MSI MAG Z790 Tomahawk WiFi

MSI MAG Z790 Tomahawk WiFi Motherboard User Manual

Installation, Operation, and Maintenance Guide

Introduction



Image: The MSI MAG Z790 Tomahawk WiFi motherboard is displayed alongside its retail packaging. The motherboard features a black PCB with prominent heatsinks covering the VRM, M.2 slots, and chipset. The LGA 1700 CPU socket is visible, as are the four DDR5 DIMM slots. The retail box highlights key features such as 'MAG Z790 Tomahawk WiFi', 'TPM 2.0', 'Windows 11 Compatible', and 'Lightning Gen 5'.

This manual provides detailed instructions for the installation, configuration, and maintenance of your MSI MAG Z790 Tomahawk WiFi motherboard. Please read this guide thoroughly before proceeding with installation to ensure proper setup and operation of your system. This motherboard supports 12th and 13th Generation Intel Processors, DDR5 memory, and PCIe 5.0 for high-performance computing.

Safety Information

- Always disconnect the power cord from the electrical outlet before touching any component inside your computer.
- Wear an anti-static wrist strap to prevent electrostatic discharge (ESD) damage to sensitive components. If a wrist strap is unavailable, periodically touch a grounded metal object to discharge static electricity.
- Handle components by their edges to avoid touching sensitive parts, such as gold connectors or integrated circuits.
- Ensure proper ventilation within your computer case to prevent overheating, which can lead to system instability or component damage.
- Refer to the CPU and CPU cooler manufacturer's instructions for proper installation and thermal paste application.

Package Contents

Verify that all items listed below are present in your motherboard package. If any item is damaged or missing, please contact your retailer for assistance.



Image: This image displays the various accessories included with the MSI MAG Z790 Tomahawk WiFi motherboard. Visible items include the motherboard itself, a Quick Installation Guide, two SATA data cables, two EZ M.2 clips for tool-less SSD installation, a USB drive (likely containing drivers and utilities), two Wi-Fi antennas, a sheet of cable stickers with MSI branding, and a European Union Regulatory Notice document.

- MSI MAG Z790 Tomahawk WiFi Motherboard
- Quick Installation Guide
- SATA Cables (x2)
- EZ M.2 Clips (x2)
- USB Drive (with drivers and utilities)
- Wi-Fi Antennas (x2)
- Cable Sticker Sheet
- European Union Regulatory Notice

Motherboard Layout

Familiarize yourself with the various components and connectors on your MSI MAG Z790 Tomahawk WiFi motherboard to ensure correct installation.

