ComX Computers
Product Specification Sheet

MB-GB650EAM+W

Gigabyte B650E Aorus Master AMD B650 Chipset AMD Ryzen AM5 Socket ATX Motherboard with WiFi

Product Overview

Gigabyte B650E Aorus Master + Wifi: AMD AM5 mb - with 16+2+2 phase digital VRM, AORUS animated display on the aluminum i/o cover, NanoCarbon aluminum backplate, Fins-Array III with NanoCarbon coating+8mm heatpipe, Addressable LED Strip Support



Specifications

Features:

Unparalleled Performance
With the fast-moving technology changes, GIGABYTE always follows the latest trends and provides customers with advanced features and latest technologies. GIGABYTE motherboards are equipped with upgraded power solution, latest storage standards and outstanding connectivity to enable optimized performance for gaming.

Twin Digital VRM Design
To ensure maximum Turbo Boost and overclocking performance of AMD's new generation CPU, GIGABYTE AORUS series motherboard equip the best VRM design ever built with the highest quality components.

Design Ready for PCIe 5.0
PCIe 5.0 Design supports double the bandwidth of PCIe 4.0 and ensures that compatible with cutting-edge SSDs and GPUs released in the next few years to their full capability.

Ultra Durable™ SMD PCIe 5.0 x4 M.2 Connector
The first PCIe 5.0 x4 M.2 Slot supports the latest M.2 25110 form factor. Reinforced PCIe 5.0 M.2 connectors with metal shielding to provide higher strength.

The New Generation Ultra Durable™ SMD PCIe 5.0 Armor
The new generation, GIGABYTE's exclusive stainless-steel PCI-e shielding becomes 20% wider providing reinforced tensile strength.

DDR5 EXPO & XMP Overclocking Up to 6600 and Beyond*
AORUS is offering a tested and proven platform that the memory overclocking capability is able up to 6600 and beyond. All

users need to do for achieving this extreme memory performance boost is to ensure that their DDR5 memory modules are AMD EXPO™/ Intel® XMP capable, the EXPO/XMP function is activated and enabled on their AORUS motherboard.

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Unlock DDR5 Voltage

- GIGABYTE exclusive circuit design unlocks Native DDR5 voltage control
- Transforms Native DDR5 memory module to Overclocked DDR5 memory
- Increases DDR5 memory overclocking performance and capability
- Supports all PMIC vendors for maximum compatibility

Programmable Mode
GIGABYTE's exclusive design unlocks Native DDR5 PMIC secure mode into programmable mode and control Native DDR5 voltage with wide range.

Ultra Durable™ SMD DDR5 Memory Armor
GIGABYTE's exclusive stainless steel shielding design.

Shielded Memory Routing
All memory routing is under the PCB inner layer shielded by a large ground layer to protect from external interference.

EXPO and XMP Dual Support
GIGABYTE AM5 MB supports both AMD EXPO™ and/or Intel® XMP overclocking memory modules for maximal compatibility. MB will automatically detect both profiles format in SPD, users can choose to enable one of profiles from BIOS menu and easily reach overclocked memory performance.

DDR5 Auto Booster
Automatically Boost the Native DDR5 frequency to 5000MHz while the system is under heavy loading by a single click.

AMD EXPO™ and Intel® XMP 3.0 User Profile
Define and create your own SPD profile into Native, EXPO and XMP 3.0 memory modules. One user-defined profile can be saved, loaded either locally or from/to an external storage device.
One empty SPD profile can be defined by users and carry to next computer
Quick memory performance simulation based on user input clock and timing parameters
Profile save and load function to share your memory parameters online

GIGABYTE Active OC Tuner
With GIGABYTE's exclusive Active OC Tuner BIOS function, CPU* can work with AMD P.B.O. for gaming and other light workload applications with the highest CPU boost clock, but when the applications require all CPU cores horsepower, it automatically switches to the Manual OC mode where it can utilize the high frequency for all the CPU cores. ?Active OC Tuner switches profile based on user scenario automatically ?6.8% performance increase

Outstanding Thermal Design
GIGABYTE Motherboards' unparalleled performance is guaranteed by innovative and optimized thermal design to ensure the best CPU, Chipset, SSD stability and low temperatures under full load application and gaming performance.

