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ASUS PRIME X870-P WIFI

ASUS Prime X870-P WiFi Motherboard User Manual

Model: PRIME X870-P WIFI

Brand: ASUS

1. PRODUCT OVERVIEW

The ASUS PRIME X870-P WIFI motherboard is engineered to provide a robust foundation for your PC build, supporting AMD AM5 processors. It integrates advanced features for performance, connectivity, and cooling, making it suitable for demanding applications including AI computing.



Image 1.1: The ASUS Prime X870-P WiFi Motherboard alongside its retail packaging, showcasing the product's design and branding.

Key Features:

- **Ready for Advanced AI PC:** Designed for the future of AI computing, with the power and connectivity needed for demanding AI applications.
- **AMD AM5 Socket:** Ready for AMD Socket AM5 for AMD Ryzen 9000 & 8000 & 7000 Series Desktop Processors.
- **Enhanced Power Solution:** 14+2+1 80A DrMOS power stages, 8-layer PCB, ProCool connectors, alloy chokes and durable capacitors for stable power delivery.
- **Ultrafast Connectivity:** Wi-Fi 7, PCIe 5.0 x16 slot, PCIe 5.0 M.2 slot, Realtek 2.5Gb Ethernet, USB4 (40Gbps) Type-C ports, front USB 10Gbps Type-C and rear USB 10Gbps Type-A ports.
- **Comprehensive Cooling:** Large VRM heatsink, Dual M.2 heatsinks, PCH heatsink, hybrid fan headers and Fan Xpert 4 with AI Cooling II.
- **DIY-Friendly Design:** Pre-mounted I/O shield, Q-Antenna, PCIe Slot Q-Release, M.2 Q-Latch, BIOS FlashBack, Flexible M.2 heatsink, Q-Dashboard, Q-LED Core.



Image 1.2: An overview of the ASUS TUF GAMING X870-P WIFI motherboard, highlighting its robust design and compatibility with AMD Ryzen processors for gaming and AI applications.

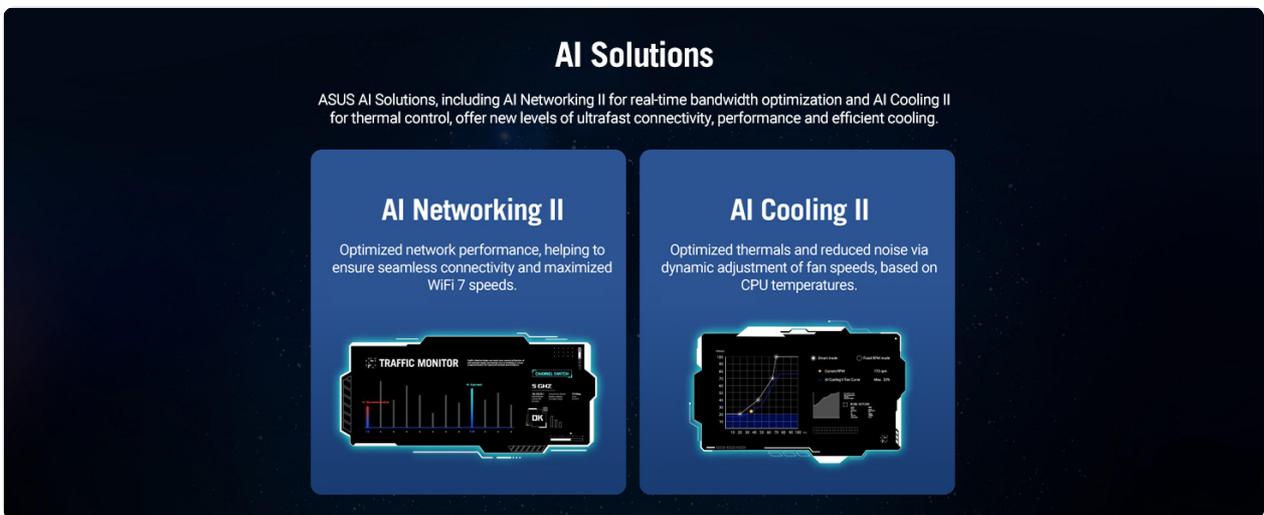


Image 1.3: A visual grid summarizing key features of the ASUS Prime X870-P WiFi motherboard, including power stages, AI solutions, DDR5 support, Wi-Fi 7, USB 40Gbps, PCIe 5.0, USB 10Gbps, EZ PC DIY, and Aura Sync.

