ASUS TUF Gaming Z690-PLUS WiFi

ASUS TUF Gaming Z690-PLUS WiFi Motherboard User Manual

Model: TUF Gaming Z690-PLUS WiFi (90MB1AW0-M0EAY0)

1. Product Overview

The ASUS TUF Gaming Z690-PLUS WiFi is an ATX motherboard designed for Intel 12th Generation Core, Pentium Gold, and Celeron processors, utilizing the LGA1700 socket and Intel Z690 chipset. It supports DDR5 memory and features comprehensive connectivity options including WiFi 6 and Bluetooth v5.2.

Key Features:

- **CPU Support:** Intel Socket 1700 for 12th Gen Core/Pentium Gold/Celeron Processors
- **Chipset:** Intel Z690
- **Memory:** 4 x DIMM slots, Max. 128GB DDR5
- **Expansion Slots:** 1 x PCIe 5.0 x16, 1 x PCIe 3.0 x16, 1 x PCIe 3.0 x4, 2 x PCIe 3.0 x1
- **Storage:** 4 x M.2 slots, 4 x SATA 6Gb/s ports
- **Video Output:** 1 x HDMI, 1 x DisplayPort
- **LAN:** 1 x Intel 2.5Gb Ethernet
- **Wireless:** WiFi 6, Bluetooth v5.2
- **Audio:** ROG Realtek 7.1 Surround Sound HD Audio Codec
- **USB Ports:** Rear Total 8 ports, Front Total 7 ports
- **Form Factor:** ATX

What's in the Box

The retail package for the ASUS TUF Gaming Z690-PLUS WiFi motherboard typically includes the following components:

Image 1: The image displays the contents of the ASUS TUF Gaming Z690-PLUS WiFi motherboard box. It includes the motherboard itself, a user guide, a support DVD, TUF Gaming stickers, two 2-in-1 SATA cables, and an ASUS 2x2 dual-band antenna.

Extreme Power & Performance Features

This motherboard is engineered with robust power delivery and high-speed connectivity to support demanding computing tasks.