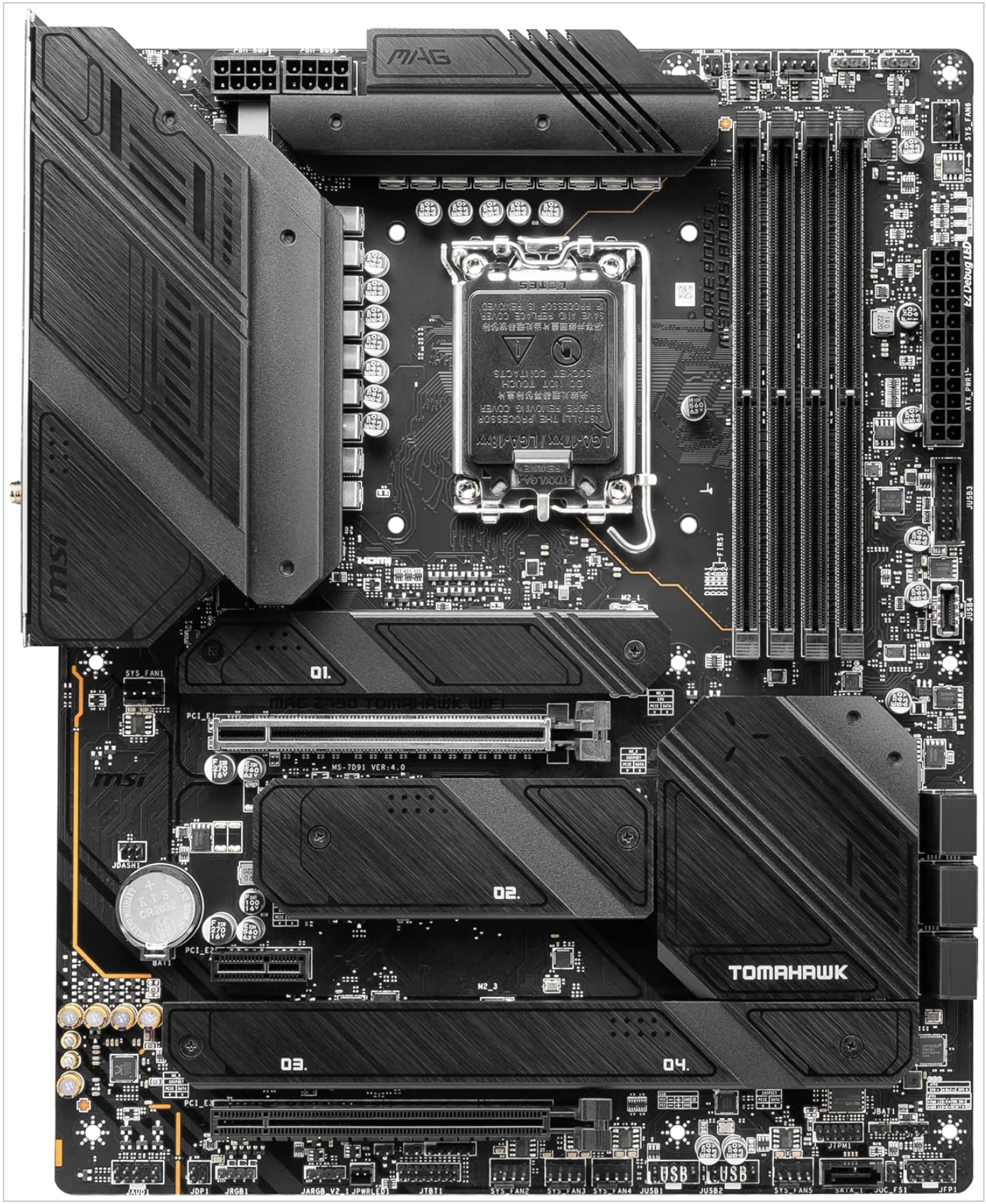


Image: A clear top-down view of the MSI MAG Z790 Tomahawk WiFi motherboard. The central LGA 1700 CPU socket is prominent, surrounded by power delivery components and heatsinks. To the right are four DDR5 DIMM slots. Below the CPU socket, multiple M.2 slots are visible, covered by large heatsinks labeled 01, 02, 03, and 04. The primary PCIe 5.0 x16 slot is also clearly identifiable. Various headers for front panel connections, USB, and SATA ports are distributed across the board's edges.