Fully Covered Thermal Design
High coverage MOSFET and integrated molding Heatsinks to improve thermal efficiency with better airflow and heat exchange.

M.2 Thermal Guard III
M.2 Thermal Guard III constructed with 9X optimized heat dissipation surface and double-sided M.2 heatsinks to prevent throttling and bottlenecks on high-speed/ large capacity of PCIe 5.0 M.2 SSDs.

8mm Mega-Heatpipe
8mm Mega-Heatpipe has 30% wider diameter than traditional 6mm heatpipe and is able to transfer more heat under same time period.

8-Layer & 2X Copper PCB
2X COPPER PCBs design effectively lower the component temperature by its high thermal conductivity and low impedance.

4X Large Surface
Increased surface area up to 4X larger compared to traditional heatsinks. It improves heat dissipation from the MOSFETs.

Real One-piece Build
TMOS is a TRUE single piece heatsink. Its one-piece design and larger surface drastically improve the cooling performance against competitors' multi-piece design.

Multi-Cut Design
TMOS features several channels and inlets on the heatsink. This design allows for the air flow to go through which leads to a great improvement of the heat transfer performance.

M.2 Thermal III
M.2 Thermal Guard III constructed with 9X optimized heat dissipation surface to prevent throttling and bottleneck that high-speed/ large capacity of PCIe 5.0 M.2 SSDs may cause, especially under heavy workload.The special design of heatsink grooves in the direction of CPU further enhances the in-chassis air flow and optimizes the heat convection efficiency.

SMART FAN 6
Smart Fan 6 contains several unique cooling features that ensure gaming PC maintain its performance while staying cool and quiet. Multiple fan headers can support PWM/DC fan and pump, and users can easily define each fan curve based on different temperature sensors across the board via intuitive user interface.

High Current Support
Each fan headers support PWM and DC fan and Water Cooling Pump , and up to 24W (12V x 2A) with Over-Current Protection

Precision Control
Multiple temperature/fan speed control points for precise fan curve

Dual Curve Mode
Slope/Stair dual mode for different user scenario

Fan Stop
Fan can stop completely below users' specified temperature point

Improve fan curve UI
We increase control points from 5 to 7 and larger fan speed graph for precise and easier fan curve control.

Slope/Stair dual graph mode
Fan curve can be quickly switch with Slope and Stair modes for different user scenario. Slope is traditional and intuitive linear fan speed curve. With newly added Stair non-linear mode, fan keeps at same speed between specified temperature interval.

Manual Input
For advanced users, we provide fan speed manual input for more precise control.

EZ Tuning
Use can place 4 EZ Tuning points at rough temperature/fan speed, and Smart Fan 6 can quickly generate a fan curve.

Fan curve profile
Fan curve profile can be saved in BIOS ROM, profile will be kept after updating BIOS.

Noise Detection
With the new Noise Detection function, you can monitor noise level of all devices including fans, CPU coolers, graphics card, etc. in real time, and you can determine how fast your fan speed needs to be. Our bundled Noise Detection cable doesn't include any sound recording function, it simply detects sound pressure while protecting your privacy.

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CONNECTIVITY
GIGABYTE Motherboards enable the ultimate connection experience with blazing data-transfer speeds through the next generation network, storage, and WIFI connectivity.

802.11ax Wi-Fi 6E
The latest Wireless solution 802.11ax Wi-Fi 6E with new dedicated 6GHz band, enables gigabit wireless performance, provides smooth video streaming, better gaming experience, few dropped connections and speeds up to 2.4Gbps. Moreover, Bluetooth 5 provides 4X range over BT 4.2 and with faster transmission.