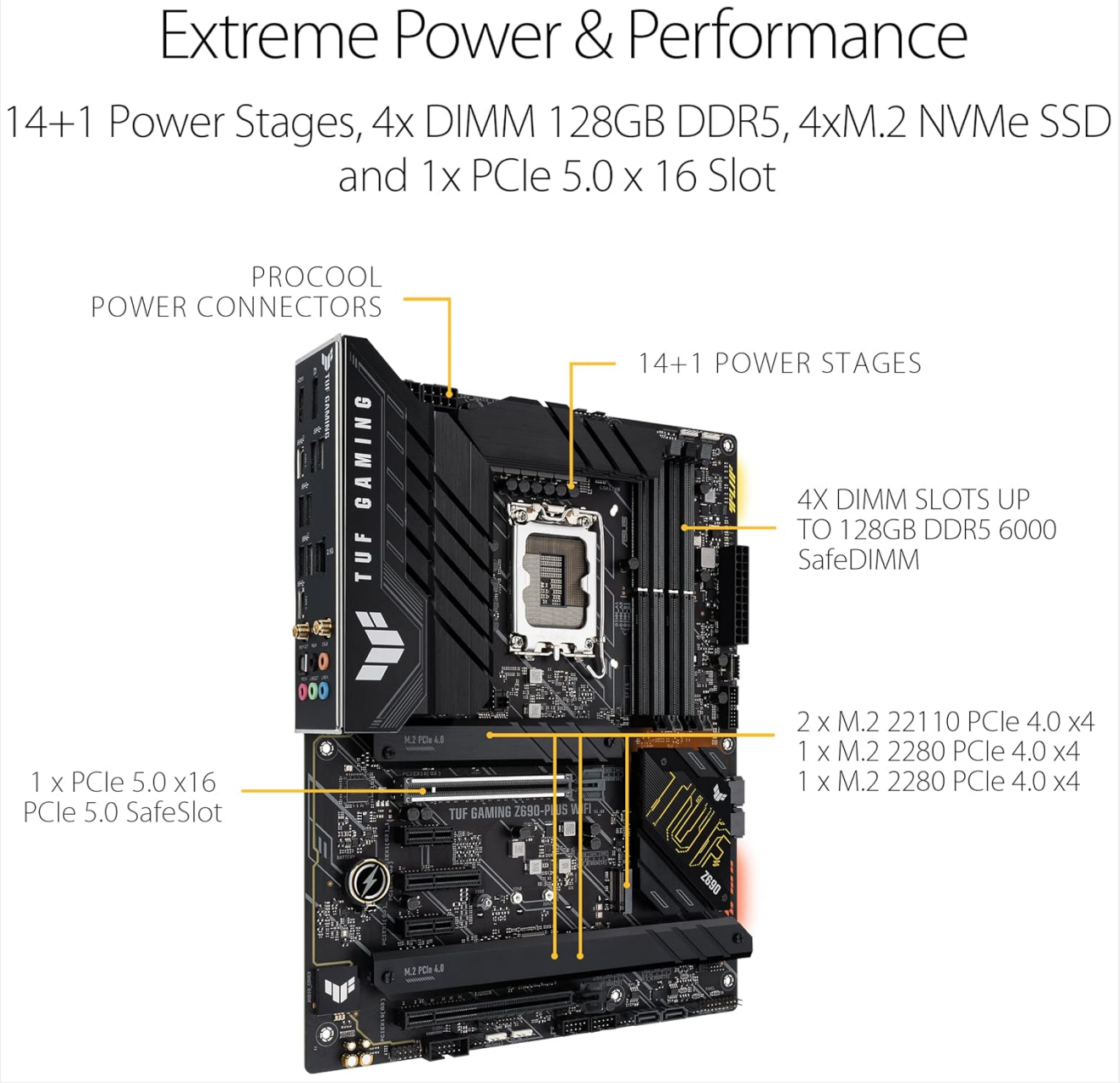

Image 2: This image highlights the power and performance features of the ASUS TUF Gaming Z690-PLUS WiFi motherboard. It shows the ProCool power connectors, 14+1 power stages, four DIMM slots supporting up to 128GB DDR5 memory, and a PCIe 5.0 x16 SafeSlot. It also indicates multiple M.2 NVMe SSD slots.

2. Installation Guide

This section provides general guidelines for installing your motherboard and its components. Always refer to the detailed instructions in the included user guide for specific steps and safety precautions.

2.1 CPU Installation

1. Ensure the CPU socket lever is open.
2. Carefully align the CPU with the socket, matching the triangular mark on the CPU to the mark on the socket.
3. Gently place the CPU into the socket without forcing it.
4. Close the socket lever to secure the CPU.

2.2 Memory (RAM) Installation

1. Open the clips on both ends of the DIMM slot.

2. Align the notch on the DDR5 memory module with the key in the DIMM slot.
3. Insert the memory module firmly into the slot until the clips snap into place.

2.3 Storage (M.2, SATA) Installation

- **M.2 SSD:** Locate the M.2 slots. 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 provided screw or Q-Latch mechanism. Reinstall the heatsink.
- **SATA Drives:** Connect one end of a SATA data cable to a SATA 6Gb/s port on the motherboard and the other end to your SATA hard drive or SSD. Connect a SATA power cable from your power supply to the drive.

2.4 Expansion Cards (PCIe) Installation

1. Align your PCIe expansion card (e.g., graphics card) with the desired PCIe slot.
2. Press down firmly until the card is seated correctly and the retention clip locks.
3. Secure the card to your chassis with a screw.

2.5 Power Connections

- Connect the 24-pin ATX power connector from your power supply to the motherboard.
- Connect the 8-pin (or 4+4-pin) CPU power connector(s) to the motherboard.

2.6 Front Panel Connections

Connect the cables from your PC case's front panel (power button, reset button, USB ports, audio jacks, LED indicators) to the corresponding headers on the motherboard. Refer to the motherboard manual for exact pin layouts.

3. System Configuration and Operation

3.1 BIOS/UEFI Setup

To enter the BIOS/UEFI setup utility, press the**DEL** key or **F2** key during the Power-On Self-Test (POST) process. Here you can configure boot order, system settings, overclocking parameters, and update the BIOS.

3.2 Driver Installation

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

3.3 Software Utilities

ASUS provides various software utilities to enhance your system's performance and functionality, such as Armoury Crate for system monitoring and RGB control, and AI Suite for system tuning.

