ASRock

Z890 TAICHI AQUA

intel CORE ULTRA — Supports Intel® Core™ Ultra processors (Series 2) | intel CHIPSET Z890 | WiFi 7 | THUNDERBOLT
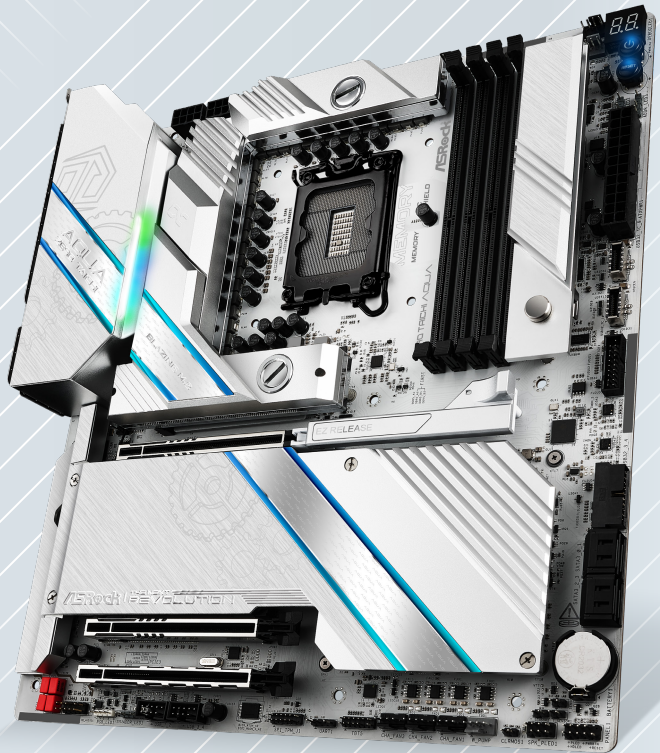
PRODUCT BRIEF :

- Supports Intel® Core™ Ultra Processors (Series 2) (LGA1851)
- 28+1+2+1+1 Power Phase, 110A SPS for VCore
- 4 x DDR5 DIMMs
  Supports Dual Channel, up to 9200+ (OC)
- 2 PCIe 5.0 x16, 1 PCIe 4.0 x16
- Graphics Output Options: 2 Thunderbolt™ 4 Type-C
- Realtek ALC4082 5.1 CH HD Audio Codec,
  ESS SABRE9219 DAC, WIMA Audio Cap, Nahimic Audio

- 4 SATA3
  2 Blazing M.2 (PCIe Gen5 x4)
  3 Hyper M.2 (PCIe Gen4 x4)
  1 Hyper M.2 (PCIe Gen4 x4 & SATA3)
- 2 Thunderbolt™ 4 Type-C (Rear)
  2 USB 3.2 Gen2x2 Type-C (Front)
  4 USB 3.2 Gen2 Type-C (Rear)
  4 USB 3.2 Gen1 Type-C (Rear)
  4 USB 3.2 Gen1 Type-A (Front)
  4 USB 2.0 (Front)

- Marvell 10Gbps LAN, 5Gbps LAN
- Killer 802.11be Wi-Fi 7 + Bluetooth
- Supports Memory OC Shield,
  20K Caps with 1000uF Capacitance,
  EZ Release Design

I/O OVERVIEW

28+1+2+1+1 Power Phase Design
Vcore with SPS design, Delivering smoother and neater power to the CPU.

SPS Dr.Mos

28 110A SPS VCORE PHASE

Unique Cooling Blocks (VRM, Gen5 SSD)
Staying cool with this hybrid thermal design. Choose your way to chill.

COLLABORATION WITH alphaCOOL

INDIVIDUAL WATER BLOCKS FOR VRM AND M.2

THE FIRST DETACHABLE M.2 WATER BLOCK FOR GEN5 SSD

Plenty of Type-C on Rear IO
A cutting-edge design featuring all USB Type-C ports on the rear I/O.

802.11be 7

20K Caps with 1000uF Capacitance

20K 1000uF

Dual Thunderbolt™ 4 Type-C
It enables lightning-fast data transfer up to 40Gbps and connects versatile devices with a single Thunderbolt™ 4 cable.

THUNDERBOLT

Memory OC Shield (Patent Pending)
ASRock's exclusive Memory OC Shield effectively absorbs EMI noise, enhancing memory overclocking performance and stability.

PATENT PENDING

*Patent applied number 113209060

Deluxe 6*M.2 Sockets
Supports up to 6*NVMe M.2 SSDs and two of which is able to accommodates the latest PCI Express 5.0 standard.

