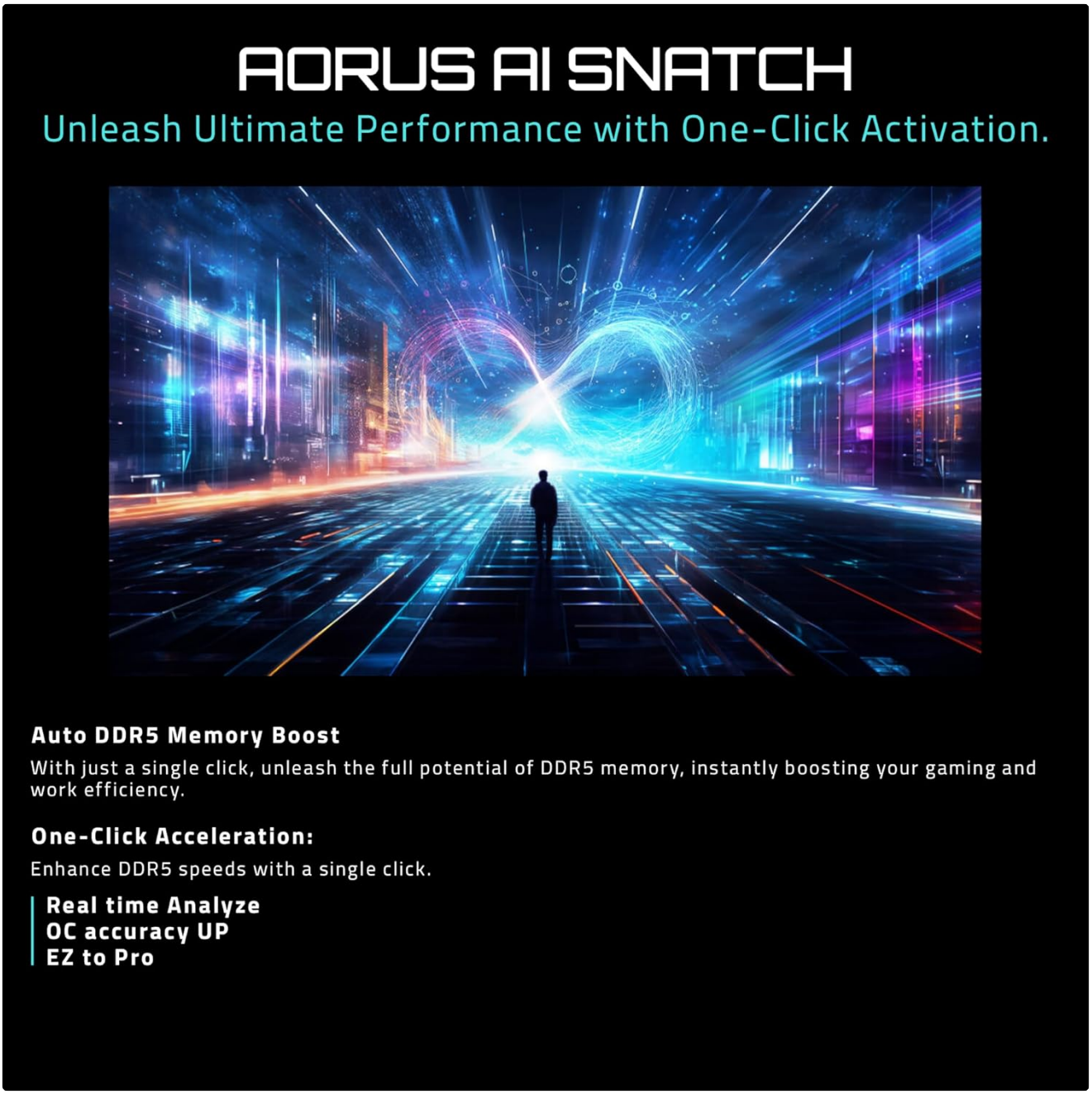
Introduction

This manual provides detailed instructions for the installation, operation, maintenance, and troubleshooting of your GIGABYTE X870E AORUS PRO AMD AM5 Motherboard. Please read this manual thoroughly before beginning installation to ensure proper setup and optimal performance.