4. Comprehensive Cooling

The TUF Gaming Z690-PLUS WiFi motherboard incorporates advanced cooling solutions to maintain optimal temperatures during operation.

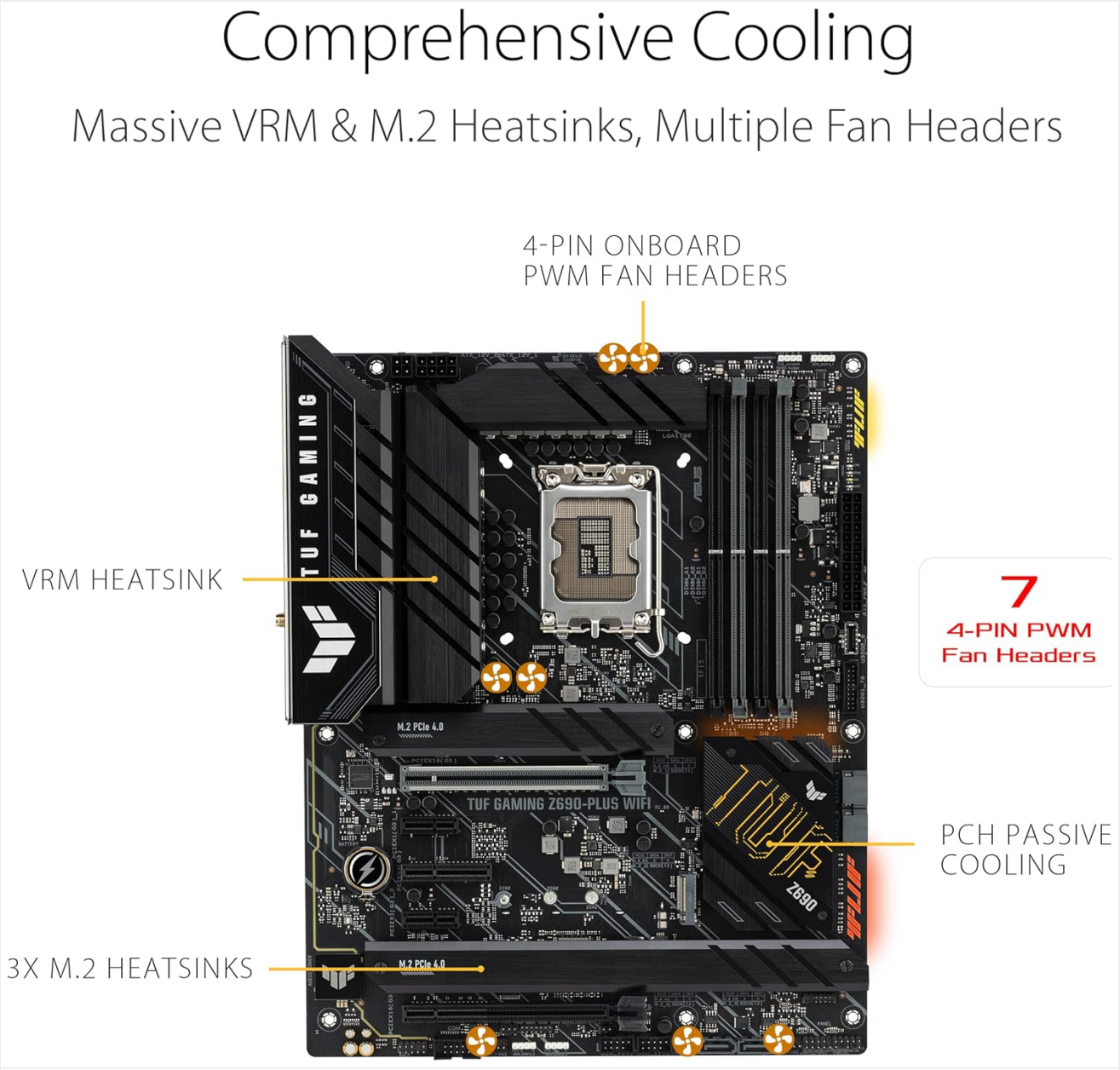

Image 3: This image illustrates the comprehensive cooling features of the ASUS TUF Gaming Z690-PLUS WiFi motherboard. It highlights the VRM heatsink, three M.2 heatsinks for NVMe SSDs, and multiple 4-pin PWM fan headers for connecting system fans.

