GIGABYTE X870E AORUS PRO ICE

GIGABYTE X870E AORUS PRO ICE Motherboard User Manual

Model: X870E AORUS PRO ICE
Brand: GIGABYTE

1. Introduction

This manual provides comprehensive instructions for the installation, operation, and maintenance of your GIGABYTE X870E AORUS PRO ICE AMD AM5 LGA 1718 Motherboard. Please read this manual thoroughly before proceeding with installation to ensure proper setup and optimal performance.

The GIGABYTE X870E AORUS PRO ICE motherboard is designed to support AMD Ryzen 9000, 8000, and 7000 Series Processors, offering unparalleled performance for modern computing needs. It features advanced power delivery, high-speed storage options, and robust connectivity to optimize your system's capabilities.

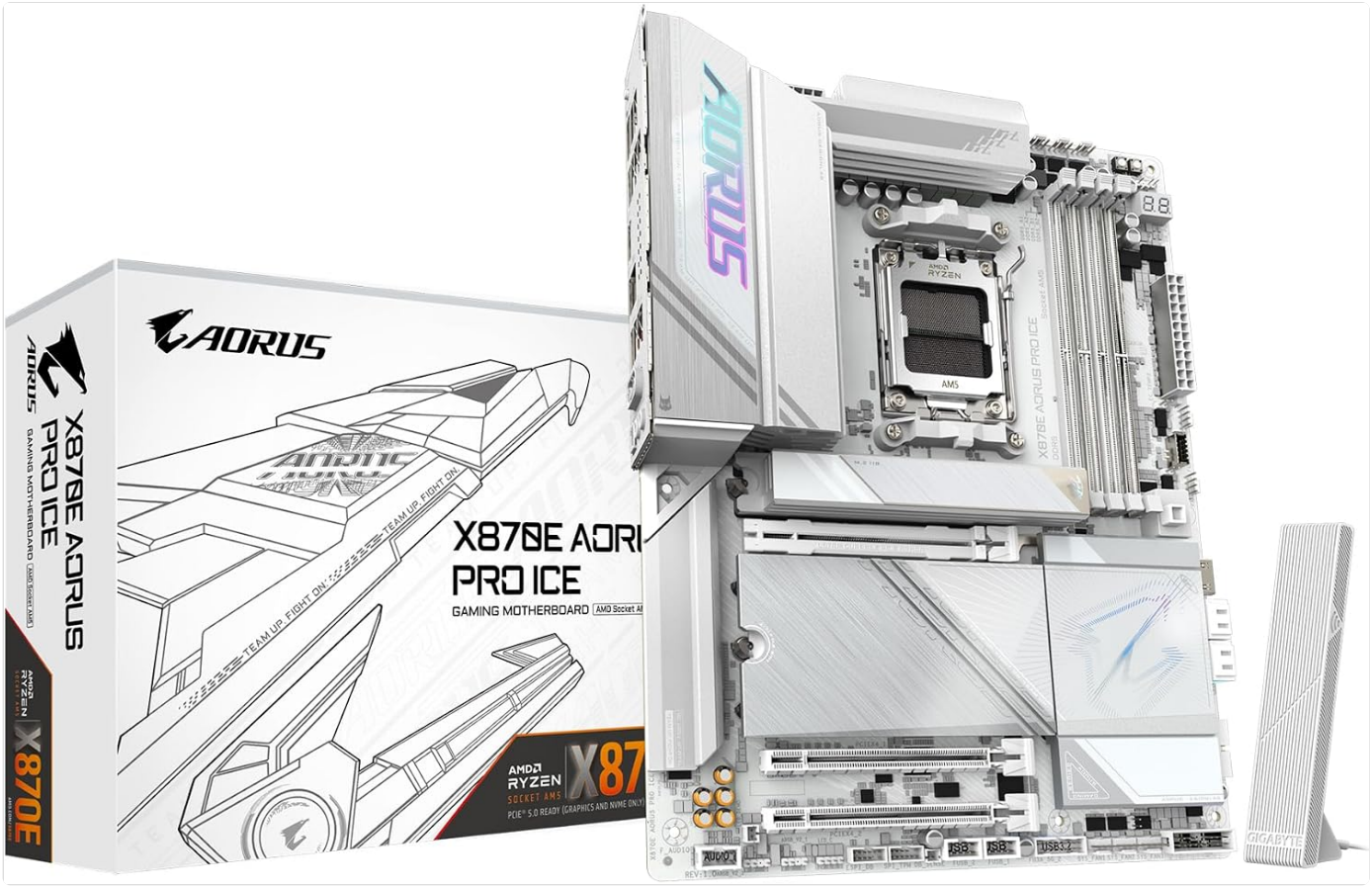


Figure 1.1: GIGABYTE X870E AORUS PRO ICE Motherboard with its retail packaging.

Key Features:

- **AMD Socket AM5:** Supports AMD Ryzen 9000 / Ryzen 8000 / Ryzen 7000 Series Processors.
- **DDR5 Compatible:** 4 x DIMMs with AMD EXPO Support for high-speed memory.
- **Robust Power Design:** 16+2+2 phase, 80A Smart Power Stage for stable power delivery.
- **Advanced Thermals:** VRM and M.2 Thermal Guard for efficient heat dissipation.
- **Comprehensive Connectivity:** PCIe 5.0, 4x M.2 Slots, Dual USB4, Front and Rear USB-C, Sensor Panel Link, WIFI7, 2.5GbE LAN.

2. Setup and Installation

This section guides you through the physical installation of the motherboard and its primary components.

2.1 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 with appropriate standoffs installed for ATX form factor.

2.2 Motherboard Layout and Components

Familiarize yourself with the various connectors and slots on the motherboard.



Figure 2.1: Top-down view of the motherboard, highlighting key component locations.