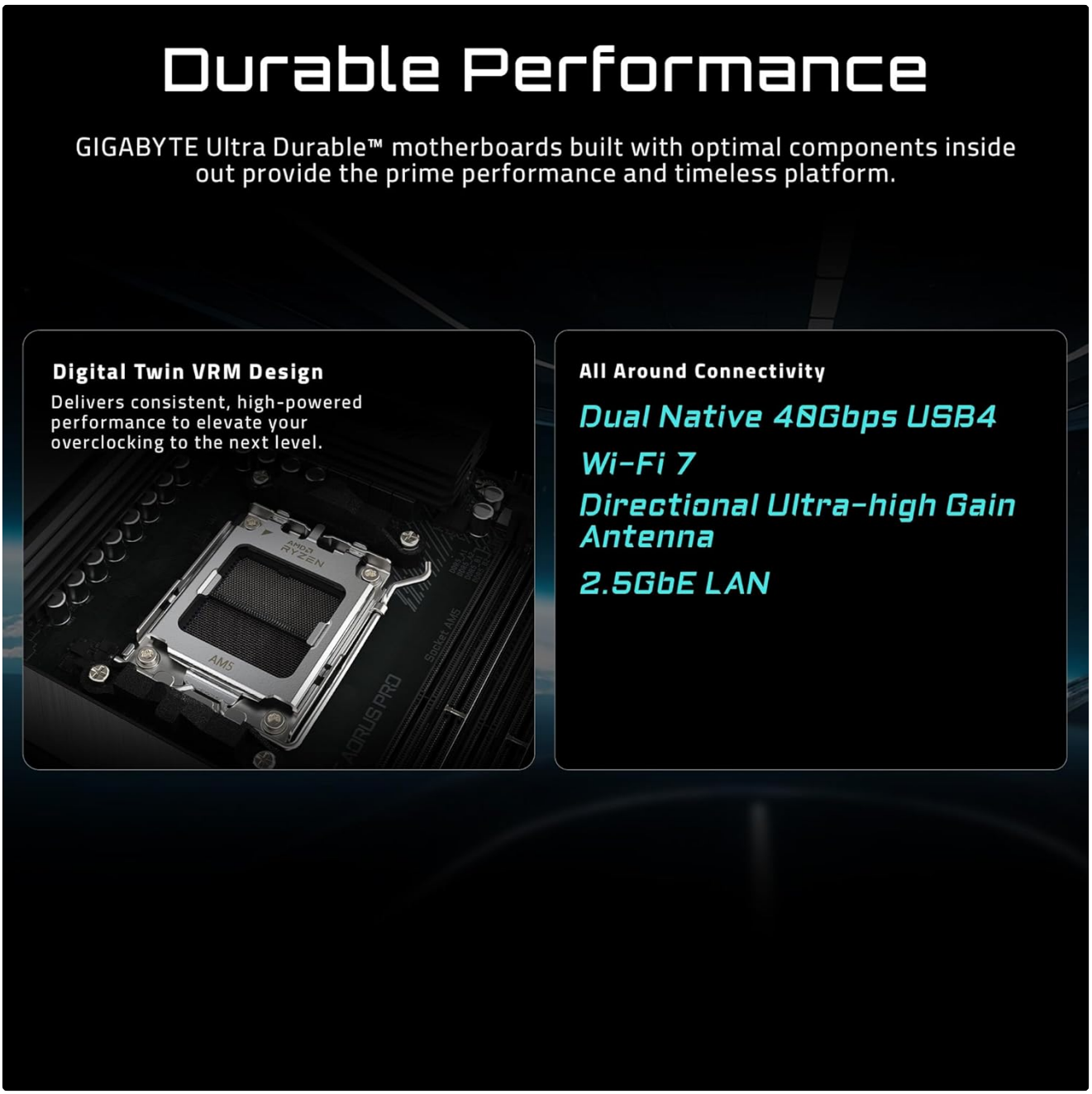
The GIGABYTE X870E AORUS PRO Motherboard, shown with its retail packaging, is designed for high-performance computing with AMD AM5 processors.

