GIGABYTE Z890 AI TOP

GIGABYTE Z890 AI TOP Motherboard Instruction Manual

Model: Z890 AI TOP

Brand: GIGABYTE

Product Overview

The GIGABYTE Z890 AI TOP Motherboard is designed to support Intel Core Ultra Processors (Series 2). It offers robust power delivery, advanced storage capabilities, and extensive connectivity options to optimize system performance.

Key Features

- Supports Intel Core Ultra Processors (Series 2)
- DDR5 Compatible: 4 DIMM slots with XMP Memory Module Support
- Power Design: 16+1+2 phase, 80A Smart Power Stage
- Thermals: VRM Thermal Armor Advanced, M.2 Thermal Guard
- Connectivity: PCIe 5.0, 4x M.2 Slots, Dual Thunderbolt 5, Front USB-C
- DIY Friendly: M.2 EZ-Latch, PCIe EZ-Latch, WIFI EZ-Plug, EZ-Debug Zone
- Networking: WIFI7, 10GbE LAN

Unboxing and Package Contents

This section details the items included in the GIGABYTE Z890 AI TOP Motherboard package.



Image: The GIGABYTE Z890 AI TOP Motherboard box alongside the motherboard itself, showcasing the product packaging and the main component.



Image: The GIGABYTE Z890 AI TOP Motherboard securely packaged within its anti-static bag inside the box.

The package typically includes:

- GIGABYTE Z890 AI TOP Motherboard
- User Manual
- Multilingual Installation Guide
- 2x SATA cables (one 90-degree to straight, one straight to straight)
- 2x Velcro cable ties
- 2x Thermistors (temperature sensors)
- 1x BIOS speaker
- 1x Wi-Fi antenna
- 1x USB-C connector
- Front panel connector adapter

Motherboard Layout and Components

This section provides a detailed overview of the GIGABYTE Z890 AI TOP Motherboard's physical layout and key components.



Image: A top-down view of the GIGABYTE Z890 AI TOP Motherboard, highlighting its overall design and major heat sinks.

Rear of the Motherboard

The rear of the motherboard features Surface Mount Technology (SMD) for enhanced durability and signal integrity, particularly around the RAM DIMMs. It also includes "Ultra Durable PCIe Armor" for reinforced PCIe slots.

Top Section

- **CPU Power Connectors:** Two 8-pin power connectors for CPU power delivery.
- **Fan Headers:** Multiple 4-pin fan headers, including one dedicated for the CPU fan and another for AIO pump connection.
- **Debug Features:** Debug LED indicators and a Debug 80 port (display) for system diagnostics.
- **Control Buttons:** Power, Reset, and Q-Flash Plus buttons for convenient system control and BIOS flashing without a CPU.
- **RGB Headers:** ARGBV2 headers for connecting addressable RGB lighting.

Middle Section

- **CPU Socket:** LGA 1851 socket, supporting Intel Core Ultra Processors (Series 2).
- **DDR5 DIMM Slots:** Four DDR5 DIMM slots, with two reinforced for enhanced stability, supporting high-speed memory up to 9500 MT/s.
- **24-pin Motherboard Power Connector:** Standard 24-pin ATX power connector.
- **SMBus Header:** An SMBus header, indicating workstation-grade features for system monitoring.
- **Thermistor Pins:** Pins for connecting external thermistors to monitor temperatures.
- **Front USB-C Header:** A Thunderbolt 4 (USB-C) header for front panel connectivity, useful for connecting internal displays or power delivery.
- **Front USB 3.2 Gen 2x2 Headers:** Two USB 3.2 Gen 2x2 (USB-C) headers for high-speed front panel connectivity.

Bottom Section

- **Front Panel Headers:** Standard front panel headers for power, reset, and LED connections, with a convenient

adapter for easier installation.

- **Additional Fan Headers:** Three more 4-pin fan headers.
- **USB 2.0 Headers:** Two USB 2.0 headers.
- **TPM Module Header:** A header for connecting a Trusted Platform Module (TPM).
- **RGB Headers:** A 4-pin RGB header and two ARGBV2 headers.
- **Audio Connector:** Front panel audio connector.
- **PCIe Slots:** Two full-length PCIe 5.0 slots, with the primary slot featuring an EZ-Latch release mechanism for easy GPU removal. One additional PCIe 4.0 slot.
- **M.2 Slots:** Four M.2 slots for NVMe SSDs, all covered by thick thermal guards with EZ-Latch mechanisms for tool-less installation and removal.
- **SATA Ports:** Eight SATA 6Gb/s ports.