2. SETUP AND INSTALLATION

2.1. Before You Begin

Ensure you have all necessary components: CPU, RAM, storage devices, power supply, and a compatible PC case. Always handle the motherboard by its edges to prevent electrostatic discharge (ESD) damage. Consider wearing an anti-static wrist strap.

2.2. Installing the CPU

1. Open the CPU socket lever.
2. Align the CPU with the socket, ensuring the golden triangle on the CPU matches the triangle on the socket.
3. Gently place the CPU into the socket. Do not force it.

4. Close the lever to secure the CPU.

2.3. Installing Memory (RAM)

The motherboard supports DDR5 memory. Refer to the motherboard manual for specific memory slot configurations for optimal performance (e.g., dual-channel setup).

1. Open the clips at both ends of the DIMM slot.
2. Align the notch on the memory module with the key in the DIMM slot.
3. Press down firmly on both ends of the memory module until the clips snap into place.

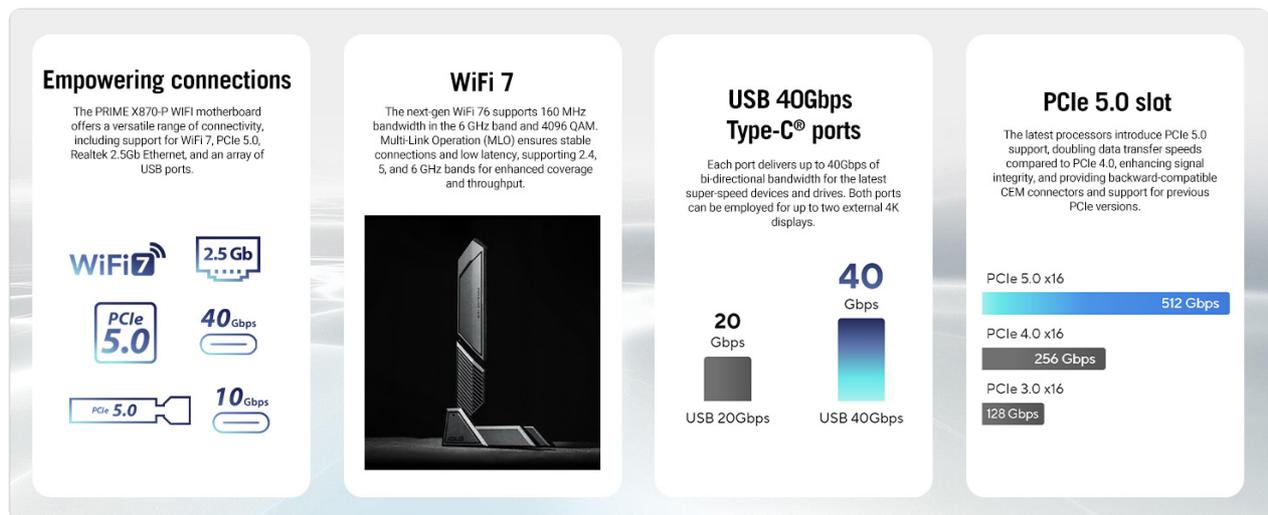


Image 2.1: Close-up view of the DDR5 memory slots and M.2 slots on the ASUS Prime X870-P WiFi motherboard, illustrating the layout for component installation.