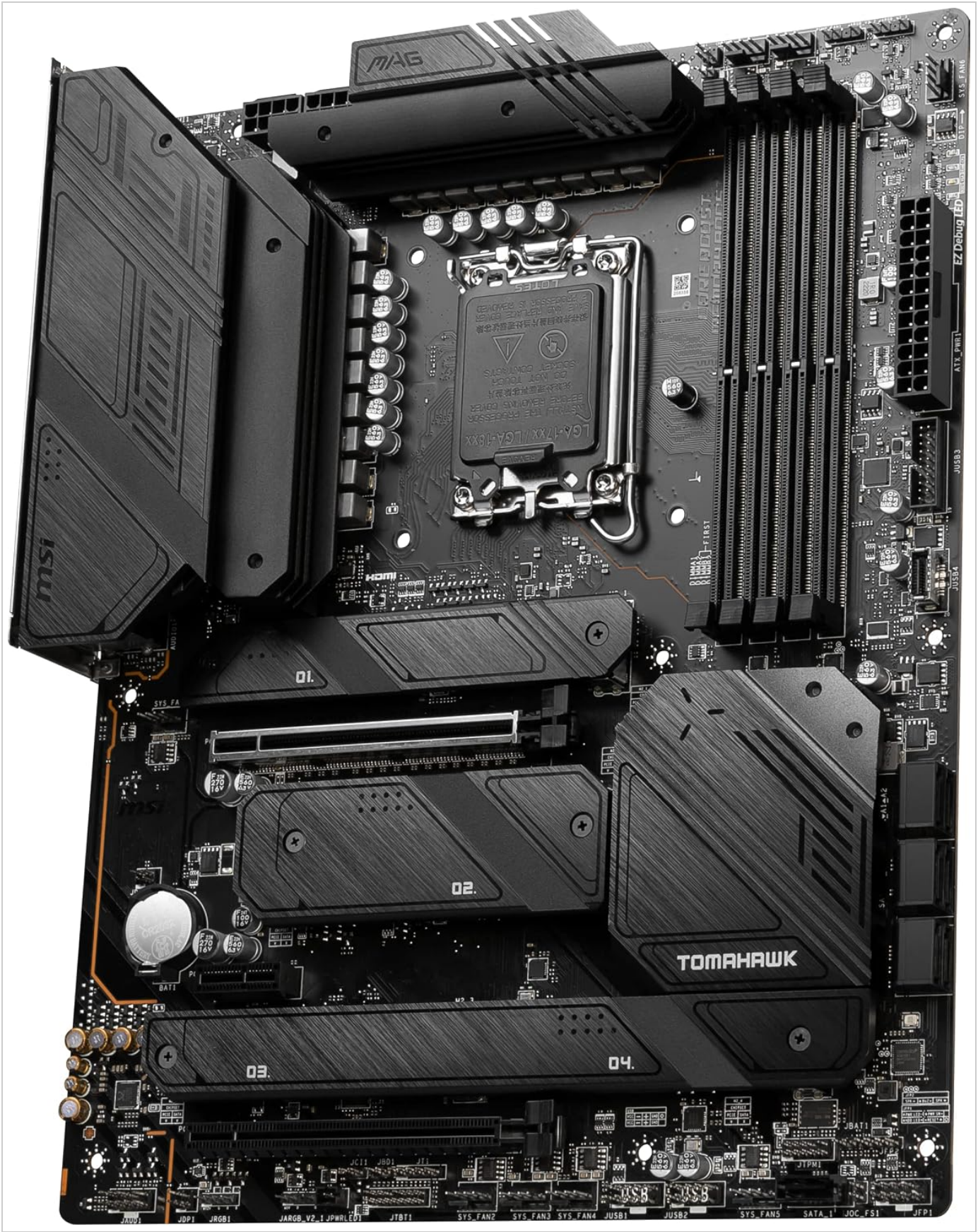


Image: An angled perspective of the MSI MAG Z790 Tomahawk WiFi motherboard, showcasing its integrated I/O shield and the robust VRM heatsinks. This view emphasizes the board's aesthetic design and the placement of the DDR5 memory slots, PCIe slots, and M.2 heatsinks. The overall black and grey color scheme with subtle textures is visible.

Key Components:

- **LGA 1700 CPU Socket:** Supports Intel 12th and 13th Generation Core processors.
- **DDR5 DIMM Slots:** Four slots for DDR5 memory modules, supporting up to 192GB of RAM.

- **PCIe 5.0 x16 Slot:** Primary slot for high-performance graphics cards, offering increased bandwidth.
- **M.2 Slots:** Multiple M.2 slots (with heatsinks) for NVMe Solid State Drives, providing fast storage options.
- **SATA Ports:** Connectors for traditional SATA-based hard drives and SSDs.
- **Rear I/O Panel:** Provides various external connectivity options.