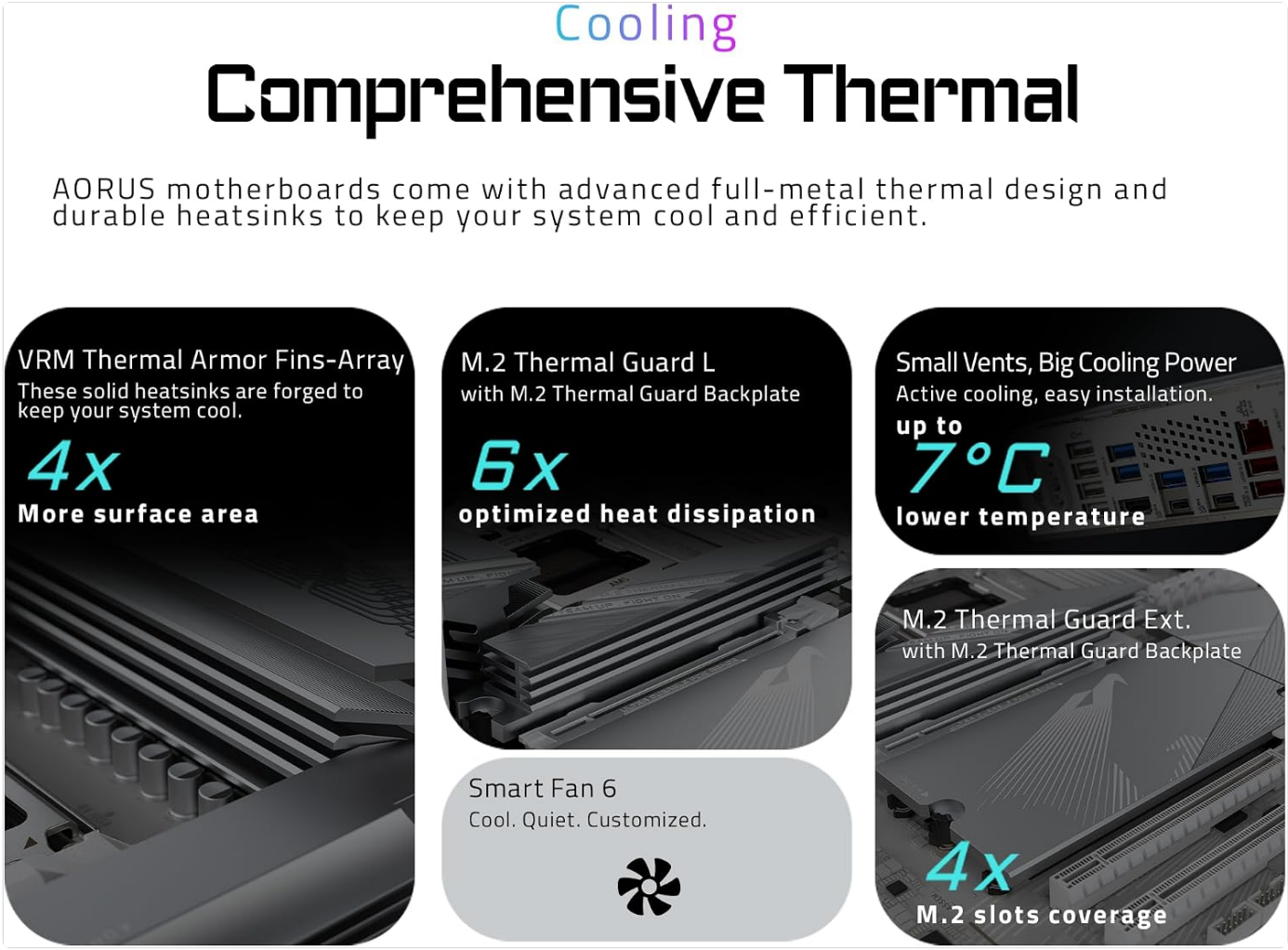


Figure 2.2: Rear Input/Output (I/O) panel, showing various ports including USB, HDMI, and LAN.