2.4. Installing Storage Devices (M.2 SSDs)

The motherboard features four M.2 slots, including one PCIe 5.0 M.2 slot for high-speed storage.

1. Locate the M.2 slots and remove any pre-installed heatsinks.
2. Insert the M.2 SSD into the slot at an angle.
3. Gently push down the SSD and secure it with the M.2 Q-Latch mechanism or a screw.
4. Reinstall the M.2 heatsink if applicable.

2.5. Connecting Power Supply

Connect the 24-pin ATX power connector and the 8-pin + 4-pin (or 8-pin) CPU power connectors from your power supply to the motherboard. Ensure all connections are secure.

2.6. Installing Graphics Card (GPU)

The motherboard features a PCIe 5.0 x16 SafeSlot for graphics cards.

1. Open the PCIe Slot Q-Release latch on the PCIe 5.0 x16 slot.
2. Align your graphics card with the slot and press down firmly until it clicks into place.
3. Secure the graphics card to your PC case with screws.

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Video 2.2: An official product video demonstrating key features and ease of use for the ASUS Prime X870-P WiFi

motherboard, including the PCIe Slot Q-Release mechanism for easy graphics card installation and removal.

3. OPERATING THE MOTHERBOARD

3.1. BIOS/UEFI Setup

The BIOS (Basic Input/Output System) or UEFI (Unified Extensible Firmware Interface) is the first software your computer runs when it starts. It allows you to configure hardware settings, boot order, and system performance.

- To enter BIOS/UEFI Setup, press the **DEL** or **F2** key during the Power-On Self-Test (POST).
- Navigate using keyboard arrows and **Enter**.
- Save changes and exit to boot into your operating system.

3.2. Wi-Fi 7 Connectivity

The motherboard supports Wi-Fi 7 for stable and low-latency wireless connections. Ensure the Q-Antenna is properly connected to the I/O shield for optimal signal strength.

3.3. USB4 and USB 10Gbps Ports

Utilize the USB4 (40Gbps) Type-C ports for high-speed data transfer and display outputs. The USB 10Gbps Type-C and Type-A ports provide versatile connectivity for peripherals.



Image 3.1: A visual representation of the various connectivity options on the ASUS Prime X870-P WiFi motherboard, including Wi-Fi 7, 2.5Gb Ethernet, PCIe 5.0, USB 40Gbps, and USB 10Gbps ports.

4. MAINTENANCE

4.1. Cooling System

The motherboard features comprehensive cooling solutions, including large VRM heatsinks, dual M.2 heatsinks, and a PCH heatsink. Ensure proper airflow within your PC case to maintain optimal temperatures. Regularly clean dust from fans and heatsinks using compressed air.

