



PHANTOM®
GAMING

PHANTOM GAMING Z790 NOVA **WiFi**



PRODUCT BRIEF :

- Supports 13th Gen & 12th Gen and next gen Intel® Core™ Processors (LGA1700)
- 20+1+1 Power Phase, 90A SPS for VCore+GT, 8-Layer 20Z PCB
- Supports DDR5 7800+ (OC)
- 1 PCIe 5.0 x16, 1 PCIe 4.0 x16, 1 PCIe 3.0 x1
- Graphics Output Options: HDMI, DisplayPort
- Realtek ALC4082 7.1 CH HD Audio Codec, Nahimic Audio
- 1 Blazing M.2 (PCIe Gen5 x4), 4 Hyper M.2 (PCIe Gen4 x4), 1 Hyper M.2 (PCIe Gen4 x4 & SATA3), 4 SATA3
- 2 USB 3.2 Gen2x2 Type-C (1 Rear, 1 Front), 4 USB 3.2 Gen2 Type-A (Rear), 7 USB 3.2 Gen1 Type-A (3 Rear, 4 Front), 6 USB 2.0 (2 Rear, 4 Front)
- Killer 2.5G LAN
- 802.11be WiFi 7 + Bluetooth
- Supports ASRock Graphics Card Holder, Toolless Multi-Layer M.2 Heatsink



COMPOSITE VRM HEATSINK

It's equipped with a composite VRM heatsink combining a cooling fan, bigger aluminum sink and heat pipe for maximum heat dissipation.

XXL VRM HEATSINK
HEAT PIPE
COOLING FAN

WiFi 7

4K QAM
1K QAM
256 QAM

WI-FI 7 802.11be

Latest WiFi 7 technology delivers extreme wireless internet speeds and low latency.

*The availability will depend on the different regulation status of each country and region.

OPTIMIZED POWER AND DURABILITY

VCore with SPS design delivers smoother and neater power to the CPU, while 20K black capacitors ensure a lifespan of at least 20,000 hours for longer component durability.

Long Lasting 20K Cap

SPS Dr.Mos

20 SPS VCore Phase
1 SPS VCCGT Phase
1 SPS VCC AUX Phase

DELUXE 6 * M.2 SOCKETS

Supports up to 6 * NVMe M.2 SSDs and one of which is able to accommodate the latest PCI Express 5.0 standard.

Gen5 x4
BLAZING M.2
128GB/s

PCIe Gen5x4 M.2
PCIe Gen4x4 M.2
PCIe Gen4x4 M.2
PCIe Gen4x4 M.2
PCIe Gen4x4 M.2

SERVER-GRADE LOW-LOSS 8-LAYER PCB

8 LAYER PCB

The server-grade PCB improves signal integrity, giving a reliable and long-lasting system without any compromise.

TOOLLESS MULTI-LAYER M.2 HEATSINK

Including a quick-release mechanism heatsink for effortless and toolless M.2 SSD installation.