First adopter on 2.5GbE LAN onboard

- Adoption of 2.5G LAN provide up to 2.5 GbE network connectivity, with at least 2X faster transfer speeds compared to general 1GbE networking, perfectly designed for gamers with ultimate online gaming experience.
- Support Multi-Gig(10/100/1000/2500Mbps) RJ-45 Ethernet

Connecting the Future - Front USB 3.2 Gen 2x2 Type-C®
Featuring the USB 3.2 Gen 2x2 design which is doubled the performance than previous generation of USB 3.2 Gen 2. It works up to 20Gbps ultra-fast data transfer while connecting to USB 3.2 compliant peripherals. Through the USB Type-C® connector, users can enjoy the flexibility of reversible connection to access and store massive amounts of data rapidly.

CONNECTING THE FUTURE - Rear USB3.2 Gen 2 Type-C®

AMD's native USB 3.2 Gen 2 provides USB 3.2 Gen 2 ports with speeds up to 10Gbps. With twice the bandwidth compared to its previous generation as well as backwards compatibility with USB 2.0 and USB 3.2 Gen1, the much improved USB 3.2 Gen 2 protocol is available over the new reversible USB Type-C™ and the traditional USB Type-A connector for better compatibility over a wider range of devices.

ESS SABRE reference DAC ES9118

- ESS SABRE reference DAC (ESS 9118)
- Hyperstream Dynamic Range (SNR 125dB)
- High-Res music (32bit, 192KHz PCM)
- Super low THD+N (THD+N -112db)

True High-Fidelity Music (Realtek ALC1220)
Paired with Realtek's latest ALC1220 Codec, playback for surround sound audio and DSD enabled music are easier than ever.

Audiophile Grade Capacitors (WIMA & Fine Gold)
To ensure a studio-quality experience, WIMA and Fine Gold capacitors are used to provide power to the overall system.

Precision Audio Stream (TXC OSCILLATOR)
Provides precise time triggers to Digital-Analog Converters. High resistance to corrosion and oxidation.

DTS :X® Ultra
Recreates an authentic, spatially accurate 3D audio experience for gaming over any headphones or speakers. Supports channel-based, scene based and object-based audio. Provides out-of-the-box calibration for a range of headphones and speakers. Provides post-processing enhancements and device level tuning for DTS® codecs. DTS Sound Unbound* leverage Microsoft Spatial, enabling the the most believable, 3D audio experience for games. Immersion through DTS Headphone:X means in the sonic landscape, stationary and moving sounds can be heard from above, below or around the listener. Sounds pass around the listener with amazing externalization and accurate localization.

Personalization
GIGABYTE motherboards bundle several useful and intuitive software to help users to control every aspect of motherboard and provide customizable lighting effect with outstanding aesthetics to fit your unique personality.

RGB Fusion Multi-Zone Light Show Design
Now offering more LED customizations than ever, users can truly adapt their PC to represent their lifestyle. With full RGB support and a redesigned RGB Fusion 2.0 application, the user has complete control over the LEDs which surround the motherboard.

Friendly User Interface
The EASY MODE shows important hardware information in one page including CPU clock, Memory, Storage, Fan.

My Favorites
Add constantly used items into the favorite menu for quick access.

Storage Information
Show all kinds of storage information including SATA, PCIE and M.2 interface.

Changelog
List all changes before saving and exiting bios. Quickly review overall settings modification.

Intuitive Load Line Curve
Clearly show each loadline calibration setting in an intuitive curve graph.

GIGABYTE CONTROL CENTER
GIGABYTE CONTROL CENTER (GCC) is a unified software for all GIGABYTE supported products. It provides newly designed intuitive user interface to control all essential function.

- Unified software platform for all Gigabyte supported products
- Intuitive user interface for an eased experience
- Modularized control components only for installed hardware
- Auto update function to keep system up to date and support future products

Multi-key
A multi-function reset button that can be reconfigured to other function in BIOS for different user scenarios.

RGB Switch
Turn off all lighting effect on motherboard.

Direct-To-BIOS
Boot into BIOS menu directly without pressing any keyboard button.

Safe Mode
Boot into BIOS safe mode to change specific option without losing other BIOS settings.