Rear I/O Panel

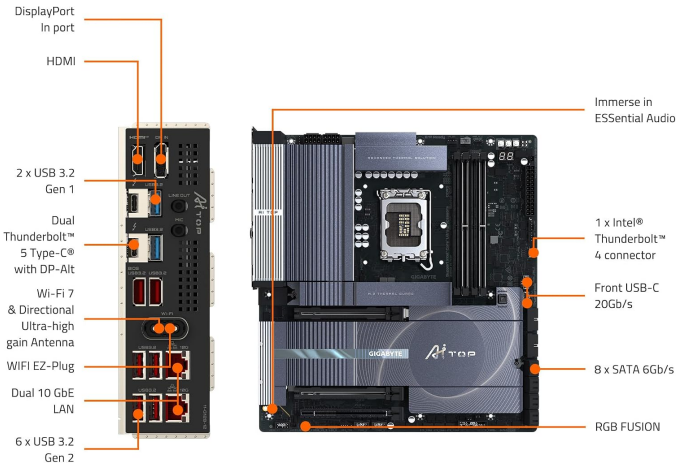


Image: A close-up view of the rear I/O panel, showing the various ports and connectors with labels for easy identification.

- **Video Outputs:** HDMI and DisplayPort In ports.
- **USB 3.2 Gen 1 Ports:** Two blue USB 3.2 Gen 1 ports.
- **Audio Jacks:** Line Out and Microphone 3.5mm jacks.
- **Thunderbolt 5 Ports:** Two USB-C Thunderbolt 5 ports with DisplayPort Alt Mode.
- **USB 3.2 Gen 2 Ports:** Six red USB 3.2 Gen 2 ports.
- **Wi-Fi Antenna Connectors:** Wi-Fi 7 antenna connectors with EZ-Plug.
- **LAN Ports:** Two 10GbE LAN ports.

GIGABYTE AI TOP Utility

The GIGABYTE AI TOP Utility is a software tool designed to allow users to customize and optimize AI tasks directly on their PC. Unlike complex AI model creation from scratch, this utility focuses on fine-tuning existing AI models or features to suit personal needs and preferences.

Key aspects of the AI TOP Utility include:

- **Local Training:** Enables users to train their own AI models locally on their desktop, reducing reliance on internet connectivity and external cloud resources.
- **Resource Utilization:** Leverages the motherboard's high-end specifications, including VRAM, DRAM, and SSDs, for efficient AI training.
- **LLM Support:** Supports over 70 Large Language Model (LLM) backbone models, allowing users to fine-tune pre-existing models.
- **User-Friendly Interface:** Provides an accessible interface for users to create their own training datasets and

execute custom chat interfaces, similar to popular LLM platforms.

- **Customization:** Allows for fine-tuning settings with standard, fast speed, and high precision strategies.

This utility is particularly beneficial for AI enthusiasts and developers who wish to experiment with and customize AI models using their own hardware resources, offering a powerful local AI training environment.

Setup Guide

Pre-Installation Checklist

- Ensure your power supply unit (PSU) is compatible and provides sufficient wattage.
- Gather necessary tools: Phillips-head screwdriver, anti-static wrist strap (recommended).
- Prepare your PC case for motherboard installation.

Motherboard Installation

- **Install CPU:** Carefully open the CPU socket lever, align the CPU with the triangular marker, and gently place it into the socket. Close the lever to secure.
- **Install CPU Cooler:** Follow the cooler manufacturer's instructions to install the CPU cooler, ensuring proper thermal paste application. Connect the CPU fan cable to the designated CPU_FAN header.
- **Install RAM:** Open the clips on the DDR5 DIMM slots. Align the RAM modules with the notch in the slot and press firmly until the clips lock into place. For dual-channel operation, refer to the manual for recommended slot configurations (typically A2/B2).
- **Install NVMe SSDs:** Unscrew or unlatch the M.2 thermal guards. Insert the NVMe SSD into the M.2 slot, secure it with the EZ-Latch mechanism, and reattach the thermal guard.
- **Mount Motherboard:** Align the motherboard with the standoffs in your PC case. Secure the motherboard with screws.
- **Connect Power Cables:** Connect the 24-pin ATX power cable and the 8-pin CPU power cables from your PSU to the motherboard.
- **Connect Front Panel Cables:** Use the provided front panel adapter to connect the power switch, reset switch, and LED cables from your case to the motherboard.
- **Connect SATA Devices:** Connect SATA data cables from your storage drives to the SATA ports on the motherboard.
- **Install Graphics Card:** Open the PCIe EZ-Latch on the primary PCIe 5.0 slot. Insert your graphics card firmly until it clicks into place. Secure the card with case screws. Connect PCIe power cables from your PSU to the graphics card.
- **Connect Wi-Fi Antenna:** Attach the included Wi-Fi antenna to the rear I/O panel's Wi-Fi connectors.

