

ASUS TUF GAMING X870E-PLUS WIFI7

ASUS TUF Gaming X870E-PLUS WIFI7 AMD Motherboard User Manual

Model: TUF GAMING X870E-PLUS WIFI7

INTRODUCTION

The ASUS TUF Gaming X870E-PLUS WIFI7 motherboard is engineered to provide a robust and reliable foundation for your AMD Ryzen 9000 Series desktop PC. It integrates essential features for high-performance computing, including advanced power delivery, comprehensive cooling, and next-generation connectivity. This manual provides detailed instructions for installation, operation, and maintenance to ensure optimal performance and longevity of your motherboard.

Key features include:

- Ready for AMD Socket AM5 for AMD Ryzen 9000, 8000, and 7000 Series Desktop Processors.
- Enhanced Power Solution: 16+2+1 80A power stages and 8-layer PCB for stable power delivery.
- Intelligent Control: ASUS-exclusive AI Overclocking, AI Cooling II, AI Networking II, and AEMP.
- Latest M.2 Support: Two onboard PCIe 5.0 M.2 slots and two PCIe 4.0 M.2 slots.
- Ultrafast Connectivity: Wi-Fi 7, PCIe 5.0 x16 slot, Realtek 2.5Gb Ethernet, rear two USB4 (40Gbps) Type-C ports, front USB 20Gbps Type-C connector with up to 30W PD Fast-charge.
- Comprehensive Cooling: Enlarged VRM heatsink, M.2 heatsink, PCH heatsink, hybrid fan headers and Fan Xpert 4 with AI Cooling II.
- DIY Friendly Design: PCIe Slot Q-Release Slim, M.2 Q-Latch, Q-LED, BIOS FlashBack and Pre-mounted I/O shield.

SETUP AND INSTALLATION

This section guides you through the physical installation of your ASUS TUF Gaming X870E-PLUS WIFI7 motherboard and its primary components.

1. Unboxing and Initial Inspection

Carefully remove the motherboard and all accessories from the packaging. Inspect for any visible damage. The package typically includes the motherboard, Wi-Fi antenna, SATA cables, M.2 rubber pads, M.2 screws, and documentation.



Figure 1: ASUS TUF Gaming X870E-PLUS WIFI7 Motherboard and included accessories.

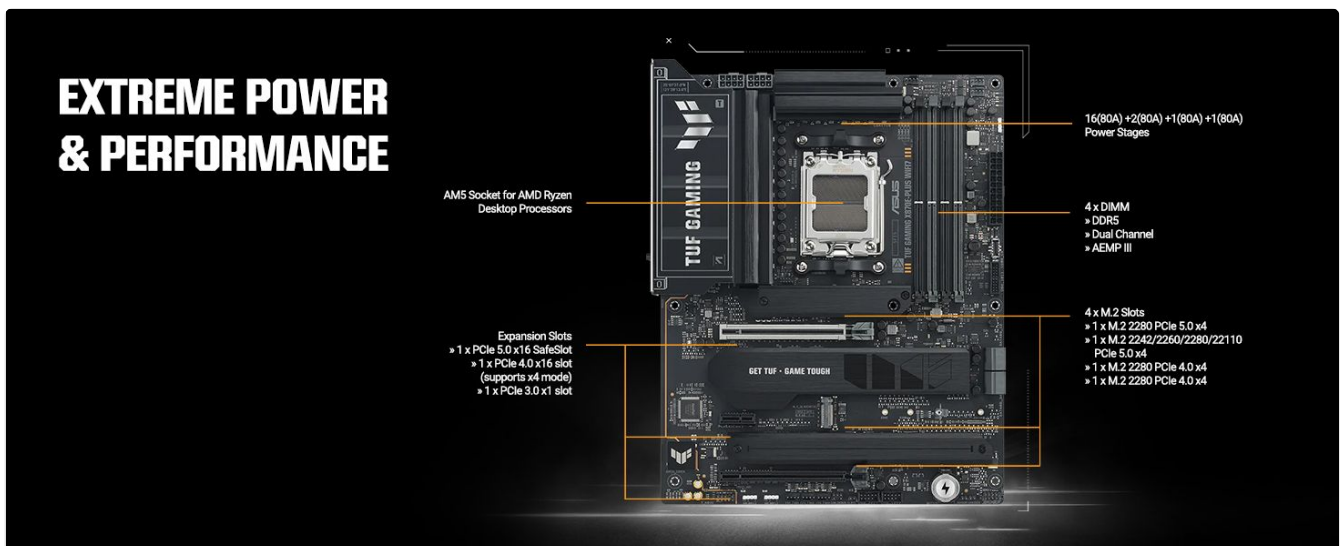


Figure 2: Detailed view of the motherboard and various components included in the box, such as SATA cables and the Wi-Fi antenna.