Hyper M.2 SSD
Gen5 x4 BLAZING M.2 128Gb/s
Hyper M.2 SSD
Hyper M.2 SSD
Hyper M.2 SSD

10G + 5G LAN
10G 5G

BIOS FLASHBACK
BIOS Flashback

DETAIL SPECIFICATION

Platform	- EATX Form Factor: 12.0-in x 10.8-in, 30.5 cm x 27.4 cm - 10 Layer PCB - 2oz Copper PCB

Unique Feature	Superb Productivity
	  - PCIe Gen5 (Graphics, M.2)
	  - Dual Channel DDR5
	  - Thunderbolt™ 4 Type-C Ports (40 Gb/s)
	Rock-Solid Durability
	  - Server-Grade Low-Loss PCB
	  - 28+1+2+1+1 Power Phase, 110A SPS for VCore with Enlarged Heatsink Armor
	  - Memory OC Shield
	  - Flexible Integrated I/O Shield
	  - 20K Long-lasting Black Caps (high quality and conductive polymer capacitors)
	Ultrafast Connectivity
	  - Marvell 10G LAN, Realtek 5G LAN
	  - 802.11be Wi-Fi 7 Module
	EZ Update
	  - BIOS Flashback Button
	  - ASRock Auto Driver Installer

CPU	- Supports Intel® Core™ Ultra Processors (Series 2) (LGA1851RL-ILM) - Supports Intel® Hybrid Technology - Supports Intel® Turbo Boost Max 3.0 Technology - Supports Intel® Thermal Velocity Boost (TVB) - Supports Intel® Adaptive Boost Technology (ABT) - Integrated NPU for dedicated AI acceleration - Supports ASRock Hyper BCLK Engine
Chipset	- Intel® Z890

Memory	- Dual Channel DDR5 Memory Technology
	- 4 x DDR5 DIMM Slots
	- Supports DDR5 non-ECC, un-buffered memory up to 9200+(OC)*
	  1DPC 1R Up to 9200+ MHz (OC), 5600 MHz Natively.
	  1DPC 2R Up to 6800+ MHz (OC), 5600 MHz Natively.
	  2DPC 1R Up to 6800+ MHz (OC), 4800 MHz Natively.
	  2DPC 2R Up to 5800+ MHz (OC), 4400 MHz Natively.
	- Max. capacity of system memory: 256GB
	- Supports Intel® Extreme Memory Profile (XMP) 3.0x
	* Please refer to Memory Support List on ASRock's website for more information.
	  (http://www.asrock.com/)

Expansion Slot	CPU: - 2 x PCIe 5.0 x16 Slots (PCIE1 and PCIE2), support x16 or x8/x8 modes* Chipset: - 1 x PCIe 4.0 x16 Slot (PCIE3), supports x4 mode* - 1 x M.2 Socket (Key E), supports type 2230 WiFi/BT PCIe WiFi module * If M2_2 is occupied, PCIE1 will downgrade to x8 mode and PCIE2 will downgrade to x4 mode. * PCIE1 supports PCIe riser cards to extend one x16 slot to x8/x8 or x8/x4/x4 slots. * Supports NVMe SSD as boot disks - Supports AMD CrossFireTM - 15μ Gold Contact in VGA PCIe Slots (PCIE1 and PCIE2)

Graphics	* Intel® UHD Graphics Built-in Visuals and the VGA outputs can be supported only
	  with processors which are GPU integrated.
	- Intel® Xe LPG Graphics Architecture
	- 2 x Intel® Thunderbolt™ 4, support HDCP 2.3 and max. resolution up to 8K 60Hz /
	  5K 120Hz*
	* Supports two 4K displays or one 8K display
	* Only the CPU's embedded graphics can be displayed through Thunderbolt ports.
	  If you want to display to a Thunderbolt monitor, please use CPU models with
	  embedded graphics.

Audio	- 5.1 CH HD Audio with Content Protection (Realtek ALC4082 Audio Codec) - WIMA Audio Capacitors (For Front Outputs) - ESS SABRE9219 DAC for Front Panel Audio (130dB SNR) - Individual PCB Layers for R/L Audio Channel - Impedance Sensing on Rear Out port - Nahimic Audio
LAN	1 x 10 Gigabit LAN 100/1000/2500/5000/10000 Mb/s (Marvell AQC113) - Support Wake-On-LAN - Support PXE 1 x 5 Gigabit LAN 10/100/1000/2500/5000 Mb/s (Realtek RTL8126)

Wireless LAN	- 802.11be 2x2 Wi-Fi 7 Module
	- Supports IEEE 802.11a/b/g/n/ac/ax/axe/be
	- Supports 2.4GHz/5GHz/6GHz* frequency band
	- Supports 320MHz channel bandwidth with 6GHz* frequency band
	* Wi-Fi 7 (6GHz band) will be supported by Microsoft® Windows® 11. The availability
	  will depend on the different regulation status of each country and region.
	  It will be activated (for supported countries) through Windows Update and software
	  updates once available.
	- 1 antenna to support 2 (Transmit) x 2 (Receive) diversity technology
	- Supports Bluetooth 5.4
	- Supports MU-MIMO
	- Supports Killer LAN Software