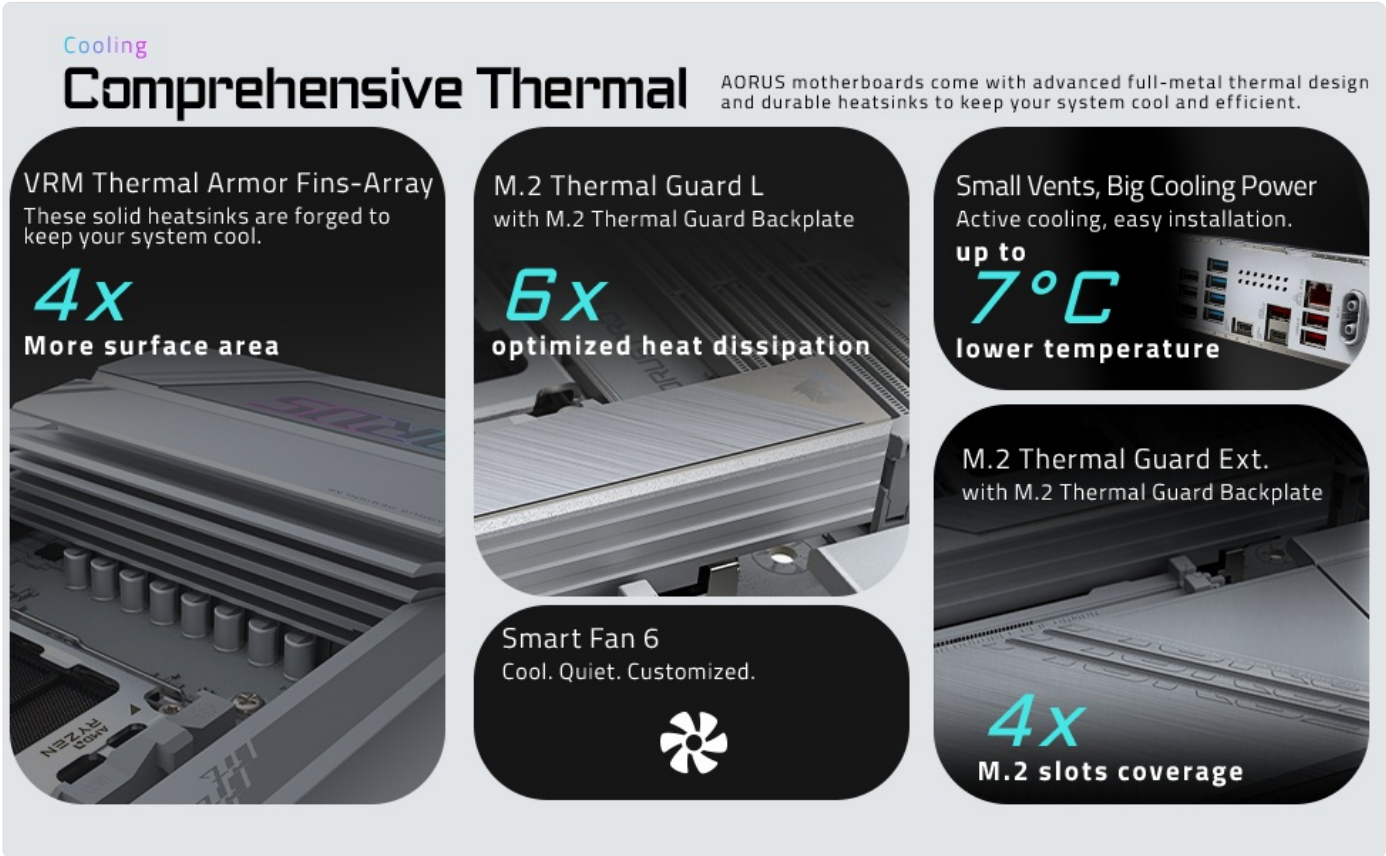


Figure 2.3: Features designed for easy assembly, including EZ-Latch designs and WIFI EZ-Plug.

2.3 Step-by-Step Installation

1. **Install CPU:** Carefully open the CPU socket lever, align the CPU with the triangle marker on the socket, gently place the CPU, and close the lever.
2. **Install CPU Cooler:** Follow the cooler manufacturer's instructions to install the CPU cooler. Ensure proper thermal paste application.
3. **Install RAM:** Open the DIMM slot clips, align the memory module notch with the slot key, and press down firmly on both ends until the clips snap into place.
4. **Install M.2 SSDs:** Locate the M.2 slots. Remove the M.2 Thermal Guard if present. Insert the M.2 SSD at an angle, then push it down and secure it with the EZ-Latch mechanism or screw. Reinstall the Thermal Guard.
5. **Mount Motherboard:** Carefully place the motherboard into the PC case, aligning it with the standoffs. Secure it with screws.
6. **Install Graphics Card (GPU):** Open the PCIe EZ-Latch Plus clip. Insert the graphics card into the PCIe 5.0 x16 slot until it clicks into place. Secure it with a case screw.
7. **Connect Power Cables:** Connect the 24-pin ATX main power connector and the 8-pin/4-pin CPU power connectors from your PSU to the motherboard.
