ComX Computers
Product Specification Sheet

MB-GB650iAU+W

Gigabyte B650i Aorus Ultra iTX AMD B650 Chipset Ryzen AM5 Socket Mini-ITX Motherboard with WiFi

Product Overview

Gigabyte B650i Aorus Ultra iTX + Wifi: AMD AM5 mb - with 8+2+1 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:

- AMD Socket AM5:Supports AMD Ryzen™ 7000 / Ryzen™ 8000 / Ryzen™ 9000 Series Processors
- Unparalleled Performance:Direct 8+2+1 Phases Digital VRM Solution
- Dual Channel DDR5:2*SMD DIMMs with AMD EXPO™ & Intel® XMP Memory Module Support
- Next Generation Storage:1*PCIe 5.0 x4 and 2*PCIe 4.0 x4 M.2 Connectors
- Fully Covered Heatpipe & M.2 Thermal Guard III with Active Cooling:To Ensure 2280 PCIe 5.0 M.2 SSD Performance
- EZ-Latch:PCIe x16 Slot & M.2 Connectors with Quick Release & Screwless Design
- Hi-Fi Audio with DTS:X® Ultra:ALC4080 CODEC
- Fast Networks:Intel® 2.5GbE LAN & Wi-Fi 6E 802.11ax
- Extended Connectivity:DP, HDMI, Rear USB-C® with DP Alt Mode, Front USB-C® 20Gb/s
- Q-Flash Plus:Update BIOS Without Installing the CPU, Memory and Graphics Card

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.

Direct 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.

PCIe 5.0 x4 M.2 Connector
The PCIe 5.0 x4 M.2 Slot supports the latest M.2 2280 form factor.

DDR5 EXPO & XMP Overclocking Up to 7200 and Beyond*
AORUS is offering a tested and proven platform that the memory overclocking capability is able up to 7200 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.

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.

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.

Thermal Design

- Fully Covered Thermal Design
- M.2 Thermal Guard III with Active Cooling
- 12-Layer & 2X Copper PCB Coating
- Hybrid PCH & M.2 Heatsink
- NanoCarbon Baseplate

M.2 Thermal Guard III with Active Cooling
M.2 Thermal Guard III with Active Cooling constructed with 6X optimized heat dissipation surface to prevent throttling and bottleneck that high-speed/ large capacity of 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.

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

Smart Antenna
2X signal strength compared to traditional antenna design.
AORUS Antenna with smart antenna function for the best WIFI signal transmitting.

Wi-Fi 6E bring you the Ultimate VR experience!
Wi-Fi 6E brings faster Wi-Fi speeds, lower latency, and better battery life for VR devices, which means streaming VR games wirelessly from your PC to your VR device offers a lot smoother and has higher quality video.

Wi-Fi 6E compared to Wi-Fi 5 provide…

- 40% faster speed for smoother gaming/streaming experience
- 50% higher resolution for video game related content
- Better battery life for VR devices

Wi-Fi 6E Advantage
Spectrum congestion is huge problem in current Wi-Fi environment nowadays because too many devices all use existing 2.4GHz and 5GHz spectrum, and it cause unreliable connection and slower speed. Wi-Fi 6E is extended standard to Wi-Fi 6, and it use dedicated 6GHz band that it provides not only brand new frequency to transfer data, but also spacious spectrum for future more devices. With Wi-Fi 6E, users can enjoy faster connection and stronger signal than before.

2X Faster than ever

- 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.

Rear USB 3.2 Gen 2 Type-C® with DisplayPort™ Alternate Mode
DisplayPort™ over USB Type-C® enables the delivery of full DisplayPort A/V performance (driving monitor resolutions of 4K and beyond), SuperSpeed USB (USB 3.2 Gen 2) 10Gbps data transition and power delivery with the convenience of reversible plug orientation and cable direction.

True High-Fidelity Music (Realtek ALC4080)
Paired with Realtek's latest ALC4080 Codec, playback for surround sound audio and DSD enabled music are easier than ever.

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.

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

PCIe EZ-Latch
Unlock the latch of the PCIe slot easily when remove the graphics card in the PCIe slot.

