



KEY FEATURES

- Intel® 13th/12th Gen (Raptor Lake-S/Alder Lake-S) Core™ Processors with Q670 chipset
- 4 x 288-pin Long-DIMM DDR5 4400 MHz , up to 128GB (32GB per DIMM)
- 1 x PCIe x16 (Gen5), 1 x PCIe x8 (Gen5), 2 x PCIe x4 (Gen4), 3 x PCIe x1 (Gen3)
- 1 x USB3.2 Gen2x2 Type C, 5 x USB3.2 Gen2, 4 x USB 2.0
- 1 x M.2 Key B, 1 x M.2 Key E, 1 x M.2 Key M, 6 x COM, 8 x SATA3
- 3 x Intel 2.5 Gigabit LAN
- Supports Triple display, 1 x HDMI 2.0b, 1 x DP1.4a, 1 x VGA
- TPM 2.0 onboard IC
- Supports Intel® vPro, VMD RAID 0/1/5/10
- ATX PWR (8+24 Pin)

SPECIFICATIONS

Form Factor

Dimensions (LxWxH)	ATX (12-in x 9.6-in x 1.4-in, 30.5 cm x 24.4 cm x 3.6 cm)
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Processor System

CPU	Intel® 13th/12th Gen (Raptor Lake-S/Alder Lake-S) Core™ Processors, up to 125W
Chipset	Intel® Q670
Socket	LGA1700
BIOS	AMI SPI 256 Mbit

Memory

Technology	DDR5 4400 MHz (2DPC - 1DIMM) DDR5 4000 MHz (2DPC - 2DIMM 1R) DDR5 3600 MHz (2DPC - 2DIMM 2R)
Capacity	128 GB (32 GB per DIMM)
Socket	4 x 288-pin Long-DIMM

Graphics

Controller	Intel® UHD Graphics
HDMI	HDMI 2.0b Max resolution up to 4096x2160@60Hz
DisplayPort	DisplayPort 1.4a, DP++ Max resolution up to 4096x2160@60Hz
VGA	Max resolution up to 1920 x 1200@60Hz
MultiDisplay	Triple Display

Expansion Slot

PCIe	2 x PCIe Gen5 Slots (PCIe1/PCIe4:single at x16(PCIe1); dual at x8 (PCIe1) / x8 (PCIe4)) (PCIe1: Support Riser card x8/x8) 2 x PCIe x4 (Gen4) 3 x PCIe x1 (Gen3)
M.2	1 x M.2 (Key E, 2230) with PCIe x1, USB 2.0 and CNVi for Wireless 1 x M.2 (Key B, 3042/3052) with PCIe x1, USB3.2 Gen1, USB 2.0 and SIM for 4G/5G
SIM Socket	1 x SIM socket connected to M.2 Key B

Audio

Interface	Realtek ALC897, High Definition Audio. Line-in, Line-out, Mic-in
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Ethernet

Controller/ Speed	LAN1: Intel® I226V with 10/100/1000/2500 Mbps, supports PoE LAN2: Intel® I226LM with 10/100/1000/2500 Mbps, supports vPro LAN3: Intel® I226V with 10/100/1000/2500 Mbps
Connector	3 x RJ-45

Rear I/O

HDMI	1 x HDMI 2.0b
DisplayPort	1 x DP 1.4a++
VGA	1
Ethernet	3 x 2.5 Gigabit LAN
USB	5 x USB 3.2 Gen2 1 x USB 3.2 Gen2x2 (Type-C, 5V/3A)
Audio	3 (Mic-in, Line-in, Line-out)
COM	COM1, COM2 (RS-232/422/485)

Internal Connector

USB	2 x USB 3.2 Gen1 (1 x USB 3.2 header) 4 x USB 2.0 (1 x 2.54 pitch header, 2 x USB 2.0 Type-A vertical con)
COM	COM3, COM4, COM5, COM6 (RS-232)
Parallel	1
GPIO	8 x GPI, 8 x GPO (shared with LPT header)
PS2	1 x PS2 header
Thunderbolt header	1

Storage

M.2	1 x M.2 (Key M, 2242/2260/2280/22110/25110) with PCIe Gen4 x4 for SSD
SATA	8 x SATA3 (6Gb/s)
RAID	Intel® VMD RAID 0/1/5/10 **supported by identical interface (PCIe or SATA) PCIe interface: M.2 Key B + M.2 Key M SATA interface: SATA port

Security

TPM	TPM 2.0 onboard IC
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Watchdog Timer

Output	From Super I/O to drag RESETCON#
Interval	256 Segments, 0, 1, 2, ...255sec

Power Requirements

Input PWR	ATX PWR (8+24 Pin)
Power On	AT/ATX Supported - AT : Directly PWR on as power input ready - ATX : Press button to PWR on after power input ready

Environment

Operating Temp	0°C ~ 70°C
Storage Temp	-40°C ~ 85°C
Operating Humidity	5% ~ 90%
Storage Humidity	5% ~ 90%

BLOCK DIAGRAM