8. **Connect Front Panel Cables:** Connect the power button, reset button, USB ports, audio jacks, and LED indicators from your PC case to the corresponding headers on the motherboard. Refer to the motherboard manual for exact header locations.
9. **Connect Storage Drives:** Connect SATA data cables from your SSDs/HDDs to the SATA ports on the motherboard. Connect SATA power cables from your PSU to the drives.
10. **Connect Case Fans:** Connect case fans to the fan headers on the motherboard.

3. Operating Instructions

This section covers initial boot-up and essential software setup.

3.1 First Boot-Up

- After connecting all components and peripherals, connect your monitor, keyboard, and mouse.
- Power on your system. The system should display the GIGABYTE splash screen.
- Press the `DEL` key repeatedly during startup to enter the BIOS/UEFI setup utility.

3.2 BIOS/UEFI Setup

The BIOS/UEFI allows you to configure system settings, boot order, and hardware parameters.

- **Set Boot Order:** Configure the boot priority to your desired operating system installation media (USB drive or DVD).
- **Enable AMD EXPO:** For optimal DDR5 memory performance, enable the AMD EXPO profile in the BIOS. This can be found in the "Tweaker" or "Advanced Memory Settings" section.
- **Save and Exit:** After making changes, save your settings and exit the BIOS. The system will restart.