Product Overview

Motherboard Layout



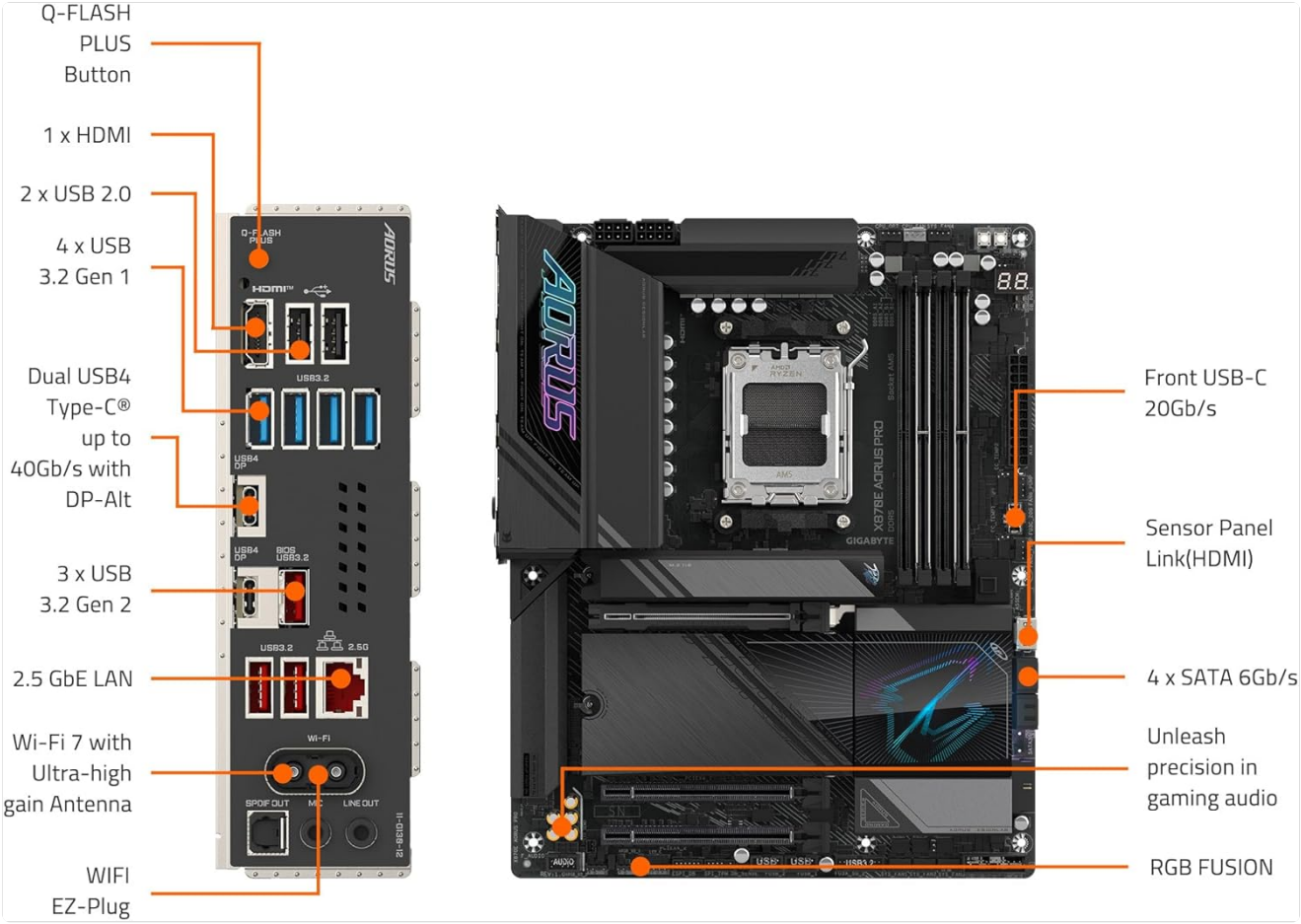
Front view of the GIGABYTE X870E AORUS PRO Motherboard, highlighting the CPU socket, DDR5 DIMM slots, and PCIe slots.