Rear I/O Panel Overview:



Image: A close-up view of the rear input/output (I/O) panel of the MSI MAG Z790 Tomahawk WiFi motherboard. From left to right, it features DisplayPort, HDMI, multiple USB 3.2 Gen2 Type-A ports (blue and red), a Clear CMOS button, a Flash BIOS button, 2.5G Ethernet port, Wi-Fi 6E antenna connectors, USB 3.2 Gen2 Type-C ports, S/PDIF Out, and various audio jacks (L-Out, L-In, Mic-In, CS-Out, RS-Out).

- **DisplayPort & HDMI:** Video output ports.
- **USB 3.2 Gen2 Ports:** Multiple Type-A and Type-C ports for high-speed peripheral connectivity.
- **Clear CMOS Button:** Resets BIOS settings to default.
- **Flash BIOS Button:** Allows BIOS updates without a CPU or RAM installed.
- **2.5G Ethernet Port:** For high-speed wired network connections.
- **Wi-Fi 6E Antenna Connectors:** For attaching the included Wi-Fi antennas.
- **Audio Jacks:** Standard audio input and output ports, including S/PDIF optical out.

Setup Guide

Follow these steps for proper installation of your motherboard and its components into your computer case.

1. CPU Installation (LGA 1700)

1. Locate the LGA 1700 CPU socket on the motherboard. Open the socket lever and lift the metal load plate.
2. Carefully align the CPU with the socket, ensuring the triangular mark on the CPU matches the mark on the socket. Do not force the CPU into the socket; it should drop in easily.
3. Lower the load plate and secure it by pushing the lever back into its locked position. This will apply pressure to the CPU.
4. Install the CPU cooler according to its manufacturer's instructions, ensuring proper thermal paste application.

2. RAM (DDR5) Installation

1. Open the clips on both ends of the DDR5 DIMM slots where you intend to install memory modules.
2. Align the notch on the DDR5 memory module with the key in the DIMM slot. Ensure the module is oriented correctly.
3. Press down firmly on both ends of the memory module until the clips snap into place, securing the module.

3. Storage Installation (M.2 SSDs and SATA Drives)

M.2 SSD Installation:

1. Unscrew and remove the M.2 heatsink from the desired M.2 slot (e.g., M2_1, M2_2, M2_3, or M2_4).
2. Insert the M.2 SSD into the slot at a slight angle, ensuring it is fully seated.
3. Secure the M.2 SSD using the provided EZ M.2 clip or screw, depending on the slot design.
4. Reattach the M.2 heatsink and secure it with screws to ensure proper cooling.

SATA Drive Installation:

1. Connect one end of a SATA data cable to an available SATA port on the motherboard.
2. Connect the other end of the SATA data cable to your SATA hard drive or SSD.
3. Connect a SATA power cable from your power supply unit (PSU) to the SATA drive.

4. Graphics Card (PCIe 5.0) Installation

1. Locate the PCIe 5.0 x16 slot (typically the top reinforced slot on the motherboard).
2. Open the retention clip at the end of the slot.
3. Align your graphics card with the slot and press down firmly until it is fully seated and the retention clip locks into place.
4. Secure the graphics card to your computer case with screws.
5. Connect appropriate PCIe power cables from your PSU to the graphics card, if required by the card.

5. Power Connections

1. Connect the 24-pin ATX main power connector from your PSU to the corresponding port on the motherboard.
2. Connect the 8-pin (or 4+4 pin) CPU power connector(s) from your PSU to the CPU power port(s) located near the CPU socket.

6. Front Panel Connections

1. Connect the front panel headers (Power Switch, Reset Switch, HDD LED, Power LED) to the JFP1 header on the motherboard. Refer to the motherboard manual for exact pin assignments.

2. Connect the USB 2.0, USB 3.2 Gen1, and USB 3.2 Gen2 Type-C front panel connectors from your case to their respective headers on the motherboard.
3. Connect the front panel audio connector from your case to the JAUD1 header.