Cooling Features:

- **VRM Heatsink:** Large heatsinks cover the Voltage Regulator Modules to ensure stable power delivery.
- **M.2 Heatsinks:** Dedicated heatsinks for M.2 SSDs help prevent thermal throttling and maintain performance.
- **PCH Passive Cooling:** The Platform Controller Hub (PCH) is passively cooled to ensure stable operation.
- **Fan Headers:** Multiple 4-pin PWM fan headers allow for precise control over system cooling fans.

5. Connectivity and Audio

The motherboard offers extensive connectivity options and high-quality audio for an immersive user experience.

Total Gaming Immersion Features

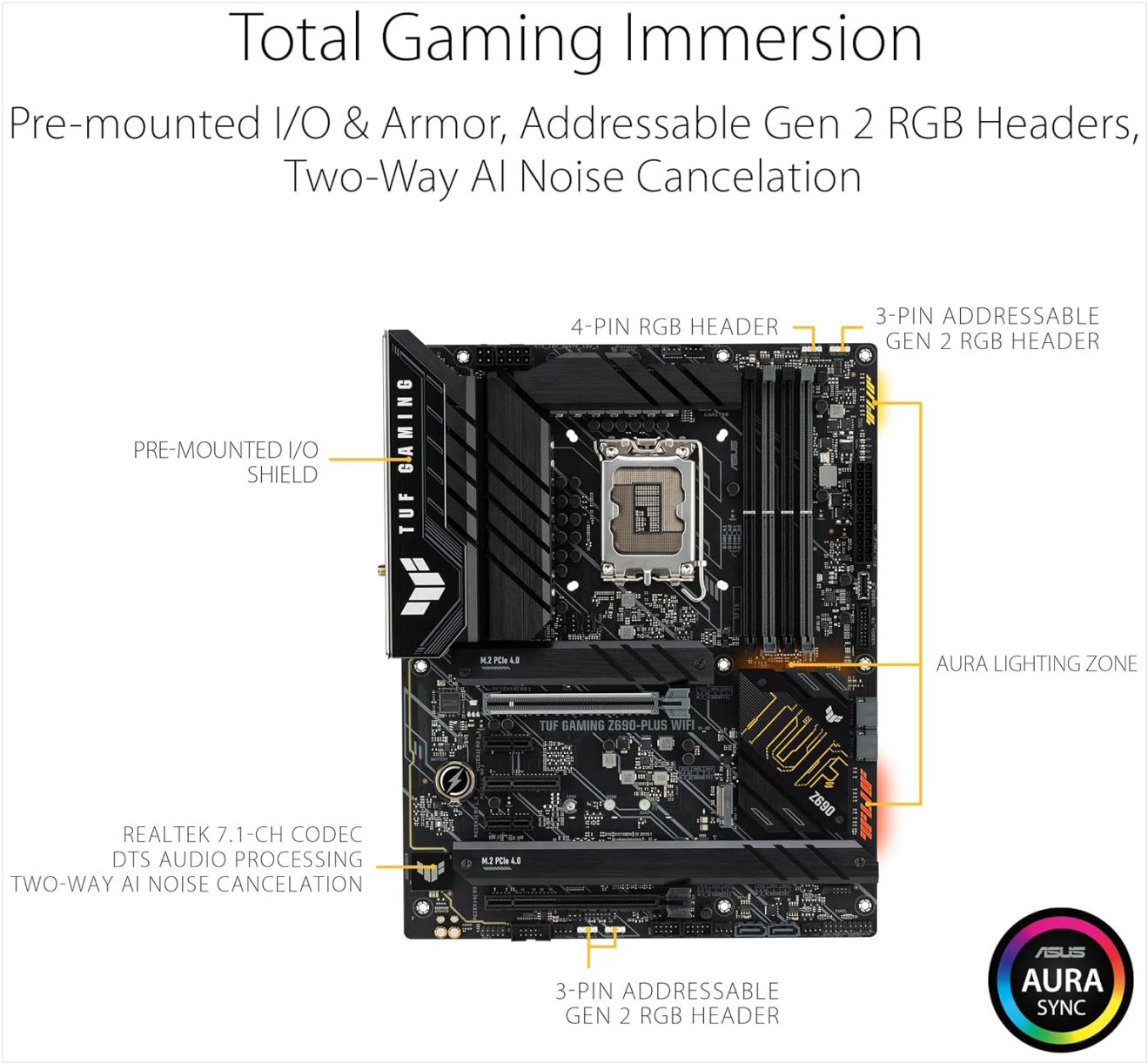

Image 4: This image highlights features contributing to gaming immersion on the ASUS TUF Gaming Z690-PLUS WiFi motherboard. It shows the pre-mounted I/O shield, a 4-pin RGB header, a 3-pin addressable Gen 2 RGB header, and an Aura lighting zone. It also mentions Realtek 7.1-CH codec DTS audio processing and two-way AI noise cancellation.