Side view of the motherboard, showcasing the robust VRM heatsinks and the overall board thickness.

Rear view of the motherboard, showing the backplate and various mounting points.

Rear I/O Panel



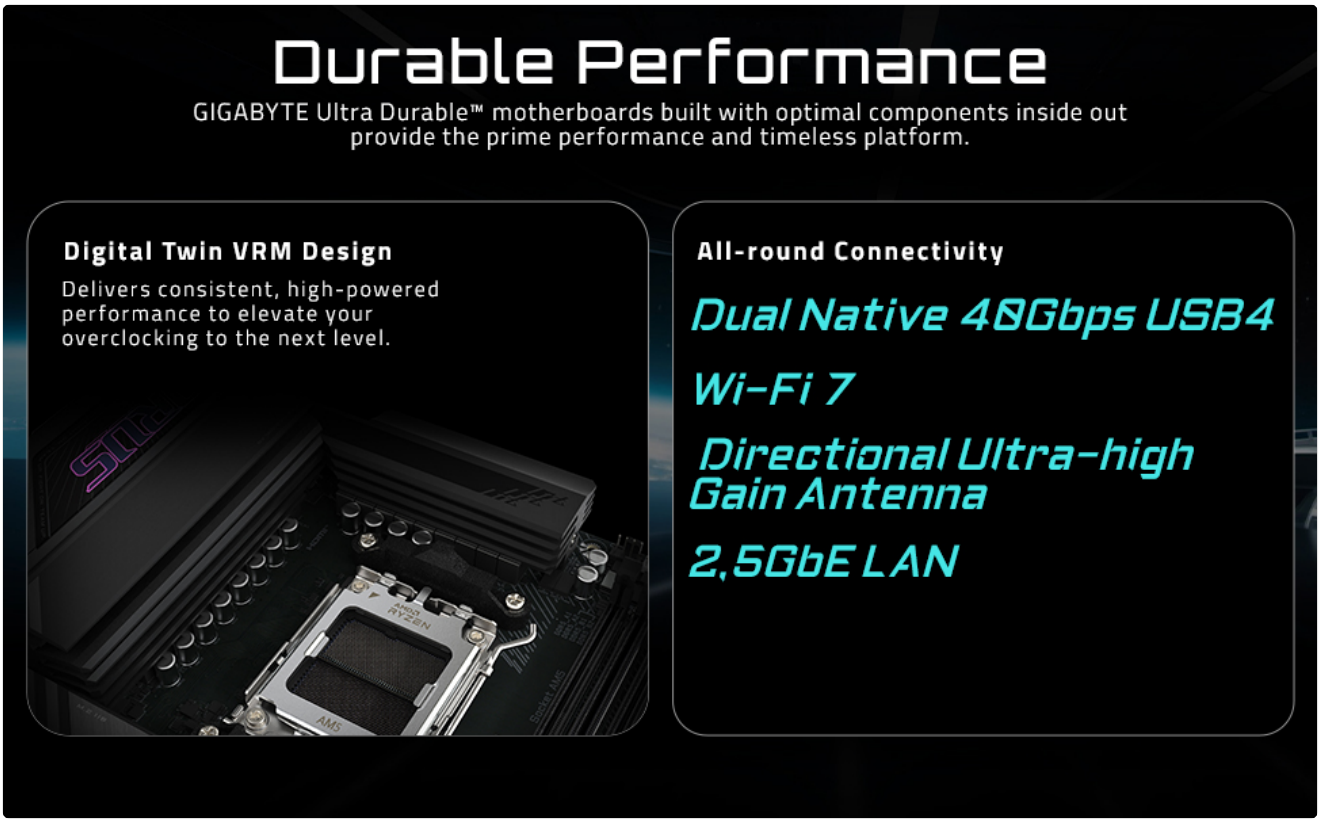
Detailed view of the rear I/O panel, indicating the location of USB ports (including USB4), HDMI, 2.5GbE LAN, Wi-Fi antenna connectors, and audio jacks.