ULTRA DURABLE
GIGABYTE Ultra Durable™ design provides product durability and high-quality manufacturing process. GIGABYTE motherboards use the best components and reinforce every slots to make each of them solid and durable.

EZ-Latch Plus
With GIGABYTE EZ-Latch Plus, you can DIY your PC in no time, quick and easy.

Update the BIOS easily without installing the CPU, memory and graphics card.
With GIGABYTE Q-Flash Plus, you don't need to install the CPU, memory and graphics card nor enter the BIOS menu to flash the BIOS. Just download and save a new BIOS file (rename to gigabyte.bin) on the USB flash drive, then press the dedicated Q-Flash Plus button and you're good to go!

Specifications:

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Specifications	
Product Code	MB-GB650EAM+W
CPU	1. AMD Socket AM5, support for: AMD Ryzen 7000 Series Processors
Chipset	1. AMD B650

Memory	1. Support for DDR5 6600(OC) / 6400(OC) / 6200(OC) / 6000(OC) / 5600(OC) / 5200 / 4800 / 4400 MT/s memory modules
	2. 4 x DDR5 DIMM sockets supporting up to 128 GB (32 GB single DIMM capacity) of system memory
	3. Dual channel memory architecture
	4. Support for non-ECC Un-buffered DIMM 1Rx8/2Rx8/1Rx16 memory modules
	5. Support for AMD EXtended Profiles for Overclocking (AMD EXPO) and Extreme Memory Profile (XMP) memory modules
Onboard Graphics	Integrated Graphics Processor:
	1. 1 x HDMI port, supporting a maximum resolution of 7680x4320@60 Hz
	* Support for HDMI 2.1 version, HDCP 2.3, and HDR.
Audio	1. Realtek ALC1220-VB CODEC
	* The front panel line out jack supports DSD audio.
	2. ESS ES9118 DAC chip
	3. Support for DTS:X Ultra
	4. High Definition Audio
	5. 2/4/5.1-channel
	* You can change the functionality of an audio jack using the audio software. To configure 5.1-channel audio, access the audio software for audio settings.
	6. Support for S/PDIF Out
LAN	1. Intel 2.5GbE LAN chip (2.5 Gbps/1 Gbps/100 Mbps)
Wireless Communication module	AMD Wi-Fi 6E RZ616 (MT7922A22M)
	1. WIFI a, b, g, n, ac, ax, supporting 2.4/5/6 GHz carrier frequency bands
	2. BLUETOOTH 5.2
	3. Support for 11ax 160MHz wireless standard and up to 2.4 Gbps data rate
	(Actual data rate may vary depending on environment and equipment.)
Expansion Slots	CPU:
	1. 1 x PCI Express x16 slot, supporting PCIe 5.0* and running at x16 (PCIEX16)
	* Actual support may vary by CPU.
	* The M2B_CPU and M2C_CPU slots share bandwidth with the PCIEX16 slot. When the M2B_CPU or M2C_CPU slot is populated, the PCIEX16 slot operates at up to x8 mode.
	* For optimum performance, if only one PCI Express graphics card is to be installed, be sure to install it in the PCIEX16 slot.
	Chipset:
	1. 1 x PCI Express x16 slot, supporting PCIe 4.0 and running at x4 (PCIEX4)
	2. 1 x PCI Express x16 slot, supporting PCIe 4.0 and running at x2 (PCIEX2)
	Support for AMD CrossFire technology (PCIEX16 and PCIEX4)