2. Processor (CPU) Installation

Ensure the motherboard is placed on a non-conductive surface. Open the CPU socket lever, align the AMD Ryzen processor with the socket (triangle mark on the CPU matches the socket), and gently place it into the socket. Close the lever to secure the CPU.

Performance & Cooling



16(80A) + 2(80A) + 1(80A) power stages

ENLARGED VRM HEATSINKS

The extensive surface area of this heatsink covers the MOSFETs and chokes to improve thermal performance.

ENLARGED M.2 HEATSINKS

Three of the four M.2 slots have dedicated heatsinks to help keep M.2 SSDs at optimal operating temperatures.

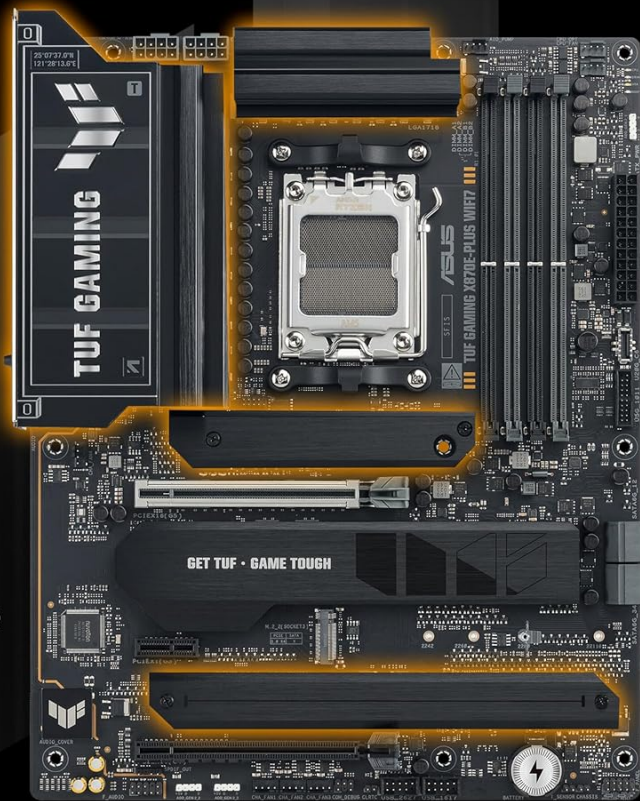


Figure 3: Close-up view of the AMD AM5 CPU socket, ready for processor installation.

3. Memory (RAM) Installation

Unlock the DIMM slots by pushing the clips outward. Align your DDR5 memory modules with the slots, ensuring the notch on the module matches the notch in the slot. Press firmly on both ends of the memory module until the clips snap into place.

4. Storage (M.2 SSDs) Installation

The motherboard features M.2 Q-Latch for tool-less installation of M.2 SSDs. Locate the M.2 slots (two PCIe 5.0 and two PCIe 4.0). Remove the M.2 heatsink if present. Insert the M.2 SSD into the slot at an angle, then push it down and secure it with the Q-Latch mechanism. Reattach the heatsink if applicable.