Key Features

AORUS AI SNATCH: Unleash Ultimate Performance with One-Click Activation

The AORUS AI SNATCH feature allows for automatic DDR5 Memory Boost and one-click acceleration to enhance DDR5 speeds. It includes real-time analysis, OC accuracy improvements, and an EZ to Pro mode for simplified optimization.

Durable Performance



GIGABYTE Ultra Durable™ motherboards are built with optimal components for prime performance. This includes a Digital Twin VRM Design for consistent, high-powered performance and extensive connectivity options such as Dual Native 40Gbps USB4, Wi-Fi 7, Directional Ultra-high Gain Antenna, and 2.5GbE LAN.

Comprehensive Thermal Solution

AORUS motherboards feature advanced full-metal thermal designs. Key cooling components include VRM Thermal Armor Fins-

Array for 4x more surface area, M.2 Thermal Guard L with backplate for 6x optimized heat dissipation, and Smart Fan 6 for cool, quiet, and customized fan control. Small vents and big cooling power contribute to up to 7°C lower temperatures, with 4x M.2 slots covered by thermal guards.

Hassle-free Assembly

The motherboard is designed for an easy DIY experience. It features EZ-Latch Designs for simplifying assembly, including PCIe EZ-Latch Plus for easy graphics card ejection. Fast-Access Controls provide handy revert and refresh functions. The EZ Debug Zone and Q-Flash Auto Scan assist with system diagnostics and BIOS updates. The WIFI EZ-Plug design integrates the Wi-Fi antenna into one adapter for easy installation.

Setup

Motherboard Installation

1. **Prepare the Case:** Ensure your PC case is compatible with ATX motherboards. Install the I/O shield into the case's rear opening.
2. **Install CPU:** Open the CPU socket lever. Carefully align the AMD AM5 processor with the socket, ensuring the triangle on the CPU matches the triangle on the socket. Gently place the CPU into the socket without forcing it. Close the lever to secure the CPU.
3. **Install CPU Cooler:** Mount your compatible CPU cooler according to its manufacturer's instructions. Ensure proper thermal paste application.
4. **Install Memory (RAM):** Open the clips on the DDR5 DIMM slots. Align the memory modules with the slots, ensuring the notch on the module matches the key in the slot. Press down firmly on both ends until the clips snap into place. Refer to your cooler's manual for optimal DIMM slot population.
5. **Mount Motherboard:** Carefully place the motherboard into the PC case, aligning the screw holes with the standoffs. Secure the motherboard with screws.
6. **Install M.2 SSDs:** Locate the M.2 slots. Remove the M.2 Thermal Guard. Insert the M.2 SSD into the slot at an angle, then gently push it down. Secure it using the EZ-Latch mechanism or the provided screw. Reattach the M.2 Thermal Guard.

7. **Install Graphics Card:** Open the PCIe EZ-Latch Plus clip on the primary PCIe 5.0 x16 slot. Insert your graphics card firmly until it clicks into place and the latch secures it. Secure the card to the case with screws.
8. **Connect Power Cables:** Connect the 24-pin ATX main power connector and the 8-pin (or 8+4-pin) CPU power connector from your power supply to the motherboard.
9. **Connect Storage Devices:** Connect SATA data cables from your storage drives to the SATA ports on the motherboard. Connect power cables from your power supply to the drives.
10. **Connect Front Panel Cables:** Connect the power button, reset button, HDD LED, power LED, and front USB/audio headers from your case to the corresponding pins on the motherboard. Refer to the motherboard diagram for correct pin alignment.
11. **Install Wi-Fi Antenna:** Connect the included Wi-Fi antenna to the designated connectors on the rear I/O panel.

Operating

First Boot and BIOS Access

After completing the hardware installation, connect your monitor, keyboard, and mouse. Power on your system. During the boot process, repeatedly press the `DEL` key to enter the BIOS (Basic Input/Output System) setup. The BIOS allows you to configure system settings, boot order, and monitor hardware status.

Operating System Installation

Once in the BIOS, configure the boot order to prioritize your USB installation media or optical drive containing the operating system installer. Save changes and exit the BIOS to begin the OS installation process. Follow the on-screen prompts to complete the installation.