3.3 Operating System and Driver Installation

- Install your preferred operating system (e.g., Windows 10/11) by following the on-screen prompts.
- After OS installation, install the latest drivers for your motherboard components. These can be found on the official GIGABYTE website for your specific model. Essential drivers include:
  - Chipset Drivers
  - LAN Drivers (2.5GbE)

- Wi-Fi 7 Drivers
- Audio Drivers
- USB Drivers

- Install GIGABYTE utilities such as GIGABYTE Control Center for system monitoring and customization.



Figure 3.1: AORUS AI SNATCH feature, enabling one-click performance optimization for DDR5 memory and overall system.

4. Maintenance

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

4.1 Cleaning

- Periodically clean dust from the motherboard and components using compressed air.
- Ensure the system is powered off and unplugged before cleaning.
- Pay attention to heatsinks and fan blades to prevent dust buildup, which can impede cooling.

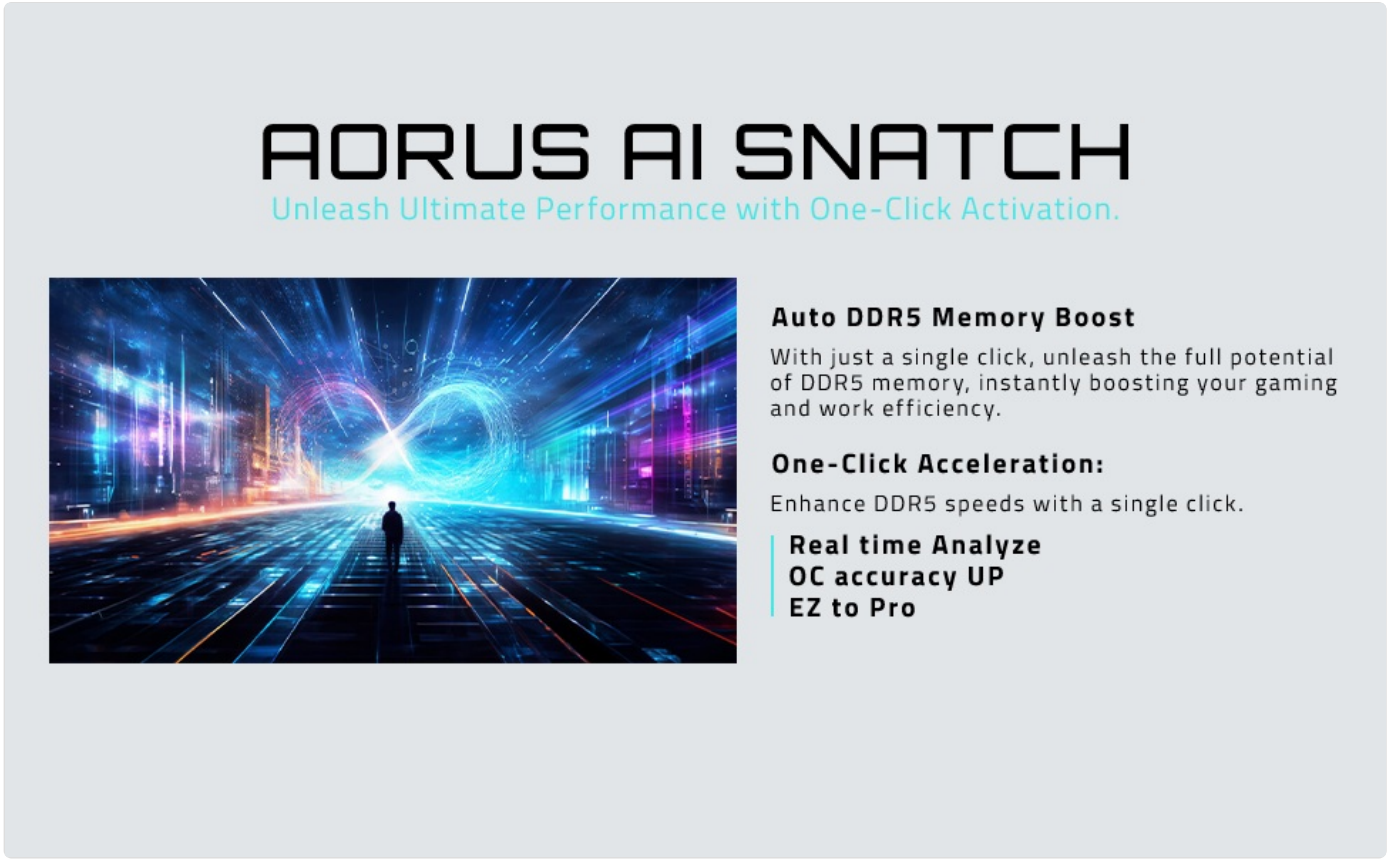


Figure 4.1: Overview of the comprehensive thermal design, including VRM Thermal Armor and M.2 Thermal Guards, which benefit from regular cleaning.

4.2 BIOS Updates

- Check the GIGABYTE website regularly for BIOS updates. Updates can improve compatibility, stability, and performance.
- Use the Q-Flash or Q-Flash Plus utility for safe BIOS updates. Follow the instructions provided by GIGABYTE carefully.
- Do not power off or restart your system during a BIOS update.

4.3 Driver Updates

- Keep your drivers updated to ensure optimal performance and compatibility with new software and hardware.
- Download drivers only from the official GIGABYTE website or trusted component manufacturers (e.g., AMD for chipset drivers).

5. Troubleshooting

This section provides solutions to common issues you might encounter.

5.1 Common Issues and Solutions

Problem	Possible Cause	Solution
No Power / System Not Turning On	Loose power cables, faulty PSU, incorrect front panel connections.	Check all power connections (24-pin ATX, CPU power). Verify front panel header connections. Test PSU if possible.