USB	CPU: - 2 x Thunderbolt™ 4 Type-C (Rear) Chipset: - 2 x USB 3.2 Gen2x2 Type-C (Front) - 4 x USB 3.2 Gen2 Type-C (Rear) - 4 x USB 3.2 Gen1 Type-A (Front) - 4 x USB 3.2 Gen1 Type-C (Rear) - 4 x USB 2.0 (Front) * All USB ports support ESD Protection
Rear Panel I/O	- 2 x Antenna Ports - 1 x Optical SPDIF Out Port - 2 x Thunderbolt™ 4 Type-C Ports (40 Gb/s for USB4 protocol; 40Gb/s for Thunderbolt protocol)* - 4 x USB 3.2 Gen2 Type-C Ports (10 Gb/s) - 4 x USB 3.2 Gen1 Type-C Ports (USB32_TC_56 support Ultra USB Power.) - 2 x RJ-45 LAN Ports - 1 x Clear CMOS Button - 1 x BIOS Flashback Button - 1 x Line Out Jack (Gold Audio Jack) - 1 x Microphone Input Jack (Gold Audio Jack) * Supports USB PD 3.0 up to 5V@3A (15W) charging
Storage	CPU: - 1 x Blazing M.2 Socket (M2_1, Key M), supports type 2280 PCIe Gen5x4 (128 Gb/s) mode* - 1 x Blazing M.2 Socket (M2_2, Key M), supports type 2280 PCIe Gen5x4 (128 Gb/s) mode* - 1 x Hyper M.2 Socket (M2_3, Key M), supports type 2280 PCIe Gen4x4 (64 Gb/s) mode* Chipset: - 1 x Hyper M.2 Socket (M2_4, Key M), supports type 2280 PCIe Gen4x4 (64 Gb/s) mode* - 1 x Hyper M.2 Socket (M2_5, Key M), supports type 2280 PCIe Gen4x4 (64 Gb/s) mode* - 1 x Hyper M.2 Socket (M2_6, Key M), supports type 2242/2260/2280 SATA3 6.0 Gb/s & PCIe Gen4x4 (64 Gb/s) modes* - 4 x SATA3 6.0 Gb/s Connectors * Supports Intel® Volume Management Device (VMD) * Supports NVMe SSD as boot disks * If M2_2 is occupied, PCIE1 will downgrade to x8 mode and PCIE2 will downgrade to x4 mode.
RAID	- Supports RAID 0, RAID 1, RAID 5 and RAID 10 for SATA storage devices - Supports RAID 0, RAID 1, RAID 5 and RAID 10 for M.2 NVMe storage devices

Connector	- 3 x Thermistor Cable Headers
	- 1 x SPI TPM Header
	- 1 x Power LED and Speaker Header
	- 1 x RGB LED Header*
	- 3 x Addressable LED Headers**
	- 2 x CPU Fan Connector (4-pin) (Smart Fan Speed Control)***
	- 4 x Chassis Fan Connectors (4-pin) (Smart Fan Speed Control)***
	- 1 x AIO Pump Fan Connector (4-pin) (Smart Fan Speed Control)***
	- 1 x Water Pump Fan Connector (4-pin) (Smart Fan Speed Control)***
	- 1 x 24 pin ATX Power Connector (Hi-Density Power Connector)
	- 2 x 8 pin 12V Power Connectors (Hi-Density Power Connector)
	- 1 x Front Panel Audio Connector (15μ Gold Audio Connector)
	- 2 x USB 2.0 Headers (Support 4 USB 2.0 ports)
	- 2 x USB 3.2 Gen1 Headers (Support 4 USB 3.2 Gen1 ports)
	- 2 x Front Panel Type C USB 3.2 Gen2x2 Headers (20 Gb/s)
	- 1 x Dr. Debug with LED
	- 1 x Power Button with LED
	- 1 x Reset Button with LED
	* Supports in total up to 12V/3A, 36W LED Strip
	** Support in total up to 5V/3A, 15W LED Strip
	*** CPU_FAN1 supports the fan power up to 1A (12W).
	*** CPU_FAN2, CHA_FAN1~4, AIO_PUMP and W_PUMP support the fan power up to
	  3A (36W).
	*** CPU_FAN2, CHA_FAN1~4, AIO_PUMP and W_PUMP can auto detect if 3-pin or 4-pin
	  fan is in use.

BIOS Feature	- 256Mb AMI UEFI Legal BIOS with GUI support
Software and UEFI	Software - ASRock Motherboard Utility (A-Tuning) - Killer Control Center - ASRock Polychrome SYNC * These utilities can be downloaded from ASRock Live Update & APP Shop. UEFI - ASRock EZ Mode - ASRock Full HD UEFI - ASRock My Favorites in UEFI - ASRock Auto Driver Installer - ASRock Instant Flash
OS	- Microsoft® Windows® 11 64-bit
Certifications	- FCC, CE - ErP/EuP ready (ErP/EuP ready power supply is required) - CEC Tier II ready
Accessories	- 4 x SATA Data Cables - 1 x USB 2.0 Bracket - 1 x ASRock WiFi 2.4/5/6 GHz Antenna - 1 x ARGB Splitter Cable - 3 x Thermistor Cables