

ASUS B650E MAX GAMING WIFI AMD B650 Socket AM5 ATX

Model: 90MB1LD0-M0EAY0

Manufacturer: ASUS

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R3,837

ASUS B650E series motherboards are expertly engineered to unleash the full potential of AMD Ryzen 9000 & 8000 & 7000 Series processors. Boasting a robust power design, comprehensive cooling solutions and intelligent tuning options, B650E MAX GAMING WIFI provides users and PC DIY builders with a range of performance optimizations via intuitive software and firmware features. This platform delivers the power and connectivity that advanced AI PC applications demand.

FLEXIBILITY

Comprehensive controls form the foundation of the ASUS B650E series. The ASUS B650E motherboard packs flexible tools to tune every aspect of your system, enabling performance tweaks to perfectly match the way you work to maximize productivity.

Intelligent Control

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CPU Performance Boost

AMD Precision Boost Overdrive(PBO) pushes the CPU current and voltage budget to opportunistically increase performance. By aggressively tuning the PBO parameters, AMD‘s algorithm can leverage the motherboard’s robust power solution to ramp up performance even higher.

All-Around Energy Efficiency

The Power Saving function contains several settings can easily optimize power consumption and maximize energy savings. You can enable a CPU power limit, darken Aura lighting, and set the fan profile to a power saving mode. You can also toggle the Power Saver plan that is built into Microsoft Windows.

Flexible Air- and Liquid-Cooling Controls

ASUS Fan Xpert 2+ software provides comprehensive control over fans and all-in-one (AiO) coolers. Whether cooling with air or water, an Auto-Tuning mode intelligently configures all parameters with a single click. There’s also an Extreme Quiet mode that reduces chassis fan speeds to below the default minimum to keep your system whisper-quiet when performing light tasks. Fans, AiO coolers can also be controlled via the UEFI BIOS.

Precise Digital Power Control

The Digi+ voltage-regulator module (VRM) delivers real-time control over voltage droop, automatically switching frequency and power-efficiency settings. It also allows you to fine-tune your CPU for ultimate stability and performance.

UEFI BIOS

The renowned ASUS UEFI BIOS provides everything you need to configure, tweak and tune your system. It offers intelligently simplified options for PC DIY beginners, as well as comprehensive features for seasoned veterans.

Advanced Tuning for Serious Tweakers

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An intuitive Advanced mode offered via the UEFI lets you take complete control. A built-in search feature makes it easy to find options, and various advanced functions let you intelligently make nuanced adjustments so you can dial in performance just the way you want.

Quick and Simple Setup

EZ mode displays vital settings and stats and also offers guided wizards, drag-and-drop functionality, and one-click application of important settings — all to help you get your rig up and running in no time.

Intuitive Graphical Fan Control

Fine-tune individual fan settings simply by dragging a curve with the mouse.

Aura On/Off Mode (Stealth)

Easily enable or disable Aura RGB lighting or every onboard LED, for a subdued aesthetic touch.

COOLING

ASUS B650E series are engineered with multiple onboard heatsinks and an array of hybrid fan headers to ensure your rig stays cool and stable under intense workloads.

M.2 Heatsink

The M.2 heatsink is flexible, which can take care of the M.2_1 or M.2_2 slot, warding off throttling that can occur with M.2 storage during sustained transfers. The heatsink is held in place by captive screws.

VRM Heatsinks and Thermal Pads

VRM heatsinks and thermal pads improve heat transfer from the MOSFETs and chokes for better cooling performance.

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Cooler by Design

ASUS B650E series feature comprehensive cooling controls that are configurable via Fan Xpert 2+ software or via the UEFI BIOS.

Multiple Temperature Sources

Each header can dynamically reference three thermal sensors. Fan Xpert 2+ allows you to map the temperature of supported ASUS graphics cards to optimize cooling for GPU- and CPU-intensive tasks.

AIO Pump Header

A dedicated PWM/DC header for self-contained water-cooling setups.

Smart Protection

A dedicated integrated circuit protects each fan header from overheating and overcurrent.

4-Pin PWM/DC Fan

Each onboard header supports auto-detection of PWM or DC fans.

PERFORMANCE

The ASUS B650E series is built to handle the high core counts and bandwidth demands of AMD processors. ASUS B650 motherboard provides all the fundamentals to boost daily productivity, so your system will be ready for action with stable power, intuitive cooling and flexible data transfer options.

Robust Power Design

Stable power is essential to extract every last bit of performance out of AMD processors. The B650E MAX GAMING WIFI is geared to cater to the demands of these high-core-count CPUs.

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Digital Power Design

B650E MAX GAMING WIFI features an 8+2+1 phase power design with discrete MOSFETs, ensuring efficient and stable power delivery for AMD processors plus steady performance for day-to-day use.

Six-Layer PCB Design

Multiple PCB layers optimize heat management for critical components, providing more headroom to push CPUs beyond stock speeds.