Full Gaming Connectivity

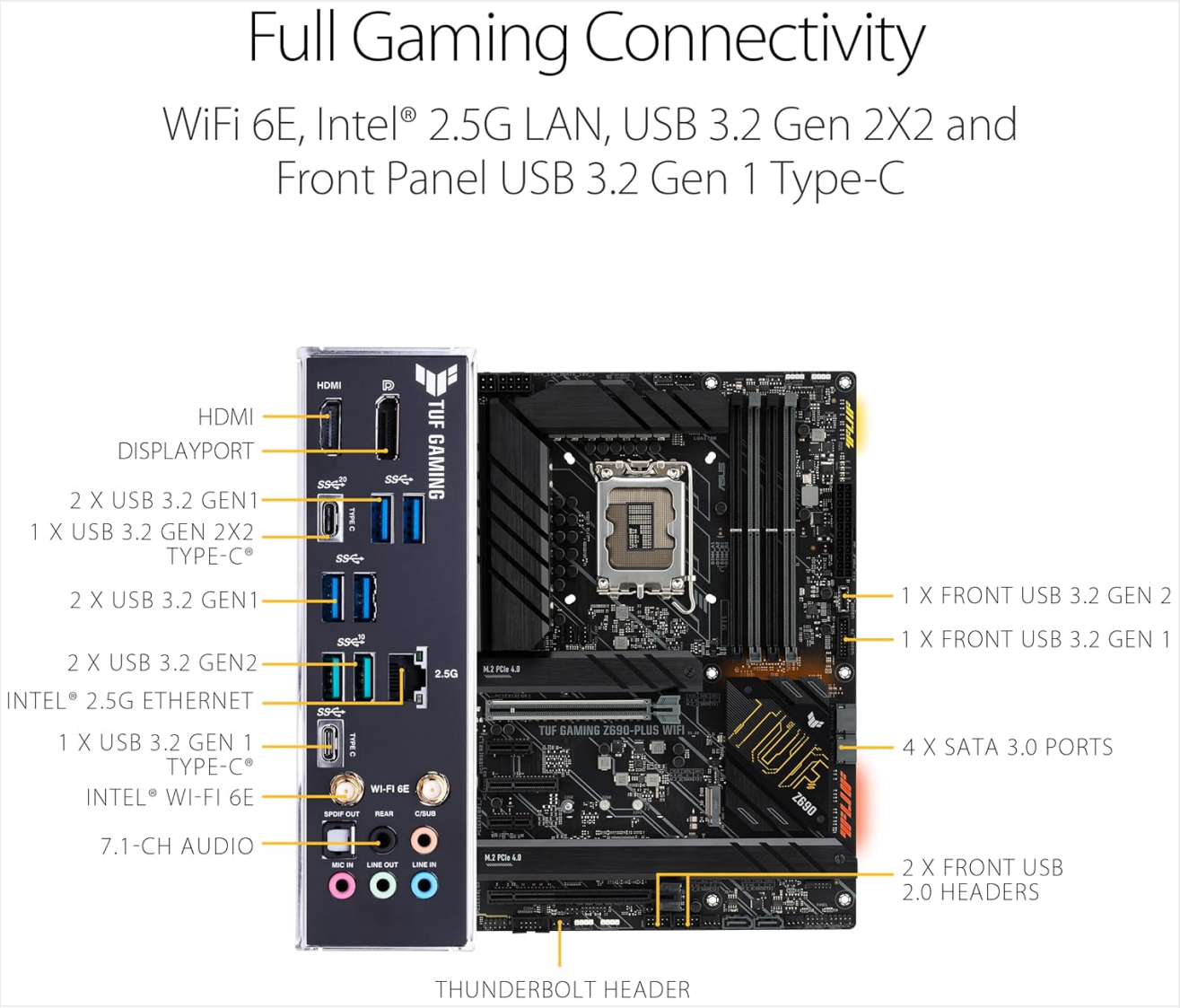

Image 5: This image details the full gaming connectivity options of the ASUS TUF Gaming Z690-PLUS WiFi motherboard. It displays the rear I/O panel with HDMI, DisplayPort, multiple USB 3.2 Gen 1 and Gen 2 ports (including Type-C), Intel 2.5G Ethernet, Intel Wi-Fi 6E, and 7.1-channel audio jacks. It also shows internal headers for front USB 3.2 Gen 2, USB 3.2 Gen 1, SATA 3.0 ports, front USB 2.0 headers, and a Thunderbolt header.

Connectivity Features:

- **Rear I/O:** HDMI, DisplayPort, USB 3.2 Gen 1, USB 3.2 Gen 2 (including Type-C), Intel 2.5G Ethernet, Wi-Fi 6E antenna connectors, 7.1-channel audio jacks.
- **Internal Headers:** Front USB 3.2 Gen 2, USB 3.2 Gen 1 Type-C, USB 2.0 headers, SATA 6Gb/s ports, Thunderbolt header.
- **Audio:** Realtek 7.1-CH Codec with DTS Audio Processing and Two-Way AI Noise Cancellation.
- **RGB:** Multiple RGB headers for customizable lighting effects, compatible with ASUS Aura Sync.

6. Maintenance

Proper maintenance ensures the longevity and stable performance of your motherboard.

6.1 BIOS Updates

Regularly check the ASUS support website for the latest BIOS updates. BIOS updates can improve system stability, add support for new hardware, and fix bugs. Follow the instructions provided by ASUS carefully when performing a BIOS update to avoid system damage.

6.2 Cleaning

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

7. Troubleshooting

This section addresses common issues you might encounter. For more detailed troubleshooting, refer to the full user manual or ASUS support resources.

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

- Verify all power cables (24-pin ATX, 8-pin CPU) are securely connected to the motherboard and power supply.
- Ensure the CPU, RAM, and graphics card are properly seated in their respective slots.