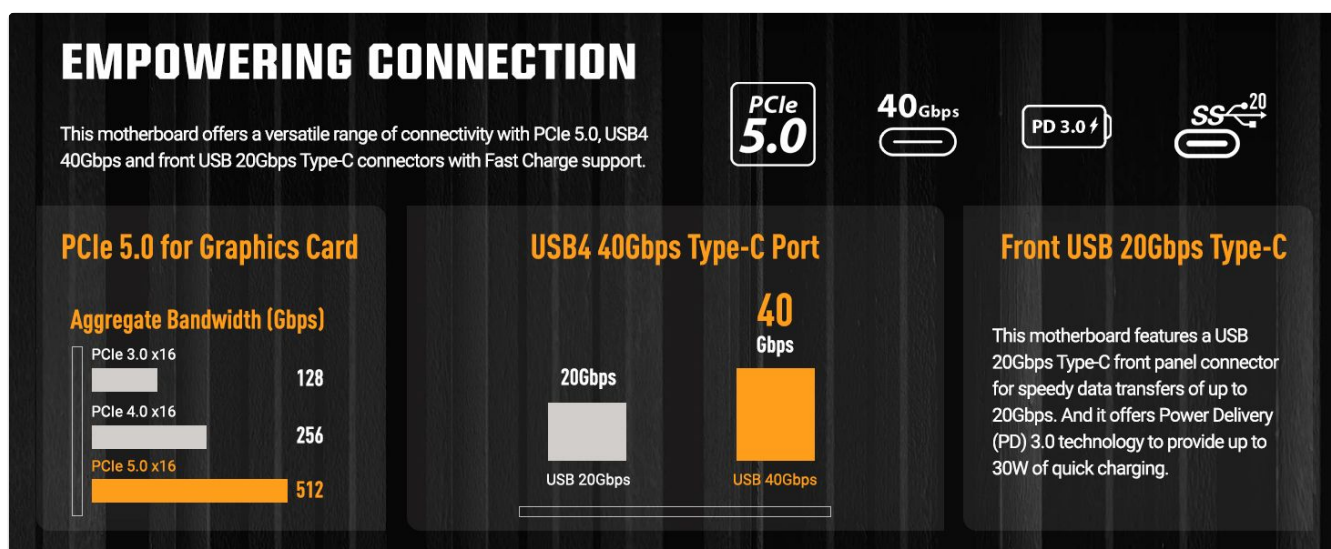


Figure 4: Illustration of the M.2 Q-Latch for easy SSD installation and the PCIe Q-Release Slim for graphics card removal.

5. Graphics Card (GPU) Installation

Locate the PCIe 5.0 x16 slot. Open the PCIe Slot Q-Release Slim latch. Insert your graphics card firmly into the slot until it clicks into place. Ensure the latch is closed. Connect necessary PCIe power cables from your power supply to the graphics card.

6. Power Supply Connections

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

7. Wi-Fi Antenna Installation

Attach the included ASUS Wi-Fi Q-Antenna to the designated connectors on the rear I/O panel for optimal wireless performance.