Operating Your Motherboard

- **First Boot:** After assembly, connect your monitor, keyboard, and mouse. Power on the system. The EZ-Debug Zone LEDs will indicate the boot status.
- **BIOS/UEFI Setup:** Press the designated key (usually DEL or F2) during startup to enter the BIOS/UEFI. Configure boot order, enable XMP for RAM, and adjust other settings as needed.
- **Driver Installation:** Install the latest drivers for your motherboard chipset, integrated graphics (if applicable), audio, LAN, and Wi-Fi from the GIGABYTE website or the provided support DVD/USB.
- **Operating System Installation:** Install your preferred operating system (e.g., Windows 11) following its installation guide.
- **AI TOP Utility Usage:** Once the OS is installed, download and install the GIGABYTE AI TOP Utility. Refer to the utility's interface for creating and fine-tuning your AI models.

Maintenance

- **Keep Drivers Updated:** Regularly check the GIGABYTE website for the latest BIOS updates and drivers to ensure optimal performance and stability.
- **Dust Removal:** Periodically clean dust from the motherboard, CPU cooler, and case fans using compressed air. Ensure the system is powered off and unplugged before cleaning.
- **Thermal Management:** Monitor system temperatures using monitoring software. Ensure proper airflow within the case and that all fans are functioning correctly.
- **BIOS Backup:** Utilize the Q-Flash Plus feature to back up your BIOS settings before major updates or changes.

Troubleshooting Common Issues

- **No Display:**
  - Check all power connections (24-pin, 8-pin CPU, GPU PCIe power).
  - Ensure RAM modules are properly seated in the correct slots.
  - Verify monitor cable connection and input source.
  - If using a dedicated GPU, ensure the monitor is connected to the GPU, not the motherboard's integrated graphics ports.
- **System Not Booting (EZ-Debug Zone):**
  - Observe the EZ-Debug Zone LEDs. Each LED corresponds to a component (CPU, DRAM, VGA, BOOT). The lit LED indicates the component causing the boot failure.
  - Consult the user manual for specific debug codes displayed on the Debug 80 port.
- **Overheating:**
  - Check CPU cooler installation and thermal paste.
  - Ensure case fans are properly installed and spinning.
  - Verify M.2 thermal guards are correctly installed on SSDs.
  - Clean dust from heatsinks and fans.
- **Intermittent Issues/Crashes:**
  - Ensure all drivers are up to date.
  - Check RAM stability (e.g., run memory diagnostic tools).
  - Verify power supply stability.
  - Reset BIOS to default settings if recent changes caused instability.

Technical Specifications

Feature	Specification
Brand	GIGABYTE
Model Name	Z890 AI TOP
CPU Socket	Intel LGA 1851
Compatible Processors	Supports Intel Core Ultra Processors (Series 2)
Chipset Type	Intel Z890

RAM Memory Technology	DDR5
Memory Speed	5600 MHz (Base)
Main Power Connector	24-Pin
Item Weight	7.75 pounds
Package Dimensions	14.74 x 13.16 x 3.78 inches
Color	Black
Country of Origin	China
Platform	Windows, Windows 11

Support & Warranty Information

For detailed support, including drivers, utilities, and further troubleshooting, please refer to the official GIGABYTE website.

A comprehensive User Manual (PDF) is available for download: GIGABYTE Z890 AI TOP User Manual

Warranty information is typically provided with the product packaging or can be found on the official GIGABYTE support website. Please retain your proof of purchase for warranty claims.

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.

Name

Anonymous

Email

you@example.com

After a successful submission, we securely hash the supplied account or form email before sending it to Microsoft Advertising for conversion attribution. Privacy details.

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