- Check for any bent pins in the CPU socket. Bent pins can prevent the system from booting. If found, contact ASUS support or a qualified technician.
- Try booting with only essential components (CPU, one RAM stick, graphics card if no integrated graphics) to isolate the issue.
- Clear the CMOS by removing the CMOS battery for a few minutes or using the clear CMOS jumper.

7.2 System Instability / Crashes

- Ensure all drivers are up to date.
- Check memory compatibility and run a memory diagnostic tool.
- Monitor CPU and GPU temperatures to ensure they are within safe operating limits.
- Verify power supply wattage is sufficient for all components.

7.3 Peripheral Not Detected

- Ensure the peripheral is correctly connected to the appropriate port.
- Install the latest drivers for the peripheral and the motherboard's chipset.
- Check BIOS settings to ensure the port or controller is enabled.

8. Technical Specifications

Feature	Specification
Brand	ASUS
Series	TUF Gaming Z690-PLUS WiFi
Item Model Number	90MB1AW0-M0EAY0
CPU Socket	LGA 1700
Chipset Type	Intel Z690
RAM Memory Technology	DDR5
Memory Speed	2133 MHz (Base), up to 6000MHz+ (OC)

Feature	Specification
Memory Storage Capacity	128 GB (Max)
Wireless Type	802.11a/b/g/n/ac, 802.11ax (WiFi 6E)
Number of USB 2.0 Ports	1 (Internal Header)
Product Dimensions (LxWxH)	13.19 x 13.63 x 2.76 inches
Item Weight	2.2 pounds
Color	Black
Platform	Windows 10, Windows 11

9. Warranty and Support Information

ASUS products typically come with a limited manufacturer's warranty. The duration and terms of the warranty may vary by region and product. Please retain your proof of purchase for warranty claims.

Customer Support:

For technical assistance, driver downloads, BIOS updates, and further product information, please visit the official ASUS support website:

www.asus.com/support/

You may also contact ASUS customer service directly through their website for personalized support.