Memory

DDR5 Performance Enhancement

Comprehensive memory tuning options are the cornerstone of B650E motherboards. With the B650E MAX GAMING WIFI, you can extract all of the potential out of your DDR5 modules, whether they're from an extreme-speed kit or an entry-level set that would otherwise be locked.

For entry-level modules without EXPO™ memory support, we’ve got you covered. Click here to learn more about AEMP. arrow.

For those who want to fly past stock DDR5 speeds, the B650E MAX GAMING WIFI is primed and ready for enthusiast-grade kits courtesy of vast AMD Extended Profiles for Overclocking (EXPO™) support. Seasoned veterans can further tweak performance via the extensive array of settings in the UEFI.

ASUS OptiMem II

Revisions to the motherboard’s trace routing provide the latest processors with unrestricted access to memory bandwidth. ASUS OptiMem II technology carefully maps memory signal pathways across different PCB layers to reduce vias and adds shielding zones that significantly reduce crosstalk.

Benefits of ASUS OptiMem II:

Improved memory stability and compatibility

Allows lower memory latencies at equivalent voltages

Improved memory frequency margin

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Motherboards with OptiMem II technology were tested with Synopsys HSPICE simulation software

Storage

PCIe 5.0 M.2 Support

B650E MAX GAMING WIFI offers a total of three M.2 slots, the first one supports data-transfer speeds of up to 128Gbps via PCIe 5.0, enabling quicker boot-up and app load times with OS or application drives.
* Actual transmission speeds will be lower than the theoretical maximum speed.

Connectivity

PCIe 5.0 Slot

B650E MAX GMING WIFI series motherboards offer PCIe 5.0 Slot connectivity for the latest GPUs. The wide bandwidth and superfast transmission speeds allow you to create feature-rich builds that can handle high loads effortlessly.

USB 10Gbps Type-C®

A batch of USB ports support high-end rigs loaded with peripherals, including a rear USB Type-C® connector with ultrafast USB 10Gbps for transmission speeds of up to 10Gbps.

USB4® Support

B650E MAX GAMING WIFI motherboard features USB4® support via a Thunderbolt™ (USB4®) header. With an ASUS add-on card*, ASUS motherboards can enable bi-directional speeds of up to 40 Gbps on a single cable, while providing power to fast-charge device. Additionally, this card has a daisy-chain function for multi-screen connection and supports up to dual displays with 4K resolution.
*ASUS add-on card is sold separately.

WiFi 6E

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Built-in WiFi 6E technology takes advantage of the newly available radio spectrum in the 6 GHz band. With triple the bandwidth of the 2.4/5/6 GHz band, WiFi 6E delivers ultrafast wireless networking speeds with improved capacity and better performance in dense wireless environments. *WiFi 6E availability and features are dependent on regulatory limitations and co-existence with 5 GHz WiFi.

Realtek 2.5Gb Ethernet

Realtek 2.5Gb Ethernet reduces CPU overhead and offers exceptionally high TCP and UDP throughput for faster, smoother data transfers.

LANGuard

ASUS LANGuard is a hardware-level network protection feature that integrates advanced signal-coupling technology and premium anti-EMI surface-mounted capacitors to improve throughput and ensure a more reliable connection.

Combined onboard features deliver elevated audio

Intelligent design and premium hardware create audio quality unlike anything you’ve ever experienced.

Audio Shielding

Audio shielding ensures precision analog/digital separation and greatly reduced multi-lateral interference.

Dedicated Audio PCB Layers

Separate layers for left and right tracks ensures both channels deliver consistent, equal quality.

Premium Audio Capacitors

Provides warm, natural, and immersive sound with exceptional clarity and fidelity.

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Aura Sync

Outshine the Competition

A well-tuned enthusiast system deserves a matching aesthetic. ASUS Aura offers full RGB lighting control with a variety of functional presets for the built-in RGB LEDs as well as strips and devices connected to the onboard RGB headers — and it can all be synced with an ever-growing portfolio of Aura-capable hardware.

Addressable RGB Gen 2 Headers

Three addressable RGB Gen 2 headers are capable of detecting the number of LEDs on second-gen addressable RGB devices, allowing the software to automatically tailor lighting effects to specific devices. The new headers also offer backward-compatibility with existing Aura RGB gear.

Armoury Crate

Within a single intuitive interface, Armoury Crate offers easily customized Aura Sync RGB settings for every compatible device in your arsenal , plus controls for an ever-growing family of ASUS products, including keyboard and mouse preferences. Armoury Crate also integrates product registration and a news feed so that you never miss updates of interest to the ASUS community.

Build for the most advanced pc for gaming and creating

When only the fastest will do, ASUS motherboards deliver. With faster dual-channel DDR5 memory support, AMD EXPO™ technology and PCIe® 5.0 support for both graphics and NVMe, you can play the most demanding games and deliver your biggest projects with the revolutionary performance of an ASUS motherboard and AMD Ryzen™ 9000, 8000, and 7000 Series processors.

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