Operating Instructions

1. Initial Boot-up

After all components are installed and connected, ensure your monitor, keyboard, and mouse are connected to the appropriate ports. Power on your system. The system should display the MSI logo and either enter the BIOS/UEFI interface or begin the operating system installation process if a bootable drive is present.

2. BIOS/UEFI Configuration

To enter the BIOS/UEFI setup utility, press the**Delete** key repeatedly during the initial boot-up sequence (when the MSI logo appears). Within the BIOS/UEFI, you can configure various system settings such as boot order, system time, fan speeds, and other advanced features. Remember to save any changes before exiting the BIOS/UEFI.

3. Driver Installation

After successfully installing your operating system, it is crucial to install the necessary drivers for your motherboard's components. These drivers can typically be found on the included USB drive or downloaded from the official MSI website. Essential drivers include chipset, LAN, Wi-Fi, audio, and graphics drivers to ensure full functionality and optimal performance.

Maintenance

1. Cleaning

Regularly clean your computer's interior to prevent dust buildup, which can impede airflow and lead to overheating. Use compressed air to gently remove dust from fans, heatsinks, and other components. Always ensure the system is powered off and unplugged from the wall outlet before performing any cleaning.

2. BIOS Updates

Periodically check the official MSI website for BIOS/UEFI updates for your motherboard model. BIOS updates can improve system stability, enhance compatibility with new hardware, and sometimes offer performance optimizations. Follow the instructions provided by MSI carefully when performing a BIOS update to avoid potential system damage or instability.

Troubleshooting

This section addresses common issues you might encounter during installation or operation and provides potential solutions.

Problem	Possible Solution
System does not power on.	Check all power connections (24-pin ATX, 8-pin CPU, graphics card). Ensure the PSU switch is on and the power outlet is functional. Test with a different power supply if possible.
No display on monitor.	Verify the monitor is connected to the graphics card (not the motherboard's integrated graphics ports unless using an Intel CPU with integrated graphics). Reseat the graphics card and RAM modules. Check monitor input selection.

Problem	Possible Solution
System powers on but does not POST (Power-On Self-Test).	Check for diagnostic LEDs or a debug code display on the motherboard for error indications. Reseat CPU, RAM, and graphics card. Try booting with only essential components (CPU, one RAM stick, GPU).
Operating system not detected.	Check boot order in BIOS/UEFI to ensure the correct drive is prioritized. Ensure storage drives are properly connected and detected in BIOS. Reinstall operating system if necessary.
Wi-Fi or LAN not working.	Install the latest Wi-Fi and LAN drivers from the MSI website. Ensure Wi-Fi antennas are securely connected. For LAN, check the network cable connection and router status.

Specifications

Detailed technical specifications for the MSI MAG Z790 Tomahawk WiFi Motherboard.

Feature	Detail
Brand	MSI
Model Name	MAG Z790 Tomahawk WiFi
CPU Socket	LGA 1700
Compatible Processors	Intel 12th Gen, Intel 13th Gen Core Processors
RAM Memory Technology	DDR5
RAM Memory Maximum Size	192 GB (4 x DIMM slots)
Chipset Type	Intel Z790
Product Dimensions	12 x 9.6 x 2.5 inches (ATX Form Factor)
Item Weight	3.69 pounds
Wi-Fi Standard	Wi-Fi 6E
Ethernet	2.5G LAN
PCIe Version	PCIe 5.0 (Primary x16 slot)
USB Standard	USB 3.2 Gen2 (Various Type-A and Type-C ports)
Storage Interfaces	Multiple M.2 slots, SATA 6Gb/s ports

Warranty and Support

For detailed warranty information, technical support, and driver downloads, please refer to the official MSI website or contact your retailer. It is recommended to keep your proof of purchase for any warranty claims.

MSI Official Website: www.msi.com

Ask a question about this manual

Ask about setup, troubleshooting, compatibility, parts, safety, or missing instructions. Manuals+ will review the question and use this page's manual context to help answer it.

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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