Driver Installation

After installing the operating system, install the necessary drivers for your motherboard components. These can typically be found on the included driver CD/DVD or downloaded from the official GIGABYTE website. Key drivers include chipset drivers, LAN drivers, audio drivers, and Wi-Fi drivers.

Maintenance

General Care

- Keep the system clean and free from dust. Use compressed air to regularly clear dust from fans, heatsinks, and vents.
- Ensure adequate airflow within your PC case to prevent overheating.
- Avoid exposing the motherboard to extreme temperatures or humidity.

BIOS Updates

Periodically check the GIGABYTE website for updated BIOS versions. BIOS updates can improve system stability, add support for new hardware, or fix known issues. Follow the instructions provided by GIGABYTE for safe BIOS flashing, typically using Q-Flash or Q-Flash Plus features.

Driver Updates

Regularly update your system drivers to ensure optimal performance and compatibility. Drivers can be downloaded from the GIGABYTE support page for your specific motherboard model.

Troubleshooting

Common Issues and Solutions

- **No Power:**
  Check all power connections (24-pin ATX, 8-pin CPU, GPU power). Ensure the power supply is switched on. Test the power supply with another system if possible.
- **No Display:**
  Verify that the monitor is connected to the graphics card (or motherboard if using integrated graphics). Reseat the graphics card and RAM modules. Check the debug LED codes on the motherboard for specific error indications.
- **System Instability/Crashes:**
  Ensure all drivers are up to date. Check CPU and GPU temperatures. Run memory diagnostic tools to check for RAM errors. Verify power supply wattage is sufficient for all components.
- **Boot Loop:**
  Clear CMOS (Complementary Metal-Oxide-Semiconductor) settings. This can be done by shorting the CLR_CMOS pins on the motherboard or removing the CMOS battery for a few minutes. Check for bent CPU pins if the issue persists after clearing CMOS.
- **Peripheral Not Detected:**
  Try connecting the peripheral to a different port. Ensure relevant drivers are installed. Check BIOS settings for USB or other port configurations.

Debug LED Codes

The GIGABYTE X870E AORUS PRO motherboard features an EZ Debug Zone with diagnostic LEDs (or a POST code display) that indicate the status of key components during boot-up. Refer to the motherboard's detailed manual (available on the GIGABYTE website) for a complete list of POST codes and their meanings. Common indicators include:

- **CPU LED:** Indicates an issue with the CPU.
- **DRAM LED:** Indicates an issue with the memory.
- **VGA LED:** Indicates an issue with the graphics card.
- **BOOT LED:** Indicates an issue with the boot device.

Specifications

Feature	Detail
Brand	GIGABYTE
Series	X870E AORUS PRO
Model Number	X870E AORUS PRO
CPU Socket	Socket AM5
Compatible Processors	AMD Ryzen 9000 / Ryzen 8000 / Ryzen 7000 Series Processors
RAM Technology	DDR5
Memory Slots	4 x DIMMs with AMD EXPO Support

Feature	Detail
Max Memory Size	256 GB
Memory Speed	5600 MHz (Base)
Chipset Type	AMD X870E
PCIe Support	PCIe 5.0
M.2 Slots	4x M.2 Slots
USB Connectivity	Dual USB4, Front and Rear USB-C
Network	WIFI7, 2.5GbE LAN
Power Design	16+2+2, 80A Smart Power Stage
Thermals	VRM and M.2 Thermal Guard
Platform	Windows 11, Windows 10
Item Weight	5.06 pounds
Color	Matte Black

Warranty and Support

Product Warranty

The GIGABYTE X870E AORUS PRO Motherboard typically comes with a 5-Year Warranty, providing extensive coverage for manufacturing defects and hardware failures. Please refer to the official GIGABYTE warranty policy for detailed terms and conditions, including registration requirements and claim procedures.

Technical Support

For technical assistance, driver downloads, BIOS updates, and further product information, please visit the official GIGABYTE support website. You can find FAQs, troubleshooting guides, and contact information for customer service.

- **GIGABYTE Support Website:** www.gigabyte.com/support
- **Product Page:** Search for 'X870E AORUS PRO' on the GIGABYTE website for specific downloads and documentation.