What's in the Box

Exclusive TUF Gaming X870E-Plus WiFi7 Bundle

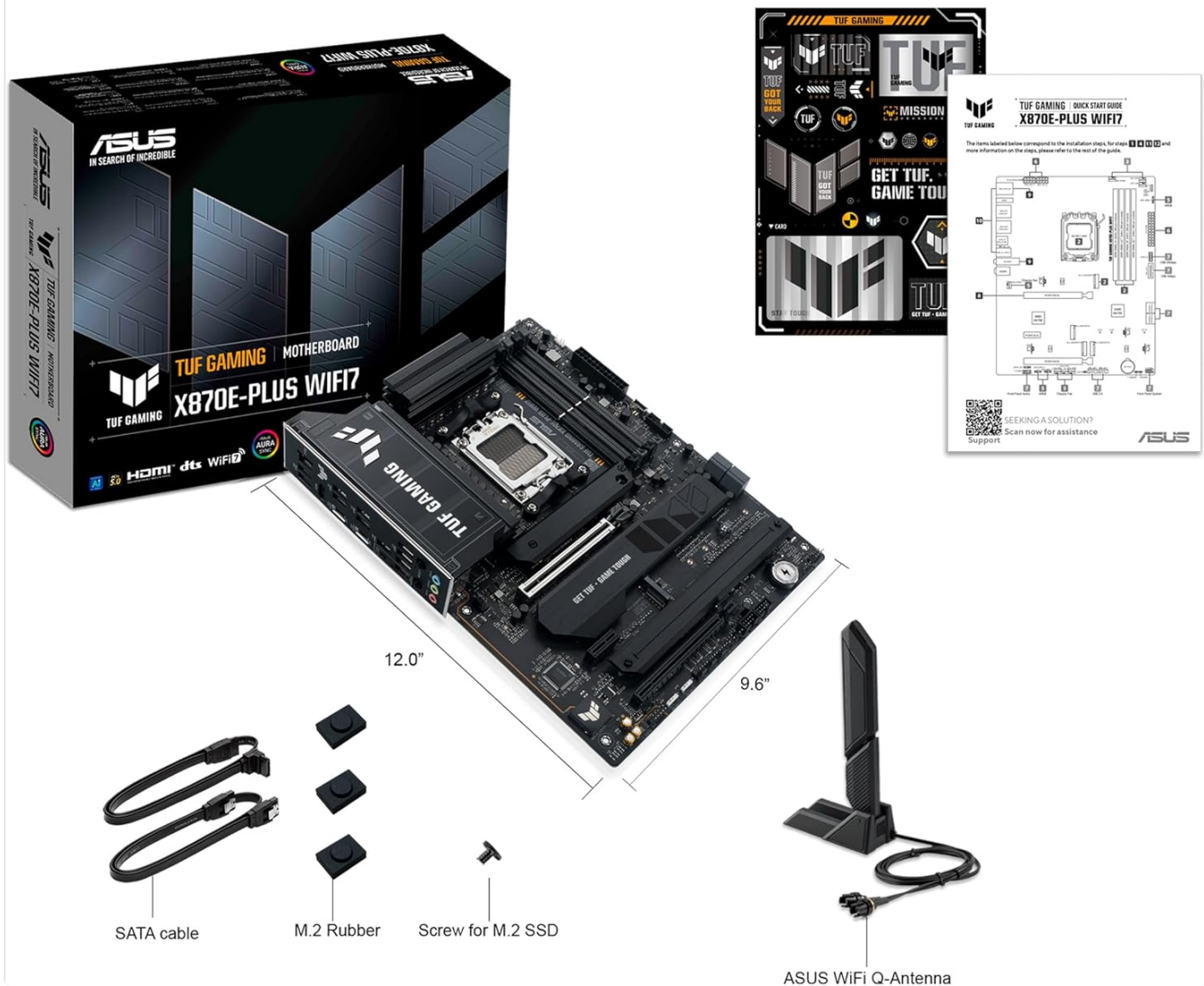


Figure 5: Rear I/O panel showing various ports and the connected Wi-Fi antenna.

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Video 1: An overview of the ASUS TUF Gaming X870E-PLUS WIFI7 motherboard, highlighting key features and design elements relevant to setup.

OPERATING FEATURES

AI Technologies

The ASUS TUF Gaming X870E-PLUS WIFI7 integrates several AI-driven technologies to optimize system performance and user experience:

- **AI Overclocking:** Maximizes CPU performance and predicts ideal CPU and cooling settings.
- **AI Cooling II:** Optimizes thermal performance and reduces noise through dynamic fan speed adjustments based on CPU temperatures.
- **AI Networking II:** Optimizes network performance for seamless connectivity and maximized Wi-Fi 7 speeds.
- **ASUS AI Advisor:** Provides technical assistance and answers questions about motherboard functionality.



Figure 6: Overview of ASUS AI Technologies for system optimization.

Power Solution and Cooling

The motherboard features a robust 16+2+1 80A power stage design and an 8-layer PCB, ensuring stable power delivery for demanding processors. Comprehensive cooling solutions include enlarged VRM and M.2 heatsinks, a PCH heatsink, and hybrid fan headers managed by Fan Xpert 4 with AI Cooling II.