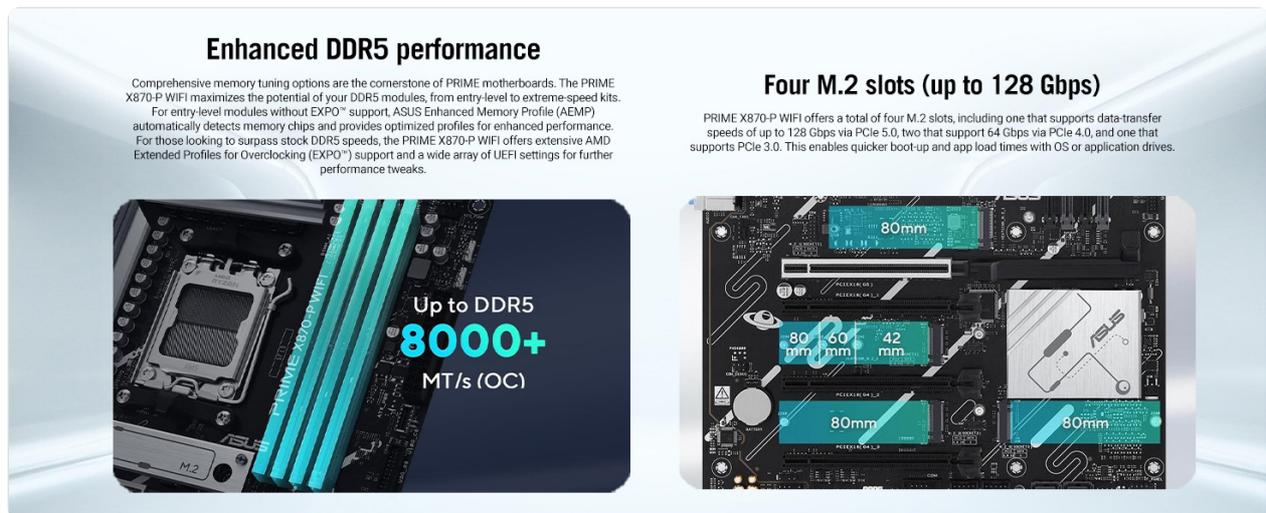


Image 4.1: An illustration detailing the robust power design of the ASUS Prime X870-P WiFi motherboard, emphasizing the 14+2+1 80A DrMOS power stages and cooling components like VRM heatsinks.

4.2. BIOS Updates

Periodically check the ASUS support website for the latest BIOS updates. Updating the BIOS can improve system stability, compatibility, and performance. The motherboard supports BIOS FlashBack for easy updates without a CPU or RAM installed.

5. TROUBLESHOOTING

5.1. No Power/No POST

- **Check Power Connections:** Ensure all power cables (24-pin ATX, 8-pin CPU, 4-pin CPU) are securely connected to the motherboard and power supply.
- **Q-LED Core:** The Q-LED Core indicators on the motherboard can help diagnose issues. Refer to the motherboard manual for the meaning of different LED patterns (CPU, DRAM, VGA, BOOT).
- **Reseat Components:** Try reseating the CPU, RAM modules, and graphics card to ensure they are properly seated in their respective slots.
- **Clear CMOS:** If the system fails to boot after configuration changes, clear the CMOS by shorting the CLRTC pins or removing the CMOS battery for a few minutes.

5.2. Memory Issues

- **Memory Compatibility:** Ensure your DDR5 memory modules are on the motherboard's Qualified Vendor List (QVL) for optimal compatibility and performance.
- **EXPO/AEMP Profile:** If experiencing instability with EXPO (Extended Profiles for Overclocking) or AEMP (ASUS Enhanced Memory Profile), try disabling it in BIOS or manually setting memory timings.

5.3. Connectivity Problems

- **Wi-Fi/Bluetooth:** Ensure the Q-Antenna is securely connected. Update Wi-Fi and Bluetooth drivers from the ASUS support website.
- **LAN:** Check the Ethernet cable connection. Update LAN drivers.

6. SPECIFICATIONS

Feature	Detail
Brand	ASUS
Model Name	PRIME X870-P WIFI
CPU Socket	Socket AM5
Compatible Processors	Ryzen™ 9000 & 8000 & 7000 Series
Chipset Type	AMD X870
RAM Memory Technology	DDR5
Memory Storage Capacity (Max)	192 GB
Wireless Type	Wi-Fi 7 (802.11be)
LAN	Realtek 2.5Gb Ethernet
PCIe Slots	PCIe 5.0 x16 slot
M.2 Slots	4 (including 1x PCIe 5.0 M.2)
USB Ports	2x USB4 (40Gbps) Type-C, USB 10Gbps Type-C/Type-A
Dimensions (LxWxH)	14 x 10.8 x 2.8 inches
Item Weight	4 pounds

7. WARRANTY AND SUPPORT

For warranty information and technical support, please refer to the official ASUS website or contact ASUS customer service. Keep your proof of purchase for warranty claims.

- **Online Support:** Visit the [ASUS Support Website](#) for drivers, manuals, and FAQs.
- **Protection Plans:** Additional protection plans may be available for purchase. Refer to your retailer for details.

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