Q-Flash Plus
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-GB650iAU+W
CPU	AMD Socket AM5, support for: AMD Ryzen 7000 / Ryzen 8000 / Ryzen 9000 Series Processors
Chipset	AMD B650
Memory	Support for DDR5 7200(OC)/ 7000(OC)/ 6800(OC)/ 6400(OC) / 6200(OC) / 6000(OC) / 5600(OC) / 5200 / 4800 / 4400 MT/s memory modules)
	2 x DDR5 DIMM sockets supporting up to 128 GB (64 GB single DIMM capacity) of system memory
	Dual channel memory architecture
	Support for non-ECC Un-buffered DIMM 1Rx8/2Rx8/1Rx16 memory modules
	Support for AMD EXtended Profiles for Overclocking (AMD EXPO) and Extreme Memory Profile (XMP) memory modules
	(The CPU and memory configuration may affect the supported memory types, data rate (speed), and number of DRAM modules

Onboard Graphics	Integrated Graphics Processor with AMD Radeon Graphics support:
	1 x DisplayPort, supporting a maximum resolution of 3840x2160@144 Hz
	* Support for DisplayPort 1.4 version and HDR.
	1 x USB Type-C port, supporting USB 3.2 Gen 2 and DisplayPort video outputs and a maximum resolution of 3840x2160@144 Hz
	* Support for DisplayPort 1.4 version and HDR.
	1 x HDMI port, supporting a maximum resolution of 7680x4320@60 Hz
	* Support for HDMI 2.1 version and HDCP 2.3.
	** Support native HDMI 2.1 TMDS compatible ports.
	(Graphics specifications may vary depending on CPU support.)
Audio	Realtek ALC4080 CODEC
	High Definition Audio
	2-channel
LAN	Intel 2.5GbE LAN chip (2.5 Gbps/1 Gbps/100 Mbps)
Wireless Communication module	AMD Wi-Fi 6E RZ616 (MT7922A22M) (PCB rev. 1.0)
	WIFI a, b, g, n, ac, ax, supporting 2.4/5/6 GHz carrier frequency bands
	BLUETOOTH 5.2
	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	1 x PCI Express x16 slot, integrated in the CPU:
	AMD Ryzen 7000/9000 Series Processors support PCIe 4.0 x16 mode
	AMD Ryzen 8000 Series-Phoenix 1 Processors support PCIe 4.0 x8 mode
	AMD Ryzen 8000 Series-Phoenix 2 Processors support PCIe 4.0 x4 mode
	* The PCIEX16 slot can only support a graphics card or an NVMe SSD.
Storage Interface	1 x M.2 connector on the front of GC-B650I BTB PLUG (M2B_CPU), integrated in the CPU, supporting Socket 3, M key, type 2280 SSDs:
	AMD Ryzen 7000/9000 Series Processors support PCIe 5.0 x4/x2 SSD
	AMD Ryzen 8000 Series-Phoenix 1 Processors support PCIe 4.0 x4/x2 SSD
	AMD Ryzen 8000 Series-Phoenix 2 Processors support PCIe 4.0 x2 SSD
	1 x M.2 connector on the back of GC-B650I BTB PLUG (M2A_CPU), integrated in the CPU, supporting Socket 3, M key, type 2280/2260 SSDs:
	AMD Ryzen 7000/9000 Series Processors support PCIe 4.0 x4/x2 SSD
	AMD Ryzen 8000 Series-Phoenix 1 Processors support PCIe 4.0 x4/x2 SSD
	AMD Ryzen 8000 Series-Phoenix 2 Processors support PCIe 4.0 x4/x2 SSD
	1 x M.2 connector on the back of the motherboard (M2C_SB), integrated in the Chipset, supporting Socket 3, M key, type 2280 PCIe 4.0 x4/x2 SSD
	4 x SATA 6Gb/s connectors on the front of GC-B650I FRONT CARD
	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
CPU:
1 x USB Type-C port on the back panel, with USB 3.2 Gen 2 support
2 x USB 3.2 Gen 2 Type-A ports (red) on the back panel
CPU + USB 2.0 Hub:
1. 4 x USB 2.0/1.1 ports available through the F_USB header on the front of GC-B650I BTB PLUG
Chipset:
1 x USB Type-C port with USB 3.2 Gen 2x2 support, available through the internal USB header
4 x USB 3.2 Gen 1 ports (2 ports on the back panel, 2 ports available through the internal USB header)
2 x USB 2.0/1.1 ports on the back panel
1 x 24-pin ATX main power connector
1 x 8-pin ATX 12V power connector
1 x CPU fan header
1 x CPU fan/water cooling pump header
1 x system fan header (SYS_FAN1(Note 1))
1 x addressable LED strip header(Note 2)
1 x RGB LED strip header(Note 1)
3 x M.2 Socket 3 connectors (M2B_CPU(Note 2)/M2A_CPU(Note 3)/M2C_SB(Note 4))
4 x SATA 6Gb/s connectors(Note 1)
1 x front panel header(Note 1)
1 x front panel audio header (routed from the adapter card on the rear panel)
1 x USB Type-C header, with USB 3.2 Gen 2x2 support
1 x USB 3.2 Gen 1 header
1 x USB 2.0/1.1 header(Note 2)
1 x reset button(Note 2)
1 x reset jumper
1 x power switch jumper
1 x Clear CMOS jumper
(Note 1) The connector is on the front of GC-B650I FRONT CARD.
(Note 2) The connector is on the front of GC-B650I BTB PLUG.
(Note 3) The connector is on the back of GC-B650I BTB PLUG.
(Note 4) The connector is on the back of the motherboard.
1 x DisplayPort
1 x HDMI port
1 x USB Type-C port (DisplayPort), with USB 3.2 Gen 2 support