Storage Interface	CPU:
	1. 1 x M.2 connector (Socket 3, M key, type 25110/2280 PCIe 5.0* x4/x2 SSD support) (M2A_CPU)
	* Actual support may vary by CPU.
	2. 3 x M.2 connectors (Socket 3, M key, type 22110/2280 PCIe 5.0* x4/x2 SSD support) (M2D_CPU, M2C_CPU, M2B_CPU)
	* Actual support may vary by CPU.
	Chipset:
	1. 4 x SATA 6Gb/s connectors
	RAID 0, RAID 1, and RAID 10 support for NVMe SSD storage devices
	RAID 0, RAID 1, and RAID 10 support for SATA storage devices
USB	CPU:
	1. 1 x USB Type-C port on the back panel, with USB 3.2 Gen 2 support
	2. 2 x USB 3.2 Gen 2 Type-A ports (red) on the back panel
	CPU+USB 3.2 Gen 1 Hub:
	1. 4 x USB 3.2 Gen 1 ports on the back panel
	CPU + USB 2.0 Hub:
	1. 4 x USB 2.0/1.1 ports on the back panel
	Chipset:
	1. 1 x USB Type-C port with USB 3.2 Gen 2x2 support, available through the internal USB header
	2. 2 x USB 3.2 Gen 2 Type-A ports (red) on the back panel
	3. 2 x USB 3.2 Gen 1 ports available through the internal USB header
	4. 4 x USB 2.0/1.1 ports available through the internal USB headers

Internal I/O Connectors	1. 1 x 24-pin ATX main power connector
	2. 2 x 8-pin ATX 12V power connectors
	3. 1 x CPU fan header
	4. 1 x water cooling CPU fan header
	5. 4 x system fan headers
	6. 4 x system fan/water cooling pump headers
	7. 2 x addressable LED strip headers
	8. 2 x RGB LED strip headers
	9. 1 x CPU cooler LED strip/RGB LED strip header
	10. 4 x M.2 Socket 3 connectors
	11. 4 x SATA 6Gb/s connectors
	12. 1 x front panel header
	13. 1 x front panel audio header
	14. 1 x USB Type-C header, with USB 3.2 Gen 2x2 support
	15. 1 x USB 3.2 Gen 1 header
	16. 2 x USB 2.0/1.1 headers
	17. 1 x noise detection header
	18. 1 x THB_U4 add-in card connector
	19. 1 x Trusted Platform Module header (For the GC-TPM2.0 SPI/GC-TPM2.0 SPI
	2.0 module only)
	20. 1 x power button
	21. 1 x reset button
	22. 2 x temperature sensor headers
	23. 1 x reset jumper
	24. 1 x Clear CMOS jumper
Back Panel Connectors	1. 1 x Q-Flash Plus button
	2. 1 x Clear CMOS button
	3. 1 x HDMI 2.1 port
	4. 2 x SMA antenna connectors (2T2R)
	5. 1 x USB Type-C port on the back panel, with USB 3.2 Gen 2 support
	6. 4 x USB 3.2 Gen 2 Type-A ports (red)
	7. 4 x USB 3.2 Gen 1 ports
	8. 4 x USB 2.0/1.1 ports
	9. 1 x RJ-45 port
	10. 1 x optical S/PDIF Out connector
	11. 2 x audio jacks
I/O Controller	1. iTE I/O Controller Chip

H/W Monitoring	1. Voltage detection
	2. Temperature detection
	3. Fan speed detection
	4. Water cooling flow rate detection
	5. Fan fail warning
	6. Fan speed control
	* Whether the fan (pump) speed control function is supported will depend on the fan (pump) you install.
	7. Noise detection
BIOS	1. 1 x 256 Mbit flash
	2. Use of licensed AMI UEFI BIOS
	3. PnP 1.0a, DMI 2.7, WfM 2.0, SM BIOS 2.7, ACPI 5.0
Unique Features	1. Support for GIGABYTE Control Center (GCC)
	* Available applications in GCC may vary by motherboard model. Supported functions of each application may also vary depending on motherboard specifications.
	2. Support for Q-Flash
	3. Support for Q-Flash Plus
Bundled Software	1. Norton Internet Security (OEM version)
	2. LAN bandwidth management software
Operating System	1. Support for Windows 11 64-bit
	2. Support for Windows 10 64-bit
Form Factor	1. ATX Form Factor; 30.5cm x 24.4cm

Product Information Online

For the latest product information, availability and purchasing details, please visit the product page:

Product page:
https://www.comx-computers.co.za/MB-GB650EAM-W-Gigabyte-B650E-Aorus-Master-AMD-B650-Chipset-AMD-Ryzen-AM5-Socket-ATX-p-273495.php

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