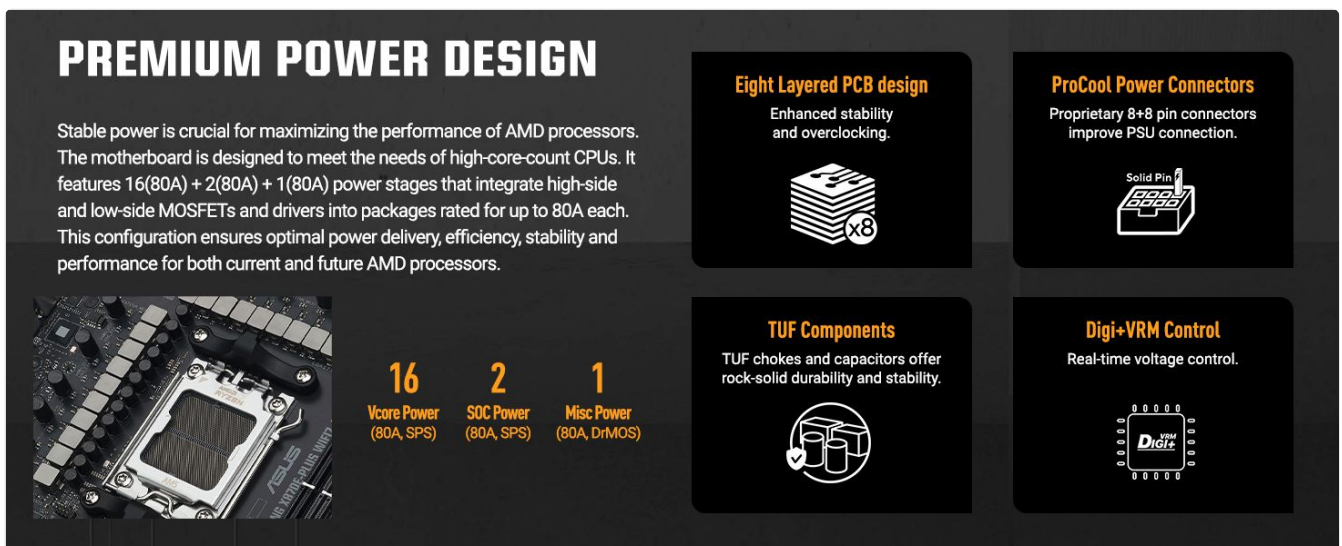


Figure 7: Illustration of the motherboard's power delivery and cooling components.

Connectivity

Experience ultrafast data transfer and networking with:

- **Wi-Fi 7:** Provides stable connections and low latency with the ASUS Wi-Fi Q-Antenna.
- **Realtek 2.5Gb Ethernet:** Enhances LAN connection speeds up to 2.5 times faster than 1Gb connections.
- **PCIe 5.0:** Supports next-generation graphics cards and M.2 SSDs for maximum bandwidth.
- **USB4 (40Gbps) Type-C:** Two rear ports for high-speed data transfer.
- **Front USB 20Gbps Type-C:** With up to 30W Power Delivery (PD) Fast-charge.

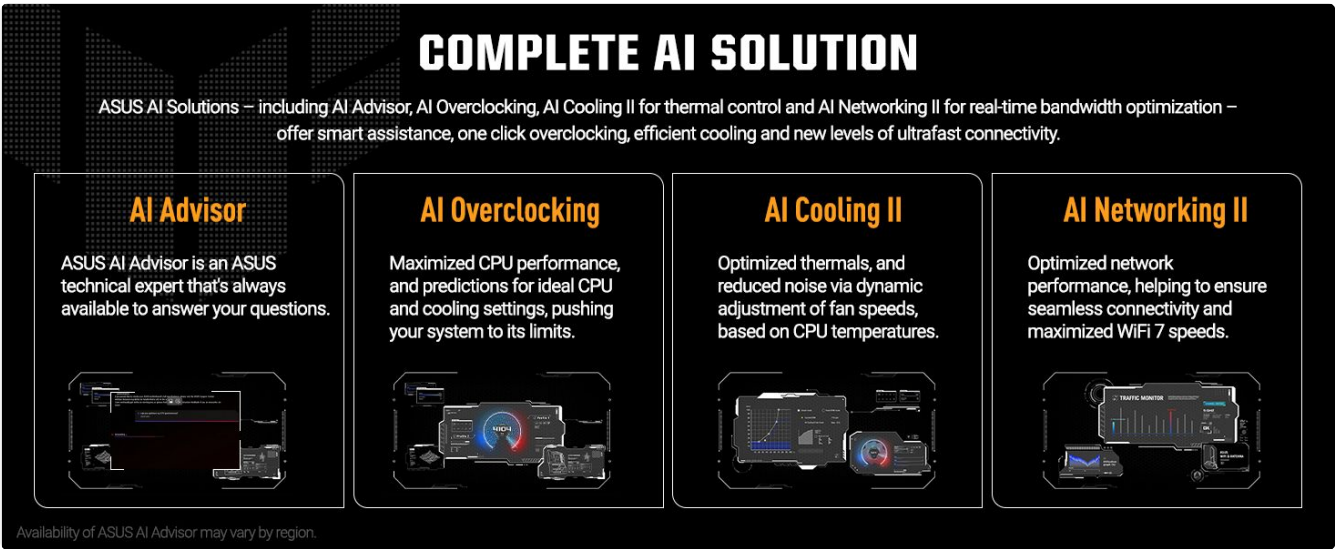


Figure 8: Overview of the motherboard's advanced connectivity features.

MAINTENANCE

Regular maintenance ensures the longevity and optimal performance of your motherboard.