Problem	Possible Cause	Solution
No Display Output	GPU not seated correctly, monitor cable issues, incorrect display output selected.	Reseat GPU. Check monitor cable connections. Ensure monitor is on correct input. Test with integrated graphics if available.
System Instability / Crashes	Overheating, unstable RAM settings, outdated drivers, faulty components.	Monitor temperatures. Ensure AMD EXPO is stable or disable it. Update all drivers. Run memory diagnostic tests.
Boot Device Not Found	Incorrect boot order, loose SATA/M.2 connection, corrupted OS.	Check BIOS boot order. Reseat SATA/M.2 drives. Reinstall OS if necessary.

5.2 EZ Debug Zone

The motherboard features an EZ Debug Zone (LED indicators) that can help diagnose issues during boot-up. Refer to the motherboard's physical manual for specific LED codes.

6. Specifications

Detailed technical specifications for the GIGABYTE X870E AORUS PRO ICE Motherboard.

Feature	Specification
Brand	GIGABYTE
Model Name	X870E AORUS PRO ICE
CPU Socket	Socket AM5
Compatible Processors	AMD Ryzen 7000 series, AMD Ryzen 8000 series, AMD Ryzen 9000 series
Chipset Type	AMD X870E
RAM Memory Technology	DDR5
RAM Memory Maximum Size	256 GB
Memory Speed	5600 MHz (Base, higher with EXPO)
Product Dimensions (LxWxH)	13.4 x 10.8 x 3.3 inches
Item Weight	5.13 pounds
Color	Snow White
Platform	Windows 10, Windows 11
PCIe Slots	PCIe 5.0 support
M.2 Slots	4x M.2 Slots
USB Ports	Dual USB4, Front and Rear USB-C, USB 3.2 Gen 1/2, USB 2.0
LAN	2.5GbE LAN
Wireless Connectivity	WIFI7

7. Warranty and Support

Your GIGABYTE X870E AORUS PRO ICE Motherboard comes with a 5-Year Warranty, ensuring long-term reliability and peace of mind.

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

GIGABYTE Official Website

You can also find support resources and FAQs on the GIGABYTE AORUS support pages.

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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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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.

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