2 x USB 3.2 Gen 2 Type-A ports (red)
2 x USB 3.2 Gen 1 ports
2 x USB 2.0/1.1 ports
1 x RJ-45 port
2 x SMA antenna connectors (2T2R)
1 x Q-Flash Plus button
2 x audio jacks
* Actual support may vary by CPU.
iTE I/O Controller Chip
Voltage detection
Temperature detection
Fan speed detection
Water cooling flow rate detection
Fan fail warning
Fan speed control
* Whether the fan (pump) speed control function is supported will depend on the fan(pump) you install.
1 x 256 Mbit flash
Use of licensed AMI UEFI BIOS
PnP 1.0a, DMI 2.7, WfM 2.0, SM BIOS 2.7, ACPI 5.0
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.
Support for Q-Flash
Support for Q-Flash Plus
Norton Internet Security (OEM version)
LAN bandwidth management software
Support for Windows 11 64-bit
Support for Windows 10 64-bit
Mini-ITX Form Factor; 17.0cm x 17.0cm

Internal I/O Connectors	1 x 24-pin ATX main power connector
	1 x 8-pin ATX 12V power connector
	1 x CPU fan header
	1 x CPU fan/water cooling pump header
	1 x system fan header (SYS_FAN1(Note 1))
	1 x addressable LED strip header(Note 2)
	1 x RGB LED strip header(Note 1)
	3 x M.2 Socket 3 connectors (M2B_CPU(Note 2)/M2A_CPU(Note 3)/M2C_SB(Note 4))
	4 x SATA 6Gb/s connectors(Note 1)
	1 x front panel header(Note 1)
	1 x front panel audio header (routed from the adapter card on the rear panel)
	1 x USB Type-C header, with USB 3.2 Gen 2x2 support
	1 x USB 3.2 Gen 1 header
	1 x USB 2.0/1.1 header(Note 2)
	1 x reset button(Note 2)
	1 x reset jumper
	1 x power switch jumper
	1 x Clear CMOS jumper
	(Note 1) The connector is on the front of GC-B650I FRONT CARD.
	(Note 2) The connector is on the front of GC-B650I BTB PLUG.
	(Note 3) The connector is on the back of GC-B650I BTB PLUG.
	(Note 4) The connector is on the back of the motherboard.
Back Panel Connectors	1. 1 x DisplayPort
	2. 1 x HDMI port
	3. 1 x USB Type-C port (DisplayPort), with USB 3.2 Gen 2 support
	4. 2 x USB 3.2 Gen 2 Type-A ports (red)
	5. 2 x USB 3.2 Gen 1 ports
	6. 2 x USB 2.0/1.1 ports
	7. 1 x RJ-45 port
	8. 2 x SMA antenna connectors (2T2R)
	9. 1 x Q-Flash Plus button
	10. 2 x audio jacks
	* Actual support may vary by CPU.
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.
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. Mini-ITX Form Factor; 17.0cm x 17.0cm

Product Information Online

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

Product page:
https://www.comx.co.za/MB-GB650iAU-W-Gigabyte-B650i-Aorus-Ultra-iTX-AMD-B650-Chipset-Ryzen-AM5-Socket-Mini-p-320196.php

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