- **BIOS Updates:** Utilize the BIOS FlashBack feature to update the BIOS without needing a CPU or memory installed. This is crucial for compatibility with new processors or for applying performance and stability improvements.
- **Driver Updates:** Keep your system drivers updated using ASUS DriverHub or by downloading the latest drivers from the official ASUS support website.
- **Dust Removal:** Periodically clean dust from the motherboard and cooling components using compressed air to maintain efficient heat dissipation.
- **Component Checks:** Ensure all cables and components are securely seated to prevent intermittent issues.

TROUBLESHOOTING

If you encounter issues with your motherboard, consider the following troubleshooting steps:

- **Q-LED Indicator:** The Q-LED feature provides diagnostic codes during boot-up. Refer to your motherboard's quick start guide for the meaning of specific LED indicators (CPU, DRAM, VGA, BOOT) to identify the component causing the issue.
- **No Display:** Ensure your graphics card is properly seated and connected to power. Verify your monitor is connected to the correct output on the graphics card or motherboard.
- **System Instability:** Check memory module seating. Ensure CPU cooler is properly installed and making good contact with the CPU. Verify power supply connections.
- **BIOS Reset:** If the system fails to boot after configuration changes, clear the CMOS by removing the CMOS battery for a few minutes or using the dedicated Clear CMOS jumper/button (if available).
- **Driver Issues:** If a specific component is not functioning correctly, ensure its drivers are installed and up-to-date.

SPECIFICATIONS

Feature	Detail
Brand	ASUS
Series	TUF GAMING X870E-PLUS WIFI7

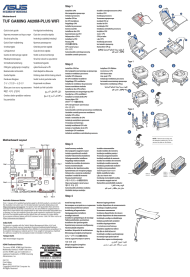
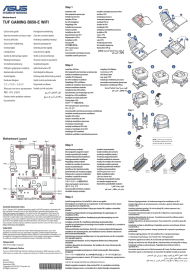
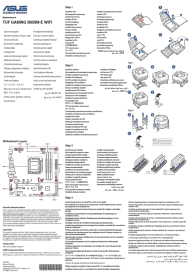
Model Name	TUF GAMING X870E-PLUS WIFI7
CPU Socket	Socket AM5
Compatible Processors	Ryzen™ 9000 & 8000 & 7000 Series Desktop Processors
Chipset Type	AMD X870E
RAM Memory Technology	DDR5
Memory Clock Speed	Up to 8000 MHz (OC)
Memory Storage Capacity	256 GB (Max)
Product Dimensions	12 x 9.6 x 1.9 inches
Item Weight	3.4 pounds
Platform	Windows 11

WARRANTY AND SUPPORT

For warranty information, technical support, and driver downloads, please visit the official ASUS website or the ASUS Store. [Visit the ASUS Store for Support](#)

Related Documents - TUF GAMING X870E-PLUS WIFI7

	<p>ASUS TUF GAMING B650M-E WIFI Quick Start Guide</p> <p>A concise guide for installing and setting up the ASUS TUF GAMING B650M-E WIFI motherboard, covering CPU, memory, storage, expansion cards, and system connections.</p>
	<p>ASUS TUF GAMING X670E-PLUS Motherboard User Manual</p> <p>Comprehensive user manual for the ASUS TUF GAMING X670E-PLUS motherboard, covering installation, specifications, BIOS setup, and troubleshooting. Learn about CPU, memory, expansion slots, and more.</p>
	<p>ASUS ROG CROSSHAIR X870E HERO Motherboard User Manual</p> <p>Comprehensive user manual for the ASUS ROG CROSSHAIR X870E HERO motherboard, detailing installation, setup, specifications, and BIOS/RAID support for AMD AM5 platform.</p>

	<p>ASUS TUF GAMING A620M-PLUS WIFI Motherboard: Quick Start Guide</p> <p>Comprehensive guide for installing the ASUS TUF GAMING A620M-PLUS WIFI motherboard, covering CPU, RAM, expansion cards, storage, and system connections. Includes setup steps and component identification.</p>
	<p>ASUS TUF GAMING B650-E WIFI Motherboard Quick Start Guide</p> <p>A concise, step-by-step guide for installing the ASUS TUF GAMING B650-E WIFI motherboard, covering CPU, RAM, storage, expansion cards, power connections, and initial system setup.</p>
	<p>ASUS TUF GAMING B650M-E WIFI Motherboard Quick Start Guide</p> <p>This guide provides essential steps for installing the ASUS TUF GAMING B650M-E WIFI motherboard, including CPU, fan, memory, storage, and expansion card installation, along with system connections and initial setup.</p>