3.
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Up to DDR5 7800 MHZ

Detail Specification

Platform	- ATX Form Factor: 12.0-in x 9.6-in, 30.5 cm x 24.4 cm - 8 Layer PCB - 2oz Copper PCB	Rear Panel I/O	- 2 x Antenna Ports - 1 x HDMI Port - 1 x DisplayPort 1.4 - 1 x Optical SPDIF Out Port - 1 x USB 3.2 Gen2x2 Type-C Port (20 Gb/s) - 4 x USB 3.2 Gen2 Type-A Ports (10 Gb/s) * - 3 x USB 3.2 Gen1 Ports * - 2 x USB 2.0 Ports - 1 x RJ-45 LAN Port - 1 x Clear CMOS Button - 1 x Line Out Jack (Gold Audio Jack) - 1 x Microphone Input Jack (Gold Audio Jack) *USB32_12 support Ultra USB Power. USB32_34 are Lightning Gaming Ports.
Unique Feature	Superb Productivity - PCIe Gen5 (Graphics, M.2) - Dual Channel DDR5 Rock-Solid Durability - Server-Grade Low-Loss PCB - 20+1+1 Power Phase, 90A SPS for VCore+GT with Enlarged Heatsink Armor - Flexible Integrated I/O Shield - 20K Long-lasting Black Caps (high quality and conductive polymer capacitors) Ultrafast Connectivity - Killer 2.5G LAN, 802.11be Wi-Fi 7 Module - ASRock Lightning Gaming Ports EZ Update - ASRock Auto Driver Installer	Storage	CPU: - 1 x Blazing M.2 Socket (M2_1, Key M), supports type 2260/2280 PCIe Gen5x4 (128 Gb/s) mode* - 1 x Hyper M.2 Socket (M2_2, Key M), supports type 2260/2280 PCIe Gen4x4 (64 Gb/s) mode* Chipset: - 1 x Hyper M.2 Socket (M2_3, Key M), supports type 2260/2280 PCIe Gen4x4 (64 Gb/s) mode* - 1 x Hyper M.2 Socket (M2_4, Key M), supports type 2260/2280 PCIe Gen4x4 (64 Gb/s) mode* - 1 x Hyper M.2 Socket (M2_5, Key M), supports type 2260/2280 SATA3 6.0 Gb/s & PCIe Gen4x4 (64 Gb/s) modes* - 1 x Hyper M.2 Socket (M2_6, Key M), supports type 2260/2280 PCIe Gen4x4 (64 Gb/s) mode* - 4 x SATA3 6.0 Gb/s Connectors * Supports Intel® Volume Management Device (VMD) * Supports NVMe SSD as boot disks * If M2_1 is occupied, PCIe1 will downgrade to x8 mode.
CPU	- Supports 13 th Gen & 12 th Gen Intel® Core™ Processors (LGA1700) - Supports Intel® Hybrid Technology - Supports Intel® Turbo Boost Max 3.0 Technology - Supports Intel® Thermal Velocity Boost (TVB) - Supports Intel® Adaptive Boost Technology (ABT) - Supports ASRock Hyper BCLK Engine	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
Chipset	- Intel® Z790	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** - 1 x CPU Fan Connector (4-pin)*** - 1 x CPU/Water Pump Fan Connector (4-pin) (Smart Fan Speed Control)**** - 5 x Chassis/Water Pump Fan Connectors (4-pin) (Smart Fan Speed Control)***** - 1 x VRM 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) - 1 x Thunderbolt AIC Connector (5-pin) (Supports ASRock Thunderbolt 4 AIC Card) - 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) - 1 x Front Panel Type C USB 3.2 Gen2x2 Header (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/WP supports the fan power up to 2A (24W). ***** CHA_FAN1-5/WP support the fan power up to 2A (24W). ***** CPU_FAN2/WP and CHA_FAN1-5/WP can auto detect if 3-pin or 4-pin fan is in use. ***** VRM_FAN supports the VRM fan power up to 2A (24W).
Memory	- Dual Channel DDR5 Memory Technology - 4 x DDR5 DIMM Slots - Supports DDR5 non-ECC, un-buffered memory up to 7800+(OC)* 1DPC 1R Up to 7800+ MHz (OC), 4800 MHz Natively. 1DPC 2R Up to 6800+ MHz (OC), 4400 MHz Natively. 2DPC 1R Up to 6000+ MHz (OC), 4000 MHz Natively. 2DPC 2R Up to 5600+ MHz (OC), 3600 MHz Natively. - Max. capacity of system memory: 192GB - Supports Intel® Extreme Memory Profile (XMP) 3.0 * Please refer to Memory Support List on ASRock's website for more information. (http://www.asrock.com/)	BIOS Feature	- 256Mb AMI UEFI Legal BIOS with GUI support
Expansion Slot	CPU: - 1 x PCIe 5.0 x16 Slot (PCIe1), supports x16 mode* Chipset: - 1 x PCIe 4.0 x16 Slot (PCIe2), supports x4 mode* - 1 x PCIe 3.0 x1 Slot (PCIe3)* - 1 x Vertical M.2 Socket (Key E), supports type 2230 WiFi/BT PCIe WiFi module and Intel® CNVio/CNVio2 (Integrated WiFi/BT) * Supports NVMe SSD as boot disks * If M2_1 is occupied, PCIe1 will downgrade to x8 mode. - Supports AMD CrossFire™ - 15µ Gold Contact in VGA PCIe Slot (PCIe1)	Software and UEFI	Software - ASRock Motherboard Utility (Phantom Gaming 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 - ASRock Easy RAID Installer
Graphics	* Intel® UHD Graphics Built-in Visuals and the VGA outputs can be supported only with processors which are GPU integrated. - Intel® X ^e Graphics Architecture (Gen 12) - 1 x HDMI 2.1 TMDS Compatible, supports HDCP 2.3 and max. resolution up to 4K 60Hz - 1 x DisplayPort 1.4 with DSC (compressed), supports HDCP 2.3 and max. resolution up to 8K 60Hz / 5K 120Hz	OS	- Microsoft® Windows® 10 64-bit / 11 64-bit
Audio	- 7.1 CH HD Audio with Content Protection (Realtek ALC4082 Audio Codec) - Individual PCB Layers for R/L Audio Channel - Impedance Sensing on Rear Out port - Nahimic Audio	Certifications	- FCC, CE - ErP/EuP ready (ErP/EuP ready power supply is required)
LAN	- 2.5 Gigabit LAN 10/100/1000/2500 Mb/s - Killer® E3100G - Supports Killer LAN Software	Accessories	- 1 x User Manual - 4 x SATA Data Cables - 1 x Graphics Card Holder - 1 x ASRock WiFi 2.4/5/6 GHz Antenna - 1 x ARGB Splitter Cable - 3 x Thermistor Cables - 5 x Screws for M.2 Sockets - 5 x Standoffs for M.2 Sockets
Wireless LAN	- 802.11be 2x2 Wi-Fi 7 Module - Supports IEEE 802.11a/b/g/n/ac/ax/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. * A 6GHz compatible router is required for 7 functionality. - 1 antenna to support 2 (Transmit) x 2 (Receive) diversity technology - Supports Bluetooth 5.4 - Supports MU-MIMO		
USB	- 2 x USB 3.2 Gen2x2 Type-C (1 Rear, 1 Front) - 4 x USB 3.2 Gen2 Type-A (Rear) - 7 x USB 3.2 Gen1 Type-A (3 Rear, 4 Front) - 6 x USB 2.0 (2 Rear, 4 Front) * All USB ports support ESD Protection		