



**KEY FEATURES**

- Intel® 10<sup>th</sup> Gen (Cometlake-S) Core™ Processors with Q470E chipset
- 4 x 288-pin Long-DIMM, Support Dual Channel DDR4 2933 (i9/i7 CPU) / 2666 (i5/i3 CPU) / 2400 (Pentium/ Celeron CPU), up to 128GB
- 1 x PCIe x16 Gen3, 1 x PCIe x8 Gen3, 3 x PCIe x4 Gen3, 2 x PCI 4 x USB 3.2 Gen2, 4 x USB 3.2 Gen1, 4 x USB 2.0, 1 x M.2 Key E, 1 x M.2 Key M, 1 x M.2 Key B, 6 x COM, 6 x SATA3
- 1 x Intel 1 Gigabit LAN, 1 x Intel 2.5 Gigabit LAN
- Support Triple display, 1 x DP1.2, 1 x VGA, 1 x HDMI 2.0a
- TPM 2.0 onboard
- Supports Intel® vPro, AMT, RAID 0/1/5/10
- ATX-PWR (24+8-pin)

**SPECIFICATIONS**

**Form Factor**

Dimensions	ATX (12-in x 9.6-in)
------------	----------------------

**Processor System**

CPU	Intel® 10 <sup>th</sup> Gen (Cometlake-S) Core™ Processors, up to 125 W
Chipset	Intel® Q470E
Socket	LGA1200
BIOS	AMI SPI 256 Mbit

**Memory**

Technology	Dual Channel DDR4 2933/2666/2400 MHz - Intel Core i9/i7 CPUs support DDR4 up to 2933 MHz - Intel Core i5/i3 CPUs support DDR4 up to 2666 MHz - Intel Pentium/Celeron CPU support DDR4 up to 2400 MHz
Capacity	128GB (32GB per DIMM)
Socket	4 x 288-pin Long-DIMM

**Graphics**

Controller	Intel® UHD Graphics
HDMI	HDMI 2.0a Max resolution up to 4096x2160@60Hz
DisplayPort	DisplayPort 1.2, DP++ Max resolution up to 4096x2160@60Hz
VGA	Max resolution up to 1920x1200@60Hz
LVDS	N/A
eDP	N/A
DVI	N/A
MultiDisplay	Triple Display

**Expansion Slot**

PCIe	3 x PCIe Gen3 Slots (PCIe1/PCIe2/PCIe3: single at x16 (PCIe1); dual at x8 (PCIe1) / x8 (PCIe3); triple at x8 (PCIe1) / x4 (PCIe2) / x4 (PCIe3)) 2 x PCIe x4 (Gen3)
PCI	2 x PCI
Mini-PCIe	N/A
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/USB 3.2 Gen1/USB2.0 and SIM for 4G/5G
SIM Socket	1x SIM socket connected to M.2 key B

**Audio**

Interface	Realtek ALC887/ALC897 HD, High Definition Audio. Line-In/ Line-Out/ Mic-In
-----------	--

**Ethernet**

Controller/ Speed	LAN1: Intel® I225LM with 10/100/1000/2500 Mbps LAN2: Intel® I219LM with 10/100/1000 Mbps, support AMT/vPro
Connector	2 x RJ-45

**Rear I/O**

HDMI	1 x HDMI 2.0a
DisplayPort	1 x DP 1.2
VGA	1
DVI	N/A
Ethernet	1 x 1 Gigabit LAN, 1 x 2.5 Gigabit LAN
USB	4 x USB 3.2 (Gen2), 2 x USB2.0
Audio	3( Line-In, Line-Out, Mic-In )
COM	2 x COM (RS-232/422/485)
PS2	1

**Internal Connector**

USB	4 x USB 3.2 Gen1 (2 x USB 3.1 header) 2 x USB2.0 (1x2.54 pitch header)
COM	4 x COM (RS-232)
Parallel	1
GPIO	8 x GPI, 8 x GPO, (shared with LPT header)
TPM	TPM 2.0 onboard
LVDS	N/A
eDP	N/A
VGA	N/A
SATA PWR Output	N/A
Speaker Header	1

**Storage**

M.2	1 x M.2 (Key M, 2242/2260/2280) with SATA3 and PCIe x4 for SSD * Shared with SATA3_5/ SATA3_6 Ports - When using M.2 PCIe x4 SSD, both SATA3_5 and SATA_6 Ports are disabled - When using M.2 SATA SSD, only SATA3_5 Port is disabled, and SATA3_6 Port is available
mSATA	N/A
SATA	6 x SATA3 (6Gb/s)
RAID	Intel® SATA RAID 0/1/5/10
eMMC	N/A

**Watchdog Timer**

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

**Power Requirements**

Input PWR	ATX PWR (24+8-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 ~ 60°C
Storage Temp	-40° C ~ 85° C
Operating Humidity	5% ~ 90%
Storage Humidity	5% ~ 90%